Hidden Figures: The Impact of Omission of SFAS 131-Mandated Segment Line Items on Stock Price Update

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Abstract

SFAS 131 mandates the disclosure of financial line items that top management regularly reviews or receives internally for each business segment (*the management approach*), aiming to provide investors with the most value-relevant segment information. However, we find that multi-segment firms frequently omit key mandated items in their segment reporting—on average, about half the time—raising concerns that managers might ostensibly comply with the standards while actually concealing critical information. We show that multi-segment firms with more extensive omissions experience greater delays in price updates than their single-segment industry peers when responding to common industry news. Notably, omissions by firms with superior managerial ability, strong corporate governance, and low competitive harm concerns do not exhibit significant pricing inefficiencies. This suggests that when properly applied, the management approach can furnish investors with the data necessary for timely analysis of multi-segment firms. Overall, our findings underscore the critical role of segment item disclosures in enhancing pricing efficiency and highlight a potential shortfall in SFAS 131's effectiveness: it hinges on managerial ability to identify the relevant segment information and on managerial constraints and incentives to comply with mandated disclosure requirements.

Keywords: SFAS 131; management approach; segment line item disclosure; managerial ability; corporate governance; proprietary cost; pricing efficiency

JEL Codes: G10, G14, G18, M40, M41

1. Introduction

Valuing multi-segment firms is inherently challenging due to the limited information that outsiders typically have about individual business segments. To address this issue, the Financial Accounting Standards Board (FASB) introduced the Statement of Financial Accounting Standard No. 131 (SFAS 131) in December 1997, providing segment reporting guidelines. SFAS 131 mandates the disclosure of a list of basic financial line items for each business segment, with a critical nuance: these mandated items must be disclosed if they are regularly reviewed or received by the chief operating decision maker (CODM) internally (the so-called "management approach").[1] The expectation is that items reviewed by top management are most value-relevant to investors and should streamline their assessment of a conglomerate's diverse business lines.

Despite these intentions, ongoing investor dissatisfaction with the segment item disclosures remains, raising concerns about the effectiveness of SFAS 131. In September 2009, the FASB codified SFAS 131 as ASC 280 to enhance the clarity and accessibility of reporting standards, aiming to improve compliance with disclosure requirements. However, an Invitation to Comment (FASB [2016]) unveiled a consistent stakeholder concern that the list of items disclosed by segment is insufficient. In response, FASB's Investor Advisory Committee has urged the board to focus efforts on improving the current disclosure requirements for each reportable segment. Recently, the FASB amended SFAS 131 (FASB [2023]) to mandate the disclosure of additional segment items, "significant segment expenses," following the same management approach principle that these expenses must be disclosed if they are regularly provided to management.

[1] In this paper, the term "mandatory items" or "mandated items" refers to line items that SFAS 131 mandates for disclosure, including those contingent upon managerial review. The term "voluntary items" describes line items not specified by SFAS 131.

To shed light on the potential impacts of recent amendments mandating additional segment line items, we examine firms' up-to-date (before the amendment) reporting of the current mandated items under SFAS 131 and assess their informativeness. The management approach suggests that an item's omission can occur because the top managers do not review or receive it internally for resource allocations and segment evaluations, deeming it irrelevant. Thus, the omission is unlikely to diminish the usefulness of segment disclosures.[2] However, the capability of divisional managers to identify and report all relevant data, or the top management's involvement in reviewing segment details, might be inadequate. This could result in the non-disclosure of crucial segment information. Additionally, even if the management approach is fundamentally sound, there remains a risk that managers might use the pretext of not having received certain information regularly to intentionally withhold it, thereby increasing information asymmetry and hindering investors' ability to promptly process segment-specific details when valuing multi-segment firms.[3]

Do omissions reflect the actual relevance of segment information to management decision-making (i.e., the management approach), or do they obscure crucial information from investors? To address this, we first document the extent to which multi-segment firms omit SFAS 131-mandated items and then evaluate whether these omissions impede stock price efficiency. If omissions do reduce price efficiency, it is likely to suggest that either the alignment with management's decision-making is suboptimal (e.g., managers may not be reviewing enough

[2] Unless investors desire more detailed information than what top managers actually use. Survey evidence indicates a gap between the perceived relevance of segment disclosures among financial statement users and preparers, with preparers generally being more skeptical (Botosan, Huffman, and Stanford [2021]). This suggests that managers may review fewer items than investors deem necessary for thorough segment analysis.

[3] Christine A. Botosan, a dissenting Board member on the recent amendments (FASB [2023]), noted that some firms might tailor the segment reports provided to the CODM to achieve a preferred financial reporting outcome.

segment items to meet investor demands) or that managers are opportunistically withholding essential segment disclosures. The former would challenge the effectiveness of the management approach, while the latter would call for stricter enforcement by the U.S. Securities and Exchange Commission (SEC). In our study, we conduct subsample analyses to assess these scenarios.

For our inquiry, we examine U.S. publicly listed firms reporting multiple business segments from 2000 to 2020, two decades following the adoption of SFAS 131. Based on Compustat Segment files, we identify 25 items in segment reporting: 17 mandated by SFAS 131, such as capital expenditure, and another 8 that firms voluntarily report, e.g., R&D expenses. All mandated items adhere to the "regularly reviewed or received" principle, except for segment revenue and profit, which must be provided.[4]

Our findings uncover that multi-segment firms disclose a given mandated item only about half the time, typically reporting just eight mandated items per segment.[5] Segment revenue and a measure of segment profit are usually disclosed, but many other mandatory items likely critical for assessing segment value are frequently omitted.[6] For instance, total assets, depreciation, capital expenditures, and special items are omitted 20.5%, 22.4%, 30.7%, and 57.2% of the time, respectively.[7] The least frequently reported mandated items are related to interest and tax, with omission rates as high as 80% and 87%. Voluntary disclosures are rarer, with an average non-

[4] Single-segment firms must report line items for their sole operating segment (e.g., excluding corporate overhead amounts) under the same segment reporting standard. It is not surprising that single-segment firms almost always provide full disclosure of the 25 items. For these firms, the financial figures in segment reports, even when hidden, can be easily obtained via inference based on the firm's consolidated financial statements.

[5] Our counting process excludes cases where an item is missing because it is inherently absent in the firm or segment, by matching segment items with firm-level counterparts. Section 3.3.1 provides more details on our screening methods.

[6] Segments without net sales data or with zero or negative sales figures, primarily corporate or miscellaneous segments (~3.8%), are excluded from our sample. The remaining firms in our sample omit a profit measure approximately 9% of time. We find some firms justify the omission of segment profit by stating that their CODM assesses performance based solely on segment revenue. An example of this is provided in Appendix A.

[7] SFAS 131 requires the disclosure of "unusual items" (ASC 280-10-50-22, item f.). Compustat records two related items: special items and extraordinary items.

reporting rate of 84.7%: firms typically report only one voluntary item per segment. Moreover, firms are particularly reluctant to voluntarily disclose expense-related items such as total costs, SG&A, and COGS—the very items the FASB now seeks to mandate—which are currently withheld 88%, 87.3%, and 71.5% of the time.

The management approach implies that the 50% omission rate of mandated items we identified indicates that managers use roughly half of these items for internal decision-making about their segments. If their segment review process is rigorous, these omissions should not compromise price efficiency as what the top management uses (hence, reports) should be the driver for firm value. However, if the disclosed 50% is insufficient for investors to value multi-segment firms, we would expect to observe price inefficiencies, especially when omissions are extensive. To evaluate the impact of omissions on price efficiency, we follow previous research to assess multi-segment firms' stock price updates in response to their segment industry news.

Cohen and Lou [2012] is among the first studies documenting multi-segment firms significantly lag behind their single-segment peers in incorporating common industry news into their stock prices, resulting in substantial return predictability from single- to multi-segment firms. Further research by Chichernea, Schaberl, and Thevenot [2022] showed that this lead-lag return relation was primarily evident pre-SFAS 131 and significantly diminished post-SFAS 131, suggesting SFAS 131 improved the pricing efficiency of multi-segment firms.[8] Different from

[8] Previous studies on segment reporting (e.g., Berger and Hann [2003], Botosan and Stanford [2005], Chichernea, Schaberl, and Thevenot [2022], Cho [2015], Ettredge et al. [2005], [2006], Franco, Urcan, and Vasvari [2016], Kang, Khurana, and Wang [2017], Park [2011]) have primarily focused on the overall improvement in informativeness following the transition from SFAS 14 to SFAS 131. SFAS 14, issued by FASB in 1976 and now completely superseded, set earlier standards for segment reporting. These studies typically assess the average effects of SFAS 131 and do not delve into the alignment of segment item disclosures with management's actual usage. Consequently, they do not provide insights into whether amendments to SFAS 131 can effectively enhance the detailed reporting and utility of segment disclosures, leaving a critical gap that our study seeks to fill.

previous studies, we delve deeper to examine whether a multi-segment firm's omissions of mandated segment items reduce price efficiency in impounding industry news.

Similar to Cohen and Lou [2012] and Chichernea, Schaberl, and Thevenot [2022], we construct a "pseudo-multi firm" for each multi-segment firm in our sample, composed of a portfolio of single-segment firms operating in the same industries as the multi-segment firm's segments. Our analysis reveals that omissions of mandated segment items significantly delay the price response of multi-segment firms to industry news compared to their paired pseudo-multi firms. Specifically, a long/short portfolio strategy—buying multi-segment firms with the highest lagged returns from their paired pseudo-multi firms and selling those with the lowest—generates a substantial monthly abnormal return of 106 basis points (13.5% annualized) when these multi-segment firms omit the most mandated segment items. Our results remain robust after controlling for confounding factors such as operational diversity and firm-wide disclosure quality.

Some multi-segment firms may effectively comply with SFAS 131, meaning their disclosures are likely adequate and genuinely reflect the internal use of segment information for sound decision-making. If, by design, the management approach ensures that investors receive the necessary data for firm valuation, then omissions by these firms should not impact pricing efficiency. To investigate this, we explore whether the relationship between segment item omissions and pricing delays varies based on the managerial ability to identify pertinent segment items. We reason that capable managers, well-versed in their product segments' industry trends and resource requirements, are expected to identify and regularly review the most relevant segment items for effective decision-making. Therefore, we anticipate that firms led by such managers are more likely to ensure comprehensive review and reporting of value-relevant items. We then examine the likelihood of managerial compliance. First, we posit that firms with robust corporate

governance, characterized by engaged boards and extensive institutional investor oversight, are less likely to allow top managers to withhold reviewed segment items. Second, we propose that managers of firms with lower proprietary costs—such as those with minimal R&D, fewer intangible assets, and less exposure to disruptive product market shocks—have greater incentive to follow the management approach, as reporting the reviewed segment information is less likely to impede competition.

Consistent with our predictions, our findings reveal that firms with high managerial ability, strong governance, and minimal proprietary costs exhibit no pricing inefficiencies from omissions of segment items. This evidence confirms the efficacy of the management approach, but only when properly executed. Put simply, the "management approach" adopted by SFAS 131 is sound at the conceptual level. However, problems may arise if managers lack the necessary skills or adequate scrutiny to identify and assess critical items during internal segment reviews for decision-making. Moreover, enforcing the management approach may prove challenging when firms, influenced by weak corporate governance or misaligned incentives, ostensibly comply by manipulating their internal segment review processes to exclude certain items from disclosure.[9]

We provide a series of additional tests and robustness checks to further validate our findings. First, we show that segment items are particularly valuable for the timely pricing of more complex multi-segment firms, underscoring that comprehensive segment disclosure significantly mitigates the challenges investors struggle with when analyzing multi-segment firms with intricate

[9] When SFAS 131 was first proposed, firms frequently cited competitive harm as a reason against it (e.g., Botosan and Stanford [2005], Zhou [2022]). However, the FASB [1997] believes that SFAS 131 has already addressed the concerns of competitive harm by eliminating the requirements to disclose R&D expenses and liabilities by segment. They argued that the currently mandated disclosures—no more detailed or specific than the information typically provided by a small enterprise—should not impede competition. Yet, firms' behavior suggests otherwise, indicating that competitive concerns may still be influencing their segment disclosure practices.

business structures or financial reporting. Second, we address endogeneity by utilizing the ASC 280 codification of SFAS 131 in 2009 as an exogenous shock to segment reporting.[10] We observe that post-codification, firms with a higher interest in protecting proprietary information omit fewer segment disclosures and exhibit a greater reduction in pricing inefficiencies. Third, we explore the impact of segment item disclosures on stock price responses to firms' earnings announcements. We find that multi-segment firms that omit more mandated segment items experience a muted earnings response coefficient and an increased post-earnings annoncement drift. Fourth, we corroborate the channel that omissions lead to price inefficiency through increasing information asymmetry. We show that more item omissions are associated with increased stock return volatility, wider bid-ask spreads, and greater dispersion in analyst forecasts. Notably, firms with higher managerial ability and compliance likelihood do not exhibit these adverse effects, underscoring that when properly implemented, the management approach provides investors with sufficiently useful data for segment analysis. Lastly, we confirm that our results are robust to alternative return definitions and alternative measures of stock pricing efficiency.

Our research significantly advances the understanding of the valuation effects of SFAS 131's mandatory disclosure requirements. Previous studies have primarily focused on the general informativeness improvements post-transition from SFAS 14 to SFAS 131. Our investigation delves deeper into firms' actual reporting behaviors, revealing that although SFAS 131-mandated line items are crucial for investors to evaluate multi-segment firms, many firms likely either fail to identify or adequately review these valuable items, or they superficially comply with the management approach while obscuring critical segment information. The results suggest potential

[10] We thank Christine A. Botosan for bringing this policy shock to our attention.

shortcomings in the effectiveness of SFAS 131—an aspect previously overlooked. While the FASB's recent mandate to disclose "significant segment expenses" is a positive step, its success may be compromised if managers cannot accurately identify what constitutes significant expenses for a segment or if they do not genuinely adhere to the management approach. Additionally, our findings offer practical guidance for investors using segment reporting. Despite ongoing support from investors for the management approach due to its potential to provide decision-useful information, our analysis indicates that its effectiveness is contingent on the presence of capable managers, strong governance, and aligned managerial incentives. Investors should be cautious of omissions in environments with weak governance or misaligned managerial motives.

The remainder of the paper is organized as follows: Section 2 outlines the regulatory framework of SFAS 131's management approach, reviews current disclosure practices, and develops our empirical predictions. Section 3 details the data, sample, and variable measurement. Section 4 provides descriptive evidence on the omission of SFAS 131-mandated data items by multi-segment firms. Section 5 presents the results showing how these omissions affect stock price updates. Section 6 offers additional analyses and robustness checks, and Section 7 concludes.

2. Background

2.1. The management approach under SFAS 131

The contemporary framework for segment reporting was established in December 1997 with the FASB's issuance of SFAS 131, which was subsequently codified as ASC 280 in September 2009. Recently, the FASB issued its first amendment to SFAS 131 in Novermber 2023, mandating the disclosure of additional segment items, specifically "significant segment expenses".

In brief, SFAS 131 outlines a three-tiered process for segment reporting. First, public entities identify their operating segments, which are defined as components involved in business activities.[11] Second, these segments are aggregated into reportable segments based on qualitative and quantitative factors.[12] Third, each reportable segment must disclose a list of basic financial line items, including (i) a measure of profit or loss, (ii) total assets, and (iii) twelve specified component items of profit or loss and assets, such as revenue, depreciation, and capital expenditure. These mandated items constitute a mere 5.8% of the total line items from balance sheets and income statements.[13] The requirement also extends to entities with a single reportable segment.

SFAS 131's "management approach" requires segment reporting to mirror how management internally organizes the segments for the purposes of allocating resources and assessing performance. This principle is designed to enable financial statement users to see disaggregated information about a firm through the eyes of management and to assess the performance of the segments in the same way that management reviews segments (FASB [1997]).[14]

Under the management approach, firms shall disclose a self-selected measure of each segment's profit or loss and a measure of assets that the chief operating decision maker (CODM)

[11] Firms may define operating segments based on products and services, geographic areas, or both, based on their internal organization. Botosan, Huffman, and Stanford [2021] report that in 2017, 65% of segments were business segments, 19% geographic, and 16% a matrix of both. Our analysis exclusively considers business segments.
[12] Operating segments with similar economic characteristics can be aggregated into a single, reportable segment. Separate disclosure is required if an operating segment comprises 10% or more of revenue, profitability (the absolute segment profit or loss compared to the greater of the combined profits of profitable segments or the combined losses of unprofitable ones), or total assets. An entity might need to disclose additional segments separately (even if none of them is more than 10%) to ensure that reportable segments constitute at least 75% of the total firm revenue.
[13] The Compustat Fundamental dataset lists around 343 balance sheet and income statement items. The Compustat Segment dataset lists 20 items related to those mandated by SFAS 131 (we include 17 mandatory items in our study).
[14] FASB [1997] highlights several benefits of management approach: it encourages more comprehensive reporting by increasing the number of segments disclosed, enhances the detail of information provided for each segment, and ensures consistency with other parts of annual reports. Additionally, it is cost-effective as it leverages existing internal reports, minimizing additional preparation expenses.

uses to assess segment performance and allocate resources (ASC 280-10-50-22).[15] This approach introduces a nuance for those component items: they are required to be disclosed only if they are "included in the measure of segment profit or loss (or segment assets) reviewed by the CODM" or "otherwise regularly provided to the CODM, even if not included in that measure" (ASC 280-10-50-22 (25)). An important exception to this rule is segment revenue, which must be disclosed regardless of whether it is regularly reviewed or received by the CODM.[16] SFAS 131 does not specify what constitutes being "regularly provided to" or "regularly reviewed by" the CODM, leaving the implementation of the rules open to interpretation and managerial judgment.[17] Furthermore, after ASC 280 codification, the standard adds that "if no segment asset information is provided for a reportable segment, that fact and the reason, therefore, shall be disclosed" (ASC 280-10-50-26).

In an Invitation to Comment (FASB [2016]), investors largely supported the management approach to segment reporting, recognizing its potential to provide decision-useful information. However, many expressed a desire for enhanced line item disclosures beyond current requirements, particularly noting the lack of detailed segment expense information. As a result, the FASB amended SFAS 131 (FASB [2023]) to mandate the disclosure of "significant segment expenses" that are regularly provided to the CODM and included within each reported measure of segment

[15] If the CODM uses more than one measure of a segment's profit or loss and more than one measure of a segment's assets, the reported measures shall be those that management believes are determined in accordance with the measurement principles most consistent with those used in measuring the corresponding amounts in the public entity's consolidated financial statements (ASC 280-10-50-28).

[16] Revenue is both a segment disclosure item and an entity-wide disclosure item under SFAS 131. Specifically, ASC 280-10-50-40 requires a public entity to report the revenues that it derives from each of its products and services (or groups of similar products and services), if not already provided as part of its segment disclosures in accordance with ASC 280-10-50-22, unless doing so is impracticable (such situations are expected to be rare).

