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Dedication

To my beloved family for their endless care, support, and love.

To myself whose determination turns doubt into confidence.

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Abstract

I investigate two discretionary reporting strategies used by managers to highlight core performance – non-GAAP disclosure and classification shifting. Non-GAAP disclosures represent managers' voluntary disclosure of GAAP earnings that exclude certain non-recurring or non-cash expenses. Managers claim that non-GAAP disclosures better inform investors of underlying core performance. However, such disclosures have been heavily criticized by investors and regulators as an attempt by managers to opportunistically inflate performance. Classification shifting is a reporting strategy that represents managers' recognition of certain core expenses as special items. The literature provides mixed conclusions as to whether classification shifting reflects managers' opportunistic actions to inflate core performance or an informative signal of core expenses more likely to persist. I document that managers tend to use non-GAAP disclosures and classification shifting as a joint reporting strategy, especially when external monitoring from institutional investors, analysts, and auditors is high. In addition, firms engaging in both reporting strategies exhibit more persistent earnings, help analysts form less disperse and more accurate expectations, and show higher earnings response coefficients both around the earnings announcement and during the quarter. Collectively, the findings suggest that managers use both strategies jointly as an informative signal of performance rather than as an opportunistic strategy to overstate core performance.

1. INTRODUCTION

This study investigates two discretionary reporting strategies – non-GAAP disclosure and classification shifting. Non-GAAP disclosures are management's voluntary disclosures of earnings adjusted from Generally Accepted Accounting Principles (GAAP). For example, managers often disclose an amount for non-GAAP earnings equal to GAAP earnings excluding one-time items (e.g., restructuring charges) and non-cash charges (e.g., stock compensation).[1] Managers assert that non-GAAP earnings better help investors understand the *true* performance of the firm. However, non-GAAP exclusions more often involve income-decreasing items than income-increasing items, resulting in non-GAAP earnings being, on average, higher than GAAP earnings. The higher reported amount for non-GAAP earnings, along with their discretionary nature, has led standard setters and regulators to question whether such disclosures are being used by managers to opportunistically inflate reported performance and potentially mislead investors.

Classification shifting represents another reporting strategy to increase reported core performance. Under this strategy, managers classify some core expenses (e.g., marketing expenses) as special items (e.g., acquisition cost). While such reclassification has no effect on bottom-line net income, reported core performance increases. The literature provides mixed evidence as to whether classification shifting increases or decreases the informativeness of the financial statements. An inference from the literature exploring the determinants of classification shifting (McVay 2006; Barua, Lin, and Sbaraglia 2010; Fan, Barua, Cready, and Thomas 2010) is that classification shifting is used by managers to opportunistically inflate core performance.

[1] Non-GAAP disclosure is not limited to bottom-line net income, although this is the most frequent level adjusted. For example, Uber reports '*core platform adjusted net revenue*' after excluding some recurring costs spent to grow in the competitive market (Maurer, 2019a).

However, recent studies demonstrate benefits from classification shifting such as increased firm value (Lattanzio and Thomas 2020) and greater earnings predictability (Ha and Thomas 2020).

To date, accounting researchers have largely considered non-GAAP disclosures and classification shifting separately, presumably due to their seemingly different nature. Non-GAAP disclosures are voluntary and most often appear in management's discussion and analysis (MD&A) or earnings releases. Classification shifting, on the other hand, affects mandatory reporting of items recognized on the face of the income statement. Differences in mandatory versus voluntary reporting, as well as differences in disclosure versus recognition, potentially have varying effects on the incentives and ability of managers to use these reporting strategies. However, both reporting strategies serve a common purpose — to increase a firm's reported core performance.

I suggest that managers may use these strategies in tandem to communicate a single message. Such behavior would be consistent with signaling theory. Signaling theory suggests multiple signals strengthen the effectiveness of the signaling process (Connelly, Certo, Ireland, and Reutzel 2011). Non-GAAP disclosure and classification shifting provide managers with multiple tools with consistent objectives to signal their intention. In addition, these two reporting strategies together better satisfy two characteristics of an effective signal, observability and signal costs (Spence 1978; Ahlers, Cumming, Günther, and Schweizer 2015). Accordingly, managers motivated to report an increase in core performance are likely to use non-GAAP disclosure and classification shifting jointly.

An interesting research question that follows is why managers may use these two reporting strategies jointly to highlight core performance. For example, do managers use non-GAAP disclosures to better disguise shifted core expenses? If this is the case, managers' use of non-GAAP

disclosure and classification shifting can be viewed as opportunistic to fool investors. Or do managers use classification shifting (i.e., recognized items) to add credibility to their discretionary non-GAAP disclosures? Such joint reporting would help to send a more informative signal of current performance. Hence, the joint use of non-GAAP disclosure and classification shifting could be used for both informative and opportunistic purposes. This study addresses this issue by exploring managerial incentives and the consequences of using the two reporting strategies jointly.

Non-GAAP disclosures are measured using data obtained by Bentley, Christensen, Gee, and Whipple (2018).[2] A firm is said to disclose non-GAAP earnings when managers' non-GAAP earnings per share (EPS) is greater than GAAP EPS.[3] The firm's propensity to use classification shifting is measured as the relation between unexpected core earnings and income-decreasing special items for the past eight quarters.[4] The intuition is that when a firm reports unexpectedly high core earnings and income-decreasing special items at the same time, the firm more likely engages in classification shifting.

I first demonstrate that non-GAAP disclosure and classification shifting have a significant positive relationship (i.e., the existence of non-GAAP disclosure relates positively to the likelihood of using classification shifting). The results are robust to controlling for firm characteristics, time trends, and using alternative measures. These results are consistent with managers using these two reporting strategies jointly (i.e., as complements) to increase and highlight core performance.

[2] Bentley et al. (2018) gather non-GAAP disclosures from companies' 8-K filings.
[3] Non-GAAP earnings that are below GAAP earnings are regarded as non-disclosing observations since I only consider cases that boost core performance. Non-GAAP disclosure on other metrics such as revenues is not included.
[4] Compustat classifies special items as "unusual or nonrecurring items presented above taxes by the company." These items include amounts such as restructuring costs, goodwill impairment, write-down of inventory and receivables, gains and losses from sale of an asset, and other amounts judged to be significant nonrecurring items. Compustat aggregates all amounts classified as special items (both positive and negative) and outputs a single item called 'special items' (Compustat mnemonic SPI).

Next, I investigate whether and how managers' use of both reporting techniques varies with their incentives to be opportunistic versus informative. I examine the effect of external monitoring on the joint use of non-GAAP disclosure and classification shifting. External monitors work as a governance mechanism, demanding informative disclosure (Healy and Palepu 2001; Armstrong, Guay, and Weber 2010). Accordingly, disclosures are expected to be more informative and less opportunistic as firms' external monitoring increases. Consistent with managers' incentives to be informative, I find that the complementary relation between non-GAAP disclosure and classification shifting generally increases with external monitoring. For example, I find that the joint reporting strategy increases with institutional ownership and the number of analysts. I also test auditor tenure as a form of external monitor but find no evidence after control variables are included.

Additional analyses further support the joint use of these reporting strategies relates more to informed managers helping to signal future performance, as opposed to opportunistically manipulating the market's perception of firms' operation. When both strategies are used jointly, core earnings are found to be more persistent, analysts' forecasts are less dispersed and more accurate, and earnings informativeness increases. These outcome-based results support that managers' motivation in utilizing the joint reporting strategy is informative rather than opportunistic. Overall, the results infer that the complementary relation between the two reporting techniques enhances the credibility of mandatory and voluntary disclosure.

This study should be of interest to regulators and standard setters. Both classification shifting and non-GAAP disclosure have increasingly received attention from the FASB and the SEC. The FASB is currently exploring how improved performance reporting can help investors

better understand which components of earnings are more likely to persist.[5] In addition, the SEC has put effort into improving and regulating non-GAAP disclosure (e.g., Regulation G in 2003).[6] The SEC continuously updates Compliance & Disclosure Interpretations of non-GAAP measures to provide guidance to preparers and prevent investors from being misled.[7] This study speaks to the concerns of the FASB and the SEC on non-GAAP disclosures by presenting evidence that non-GAAP disclosure, in conjunction with classification shifting, is used by managers to improve the information environment for investors.

This study also extends the separate literature on non-GAAP disclosures and classification shifting. To date, each reporting strategy has been addressed separately. However, their joint investigation fits into at least three broad streams of research: (i) Disclosure – mandatory versus voluntary, (ii) Reporting – recognition versus disclosure, and (iii) Managerial reporting incentives – informative versus opportunistic. These different areas of research have implications for this study. For example, general findings of prior research might suggest that investors place lower weight on *voluntary* disclosure of *discretionary* amounts (i.e., the choice of excluded items for non-GAAP reporting). In contrast, *recognized* amounts in *mandatory* reports should receive greater investor attention (i.e., expense classification in the income statement). While each reporting strategy could be used for opportunistic or informative purposes, we should expect managers to use these strategies jointly for the same objective. Therefore, studying their joint effect helps to better reveal managerial reporting incentives.

The study also broadens the literature on the combination of discretionary reporting strategies. To date, the focus on the portfolio of reporting strategies centers on accruals and real

[5] https://www.fasb.org/jsp/FASB/FASBContent_C/ProjectUpdateExpandPage&cid=1176170640702
[6] https://corpgov.law.harvard.edu/2019/02/07/sec-scrutiny-of-non-gaap-financial-measures/
[7] Link to the SEC's Compliance & Disclosure Interpretations
https://www.sec.gov/divisions/corpfin/guidance/nongaapinterp.htm

earnings management (Zang 2011; Black et al. 2017b; Fan and Liu 2017). Zang (2011) documents the trade-off between accruals management and real activities management depending on the cost, benefit, and timing of each strategy. The relative effect of those two reporting strategies is examined in the context of the Sarbanes-Oxley (Cohen, Dey, and Lys 2008); seasoned equity offering (Cohen and Zarowin 2010); venture-backed initial public offerings (Wongsunwai 2013); and the SEC comment letters (Cunningham, Johnson, Johnson, and Lisic 2019). My study introduces another combination of reporting strategies – the combination of non-GAAP disclosures and classification shifting, in the context of informative versus opportunistic motivations.

The remainder of the paper proceeds as follows. In the next section, background and related literature are provided. Then, I develop hypotheses. Next, I detail the research design. The following section reports results and additional analyses. The final section concludes the study.

2. BACKGROUND and LITERATURE

Non-GAAP Disclosure

Non-GAAP disclosures represent managers' voluntary and discretionary disclosure of adjusted GAAP metrics. Companies typically file non-GAAP disclosure under item number 2.02 and 9.01 of 8-K filings. Performance metrics presented in non-GAAP disclosure are required to be reconciled from 'the most directly comparable financial measure calculated and presented in accordance with GAAP.'[8] Most often, managers exclude income-decreasing amounts such as special items and stock compensation. These items are added back to GAAP EPS to represent

[8] https://www.sec.gov/rules/final/33-8176.htm

managers' belief of core performance.[9] The trend in non-GAAP disclosure has increased over the last two decades. Nearly all (97%) S&P 500 companies disclose non-GAAP earnings in 2017, compared to only 59% in 1996 (Laughlin 2019; Maurer 2019a). In addition, because excluded amounts most often include income-decreasing items, non-GAAP profits typically are greater than GAAP profits (Black, Christensen, Ciesielski, and Whipple 2018a).[10,11]

An example of non-GAAP disclosure is shown in Figure 1. The figure provides a summary of the 2019 fiscal year-end earnings press release by Advanced Micro Devices (AMD). AMD's GAAP EPS for 2019 and 2018 were $0.30 and $0.32, respectively, representing a slight year-over-year decrease in performance. After adding back costs such as stock-based compensation and debt redemption loss, AMD disclosed non-GAAP earnings in 2019 and 2018 of $0.64 and $0.46, respectively. AMD's 2019 non-GAAP disclosure allows the company to report more than twice as much profitability in 2019 and a year-over-year increase in performance. Management asserts that these non-GAAP measures "assist investors in comparing the performance across reporting periods on a consistent basis by excluding items that it [AMD] does not believe are indicative of its core operating performance."[12]

In theory, non-GAAP disclosures fit in the broader voluntary disclosure literature. Economic theory on disclosure generally supports the informative motivation of voluntary disclosure to reduce information asymmetry in different contexts. Early studies show that because outsiders (e.g., investors, buyers, and suppliers) discount withheld information, managers are

[9] Core performance presented in non-GAAP disclosure often contains words such as "adjusted," "exclude," "proforma," "non-GAAP," "operating," and "continuing" (Bentley et al. 2018). Non-GAAP disclosure frequently includes metrics other than non-GAAP earnings (or non-GAAP EPS) such as non-GAAP revenue. In this study, I confine the scope of non-GAAP disclosure to non-GAAP earnings.

[10] In 2017, the average adjustment from GAAP to non-GAAP EPS per company added 26 cents per share, about 15% of average GAAP EPS (Maurer, 2019b).

[11] The most commonly excluded items are amortization, impairments, stock compensation, and restructuring charges (Black et al. 2018a).

