

Earnings Management to Meet or Beat Analyst Earnings Forecasts Through Changes in Interim Expenses

Joseph Comprix ^a, Lillian Mills ^b, and Andrew Schmidt ^{c*}

^a *W.P. Carey School of Business, Arizona State University, Box 873606, Tempe, AZ 85287-3606*

^b *The University of Texas at Austin, 1 University Station, B6400, Austin, TX 78712-0211*

^c *Columbia Business School, 618 Uris Hall, 3022 Broadway, New York, NY 10027*

Abstract

We investigate whether firms manage quarterly earnings by adjusting expenses recorded during the year under the integral method. The integral method, which is used to determine interim cost of goods sold, selling, general, and administrative expenses, and income tax expenses, introduces management discretion into the amount and timing of costs allocated to quarterly expenses. We find that seasonal differences in each of the above expenses are significantly associated with meeting or beating analysts' earnings forecasts in a given quarter. This study is the first to show that changes in interim cost of goods sold and selling, general, and administrative expenses are associated with earnings management. In addition, this study extends prior research showing that firms can decrease effective tax rates in the fourth quarter to lower tax expense enough to meet or beat year-end analysts' forecasts. We document a positive association between seasonal differences in the provision for income taxes and meeting or beating analysts' earnings forecasts in all four quarters. These findings complement research efforts to understand the limits of multi-year earnings management to show how flexible accounts like interim expenses permit firms to manage earnings within a year.

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* Corresponding Author

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1.0. Introduction

We investigate whether firms manage quarterly earnings to meet or beat analyst earnings forecasts through expenses recorded during the year under the integral method.¹ Firms use the integral method to determine interim costs and expenses such as cost of goods sold, selling, general, and administrative expenses, and the provision for income taxes. The application of the integral method varies across the categories of interim expenses. Firms that expect quarterly gains/losses to reverse by year-end must exclude these items from cost of goods sold. For selling, general, and administrative expenses, firms must allocate costs to all quarters the cost will benefit. Finally, for income tax expense, firms must use estimates of annual effective tax rates to determine quarterly income tax expense. Application of the integral method to each of these expense categories introduces managerial discretion into the timing and amount of costs that are included in quarterly expenses.

Managers are motivated to meet or beat analyst earnings expectations primarily because of capital market incentives, but other reasons like reputational effects with stakeholders, contracting, and career concerns also provide incentives (Graham, Harvey, and Rajgopal 2005). These incentives to meet or beat analyst earnings forecasts have intensified recently as analysts have taken a more prominent role in the functioning of capital markets. Brown and Caylor (2005) document a significant recent increase in the number of analysts, the number of firms followed by analysts, the amount of media attention paid to analyst forecasts, and the accuracy and precision of analyst forecasts.

¹ The term integral method arises from APB Opinion No. 28, which treats interim reports as an “integral” part of the annual report.

Recent changes in interim filing requirements by the SEC highlight the importance of interim financial statements as a source of capital market information.² Interim financial reporting may provide an opportunity for intra-period earnings management because auditors do not audit interim financial reports,³ interim reports rely extensively on management estimates,⁴ and disclosure requirements are lower than for annual reports. Although both contracting and benchmark studies of earnings management investigate cross-sectional evidence of upward and downward earnings management, this paper investigates such behavior in an intra-year setting.

In addition, we extend research on the use of the integral method to consider whether estimates used for interim reporting under the integral method are subject to manipulation. Rangan and Sloan (1998) find that the auto-regressive coefficients for standardized seasonally differenced quarterly earnings are larger when the quarters used in the auto-regressions belong to the same fiscal year than when they belong to different fiscal years, consistent with the smoothing inherent in the application of the integral method to interim reporting. Rangan and Sloan (1998) then show that stock returns act as if investors underestimate the larger auto-regressive coefficients between quarters in the same fiscal year. We consider that the judgment involved in constructing integral method estimates also permits opportunism.

We find that firms report decreases in seasonally differenced interim costs when they would otherwise miss their analyst earnings forecasts. Alternatively, managers may smooth

² For example, large filers have been required to accelerate their SEC filings. For filings made on or after December 15, 2005, annual reports are now due within 60 days of the fiscal year-end and quarterly reports are due within 35 days of quarter-end for large filers (over \$75 million of market capitalization) (<http://www.sec.gov/rules/final/33-8128.htm>). Other recent changes include a requirement that interim disclosures must be included in 10-Ks (only large companies formerly had to provide these disclosures) and that for quarters ending on or after March 15, 2000, interim financials must be reviewed by auditors for compliance with GAAP (Regulation S-X, Article 10-01(d)).

³ The auditors merely perform a review of the financial information in interim financial reports (and not an audit) and thus auditors do not have a basis for expressing an opinion on interim reports (Statement of Auditing Standard (SAS) 100, *Interim Financial Information*).

⁴ For example, managers determine when costs will reverse before year-end, when expenses will benefit future periods, and what the expected annual effective tax rates will be.

earnings by overstating interim expenses when they would make their forecasts anyway, which would allow them to reverse these overstatements to increase income in later quarters, if needed. Consistent with these expectations, we find that firms that would make their analyst forecasts before taking changes in interim costs into account report income-decreasing changes in interim costs. Livnat and Tan (2004) find that cost of goods sold and the provision for income taxes are the primary cause of restatements to quarterly earnings; therefore, our study provides an explanation for the restatements observed in their sample.⁵

We also contribute to prior research on the use of effective tax rates for earnings management by showing that firms can decrease the provision for income taxes to meet or beat analysts' forecasts in all four quarters of the year. Dhaliwal, Gleason, and Mills (2004) find that firms decrease fourth quarter effective tax rates (ETRs) to beat analysts' forecasts. We extend Dhaliwal et al. (2004) to show that firms also manipulate ETRs in quarters one, two, and three to meet earnings forecasts. Overall, our findings complement research efforts to understand the limits of multi-year earnings management to show how flexible accounts like interim expenses permit firms to manage earnings within a year.

2.0. Background on Interim Reporting

2.1. Overview

Interim reporting refers to financial reporting for periods shorter than one year. Since 1970, the SEC has required firms subject to its periodic reporting requirements to file quarterly condensed financial information on either Form 10Q or Form 10QSB. In 1973, the FASB issued APB Opinion No. 28 (APB 28): *Interim Financial Reporting*, which established GAAP for firms issuing interim financial statements.