[17] Deloitte's "A Roadmap to Segment Reporting (May 2024)" clarifies that "a regular review" for most public entities would be held at least quarterly. https://dart.deloitte.com/USDART/home/codification/presentation/asc280-10/roadmap-segment-reporting.

profit or loss. This enhancement adheres to the management approach, aiming to furnish investors with the most relevant expense information that the CODM utilizes to manage operations.

Christine A. Botosan, a dissenting Board member on the recent amendments, expressed concerns that the amendments may fall short of investors' need for more financial line items about each segment. She argued that the management approach allows too much managerial discretion, enabling firms to tailor reporting outcomes.[18] Managers could exploit this flexibility to adjust the segment reports provided to the CODM, potentially narrowing the scope of disclosed information. Managers may utilize the justification that certain items are "not reviewed regularly" as a pretext to avoid disclosing sensitive information. This tactic could tie into the broader issue of competitive harm, which managers often cite as a concern against segment disclosure (see footnote 9).

2.2. A case of disclosure practice: alleged compliance with the management approach

Alphabet's 2017 segment reporting for its "Google" and "Other Bets" segments listed only five items: net sales, operating income, depreciation, special items, and capital expenditure. Alphabet explained the absence of segment asset information by stating that its CODM does not use asset data to evaluate segments. While this may well be the case, it raises questions about the comprehensiveness of operational decision-making without key financial metrics like asset turnover ratios. Notably, portfolio managers and analysts rank total assets as the most important item to be included in segment disclosure.[19]

In 2017, the SEC queried Alphabet's segment reporting, seeking clarification on the financial data reviewed by then-CEO Larry Page, President Sergey Brin, and Google CEO Sundar

[18] Christine A. Botosan's dissent opinions can be found in FASB [2023], page 35-38.
[19] In the Financial Accounting Foundation 2012 survey, at least 97% of users deemed both segment-level assets and capital expenditures useful; 91% of users considered depreciation useful (Botosan, Huffman, and Stanford [2021]).

Pichai. Alphabet clarified that Page, as the CODM, reviewed weekly summaries of revenue and operating profitability, using operating income/loss to assess performance and allocate resources. Pichai, despite having access to more detailed data, was not the CODM, so his data was not included in regular segment reports. Therefore, by restricting its segment reporting to include financial line items that only the CODM receives and only those reviewed on a regular basis, it seems that Alphabet ostensibly adheres to the principles of the management approach, limiting the scope for external critique.

Such practice of furnishing a "succinct" segment report is not uncommon, as evidenced by another example from Volcano Corp., which disclosed only one segment item—revenue, stating that it does not assess segments using any additional financial metrics. These practices frequently draw SEC attention and highlight the challenge of enforcing management approach when firms claim items are not reviewed nor received by the CODM regularly. Appendix A includes relevant excerpts from Alphabet's and Volcano's segment disclosures and SEC communications.

2.3. Research framework: predicting the impact of segment item omissions on pricing efficiency

Segment-level data provides essential insights into specific business operations within multi-segment firms, which is crucial for the informed valuation of each segment.[20] For instance, consider how new research highlighting carob's health benefits might affect the stock price of a multi-segment company like DuPont, which includes a nutrition segment. Detailed segment line item disclosures, such as operating profits and capital expenditures, are necessary for investors to effectively assess DuPont's nutrition business strategy, market position, and financial health. This

[20] For instance, the combination of segment sales, capital expenditure, operating profits, and depreciation can help assess the efficiency of internal resource allocation (e.g., Berger and Hann [2007], Cho [2015]), as well as a segment's cash-generating potential and cash requirements (FASB [1997]); increasing capital investments and expenses coupled with declining revenue growth in a segment may suggest aggressive yet ineffective management practices in operating a business line (Cao, Li, and Ma [2022]).

granularity, which cannot be discerned from consolidated financial results, enables investors to integrate industry-specific news into their valuation models, allowing investors to update forecasts for future cash flows and risks associated with DuPont's nutrition segment. These valuation adjustments are then incorporated into DuPont's stock price. The absence of such disaggregated financial details necessitates additional research for investors, which is time-consuming and may lead to stock price update delays.

Under SFAS 131's management approach, the impact of segment item omissions on price efficiency depends crucially on two aspects: (1) the adequacy of the management approach in ensuring comprehensive reporting of all critical segment data, namely whether the range of items reviewed by managers meets the needs of investors for effective segment valuation, and (2) the level of managerial compliance with the standard, specifically whether managers opportunistically omit relevant items they actively use.

Omissions might result from genuine compliance with management approach. Because managers do not routinely use certain items for operational decision-making, these items are likely irrelevant for that specific segment and thus should not impact investors' valuation of the segment. For example, while "equity in earnings" is included in SFAS 131's mandated disclosure list, its relevance may vary by industry. An automotive company with significant equity stakes in suppliers might regularly review this item, making it crucial for their segment reporting. In contrast, a company with minimal equity investments may not consider it a key metric. Therefore, if items such as equity in earnings are omitted because they are irrelevant to a firm's operations, these omissions should not necessarily result in stock price inefficiencies, as they do not withhold critical information from investors.

However, the above reasoning implicitly assumes that SFAS 131's management approach guarantees comprehensive reporting of all critical segment data, based on the premise that top managers understand which segment items are necessary for informed decision-making. Nonetheless, there may be instances where top managers review fewer items than investors require for thorough segment analysis. This discrepancy could occur if the CODM, who might delegate detailed operational decision-making to divisional heads with expertise in specific segment areas, is not sufficiently involved in segment review or does not have the requisite skills to identify all pertinent segment data. Additionally, divisional managers may lack the oversight or capability to identify and relay all relevant data to top management. If such a disconnect exists, the management approach might be suboptimal. In these situations, adherence to reporting standards may still result in the overlooking and omission of critical segment items, potentially impairing stock price efficiency. Such a scenario would call into question the effectiveness of the management approach, suggesting that FASB may need to reassess or significantly revise the standards.

Alternatively, omissions of segment items may stem from intentional efforts to manipulate disclosures. For instance, managers may selectively tailor internal reports to exclude certain items from those "regularly" provided to the CODM, or they might falsely assert that some items are not reviewed internally. These omissions can be motivated by a desire to shield proprietary business information from competitors (Zhou [2022]), or by managers seeking to favourably influence perceptions of their performance to enhance their compensation or protect their careers (e.g., Dye [1985], Kim and Pae [2023]).[21] Given such motivations to conceal critical information, it is likely

[21] Hayes and Lundholm [1996] and Arya, Frimor, and Mittendorf [2010] argue that multi-segment firms, facing competitive threats, might withhold disaggregated segment data to protect competitive advantages. European and Australian studies (e.g., André, Filip, and Moldovan [2016], Bugeja, Czernkowski, and Moran [2015]) have observed reductions in disclosures of total assets, capital expenditures, and R&D at the segment level to mitigate competitive harm. While empirical evidence (e.g., Bens, Berger, and Monahan [2011], Berger and Hann [2003], [2007], Bugeja,

that undisclosed items are highly relevant to investors for assessing segment performance. As a result, such omissions can create significant information asymmetry or insufficiency (Thomas [2002]), compromising investors' ability to assimilate and reflect segment-relevant industry news in stock prices. If this pattern is prevalent, it underscores the need for the SEC to implement stricter enforcement of disclosure standards.

Appendix B presents a flowchart detailing our research framework, illustrating how omissions of segment-level line items can impact stock price efficiency. We identify two potential causes for these omissions: either managers are genuinely adhering to the management approach, or they are intentionally withholding critical segment information. In cases of genuine adherence, price updates should not be delayed unless the CODM fails to identify and review sufficient items to meet investors' valuation needs, possibly due to a lack of managerial ability. Conversely, intentional withholding should lead to price inefficiencies. To investigate these scenarios and assess the management approach's effectiveness in providing essential segment data, we analyze subsamples differentiated by managers' ability, constraints, and incentives to adhere to this approach thoroughly and correctly.

3. Data and variable measurement

3.1. Data and sample selection

We extract firms' segment-level financial data from the Compustat Segment database. Our sample includes only those firms that report segments defined by product lines, identified in the database as either the BUSSEG (business segment) or OPSEG (operating segment) segment types. We focus exclusively on core operating segments that actively engage in line-of-business activities.

Czernkowski, and Moran [2015], Cho [2015]) supports that agency costs may decrease the number of reported segments, impacts on the breadth of data item reporting are less understood.

Following Lail, Thomas, and Winterbotham [2014], we exclude segments categorized as corporate/other, which management typically uses to capture corporate-type costs, adjustments, and transfers. Additionally, segments that lack net sales data or report zero or negative sales figures are removed from our sample.[22] Last, similar to Cohen and Lou [2012], we eliminate firm-year observations if the firm's aggregated net sales across all reported segments deviate substantially (less than 75% or more than 125%) from the total net sales recorded in the Compustat Stock Fundamental database. This screening criterion ensures that the reported segments significantly represent the firm's overall operations.

We merge the segment information with stock returns from the CRSP Stock database and firm-level financials from the Compustat Stock Fundamental database. Additionally, we incorporate financial statement readability and voluntary disclosure from the WRDS SEC Analytics database, institutional holdings from Thomson Reuters, and analyst earnings forecasts from the I/B/E/S database. To ensure that segment information is publicly known before stock price changes, we follow Cohen and Lou [2012] to impose at least a six-month gap between firm fiscal year ends and stock returns, using segment financial information for a fiscal year only after June of the following year. Finally, consistent with prior literature on price efficiency (e.g., Cohen and Lou [2012], Saffi and Sigurdsson [2011]), we exclude penny stocks with a time series average stock price of less than $5, stocks with more than ten zero-weekly returns in a year, and firms with less than three years of return data.

[22] These segments account for approximately 3.8% of our observations. We manually check the segment names with missing or zero sales figures; we find that the majority of them are corporate/other segments. Negative sales figures likely represent the elimination of inter-segment sales (Botosan, Huffman, and Stanford [2021]).

Our sample spans from January 2000 to December 2020, covering two decades of data with segment details through 2019 and stock return information extending through 2020. We exclude the SFAS 131 transitional years of 1998 and 1999 to avoid initial standardization ambiguities. This extended period allows us to examine the enduring impact of SFAS 131 on asset pricing, building upon and extending prior research that primarily focused on the initial years following its 1997 introduction (e.g., Berger and Hann [2007], Cho [2015], Ettredge et al. [2005], [2006], Jayaraman and Wu [2019], Park [2011], Cao, Li, and Ma [2022]). Our dataset includes approximately 2,000 publicly listed U.S. firms and 45,014 firm-year observations. We categorize firms as single-segment if they report only one business or operating segment and as multi-segment if they report two or more. Multi-segment firms comprise about 55% of our firm-year observations.[23]

3.2. Scope of the line items disclosure

Compustat Segment codes a total of 33 segment-specific line items. We exclude eight of these items either because they are infrequently disclosed or because they do not have a direct counterpart in Compustat's consolidated financials. Some excluded items only apply to a narrow subset of firms: "excise tax" primarily affects commodity firms. Other items, such as "other eliminations" and "other expenses," are miscellaneous.[24] Removing these items enables us to concentrate on the most material and decision-useful items. Our analyses focus on the 25 segment-specific line items that remain; we list them in Appendix C.

[23] SFAS 131 does not require firms to adhere to standardized industry classifications in defining their segments, so we consider segments reported by the firms, even within the same industry (i.e., by SIC or Fama-French industry classification), as distinct.

[24] We exclude total revenues (duplicated by net sales), intersegment eliminations (no firm-level counterpart), net interest income, export sales, long-lived assets, other costs and expenses, other eliminations, and excise taxes (their non-disclosure rates range from 98% to 99.95%). The cross-sectional disclosure variability of these excluded items is limited, owing to widespread non-disclosure. An unreported test indicates that including these items does not materially affect our findings.

SFAS 131 explicitly requires 17 of these 25 items to be disclosed.[25] These mandatory disclosures encompass net sales; a measure of profit or loss (firms report various measures such as operating profit, operating income before or after depreciation, pre-tax income, income before extraordinary items, and net income); total assets; and various component items including interest income, interest expense, depreciation, special items, equity in earnings, income tax, extraordinary items, investments at equity, and capital expenditure. All these items were already mandated in SFAS 14 except for interest income, interest expense, and income tax, which were added by SFAS 131 in 1997. SFAS 131 does not mandate the remaining 8 items, they are voluntarily disclosed by a subset of the firms in our sample. These include the number of employees; research and development expenses; order backlog; property, plant, and equipment values; the total cost and expenses; the cost of goods sold; non-operating income; and selling, general, and administrative expenses.

3.3. Variable measurement

3.3.1. Segment-level line items omission

In assessing a firm's segment data omission, we first employ a segment-sales-weighted method to average the number of disclosed items for a firm's segment(s). We denote the variable as $\#\ Seg\ Line\ Items$. We refine our count by dismissing instances where an item's absence may result from its inapplicability to the firm or segment rather than non-disclosure. To this end, we match the 25 identified segment-specific line items with their counterparts in firm-level

[25] SFAS 131 effectively mandates 14 items: a measure of profit or loss, total assets, 10 component items of profit or loss (items a. to j. in ASC 280-10-50-22), and 2 component items of total assets (items a. & b. in ASC 280-10-50-25). We count the six different profit/loss measures reported by firms as six mandatory items. Counting them as one does not materially affect our results since most firms define profit/loss as operating profit. We treat "special items" and "extraordinary items" separately, both related to ASC 280-10-50-22 item f. "unusual items". We exclude ASC 280-10-50-22 item b. "inter-segment sales" from our study and find no Compustat data for items i. "subparagraph superseded by ASU No. 2015-01" and j. "significant noncash items other than depreciation, depletion, and amortization". Thus, we arrive at 17 mandatory items.

consolidated statements, excluding any for which consolidated data is not reported.[26] For example, if a firm does not report "equity in earnings" at both the firm and segment levels, we consider it an irrelevant item for that firm and we exclude it from the count.

Further, we validate the representativeness of the amount of disclosed segment-level data against firm-level figures. An item is only classified as "omitted" for a segment if the summed amount of disclosure across the other segments falls short of representing 75% of the consolidated figure. This threshold ensures that we recognize non-disclosure rather than an activity's absence (e.g., if a firm's total disclosed equity in earnings across other segments nearly equals the consolidated equity in earnings, then a non-disclosed amount in a specific segment could suggest irrelevance rather than omission).

To account for varying levels of business or financial complexity, we normalize the number of disclosed items by a firm's total reportable items (out of 25), as indicated by their appearance in the consolidated financial statements. Therefore, a higher value of the scaled $\#\ Seg\ Line\ Items$ indicates fewer item omissions. This scaling, however, is not a panacea; it might artificially inflate the level of disclosure for firms that withhold items at both the segment and firm levels.[27] Nevertheless, the strong correlation (Spearman: 0.98) between our scaled and unscaled measures offers reassurance about the robustness of our approach. Our main analyses are based on the scaled $\#\ Seg\ Line\ Items$; unscaled measures yield qualitatively similar (untabulated) results.

[26] Occasionally, a firm reports zero values for a line item on the consolidated level, while at the segment level the value of the corresponding item is shown as missing. In such cases, we regard the missing segment-level value as zero (i.e., non-missing). This adjustment ensures that we do not identify a firm as omitting an item just because the non-reported amount actually has a value of zero. This change corrects 63.57% of extraordinary items, 43% of special items, and 19.23% of interest income. The impact on the other items is minimal.

[27] To address this concern, we exclude firms with fewer than 10 reportable items in their consolidated financial data in Compustat. These instances represent only 0.017% of our total firm-year observations.

To assess firms' reporting of mandatory and voluntary items separately, we divide our metric into two components: $\#\ Man\ Seg\ Line\ Items$, which represents the segment sales-weighted average number of mandatory line items that a firm reports for its segment(s), scaled by the total reportable mandatory items (out of 17); and $\#\ Vol\ Seg\ Line\ Items$, which is constructed similarly but focuses solely on the disclosure of the 8 voluntary items.

3.3.2. Firm-level control variables

Our study incorporates several firm-level control variables to address potential confounding factors that influence segment reporting and pricing delays. The operational structure of a firm can influence pricing efficiency (e.g., Chichernea, Schaberl, and Thevenot [2022], Cohen and Lou [2012]) and complicate the allocation of shared costs and profits across segments (e.g., Franco, Urcan, and Vasvari [2016], Givoly, Hayn, and D'Souza [2000]), which may impact the omission of segment items. Therefore, we control for the number of reported segments ($\#\ Seg$), segment disaggregation ($Seg\ Disaggr$), defined as the natural logarithm of the ratio of total segments to the number of industries in which a firm operates, and operational diversity ($Seg\ Diversity$), measured as the negative of an industry segment-sales-based Herfindahl index. Firm-wide disclosure quality is gauged using consolidated financial detail (DQ, Chen, Miao, and Shevlin [2015]), readability metrics (Fog and 10-K $File\ Size$, Li [2008] and Loughran and McDonald [2014]), and frequency of 8-K filings (#8K, Guay, Samuels, and Taylor [2016]. Additional controls, aiming to capture the broader information environment of multi-segment firms, include firm size, age, stock turnover, growth opportunities, special items, annual earnings, earnings volatility, and the number of consolidated financial data items. Detailed definitions of these variables are provided in Appendix E.

4. Segment-level financial line item omissions

4.1. Item-by-item omission rate

We begin by examining the extent to which multi-segment firms have omitted SFAS 131-mandated segment items over the past two decades. We create an indicator variable for each line item in each segment, assigning a value of 1 when the line item is disclosed for that year and 0 when it is omitted. As we outline in Section 3.3.1, we adjust the indicator to exclude cases where a line item is missing because it is not applicable, rather than because of non-disclosure. We then calculate the sales-weighted average of this indicator for each line item across all of a firm's segments. The resulting firm-level figure represents a firm's disclosure frequency for a specific line item in its segment reporting.[28] The corresponding omission rate equals one minus the disclosure frequency. Detailed statistics are provided in Appendix D. For clearer visualization, Figure 1 plots the mean omission rate for each of the 17 mandatory and 8 voluntary line items.