[12] Link to AMD's 8-K filings https://www.sec.gov/Archives/edgar/data/2488/000000248820000006/q419991.htm

always in a position to better disclose than withhold information (Grossman 1981; Milgrom 1981). Other studies consider disclosure-related costs. The disclosure-related costs include whether the nature of information withheld is proprietary or non-proprietary (Verrecchia 1983), whether there is a trade-off between mandatory and voluntary disclosure (Dye 1986), whether the information is favorable or not (Jung and Kwon 1988), and whether and how disclosed information is used to value not only the disclosing firm but also strategic competitors (Darrough and Stoughton 1990; Wagenhofer 1990). Taking into consideration various assumptions, theories overall support that voluntary disclosure reduces information asymmetry, provided that voluntary disclosure is truthful and accurate.[13]

However, due to its voluntary (i.e., discretionary) nature, non-GAAP disclosures have received intense criticism from regulators and standard setters. Since the introduction of Regulation G in 2003, the SEC has expressed concerns over non-GAAP reporting. The SEC views non-GAAP measures as a 'fraud risk factor' that could be a 'source of confusion.'[14] In an effort to prevent non-GAAP disclosure from misleading investors, the SEC continuously updates guidelines and provides answers to questions in Compliance & Disclosure Interpretations. Supporting the accusation that non-GAAP disclosures are fraudulent, studies on signal costs assert that because non-GAAP disclosure does not accompany costly signals, the information disclosed in the voluntary announcement is not credible (Spence 1974; Dye 1986). In fact, managers are found to adopt non-GAAP disclosure more when earnings benchmarks are not met, consistent with non-GAAP disclosure being a less costly perception management tool (Black, Christensen, Joo,

[13] The literature phrases the assumptions differently but carries similar meanings. For example, the assumptions such as 'disclosure is verified' and 'credible and optimal disclosure policies exist' deliver the same implication as truthful and accurate voluntary disclosure.

[14] See Table 1 from Black, Christensen, Ciesielski, and Whipple (2018b) for more details on the timeline of non-GAAP regulation.

and Schmardebeck 2017). In other words, the *ex-post* nature of non-GAAP disclosure lacks managers' commitment to disclosure and therefore requires additional mechanisms to be credible.[15]

Hirshleifer and Teoh (2003) more narrowly focus on non-GAAP disclosure and explore competing motivations for voluntary disclosures. They model managerial incentives to disclose non-GAAP earnings as a function of investor inattention, the signal-to-noise ratio, and managerial myopic focus. Each of these factors can be applied to non-GAAP disclosures for both 'legitimate' and 'manipulative' reasons. For example, inattentive investors take non-GAAP earnings at face value without adequate adjustment. Thus, manipulative managers can exploit this inattention to boost the stock price by disclosing non-GAAP earnings that are opportunistically inflated, whereas legitimate managers can help the inattentive investors form more accurate perceptions about their firm's operations. Similarly, more effective non-GAAP disclosure (i.e., higher signal-to-noise ratio) allows managers to either better communicate or better fool investors about their performance. Finally, when managers are more incentivized to maintain high short-term stock prices, they are likely to disclose non-GAAP disclosure to garble true operating performance and mislead investors or to help investors draw a truer picture about the current and future performance of firms.

Empirical research further explores the competing motivations for non-GAAP disclosure. On one hand, consistent with the view of the SEC that non-GAAP disclosure is "EBS" ('Everything but Bad Stuff'),[16] managers act opportunistically in disclosing non-GAAP measures to increase reported performance. For example, Doyle, Jennings, and Soliman (2013) show that managers

[15] Black et al. (2018b) assert two mechanisms through which non-GAAP disclosure is credible: (i) investors do not discount or disregard non-GAAP disclosure, which would be the case if non-GAAP disclosure was not credible nor accurate, and (ii) non-GAAP is a multi-period disclosure policy that affects managers' reputation in the long run.
[16] Comments by Lynn Turner, the SEC's former chief accountant (https://www.sec.gov/news/speech/spch418.htm)

opportunistically define non-GAAP earnings to beat analyst forecasts when the cost of other earnings management is higher. They also find that while managers are able to beat analyst forecasts through non-GAAP disclosure, investors penalize managerial opportunistic disclosure choices. Moreover, Guest, Kothari, and Pozen (2019) show that S&P 500 CEOs report non-GAAP earnings opportunistically and receive $600,000 more in compensation than CEOs who do not report non-GAAP earnings, holding firms' fundamental performance constant. Studies also show that non-GAAP disclosures temporarily inflate stock prices, as small investors fixate on and misprice non-GAAP earnings, but subsequently, the mispricing is fixed by more sophisticated investors (Bhattacharya, Black, Christensen, and Mergenthaler 2007; Zhang and Zheng 2011). Collectively, these studies suggest that opportunistic non-GAAP disclosures by managers mislead financial statement users and allows managers to earn private gains (Miller 2009).

On the other hand, studies find that managers who disclose non-GAAP metrics are trying to inform investors about the true operations of the company. The supporting studies show that (i) non-GAAP earnings are more permanent (Bhattacharya, Black, Christensen, and Larson 2003), (ii) non-GAAP disclosures provide incremental information for loss firms (Leung and Veenman 2018) and in case of transitory gains (Curtis, McVay, and Whipple 2014), (iii) investors prefer non-GAAP earnings (Bradshaw and Sloan 2002; Bradshaw, Christensen, Gee, and Whipple 2018), and (iv) non-GAAP earnings increase consistency and comparability (Black et al. 2018a).

As such, the theoretical and empirical literature provides mixed conclusions as to whether non-GAAP disclosures are used for informative or opportunistic purposes, on average. Based on prior literature, I identify three sources for inconclusive findings; (i) biased samples, (ii) measurement error, and (iii) time trend. First, studies identify certain settings where the use of non-GAAP metrics improves or worsens investors' information environment. For example, when firms

experience a loss and report non-GAAP earnings, non-GAAP earnings are found to be informative about future performance (Leung and Veeman 2018). This result does not rule out the informativeness of GAAP earnings, as Leung and Veeman (2018) provide additional evidence that when firms experience loss but *do not* report non-GAAP earnings, GAAP earnings are informative. In a similar vein, Curtis et al. (2014) show that when firms report income-increasing special items and disclose non-GAAP earnings, managers are motivated more for informative purposes than for opportunistic purposes. They focus on income-increasing special items to separate managers' competing incentives for reporting transitory items. If transitory gains are excluded from non-GAAP disclosure, managers are more likely to be informative than opportunistic. In contrast, when managers exclude transitory expenses (e.g., income-decreasing special items), the empirical results would capture only the net effect of informative and opportunistic motivations. However, as Curtis et al. (2014) note, income-increasing special items are smaller and less frequent than are income-decreasing special items, and certain firm characteristics are inherently different. Thus, finding non-GAAP earnings to be informative does not preclude studies from identifying settings where the opposite (i.e., opportunistic use of non-GAAP earnings) could occur.

The second reason for mixed evidence on the implication of non-GAAP disclosure comes from potential measurement error. Due to the voluntary nature of non-GAAP disclosure, studies often hand collect data on non-GAAP disclosure or use '*street*' earnings as a benchmark for GAAP earnings, both of which raise concerns towards measurement error. Hand-collected data often limits the number of observations or types of firms (e.g., S&P 500), which may lead to reduced power and generalizability. Another main source of measurement error comes from using GAAP earnings surprises measured as the difference between the GAAP earnings and the *street* earnings forecast. The mismatch of GAAP earnings and street earnings forecasts complicates any

comparison of the usefulness of GAAP surprises and non-GAAP surprises (Bradshaw et al. 2018). After correcting this measurement error, Bradshaw et al. (2018) find evidence to support non-GAAP earnings being more informative than are GAAP earnings. Specifically, they find that investors' response to the *street* surprises is 373% higher than to GAAP surprises corrected for the measurement errors.

Finally, the time-trend could affect the results and implications of non-GAAP disclosure studies. While there has been a dramatic increase in the quantity of non-GAAP disclosure, there also has been a change in quality. Especially after Reg G, studies find that the quality of non-GAAP disclosure has increased (Black, Christensen, Kiosse, and Steffen 2017; Heflin and Hsu 2008; Kolev, Marquardt, and McVay 2008). Thus, it is possible that replicating earlier studies using different time periods yields different results. In addition, Ryans (2021) reports that the SEC comment letter on non-GAAP disclosure has declined since 2007 but again reached its peak in 2017. Such an increasing trend of the SEC's attention to non-GAAP disclosure may additionally affect the quality of non-GAAP disclosure (Bozanic, Dietrich, and Johnson 2017). In summary, the literature on non-GAAP earnings explores and supports both informative and opportunistic motivations for its disclosure.

Classification Shifting

Classification shifting refers to a vertical movement of expenses within the income statement. Core expenses such as cost of goods sold (COGS) and selling, general, and administrative (SG&A) expenses are shifted to special items. For example, managers can choose

to classify some of the marketing expenses as restructuring costs.[17] By reclassifying some core expenses, core performance increases without affecting bottom-line net income.

Classification shifting is distinct from other earnings management tools (McVay 2006; Abernathy, Beyer, and Rapley 2014). First, firms are more likely to avoid scrutiny from auditors and regulators. Auditors often assess materiality based on the impact on reported net income. Classification shifting has no impact on reported net income, while accrual management directly affects net income, making accruals more closely scrutinized by auditors and regulators (Cohen and Zarowin 2010; Zang 2011; Cunningham et al. 2019). Second, classification shifting does not have an *inter-temporal* effect. Any manipulation of accruals in the current period must necessarily reverse in a subsequent period. In addition, manipulation of real activities for the purpose of earnings management will have consequences on future performance (Roychowdhury 2006; Gunny 2010; Kothari, Mizik, and Roychowdhury 2015). Classification shifting has no impact on actual operations. Overall, classification shifting is likely to be a less costly reporting strategy compared to other earnings management techniques.

Classification shifting, nevertheless, raises concern, as different items in income statements have differential information content. For example, COGS is more persistent than are restructuring costs. If some of these persistent expenses are opportunistically shifted to special items, financial statement users may put incorrect weights on persistent versus transitory expenses. In other words, investors may be misled by classification shifting about firms' future performance. For this reason, regulators investigate and scrutinize aggressive classification shifting. However, the empirical evidence on the consequence of classification shifting on investors is limited.

[17] This is an anecdotal example of Borden Inc. investigated by the SEC. For more anecdotal examples see footnote 2 in McVay (2006) and page 2 in Alfonso, Cheng, and Pan (2015). Note that while these cases support the existence of classification shifting that violates GAAP, the classification shifting in this study refers to an outcome of managers' discretionary reporting choices within the boundaries of GAAP.

To date, the literature on classification shifting has focused on the existence and determinants of classification shifting. McVay (2006) was the first to confirm the existence of classification shifting. Haw, Ho, and Li (2011) show that classification shifting is also prevalent in Asian countries where concentrated ownership structure and different legal institutions exist. Research also explores varying motivations for managers to engage in classification shifting. For example, Fan et al. (2010) show that firms are more likely to use classification shifting in the fourth quarter compared to the interim quarters. This is because price reactions and analyst revisions are the greatest in the fourth quarter. Other motivations for classification shifting are to meet or beat earnings benchmarks (Fan et al. 2010), to conceal core profit when proprietary concerns are high (Lail, Thomas, and Winterbotham 2014), and to avoid debt covenant violation (Fan, Thomas, and Yu 2019).

On the other hand, a relatively new stream of research explores the consequences of classification shifting. Alfonso et al. (2015) show that investors overprice the core earnings of firms that use classification shifting. They infer that investors do not fully understand the differential persistence induced by classification shifting.

Some benefits of classification shifting are also documented. Lattanzio and Thomas (2020) demonstrate that classification shifting is associated with higher firm value. Their results are consistent with classification shifting allowing firms to obtain lower-cost financing. Ha and Thomas (2020) infer that classification shifting can represent managerial effort to be informative about core earnings likely to persist. They show that classification shifting can benefit investors by helping them to better predict earnings. Thus, the literature on classification shifting offers mixed evidence on its effects and managerial motives.

3. HYPOTHESES DEVELOPMENT

To date, the literature has explored non-GAAP disclosure and classification shifting as independent reporting strategies. They are different in that non-GAAP disclosure refers to managers' voluntary disclosure of companies' performance whereas classification shifting affects the presentation of expenses in the income statement (i.e., mandatory disclosure). However, the two reporting strategies typically serve a common purpose – to communicate management's intent of higher core performance. Non-GAAP earnings most often involve exclusions of income-decreasing items (e.g., stock compensation, amortization and depreciation). By excluding these expenses for non-GAAP reporting, managers report increased core performance. Classification shifting also increases core performance by reclassifying core expenses to special items. Whether and how these two different reporting techniques serve the reporting objective of managers remains unexamined.

Signaling theory suggests that managers are able to signal more effectively by adopting multiple signals that communicate the same message (Grinblatt and Hwang 1989; Datar, Feltham, Hughes 1991; Fan 2007; Connelly et al. 2011). Conflicting signals confuse receivers, but consistent signals increase their effectiveness (Chung and Kalnins 2001; Gao, Darroch, Mather, and MacGregor 2008). For example, Gao et al. (2008) analyze Initial Public Offering (IPO) prospectuses of firms in the biotechnology industry to investigate efficient corporate strategy communication. They find that consistent prospective statements across multiple dimensions of prospectus positively impacts initial returns. Their results suggest consistent signals increase the intensity of the message and reduce information asymmetry between uninformed and informed investors. Babenko, Tserlukevich, and Vedrashko (2012) provide analytical and empirical evidence that the joint occurrence of stock repurchases and insider trading provides a more credible

signal of undervalued stocks. Specifically, they model that managers with superior information trade on their own account, which serves as a strong undervaluation signal, and show that repurchase announcement stock returns increase with managerial stock purchases.

Non-GAAP disclosure and classification shifting provide managers with consistent signals to serve one reporting objective of increased core performance.[18] For example, managers may shift some marketing expenses to restructuring charges to increase reported core earnings, and they may also disclose non-GAAP metrics that add back certain expenses such as stock compensation to bottom-line net income.[19] Using both strategies allows managers to highlight higher core performance. Thus, managers likely are incentivized to use non-GAAP disclosure and classification shifting in tandem to better achieve their reporting objectives.