⁵ Livnat and Tan (2004) document 7,592 restatements from 1988-2002. Cost of goods sold accounts for 71 percent of the restatements, tax expense accounts for 74 percent of the restatements, and selling, general, and administrative expense accounts for 48 percent of the restatements.

At a minimum, APB 28 stipulates that interim financial results must include revenues, the provision for income taxes, special items (i.e., extraordinary items, discontinued operations, or the cumulative effect of a change in accounting principle), net income, comprehensive income, and earnings per share.⁶ APB 28 encourages (but does not require) firms to publish condensed interim balance sheet and cash flow information as well. If firms do not present condensed balance sheet or cash flow data, APB 28 requires that firms disclose significant changes in liquid assets, net working capital, long-term liabilities, or shareholders' equity since the last reporting period. In addition, the SEC has reporting requirements beyond those outlined in APB 28. Most importantly, the SEC requires registrants to file an unaudited balance sheet, income statement, and statement of cash flows with each 10-Q.

The basic objective of interim reporting is to provide timely information regarding firm performance to enable existing and prospective financial statement users to act upon up-to-date information when making investment decisions. For example, investors can use the information in interim reports to gauge whether a firm is on track to meet annual performance targets. However, Givoly and Ronen (1981) argue that interim financials are less reliable than annual financials. First, managers often use assumptions and estimates to determine interim costs.⁷ Second, the shortness of the reporting period increases the likelihood that temporary gains or losses affect interim reports. Third, firms may aggregate accounts for interim reporting purposes, making it difficult to track specific costs or revenues.⁸ Fourth, interim disclosures are usually

⁶ The reporting of this financial information is not in sufficient detail to constitute a fair presentation of the company's financial position and results of operations in accordance with GAAP (Wiley 2005).

⁷ Lev, Li, and Sougiannis (2005) find that accounting estimates imbedded in accruals do not improve the quality of information in terms of enhancing the prediction of enterprise performance.

⁸ Although the SEC allows managers to combine major account captions, most filers use the same account captions as in the prior year's annual report, as well as any new material captions arising since the filing of the annual report.

limited in scope compared to the disclosures in the annual report.⁹ Finally, auditors generally do not audit interim financial reports. These limitations, especially the extensive use of estimates in unaudited interim reports, may provide an opportunity for intra-period earnings management.

An issue that arises with interim reporting is how to treat expenses incurred in one quarter that benefit other quarters. For example, firms generally do not know the full amount of executive bonuses for the year until the fourth quarter is completed. One approach, the discrete method, records the bonus as an expense in whichever quarter managers pay the bonus. A second approach, the integral method, estimates the annual cost of the bonus and applies the expense to each quarter on a pro-rata basis. In general, APB 28 requires firms to use the integral approach for expenditures that benefit multiple periods. However, firms still use the discrete approach for major events, like extraordinary items, as well as for items that do not benefit multiple quarters. The following sections present an overview of the application of the integral method with respect to COGS, SG&A expense, and the provision for income taxes.

2.2. *Cost of Goods Sold*

For expenditures accounted for under the integral method, firms should allocate costs in a systematic manner. APB No. 28 requires firms to allocate costs directly associated with the revenues from products sold or services rendered based on sales. These product costs will vary as a function of sales volume. Different types of product costs include material costs, direct labor (including employee benefits), variable manufacturing overhead, and warranty costs. The income statement reflects product costs through the cost of goods sold.

Most companies use the same inventory pricing methods to determine cost of goods sold (COGS) for interim reporting that they use for annual reporting.¹⁰ However, for interim periods,

⁹ When preparing the footnotes to the interim financial statements, filers may presume that the users of the interim financial statements either have read or have access to the most recent annual report.

firms ignore some temporary costs. For example, firms using LIFO may experience liquidations of inventory layers expected to reverse by year-end. APB 28 requires firms to exclude these costs, as well as variances computed using standard cost assumptions that the company expects to absorb by year-end, from interim COGS calculations (firms expense other variances as incurred). The determination of which costs are temporary is, under current interim reporting rules, largely at managers' discretion. Also under managers' discretion is the decision to recognize losses at the lower-of-cost-or-market. If a decline in the market value of inventory is temporary, managers can exclude the loss from interim COGS. However, if the loss is permanent, managers should recognize the loss in the interim period in which it is incurred.¹¹ Overall, the application of the integral method to COGS should smooth COGS from quarter-to-quarter because current accounting standards discourage firms from recognizing temporary LIFO liquidations, temporary inventory holding losses, and variances that will be absorbed in later quarters during interim periods. However, management discretion over the recognition of "temporary" losses provides an opportunity for intra-period earnings management through the COGS account.

2.3 Selling, General, and Administrative Expense

The application of the integral method to selling, general, and administrative (SG&A) expense is more difficult because SG&A is a composite of several different types of costs. For example, *Compustat* groups items such as labor, insurance, rent, commissions, and advertising expenses in SG&A expense. When a specific cost benefits more than one interim period, firms may allocate the cost to the respective interim periods. For example, firms usually allocate

¹⁰ Some companies simply estimate their annual gross profit percentage (either based on past results or projections of current costs and revenues) and use this percentage to determine the interim cost of goods sold.

¹¹ If a loss that managers believe is permanent reverses in a subsequent interim period, the firm recognizes the gain in the period that the reversal occurs.

annual insurance and rent evenly across interim periods and often allocate commissions and advertising expenses to interim periods based on sales. Thus, firms smooth annual insurance and rent across interim periods and recognize sales commissions and advertising expenses across interim periods in accordance with the matching principle. Firms should expense as incurred costs that managers cannot readily identify with the benefits or activities of other periods. The integral method does not affect other costs, like administrative salaries, included in SG&A expenses; managers expense these costs as incurred.

Management discretion over the determination of quarterly SG&A expenses could arise from managers' role in determining how to allocate costs to specific quarters. Sales-based costs would be allocated based on management's estimates of expected annual sales and would be difficult for auditors to challenge because such estimates are subjective. In contrast, annual costs that generally are allocated based on the passage of time, and are thus essentially fixed from quarter to quarter, would be less useful as a tool to manipulate quarterly earnings because changes in such accounts would be difficult to justify. Because we are interested in the association between management discretion under the integral approach and earnings management, we focus on the components of SG&A that vary across quarters as a function of expected annual sales. We control for costs that are effectively the same from quarter-to-quarter, like administrative salaries, by investigating the *change* in SG&A expense across quarters, which would remove costs that do not change across the current and prior quarters from our analysis.