Our results reveal that multi-segment firms disclose a given mandatory item only 50.1% of the time. As shown in Figure 1, Panel A, the least omitted item is a self-selected profit measure, merely omitted 9.4% of the time. Under the management approach, firms must report a profit measure that is used by the CODM internally. Our data show that they typically report *operating profit*, with an omission rate of 24%. In contrast, net income, the most cost-intensive profit measure, is rarely reported, with an omission rate as high as 94.5%. Other mandated items, adhering to the "regularly reviewed or received" principle, show higher omission rates. For example, the component items of segment profit, such as depreciation, equity in earnings, extraordinary items,

[28] Our reported disclosure frequencies should be viewed as conditional on an item's applicability to a segment. This differs from Botosan, Huffman, and Stanford [2021], who report "raw" disclosure frequencies without such adjustments, resulting in our frequencies for items like equity in earnings, special items, and R&D being significantly higher. Botosan, Huffman, and Stanford [2021] also note that the low frequency of certain line items in their study reflects their less frequent occurrence at the consolidated level.

and special items, are omitted 22.4%, 24.4%, 25.8%, and 57.2% of the time, respectively. Related to segment asset information, total assets, investments at equity, and capital expenditures are omitted 20.5%, 23.3%, and 30.7% of the time. Interest income, interest expense, and income tax—are mostly overlooked, with omission rates as high as 80% for interest-related items and 87% for income tax.

If managers follow the management approach strictly, then our data suggests that the nearly 50% omission rate of mandated items indicates managers internally utilize roughly half of these items for decision-making about their segments. Managers tend to rely on operating profit, rather than more cost-laden profit measures, for assessing segment performance and may favor investments at equity over capital expenditures for resource allocation. In addition, managers seldom utilize or receive data on segments' interest burdens and tax liabilities.

Figure 1, Panel B illustrates that multi-segment firms are notably cautious in disclosing voluntary items, with an average non-reporting rate of 84.7%. Expense-related items such as total costs, SG&A, R&D, and COGS are particularly withheld, with non-disclosure rates of 88%, 87.3%, 77.9%, and 71.5% respectively. These observations underscore the rationale behind the FASB's 2023 amendments to address the scarcity of segment expense disclosures. This reticence likely conceals cost management inefficiencies or masks segment performance. On the other hand, it may also protect sensitive proprietary information. For example, in industries like chemicals and oil exploration, revealing COGS could expose proprietary methodologies or supply chain strategies (Lev, Radhakrishnan, and Tong [2021]). Similarly, disclosing SG&A might reveal investments in human capital and brand value (e.g., Ewens, Peters, and Wang [2021], Peters and Taylor [2017]). Considering the high omission rates of the existing mandated items, it remains uncertain whether firms will enhance the disclosure when these expense items become mandatory.

Appendix D shows that single-segment firms demonstrate near-complete transparency in segment reporting, with disclosure rates exceeding 97% for nearly all line items.[29]

4.2. Summary statistics and correlations

Table 1, Panel A provides summary statistics for our three segment-line-item measures: $\#\,Seg\ Line\ Items$, $\#\,Man\ Seg\ Line\ Items$, $\#\,Vol\ Seg\ Line\ Items$. While our primary focus is on multi-segment firms, we include single-segment firms as a benchmark for comparison. Multi-segment firms, on average, disclose 8.9 line items per segment—7.9 mandatory and 1 voluntary, representing only 50.1% and 15.3% of mandatory and voluntary items they could report, respectively. Single-segment firms disclose an average of 22.3 items per segment—15.9 mandatory and 6.4 voluntary, representing 98.3% and 97% of reportable items in mandatory and voluntary categories. These discrepancies highlight a significant gap in disclosure practices between single and multi-segment firms. The data challenges the plausibility of the notion that the managerial usage of SFAS 131-mandated items drops by half when firms manage multiple segments compared to just one.

Table 1, Panel B presents a correlation matrix of multi-segment firms' segment line item disclosures in relation to established firm-wide disclosure quality measures. $\#\,Seg\ Line\ Items$ exhibits a stronger correlation with $\#\,Man\ Seg\ Line\ Items$ (Spearman: 0.915) than with $\#\,Vol\ Seg\ Line\ Items$ (0.537). This is expected as multi-segment firms mostly limit their disclosures to mandatory items only. The correlation between $\#\,Man\ Seg\ Line\ Items$ and $\#\,Vol\ Seg\ Line\ Items$ is positive but modest (0.22). Notably, the three segment-line-item-disclosure measures show consistent negative correlations with DQ (Spearman: -0.113 to -0.037),

[29] Single-segment firms' segment reporting is different from their consolidated reporting. See footnote 4.

suggesting that detailed consolidated-level data item disclosures do not necessarily translate into comprehensive segment-level data reporting. Moreover, their associations with Fog (−0.042 to 0.021), 10-K $File\ Size$ (0.181 to 0.292), and $\#\ 8K$ (0.017 to 0.041) are statistically significant yet economically negligible or inconsistent in direction. These findings highlight the distinct nature of segment-level data item disclosure in capturing corporate transparency for multi-segment firms.

A drawback of traditional firm-wide disclosure measures like DQ and readability is that they can be an artifact of the structural complexity of the firm's operations (e.g., Loughran and McDonald [2014], You and Zhang [2009]). We examine whether such complexities compromise our segment data item metrics. We find $\#\ Seg\ \ Line\ Items$, $\#\ Man\ Seg\ Line\ Items$, and $\#\ Vol\ Seg\ Line\ Items$ are negatively correlated with the number of segments ($\#\ Seg$: −0.071 to −0.054), a proxy for operation complexity, and the number of consolidated data items ($\#\ Con\ Line\ Items$: −0.216 to −0.112), a proxy for financial complexity. They are also only marginally negatively correlated with $Firm\ Size$ (−0.012 to −0.076). Conversely, DQ shows a substantial positive correlation with $\#\ Con\ Line\ Items$ (0.551), while Fog, $File\ Size$, and $\#\ 8K$ positively correlates with various aspects of firm complexity.

4.3. Time trend and the effect of ASC 280 codification

Figure 2 displays the time-series trends in $\#\ Seg\ Line\ Items$, $\#\ Man\ Seg\ Line\ Items$, $\#\ Vol\ Seg\ Line\ Items$ for multi-segment firms. A significant increase in segment line item disclosure is evident around the implementation of ASC 280 in 2009. Table 1, Panel C compares the average line item disclosures before and after ASC 280 codification. The proportion of reportable total, mandatory, and voluntary items disclosed increased from 34.9%, 44.5%, and 11.1% pre-ASC 280 (with original counts of 7.99 total items, 7.24 mandatory items, and 0.75 voluntary items) to 44.3%, 54%, and 20.6% post-ASC 280 (with original counts of 10.17, 8.79, and 1.37).

Appendix D shows that not all mandatory items followed this upward trend post-ASC 280. Notably, the disclosure of total assets decreased by 5%, aligning with the new non-disclosure guidance under ASC 280-10-50-26 about segment assets (Botosan, Huffman, and Stanford [2021]). Other declines include interest income (down 3.1%), equity in earnings (2.3%), income taxes (1.3%), and investments at equity (3.9%). In contrast, single-segment firms exhibited minimal changes in their disclosure practices post-ASC 280.

5. Segment-level financial line item omissions and stock price update delays

5.1. Main empirical results

5.1.1 Calendar-time portfolio tests

Our main test follows previous research (Chichernea, Schaberl, and Thevenot [2022], Cohen and Lou [2012]) to assess multi-segment firms' stock price updates in response to their segment industry news. For each multi-segment firm in our sample, we construct a pseudo-multi firm consisting of a portfolio of single-segment firms in the same Fama-French 49 industries as the multi-segment firm's segments, weighted by the sales that each segment contributes to the multi-segment firm. At the beginning of each month, we double-sort the multi-segment firms into decile portfolios based on the lagged excess returns of the firms' corresponding pseudo-multis and into quartile portfolios according to their own line item disclosures at the segment level. All firms are either value- or equal-weighted within a given portfolio.

In an ideal scenario without information processing frictions, industry news should be reflected simultaneously in the stock prices of both multi- and single-segment firms. If omissions of segment items truly align with management's decision-making needs—meaning that multi-segment firms report the data necessary for management's review and use—then more omissions should not hinder the speed of price updates for multi-segment firms. However, if such omissions

result in insufficient data for investors to value these firms—whether due to management not reviewing sufficient useful data or intentionally withholding crucial information—their ability to process and react to industry news may be impeded. In this case, we would expect that the price updates of pseudo-multi firms, which lack these omissions, would precede and potentially predict the future price updates of their paired multi-segment firms, especially under conditions of extensive omissions. [30]

Table 2 presents the excess returns for portfolios formed based on the disclosure of segment items, providing strong evidence that extensive omissions significantly delay the incorporation of industry news into the stock values of multi-segment firms. Panel A shows that a strategy that is long on multi-segment firms paired with previously high-performing pseudo-multis (in the top decile) and short on those paired with low performers (in the bottom decile) yields value-weighted 39 basis points per month (t = 3.44). This return amplifies markedly for firms reporting the fewest segment line items. For those in the bottom quartile of $\#\ Seg\ Line\ Items$, the monthly value-weighted return of the long-short portfolio rises to 108 basis points (t = 4.71), or roughly 13.8% per year. These returns progressively diminish and lose statistical significance across firms that report more segment items, dropping to 41 basis points for the second quartile, 4 basis points for the third, and 13 basis points for the top quartile.

The last two major blocks reveal that pricing inefficiencies primarily result from the omission of mandated items, rather than from the non-reporting of voluntary ones. For instance, for firms in the bottom quartile of $\#\ Man\ Seg\ Line\ Items$—the most extensive omissions, the

[30] This industry news strategy ensures that both multi- and single-segment firms are subject to identical industry information shocks. In contrast, tests based on firm-specific news will be confounded by variations in the complexity of news released by different firms. For robustness, we will apply earnings respond coefficient (ERC) and post-earnings-announcement drift (PEAD) methodologies to analyze firm-level earnings news effect.

monthly value-weighted return of the L/S portfolio is as high as 106 basis points (t = 4.5), equivalent to around 13.5% per year. The corresponding figure in the bottom quartile of $\#\ Vol\ Seg\ Line\ Items$ is only 59 basis points (t=3.64), equivalent to around 7.3% per year. Panel B presents the equal-weighted portfolios, showing consistent and economically comparable results.

Figure 3 displays the cumulative returns for the long-short portfolio, sorted by the mandatory item quartiles. It shows no signs of reversal over the 12 months following portfolio formation. Specifically, portfolios in the lowest $\#\ Man\ Seg\ Line\ Items$ quartile experience an initial upward drift in the first six months, which then stabilizes, consistently outperforming the portfolios in higher quartiles. This sustained return pattern reinforces the notion that our results indicate a genuine delay in incorporating relevant industry information into the stock prices of multi-segment firms, rather than a mere overreaction.

5.1.2 Regression tests addressing alternative channels

We complement the portfolio-based findings with a multivariate regression framework, which allows us to better control for potential alternative channels:

$$\begin{aligned} Ret_{j,t} = {} & \alpha_j + \beta_1 Pseudoret_{j,t-1} + \beta_2 Pseudoret_{j,t-1} \times Line\ Items_{j,t-1} \\ & + \beta_3 Pseudoret_{j,t-1} \times Log(\#\ Seg)_{j,t-1} \\ & + \beta_4 Pseudoret_{j,t-1} \times Seg\ Disaggr_{j,t-1} \\ & + \beta_5 Pseudoret_{j,t-1} \times Seg\ Diversity_{j,t-1} + \beta_6 Pseudoret_{j,t-1} \times DQ_{j,t-1} \\ & + \beta_7 Pseudoret_{j,t-1} \times Fog_{j,t-1} + \beta_8 Pseudoret_{j,t-1} \times File\ Size_{j,t-1} \\ & + \beta_9 Pseudoret_{j,t-1} \times Log(\#\ 8K)_{j,t-1} + \boldsymbol{\gamma_1 Controls}_{j,t-1} + \varepsilon_{j,t-1}, \end{aligned} \quad (1)$$

The dependent variable is the excess stock return of a multi-segment firm over the risk-free rate (Ret) in month t. The key independent variables are the excess return of the firm's pseudo-multi

($Pseudoret$) in month $t-1$ and its interaction with line item disclosures ($\#\ Seg\ Line\ Items$, $\#\ Man\ Seg\ Line\ Items$, $\#\ Vol\ Seg\ Line\ Items$). To account for potentially complex information processing in multi-segment firms, we include interactions between $Pseudoret$ and three proxies of operational structure ($\#\ Seg$, $Seg\ Disaggr$, $Seg\ Diversity$). Additionally, we control for the interactions between $Pseudoret$ and firmwide disclosure quality (DQ, Fog, $File\ Size$, and $\#\ 8K$). We include the multi-segment firm's lagged return to control for the short-term reversal effect, its past 12-month accumulated return (Mom) to capture the long-term momentum effect, and the lagged industry return corresponding to the multi-segment firm's principal industry ($Indret$) to account for industry momentum. We also control for various firm characteristics, as described in section 3.3.2. [31]

The results are presented in Table 3. Column (1) sets the baseline without interaction effects, showing positive but statistically insignificant coefficient on $Pseudoret$, 0.021 (t-value=1.60). This implies that the predictive power of a pseudo-multi's return for a corresponding multi-segment firm's future return, which was prevalent before, has largely dissipated in the post-SFAS 131 period, aligning with findings from Chichernea, Schaberl, and Thevenot [2022]. In Column (2), we introduce an interaction between the pseudo-multi's return and the total number of disclosed segment line items. The interaction term $Pseudoret \times \#\ Seg\ Line\ Items$ displays a significant negative coefficient, −0.165 (t-value=−3.64), indicating that omissions of segment line items delay the assimilation of information into stock prices. The significantly positive coefficient on $Pseudoret$, 0.403 (t-value=4.51), is notably higher than in Column (1), demonstrating the most pronounced delay in price updates occurs when firms report no segment items (i.e., when

[31] Our results (untabulated) remain robust when including interaction terms between line item disclosure and all firm controls.

$Pseudoret \times \#\, Seg\ Line\ Items$ equals zero). Column (3) assesses the impacts of omitting mandatory versus voluntary items. The interaction term $Pseudoret \times \#\, Man\ Seg\ Line\ Items$ has a negative and significant coefficient, −0.163 (t-value=−4.10), emphasizing that omissions of mandatory items severely hinder stock pricing efficiency. Conversely, the coefficient for the interaction with $\#\, Vol\ Seg\ Line\ Items$ is not statistically significant. These findings highlight that the 50% of mandatory items typically disclosed falls short of equipping investors with the detailed information necessary for a timely valuation of multi-segment firms, exposing a significant gap in the effectiveness of SFAS 131's management approach.

5.2. Cross-sectional tests

5.2.1 Managerial ability to identify relevant segment items and likelihood of compliance

Understanding the underlying reasons why omissions of mandated segment items affect pricing efficiency is crucial for policy refinement. If managers often fail to identify pertinent items to satisfy investor needs for detailed segment analysis, then a reevaluation of the appropriateness of the management approach principle by the FASB may be warranted. Conversely, if managers are found to be exploiting the inherent flexibility of the management approach to intentionally withhold the mandated information, this would highlight a compliance issue, necessitating more stringent enforcement by the SEC. To explore these scenarios, we examine cross-sectional variations in our baseline results, conditioned on managerial ability to identify and review relevant segment items, and the likelihood of compliance influenced by managerial constraints and incentives.

First, we hypothesize that top managers with a high ability to convert corporate operations into profitability are likely to have a deep understanding of their product segments. This knowledge equips them to identify and review the most necessary segment items for informed decision-

making, thereby enhancing adherence to and effectiveness of the management approach by minimizing managerial ignorance and oversight. To quantify managerial ability, we use the measure developed by Demerjian, Lev, and McVay [2012], which assesses CEOs' efficiency in converting various corporate resources, from inventory to R&D, to revenues. We anticipate that for highly capable managers, the omission of segment items, deemed irrelevant for decision-making, should not markedly affect pricing efficiency.

Second, we hypothesize that robust corporate governance can effectively discipline managers to adhere strictly to segment reporting standards, making it less likely for top managers to withhold necessary segment items that they use internally from disclosures. We assess corporate governance quality using two measures: board supervision and institutional investor oversight. For board supervision, we consider the proportion of board members with heavy commitments, specifically those serving on more than three boards, as an indicator of potential governance lapses. Regarding institutional oversight, we evaluate the breadth of institutional holdings by calculating the ratio of institutional investors with a long position in the stock to the total number of institutional investors. We anticipate that in firms with diligent boards and extensive institutional investment, omissions of segment items should not significantly compromise pricing efficiency.

Third, we explore the managers' concerns about competitive harm in complying with the standards. We hypothesize that managers of low proprietary costs are incentivized to report their reviewed segment-specific information due to reduced competitive harm risks. We measure proprietary costs using three indicators: R&D expenditure, intangible assets, and volatility of special items, which indicates exposure to disruptive market shocks (Lev, Radhakrishnan, and Tong [2021]). We expect firms with minimal R&D activity, fewer intangible assets, and less

exposure to market disruptions will experience negligible impacts on pricing efficiency from omissions of segment items.

Table 4 reports results that align with our conjectures. In Panel A, within a small subsample of firms in the top decile for managerial ability, the coefficients on $Pseudoret \times \#\,Seg\ Line\ Items$ and $Pseudoret \times \#\,Man\ Seg\ Line\ Items$ are less negative and not statistically significant. This indicates that, unlike the broader sample, there are minimal pricing inefficiencies due to segment item omissions in firms with high managerial ability. A similar pattern emerges among firms in the bottom decile for board busyness and the top decile for institutional ownership breadth. Panel B of Table 5 further demonstrates that firms in the bottom decile of proprietary cost indicators do not exhibit the pricing inefficiencies associated with segment item omissions observed in the rest of the sample. Collectively, these findings support the effectiveness of the management approach when implemented properly and genuinely complied with. The approach's efficacy depends on thorough internal segment review by capable managers, robust corporate governance, and well-aligned managerial incentives for truthful external reporting. Therefore, the FASB may need to reassess and refine the management approach, taking into account the ability of top management to identify necessary segment items. Additionally, the SEC should enforce this approach more stringently.

5.2.2 Firm complexity

To further corroborate our main findings, we assess how the impact of segment item omissions on pricing delays is moderated by firm complexity. If segment disclosures provide valuable insights into specific business activities, their marginal benefit should increase with firm complexity, where investors may face greater uncertainty and delays in assimilating information.

We utilize two measures to assess firm complexity based on their financial reporting. The

first measure is the percentage of complexity words in firms' 10-K filings as developed by Loughran and McDonald [2023], which identifies words indicative of business or informational complexity "from the perspective of investors trying to estimate future cash flows." The second measure is the net file size of 10-K reports, as suggested by Loughran and Mcdonald [2016], which captures some aspects of the "overall complexity of the firm." Additionally, we use segment count to measure operational complexity.