Another mechanism through which signals become effective comes from two characteristics of signals: observability and signal costs (Spence 1978; Connelly et al. 2011; Ahlers et al. 2015). Observable signals allow receivers to reduce their search costs, making them more effective. Signals should also be sufficiently costly to deter false signals sent by others. Fan (2007) presents a model and empirical analysis that high-quality IPO firms use two signals, ownership retention and earnings management, to distinguish themselves from lower-quality issuers. Ownership retention provides a solution to information asymmetry by sending an observable

[18] Both non-GAAP disclosure and classification shifting may decrease core performance. For example, when firms experience transitory gains, managers can exclude them in non-GAAP disclosure. Similarly, classification shifting may not always increase core performance. I concentrate on non-GAAP earnings with income-increasing exclusions (e.g., losses and expenses) and shifting to income-decreasing special items (e.g., impairment losses) mainly for two reasons. First, both magnitude and frequency of exclusions are much greater for income-decreasing exclusions (Black et al. 2018a). Second, an analysis of income-increasing exclusions (i.e., gains and revenues) would bias towards finding results that indicate non-GAAP earnings are informative (Curtis et al. 2014). Nevertheless, these are interesting opportunities for future research.

[19] The dual reporting could also involve the same item. For example, certain operating costs could be classified as restructuring costs, allowing it to be shifted to special items and also highlighted in non-GAAP disclosure. If a manager opportunistically misclassifies some recurring operating costs as restructuring costs, then dual reporting would represent a stronger attempt at manipulation. If the manager is trying to be informative about the persistence of core performance, then dual reporting provides a clearer signal.

signal of the issuer's willingness to retain ownership risk at the time of the IPO (Leland and Pyle 1977). In addition, because earnings management carries substantial costs, high-quality IPO firms manage earnings upwards to the point where low-quality IPO firms cannot mimic such costly discretionary behavior (Fan 2007).

Managers wishing to increase core performance can use both non-GAAP disclosure and classification shifting, which together better satisfy the two characteristics of observability and signal costs. First, non-GAAP disclosure makes core performance more observable by highlighting increased performance in voluntary disclosure, especially for investors with limited attention. Non-GAAP disclosure provides a salient form of information that is easily processable by sorting earnings into its components that are more and less relevant for future performance (Hirshleifer and Teoh 2003). Second, both classification shifting and non-GAAP disclosure carry significant costs. Aggressive misclassification of core expenses as special items in the income statement is subject to auditor scrutiny and SEC investigation, increasing firms' risks. Similarly, non-GAAP disclosure has received intense attention from SEC, evidenced by the increase in the number of SEC comment letters on non-GAAP disclosure (Black et al. 2018b). Other possible costs of implementing these reporting strategies include compliance costs for reconciling GAAP and non-GAAP performance and information friction in subsequent periods when core earnings revert to pre-managed levels. Thus, by combining these two strategies that are observable and costly, managers are able to signal core earnings more effectively.

The efficient signaling equilibrium suggests that reporting strategies are chosen to minimize cost and maximize utility. When the cost of using multiple strategies outweighs their benefits, managers may choose not to adopt these procedures (Fan 2007; Zang 2011; Black et al. 2017b). The benefit through the joint use of non-GAAP disclosure and classification shifting

comes from distinct characteristics of the two reporting tools. Non-GAAP disclosure is a type of *voluntary* disclosure, but classification shifting affects the presentation of items in the income statement (i.e., *mandatory* disclosure). While voluntary disclosure may lack reliability due to its voluntary and discretionary nature, verification through mandatory disclosure can boost the reliability of disclosure (Ball, Jayaraman, and Shivakumar 2012; Cheng, Liao, and Zhang 2013). Thus, the joint use of non-GAAP disclosure and classification shifting allows managers to achieve their reporting objective of communicating increased core performance.

Another distinctive characteristic that enhances the reliability of the two reporting strategies is that non-GAAP metrics are *disclosed* whereas classification shifting affects expense items *recognized* in the income statement. Extant literature on fair value recognition supports differential informativeness of items that are recognized versus disclosed. Ahmed, Kilic, and Lobo (2006) show that the valuation of recognized derivatives after SFAS No.133 is significantly higher than the valuation of disclosed derivatives.[20] When the two independent reporting strategies with differential value relevance corroborate to indicate the same objective, firms' increased core earnings become more reliable and believable for stakeholders.

The joint use of non-GAAP disclosure and classification shifting strengthens the signal regardless of whether the reporting objective is informative or opportunistic. For example, one manager may want to opportunistically inflate stock prices by inflating reported core performance. To do so, the manager can disclose non-GAAP earnings that are managed upwards and support the increased core performance with aggressive classification shifting. On the other hand, another

[20] Song, Thomas, and Yi (2010) further show that the reliability of fair values matters. They find that the value relevance of more reliable (Level 1 and Level 2) fair values is greater than the value relevance of less reliable (Level 3) fair values after adoption of SFAS No.157. A similar conclusion is drawn from Davis-Friday, Liu, and Mittelstaedt (2004) using the recognition of postretirement benefits after SFAS No. 106 and from Muller, Riedl, and Sellhorn (2015) testing on European real estate firms reporting under International Financial Reporting Standards. The inference from these studies is that recognition provides more value relevant information than does disclosure.

manager, who wants to inform investors about core expenses that are not likely to persist, could both reclassify those core expenses as special items in the income statement and exclude them in non-GAAP disclosure. Thus, managers incentivized to signal inflated core performance are likely to adopt both non-GAAP disclosure and classification shifting regardless of their objectives. Therefore, a positive relationship between non-GAAP disclosure and classification shifting is expected. This leads to the first hypothesis.

H1: A positive relation exists between non-GAAP disclosure and classification shifting.

There is some tension to H1. Considering the cost of each reporting tool, non-GAAP disclosure and classification shifting may not necessarily have a positive relationship. If one reporting strategy alone allows managers to sufficiently achieve their reporting objectives, they can minimize the cost of disclosure by adopting only one or the other. For example, a manager who has been disclosing non-GAAP earnings is likely to continue to disclose non-GAAP earnings that highlight higher core performance. If the manager believes that non-GAAP disclosure adequately increased core performance and that market participants were sufficiently attentive to such voluntary disclosure, the manager can save any cost related to classification shifting by opting out.

Another potential reason for no relation between the two reporting strategies could be a lack of input. Managers can exclude stock compensation in their non-GAAP disclosure, but they may find it more difficult to classify these core expenses as special items if no other special items are being reported (i.e., no "camouflage" is available). Similarly, managers can engage in classification shifting but may be reluctant to start disclosing non-GAAP disclosure, as the pressure for non-GAAP disclosure in the future increases. Thus, while managers wishing to increase and support higher core performance are incentivized to disclose non-GAAP earnings and

engage in classification shifting simultaneously (i.e., positive relation), it is possible that the two reporting strategies are not jointly used. This becomes the test of H1.

Next, I discuss my second set of hypotheses. As discussed previously, managers may choose to jointly use non-GAAP disclosure and classification shifting for both informative and opportunistic purposes. An informative manager may wish to separately classify less persistent expenses as special items to better signal which expenses are more versus less likely to persist. For example, a manager may wish to clearly disclose business acquisition costs separately from other administrative expenses. On the other hand, an opportunistic manager may take advantage in the year of acquisition to aggregate normal recurring administrative expenses with reported business acquisition costs and then also exclude those administrative expenses in non-GAAP disclosure as well. I explore these competing motivations of managers by examining the degree to which the relation between non-GAAP disclosure and classification shifting varies with external monitoring.

External monitors demand quality disclosure. For example, the analysts' questions during the earnings calls are concentrated on detailed and accurate information about firm performance (Black, Christensen, Kiosse, and Steffen 2019; Christensen, Gomez, Ma, and Pan 2020). Quality information, if supplied by the managers, helps analysts update their expectations of future performance. External monitors not only incentivize managers to supply informative disclosures, but also limit opportunistic reporting. Analysts and auditors account for over 28% of external governance that detects corporate fraud (Dyck, Morse, and Zingales 2010). Moreover, IPO firms backed with top-quartile venture capital (i.e., greater monitoring) exhibit lower abnormal accruals, lower real activities manipulation, and lower restatement compared to IPO firms with lower monitoring (Wongsunwai 2013). To the extent heightened demand for quality disclosure from outsiders incentivizes managers to be informative, I expect managers' joint use of non-GAAP

disclosure and classification shifting to vary positively with external monitoring. I use three external monitoring mechanisms.

First, institutional investors demand more informative disclosure. Ajinkya, Bhorjaj, and Sengupta (2005) show that firms with greater institutional ownership disclose voluntary earnings forecasts, and do so more frequently, accurately, and less optimistically. This is because as outsiders, institutional investors cannot directly monitor managers' activities, but they can obtain quality information by demanding and constantly probing disclosure. On the other hand, Cunningham et al. (2019) show that the shift from accrual earnings management to real activities manipulation after receiving comment letters from the SEC is attenuated with the increase in institutional ownership. These results indicate that high institutional ownership reduces both independent and collective opportunistic reporting behavior. Overall, disclosures are more likely to be informative in the presence of institutional ownership.

If managers use the combination of non-GAAP disclosure and classification shifting for informative purposes, the positive relation between the two reporting strategies should be increasing in the extent of institutional ownership. However, if the joint use of non-GAAP disclosure and classification shifting is for opportunistic purposes, institutional ownership should weaken or nullify the positive relation between the two reporting techniques. This leads to the following hypothesis.

H2a: Consistent with informative (opportunistic) reporting, the joint use of non-GAAP disclosure and classification shifting is more (less) likely to occur as institutional ownership increases.

For H2a, evidence of an increase in the positive relation as institutional ownership increases would be consistent with managers using these reporting strategies to be informative. A

decrease in the positive relation would suggest managers use these reporting strategies opportunistically.

My second setting for external monitoring involves financial analysts. Financial analysts are an information intermediary that incorporates news about firms more timely and accurately, adding value to the capital market (Healy and Palepu 2001). The demand for disclosure by the analysts is met by the supply of informative disclosure. For example, firms with analyst following are more likely to make voluntary disclosure (Ball et al. 2012). Moreover, firms followed by a greater number of analysts help investors better understand complicated financial statements through informative voluntary disclosure (Guay, Samuels, and Taylor 2016). These findings are consistent with managers with a higher number of analysts following being more incentivized to reduce informational risks and maintain a high-quality information environment. Thus, managers that jointly use non-GAAP disclosure and classification shifting for informative (opportunistic) purposes are more (less) likely to do so as the number of analysts following increases.

H2b: Consistent with informative (opportunistic) reporting, the joint use of non-GAAP disclosure and classification shifting is more (less) likely to occur as analysts following increases.

The third setting for external monitoring is auditors. Opportunistic reporting raises auditors' concerns about litigation or reputational risks. Chen, Krishnan, and Pevzner (2012) show that while auditors are not responsible for non-GAAP disclosure, any potentially misleading disclosures increase audit risks. Their results support that auditors review non-GAAP disclosure beyond the provision of SAS 8, evidenced by an increase in audit fees and auditor resignation with non-GAAP disclosure. In a similar vein, aggressive classification shifting draws attention from the SEC. Auditors view SEC enforcement actions as another risk factor and look for potentially misleading disclosure to prevent scrutiny from the SEC (Krishnan, Pevzner, and Sengupta 2012).

Overall, auditors who are concerned about litigation risks work to reduce opportunistic reporting that could mislead investors. Such practice by auditors naturally increases informative disclosure.

Research on external monitoring generally concludes that audit quality increases with auditor tenure (Johnson, Khurana, and Reynolds 2002; Myers, Myers, and Omer 2003; Chen, Lin, and Lin 2008).[21] Myers et al. (2003) demonstrate that extreme accruals (i.e., both income-decreasing and income-increasing) are reduced as auditor tenure increases. Their results are consistent with fewer opportunities for managers to aggressively report performance as the auditor-client relationship lengthens. Accordingly, auditors are more likely to restrain the joint use of non-GAAP disclosure and classification shifting for opportunistic purposes as audit tenure increases. In contrast, auditors with longer tenure are less likely to constrain managers from using both reporting strategies for informative purposes.[22]

H2c: Consistent with informative (opportunistic) reporting, the joint use of non-GAAP disclosure and classification shifting is more (less) likely to occur as auditor tenure increases.

The next set of hypotheses focus on outcome-based measures to ascertain whether managers use non-GAAP disclosure and classification shifting for informative or opportunistic purposes. Managers are expected to be relatively informed about future firm performance. The extent to which previous disclosures are validated through ex-post future performance can help provide insights into managers' ex-ante informative versus opportunistic incentives (Healy and Palepu 2001). To the extent that disclosures are opportunistic, current reported core performance would be biased and less informative about future performance. On the other hand, if managers

[21] Studies also find that audit quality decreases with audit tenure as longer tenure may impair auditor independence (Davis, Soo, and Trompeter 2009; Sainty, Taylor, and Williams 2002).

[22] Monitoring by auditor can be measured using industry specialization and Big 4. Results stay quantitatively similar when replacing auditor tenure with industry specialization and Big 4.

use disclosures informatively, these managers are more likely to highlight current core performance when discretionary reporting helps signal future firm performance.

The first outcome-based hypothesis relates to core earnings persistence. Investors find disclosure informative when it helps them predict future performance (Bentley et al. 2018). If managers use non-GAAP disclosure and classification shifting to better signal future core performance, I expect managers to use these strategies jointly when earnings are more persistent (i.e., to provide a clearer signal of how current core performance maps into future core performance). In contrast, if current core earnings are being opportunistically reported using non-GAAP disclosure and classification shifting, the inflated core earnings are less likely to persist into future core earnings. Thus, I use the persistence of core earnings as ex-post evidence of whether managers' joint reporting strategy is informative or opportunistic.

H3a: Firms that jointly use non-GAAP disclosure and classification shifting for informative (opportunistic) purposes have more (less) persistent core earnings.