2.4. *Provision for Income Taxes*

Firms compute the quarterly provision for income taxes by estimating the ETR that managers expect to be applicable for the full fiscal year. The estimated annual ETR should reflect anticipated tax credits, foreign tax rates, percentage depletion, capital gains rates, and

other available tax planning alternatives (FASB Interpretation No. 18, 1977, ¶8). Firms then apply the estimated annual ETR to the year-to-date ordinary income at the end of each interim period to compute the year-to-date tax expense.¹² Managers record the difference between the year-to-date provision for the current quarter and the year-to-date provision for the prior quarter as the current quarter provision for income taxes.

Thus, the current period provision for income taxes reflects both expected tax expense and expected earnings. In addition, changes in expected taxes and earnings from prior interim periods affect the current period provision. Management discretion over quarterly tax expense comes primarily via estimates of expected annual ETRs to determine the ETR applied in a given quarter.

3.0. Literature Review and Hypotheses

3.1. *Earnings Management and Analyst Forecasts*

In their commentary on earnings management, Dechow and Skinner (2000) conclude that “managers have strong incentives to ‘beat benchmarks,’ implying that firms just beating benchmarks are potentially more likely to be engaging in earnings management.”

Investors can use three thresholds to benchmark firms’ quarterly earnings – meeting or beating analyst forecasts, avoiding losses, and avoiding earnings decreases. Early benchmark research identified and explored the avoidance of either losses or earnings decreases.¹³ However,

¹² The FASB does not use ordinary income in the income tax context of ordinary income and capital gain. Instead, the FASB defines ordinary income as pretax income before significant unusual or infrequent items, extraordinary items, discontinued operations, and cumulative effects of changes in accounting principles (FASB Interpretation No. 18, 1977, ¶9)

¹³ Hayn (1995) and Burgstahler and Dichev (1997) document discontinuities in earnings that occur at both zero earnings and at zero earnings changes. Barth, Elliott, and Finn (1999) find that the market rewards firms for a consistent string of earnings increases. We do not examine these two benchmarks, which other earnings management research investigates (Myers, Myers, and Skinner 2005) or critiques (Beaver, McNichols, and Nelson 2003).

beginning in the mid-1990s, the focus of research shifted to meeting or beating analysts' expectations.¹⁴

Brown and Caylor (2005) show that the highest returns accrue to firms that meet or beat analyst forecasts. Similarly, other research documents market rewards for beating forecasts, including abnormal returns at the earnings announcement date (Bartov, Givoly, and Hayn 2002; Lopez and Rees 2002) and premiums to the firm's share price (Kasznik and McNichols 2002; Dopuch, Seethamraju, and Xu 2003).¹⁵ Thus, firms with earnings near analysts' expectations have strong incentives to manage earnings to beat the benchmark.¹⁶ However, sophisticated investors temper these incentives to some degree. Bartov et al. (2002) show that the announcement period abnormal returns of firms that beat the forecast through earnings or expectations management are lower than those of firms that do not engage in such behavior. Gleason and Mills (2006) show this discount is substantial for beating the forecast through fourth quarter ETR decreases. We examine earnings management around analysts' forecasts. Specifically, we investigate whether quarterly costs estimated using the integral method decrease when the firm would miss the analyst forecast absent such a decrease.

¹⁴ Burgstahler and Eames (2003) find evidence that firms are more likely to meet or just beat analysts' forecasted earnings than they are to just miss analysts' forecasted earnings. Consistent with analysts' forecasts assuming more importance, the frequency of firms just beating the forecast has increased in the 1990s (Brown 2001; Matsumoto 2002).

¹⁵ Bartov et al. (2002) investigate whether there is a premium to meeting or beating analysts' forecasts of earnings (after controlling for the forecast error) and whether earnings or expectations management affects that premium. Bartov et al. (2002) find that firms that beat analysts' forecasts earn abnormal returns at the earnings announcement and that these abnormal returns do not reverse subsequently. Firms that beat forecasts also have higher earnings response coefficients (Lopez and Rees 2002). Kasznik and McNichols (2002) find that the market rewards firms that meet or beat analysts' expectations for at least two years with higher share prices. In addition, Kasznik and McNichols (2002) find firms that meet or beat expectations over three years have a higher premium than firms that only do so only twice.

¹⁶ See also Abarbanell and Lehavy (2003), who report that firms receiving buy recommendations from analysts are more likely to engage in earnings management to meet or just beat analysts' forecasts.

3.2 *Earnings Management and Interim Expenses*

Researchers continue to examine how specific accruals contribute to earnings management; however, these studies often focus on accounts that are unique to particular industries.¹⁷ In contrast to these studies, we investigate whether seasonal differences in quarterly COGS, SG&A expenses, and the provision for income taxes are associated with earnings management. These accounts are material for a broad set of firms and the interim reporting requirements with respect to these accounts induce a considerable amount of discretion into the financial reporting process, which drives information asymmetry between managers and market participants (Schipper 1989).

Research examining the use of COGS or SG&A expense to meet earnings targets has only recently begun to appear in the literature. Roychowdhury (2005) finds evidence of overproduction to reduce annual COGS and a reduction of annual discretionary expenditures (advertising, research and development, and SG&A) to improve reported margins among firms reporting small annual profits. Roychowdhury (2005) also presents initial evidence that firms overproduce and reduce discretionary expenditures to meet/beat analyst forecasts. However, he leaves a detailed examination of these activities for future research. McVay (2006) estimates that approximately 3.3 percent of reported special items are actually COGS or SG&A expenses that managers opportunistically shift to improve core earnings. Thomas and Zhang (2002) examine patterns in seasonally differenced quarterly COGS and SG&A (scaled by sales) as evidence of potential earnings management that causes the mispricing of the inventory accrual. Their tests provide evidence consistent with managers overproducing to decrease COGS, but

¹⁷ Other specific accruals examined for earnings management include bad-debt expense (Teoh, Wong, and Rao 1998), and industry-specific accruals such as loan-loss provisions (Beaver, Eger, Ryan, and Wolfson 1989; Wahlen 1994) and claim loss reserves (Petroni 1992; Beaver and McNichols 1998; Nelson 2000; Beatty, Ke, and Petroni 2002).

other results suggest this explanation is insufficient. For example, overproduction does not affect SG&A expense, yet Thomas and Zhang (2002) observe similar quarterly patterns for SG&A/Sales and COGS/Sales.