We separate our samples based on the complexity levels (High: top decile and Rest) and segment counts (High: >5 and Rest). Table 5, Panel A shows that the coefficients of $Pseudoret \times \#\, Seg\ Line\ Items$ and $Pseudoret \times \#\, Man\ Seg\ Line\ Items$ are statistically significant in both subsamples, with a more pronounced negative effect in firms with a higher percentage of complexity words in their 10-Ks. Panel B reveals similar results based on 10-K file size. Panel C shows that the coefficient on $Pseudoret \times \#\, Man\ Seg\ Line\ Items$ is significantly more negative for firms with five or more segments than those with only two to four segments. Overall, these findings suggest that segment line item disclosures have a stronger impact on facilitating stock price updates in more complex firms.

6. Additional analyses

6.1. Analyses of potential endogeneity: ASC 280 codification shock

We next address the concern that our primary results may be endogenous, influenced by unobservable firm characteristics that correlate with both segment disclosure and the speed of stock price updates. Although the inclusion of the interaction terms between $Pseudoret$ and key firm characteristics in Table 3 help to alleviate this issue to some extent, we employ a difference-in-differences approach centered on ASC 280 codification for more robust evidence.

In 2009, as part of its comprehensive codification project covering numerous accounting topics, the FASB codified SFAS 131 as ASC 280, thereby streamlining the previously voluminous and complex standards, including those for segment reporting. The codification was designed to integrate GAAP with relevant SEC guidance, creating a coherent, easily accessible, and user-friendly online system. The FASB intended this restructuring to ease research into accounting issues, improve usability of GAAP literature, and provide real-time updates, reducing both the time and effort invested to locate appropriate standards and the risk of non-compliance (FASB [2009]). Research shows that the codification generally leads to fewer restatements due to inadvertent errors, timelier 10-K filings, and fewer SEC comment letter questions (Alhusaini, Du, and Givoly [2017], Binz, Hills, and Kubic [2023]). Specifically, Binz, Hills, and Kubic [2023] found that the frequency of SEC comments on segment reporting decreased significantly, from an average of 23 per industry-quarter in the pre-codification period to 9.9 post-codification, suggesting the ASC 280 codification mitigates non-compliance issues in segment reporting.

Our initial analysis, depicted in Appendix D and Figure 2, hints at a post-ASC 280 increase in the disclosure of segment line items by multi-segment firms. However, the impact might not be equal across firms. We expect the codification's influence on segment reporting to be particularly pronounced for a group of firms with a vested interest in safeguarding proprietary information due to competitive harm concerns. Before codification, the guidelines' complexity and ambiguity could allow such firms greater discretion, e.g., using interpretive gaps, in withholding SFAS 131-mandated line items under the management approach. After codification, the clarified and streamlined guidance significantly narrows this latitude, potentially compelling previously reticent firms to report more items the CODM reviews or receives.

To isolate ASC 280's effect, our analysis is confined to the three years before and after the codification (2006-2013). Multi-segment firms are considered "treated" if they have above-the-median average competitive harm concerns during the three years prior to the codification.[32] Accordingly, we create a dummy variable, $Treat$, that distinguishes the treated firms (assigned a value of 1) from the control firms (assigned a value of 0).

We first verify whether our identified treated firms are indeed more likely to increase their line item reporting in the first year after ASC 280 codification. We run a logit regression:

$$Increase\ Line\ Items_j = \alpha_j + \beta_1 Treat_j + \gamma \boldsymbol{Controls}_j + \varepsilon_j, \quad (2)$$

where $Increase\ Line\ Items$ is an indicator variable that equals 1 if a firm expands its line item disclosure per segment in the year following codification relative to the previous year, and 0 otherwise.[33] The control variables mirror those used in the baseline regression in Equation (1). The findings, presented in Table 6, Panel A, indicate treatment firms exhibit an 8.1% (11.3%) higher propensity to increase their total (mandatory) line item reporting post-codification than their low-competitive-harm-concern counterparts, but not for voluntary line items.

Next, we investigate whether, after ASC 280 codification, the treated multi-segment firms experience a greater reduction in the price update delay compared to the control firms. We employ the following model:

[32] Competitive harm concerns are measured by a proprietary cost index aggregating R&D investments, intangible assets, special items volatility, and industry competition intensity. See Appendix E for variable construction details. Our sample period for the difference-in-differences analysis is 2006-2008 for a firm for which the fiscal year-end is from September to December, and 2007-2009 for firms with a fiscal year-end between January and August.

[33] The first year after codification is 2009 for a September-December fiscial-year-end firm, and 2010 for a January-August fiscial-year-end firm.

$$Ret_{j,t} = \alpha_j + \beta_1 Pseudoret_{j,t-1} + \beta_2 Pseudoret_{j,t-1} \times Treat_j \times Post_{j,t-1} + \beta_3 Pseudoret_{j,t-1} \times Treat_j + \beta_4 Pseudoret_{j,t-1} \times Post_{j,t-1} + \beta_5 Treat_j \times Post_{j,t-1} + \beta_6 Treat_j + \beta_7 Post_{j,t-1} + \gamma \boldsymbol{Controls}_{j,t-1} + \varepsilon_{j,t-1}. \quad (3)$$

We include firm and year fixed effects, thus the coefficients on $Treat$ and $Post$ will be subsumed. If ASC 280 effectively limits managers' leeway under management approach to omit value-relevant segment data, we predict $\beta_2 < 0$.

Table 6, Panel B details the findings. Column (1) shows that before codification, the treated firms display a more pronounced lead-lag return relationship than the control firms do, as indicated by the significantly positive coefficient on $Pseudoret \times Treat$. The coefficient on $Pseudoret \times Post$ is significantly negative, suggesting a general decrease in price update delay across control firms post-ASC 280. Importantly, the negative and significant coefficient on $Pseudoret \times Treat \times Post$ confirms a more marked reduction in pricing inefficiency for treated firms post-ASC 280.

To rule out the confounding effects of the 2008/2009 financial crisis, we introduce the dummy variable $Finance$ for firms in finance and real estate industries. As column (2) shows, this dummy variable has no significant impact on the post-codification lead-lag return relationship. In column (3), we follow Binz, Hills, and Kubic [2023] and exclude finance and real estate firms. Our results do not alter.

6.2. Market response to corporate earnings news

Our analyses so far use a lead-lag return relation design that considers information events that affect an entire industry. We now shift our focus to a more specific type of information event:

the earnings announcement. In the vein of consolidated financial reports, extensive research finds that disclosing more financial statement line items in accompanying earnings releases (e.g., revenues, expenses, special items) better assists analysts and investors in valuation and forecasting, and enhances market response to earnings (e.g., Beaver, McNichols, and Wang [2020], Chen, Miao, and Shevlin [2015], Chen, DeFond, and Park [2002], Ertimur, Livnat, and Martikainen [2003], Fairfield, Sweeney, and Yohn [1996], Hewitt [2009], Jegadeesh and Livnat [2006], Livnat and Zarowin [1990]). Given that a multi-segment firm's earnings stem from the combined activities of its various segments, we hypothesize that a lack of detailed financial data for each segment increases the firm's valuation uncertainty and impedes the market's ability to attribute earnings accurately across segments, which dulls the response to earnings news.

To test this possibility, we examine whether firms with more segment item omissions exhibit a less pronounced immediate market reaction to earnings surprises. Table 7, Panel A presents evidence in support of our hypothesis: there is a muted stock market reaction to earnings surprises (SUE) during the 3-day or 5-day window around earnings announcements for multi-segment firms with more extensive line-item omissions. Panel B of Table 7 further shows that the post-earnings announcement drift (PEAD) is primarily observed for multi-segment firms that rank in the lowest quartile of mandatory item disclosure. This phenomenon is visually represented in Figure 4, which displays the cumulative abnormal returns for firms at the top and bottom deciles of SUE and the $\#\ Man\ Seg\ Line\ Items$ quartiles over a 12-month period following the earnings announcement. Overall, these findings emphasize that omissions of SFAS 131-mandated data items contribute to a notable delay in earnings information being integrated into the stock prices of multi-segment firms.

6.4. Channel tests: information asymmetry

Our main research framework posits that omissions of mandated segment items lead to increased information insufficiency and asymmetry, consequently causing price inefficiency. To validate this channel, we shift from analyzing the impact of segment item omissions on pricing efficiency to information asymmetry. Following the literature (e.g., Chen, Miao, and Shevlin [2015], Loughran and McDonald [2014]), we use three measures of information asymmetry: stock return volatility, bid-ask spreads, and analyst forecast dispersion. Appendix E presents detailed variable definitions. The results, presented in Table 8, columns (1) to (6), show that omissions of mandated items generally lead to increased return volatility, wider bid-ask spread, and greater forecast dispersion; however, omissions by firms that likely properly apply the "management approach", namely, firms with superior managerial ability, strong corporate governance, and low competitive harm, mostly do not exacerbate information asymmetry.

6.3. Additional robustness checks

We conduct two additional robustness checks to further validate our findings. First, untabulated results show that our inference to using factor- or characteristic-adjusted alphas remains unchanged.

Second, we adopt alternative metrics for assessing stock price efficiency. We adapt the stock price synchronicity measure from Morck, Yeung, and Yu [2000] to measure the extent to which a firm's stock price moves in tandem with contemporaneous market and industry dynamics. A higher level of synchronicity suggests a more timely incorporation of concurrent industry information. Additionally, we employ two price response delay measures modified from Hou and Moskowitz [2005], where larger values indicate longer delays in responding to industry news. These variable definitions are further detailed in Appendix E. The findings in Table 8, columns (7)

to (12) demonstrate that increased omissions of mandated items are generally associated with lower synchronicity and longer delays, except in the subsample of firms that likely properly adhere to the management approach.

7. Conclusion

Despite long-standing advocacy by the SEC and the FASB for detailed segment information, persistent gaps in multi-segment firms' reporting reveal a fundamental tension between regulatory goals and corporate disclosure practices. SFAS 131 requires the disclosure of segment line items based on their regular review or receipt by top management. This "management approach" grants significant discretion, which can result in segment item omissions that either reflect genuine managerial practices or arise from deliberate information withholding. Suboptimal managerial practices (e.g., inadequate segment review) and opportunistic omissions will increase information asymmetry, complicating the valuation process for investors and undermining the efficacy of regulatory frameworks.

Our study indicates a chronic deficiency in segment item disclosures over two decades since SFAS 131's implementation. Multi-segment firms, on average, disclose only 50.1% of mandated items for their segments. Stock price updates towards segment industry news are significantly delayed for firms that extensively omit mandated items. Notably, such omissions do not markedly impact pricing efficiency in firms with superior managerial ability, stringent corporate governance, and minimal competitive harm concerns. Our findings underscore the vital role of segment item disclosures in enhancing stock pricing efficiency and highlight a critical shortfall in SFAS 131's effectiveness: the management approach largely depends on the

managerial ability to identify pertinent segment items in their regular decision-making, as well as the integrity of corporate governance and managerial diligence in compliance.

The recent FASB mandate for disclosing "significant segment expenses" reflects a positive step but may face implementation challenges due to the sensitive nature of detailed cost information. Our findings indicate that multi-segment firms often avoid voluntarily disclosing expense details such as COGS, SG&A, R&D, and total costs. The absence of a mechanism for external verification of firms' internal review processes, coupled with the terminology of "regularly provided to" and "significant," potentially increases managerial discretion. To ensure that disclosures truly reflect managerial information usage and enhance transparency, regulators may intensify scrutiny over firms' internal review processes of segment information and enforce disclosure standards more rigorously.

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Appendix A. Examples of segment disclosure practice and SEC communications

Excerpt 1. Alphabet Inc.'s 10-K report for the fiscal year 2017

https://www.sec.gov/Archives/edgar/data/1652044/000165204418000007/goog10-kq42017.htm

Note 15. Information about Segments and Geographic Areas

We operate our business in multiple operating segments. Google is our only reportable segment. None of our other segments meet the quantitative thresholds to qualify as reportable segments; therefore, the other operating segments are combined and disclosed as Other Bets.

Our reported segments are:

- Google – Google includes our main products such as Ads, Android, Chrome, Commerce, Google Cloud, Google Maps, Google Play, Hardware, Search, and YouTube. Our technical infrastructure and some newer efforts like virtual reality are also included in Google. Google generates revenues primarily from advertising; sales of apps, in-app purchases, digital content products, and hardware; and licensing and service fees, including fees received for Google Cloud offerings.
- Other Bets – Other Bets is a combination of multiple operating segments that are not individually material. Other Bets includes businesses such as Access, Calico, CapitalG, GV, Nest, Verily, Waymo, and X. Revenues from the Other Bets are derived primarily through the sales of internet and TV services through Fiber, sales of Nest products and services, and licensing and R&D services through Verily.

Revenues, cost of revenues, and operating expenses are generally directly attributed to our segments. Inter-segment revenues are not presented separately, as these amounts are immaterial. Our Chief Operating Decision Maker does not evaluate operating segments using asset information.

	Year Ended December 31,		
	2015	2016	2017
Revenues:			
Google	$ 74,544	$ 89,463	$ 109,652
Other Bets	445	809	1,203
Total revenues	$ 74,989	$ 90,272	$ 110,855

	Year Ended December 31,		
	2015	2016	2017
Operating income (loss):			
Google	$ 23,319	$ 27,892	$ 32,908
Other Bets	(3,456)	(3,578)	(3,355)
Reconciling items[1]	(503)	(598)	(3,407)
Total income from operations	$ 19,360	$ 23,716	$ 26,146

[1] Reconciling items are primarily comprised of the European Commission fine for the year ended December 31, 2017, as well as corporate administrative costs and other miscellaneous items that are not allocated to individual segments for all periods presented.

	Year Ended December 31,		
	2015	2016	2017
Capital expenditures:			
Google	$ 8,868	$ 9,417	$ 12,605
Other Bets	850	1,385	507
Reconciling items[2]	232	(590)	72
Total capital expenditures as presented on the Consolidated Statements of Cash Flows	$ 9,950	$ 10,212	$ 13,184
Depreciation, amortization, and impairment:			
Google	$ 4,839	$ 5,800	$ 6,520
Other Bets	203	340	395
Reconciling items[5]	21	4	—
Total depreciation, amortization, and impairment as presented on the Consolidated Statements of Cash Flows	$ 5,063	$ 6,144	$ 6,915

Appendix A. (cont.)

Excerpt 2. SEC Comment Letter "Re: Alphabet, Inc. Form 10-Q for the Quarterly Period Ended September 30, 2017 Filed October 27, 2017 File No. 001-37580" and Alphabet's Correspondence on Dec 15, 2017

SEC comment letter: https://www.sec.gov/Archives/edgar/data/1652044/000000000017039681/0000000000-17-039681-index.html

Alphabet's correspondence letter: https://www.sec.gov/Archives/edgar/data/1652044/000165204417000048/filename1.htm

5. Please further describe the Google operating results that are regularly reviewed by Larry Page, Sergey Brin and/or Sundar Pichai. Please also address the following in your response:

a. We note in your response to prior comment 6 in your letter dated August 25, 2017 that your CODM receives operating results for Google on a weekly and quarterly basis. We further note in your response to prior comment 2 in your letter dated October 16, 2017 that your CODM and Board of Directors receive disaggregated advertising revenue by platform and property including YouTube. Tell us whether Larry Page and/or the Board of Directors receive any form of profitability and/or expense information for any of the product lines within Google and specifically the YouTube business in these reports or any other reports. If so, describe the nature, type and frequency of that information.

The financial information included in the weekly reports provided to Larry Page is limited to operating results for Google as a whole. The quarterly reports provided to him and the Board of Directors includes revenue disaggregated by Google product areas and the operating results for Google as a whole. No profitability and/or expense information for any product areas within Google is provided to Larry Page and/or the Board of Directors as part of the weekly, quarterly or any other regular reporting.

Since the Board of Directors also acts in the capacity of an advisory function to the executives of Google and Other Bets, individual CEOs and product area leaders occasionally meet with the Board to discuss specific aspects of their business and may from time-to-time provide additional financial data for ad-hoc discussion purposes. The financial information that may be provided as part of these ad-hoc discussions is generally used for consulting on long-term strategy and/or in conjunction with product reviews. Given the ad-hoc nature of these meetings, the irregularity of any financial information presented, and the level at which this information is presented to the Board and/or CODM, we do not believe this is indicative, reflective or determinative of our operating segments.

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b. Explain whether any financial information received by Larry Page differs from the financial information received by Sergey Brin. If so, describe the differences as they relate to Google and the product lines within Google such as YouTube.

The financial information provided to Larry Page and Sergey Brin on a regular basis is the same.

c. Describe the segment operating results included in the financial packages provided to Sundar Pichai on a regular basis and how it differs from the information provided to Larry Page and/or Sergey Brin. In this regard, describe any profitability and/or expense information that is provided for any of the product lines within Google and specifically the YouTube business.

As outlined in our response to comment 2(a) above, Sundar Pichai receives weekly and quarterly reports. These reports include disaggregated financial information for Google product areas, including YouTube. Specifically, the quarterly reports provided to Sundar Pichai include operating results by product area. Neither Larry Page nor Sergey Brin receive the weekly and quarterly reports received by Sundar Pichai.

As outlined in our response to comments 5(a) and 5(b) above, Larry Page and Sergey Brin receive weekly and quarterly reports. The financial information included in the weekly reports is limited to operating results for Google as a whole, while the quarterly reports include revenue disaggregated by Google product areas and the operating results for Google as a whole. No profitability and/or expense information for any product areas within Google is provided to Larry Page and Sergey Brin as part of the weekly, quarterly or any other regular reporting.

Appendix A. (cont.)