The second outcome-based hypothesis concerns the effect of the joint reporting strategy on the analysts' information environment. If managers adopt the joint reporting strategy opportunistically to inflate core performance in the current period, analysts' forecasts are likely to be more dispersed and less accurate. This is because while some analysts understand and adjust opportunistically increased core performance, some other analysts are likely to form upwardly biased expectations from opportunistic core earnings. On the other hand, if the joint reporting strategy of non-GAAP disclosure and classification shifting is meant to help financial statement users form more accurate expectations, analysts are more likely to form more accurate and less dispersed forecasts. Overall, managers' informative disclosure should result in less dispersed and

more accurate analysts' forecasts. An opportunistic reporting strategy should result in analyst forecasts being more dispersed and less accurate.

H3b: Firms that jointly use non-GAAP disclosure and classification shifting for informative (opportunistic) purposes decrease (increase) analysts' forecast dispersion and increase (decrease) analysts' forecast accuracy.

The last outcome-based hypothesis explores earnings informativeness. Investors use current earnings to set expectations of future earnings, which in turn are used to value the firm (Kormendi and Lipe 1987; Dechow 1994; Nichols and Wahlen 2004). This leads to the expectation that as current earnings become more informative of future earnings, a stronger positive relation between current earnings and stock returns is expected (i.e., a higher earnings response coefficient or ERC). In the context of my study, I expect that as managers use non-GAAP disclosure and classification shifting to improve informativeness, investors will better understand the link between current performance and future performance, resulting in a higher ERC. In contrast, a lower ERC is expected if managers use these reporting strategies opportunistically, obscuring the extent to which current performance reflects future performance.

H3c: Firms that jointly use non-GAAP disclosure and classification shifting for informative (opportunistic) purposes are expected to have higher (lower) earnings response coefficients.

4. RESEARCH DESIGN

Non-GAAP Disclosure

Due to the voluntary nature of non-GAAP disclosure, empirical research exploring non-GAAP reporting has often used analysts' non-GAAP earnings ('*street'* earnings) as a proxy for

managers' non-GAAP earnings.[23] However, Bentley et al. (2018) show that while the overlap between the two is common, there is a systematic difference between managerial and analysts' non-GAAP earnings. For example, for the total sample of managerial non-GAAP reporting, 79% agree with I/B/E/S non-GAAP earnings, but 4% do not agree. For the remaining 17%, I/B/E/S does not provide non-GAAP earnings. Because of such issues with the data, Bentley et al. (2018) make available the data on managerial non-GAAP reporting. I use this dataset to capture managerial non-GAAP disclosure. The main variable of interest, $NONGAAP_q$, is an indicator variable that equals 1 if non-GAAP earnings disclosed by managers are greater than GAAP earnings, and 0 otherwise.[24,25]

Classification Shifting

I measure classification shifting in three steps. First, I compute a firm's unexpected core earnings (UE_CE_q) following previous literature on classification shifting (McVay 2006; Fan et al. 2010). Specifically, I use the model from Fan et al. (2010) to predict the expected level of core earnings using industry-year-quarter regression with a minimum number of 15 observations per industry-year-quarter. The industry is defined using Fama-French 48 industries.

$$CE_q = \alpha_0 + \alpha_1 CE_{q-4} + \alpha_2 CE_{q-1} + \alpha_3 ATO_q + \alpha_4 Acc_{q-4} + \alpha_5 Acc_{q-1} + \alpha_6 Adj.R_{q-1} + \alpha_7 Adj.R_q + \alpha_8 \Delta Sales_q + \alpha_8 Neg\Delta Sales_q + \varepsilon_q \quad (1)$$

[23] Other measures for non-GAAP disclosure are retrieved by hand-collection directly from the voluntary disclosure. For the list of studies with hand-collected data, see Appendix A in Bentley et al. (2018)

[24] There are 114 cases where there is no difference between EPS reported in Compustat (*EPSFIQ*) and non-GAAP EPS (*MGR_NG_EPS*) from the dataset by Bentley et al. (2018). The main reason is that Compustat Quarterly File becomes updated on a daily basis with changes occurring after filing dates (e.g., restatement). I manually checked some observations where there was no difference between *EPSFIQ* and *MGR_NG_EPS* and find that mostly the original GAAP-based metrics as first reported are lower than their non-GAAP counterparts. Accordingly, observations with no difference are given a value of 1 for $NONGAAP_q$.

[25] I code only income-increasing non-GAAP disclosure as non-GAAP disclosing firms, as the research question addressed in this study focuses on whether the joint use of two reporting tools helps to increase core performance. Curtis et al. (2014) show that income-decreasing non-GAAP disclosure is informative.

CE is core earnings measured as sales less cost of goods sold and selling, general, and administrative expenses, scaled by sales in the current quarter (q). *ATO* is asset turnover. *Acc* is accruals scaled by sales. *Adj.R* is market-adjusted returns. *ΔSales* is a change in sales of the same quarter from the prior year. *NegΔSales* equals *ΔSales* if *ΔSales* is less than 0. Variable definitions are included in the Appendix. The residual (ε) in equation (1) is unexpected core earnings (UE_CE_q).

In the second step, a firm's propensity to engage in classification shifting is measured. Specifically, I use a firm-year-quarter regression to compute the relation between income-decreasing special items and the unexpected core earnings computed in the first stage. I use observations of a firm's previous eight quarters with at least five quarterly observations to run the following regression.

$$UE\_CE_q = \alpha_0 + \alpha_1 \%SI_q + \varepsilon_q \quad (2)$$

$\%SI_q$ is income-decreasing special items as a percentage of sales. Specifically, negative special items are multiplied by −1 and scaled by the sales of the current quarter. Firm-year-quarter observations with positive special items are given a value of 0. α_1 in equation (2) represents a firm's propensity to engage in classification shifting. The greater the value of α_1, the greater the more likely the firm engages in classification shifting.

In the final step, α_1 in equation (2) is ranked within the industry-year-quarter in equal-sized portfolios from 1 to 9 and then scaled by 9. Firms without special items are given a value of 0. This measure of classification shifting, CS_q, varies from 0 to 1.

Hypotheses Testing

The first hypothesis tests a positive relation between non-GAAP disclosure and classification shifting. A pairwise correlation offers the starting point. I then present and analyze the frequency distribution to provide support for a complementary relation between non-GAAP disclosure and classification shifting.[26]

To examine the cross-sectional variation in the relation between classification shifting and non-GAAP disclosure as posited in the second set of hypotheses, the following regression is used.

$$NONGAAP\_CS_q = \beta_0 + \beta_1 Monitor_q + \beta_n Controls + \varepsilon_q \quad (3)$$

$NONGAAP\_CS_q$ is the joint reporting strategy defined as $NONGAAP_q$ multiplied by CS_q. $NONGAAP_q$ is an indicator variable that equals 1 if non-GAAP earnings disclosed by managers are greater than GAAP earnings and 0 otherwise. CS_q is classification shifting as explained previously. $Monitor_q$ measures external monitoring: institutional ownership (H_IO_q), the number of analysts following ($H\_Analyst_q$), and auditor tenure (H_Tenure_q). These measures are indicator variables for high institutional ownership, high analyst following, and high auditor tenure. H_IO_q ($H\_Analyst_q$) is an indicator variable with a value of 1 if institutional ownership (the number of analysts following) of the firm at the end of the prior fiscal year is above the industry-year-quarter median, and 0 otherwise. For auditor tenure, H_Tenure_q takes a value of 1 if auditor tenure is between five to ten years, and 0 otherwise.[27] β_1 is expected to be positive (negative) if managers' reporting incentives are informative (opportunistic).

[26] I do not hypothesize the relation between classification shifting and non-GAAP disclosure to be causal. Managers are likely to make a joint decision on these reporting strategies. Therefore, I focus on providing evidence on a positive relation between the two reporting strategies for the first hypothesis.

[27] I limit auditor tenure from five to ten years for greater monitoring because some studies show that very long audit tenure could be viewed as a risk factor (Johnson et al. 2002; Davis et al. 2009). However, assigning a value of 1 to H_Tenure_q for any auditor tenure greater than five years offers similar results.

Controls include size ($Size_{t-1}$), growth opportunities (MTB_{t-1}), firm age (Age_q), earnings volatility ($Xvol_{q-1}$), loss ($Loss_q$), sales growth ($\Delta Sales_q$), leverage (Lev_{t-1}), and fourth quarter indicator ($Qtr4_q$). *t-1* is measured at the end of the prior fiscal year-end, and *q* is measured at the end of the current quarter. Other variables are defined previously. Variable definitions are provided in the Appendix. For every test, I include year-quarter and industry fixed effects. Standard errors are clustered by firm.

To examine the third set of hypotheses, I test the association between the joint use of these reporting strategies and three outcomes. The first outcome is the extent to which current earnings persist to future earnings. If managers use these reporting strategies to better signal core earnings that will persist, I expect the joint use of non-GAAP disclosure and classification shifting will occur for firms with more persistent earnings. On the other hand, if managers opportunistically inflate current core performance, these earnings are less likely to persist. To test which incentive is more likely, I run the following regression.

$$Perf_{q+1,q+4} = \beta_0 + \beta_1 Perf_q + \beta_2 CS_q + \beta_3 NONGAAP_q + \beta_4 CS_q^* NONGAAP_q + \beta_5 Perf_q^* CS_q + \beta_6 Perf_q^* NONGAAP_q + \beta_7 Perf_q^* CS_q^* NONGAAP_q + \beta_n Controls + \varepsilon_q \quad (4)$$

$Perf_q$ is measured using operating income or operating cash flow.[28] $Perf_{q+1,q+4}$ is measured as the sum of performance over the four subsequent quarters. Other variables are defined previously. β_7 measures the incremental earnings persistence for firms employing both strategies. A positive (negative) β_7 is expected if the combination of non-GAAP earnings and classification shifting is

[28] The focus of both non-GAAP disclosure and classification shifting is on core performance. Thus, I expect the persistence of operating income to be most affected. Yet, managers reason that certain items excluded in non-GAAP disclosure are unrelated to operating cash flows such as depreciation expense and stock compensation (Bentley et al. 2018). Core expenses after classification shifting are more likely to relate to core operations, and hence operating cash flows. Thus, I expect the relation between the joint strategy and the persistence of operating cash flows to be similar to the relation with the persistence of operating income.

being used by managers to better reflect (opportunistically manipulate) the persistence of core performance.

Next, I test the effect of the combination of non-GAAP disclosure and classification shifting on the analysts' forecast dispersion and accuracy.

$$Analyst_{q+4(q+1)} = \beta_0 + \beta_1 CS_q + \beta_2 NONGAAP_q + \beta_3 CS_q^* NONGAAP_q + \beta_n Controls + \varepsilon_q \quad (5)$$

$Analyst_{q+4(q+1)}$ represents analysts' consensus forecast dispersion (*Dispersion*) or accuracy (*Accuracy*) for four (one) quarters in the future. $Diseprson_{q+4(q+1)}$ represents the standard deviation of analysts' consensus forecast for the same quarter in the following year (a quarter ahead) measured immediately following the quarter q's earnings announcement. *Dispersion* equals the standard deviation of the forecasts divided by the beginning price and then multiplied by 100 such that a higher value represents greater dispersion. $Accuracy_{q+4(q+1)}$ represents the difference between the actual EPS and the consensus forecasts for the same quarter in the following year (a quarter ahead) measured at the earliest date after the quarter q's earnings announcement. *Accuracy* is the absolute difference between the I/B/E/S actual EPS and the consensus forecast, multiplied by −1, scaled by the beginning price, and multiplied by 100. A higher value represents greater forecast accuracy.

Firms that opportunistically inflate core performance in the current quarter through non-GAAP reporting and classification shifting should garble some analysts to form future expectations using current (inflated) performance. This should increase forecast dispersion and decrease forecast accuracy. In contrast, managers attempting to better signal future performance should help analysts form more precise earnings expectations. Thus, for *Dispersion*, I expect β_3 to be negative (positive) when managers' reporting strategies are informative (opportunistic). For

Accuracy, I expect β_3 to be positive (negative) when reporting strategies are informative (opportunistic).

The final test involves earnings response coefficients. Depending on the motivation in the joint use of non-GAAP disclosure and classification shifting, the extent to which the earnings are informative varies.

$$Ret_q = \beta_0 + \beta_1 \Delta E_q + \beta_2 CS_q + \beta_3 NONGAAP_q + \beta_4 CS_q^* NONGAAP_q + \beta_5 \Delta E_q^* CS_q + \beta_6 \Delta E_q^* NONGAAP_q + \beta_7 \Delta E_q^* CS_q^* NONGAAP_q + \beta_n Controls + \varepsilon_q \quad (6)$$

Ret_q is measured in two ways: *CAR[-1,+1]* and Adj_qret_q. *CAR[-1,+1]* measures the 3-day cumulative market-adjusted return around the earnings announcement of the current quarter. Adj_qret_q is a market-adjusted quarterly return starting from the day after the previous earnings announcement to the earnings announcement date of the current quarter with at least 30 days of returns data available. ΔE_q is the change in the operating income between q-4 and q scaled by the total asset. If managers' use of non-GAAP disclosure and classification shifting improves investors' expectations of the extent to which current performance will persist into future performance, I expect β_7 to be positive. If, however, managers' use of non-GAAP reporting and classification shifting does not provide a credible signal of future performance, β_7 will be negative.

5. RESULTS

Sample Selection

I obtain data from the Quarterly Compustat File for the fiscal years between 2000 and 2019. The data period begins in the fiscal year 2000 because the data period on managerial non-GAAP disclosure begins in the calendar year 2003 with the implementation of Regulation G and the quarterly data for the previous two years is required. I require quarterly sales to be greater than $1 million because variables in equation (1) are scaled by sales. I exclude firms in the financial and

utility industry. I require firms to report four quarters in a given fiscal year. I drop observations whose stock price is less than $1.00 and annual special items as a percentage of sales are greater than 100% in magnitude. After excluding observations with an asset growth rate greater than 1,000%, an initial sample of 273,136 firm-year-quarter observations is obtained. I further delete observations with inadequate data to compute UE_CE_q. I also require the number of observations per industry-year-quarter to be at least 15. This reduces the sample size to 149,912 firm-year-quarter observations. For each firm-year-quarter, eight previous quarterly UE_CE_q are used to compute CS_q with at least five observations. After computing CS_q, the number of observations is 119,489. Finally, after combining data on non-GAAP disclosure, the final sample consists of 72,954 firm-year-quarter observations.[29] The sample size may vary for tests with additional variables. Table 1 shows the sample selection process.