Research examining the use of the provision for income taxes to meet earnings targets is more prevalent in the literature. The tax accounts provide information about earnings in two distinct ways. First, total tax expense directly affects net income. We focus on this effect. Second, the computation of deferred tax expense, which is a component of total tax expense, provides information about accruals in pretax earnings.¹⁸ This second stream of research, while receiving recent attention in the earnings quality literature, is generally unrelated to our research setting.

Because estimating tax expense is complex (Plumlee 2003) and involves judgment (Gleason and Mills 2002), the income tax expense creates information asymmetry between financial statement users and managers. Plumlee's (2003) finding that analysts do not make sophisticated predictions concerning the effects of tax law changes suggests that investors may have difficulty determining whether ETR changes reflect earnings management. Furthermore, Bauman and Shaw (2005) generally conclude that analysts' forecasts incorporate quarterly ETR changes, although large prior-quarter decreases in ETRs are associated with forecast errors. Existing research describes the technical aspects of the tax account (valuation allowances, deferred taxes on foreign income, and tax cushions) that make tax accounts ripe for small manipulations.¹⁹ Thus, managers can use changes in the provision for income taxes or,

¹⁸ Phillips, Pincus, and Rego (2003), Joos, Pratt, and Young (2003), and Phillips, Pincus, Rego, and Wan (2004) position the deferred tax expense as providing an alternative measure of pretax discretionary accruals. Hanlon (2005) uses deferred tax expense to impute temporary book-tax differences to determine whether firms with large differences have lower earnings persistence, and hence reflect on earnings quality (see also Lev and Nissim 2004).

¹⁹ Other literature examines specific tax contexts that apply only to subsets of the population, including valuation allowances (Miller and Skinner 1998; Visvanathan 1998; Schrand and Wong 2003; Burgstahler, Elliot, and Hanlon

equivalently, in the ETR (tax expense divided by pretax income), to opportunistically affect net income.

Dhaliwal et al. (2004) demonstrate that firms reduce the estimated annual ETR from the third to fourth quarter when earnings absent tax rate changes would miss analysts' earnings targets. Schmidt (2006) finds that initial ETR-related earnings changes (Q1) are more persistent (less transitory) than revised ETR-related earnings changes (Q2 – Q4). The more transitory nature of ETR-related earnings changes late in the year is consistent with Dhaliwal et al.'s (2004) assertion that fourth quarter ETR-related earnings changes can represent earnings management.

We contend that the discretion inherent in the application of the integral method of quarterly reporting coupled with strong capital market incentives provide opportunities for earnings management. We specifically investigate whether income-increasing changes in COGS, SG&A expenses, and the provision for income taxes occur when firms would otherwise miss their quarterly analyst earnings forecasts by calculating an “as-if” analyst forecast error for COGS, SG&A expenses, and the provision for income taxes. The “as-if” forecast error is calculated by backing out the effect of changes in each of the interim expenses from analyst forecast errors. Absent earnings management incentives, one would not expect an association between the as-if forecast errors and changes in interim expenses. Our hypotheses state that:

- H₁: *Ceteris Paribus*, quarterly seasonally differenced COGS, scaled by sales, will be significantly negatively associated with “as-if” analyst forecast errors (computed without any change in the current quarter COGS).
- H₂: *Ceteris Paribus*, quarterly seasonally differenced SG&A expenses, scaled by sales, will be significantly negatively associated with “as-if” analyst forecast errors (computed without any change in the current quarter SG&A expense).

2003; Frank and Rego 2006) and permanently reinvested foreign earnings (Collins, Hand, and Shackelford 2000; Krull 2004).

H₃: *Ceteris Paribus*, quarterly seasonally differenced provision for income taxes, scaled by sales, will be significantly negatively associated with “as-if” analyst forecast errors (computed without any change in the current quarter provision for income taxes).

4.0. Research Design

4.1. Model Development

To test the significance of the relationship between seasonally differenced interim expenses and earnings management incentives, we use a regression analysis that controls for the major nondiscretionary components of the changes in each of the interim expenses we examine. In addition, by including a control for the lagged seasonally differenced interim expense on the right-hand side of the model (and since we provide the results of quarterly regressions) we can compare our results with Rangan and Sloan (1998) – not only confirming their results, but also establishing that our findings that changes in interim expenses consistent with earnings management are not inconsistent with Rangan and Sloan’s findings (i.e., the pattern of autocorrelations is stronger within quarters of the same year than across quarters of different years even when earnings management appears to occur).

Specifically, our tests examine whether seasonal changes in COGS, SG&A or the provision for income taxes in Q1, Q2, Q3, or Q4 are associated with incentives to meet or beat analyst forecasts. We scale financial variables by sales to control for size effects and to capture the notion that earnings management should be associated with increasing margins. We estimate each of the following regressions cross-sectionally by year and quarter and use the average slopes and their time-series standard errors to draw inferences (Fama and MacBeth 1973):

$$\Delta COGS_{itq} = \delta_0 + \delta_1 \Delta COGS_{itq-1} + \delta_2 MISS_{itq} + \delta_3 MISSAMT_{itq} + \delta_4 MMAMT_{itq} + \delta_5 \Delta SALES_{itq} + \delta_6 SD_{itq} + \delta_7 SALESDECR_{itq} + \varepsilon_{itq} \quad (1)$$

$$\Delta SGA_{itq} = \delta_0 + \delta_1 \Delta SGA_{itq-1} + \delta_2 MISS_{itq} + \delta_3 MISSAMT_{itq} + \delta_4 MMAMT_{itq} + \delta_5 \Delta SALES_{itq} + \delta_6 SD_{itq} + \delta_7 SALESDECR_{itq} + \varepsilon_{itq} \quad (2)$$

$$\Delta TAX_{itq} = \delta_0 + \delta_1 \Delta TAX_{itq-1} + \delta_2 MISS_{itq} + \delta_3 MISSAMT_{itq} + \delta_4 MMAMT_{itq} + \delta_5 \Delta PTE_{itq} + \delta_6 PTED_{itq} + \delta_7 PTEDECR_{itq} + \varepsilon_{itq} \quad (3)$$

where:

- $\Delta COGS_{itq}$ = the seasonal change in quarterly cost of goods sold (quarterly *Compustat* #30), scaled by current period quarterly sales (quarterly *Compustat* #2).
- ΔSGA_{itq} = the seasonal change in quarterly selling, general, and administrative expenses (quarterly *Compustat* #1) scaled by current period quarterly sales.
- ΔTAX_{itq} = the seasonal change in the quarterly provision for income taxes (quarterly *Compustat* #6) scaled by current period quarterly sales.
- $MISS_{itq}$ = a dummy variable that takes the value of one if a firm would have missed the consensus quarterly analysts' forecast (constructed using the *I/B/E/S Detail File*) if there was no seasonal change in the current quarter interim expense (COGS, SG&A, or TAX) zero otherwise.
- $MISSAMT_{itq}$ = analyst forecast error assuming no seasonal change in the current quarter interim expense (COGS, SG&A, or TAX), computed as the consensus *I/B/E/S* quarterly forecast – (actual quarterly earnings per share from *I/B/E/S* + the seasonal change in quarterly interim expense (COGS, SG&A, or TAX))
- $MMAMT_{itq}$ = the interaction of $MISS$ and $MISSAMT$.
- $\Delta SALES_{itq}$ = the seasonal change in quarterly sales, scaled by quarterly sales
- SD_{itq} = a dummy variable that takes the value of one if $\Delta SALES$ is negative, zero otherwise.
- $SALESDECR_{itq}$ = the interaction of $\Delta SALES$ and SD .
- ΔPTE_{itq} = the seasonal change in quarterly pretax earnings (quarterly *Compustat* #23), scaled by quarterly sales
- $PTED_{itq}$ = a dummy variable that takes the value of one if ΔPTE is negative, zero otherwise.
- $PTEDECR_{itq}$ = the interaction of ΔPTE and $PTED$.

We measure our dependent variables as the seasonal change in interim expenses (COGS, SG&A, or the provision for income taxes), scaled by current quarter's sales. These seasonal changes include both discretionary (unexpected) and nondiscretionary (expected) interim expense changes. We would prefer our dependent variable to measure only unexpected changes in the interim expenses so that we could attribute those to earnings management, but we cannot directly observe the unexpected component of each interim expense change. To improve our ability to measure unexpected changes we seasonally difference the interim expenses consistent with Thomas and Zhang's (2002) finding that a seasonal random walk model (without drift) best

describes the time-series properties of changes in COGS and SG&A.²⁰ In addition, we include variables in our model to control for expected interim expense changes.

We include lagged seasonally differenced interim expenses as a control to capture the implications of the integral method on the time-series properties of quarterly earnings and earnings components. Rangan and Sloan (1998) found that the integral method will cause the autocorrelation of seasonally differenced quarterly earnings to be greater when the autocorrelations are from quarters in the same fiscal year (opposed to when the autocorrelations are from quarters with different fiscal years) because firms make expense allocations for quarters in the same fiscal year based on common annual estimates of the allocation base (i.e., sales or pretax income), while expense allocations from quarters in adjacent fiscal years are often based on estimates of the allocation base that are quite different. When we estimate the regressions by quarter, if the time-series properties of the lagged seasonally differenced interim expenses are consistent with those of overall quarterly earnings, we expect the coefficient on the lagged interim expense in quarters two through four to be larger than that in quarter one (i.e., $\delta_1^{Q1} < \delta_1^{Q2}$, $\delta_1^{Q1} < \delta_1^{Q3}$, and $\delta_1^{Q1} < \delta_1^{Q4}$).

We include three additional variables (*MISS*, *MISSAMT*, and *MMAMT*) in each regression to test our hypotheses. These variables capture incentives to meet or beat analyst forecasts. We use the last I/B/E/S forecast issued before the quarterly earnings report date as our measure of the earnings threshold.²¹ *MISSAMT* is the analyst forecast error assuming firms made no unexpected changes to the respective interim expense being measured (i.e., COGS in equation

²⁰ Alternatively, we could have used the difference between current interim expenses and prior quarter interim expenses (still scaled by current quarter sales). The measure we chose has the advantage of controlling for seasonal differences in interim expenses, which could potentially be large – some businesses do 40-50% of their sales in the fourth quarter. Seasonal differencing also facilitates comparisons with Rangan and Sloan (1998). Our results are similar using either dependent variable.

²¹ The inferences from our tests are unchanged if we substitute the mean analyst forecast for the last analyst forecast as our measure of the earnings threshold.

(1), SG&A in equation (2) and the provision for income taxes in equation (3)). *MISS* is a dummy variable that is equal to one when $MISSAMT > 0$; firms whose earnings are below the target will make income-increasing interim expense changes. We include the interaction term, *MMAMT* because firms likely have greater incentives to avoid missing the target than they do to build additional reserves (i.e., cookie jars) if they already exceed the target.

Based on our earnings management hypotheses, we predict that firm-quarters with earnings that otherwise would be below the consensus analyst forecast (i.e., $MISSAMT > 0$) will make income-increasing interim expense changes ($\delta_3 + \delta_4 < 0$). We also expect, but do not hypothesize, that firm-quarters with pre-managed earnings above the consensus analyst forecast (i.e., $MISSAMT < 0$) will make income-decreasing interim expense changes ($\delta_3 < 0$). Finally, if firms have greater incentives to avoid missing the consensus analyst forecast than they do to smooth earnings, then the coefficient on the interaction term *MMAMT* will be negative ($\delta_4 < 0$); firm-quarters will make larger income-increasing interim expense changes than income-decreasing interim expense changes.

We include the additional variables to capture expected changes in the interim expenses. $\Delta SALES$ is included in equation (1) and (2) because we expect sales to be the relevant cost driver for COGS and SG&A when applying the integral method. We include a dummy variable (*SD*) that is equal to one when sales decrease and *SALESDECR*, an interaction of *SD* and $\Delta SALES$, to account for the sticky cost behavior documented in Anderson, Banker, and Janakiraman (2003). Costs are sticky if the magnitude of the increase in costs associated with an increase in volume is greater than the magnitude of the decrease in costs associated with an equal decline in volume. If costs are sticky, we expect that $\delta_7 < 0$.