Excerpt 3. Volcano Corp.'s 10-K report for the fiscal year 2009

https://www.sec.gov/Archives/edgar/data/1354217/000119312510049107/d10k.htm

7. Segment and Geographic Information

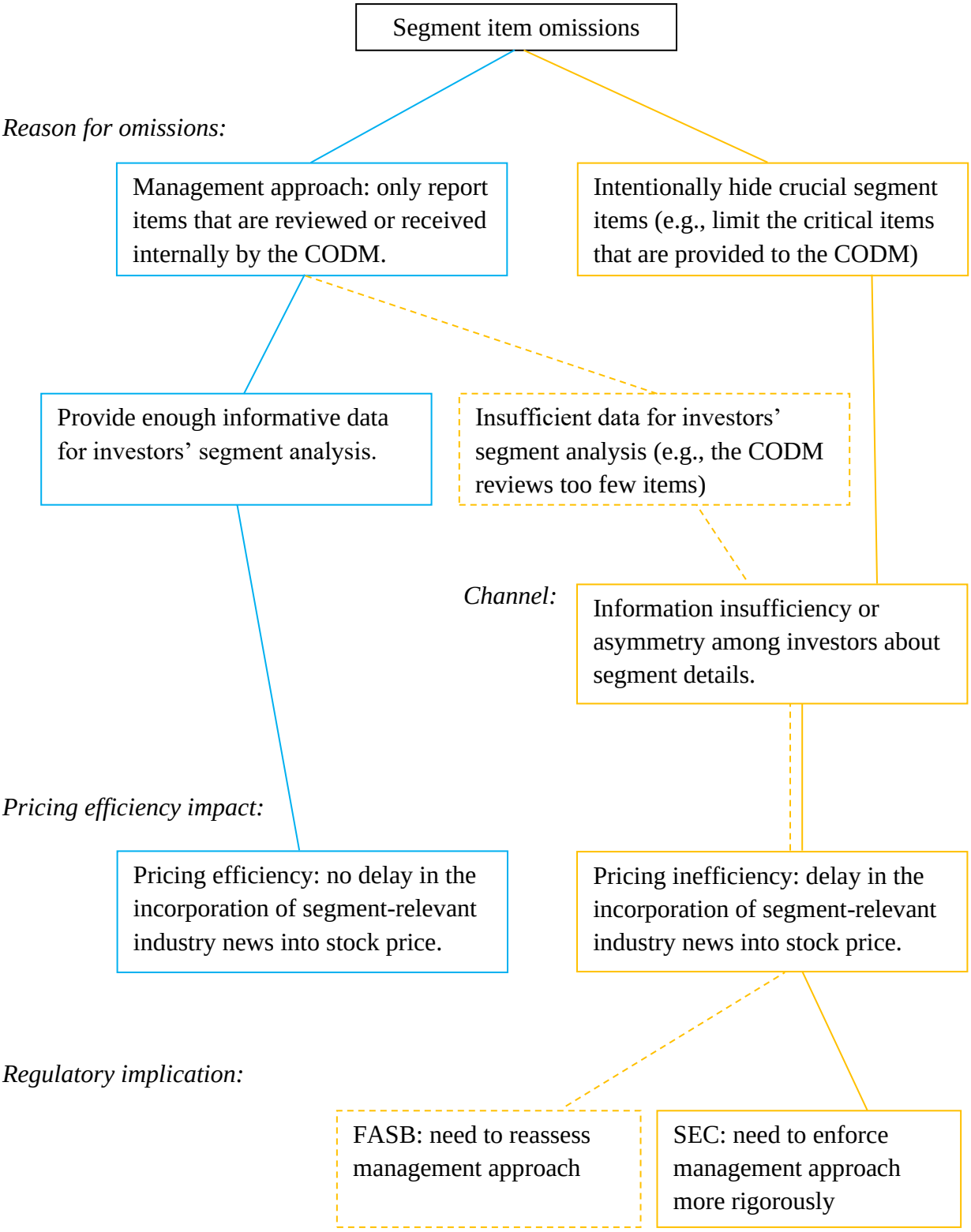
Our chief operating decision-maker reviews financial information presented on a consolidated basis, accompanied by disaggregated information about segment revenues by product and geographic region for purposes of making operating decisions and assessing financial performance. Historically, we considered ourselves to be a single reporting segment, specifically the manufacture, sale, discovery, development and commercialization of products for the diagnosis of atherosclerosis in the coronary arteries and peripheral vascular system ("medical segment"). In connection with our acquisition of Axsun in December 2008, we operate an additional segment, specifically the discovery, development, manufacture and sale of micro-optical spectrometers and optical channel monitors to telecommunications companies ("telecom segment").

We do not assess the performance of our segments on other measures of income or expense, such as depreciation and amortization, operating income or net income. We do not produce reports for, or measure the performance of, our segments on any asset-based metrics. Therefore, segment information is presented only for revenues by product.

The following table sets forth our revenues by segment and product expressed as dollar amounts (in thousands) and the changes in revenues between the specified periods expressed as percentages:

	Years Ended December 31,			Percentage Change	
	2009	2008	2007	2008 to 2009	2007 to 2008
Medical segment:					
Consoles	$ 39,438	$ 40,068	$ 28,911	(1.6)%	38.6%
Single-procedure disposables:					
IVUS	131,360	107,963	85,538	21.7	26.2
FM	31,125	17,388	12,260	79.0	41.8
Other	9,770	5,498	3,905	77.7	40.8
Sub-total medical segment	211,693	170,917	130,614	23.9	30.9
Telecom segment	16,174	578	—	2,698.3	n/a
	$227,867	$171,495	$130,614	32.9%	31.3%

Appendix B. Research framework: predicting the impact of segment item omissions on pricing efficiency



Appendix C. Line items selection

This table provides a full list of the 25 segment-level line items that we include in our study. Mandatory items are those required by SFAS 131, and voluntary items are not mentioned in SFAS 131 but are voluntarily disclosed by some firms. For each item, we report its Compustat Segment database mnemonic; the item name; additional notes in SFAS 131 and SEC regulations; whether the item is from the balance sheet (BS), income statement (IS), cash flow statement (CF), or other, and the Compustat mnemonic of its corresponding firm-level item in consolidated financial statements.

Compustat segment mnemonic	Line item name	SFAS 131 / SEC regulation	BS, IS, or CF	Compustat firm mnemonic
Mandatory items mentioned in SFAS 131				
SALES	Net Sales	Entity-wide disclosure [(1)]	IS	SALE
OPS	Operating Profit	Main profit measure [(2)]	IS	OIADP (mostly close to)
OIBDPS	Operating Income before Depreciation	Alternative profit measure [(2)]	IS	OIBDP
OIADPS	Operating Income after Depreciation	Alternative profit measure	IS	OIADP
PTIS	Pretax Income	Alternative profit measure	IS	PI
IBS	Income before Extraordinary Items	Alternative profit measure	IS	IB
NIS	Net Income	Alternative profit measure	IS	NI
IAS	Total Assets	Reason for non-disclosure [(3)]	BS	AT
IINTS	Interest Income	If regularly reviewed or received [(4)]	IS	IDIT
XINTS	Interest Expense	If regularly reviewed or received	IS	XINT
DPS	Depreciation and Amortization	If regularly reviewed or received	IS	DP
SPIS	Special Items	If regularly reviewed or received	IS	SPI
ESUBS	Equity in Earnings	If regularly reviewed or received	IS	ESUB
TXTS	Income Taxes	If regularly reviewed or received	IS	TXT
XIDOS	Extraordinary Items and Discontinued Operations	If regularly reviewed or received	IS	XIDO
IVAEQS	Investments at Equity	If regularly reviewed or received	BS	IVAEQ
CAPXS	Capital Expenditures	If regularly reviewed or received	CF	CAPX
Voluntary items				
EMPS	Employees	SEC Regulation S-K item [(5)]	Other	EMP
RDS	Research and Development		IS	XRD
OBS	Order Backlog	SEC Regulation S-K item	Other	OB
PPENTS	Property, Plant & Equipment		BS	PPENT
CAXTS	Total Cost and Expenses		IS	COGS+XSGA
COGSS	Cost of Goods Sold		IS	COGS
NOPXS	Nonoperating Income		IS	NOPI
XSGAS	Selling, General & Administrative Expenses		IS	XSGA

(1) Revenue is both a segment disclosure item and an entity-wide disclosure item in SFAS 131 (later codified as ASC 280). Specifically, ASC 280-10-50-40 requires a public entity to report the revenues that it derives from each of its products and services (or groups of similar products and services), if not already provided as part of its segment disclosures in accordance with ASC 280-10-50-22, unless doing so is impracticable (such situations are expected to be rare). Consequently, firms are required to provide segment revenue information even if it is not regularly reviewed and used for making operating decisions and assessing segment performance.

(2) ASC 280-10-50-28 requires that the measure of profit or loss disclosed for each reportable segment should be the measure used by the CODM to assess performance and to allocate resources; it may vary by reportable segment. If the CODM uses more than one measure of a segment's profit or loss, then the reported measures should be those that management believes to be determined in accordance with the measurement principles that are most consistent with those used in measuring the corresponding amounts in the public entity's consolidated financial statement. Consistent with Lail, Thomas, and Winterbotham [2014], we find that even though the unified definition of segment profit is not required, the vast majority of companies' segment profits or losses are defined as operating profit.

(3) ASC 280-10-50-22 requires total assets for each reportable segment, but ASC 280-10-50-26 notes that if no segment asset information is provided for a reportable segment, that fact and the reason therefore shall be disclosed.

(4) ASC 280-10-50-22 (25) requires the disclosure of these component items of profit/loss (assets) if "the specified amounts are included in the measure of segment profit or loss (segment assets) reviewed by the chief operating decision maker" or they "are otherwise regularly provided to the chief operating decision maker, even if not included in that measure."

(5) SEC Regulation S-K, Item 101(c), requires that a registrant's description of each reportable segment in the business section of the SEC filing should include 12 specific items (which include the number of employees and the order backlog) to the extent that they are material to understanding the registrant's business as a whole. SFAS 131 does not require these two items.

Appendix D. Item-by-item disclosure frequency in segment reporting

This table presents the frequency with which a firm discloses a given line item for its segment(s) for the multi- and single-segment firms in our sample. Mandatory items are those required by SFAS 131, and voluntary items are not mentioned in SFAS 131 but are voluntarily disclosed by some firms. For each line item in each segment, we first create an indicator variable that equals 1 if a firm discloses that item, and 0 if it is missing. If a firm does not report an item in its consolidated financial reporting, we exclude it from our counting. If an item is missing in a segment but the summed disclosed amount of that item for the rest of the firm's segments is no less than 75% of the total amount of that item in the firm's consolidated financial reporting, we count it as non-missing. We then take the value-weighted average of each line item indicator across a firm's segment(s), using segment sales as the value weights. Effectively, this average value represents a firm's disclosure frequency for that item across the firm's segment(s). The corresponding omission rate (presented in parentheses) equals one minus the disclosure frequency. *One Profit Measure* is the frequency with which a firm reports at least one profit measure (including operating profit, operating income before or after depreciation, pre-tax income, income before extraordinary items, and net income) for its segment(s). A multi-segment firm reports two or more business/operating segments, while a single-segment firm reports only one segment. Our sample period for segment data is from 2000 to 2019. We compare the average disclosure frequency in the pre- and post-ASC 280 codification periods, with the *t*-statistics for the difference reported in parentheses. ASC 280 Codification is effective for financial statements issued for periods ending after September 15, 2009. ↑ indicates a statistically significant increase and ↓ indicates a statistically significant decrease (at the 1% level) in the disclosure frequency after ASC 280 codification.

	Multi-segment firms							Single-segment firms						
	All Sample Years		ASC 280 Codification					All Sample Years		ASC 280 Codification				
Line Item	Disclosure (Omission)	Std Dev	Pre-	Post-	Post − Pre	t-stat		Mean	Std Dev	Pre-	Post-	Post − Pre	t-stat	
Mandatory														
Net Sales	1.000 (0.000)	0.000	1.000	1.000	0.000			1.000	0.000	1.000	1.000	0.000		
One Profit Measure	0.906 (0.094)	0.292	0.907	0.905	-0.002	(-0.59)		0.998	0.047	0.998	0.998	0.000	(-0.16)	
Operating Profit	0.760 (0.240)	0.426	0.728	0.795	0.067	(12.46)	↑	0.993	0.081	0.992	0.995	0.003	(2.57)	↑
Operating Income before Depreciation	0.373 (0.627)	0.483	0.073	0.695	0.622	(133.04)	↑	0.982	0.134	0.973	0.992	0.018	(10.22)	↑
Operating Income after Depreciation	0.390 (0.610)	0.487	0.067	0.737	0.670	(149.54)	↑	0.983	0.131	0.974	0.992	0.018	(10.25)	↑
Pretax Income	0.200 (0.800)	0.399	0.192	0.208	0.016	(3.23)	↑	0.975	0.156	0.978	0.972	-0.006	(-2.88)	↓
Income before Extraordinary Items	0.092 (0.908)	0.288	0.089	0.094	0.005	(1.49)		0.972	0.164	0.975	0.969	-0.005	(-2.54)	
Net Income	0.055 (0.945)	0.227	0.034	0.077	0.043	(14.97)	↑	0.972	0.165	0.974	0.970	-0.004	(-1.72)	
Total Assets	0.795 (0.205)	0.403	0.820	0.770	-0.050	(-10.27)	↓	0.996	0.061	0.996	0.996	0.000	(-0.44)	
Interest Income	0.198 (0.802)	0.399	0.214	0.183	-0.031	(-4.89)	↓	0.962	0.192	0.964	0.958	-0.006	(-1.74)	
Interest Expense	0.222 (0.778)	0.415	0.225	0.219	-0.006	(-1.09)		0.974	0.159	0.974	0.974	0.000	(-0.14)	
Depreciation and Amortization	0.776 (0.224)	0.416	0.766	0.786	0.021	(4.07)	↑	0.993	0.085	0.994	0.992	-0.002	(-1.52)	
Special Items	0.428 (0.572)	0.488	0.345	0.514	0.169	(29.00)	↑	0.982	0.134	0.981	0.982	0.001	(0.69)	
Equity in Earnings	0.756 (0.244)	0.429	0.768	0.744	-0.023	(-4.15)	↓	0.983	0.129	0.978	0.989	0.011	(6.50)	↑
Income Taxes	0.130 (0.870)	0.336	0.136	0.124	-0.013	(-3.16)	↓	0.974	0.160	0.977	0.970	-0.006	(-2.95)	↓
Extraordinary Items and Discontinued Operations	0.742 (0.258)	0.437	0.697	0.789	0.092	(17.46)	↑	0.990	0.101	0.988	0.991	0.003	(2.11)	
Investments at Equity	0.767 (0.233)	0.423	0.786	0.747	-0.039	(-7.16)	↓	0.991	0.092	0.993	0.989	-0.004	(-3.12)	↓
Capital Expenditures	0.693 (0.307)	0.461	0.695	0.691	-0.004	(-0.69)		0.990	0.098	0.990	0.990	0.000	(0.11)	
Voluntary														
Employees	0.127 (0.873)	0.328	0.119	0.134	0.016	(3.90)	↑	0.970	0.170	0.970	0.971	0.002	(0.68)	
Research and Development	0.221 (0.779)	0.414	0.195	0.249	0.054	(7.70)	↑	0.985	0.123	0.984	0.985	0.001	(0.33)	
Order Backlog	0.524 (0.476)	0.498	0.442	0.612	0.170	(16.87)	↑	0.980	0.141	0.973	0.989	0.017	(5.13)	↑
Property, Plant & Equipment	0.040 (0.960)	0.196	0.030	0.051	0.021	(8.61)	↑	0.969	0.174	0.972	0.965	-0.006	(-2.77)	↓
Total Cost and Expenses	0.120 (0.880)	0.324	0.056	0.188	0.132	(31.11)	↑	0.975	0.156	0.976	0.974	-0.002	(-0.72)	
Cost of Goods Sold	0.285 (0.715)	0.450	0.169	0.409	0.240	(43.77)	↑	0.971	0.167	0.971	0.971	0.000	(0.16)	
Nonoperating Income	0.063 (0.937)	0.242	0.062	0.064	0.002	(0.68)		0.967	0.179	0.969	0.964	-0.005	(-2.26)	
Selling, General & Administrative Expenses	0.127 (0.873)	0.331	0.059	0.197	0.138	(31.81)	↑	0.970	0.171	0.968	0.973	0.003	(1.25)	
Average (all, at least one profit measure)	0.464 (0.536)	0.142	0.444	0.485	0.042	(24.48)	↑	0.981	0.093	0.981	0.981	0.000	(-0.08)	
Average (all, include six profit measures)	0.406 (0.594)	0.142	0.361	0.452	0.091	(55.69)	↑	0.980	0.102	0.979	0.980	0.001	(0.65)	
Average (mandatory, at least one profit measure)	0.632 (0.368)	0.166	0.626	0.638	0.012	(5.91)	↑	0.987	0.068	0.987	0.987	0.000	(0.06)	
Average (mandatory, include six profit measures)	0.501 (0.499)	0.155	0.456	0.547	0.092	(50.90)	↑	0.983	0.087	0.983	0.984	0.001	(1.18)	
Average (voluntary)	0.153 (0.847)	0.196	0.111	0.197	0.086	(37.07)	↑	0.970	0.152	0.970	0.969	-0.001	(-0.41)	

Appendix E. Variable Definitions

Appendix E defines the main variables used in our analysis.

Variable	Definition
Segment line items	
# Seg Line Items	The segment sales-weighted average number of line items that a firm reports for its segment(s), scaled by the total reportable segment items. An item is reportable at the segment level if the firm discloses the item in its consolidated financial reports.
# Man Seg Line Items	The segment sales-weighted average number of mandatory line items that a firm reports for its segment(s), scaled by the total reportable mandatory segment items. An item is reportable at the segment level if the firm discloses the item in its consolidated financial reports. Mandatory items are those required by SFAS 131.
# Vol Seg Line Items	The segment sales-weighted average number of voluntary line items that a firm reports for its segment(s), scaled by the total reportable voluntary segment items. An item is reportable at the segment level if the firm discloses the item in its consolidated financial reports. Voluntary items are those not mentioned in SFAS 131 but are voluntarily disclosed by some firms.
Operational structure	
# Seg	The total number of segments reported by a firm.
Seg Disaggr	The natural log of the ratio of the total number of reported segments to the number of Fama-French 49 industries in which the firm operates.
Seg Diversity	Segment operational diversity, measured by the Hirschman-Herfindahl Index based on a firm's Fama-French 49 industry segment sales. It is calculated as the sum of the squared sales of the firm's industry segments, multiplied by -1. If a firm reports more than one segment in an industry, we aggregate the segments into a single industry segment.
Firm-wide disclosure quality	
DQ	The DQ (disaggregation quality) measure in Chen, Miao, and Shevlin [2015], which captures the level of disaggregation of accounting data through a count of non-missing data items in firms' consolidated annual reports. A higher DQ score indicates higher disclosure quality.
Fog	The Gunning Fog Readability Index in Li [2008], which combines the number of words per sentence and the number of syllables per word to create a measure of readability. A higher Fog score indicates less readable text.
File Size	The 10-K document gross file size proposed by Loughran and Mcdonald [2014] as a proxy for readability. A larger file size indicates less readable text.
# 8K	The total number of 8-K files that a firm provides.
Firm-level controls	
Firm Size	A firm's market capitalization in millions of US dollars.
Firm Age	The number of years since CRSP began to cover the firm.
Turnover	Average daily turnover in percents over a year, where daily turnover is the ratio of the number of shares traded each day to the number of shares outstanding at the end of the day.
B/M	Book-to-market ratio.
Sales Growth	Percentage change in a firm's annual sales over a year.
Special Items	The ratio of a firm's special items to its total book assets.
Earnings	Earnings before extraordinary items scaled by the total book assets.
Earnings Volatility	The standard deviation of a firm's earnings over the past five years.
# Con Line Items	The total number of non-missing items from a firm's consolidated balance sheet and income statement.
Mom	Past 12-month accumulated excess return (stock return minus risk-free rate).
Indret	Industry return, measured as the value-weighted average excess return (stock return minus risk-free rate) of all stocks in a Fama-French 49 industry.
Cross-sectional tests	
Managerial Ability	Managerial ability measure, developed by Demerjian, Lev, and McVay [2012].
Busy Board	The ratio of busy directors to the total number of director seats; a director is defined as busy director when he/she serves on more than three boards simultaneously.
Inst Breadth	The ratio of the number of institutional investors that hold a long position in the stock to the total number of institutional investors.
R&D	The ratio of a firm's annual R&D expenses to its total book assets.
Intangible	The ratio of a firm's intangible assets to its total book assets.
SPI Volatility	The standard deviation of a firm's special items over the past five years.
% Complexity Words	The percentage of complexity words in a firm's 10-K filings, developed by Loughran and McDonald [2023].
Net File Size	The net file size of a firm's 10-K documents, developed by Loughran and Mcdonald [2016].
Additional tests	
Proprietary cost	Proprietary cost = (High R&D + High Intangible + High SPI Volatility + High Competition)/4. High R&D equals 1 if the percentile ranking of R&D is above 0.75 (we set the partition at 0.75 because about 50% of firms have zero R&D), and 0 otherwise. High Intangible (High SPI Volatility, High Competition) equals 1 if the percentile ranking of Intangible (SPI Volatility, Competition) is above 0.5, and 0 otherwise. The firm's industry competition level is measured by the Hirschman-Herfindahl Index, calculated as the sum of the squared market shares of all the firms operating in a Fama-French 49 industry, multiplied by -1. All percentile rankings are based on the full sample, which combines multi- and single-segment firms.