Descriptive Statistics

Table 2 shows descriptive statistics. While the sample size is smaller than that from Bentley et al. (2018), the descriptive statistics are similar. Untabulated statistics reveal that 30,815 (about 42.24%) of total observations disclose non-GAAP earnings. Among non-GAAP disclosing firms, 84.28% disclose non-GAAP earnings greater than GAAP earnings. For firms that report non-GAAP earnings, the extent of exclusion is about 0.94% of the beginning asset, on average (untabulated). The median firm size is $747 million in total assets. The average market to book ratio is 3.05 and the average firm age is about 18.5 years. The average change in sales is 10.88%, and 23.45% of the sample experiences a quarterly loss.

[29] For each fiscal quarter, a firm must file 8-K with the SEC's items numbers (2.02, 7.01, 8.01, and 9.01) and have diluted GAAP EPS from Compustat As First Reported database to be included in the dataset on non-GAAP disclosure provided by Bentley et al. (2018). Further process as described in Appendix B in Bentley et al. (2018) reduces sample size used in this study.

Tests of H1

As shown in Table 3, CS_q and $NONGAAP_q$ have a significant positive correlation (Pearson correlation=0.1840). CS_q and $EXCL_q$, the extent of exclusion, are also positively correlated (Pearson correlation=0.0542). These correlations suggest that firms jointly engage in classification shifting and non-GAAP disclosure. Firms' propensity to engage in classification shifting or non-GAAP disclosure is positively correlated with size, age, loss, and leverage but negatively correlated with earnings volatility and change in sales.

Table 4 provides the distribution of classification shifting and non-GAAP disclosure. I divide the sample into firms that disclose non-GAAP earnings (35.60%) and those that do not (64.40%) versus firms that are more likely to engage in classification shifting (21.20%) and those that are less likely (78.80%). The likelihood of classification shifting is determined using UE_CE_q from equation (1) and income-decreasing special items. Specifically, if UE_CE_q is positive and income-decreasing special item is reported, firms are sorted into 'Likely' and all else are sorted into 'Unlikely'. For classification shifting likely firms, more report non-GAAP disclosure (12.67%) than not (8.53%). Similarly, for classification shifting unlikely firms, more do not report non-GAAP disclosure (55.87%) than do (22.93%).[30] The distribution further supports that non-GAAP disclosure and the propensity to engage in classification shifting are positively related.[31]

In an additional untabulated analysis, I regress $NONGAAP_q$ on CS_q and control for firm characteristics in model (3). I also include industry and year-quarter fixed effects, and I cluster

[30] Similar frequency distribution is observed when CS_q is divided into two at the median.

[31] Further evidence suggests that the frequency of non-GAAP disclosers and classification shifting likely firms is greater in recent years. Specifically, among classification shifting likely firms, non-GAAP disclosure (17.51%) is about twice more likely than not (8.84%) after 2010. This compares with before 2010 where non-GAAP disclosure (8.30%) is as likely as non-disclosure (8.24%).

standard errors at the firm level. The coefficient on CS_q is significantly positive (0.1452; t=14.95). Similar results are obtained using a logit regression (0.8258; t=15.83). Overall, the results provide evidence that managers employ a joint reporting strategy. Managers who disclose non-GAAP earnings to highlight core performance are more likely to use classification shifting to report increased core performance.

One possible concern with the results in Table 4 is the mere presence of special items driving the positive relation between non-GAAP disclosure and classification shifting. In other words, all firms adopting classification shifting may also report non-GAAP disclosure or vice versa. As discussed earlier, these are two independent reporting strategies that managers can choose to use or not. For example, managers shifting a portion of marketing expenses to restructuring costs have the option not to exclude the restructuring costs in non-GAAP disclosure. Also, non-GAAP disclosure may exclude special items but the manager does not have to shift core expenses to special items. Moreover, classification shifting is measured not based on the presence of special items but as the relation between unexpected core earnings and special items. In other words, firms with greater special items may not be classified as a firm with greater propensity to engage in classification shifting. Thus, reported complementary relation between non-GAAP disclosure and classification shifting is likely to present managers' aligned reporting incentive – to increase core earnings.

I attempt to further validate that special items are not the sole source for the joint reporting strategy by hand collecting 50 random 8-K filings from the group where non-GAAP metrics are disclosed and the propensity to use classification shifting is high (i.e., top-left cell of Table 4). I find that 57% (61% in magnitude) of exclusions in non-GAAP disclosure comes from recurring items (e.g., income tax expense, interest expense, depreciation, and stock compensation). This

compares with 29% of exclusion from special items. These statistics are consistent with the findings of Whipple (2015) and help to rule out the possibility that firms using joint reporting strategies are a biased sample of firms that report only special items. Overall, the results support that the two reporting strategies are not redundant and that a complementary relation exists between the two reporting strategies.

Tests of H2

The second set of hypotheses examines whether the joint use of these strategies relates to the extent of external monitoring. Because strong external monitoring is expected to be associated with more informative disclosure, finding more (less) evidence of joint reporting as external monitoring increases would be consistent with managers using these reporting strategies to be informative (opportunistic). I use three measures of external monitoring.

Table 5 presents the empirical results using equation (3). Column (A) of Panel A shows that as institutional ownership increases, firms are more likely to jointly use classification shifting and non-GAAP disclosure (β=0.0831; t-stat=14.58). Similar results are observed for analyst following and auditor tenure. As shown in Column (B), as the number of analysts following increases, firms are more likely to employ both reporting strategies (β=0.0927; t-stat=15.92). Column (C) shows that firms with greater auditor tenure are more likely to use non-GAAP reporting and classification shifting (β=0.1195; t-stat=2.32). In Column (D), all three external monitoring measures are used. The results show that monitoring by institutions and analysts continues to increase the likelihood of both strategies being used, but auditor tenure is no longer significant. In Panel B after including control variables, the effect of institutional ownership and the number of analysts continues to strengthen the joint use of non-GAAP disclosure and

classification shifting. The effect of auditor tenure, however, becomes insignificant when considered alone or with other external monitoring variables.

Overall, these results generally support the prediction in H2 of informative reporting by managers. Strong external monitors demand informative disclosures. Finding evidence that the joint use of non-GAAP disclosures and classification shifting increases as external monitoring increases is consistent with managers using these reporting strategies to be more informative.

Tests of H3

The third set of hypotheses uses outcome-based measures. Outcomes associated with the joint use of these reporting strategies can help to inform whether managers use these strategies to be informative or opportunistic. I use three outcomes.

Tests of earnings persistence are shown in Table 6. The results are shown for the persistence of two performance metrics: operating income and operating cash flow. The results support that earnings are more persistent when firms use the combination of non-GAAP disclosure and classification shifting, consistent with informative motivation under the combined reporting strategy.

In Column (A), the persistence of operating income for firms adopting both reporting strategies is greater than firms adopting either classification shifting or non-GAAP disclosure (β=0.4518; t-stat=2.53). Similarly, in Column (B), the persistence of operating cash flow is greater (β=0.2160; t-stat=1.84).[32] One interesting result is that when only one strategy is used, the performance is less persistent. For example, firms with non-GAAP disclosure only exhibit lower

[32] When net income is used as a performance measure, I find a marginally significant positive persistence for firms with the joint strategy. One possible explanation is that firms signal overall higher future performance through non-GAAP disclosure and classification shifting.

persistence in their operating income as shown in Column (A) (β=−0.5121; t-stat=−4.52). Similarly, when firms engage in classification shifting only, their operating income is less persistent (β=−0.2362; t-stat=−2.53). For firms that jointly use classification shifting and non-GAAP disclosure, the operating income becomes more persistent. Overall, the results provide evidence that managers are more likely to use both strategies when their firms' earnings are more persistent.

H3b expects lower (higher) uncertainty among analysts when firms jointly use the two reporting strategies for informative (opportunistic) motivations. Table 7 shows that firms adopting both strategies are more likely to reduce the uncertainty among analysts about future expectations. For example, in Panel (A) where the dependent variable is forecast dispersion in the following quarter, the coefficient on the interaction between the two reporting strategies is significantly negative (β=−0.0270; t-stat=−2.32). This indicates that the joint use of both classification shifting and non-GAAP disclosure reduces analysts' disagreement about firms' future performance in the following quarter. Moreover, the joint reporting strategy increases forecast accuracy. In Column (A) of Panel (B), the coefficient on the interaction between the two reporting strategies is significantly positive (β=0.0582; t-stat=1.73). These results are consistent with the notion that managers who report greater core earnings through classification shifting and disclose non-GAAP earnings help analysts form an accurate perception about future performance. Overall, the results are consistent with the use of a joint reporting strategy by informative managers.

Table 8 presents the results for testing equation (6). The dependent variables for Column (A) and (B) are the cumulative 3-day market-adjusted return around the announcement date and the quarterly return, respectively. The results show that the ERC (i.e., the coefficient on ΔE_q*CS_q*$NONGAAP_q$) is higher when a firm announces its earnings with both non-GAAP

earnings and classification shifting (β=0.2924, t-stat=2.04 in Column (A); β=0.5660, t-stat=1.75 in Column (B) with control variables). This compares favorably to the ERC when only one of the two reporting tools is adopted. For example, the ERC is significantly negative when only classification shifting is adopted (β=−0.2205; t-stat=−2.70) or when only non-GAAP disclosure is used (β=−0.2551; t-stat=−3.37).[33] These results indicate that investors' valuation better aligns with the firm's reported performance when both classification shifting and non-GAAP disclosure is used compared to when only one of the two reporting tools is used.[34]

Overall, the evidence supports the prediction in H3 of informative reporting by managers. Firms that jointly use non-GAAP disclosure and classification shifting have ex-post performance consistent with disclosures being more informative—more persistent earnings, less analyst forecast dispersion, greater analyst forecast accuracy, and greater relation between returns and earnings.[35]

6. ADDITIONAL ANALYSES

Types of Non-GAAP Disclosure

Non-GAAP exclusion (i.e., the difference between non-GAAP EPS and Compustat EPS) can be broken down into two components, special items and other exclusion. Studies have demonstrated that the two components have varying properties (Doyle et al. 2013; Kolev et al.

[33] One explanation of the negative ERC when either reporting tool is adopted may be that stock prices impound less information about current earnings news because future news are more relevant (e.g., information beyond one year ahead). For more information about stock price impounding future versus current earnings news, see Lundholm and Myers (2002) and Ha and Thomas (2020). While this may be an interesting avenue for future research, it is beyond the scope of this study in which the joint reporting strategies affect the informativeness of current quarter's reporting of income statement and non-GAAP disclosure compared to either reporting strategy.

[34] Tests using abnormal earnings measured with net income or operating cash flow offer similar conclusion.

[35] Including income-increasing non-GAAP disclosure as $NONGAAP_q$=1 yields stronger empirical results for H2 and H3 testing. This is consistent with Curtis et al. (2014) who find that income-increasing non-GAAP disclosures are motivated for informative purposes. Including informative disclosers is expected to increase the power and strength of the empirical tests.

2008). For example, Doyle et al. (2013) show that non-GAAP disclosure has opportunistic motivations to meet or beat analysts' forecasts and that the main driver of the results is other exclusion, not special items. Kolev et al. (2008) find that special items and other exclusions exhibit opposite reactions to SEC scrutiny. An interesting empirical question to ask would be whether the informativeness from the joint use is derived from special items or other exclusions in non-GAAP disclosure.

While prior studies use the extent of non-GAAP exclusion, measured as the difference between I/B/E/S actual EPS and per share GAAP earnings number, using the extent of exclusion would be inappropriate in this study. The focus of this study is to explore managers' motivation using the managers' discretionary reporting *choice* rather than their *aggressiveness*. Exclusion of five dollars per share compared to a dollar per share is likely to represent how aggressive a manager is in presenting non-GAAP disclosure rather than their choice of disclosing voluntary information. Thus, using the extent of exclusion is likely to capture more opportunistic motivation instead of allowing managers to incline towards informative or opportunistic motivations.

Instead, I perform empirical analysis using whether a manager uses special items, other exclusion, or both in their non-GAAP disclosure. If the results hold for companies using only special items (other) exclusion in their non-GAAP disclosure, it can be inferred that the informativeness from the joint use is more associated with special items (other) exclusion of non-GAAP.

To perform analysis, types of non-GAAP exclusion are computed. Total exclusion is computed as non-GAAP EPS less GAAP EPS. Special items exclusion is calculated as special items per share multiplied by –1.[36] Other exclusion is defined as total exclusion less special items

[36] Prior studies measure special items exclusion as the difference between GAAP earnings per share and GAAP operating income per share. Other exclusion is then calculated as the total exclusion less special items exclusion. I use

exclusion. Then, two indicator variables are created. If total exclusion is positive and special items (other) exclusion is positive, then special item (other) exclusion indicator variable (i_SPI_q and i_OTHER_q, respectively) takes a value of 1 and 0 otherwise. Finally, I replace $NONGAAP_q$ with each indicator variable, i_SPI_q and i_OTHER_q, and perform tests.

Figure 2 summarizes statistics on the types of non-GAAP exclusion. Figure 2-1 presents the average statistics. For 25,971 firm-quarters with positive non-GAAP disclosure, the average exclusion amount is $0.33 per share. The average exclusion amount consists of $0.18 per share of special items and $0.15 per share of other exclusion. Figure 2-2 presents the frequency statistics. Within the same 25,971 firm-quarters, 67% use both special items and other exclusions in their non-GAAP disclosure. Of the remaining 33%, 27% use only special items while 6% use only other exclusions. Overall, i_SPI_q and i_OTHER_q have average values of 0.94 and 0.72 respectively.