We include a similar set of variables (ΔPTE , $PTED$, and $PTEDECR$) in equation (3), substituting seasonally differenced pretax earnings, scaled by sales (ΔPTE), for the $\Delta SALES$ variable used in our tests of changes in COGS and SG&A. ΔPTE controls for incentives to change the quarterly tax provision to smooth earnings to achieve increasing earnings, which Myers, Myers, and Skinner (2005) document. In addition, including changes in pretax income controls for expected changes in tax expense, as well as induced changes in tax expense.²²

4.2. Sample Selection Procedures and Sample Profile

We conduct our tests using a sample of U.S. firms between 1984 and 2004 with available quarterly data on *Compustat* and *I/B/E/S*. First, we begin with all U.S. *Compustat* firm-quarters with data available to compute both the level and changes of our primary variables, sales, COGS, SG&A, the provision for income taxes, pretax income, and outstanding shares (512,541 observations). We drop 272,097 observations that have negative quarterly pretax income because loss firms face different incentives than firms with positive pretax income. Next, we drop 153,830 observations that lack quarterly *I/B/E/S* data, which leaves us with a sample of 86,614 firm-quarter observations. Our final sample screen restricts the sample to the 61,476 observations with actual earnings that are within five cents of the *I/B/E/S* consensus forecast. To reduce the effect of outliers, we winsorize all variables except the analyst forecast error at the top and bottom one percent of the distributions.

Table 1 presents descriptive statistics for the interim expenses and earnings management variables. The average seasonal $\Delta COGS$, ΔSGA , and ΔTAX are approximately \$0.44 per share, \$0.14 per share, and \$0.04 per share, respectively (shown in Panel A of Table 1). The average

²² Unexpected changes in pretax income will cause an induced change in the ETR because the change in income alters the proportion of permanent differences in pretax book income, in addition to the tax effect of income relative to tax credits (Dhaliwal et al. 2004).

seasonal $\Delta COGS$, ΔSGA , and ΔTAX are 6.00, 3.11, and 0.86 percent of sales, respectively (shown in Panel B of Table 1) The average year-to-date ETR ($YTDETR$) is 35 percent and the quarterly $\Delta YTDETR$ is 0.21 percent of pretax earnings (shown in Panel C of Table 1). Given that average sales are \$6.42 per share (\$469 million) and average pretax income is \$0.57 per share (\$51 million), the average changes reported above represent economically significant amounts. For example, a one percent decrease in SG&A would increase net income by almost 3 percent in our sample, which is a substantial amount in an environment where firms routinely beat analyst forecasts by one or two pennies.

On average, sample firms beat the forecast (FE) by slightly more than a half cent per share. The majority of firm-quarters beat the forecast before any change in interim expenses; approximately 77 percent beat the forecast before any change in COGS ($1 - MISS^{COGS}$), 81 percent beat the forecast before any change in SG&A ($1 - MISS^{SGA}$), and 70 percent beat the forecast before any change in the provision for income taxes ($1 - MISS^{TAX}$).²³ Further, $MISSAMT$ is significantly negative for each interim expense, which provides additional evidence that most firms beat analyst forecasts without making unexpected changes in interim expenses.

5.0. Sample Profile and Results

5.1. Univariate Results

Table 2 presents evidence that unexpected changes in interim expenses begin to vary in a manner consistent with earnings management when firms would not have made their earnings forecasts without a change in one of the interim expenses. Changes in COGS for firms that would have missed their forecasts regardless of the change in COGS (denoted Miss | Miss in Table 2) average -\$0.32 per share while the change in COGS for firms that made their forecasts

²³ In order to avoid confusion in Tables 1 and 4, we superscript $MISS$ with COGS, SG&A, or TAX to indicate which expense we used to calculate each variable.

due to decreasing their COGS (denoted Miss | Beat in Table 2) are larger, averaging -\$0.39 per share. In contrast, changes in COGS for firms that would have made their forecasts regardless of the change in COGS (denoted Beat | Beat in Table 2) average \$0.69 per share, consistent with income smoothing. Similarly, changes in SG&A for firms that would have missed their forecasts regardless of the change in SG&A expense (Miss | Miss) are -\$0.06 per share on average while changes in SG&A are larger, -\$0.11 per share, for firms that made their forecasts as a result of decreasing their SG&A expense (Miss | Beat). Consistent with income smoothing changes in SG&A are \$0.19 per share for firms that would have made their forecasts regardless of the change in SG&A expense (Beat | Beat). The pattern is similar for income taxes. Firms that would have missed their forecasts regardless of the change in the tax provision (Miss | Miss) change their YTDETR (tax provision) by -0.27 percent (-\$0.04 per share) while firms that made their forecast because of changing the tax provision (Miss | Beat) change their YTDETR (tax provision) by -0.42 percent (-\$0.08 per share). Finally, firms that would have made their forecasts regardless of the change in the tax provision (Beat | Beat) change their YTDETR (tax provision) 0.44 percent (0.08 per share). The difference in the change in each interim expense (COGS, SG&A and the tax provision) between Miss | Miss firms and Miss | Beat firms is significant at $p < 0.05$.

The changes in interim expenses reported in Table 2 are broadly consistent with managers exploiting their discretion under the integral method to enable their firms to meet analyst forecasts. Table 3 presents the frequencies with which firms that would meet or miss their forecasts absent a change in interim expenses make income-increasing or income-decreasing changes to those expenses. Of the firms that would have missed their forecasts absent a change in COGS), 96.3 percent decreased their COGS while only 3.7 percent of such firms

increased their COGS, which is consistent with managing earnings upwards to meet the forecast. For firms that would have made their forecasts prior to the change in COGS, 98.32 percent increased their COGS while only 1.68 percent decreased their COGS, which is consistent with managing earnings downwards after meeting the forecast. SG&A and the provision for income taxes exhibit similar patterns. For SG&A expenses, 87.56 percent of firms that would have missed their forecasts absent a change in SG&A decreased SG&A expenses while 96.92 percent of firms that would have made their forecasts regardless of a change in SG&A increased SG&A. Finally, 86.35 percent of firms that would have missed their forecasts absent a change in the provision for income taxes decreased the tax provision while 94.13 percent of firms that would have made their forecasts increased the tax provision.

The descriptive statistics presented so far raise the question of whether managers use changes in interim expenses individually or as complements to each other. The Pearson correlation matrix in Table 4 provides some evidence on this issue.²⁴ The correlations of $\Delta COGS$, ΔSGA , and ΔTAX are positive and significant; thus, these expenses tend to increase at the same time. $\Delta COGS$, ΔSGA , and ΔTAX are significantly negatively correlated with firms missing their forecasts before changes in COGS, SGA, or the provision for income taxes ($MISS^{COGS}$, $MISS^{SGA}$, and $MISS^{TAX}$, respectively) as we would expect based on the results reported in Tables 2 and 3.