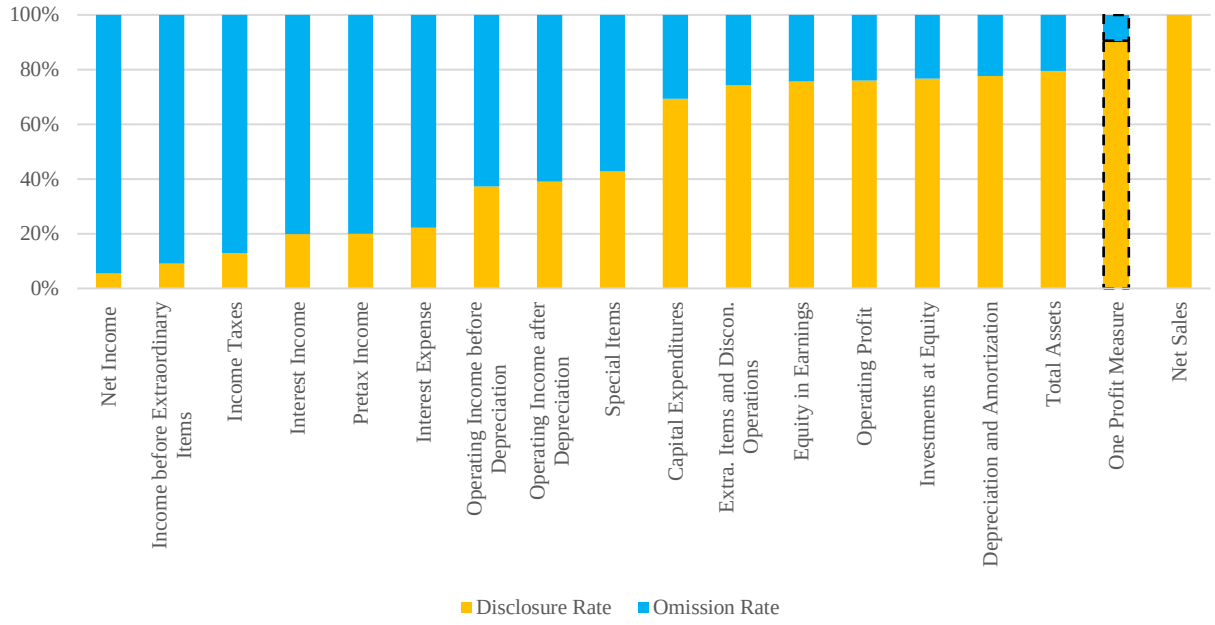
Appendix E. (cont.)

CAR	The cumulative 3-day- or 5-day-window CAPM-based abnormal returns around the earnings announcement date.
SUE	Standardized unexpected earnings, calculated as the difference between the current quarter's earnings and the earnings four quarters prior divided by the standard deviation of the unexpected earnings in the past 8 quarters.
ExVolatility	The standard deviation of weekly stock returns based on residuals of a market-model regression over a year.
Bid-Ask Spread	The average bid-ask spread over a year, where bid-ask spread is computed as (100 * [ask – bid]/[{ask + bid}/2]), using daily closing bid and ask prices.
Analyst Dispersion	The standard deviation of analysts' forecasts in the most recent forecast of the annual earnings with a minimum forecast horizon of 30 days, deflated by the stock price at the previous year-end.
Synch	Stock price synchronicity that is modified from the market model in Morck, Yeung, and Yu [2000], measured by the R^2 of the firm-level regression of the weekly stock returns on the contemporaneous, lead, and lag market returns and the industry returns in a year: $$r_{j,t} = \alpha_j + \beta_{1j} r_{m,t} + \gamma_{1j} r_{i,t} + \beta_{2j} r_{m,t-1} + \gamma_{2j} r_{i,t-1} + \beta_{3j} r_{m,t+1} + \gamma_{3j} r_{i,t+1} + \varepsilon_{j,t},$$ where $r_{j,t}$ is the weekly returns of stock j in week t, $r_{m,t}$ is the CRSP value-weighted market index return, and $r_{i,t}$ is the Fama-French 49 industry portfolio return.
Delay1	A price response delay measure constructed from an industry model that we modify based on the market model in Hou and Moskowitz [2005]. Specifically, for each stock and year, we estimate a regression of the stock's weekly returns on the contemporaneous industry return and the prior four weeks of the lagged industry returns plus the contemporaneous market return, as follows: $$r_{j,t} = \alpha_j + \beta_j r_{i,t} + \sum_{n=1}^{4} \delta_{j,-n} r_{i,t-n} + \gamma_j r_{m,t} + \varepsilon_{j,t},$$ where $r_{j,t}$ is the weekly returns of stock j in week t, $r_{i,t}$ is the value-weighted Fama-French 49 industry return, and $r_{m,t}$ is the CRSP value-weighted market index return. The first delay measure, $Delay1$, compares the value of R^2 from the regression above with that obtained when the coefficients on the lagged industry returns ($\delta_{j,-n}$) are constrained to zero: $$Delay1_j = 1 - \frac{R^2_{\delta_{j,-n}=0, \forall n \in [1,4]}}{R^2}.$$
Delay2	The second delay measure, $Delay2$, is computed as the ratio of the magnitude of the lagged industry-return coefficients to the magnitude of all industry-return coefficients: $$Delay2_j = \frac{\sum_{n=1}^{4} \lvert\delta_{j,-n}\rvert}{\lvert\beta_j\rvert + \sum_{n=1}^{4} \lvert\delta_{j,-n}\rvert}.$$

Figure 1. Item-by-item omission frequency in segment reporting

This figure depicts multi-segment firms' average disclosure/omission rate for each of the 17 mandatory items in Panel A and that for the 8 voluntary items in Panel B. Mandatory items are those required by SFAS 131, and voluntary items are not mentioned in SFAS 131 but are voluntarily disclosed by some firms. In Panel A, the dashed line highlights *One Profit Measure*, representing the frequency with which a firm reports at least one profit measure (including operating profit, operating income before or after depreciation, pre-tax income, income before extraordinary items, and net income) for its segments.

Panel A. Mandatory items



Panel B. Voluntary items

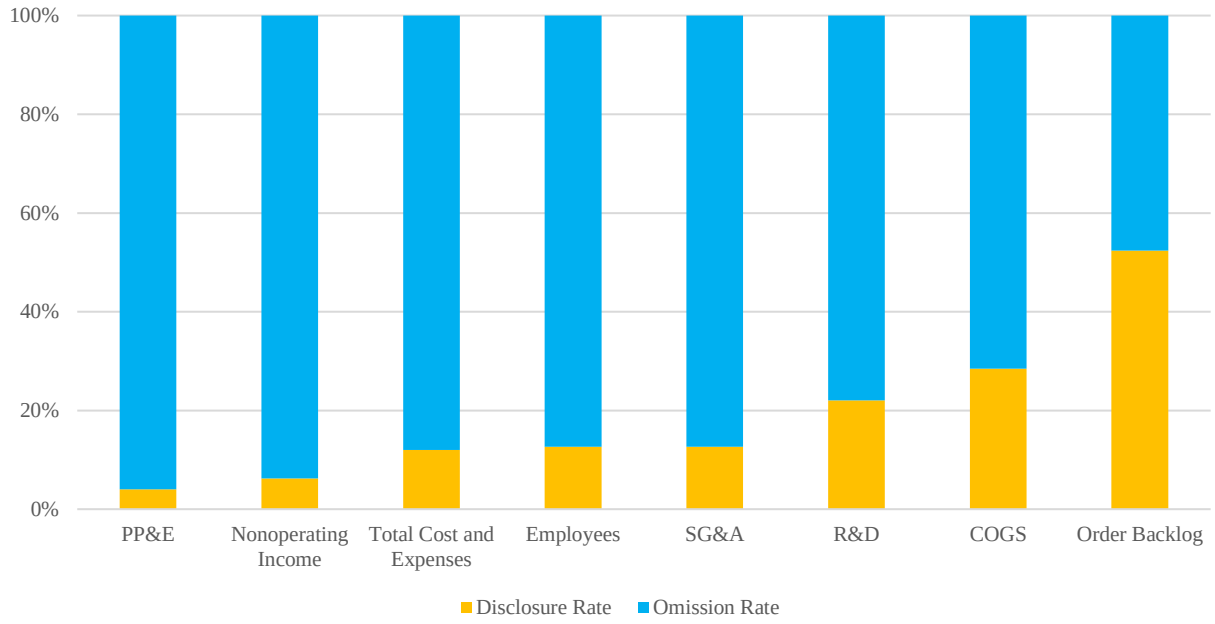


Figure 2. Segment line items disclosure over time

This figure displays the segment-sales-weighted average number of total, mandatory, and voluntary line items that multi-segment firms disclose for their business segments over 2000 to 2019. The measures # Seg *Line Items*, # *Man Seg Line Items*, and # *Vol Seg Line Items* are scaled by a firm's total reportable items, reportable mandatory items, and reportable voluntary items, respectively. An item is reportable at the segment level if the firm reports the item in its consolidated financial reports. Mandatory items are those required by SFAS 131, and voluntary items are not mentioned in SFAS 131 but are voluntarily disclosed by some firms. ASC 280 Codification is effective for financial statements issued for periods ending after September 15, 2009.

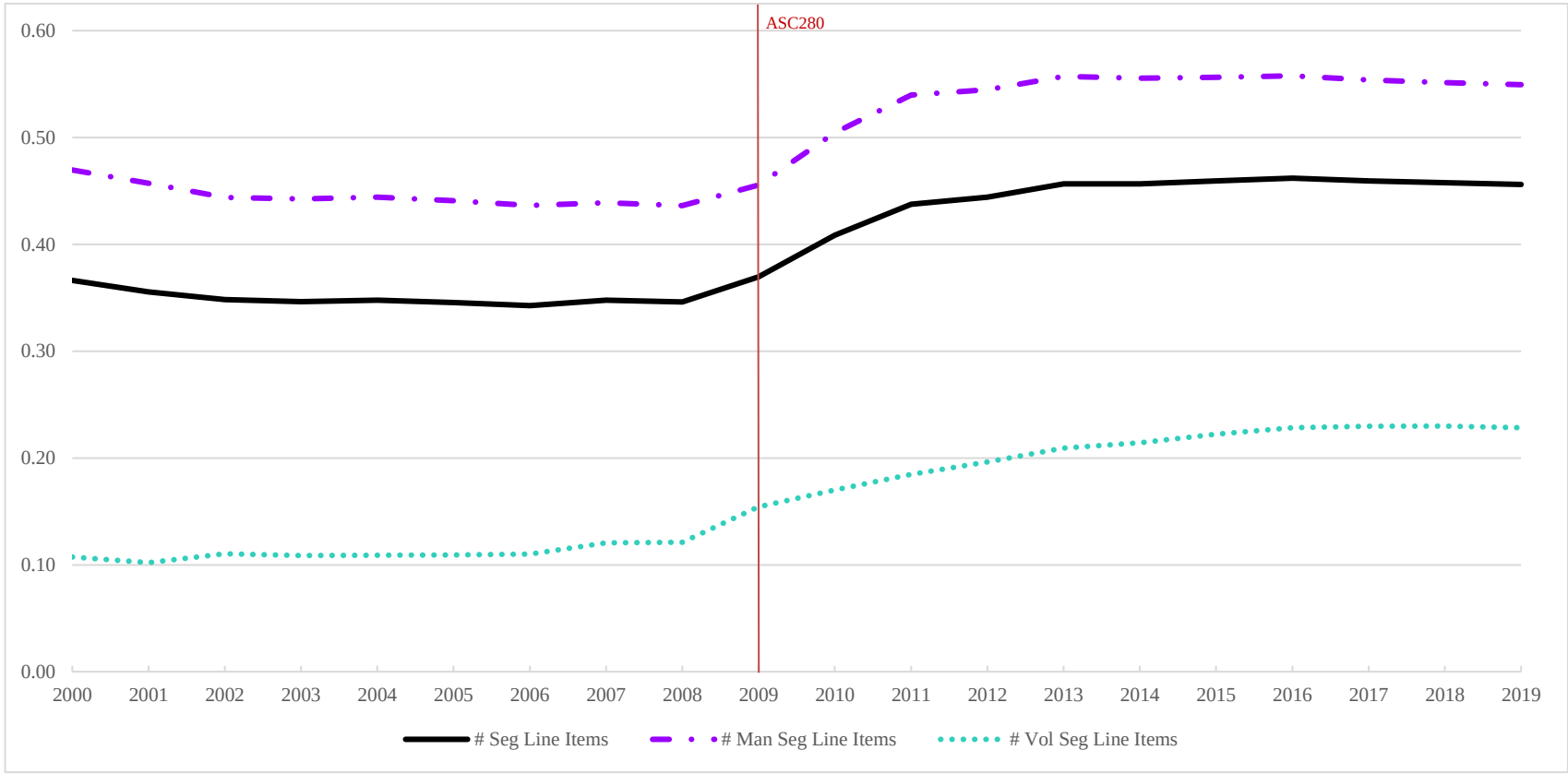


Figure 3. Effect horizon: the impact of omission of mandated segment items on the lead-lag return relation

This figure shows the cumulative returns on the long/short portfolio that is long on multi-segment firms paired with previously high-performing pseudo-multis (previous month's returns in the top decile) and short on those paired with low performers (in the bottom decile) across the quartiles of *# Man Seg Line Items* in the 12 months after portfolio formation. A pseudo-multi firm consists of a portfolio of single-segment firms in the same Fama-French 49 industries as the multi-segment firm's segments, weighted by the sales that each segment contributes to the multi-segment firm. *# Man Seg Line Items* is the segment sales-weighted average number of mandatory line items that a firm reports for its segment(s), scaled by the total reportable mandatory segment items. An item is reportable at the segment level if the firm discloses the item in its consolidated financial reports. Mandatory items are those required by SFAS 131.

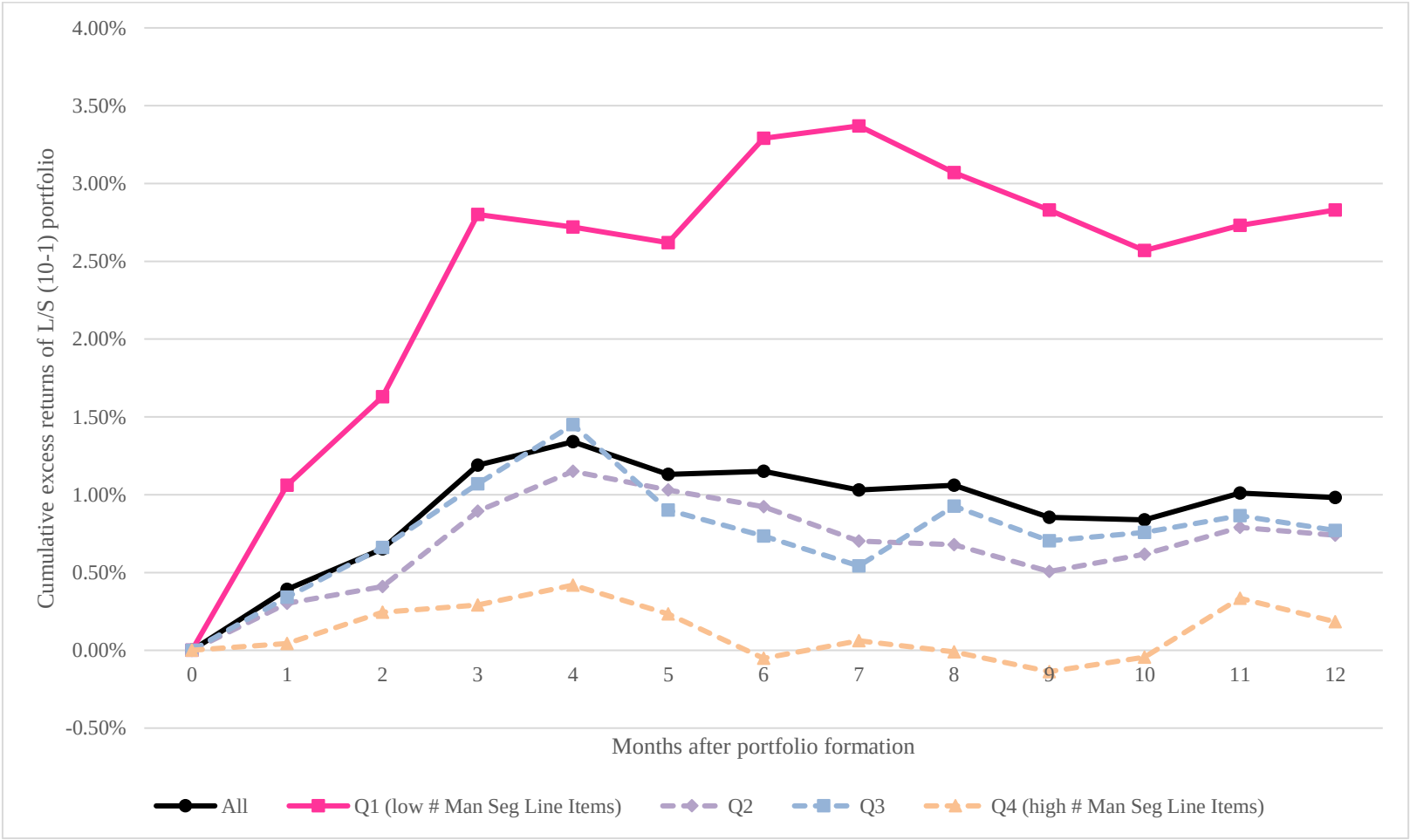


Figure 4. Post-earnings announcement drift by high vs. low mandated line items disclosure

This figure plots the cumulative CAPM-based abnormal returns over the 12 calendar months following multi-segment firms' earnings announcement months for the top (most positive) and bottom (most negative) deciles of SUE, which are intersected with the top and bottom $\#\ Man\ Seg\ Line\ Items$ quartiles. $\#\ Man\ Seg\ Line\ Items$ is the segment sales-weighted average number of mandatory line items that a firm reports for its segment(s), scaled by the total reportable mandatory segment items. An item is reportable at the segment level if the firm discloses the item in its consolidated financial reports. Mandatory items are those required by SFAS 131. All stocks are value-weighted within a given portfolio, and the portfolios are rebalanced every calendar month to maintain the value weights.