When the main analysis is performed with these two variables in place of $NONGAAP_q$, all analyses remain qualitatively the same except for the improvement in analysts' forecasts accuracy (H3b) when i_OTHER_q is used. Specifically, I no longer find evidence that analysts' forecast accuracy increases when non-GAAP disclosure is measured using other exclusions. This is consistent with Doyle et al. (2013) who find that other exclusion is the main driver of opportunistic non-GAAP disclosure garbling information environment for the analysts.

Another way to investigate the source of informativeness is to break down earnings into components in the cross-sectional persistence tests. If the joint use has an informative implication, non-GAAP earnings should exhibit greater (lower) persistence to future performance for firms

per share quarterly special items to capture the existence of special items exclusion and the rest (i.e., difference between total exclusion and per share special items) to capture the choice of other exclusion. However, following prior literature to measure two types of exclusions leaves the results unchanged.

with a greater (lower) propensity to engage in classification shifting. To test this, first, I divide the sample into two using the median of CS_q. Then, I run the following regression for each subsample.

$$NI \text{ or } OCF_{q+1,q+4} = \beta_0 + \beta_1 NGX_q + \beta_2 SPI_q + \beta_3 Other_q + \beta_n Controls + \varepsilon_q \quad (7)$$

NGX_q is non-GAAP earnings defined as non-GAAP earnings per share multiplied by the number of shares outstanding scaled by total asset. SPI_q is special items scaled by total asset. $Other_q$ is $NGX_q - SPI_q - NI_q$ where NI_q is the income before extraordinary items scaled by total asset. I expect β_1 to be greater (lower) for the subsample of high (low) classification shifting if non-GAAP disclosure and classification shifting are jointly adopted by informative (opportunistic) managers.

Table 9 presents these results. Observations with missing non-GAAP earnings are excluded, dropping the number of observations to 23,568 when using future earnings as the dependent variable as shown in Panel (A). Comparing high CS_q to low CS_q sample, the coefficient on NGX_q is greater in column (A) compared to column (B), and the difference is significantly positive (Difference in β_1=0.5882; t-stat=3.58). Similarly, in Panel (B) where future operating cash flow is the dependent variable, the coefficient on NGX_q is greater for high CS_q than for low CS_q, and the difference is also significantly positive (Difference in β_1=0.4897; t-stat=3.48). These results are consistent with core performance reported as non-GAAP earnings being more persistent when managers engage in classification shifting to a greater extent. For the persistence of special items and other expenses, the differences between high CS_q and low CS_q are insignificant for both

net income and operating cash flows. Collectively, the results continue to support that firms exhibit greater persistence when non-GAAP disclosure and classification shifting are jointly adopted.

Association with Earnings Management

In this section, I explore the relation between the two relatively less costly techniques, classification shifting and non-GAAP disclosure, and other tools to manage earnings. Two studies are closely linked to this relation. Black et al. (2017b) show that firms engaged in other forms of earnings management such as accrual management and real activities manipulation are less likely to disclose non-GAAP earnings. Abernathy et al. (2014) demonstrate a similar substitution effect between classification shifting and other forms of earnings management tools. Specifically, they find that firms more constrained to manage earnings through accruals or real activities engage in classification shifting. Both studies conjecture that when firms are not able to use costly earnings management tools, managers turn to less costly perception management tools such as classification shifting and non-GAAP disclosure.

Consistent with prior studies, I expect both classification shifting and non-GAAP disclosure to have a negative relation with accrual and real activities manipulation. This is because firms that are constrained to use either earnings management tools are likely to resort to the less costly discretionary tools, classification shifting and non-GAAP disclosure. Moreover, I expect the positive relation between classification shifting and non-GAAP disclosure to hold after controlling for accrual and real activities management.

$$NONGAAP\_CS_q = \beta_0 + \beta_1 AM_q + \beta_2 RM_q + \beta_m Costs + \beta_n Controls + \varepsilon_q \quad (8)$$

AM (*RM*) is a proxy for accrual (real activities) management. I follow Abernarthy et al. (2014) and Black et al. (2017b) to measure AM and RM.[37] *Costs* include Altman Z-score ($Zscore_{t-1}$), Big 4 auditor ($BigN_{t-1}$), auditor tenure ($Tenure_{t-1}$), operating cycle ($Cycle_{t-1}$), institutional ownership (IO_q), net operating asset (NOA_{t-1}), and the number of analysts following ($Nanalyst_q$). These variables control for costs that are associated with accruals and real activities management. All other variables are defined previously. I expect β_1 and β_2 to be negative.

The untabulated pairwise correlation generally supports that both non-GAAP disclosure and classification shifting are negatively correlated with both accruals and real activities management, inferring a substitution effect. Table 10 presents the regression results for equation (7). The results show substitution between the joint use of non-GAAP disclosure and classification shifting and two other earnings management techniques, accrual earnings management and real activities management.

Alternative Measures of Classification Shifting

While non-GAAP disclosure is directly observable, classification shifting is estimated. I assume the greater the relation between unexpected core earnings and income-decreasing special items, the greater the firm's propensity to use classification shifting. Thus, there could be a measurement error in CS_q. To address this concern, I measure CS_q in several different ways and repeat the analyses.

[37] Specifically, *AM* is the absolute value of the residual from industry-year-quarter regression: $TA_t = a_0 + a_1 (1/AT_{t-1}) + a_2 (\Delta Sale_t - \Delta AR_t) + a_3 PPE_t + a_4 OPI_t + e_t$. TA_t is total accruals defined as net income less operating cash flow of the current quarter. $\Delta Sale_t$ is change in sales from last year's quarter to the current quarter. ΔAR_t is change in accounts receivable from the last year's quarter to the current quarter. PPE_t is gross property, plant, and equipment. If gross is missing, net is used. OPI_t is operating income in the current quarter. *RM* is a sum of residual from industry-year-quarter regressions equation (1), (4), and (5) from Roychowdhury (2006). Before adding, the residual from equation (1) and (5) is multiplied by −1 such that the greater value indicates greater earnings management.

First, I set CS_q equals to 0 if α_1 in equation (2) is insignificant. Taking the significance of the coefficients into consideration helps to alleviate the concern that firms with insignificant, but extreme α_1 are driving the results.

Second, I create an indicator variable that equals 1 if UE_CE_q is greater than 0 and $\%SI_q$ is greater than 0. The intuition is that firms that report income-decreasing special items and experience unexpectedly positive core earnings are likely to have engaged in classification shifting (Abernathy et al. 2014). This measure does not require information on prior performance, increasing the sample size to 83,728. The results do not change.

Third, I use a correlation between UE_CE_q and $\%SI_q$ instead of the regression coefficient in equation (2). Specifically, using correlation over the past eight quarters per firm, I compute the correlation coefficient and scale the rank within the industry-year-quarter with more than 10 observations. Again, firms without special items are given a value of 0. This alternative measure for classification shifting also varies from 0 to 1. The results stay qualitatively similar.

Finally, I adopt the reversal model from McVay (2006). Specifically, I create an indicator variable with a value of 1 if UE_CE_q is positive, $UE\_\Delta CE_q$ is negative, and $\%SI_q$ is positive. $UE\_\Delta CE_q$ is the unexpected change in core earnings from q to q+4. McVay (2006) asserts that firms with upwardly biased core earnings using classification shifting should exhibit a reversal of core earnings in the following period. This alternative measure of CS_q has the second strongest correlation with $NONGAAP_q$ following the second alternative measure (Pearson correlation=0.2207). For other empirical tests, the results hold except for the persistence test (H3a). This is expected as CS_q takes a value of 1 when their core earnings are not persistent.

7. CONCLUSION

This study explores the relation between non-GAAP disclosure and classification shifting. Despite the significant overlap that non-GAAP disclosure and classification shifting have on increasing core performance, the relation between the two remains unexplored. Grounded on signaling theory, I find a complementary relation between non-GAAP disclosure and classification shifting. The result is consistent with managers using both strategies jointly to signal increased core performance. Further analysis provides evidence that the joint use of the two reporting strategies is more likely as external monitoring increases. Specifically, I find that the positive relation between the two reporting strategies is stronger for firms with high institutional ownership and a greater number of analysts following. These results are consistent with managers using both reporting strategies informatively to meet the demands of stronger external monitors. Outcome-based tests further support the notion that informed managers are likely to use the combination of the two reporting strategies. The results show that when non-GAAP disclosure and classification shifting are used jointly, firms' performance is more persistent, analysts form less dispersed and more accurate expectations, and earnings are more highly related to returns (i.e., a higher earnings response coefficient). Overall, I find that managers are able to credibly signal decision-useful information by combining reporting strategies that serve to increase and highlight core performance.

The results of the study should be of interest to standard-setters and regulators. Both FASB and the SEC have been addressing issues related to both non-GAAP disclosure and classification shifting. Non-GAAP is suspected of misleading investors by excluding certain types of expenses. In addition, the classification of expenses is important for investors to understand firms' operations

and predict future performance. The results of this study provide cases where both non-GAAP disclosure and discretionary classification can be beneficial for investors.

The limitations and avenues for future research are as follows. First, there may be measurement error in the proxy for classification shifting. I try to address this with additional measures and using different models. However, because the measure for classification shifting depends on the model for expected core earnings, there remains the issue of measurement error. Another limitation comes from information in non-GAAP disclosure. Often, managers disclose many other metrics along with non-GAAP earnings such as adjusted revenues and adjusted shares outstanding. Thus, non-GAAP disclosure measured in this study may include much more abundant information than excluded expenses. Future research could try to tease out the differential sources of information embedded in non-GAAP disclosure and their distinctive use in voluntary disclosures.

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APPENDIX

Variables	Definition
$Accuracy_{q+4(q+1)}$	Analysts' consensus forecast accuracy defined as $-\lvert I/B/E/S\ actual\ EPS_{q+4(q+1)} - Earliest\ forecast_{q+4(q+1)} \rvert$ / $Price_{t-1}$ * 100, where the earliest forecast is measured immediately following the earnings announcement of the current quarter, and $Price_{t-1}$ is the beginning price.
Acc_q	Accruals, calculated as net income before extraordinary items less cash from operations scaled by sales.
Adj_qret_q	Market-adjusted quarterly return starting from the day after the previous earnings announcement to the earnings announcement date of the current quarter with at least 30 days of returns.
Adj_R_q	Three-month market-adjusted return corresponding to the fiscal quarter.
Age_q	Firm age measured as the number of years a firm has had non-missing assets leading up to the current quarter.
AM_q	Accrual earnings management defined as the absolute value of the residual from industry-year-quarter regression: $TA_t = a_0 + a_1\ (1/AT_{t-1}) + a_2\ (\Delta Sale_t - \Delta AR_t) + a_3\ PPE_t + a_4\ OPI_t + e_t$. TA_t is total accruals defined as net income less operating cash flow of the current quarter. $\Delta Sale_t$ is change in sales from last year's quarter to the current quarter. ΔAR_t is change in accounts receivable from the last year's quarter to the current quarter. PPE_t is gross property, plant, and equipment. If gross is missing, net is used. OPI_t is operating income in the current quarter.
$Analyst_{q+4(q+1)}$	Analysts' consensus forecast properties proxied by either $Accuracy_{q+4(q+1)}$ or $Dispersion_{q+4(q+1)}$.
ATO_q	Asset turnover, defined as $Sales_q/avg\_NOA_{q-1,q}$, where $avg\_NOA_{q-1,q} = (NOA_q + NOA_{q-1})/2$ and NOA_q, or net operating assets, is operating assets minus operating liabilities. Operating assets are calculated as total assets less cash and short-term investments. Operating liabilities are calculated as total assets less total debt and less book value of common and preferred equity less minority interest. $avg\_NOA_{q-1,q}$ is required to be positive.
$BigN_{t-1}$	An indicator variable that equals 1 for firms with the Big 4 auditors and 0 otherwise.
$CAR[-1.+1]$	The 3-day cumulative market-adjusted return around earnings announcement of the current quarter.
CE_q	Core earnings defined as sales less cost of goods sold less SG&A expense scaled by sales in the current quarter.
Controls	Control variables including $Size_{t-1}$, MTB_{t-1}, Age_q, $Xvol_{q-1}$, $Loss_q$, $\Delta Sales_q$, Lev_{t-1}, and $Qtr4_q$.