In summary, the univariate statistics indicate that, consistent with H_1 , H_2 , and H_3 , changes in interim expenses are income increasing when firms would miss their earnings forecasts before the effect of the change in the interim expense. In addition, firms that would have made their

²⁴ We scale the financial statement variables in Table 4 by shares outstanding. Inferences from the correlations remain the same when we scale the variables by sales.

forecasts absent any change in interim expenses make income-decreasing changes, on average, consistent with earnings smoothing.

5.2. *Multivariable Results*

Tables 5, 6, and 7 present the results of regressions of seasonally differenced quarterly expenses on lagged seasonally differenced quarterly expenses, variables that capture incentives to beat analyst forecasts, and controls for expected interim expense changes. In each table, the auto-regressive expense coefficients for quarters in the same fiscal year are larger than the auto-regressive expense coefficients for quarters in different fiscal years. For example, the auto-regressive COGS coefficient (δ_1^{Q1}) in Table 5 between the first quarter $\Delta COGS$ and the preceding fiscal year's fourth quarter $\Delta COGS$ is 0.0744. In contrast, the three within-year auto-regressive coefficients (δ_1^{Q2} , δ_1^{Q3} , and δ_1^{Q4}) range from 0.1422 to 0.2422. We find similar results for the auto-regressive SGA coefficients in Table 6 and the auto-regressive TAX coefficients in Table 7. Similar to the results obtained by Rangan and Sloan (1998) for standardized unexpected earnings, the evidence in Tables 5, 6, and 7 indicates that the auto-regressive expense coefficients behave in a manner consistent with the implications of the integral method for interim reporting.

We turn next to the tests of earnings management incentives. The results in Tables 5, 6, and 7 are consistent with our hypotheses, which predicts $\delta_3 + \delta_4 < 0$. In Table 5, the *MISSAMT* coefficient for firms that miss the consensus forecast absent a change in COGS is negative and significant in the pooled regression ($\delta_3^{Pooled} + \delta_4^{Pooled} = -0.0438$, $t = -28.63$) and each quarterly regression ($\delta_3^{Q1} + \delta_4^{Q1} = -0.0494$, $t = -15.43$; $\delta_3^{Q2} + \delta_4^{Q2} = -0.0391$, $t = -13.38$; $\delta_3^{Q3} + \delta_4^{Q3} = -0.0451$, $t = -17.45$; $\delta_3^{Q4} + \delta_4^{Q4} = -0.0414$, $t = -12.97$), consistent with H₁. We expected the

coefficients to be negative since a positive forecast error ($MISS = 1$) provides the incentive to decrease COGS (increasing earnings).

For firms that would make their forecast without a change in COGS, we expect the coefficient to again be negative since a negative forecast error would be associated with the incentive to increase the COGS, consistent with income smoothing. Since $MISS = 0$ in this case, we can investigate this question using only the δ_3 coefficient. The coefficient on $MISSAMT$ in the pooled regression ($\delta_3^{Pooled} = -0.0270, t = -49.55$) and each quarterly regression ($\delta_3^{Q1} = -0.0284, t = -21.80$; $\delta_3^{Q2} = -0.0241, t = -24.16$; $\delta_3^{Q3} = -0.0284, t = -35.58$; $\delta_3^{Q4} = -0.0269, t = -27.62$) is significantly negative for firms that beat the forecast absent a change in COGS, which indicates that firm-quarters that beat the forecast with premanaged earnings make income-decreasing COGS changes.

So far, our results indicate that the change in the COGS is negative for firms that would have missed their forecasts without a change in the COGS and positive for firms that would have made their forecasts. Our next test provides evidence that the change in the COGS is of greater magnitude when firms would miss their forecasts. Specifically, the coefficient on the interaction $MMAMT$ is significantly negative in the pooled regression ($\delta_4^{Pooled} = -0.0168, t = -10.74$) and each quarterly regression ($\delta_4^{Q1} = -0.0210, t = -5.88$; $\delta_4^{Q2} = -0.0150, t = -4.64$; $\delta_4^{Q3} = -0.0167, t = -6.52$; $\delta_4^{Q4} = -0.0145, t = -4.69$), suggesting that firms that miss the forecast absent a change in COGS change COGS more than firms that meet or beat the forecast prior to a change in COGS.

The results of tests in Table 6, designed to capture the relationship between changes in SG&A and meeting analyst forecasts, are similar to those in Table 5. The coefficient on $MISSAMT$ for firms that miss the consensus forecast absent a change in SG&A is negative and

significant in each regression ($\delta_3^{Pooled} + \delta_4^{Pooled} = -0.0703, t = -18.69$; $\delta_3^{Q1} + \delta_4^{Q1} = -0.0964, t = -15.41$; $\delta_3^{Q2} + \delta_4^{Q2} = -0.0591, t = -12.95$; $\delta_3^{Q3} + \delta_4^{Q3} = -0.0525, t = -6.67$; $\delta_3^{Q4} + \delta_4^{Q4} = -0.0736, t = -9.75$), consistent with H₂. Further, the coefficient on *MISSAMT* in each regression is significantly negative ($\delta_3^{Pooled} = -0.0491, t = -23.36$; $\delta_3^{Q1} = -0.0676, t = -13.08$; $\delta_3^{Q2} = -0.0405, t = -18.98$; $\delta_3^{Q3} = -0.0408, t = -13.22$; $\delta_3^{Q4} = -0.0477, t = -16.54$), as is the coefficient on *MMAMT* in each regression ($\delta_4^{Pooled} = -0.0212, t = -6.76$; $\delta_4^{Q1} = -0.0288, t = -5.76$; $\delta_4^{Q2} = -0.0186, t = -4.07$; $\delta_4^{Q3} = -0.0117, t = -1.55$; $\delta_4^{Q4} = -0.0259, t = -3.59$).