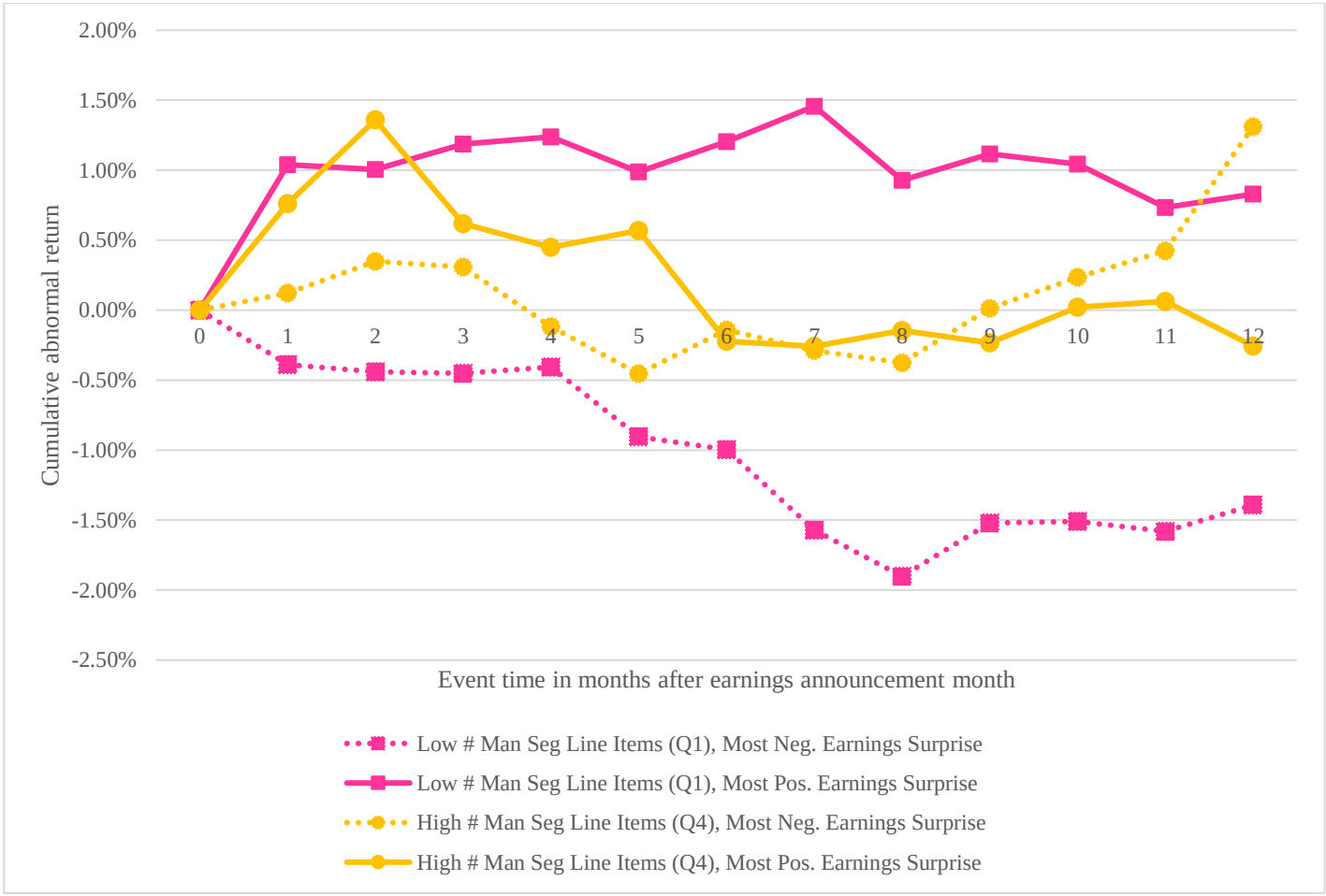


Table 1. Descriptive statistics and correlation for main variables

Panel A presents the descriptive statistics for our main variables and compares these variables' mean values between multi- and single-segment firms, with *t*-statistics reported in parentheses. The sample contains a total of 45,014 firm-year observations (single-segment obs: 21,115; multi-segment obs: 23,899). Panel B documents the association between segment line item disclosure, firm-wide disclosure quality, and firm complexity for multi-segment firms. All correlations are significant at 5%, except for those marked with "ns". Panel C compares multi-segment firms' line item disclosure in the pre- and post-ASC 280 codification periods, with the *t*-statistics for the difference reported in parentheses. ↑ (↓) indicates a statistically significant increase (decrease) at the 1% level. See Appendix E for the variable definitions.

Panel A. Descriptive statistics (multi- and single-segment firms)

	Multi-segment firms					Single-segment firms					Multi - Single	
Variable	Mean	Std Dev	25%	Median	75%	Mean	Std Dev	25%	Median	75%	M-S	t-stat
Segment line item reporting												
# Seg Line Items (unscaled)	8.9	3.0	7.0	9.0	11.0	22.3	3.3	22.0	23.0	24.0	-13.4	(-471.94)
# Seg Line Items	0.406	0.142	0.304	0.391	0.480	0.980	0.102	1.000	1.000	1.000	-0.574	(-512.17)
# Man Seg Line Items (unscaled)	7.9	2.5	6.0	8.0	9.3	15.9	1.9	16.0	16.0	17.0	-8.0	(-403.42)
# Man Seg Line Items	0.501	0.155	0.400	0.500	0.588	0.983	0.087	1.000	1.000	1.000	-0.483	(-421.95)
# Vol Seg Line Items (unscaled)	1.0	1.3	0.0	1.0	1.0	6.4	1.7	6.0	7.0	8.0	-5.4	(-405.31)
# Vol Seg Line Items	0.153	0.196	0.000	0.125	0.250	0.970	0.152	1.000	1.000	1.000	-0.817	(-516.30)
Operational structure												
# Seg	3.0	1.2	2.0	3.0	4.0	1	0					
Seg Disaggr	0.596	0.464	0.000	0.693	0.916	0	0					
Seg Diversity	-0.829	0.211	-1	-0.969	-0.646	-1	0					
Firm-wide disclosure quality												
DQ	0.727	0.125	0.697	0.762	0.799	0.758	0.101	0.718	0.774	0.820	-0.031	(-30.62)
Fog	20.025	1.059	19.332	19.945	20.603	19.997	1.004	19.349	19.950	20.582	0.029	(2.97)
File Size	8.946	10.955	1.115	2.807	15.058	5.695	7.269	0.869	1.831	9.529	3.250	(37.08)
# 8K	11.949	7.148	7.000	11.000	15.000	10.985	6.789	6.000	10.000	14.000	0.964	(15.00)
Firm characteristics												
Firm Size (in $mil)	4187.3	7371.7	242.8	1002.6	3828.2	2194.0	5096.3	113.1	417.9	1521.5	1993.3	(34.77)
Firm Age	24.6	17.3	10.0	20.0	36.0	16.2	12.5	7.0	13.0	22.0	8.5	(62.27)
Turnover	0.785	0.660	0.333	0.615	1.025	0.905	0.771	0.330	0.698	1.229	-0.120	(-18.89)
B/M	0.681	0.860	0.278	0.480	0.790	0.671	0.979	0.200	0.410	0.773	0.010	(1.21)
Sale Growth	0.091	0.300	-0.025	0.057	0.153	0.148	0.503	-0.031	0.072	0.204	-0.057	(-15.75)
Special Items	-0.016	0.051	-0.013	-0.002	0.000	-0.017	0.057	-0.012	0.000	0.000	0.001	(2.48)
Earnings	0.019	0.129	0.005	0.036	0.070	-0.038	0.244	-0.050	0.031	0.079	0.056	(33.04)
Earnings Volatility	0.057	0.089	0.014	0.028	0.062	0.103	0.144	0.022	0.050	0.118	-0.047	(-44.27)
# Con Line Items	221.5	20.0	211.0	225.0	236.0	219.0	18.2	210.0	221.0	232.0	2.5	(14.64)

Table 1. Descriptive statistics and correlation for main variables (cont.)

Panel B. Correlations for the multi-segment firms (Pearson upper-right, Spearman bottom-left)

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1)	# Seg Line Items		0.916	0.627	-0.153	-0.019	0.305	0.062	-0.056	-0.224	-0.026
(2)	# Man Seg Line Items	0.915		0.282	-0.124	-0.035	0.291	0.037	-0.046	-0.198	-0.007ns
(3)	# Vol Seg Line Items	0.537	0.220		-0.033	0.009ns	0.174	0.043	-0.058	-0.077	-0.058
(4)	DQ	-0.113	-0.085	-0.037		0.017	0.001ns	0.007ns	-0.121	0.601	-0.026
(5)	Fog	-0.023	-0.042	0.021	0.061		0.170	0.140	0.045	0.075	0.096
(6)	File Size	0.292	0.273	0.181	0.133	0.217		0.239	0.126	-0.008ns	0.325
(7)	# 8K	0.041	0.017	0.040	0.085	0.156	0.342		0.109	0.188	0.192
(8)	# Seg	-0.071	-0.054	-0.058	-0.083	0.042	0.108	0.093		0.029	0.255
(9)	# Con Line Items	-0.216	-0.182	-0.112	0.551	0.088	0.103	0.244	0.043		0.068
(10)	Firm Size	-0.031	-0.012ns	-0.076	0.001	0.151	0.417	0.296	0.245	0.157	

Panel C. Multi-segment firms' line items disclosure before and after ASC 280

	ASC 280 Codification				
	Pre-	Post-	Post − Pre	t-stat	
# Seg Line Items (unscaled)	7.991	10.165	2.174	(58.52)	↑
# Seg Line Items	0.349	0.443	0.094	(56.14)	↑
# Man Seg Line Items (unscaled)	7.237	8.790	1.553	(50.99)	↑
# Man Seg Line Items	0.445	0.540	0.095	(50.98)	↑
# Vol Seg Line Items (unscaled)	0.754	1.374	0.621	(37.85)	↑
# Vol Seg Line Items	0.111	0.206	0.095	(38.97)	↑

Table 2. Portfolio analysis: Segment line items omission and the lead-lag return relation

This table reports monthly returns for portfolios of multi-segment firms, sorted by previous month's returns of corresponding pseudo-multis ($Pseuoret$), and by the segment-sales weighted average number of disclosed line items: total, mandatory, and voluntary ($\#\ Seg\ Line\ Items$, $\#\ Man\ Seg\ Line\ Items$, and $\#\ Vol\ Seg\ Line\ Items$). Pseudo-multis are portfolios composed of single-segment firms operating within each segment industry of the multi-segment firms. Line item disclosure measures are scaled by a firm's total reportable items, reportable mandatory items, and reportable voluntary items, respectively. An item is reportable at the segment level if the firm reports the item in its consolidated financial reports. Mandatory items are those required by SFAS 131, and voluntary items are not mentioned in SFAS 131 but are voluntarily disclosed by some firms. Stocks are ranked into 40 portfolios (10 deciles of pseudoret × 4 quartiles of line items) and are value-weighted (Panel A) or equal-weighted (Panel B) within each portfolio, with monthly rebalancing. The first column shows results for portfolios sorted solely by $Pseudoret$. Subsequent columns detail double-sorted results. L/S (10-1) is a long/short spread portfolio that holds the firms with the top 10% pseudo-multi returns and sells the firms with the bottom 10% pseudo-multi returns for the previous month. Returns are measured by the monthly excess stock return over the risk-free rate. *t*-statistics are presented in parentheses. For L/S portfolios, *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Value-weighted

		Quartile: # Seg Line Items				Quartile: # Man Seg Line Items				Quartile: # Vol Seg Line Items			
Decile: Pseudoret	All	1 (low)	2	3	4 (high)	1 (low)	2	3	4 (high)	1 (low)	2	3	4 (high)
1	0.68%	0.19%	0.77%	0.90%	0.87%	0.15%	0.85%	0.70%	0.90%	0.48%	1.16%	0.75%	0.79%
(low)	(8.48)	(1.19)	(4.93)	(5.75)	(5.72)	(0.87)	(5.63)	(4.61)	(5.80)	(4.14)	(4.61)	(4.63)	(4.78)
10	1.07%	1.27%	1.18%	0.94%	0.99%	1.21%	1.16%	1.05%	0.95%	1.07%	1.25%	1.10%	1.06%
(high)	(13.38)	(7.73)	(7.74)	(6.14)	(6.30)	(7.18)	(7.52)	(6.98)	(6.07)	(9.56)	(5.08)	(6.32)	(6.31)
L/S: 10-1	0.39%***	1.08%***	0.41%*	0.04%	0.13%	1.06%***	0.30%	0.34%	0.04%	0.59%***	0.09%	0.35%	0.28%
	(3.44)	(4.71)	(1.89)	(0.20)	(0.58)	(4.50)	(1.40)	(1.60)	(0.19)	(3.64)	(0.26)	(1.46)	(1.18)

Panel B. Equal-weighted

		Quartile: # Seg Line Items				Quartile: # Man Seg Line Items				Quartile: # Vol Seg Line Items			
Decile: Pseudoret	All	1 (low)	2	3	4 (high)	1 (low)	2	3	4 (high)	1 (low)	2	3	4 (high)
1	0.63%	0.40%	0.90%	0.81%	0.75%	0.27%	0.78%	0.72%	0.83%	0.70%	1.33%	0.68%	0.61%
(low)	(5.11)	(2.03)	(4.68)	(4.34)	(3.99)	(1.34)	(4.19)	(3.91)	(4.36)	(4.38)	(4.81)	(3.52)	(3.14)
10	1.12%	1.38%	1.17%	0.87%	0.98%	1.31%	1.22%	1.09%	0.90%	1.18%	1.28%	1.11%	1.09%
(high)	(9.55)	(6.89)	(6.41)	(4.85)	(5.23)	(6.63)	(6.41)	(6.13)	(4.92)	(7.89)	(4.82)	(5.55)	(5.65)
L/S: 10-1	0.49%***	0.98%***	0.28%	0.06%	0.23%	1.04%***	0.43%	0.37%	0.07%	0.48%**	-0.05%	0.43%	0.49%*
	(2.88)	(3.47)	(1.04)	(0.24)	(0.88)	(3.68)	(1.63)	(1.44)	(0.25)	(2.21)	(-0.14)	(1.55)	(1.79)

Table 3. Regression analysis: Segment line items omission and the lead-lag return relation

This table presents the results for the regressions of multi-segment firms' monthly returns on the previous month's returns of their single-segment peers that operate in the same segment industries and that interact with multi-segment firms' disclosure of total, mandatory, and voluntary line items for their individual segments. Ret is the monthly excess return over the risk-free rate for multi-segment firms. Each multi-segment firm is paired with a pseudo-multi, which is a portfolio composed of single-segment firms operating within each segment industry of the multi-segment firm. $Pseudoret$ is the pseudo-multi's excess return. The measures # Seg $Line\ Items$, # $Man\ Seg\ Line\ Items$, and # $Vol\ Seg\ Line\ Items$ are scaled by a firm's total reportable items, reportable mandatory items, and reportable voluntary items, respectively. An item is reportable at the segment level if the firm reports the item in its consolidated financial reports. Mandatory items are those required by SFAS 131, and voluntary items are not mentioned in SFAS 131 but are voluntarily disclosed by some firms. All the columns control for the multi-segment firm's own 1-month lagged return, its past 12-month accumulated return, 1-month lagged return of the firm's principal industry, and firm characteristics. All independent variables are lagged for one year. See Appendix E for the variable definitions. Firm and year fixed effects are included. *t*-statistics, presented in parentheses, are based on heteroscedasticity-consistent standard errors clustered at the industry level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Dependent Var:	Ret_t		
	(1)	(2)	(3)
$Pseudoret_{t-1}$	0.021	0.403***	0.414***
	(1.60)	(4.51)	(4.51)
$Pseudoret_{t-1}$ × # Seg Line Items		-0.165***	
		(-3.64)	
$Pseudoret_{t-1}$ × # Man Seg Line Items			-0.163***
			(-4.10)
$Pseudoret_{t-1}$ × # Vol Seg Line Items			0.002
			(0.07)
$Pseudoret_{t-1}$ × Log (#Seg)		-0.025	-0.025
		(-1.27)	(-1.27)
$Pseudoret_{t-1}$ × Seg Disaggr		0.013	0.013
		(0.77)	(0.78)
$Pseudoret_{t-1}$ × Seg Diversity		0.055*	0.057*
		(1.85)	(1.90)
$Pseudoret_{t-1}$ × DQ		-0.061	-0.051
		(-0.99)	(-0.86)
$Pseudoret_{t-1}$ × Fog		-0.811*	-0.810*
		(-2.00)	(-1.99)
$Pseudoret_{t-1}$ × File Size		-0.509***	-0.508***
		(-5.66)	(-5.76)
$Pseudoret_{t-1}$ × Log (#8K)		0.002	0.001
		(0.24)	(0.09)
Controls	Yes	Yes	Yes
Constant	0.233***	0.239***	0.234***
	(5.46)	(5.60)	(5.62)
No. of Obs.	259777	259777	259777
Adj. R^2	0.038	0.040	0.040

Table 4. Cross-sectional analyses conditional on managerial ability to identify relevant segment items and likelihood of compliance

This table reports the cross-sectional tests of the relation between omissions of segment items and the lead-lag return effect, conditional on managers' ability to identify relevant segment items and their likelihood of genuinely complying with the management approach. Panel A explores managerial ability and managers' constraints from corporate governance. We split the sample by the managerial ability (high ability: in top decile), the ratio of busy board directors (devoted: in bottom decile), and the breadth of institutional holdings (broad: in top decile). Panel B explores managers' incentives based on proprietary cost they face. We split the sample by R&D, intangible assets, and volatility of special items, with low indicating below the bottom decile. All percentile rankings are based on the full sample, which combines multi- and single-segment firms. All independent variables are lagged by one year. See Appendix E for the variable definitions. Firm and year fixed effects are included. For parsimony, only the relevant coefficients are tabulated. *t*-statistics, presented in parentheses, are based on heteroscedasticity-consistent standard errors clustered at the industry level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. The p-values of the significance tests of the differences in coefficients across subsamples are two-tailed.