Costs	Cost variables including $Zscore_{t-1}$, $BigN_{t-1}$, $Tenure_{t-1}$, $Cycle_{t-1}$, IO_q, NOA_{t-1}, and $Nanalyst_q$.
CS_q	Industry-year-quarter scaled rank of β_1 from a firm-specific regression of $UE\_CE_q = \beta_0 + \beta_1 \%SI_q + \varepsilon_q$ using observations of the previous 8 quarters from q-7 to q. For each firm-year-quarter, at least 5 quarterly observations are required. Observations without negative special items in the previous 8 quarters are given a value of 0. Industry-year-quarter should have at least 10 observations to rank.
$Cycle_{t-1}$	Operating cycle for the prior fiscal year using the equation on p.29 in Dechow (1994), which is the days in receivable plus the days in inventory. For firms without cost of goods sold, the days receivable is used.
$Dispersion_{q+4(q+1)}$	Analysts' consensus forecast dispersion defined as the standard deviation of the earliest consensus forecasts for the same quarter in the following year (one quarter ahead) divided by the beginning price and multiplied by 100. The earliest consensus forecasts are measured immediately after the earnings announcement of the current quarter.
ΔE_q	Change in operating income scaled by total asset from the same quarter in the prior year.
$EXCL_q$	Exclusion defined as managerial non-GAAP EPS less GAAP EPS multiplied by the number of shares and scaled by total assets. Observations with non-GAAP EPS less than GAAP EPS are given a value of 0.
$H\_Analyst_q$	An indicator variable for the number of analysts following. Firm-year-quarter observations with the number of analysts following greater than the industry-year-quarter median are given a value of 1, and 0 otherwise.
H_IO_q	An indicator variable for institutional ownership. Firm-year-quarter observations with the current quarterly institutional ownership greater than the industry-year-quarter median are given a value of 1, and 0 otherwise.
H_Tenure_q	An indicator variable for auditor tenure. Firm-year-quarter observations with auditor tenure between five and ten years are given a value of 1, and 0 otherwise.
IO_q	Institutional ownership measured the same calendar quarter obtained from 13F filing
i_Other_q	An indicator variable for other exclusion with a value of 1 if total exclusion is positive and other exclusion is positive. Total exclusion is non-GAAP EPS less GAAP EPS. Other exclusion is total exclusion less special items exclusion. Special items exclusion is special items divided by the number of shares multiplied by −1.
i_SPI_q	An indicator variable for special items exclusion with a value of 1 if total exclusion is positive and special items exclusion is positive. Total

	exclusion is non-GAAP EPS less GAAP EPS. Special items exclusion is special items divided by the number of shares multiplied by −1.
Lev_{t-1}	Leverage defined as total liabilities scaled by total asset at the beginning of the year.
$Loss_q$	An indicator variable with a value of 1 if the quarterly earnings are less than 0 and 0 otherwise.
$Monitor_q$	External monitoring measured with three variables: H_IO_q, $H\_Analyst_q$, H_Tenure_q
MTB_{t-1}	Market to book ratio measured at the end of the previous fiscal year.
$Nanalyst_q$	Natural logarithm of the number of analysts following plus 1.
$Neg\Delta Sales_q$	$\Delta Sales_q$ if $\Delta Sales_q$ less than 0, and 0 otherwise.
NGX_q	Non-GAAP earnings defined as non-GAAP earnings per share multiplied by the number of shares divided by total asset.
NI_q	Income before extraordinary items of the quarter scaled by total assets.
$NI_{q+1,q+4}$	The sum of earnings from the following quarter through the fourth quarter into the future scaled by total asset.
NOA_t	Net operating asset at the end of the fiscal year. Net operating asset is operating assets minus operating liabilities, scaled by the beginning asset. Operating assets are calculated as total assets less cash and short-term investments. Operating liabilities are calculated as total assets less total debt, less book value of common and preferred equity, less minority interest.
$NONGAAP_q$	An indicator variable with a value of 1 if a manager's non-GAAP EPS is greater than GAAP EPS in the current quarter and 0 otherwise.
$NONGAAP\_CS_q$	The joint use of non-GAAP disclosure and classification shifting, defined as $NONGAAP_q$ multiplied by CS_q.
OCF_q	Operating cash flow of the quarter scaled by total assets.
$OCF_{q+1,q+4}$	The sum of the operating cash flow from the following quarter through the fourth quarter into the future scaled by total asset.
OPI_q	Operating income of the quarter scaled by total asset.
$OPI_{q+1,q+4}$	The sum of the operating income from the following quarter through the fourth quarter into the future scaled by total asset.
$Other_q$	Other exclusion defined as NGX_q less SPI_q less earnings scaled by total asset.
$Perf_q$	One of two performance metrics: OPI_q, OCF_q
$Qtr4_q$	An indicator variable that equals 1 if the current quarter is the fourth fiscal quarter of the firm, and 0 otherwise.

Ret_q	One of two return metrics: *CAR[-1.+1]*, Adj_qret_q
RM_q	Real activities manipulation defined as the is sum of residual from industry-year-quarter regressions equation (1), (4), and (5) from Roychowdhury (2006). Before adding, the residual from equation (1) and (5) is multiplied by −1 such that the greater value indicates greater earnings management.
$\Delta Sales_q$	Percentage change in sales from the same quarter in the prior year.
$\%SI_q$	Income-decreasing special items defined as negative special items multiplied by −1 and scaled by the sales of the current quarter. Observations with quarterly special items greater than 0 are given value of 0.
$Size_{t-1}$	Firm size measured by the natural logarithm of total asset at the end of the previous fiscal year.
SPI_q	Special items defined as special items scaled by total asset.
$Tenure_{t-1}$	Auditor tenure leading up to the current quarter.
UE_CE_q	Unexpected core earnings, calculated as the residuals from industry-year-quarter regression in equation (1).
$Xvol_{q-1}$	Earnings volatility defined as the standard deviation of the previous 8 quarterly earnings from q-8 to q-1 scaled by total asset measured at the end of the previous fiscal year.
$Zscore_{t-1}$	Modified Altman Z score calculated at the end of the prior fiscal year: 0.3 * Net Income / Asset + 1.0 Sales / Asset + 1.4 * Retained Earnings / Asset + 1.2 * Working Capital / Asset + 0.6 * Stock Price * Shares Outstanding / Total Liabilities.

Figure 1. An Extract of Non-GAAP Disclosure

NEWS RELEASE

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AMD Reports Fourth Quarter and Annual 2019 Financial Results

- Record quarterly revenue of $2.13 billion; record annual revenue of $6.73 billion -

- Gross margin expanded to 45 percent in Q4 2019 and 43 percent for 2019 -

SANTA CLARA, Calif. - Jan. 28, 2020 - AMD (NASDAQ:AMD) today announced revenue for the fourth quarter of 2019 of $2.13 billion, operating income of $348 million, net income of $170 million and diluted earnings per share of $0.15. On a non-GAAP(*) basis, operating income was $405 million, net income was $383 million and diluted earnings per share was $0.32.

For fiscal year 2019, the company reported revenue of $6.73 billion, operating income of $631 million, net income of $341 million and diluted earnings per share of $0.30. On a non-GAAP(*) basis, operating income was $840 million, net income was $756 million and diluted earnings per share was $0.64.

	Three Months Ended						Year Ended			
	December 28, 2019		September 28, 2019		December 29, 2018		December 28, 2019		December 29, 2018	
GAAP net income/ earnings per share	**$ 170**	**$0.15**	**$ 120**	**$ 0.11**	**$ 38**	**$0.04**	**$ 341**	**$0.30**	**$ 337**	**$0.32**
Loss on debt redemption/conversion	128	0.10	40	0.03	5	—	176	0.15	12	0.01
Non-cash interest expense related to convertible debt	4	—	6	—	6	0.01	22	0.02	24	0.02
Stock-based compensation	57	0.05	54	0.04	36	0.03	197	0.16	137	0.11
Impairment of technology licenses	—	—	—	—	45	0.04	—	—	45	0.04
Equity (income) loss in investee	—	—	(1)	—	—	—	—	—	2	—
Loss contingency on legal matter	—	—	—	—	—	—	12	0.01	—	—
Provision for income taxes	24	0.02	—	—	—	—	8	—	—	—
Withholding tax refund including interest	—	—	—	—	(43)	(0.04)	—	—	(43)	(0.04)
Non-GAAP net income / earnings per share	**$ 383**	**$0.32**	**$ 219**	**$ 0.18**	**$ 87**	**$0.08**	**$ 756**	**$0.64**	**$ 514**	**$0.46**
Shares used and net income adjustment in earnings per share calculation										
Shares used in per share calculation (GAAP)		1,188		1,117		1,079		1,120		1,064
Interest expense add-back to GAAP net income	$	4	$	—	$	—	$	—	$	—
Shares used in per share calculation (Non-GAAP)(1)		1,216		1,212		1,180		1,209		1,165

This figure shows a part of 8-K filings by Advanced Micro Devices (AMD) released on Jan 28, 2020 for the fiscal year ended Dec 31, 2019. The full disclosure can be found at https://www.sec.gov/Archives/edgar/data/2488/000000248820000006/q419991.htm

Figure 2. Statistics on the Components of Non-GAAP Disclosure

Figure 2-1. The figure shows average statistics on non-GAAP exclusion for 25,971 firm-quarters non-GAAP disclosure with non-GAAP earnings greater than GAAP earnings. Special items is measured as per share quarterly special items reported by Compustat. Other exclusion is the difference between total exclusion and special items.

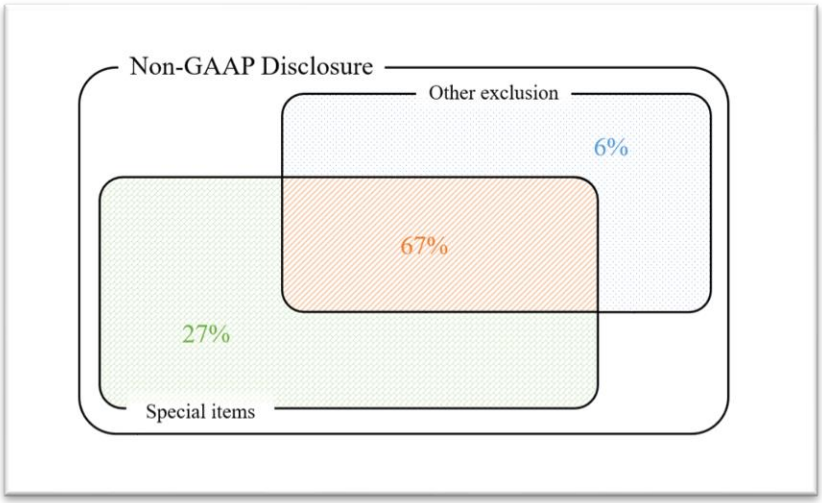

Figure 2-2. The figure shows frequency distribution on non-GAAP exclusion for 25,971 firm-quarters non-GAAP disclosure with non-GAAP earnings greater than GAAP earnings. Special items is measured as per share quarterly special items reported by Compustat. Other exclusion is the difference between total exclusion and special items.

Table 1. Sample Selection

Quarterly reporting firm-year-quarter observations from Compustat/CRSP with quarterly sales equal to or greater than $1 million and no change in fiscal year-end. Annual special items are less than 100% of annual sales in magnitude. Share price is greater than $1.	273,136
No missing variables to compute UE_CE_q using Fan et al. (2010) model with at least 15 industry-year-quarter observations.	149,912
Each firm-year-quarter with at least 5 observations on UE_CE_q and $\%SI_q$ from 8 previous quarters to compute CS_q.	119,489
Management non-GAAP disclosure from Bentley et al. (2018) available.	72,954

This table shows the sample selection process. The unit of observation is firm-year-quarter. The number of observations may vary depending on the research design.

Table 2. Descriptive Statistics

Variable	N	Mean	Median	STD	Q1	Q3
CS_q	72,954	0.4343	0.4444	0.3387	0.1111	0.7778
$NONGAAP_q$	72,954	0.3560	0.0000	0.4788	0.0000	1.0000
$EXCL_q$	72,954	0.0050	0.0000	0.0226	0.0000	0.0032
NI_q	72,954	0.0085	0.0119	0.0319	0.0008	0.0232
OPI_q	72,954	0.0105	0.0127	0.0272	0.0025	0.0234
$Size_{t-1}$	72,954	6.6768	6.6160	1.7627	5.4372	7.8463
MTB_{t-1}	72,954	3.0519	2.2123	4.1740	1.3923	3.6271
Age_q	72,954	18.5374	17.0000	9.4892	10.0000	26.0000
$Xvol_{q-1}$	72,954	0.0189	0.0115	0.0218	0.0061	0.0226
$Loss_q$	72,954	0.2345	0.0000	0.4237	0.0000	0.0000
$\Delta Sales_q$	72,954	0.1088	0.0738	0.2711	−0.0208	0.1937
Lev_{t-1}	72,954	0.4692	0.4629	0.2259	0.2936	0.6151

This table presents descriptive statistics of variables used in empirical tests. All continuous variables are winsorized at the 1st and 99th percentile. Variable definitions are provided in the appendix.

Table 3. Correlation Matrix

	(1) CS_q	(2) $NONGAAP_q$	(3) $EXCL_q$	(4) NI_q	(5) OPI_q	(6) $Size_{t-1}$	(7) MTB_{t-1}	(8) Age_q	(9) $Xvol_{q-1}$	(10) $Loss_q$	(11) $\Delta Sales_q$	(12) Lev_{t-1}
(1)	1	0.1946	0.1850	−0.1023	−0.0760	0.1894	−0.0530	0.0346	0.0047	0.0519	−0.0524	0.1380
		<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.2070	<.0001	<.0001	<.0001
(2)	0.1840	1	0.9649	−0.1686	−0.0799	0.2419	0.0692	0.0149	−0.0221	0.0960	−0.0224	0.0684
	<.0001		<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
(3)	0.0542	0.2992	1	−0.2226	−0.1163	0.1987	0.0746	−0.0082	0.0242	0.1716	−0.0204	0.0405
	<.0001	<.0001		<.0001	<.0001	<.0001	<.0001	0.0264	<.0001	<.0001	<.0001	<.0001
(4)	−0.0689	−0.1264	−0.3814	1	0.9404	0.1300	0.3605	0.1140	−0.1774	−0.7325	0.2525	−0.1112
	<.0001	<.0001	<.0001		<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
(5)	−0.0479	−0.0523	−0.2241	0.9099	1	0.1533	0.3846	0.1298	−0.1822	−0.6800	0.2505	−0.1108
	<.0001	<.0001	<.0001	<.0001		<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
(6)	0.1763	0.2394	0.0213	0.1526	0.1817	1	0.1094	0.2767	−0.2871	−0.1831	−0.0497	0.4421
	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
(7)	−0.0336	0.0389	0.0119	0.1065	0.1213	0.0428	1	−0.0051	−0.0176	−0.1846	0.2249	0.0468
	<.0001	<.0001	0.0013	<.0001	<.0001	<.0001		0.1679	<.0001	<.0001	<.0001	<.0001
(8)	0.0379	0.0241	−0.0223	0.1058	0.1250	0.3022	−0.0196	1	−0.1501	−0.1221	−0.1348	0.1020
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001	<.0001	<.0001	<.0001
(9)	−0.0092	−0.0130	0.0844	−0.1848	−0.2014	−0.2394	0.0325	−0.1288	1	0.3014	−0.0203	−0.0946
	0.0132	0.0004	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001	<.0001	<.0001
(10)	0.0480	0.0960	0.2228	−0.6790	−0.6496	−0.1806	−0.0589	−0.1190	0.2349	1	−0.2003	0.0114
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001	0.0022
(11)	−0.0374	−0.0162	−0.0418	0.1788	0.1797	−0.0601	0.0984	−0.1241	0.0381	−0.1467	1	−0.0893
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		<.0001
(12)	0.1275	0.0620	0.0080	−0.0471	−0.0510	0.3976	0.0834	0.0973	−0.0324	0.0207	−0.0687	1
	<.0001	<.0001	0.0308	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001		

This table shows the correlation matrix. The bottom-left half shows the Pearson correlation and the top-right half shows the Spearman correlation. Variable definitions are provided in the Appendix.