Panel A. By managerial ability and corporate governance

Dependent Var:	Ret_t												
	Managerial Ability				Internal Governance					External Governance			
	Highest Ability		Rest of Sample		Most Devoted Board		Rest of Sample			Broadest Inst Investors		Rest of Sample	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		(9)	(10)	(11)	(12)
$Pseudoret_{t-1}$	0.701**	0.700**	0.383***	0.398***	0.123	0.120	0.420***	0.433***	0.123	0.608***	0.640**	0.393***	0.403***
	(2.10)	(2.09)	(3.47)	(3.56)	(0.50)	(0.48)	(3.65)	(3.65)	(0.50)	(3.69)	(3.70)	(3.59)	(3.66)
$Pseudoret_{t-1}$ × # Seg Line Items	-0.110		-0.151***		0.116		-0.168***		0.116	-0.097		-0.193***	
	(-0.92)		(-3.11)		(1.09)		(-3.56)		(1.09)	(-1.02)		(-4.40)	
$Pseudoret_{t-1}$ × # Man Seg Line Items		-0.114		-0.160***		0.064		-0.165***			-0.131		-0.195***
		(-1.29)		(-3.51)		(0.59)		(-3.99)			(-1.57)		(-4.99)
$Pseudoret_{t-1}$ × # Vol Seg Line Items		0.003		0.010		0.045		-0.002			0.039		0.007
		(0.06)		(0.34)		(0.91)		(-0.08)			(0.72)		(0.27)
p-value of cross-sectional diff. across high-low split													
Pseudoret t-1 × # Seg Line Items			0.04			0.03					0.04		
Pseudoret t-1 × # Man Seg Line Items			0.05			0.04					0.05		
Other variables	Included	Included	Included	Included	Included	Included	Included	Included		Included	Included	Included	Included
No. of Obs.	18479	18479	196309	196309	25091	25091	208541	208541		36413	36413	212410	212410
Adj. R^2	0.043	0.043	0.040	0.041	0.045	0.045	0.040	0.040		0.053	0.053	0.039	0.039

Panel B. By competitive harm concerns

Dependent Var:	Ret_t												
	R&D				Intangible Assets					SPI Volatility			
	Lowest R&D		Rest of Sample		Lowest Intangible Assets		Rest of Sample			Lowest Volatility		Rest of Sample	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		(9)	(10)	(11)	(12)
$Pseudoret_{t-1}$	0.451	0.505	0.383***	0.383***	0.093	0.107	0.419***	0.429***		1.015***	0.993***	0.366***	0.379***
	(1.34)	(1.52)	(3.73)	(3.69)	(0.21)	(0.25)	(4.05)	(4.13)		(3.86)	(3.76)	(3.83)	(3.90)
$Pseudoret_{t-1}$ × # Seg Line Items	0.007		-0.202***		0.031		-0.189***			-0.118		-0.156***	
	(0.08)		(-4.08)		(0.32)		(-3.73)			(-1.14)		(-3.37)	
$Pseudoret_{t-1}$ × # Man Seg Line Items		-0.098		-0.169***		-0.002		-0.178***			-0.078		-0.161***
		(-1.34)		(-4.06)		(-0.02)		(-3.96)			(-0.79)		(-3.98)
$Pseudoret_{t-1}$ × # Vol Seg Line Items		0.094*		-0.029		0.025		-0.008			-0.053		0.008
		(1.89)		(-0.99)		(0.40)		(-0.32)			(-1.42)		(0.28)
p-value of cross-sectional diff. across high-low split													
Pseudoret t-1 × # Seg Line Items			<0.01			0.05					0.02		
Pseudoret t-1 × # Man Seg Line Items			<0.01			0.05					0.04		
Other variables	Included	Included	Included	Included	Included	Included	Included	Included		Included	Included	Included	Included
No. of Obs.	36981	36981	222796	222796	28291	28291	225880	225880		21718	21718	234999	234999
Adj. R^2	0.030	0.030	0.044	0.044	0.043	0.043	0.040	0.041		0.048	0.049	0.040	0.040

Table 5. Cross-sectional analyses conditional on firm complexity

This table reports the moderating impact of firm complexity on the relationship between omissions of segment line items and the lead-lag return effect. Panels A and B split the sample by the fraction of complexity words used in 10-K filings and the net file size of 10-K documents, with high (low) indicating above (below) the top decile. Panel C splits the sample by the number of segments. All percentile rankings are based on the full sample, which combines multi- and single-segment firms. All independent variables are lagged by one year. See Appendix E for the variable definitions. Firm and year fixed effects are included. For parsimony, only the relevant coefficients are tabulated. *t*-statistics, presented in parentheses, are based on heteroscedasticity-consistent standard errors clustered at the industry level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. The p-values of the significance tests of the differences in coefficients across subsamples are two-tailed.

Panel A. Complexity words					
Dependent Var:	Ret_t				
	Highest % Complexity Words			Rest of Sample	
	(1)	(2)		(3)	(4)
$Pseudoret_{t-1}$	0.299	0.348		0.391***	0.397***
	(0.96)	(1.11)		(4.48)	(4.44)
$Pseudoret_{t-1}$ × # Seg Line Items	-0.235**			-0.156***	
	(-2.11)			(-3.37)	
$Pseudoret_{t-1}$ × # Man Seg Line Items		-0.276***			-0.151***
		(-2.92)			(-3.55)
$Pseudoret_{t-1}$ × # Vol Seg Line Items		0.025			0.004
		(0.34)			(0.15)
p-value of diff. across high-low split					
$Pseudoret_{t-1}$ × # Seg Line Items			*0.01*		
$Pseudoret_{t-1}$ × # Man Seg Line Items			*0.01*		
Other variables	Included	Included		Included	Included
No. of Obs.	29871	29871		214803	214803
Adj. R^2	0.054	0.054		0.039	0.039
Panel B. 10-K file size					
Dependent Var:	Ret_t				
	Largest Net File Size			Rest of Sample	
	(1)	(2)		(3)	(4)
$Pseudoret_{t-1}$	0.626***	0.649***		0.329**	0.339**
	(3.79)	(3.90)		(3.24)	(3.27)
$Pseudoret_{t-1}$ × # Seg Line Items	-0.174***			-0.155**	
	(-2.50)			(-3.15)	
$Pseudoret_{t-1}$ × # Man Seg Line Items		-0.216***			-0.153***
		(-2.78)			(-3.68)
$Pseudoret_{t-1}$ × # Vol Seg Line Items		0.050			0.003
		(0.81)			(0.10)
p-value of diff. across high-low split					
$Pseudoret_{t-1}$ × # Seg Line Items			*<0.01*		
$Pseudoret_{t-1}$ × # Man Seg Line Items			*<0.01*		
Other variables	Included	Included		Included	Included
No. of Obs.	32221	32221		212453	212453
Adj. R^2	0.058	0.058		0.039	0.039
Panel C. No. of segments					
Dependent Var:	Ret_t				
	# Segments: 5 & above			# Segments: 2 ~ 4	
	(1)	(2)		(3)	(4)
$Pseudoret_{t-1}$	0.160	0.212		0.376***	0.385***
	(0.57)	(0.75)		(4.02)	(4.01)
$Pseudoret_{t-1}$ × # Seg Line Items	-0.230*			-0.156***	
	(-1.77)			(-3.69)	
$Pseudoret_{t-1}$ × # Man Seg Line Items		-0.251**			-0.153***
		(-2.50)			(-3.96)
$Pseudoret_{t-1}$ × # Vol Seg Line Items		0.023			-0.001
		(0.26)			(-0.01)
p-value of diff. across high-low split					
$Pseudoret_{t-1}$ × # Seg Line Items			*0.10*		
$Pseudoret_{t-1}$ × # Man Seg Line Items			*0.01*		
Other variables	Included	Included		Included	Included
No. of Obs.	28728	28728		231049	231049
Adj. R^2	0.053	0.053		0.039	0.039

Table 6. DID analysis: ASC 280 codification shock

This table reports the relation between omissions of segment line items and the lead-lag return effect using a difference-in-differences (DID) research design based on the ASC 280 codification of SFAS 131. Panel A presents the treatment effect using a logit regression. The sample is comprised of unique firms in the first year after codification. $Treat$ is an indicator variable that equals 1 for firms that are likely treated by the codification because of their high competitive harm concerns over the 3 years before codification; and 0 for all other firms. $Increase\ Line\ Items$ is an indicator variable that equals 1 for firms that disclose more line items per segment in the first year after codification than they do in the year prior to codification, and 0 otherwise. All columns include as controls firms' line items disclosure and other characteristics in the last year before codification. Panel B reports the effect of ASC 280 codification on multi-segment firms' stock price update delays. The full sample is comprised of firms over the period 2006-2013, which corresponds to the 3 years before and after the codification. $Finance$ is an indicator variable that equals 1 for firms in the finance and real estate industries, and 0 for firms in other industries. All columns include the same control variables as those in Table 3. All independent variables are lagged by one year. See Appendix E for the variable definitions. Firm and year fixed effects are included. For parsimony, only the relevant coefficients are tabulated. t-statistics, presented in parentheses, are based on heteroscedasticity-consistent standard errors clustered at the industry level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A. The treatment effect of ASC 280 codification on line item disclosures

Dependent Var:	Increase Line Items		
	(1)	(2)	(3)
	# Seg Line Items	# Man Seg Line Items	# Vol Seg Line Items
Treat	0.363**	0.509***	0.328
	(2.21)	(3.07)	(1.56)
marginal impact: dy/dx	*0.081*	*0.113*	*0.045*
Controls	Yes	Yes	Yes
No. of Obs.	1193	1193	1193
Pseudo R-Squared	0.079	0.076	0.179

Panel B. The effect of ASC 280 codification on the lead-lag return relation

Dependent Var:	Ret_t		
	Full Sample		Sample Exclude Fin Firms
	(1)	(2)	(3)
$Pseudoret_{t-1}$	0.160***	0.184***	0.165***
	(5.79)	(7.95)	(5.85)
$Pseudoret_{t-1} \times Treat \times Post$	-0.085**		-0.086**
	(-2.47)		(-2.48)
$Pseudoret_{t-1} \times Treat$	0.045*		0.040
	(1.73)		(1.53)
$Treat \times Post$	0.002		0.002
	(0.51)		(0.59)
$Pseudoret_{t-1} \times Finance \times Post$		0.072	
		(0.45)	
$Pseudoret_{t-1} \times Finance$		-0.280***	
		(-4.90)	
$Finance \times Post$		0.018	
		(1.44)	
$Pseudoret_{t-1} \times Post$	-0.307***	-0.348***	-0.307***
	(-11.89)	(-14.87)	(-11.75)
Controls	Yes	Yes	Yes
No. of Obs.	58817	58817	58041
Adj. R^2	0.071	0.071	0.072

Table 7. Segment line items omission and the stock market reaction to earnings announcements

This table presents the results for the effect of omissions of segment line items on the market reaction to multi-segment firms' earnings announcements. Panel A reports the results for the regressions of the cumulative, 3-day- and 5-day-window, CAPM-based, abnormal returns around the earnings announcement date (CAR) on unexpected earnings (SUE) and that interacted with multi-segment firms' disclosure of line items for their individual segments. All columns include the same control variables as those in Table 3. Panel B sorts firms independently into deciles of SUE and quartiles of segment-level line item disclosures. The value-weighted average monthly abnormal returns over the 6 calendar months following the earnings announcement month are reported for the top (most positive) and bottom (most negative) deciles of SUE unconditionally as well as conditioned on each quartile of segment line items. L/S (Pos-Neg) is a long/short spread portfolio of multi-segment firms that holds the firms with the top decile SUE and sells the firms with the bottom decile SUE. See Appendix E for the variable definitions. t-statistics are shown below the coefficient estimates. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Earnings response coefficient

Dependent Var:	CAR [-1, 1]		CAR [-2, 2]	
	(1)	(2)	(3)	(4)
SUE	0.637	0.888	0.451	0.675
	(0.87)	(1.20)	(0.56)	(0.83)
SUE × # Seg Line Items	1.118***		1.162***	
	(4.89)		(4.66)	
SUE × # Man Seg Line Items		0.517**		0.594**
		(2.37)		(2.43)
SUE × # Vol Seg Line Items		0.663***		0.613***
		(3.93)		(3.36)
Controls	Yes	Yes	Yes	Yes
No. of Obs.	31013	31013	31013	31013
Adj. R^2	0.018	0.018	0.016	0.016

B. Post-earnings announcement drift

		Quartile (# Seg Line Items)				Quartile (# Man Seg Line Items)				Quartile (# Vol Seg Line Items)			
	All	1 (low)	2	3	4 (high)	1 (low)	2	3	4 (high)	1 (low)	2	3	4 (high)
Most Neg. Earnings Surprise	-0.08%	-0.14%	0.01%	-0.10%	-0.01%	-0.14%	-0.11%	0.02%	0.01%	0.08%	-0.44%	-0.15%	-0.06%
	(-1.39)	(-1.25)	(0.13)	(-0.90)	(-0.11)	(-1.20)	(-1.07)	(0.15)	(0.13)	(0.94)	(-2.46)	(-1.26)	(-0.51)
Most Pos. Earnings Surprise	0.09%	0.26%	0.02%	-0.08%	0.16%	0.20%	0.04%	0.07%	0.06%	0.20%	-0.22%	0.08%	-0.02%
	(1.68)	(2.44)	(0.24)	(-0.81)	(1.60)	(1.88)	(0.35)	(0.67)	(0.63)	(2.60)	(-1.44)	(0.71)	(-0.18)
L/S: Pos-Neg	0.16%**	0.40%***	0.01%	0.02%	0.17%	0.34%**	0.15%	0.05%	0.05%	0.13%	0.23%	0.23%	0.04%
	(2.16)	(2.59)	(0.06)	(0.11)	(1.14)	(2.16)	(1.01)	(0.35)	(0.31)	(1.12)	(0.96)	(1.40)	(0.27)

Table 8. Additional robustness checks: information asymmetry and stock return synchronicity

This table reports the robustness tests of the impact of omissions of mandated segment items on information asymmetry and stock return synchronicity, conditional on managerial ability, corporate governance, and proprietary cost. $ExVolatility$ is the standard deviation of weekly stock returns based on residuals of a market-model regression over a year. $Bid-Ask\ Spread$ is the average bid-ask spread over a year. $Analyst\ Dispersion$ is the standard deviation of the earnings forecasts scaled by the previous year's stock price. $Synch$ is the stock price synchronicity modified from Morck, Yeung, and Yu [2000], measured as the R^2 of the regression of the weekly stock returns on the contemporaneous, lead, and lag market returns and on the industry returns. $Delay1$ and $Delay2$ are the two price response delay measures constructed from an industry model that we modify based on the market model in Hou and Moskowitz [2005]. All percentile rankings are based on the full sample, which combines multi- and single-segment firms. All columns include the same control variables as those in Table 3. All independent variables are lagged by one year. See Appendix E for the variable definitions. Firm and year fixed effects are included. For parsimony, only the relevant coefficients are tabulated. t-statistics, presented in parentheses, are based on heteroscedasticity-consistent standard errors clustered at the industry level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively. The p-values of the significance tests of the differences in coefficients across subsamples are two-tailed.

Dependent Var:	ExVolatility		Bid-Ask Spread		Analyst Dispersion		Synch		Delay 1		Delay 2	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Highest Managerial Ability	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
# Man Seg Line Items	-0.004	-0.005***	1.287	-0.036	-0.002	-0.009***	-0.007	0.037***	-0.043	-0.037***	0.008	-0.004
	(-0.77)	(-3.94)	(1.51)	(-0.29)	(-0.31)	(-3.21)	(-0.22)	(3.75)	(-1.25)	(-2.75)	(0.15)	(-0.29)
p-value of cross-sectional diff.	*<0.01*		*0.32*		*0.03*		*<0.01*		*<0.01*		*<0.01*	
Most Devoted Board	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
# Man Seg Line Items	-0.005	-0.005***	0.038	-0.203***	-0.015	-0.008***	-0.005	-0.020***	0.044	-0.052***	0.060	-0.035**
	(-1.64)	(-4.33)	(0.29)	(-2.62)	(-1.58)	(-3.09)	(-0.27)	(-2.60)	(1.31)	(-4.23)	(1.58)	(-2.30)
p-value of cross-sectional diff.	*0.58*		*0.08*		*0.95*		*0.02*		*<0.01*		*0.26*	
Broadest Institutional Investors	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
# Man Seg Line Items	-0.004*	-0.005***	0.012	-0.178**	-0.000	-0.010***	0.004	0.044***	-0.011	-0.043***	0.109***	-0.046***
	(-1.88)	(-3.89)	(0.35)	(-2.18)	(-0.06)	(-3.48)	(0.13)	(4.81)	(-0.54)	(-3.36)	(3.08)	(-3.13)
p-value of cross sectional diff.	*<0.01*		*<0.01*		*<0.01*		*<0.01*		*<0.01*		*<0.01*	
Lowest R&D	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
# Man Seg Line Items	0.000	-0.006***	-0.107	-0.164**	-0.002	-0.009***	0.006	0.050***	-0.029	-0.047***	-0.064	-0.020
	(0.00)	(-5.49)	(-0.68)	(-2.12)	(-0.21)	(-3.74)	(0.26)	(5.43)	(-0.80)	(-3.85)	(-1.57)	(-1.35)
p-value of cross-sectional diff.	*<0.01*		*0.57*		*0.09*		*0.95*		*<0.01*		*0.01*	
Lowest Intangible Assets	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
# Man Seg Line Items	0.004	-0.007***	0.028	-0.234***	-0.010	-0.008***	0.031	0.047***	-0.021	-0.046***	-0.035	-0.028*
	(1.33)	(-5.80)	(0.15)	(-3.31)	(-0.86)	(-3.37)	(1.35)	(4.83)	(-0.66)	(-3.71)	(-1.01)	(-1.88)
p-value of cross-sectional diff.	*<0.01*		*<0.01*		*0.35*		*0.15*		*<0.01*		*0.18*	
Lowest SPI Volatility	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
# Man Seg Line Items	-0.005*	-0.005***	0.040	-0.210***	-0.001	-0.010***	0.023	0.049***	-0.020	-0.049***	-0.043	-0.028*
	(-1.81)	(-4.20)	(0.22)	(-2.88)	(-0.85)	(-3.66)	(0.78)	(5.43)	(-0.49)	(-4.24)	(-1.10)	(-1.91)
p-value of cross-sectional diff.	*0.01*		*<0.01*		*<0.01*		*0.05*		*<0.01*		*0.03*	