Table 4. Frequency Distribution

		Classification Shifting		Total
		Likely	Unlikely	
Non-GAAP Disclosure	Yes	9,246 (12.67%)	16,725 (22.93%)	25,971 (35.60%)
	No	6,220 (8.53%)	40,763 (55.87%)	46,983 (64.40%)
Total		15,466 (21.20%)	57,488 (78.80%)	72,954 (100%)

This table shows the distribution of frequency between the main constructs, non-GAAP disclosure and classification shifting. Non-GAAP disclosure is sorted into Yes if non-GAAP earnings are greater than GAAP earnings, and No otherwise. In columns, classification shifting is sorted as 'Likely' if UE_CE_q from equation (1) is positive and negative special item is reported, and 'Unlikely' otherwise. The total number of non-GAAP disclosing firm-quarter observations is 30,815.

Table 5. External Monitoring on Non-GAAP disclosure and Classification Shifting

Panel A. Basic Regression

	Dependent Variable = $NONGAAP\_CS_q$			
	(A)	(B)	(C)	(D)
Intercept	0.0207	0.0173	0.0642***	−0.0016
	(0.89)	(0.83)	(2.70)	(−0.07)
H_IO_q	0.0831***			0.0564***
	(14.58)			(9.48)
$H\_Analyst_q$		0.0927***		0.0717***
		(15.92)		(11.65)
H_Tenure_q			0.1195**	0.0594
			(2.43)	(1.24)
Controls	No	No	No	No
N	72,954	72,954	7,2954	72,954
Adj. R^2	0.1033	0.1080	0.0849	0.1156

Panel B. Multiple Regression

	Dependent Variable = $NONGAAP\_CS_q$			
	(A)	(B)	(C)	(D)
Intercept	−0.2149***	−0.1965***	−0.2153***	−0.2038***
	(−8.50)	(−7.69)	(−8.42)	(−8.00)
H_IO_q	0.0513***			0.0482***
	(8.68)			(8.09)
$H\_Analyst_q$		0.0299***		0.0178***
		(4.50)		(2.70)
H_Tenure_q			0.0048	−0.0078
			(0.10)	(−0.17)
Controls	Yes	Yes	Yes	Yes
N	72,954	72,954	72,954	72,954
Adj. R^2	0.1483	0.1435	0.1420	0.1487

This table presents the cross-sectional regressions of non-GAAP disclosure and classification shifting on external monitoring. The dependent variable is $NONGAAP\_CS_q$ defined as $NONGAAP_q$ multiplied by CS_q. Non-GAAP disclosure, $NONGAAP_q$, which equals 1 if a firm's non-GAAP EPS is greater than GAAP EPS. CS_q is a scaled ranked regression coefficient from equation (2). The independent variables include three variables: H_IO_q ($H\_Analyst_q$) is an indicator variable with a value of 1 if institutional ownership (the number of analysts following) of the firm at the end of the prior fiscal year is above the industry-year-quarter median, and 0 otherwise. H_Tenure_q is an indicator variable that equals 1 if the auditor tenure is equal to or greater than five years or equal to or less than 10 years, and 0 otherwise. All continuous variables are winsorized at the 1st and 99th percentile. Variables are scaled for values to appear in the table. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level. For every model, industry and year-quarter fixed effects are included, and standard errors are clustered at the firm level. Details on variables are included in the Appendix.

Table 6. Earnings Persistence

	Dependent Variable = $Perf_{q+1,q+4}$	
	(A)	(B)
Perf	*OPI*	*OCF*
Intercept	0.0046	0.0647***
	(1.11)	(8.27)
CS_q	−0.0037*	−0.0081***
	(−1.83)	(−2.88)
$NONGAAP_q$	0.0090***	0.0031
	(3.74)	(0.99)
$CS_q{}^*NONGAAP_q$	−0.0022	0.0031
	(−0.59)	(0.71)
$Perf_q$	2.5935***	0.8652***
	(38.80)	(18.33)
$Perf_q{}^*CS_q$	−0.2362**	−0.1223*
	(−2.53)	(−1.84)
$Perf_q{}^*NONGAAP_q$	−0.5121***	−0.1166
	(−4.52)	(−1.49)
$Perf_q{}^*CS_q{}^*NONGAAP_q$	0.4518**	0.2160*
	(2.53)	(1.84)
Controls	Yes	Yes
N	66,902	66,899
Adj.R^2	0.5654	0.3397

This table presents regressions of future performance on non-GAAP disclosure and classification shifting. The dependent variables are future performance, which is the sum of performance over the four subsequent quarters measured using either operating income or operating cash flow. The independent variables include non-GAAP disclosure, $NONGAAP_q$, which equals 1 if a firm's non-GAAP EPS is greater than GAAP EPS, and classification shifting, CS_q, which is a scaled ranked regression coefficient from equation (2), and current performance, which is either operating income or operating cash flows. All continuous variables are winsorized at the 1st and 99th percentile. Variables are scaled for values to appear in the table. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level. For every model, industry, and year-quarter fixed effects are included, and standard errors are clustered at the firm level. Details on variables are included in the Appendix.

Table 7. Analysts' Forecast Expectation

Panel A. Forecast Dispersion

	(A)	(B)
DV	$Dispersion_{q+1}$	$Dispersion_{q+4}$
Intercept	0.1745***	0.2119***
	(6.18)	(6.32)
CS_q	0.0261***	0.0242***
	(3.27)	(2.61)
$NONGAAP_q$	−0.0574***	−0.0464***
	(−7.06)	(−4.80)
CS_q*$NONGAAP_q$	−0.0270**	−0.0177
	(−2.32)	(−1.26)
Controls	Yes	Yes
N	60,657	52,641
Adj. R^2	0.2611	0.2709

Panel B. Forecast Accuracy

	(A)	(B)
DV	$Accuracy_{q+1}$	$Accuracy_{q+4}$
Intercept	−0.8354***	−1.3257***
	(−9.30)	(−10.33)
CS_q	−0.0769***	−0.1268***
	(−3.00)	(−3.63)
$NONGAAP_q$	0.1906***	0.1792***
	(7.85)	(5.26)
CS_q*$NONGAAP_q$	0.0582*	0.1056**
	(1.73)	(2.13)
Controls	Yes	Yes
N	66,575	59,972
Adj. R^2	0.1595	0.1679

This table presents regressions of meeting or beating future expectations on the joint use of non-GAAP disclosure and classification shifting. The dependent variable is $Dispersion_{q+1(q+4)}$, for Panel A, and $Accuracy_{q+1(q+4)}$ for Panel B. The independent variables non-GAAP disclosure, $NONGAAP_q$, which equals 1 if a firm's non-GAAP EPS is greater than GAAP EPS, and classification shifting, CS_q, which is a scaled ranked regression coefficient from equation (2). Control variables are included in models. All continuous variables are winsorized at the 1st and 99th percentile. Variables are scaled for values to appear in the table. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level. For every model, industry, and year-quarter fixed effects are included, and standard errors are clustered at the firm level. Details on variables are included in the Appendix.

Table 8. Earnings Response Coefficient with Non-GAAP Disclosure and Classification Shifting

	(A)		(B)	
DV	*CAR[−1,1]*		*Adj_qret$_q$*	
Intercept	0.0083**	0.0137***	−0.0101	−0.0023
	(2.53)	(3.83)	(−1.17)	(−0.25)
ΔE$_q$	0.0005	0.0020*	0.0041	0.0063**
	(0.46)	(1.76)	(1.63)	(2.49)
CS$_q$	0.0006	0.0020	0.0017	0.0045
	(0.41)	(1.46)	(0.62)	(1.59)
NONGAAP$_q$	0.0010	0.0005	−0.0038	−0.0038
	(0.42)	(0.21)	(−0.82)	(−0.84)
*CS$_q$*NONGAAP$_q$*	0.7723***	0.6038***	1.5673***	1.2570***
	(17.08)	(13.54)	(15.64)	(12.39)
*ΔE$_q$*CS$_q$*	−0.2231***	−0.2205***	−0.2841	−0.2744
	(−2.65)	(−2.70)	(−1.50)	(−1.46)
*ΔE$_q$*NONGAAP$_q$*	−0.2550***	−0.2551***	−0.4386**	−0.4138**
	(−3.34)	(−3.37)	(−2.42)	(−2.28)
*ΔE$_q$*CS$_q$*NONGAAP$_q$*	0.2970**	0.2924**	0.5772*	0.5660*
	(2.03)	(2.04)	(1.77)	(1.75)
Controls	No	Yes	No	Yes
N	64,262	64,262	63,689	63,689
Adj. R^2	0.0259	0.0364	0.0653	0.0714

This table presents regressions of returns on classification shifting and non-GAAP disclosure. The dependent variables are returns, which are either cumulative abnormal returns measured in three days around the announcement date, *CAR[-1,1]* or quarterly market-adjusted returns, *adj_qret$_q$*. The independent variables include non-GAAP disclosure, *NONGAAP$_q$*, which equals 1 if a firm's non-GAAP EPS is greater than GAAP EPS, classification shifting, *CS$_q$*, which is a scaled ranked regression coefficient from equation (2), and abnormal earnings, *ΔE$_q$*, which is the change in operating income for the same quarter over the year. Control variables are included in models on the right of each column. All continuous variables are winsorized at the 1st and 99th percentile. Variables are scaled for values to appear in the table. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level. For every model, industry, and year-quarter fixed effects are included, and standard errors are clustered at the firm level. Details on variables are included in the Appendix.

Table 9. Cross-sectional Earnings Persistence

Panel A. Future Earnings ($NI_{q+1,q+4}$)

	(A) High CS_q	(B) Low CS_q	(C) Difference
Intercept	−0.1031***	−0.1347***	
	(−3.74)	(−2.82)	
NGX_q	2.9709***	2.3827***	0.5882***
	(23.97)	(18.78)	(3.58)
SPI_q	0.2923***	0.3297***	−0.0374
	(4.02)	(2.63)	(−0.26)
$Other_q$	−1.0472***	−1.1127***	0.0655
	(−7.47)	(−7.45)	(0.33)
Controls	Yes	Yes	
N	12,502	11,066	
Adj. R^2	0.4359	0.3833	

Panel B. Future Operating Cash Flow ($OCF_{q+1,q+4}$)

DV	(A) High CS_q	(B) Low CS_q	(C) Difference
Intercept	−0.0314	−0.0172	
	(−1.33)	(−1.12)	
NGX_q	2.4554***	1.9657***	0.4897***
	(23.17)	(18.35)	(3.48)
SPI_q	0.0160	−0.1096	0.1256
	(0.36)	(−1.45)	(1.46)
$Other_q$	−0.2788***	−0.4477***	0.1689
	(−4.07)	(−4.42)	(1.28)
Controls	Yes	Yes	
N	12,501	11,066	
Adj. R^2	0.4516	0.4011	

This table presents cross-sectional regressions of future performance on components of earnings. The dependent variables are either future net income or operating cash flow. The independent variables include non-GAAP earnings, NGX_q, special items, SPI_q, and the rest, $Other_q$. Control variables are included in models on the right of each column. All continuous variables are winsorized at the 1st and 99th percentile. Variables are scaled for values to appear in the table. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level. For every model, industry, and year-quarter fixed effects are included, and standard errors are clustered at the firm level. Details on variables are included in the Appendix.

Table 10. Relation with Earnings Management

	Dependent Variable = $NONGAAP\_CS_q$	
Intercept	0.0775***	−0.2473***
	(3.27)	(−8.95)
AM_q	−0.5813***	−0.2068***
	(−9.12)	(−3.52)
RM_q	−0.0055	−0.0975***
	(−0.19)	(−3.49)
$Zscore_{t-1}$		−0.0019***
		(−3.74)
$BigN_{t-1}$		0.0441***
		(5.34)
$Tenure_{t-1}$		−0.9704
		(−1.11)
$Cycle_{t-1}$		−0.0667*
		(−1.66)
IO_q		0.0619***
		(5.21)
NOA_{t-1}		0.0726***
		(5.44)
$Nanalyst_q$		0.0211***
		(4.22)
Controls	No	Yes
N	70,584	67,648
Adj.R^2	0.0895	0.1613

This table presents regressions of non-GAAP disclosure on classification shifting and other earnings management. The dependent variable is $NONGAAP\_CS_q$ defined as $NONGAAP_q$ multiplied by CS_q. $NONGAAP_q$ equals 1 if a firm's non-GAAP EPS is greater than GAAP EPS and CS_q is a scaled ranked regression coefficient from equation (2), accruals management, AM_q, and real activities management, RM_q. Both AM_q and RM_q are measured using residuals from industry-year-quarter regression and the details are noted in footnote 38. Control variables are included in models on the right of each column. All continuous variables are winsorized at the 1st and 99th percentile. Variables are scaled for values to appear in the table. *, **, *** indicate statistical significance at the 10%, 5%, and 1% level. For every model, industry, and year-quarter fixed effects are included, and standard errors are clustered at the firm level. Details on variables are included in the Appendix.