Table 7 presents the results of tests designed to capture the relationship between changes in the provision for income taxes and meeting analyst forecasts. The *MISSAMT* coefficient for firms that miss the consensus forecast absent a change in the provision for income taxes is negative and significant in the pooled regression ($\delta_3^{Pooled} + \delta_4^{Pooled} = -0.067, t = -18.14$) and each quarterly regression ($\delta_3^{Q1} + \delta_4^{Q1} = -0.0536, t = -6.98$; $\delta_3^{Q2} + \delta_4^{Q2} = -0.0603, t = -10.93$; $\delta_3^{Q3} + \delta_4^{Q3} = -0.0752, t = -11.48$; $\delta_3^{Q4} + \delta_4^{Q4} = -0.0832, t = -10.11$), consistent with H₃. The coefficient on *MISSAMT* in the pooled regression ($\delta_3^{Pooled} = -0.0666, t = -21.87$) and each quarterly regression ($\delta_3^{Q1} = -0.0592, t = -9.45$; $\delta_3^{Q2} = -0.0607, t = -12.04$; $\delta_3^{Q3} = -0.0732, t = -12.05$; $\delta_3^{Q4} = -0.0735, t = -11.13$) is also significantly negative. However, the coefficient on the interaction term *MMAMT* is not consistent with the results reported for COGS and SGA. The coefficient is positive and insignificant in quarters one and two ($\delta_4^{Q1} = 0.056, t = 1.25$; $\delta_4^{Q2} = 0.0004, t = 0.92$), while it is negative and insignificant in quarter three ($\delta_4^{Q3} = -0.0020, t = -0.32$). Finally, the coefficient is negative (consistent with Dhaliwal et al. (2004)) in quarter four although it is only marginally

significant ($\delta_4^{Q4} = -0.0097, t = -1.58$).²⁵ Overall, the results for the interaction term *MMAMT* for quarters one through three suggest that the incentive to manage the income tax provision to meet or beat analyst forecasts is not stronger than the incentive to use the provision to smooth earnings for firms that would have made the forecast with premanaged earnings.

Finally, we briefly discuss the results for the control variables. As expected, Table 5 indicates that there is a strong positive association between $\Delta SALES$ and $\Delta COGS$. The insignificant coefficients on *SALESDECR* in the quarterly and pooled regressions indicate that the association is constant for both sales increases and decreases. There is also a positive and significant association between $\Delta SALES$ and ΔSGA in each regression in Table 6. The negative and significant coefficient on *SALESDECR* in the Table 6 pooled regression ($\delta_7^{Pooled} = -0.0398, t = -7.24$) and each quarterly regression ($\delta_7^{Q1} = -0.0589, t = -4.75$; $\delta_7^{Q2} = -0.0225, t = -3.11$; $\delta_7^{Q3} = -0.0371, t = -3.30$; $\delta_7^{Q4} = -0.0408, t = -3.49$) supports the sticky cost hypothesis in Anderson et al. (2003); the increase of SG&A expenses when revenues increase is greater than the decrease when revenues decrease. Finally, Table 7 documents a strong positive association between ΔPTE and ΔTAX . The positive and significant coefficients on *PTEDECR* in each regression suggest that the association is stronger when pretax earnings decrease.

5.3 Supplemental Tests: Controlling for the effects of Other Types of Earnings Management

A potential concern with attributing the evidence from our earnings management tests to discretion caused by the integral method is the existence of other discretionary actions taken by managers to influence earnings. For example, Roychowdhury (2005) presents initial evidence that managers overproduce and reduce discretionary expenses to meet annual analyst forecasts,

²⁵ Note that our measure of tax expense decrease is relative to the same quarter a year ago, whereas Dhaliwal et al. used the YTDETR from the third quarter as the expectation.

McVay (2006) documents that firms shift core expenses into special items in order to meet annual analyst forecasts, and Schrand and Wong (2003) and Frank and Rego (2006) find that managers use the deferred tax asset valuation allowance (DTVA) to meet annual analyst forecasts.²⁶ In this section of the paper, we discuss the results of untabulated tests that control for these issues.

Three prevalent types of real earnings management activities might affect our earnings management inferences: overproduction to decrease discretionary COGS and decreasing discretionary research and development (R&D) and SG&A expenses. In order to identify firm-quarters that likely exhibit these real earnings management activities, we first identify firms that have stronger incentives to use real earnings management due to reduced accrual flexibility. We calculate the beginning balance of net operating assets (NOA), scaled by sales, as our proxy for accrual flexibility.²⁷ Barton and Simko (2002) and Gunny (2005) document that NOA captures previous optimism in financial reporting; firms in the highest quintile of NOA report larger cumulative levels of abnormal income-increasing accruals. Barton and Simko (2002) conclude that managers' ability to opportunistically bias earnings decreases with the level of previous earnings management.

Next, we calculate production costs as COGS plus the change in inventory (scaled by sales) for firms that report non-missing values of either raw materials inventory (annual *Compustat* #76) or work-in-process inventory (annual *Compustat* #77). We identify firms suspected of overproducing to decrease COGS as firms in the highest production quartile and the

²⁶ We are not aware of any studies that focus on the use of specific pretax discretionary accruals to meet analyst forecasts. Marquardt and Wiedman (2004) examines the use of specific discretionary accruals to manage earnings in three different settings, equity offerings, management buyouts, and to avoid reporting an earnings decrease,

²⁷ We calculate NOA as operating assets (OA) minus operating liabilities (OL) where OA = total assets (quarterly *Compustat* #44) minus cash and marketable securities (quarterly *Compustat* #36) and OL = total assets minus the current and long-term portion of debt (quarterly *Compustat* #51 and #45) minus the book value of preferred and common equity (quarterly *Compustat* #55 and #59) minus minority interest (quarterly *Compustat* #3).

highest NOA quartile in any given quarter (748 firm-quarters). SG&A expense scaled by sales captures R&D costs in addition to other operating expenses.²⁸ We identify firms suspected of cutting SG&A and R&D expenses as firms in the lowest SG&A (scaled by sales) quintile and the highest NOA quintile (2,810 firm-quarters).

When we exclude the overproduction firm-quarter observations from the sample and re-run the COGS regressions in Table 5, we find no substantive differences from the results originally reported in Table 5. We also exclude the firm-quarters suspected of reducing SG&A and R&D expenses from the sample and re-run the SG&A regressions in Table 6. Again, we find no material differences from the results originally reported in Table 6.

We also perform additional tests to control for the classification shifting documented in McVay (2006). We identify all firm-quarters with positive special items (quarterly *Compustat* #32) and exclude these 3,091 observations from the sample. Then we estimate the COGS regressions and SG&A regressions and find results that are similar to those originally reported in Table 5 for COGS and Table 6 for SG&A expense. We conclude that the effects of the real earnings management activities of overproduction or decreasing SG&A expense, as well as shifting core expenses into special items do not account for our results in Tables 5 or 6.

Finally, we augment the TAX regressions in Table 7 to include other variables associated with tax and non-tax earnings management. We include deferred tax expense (scaled by sales) and an interaction of deferred tax expense (quarterly *Compustat* #35) and *MISS* to control for potential earnings management through the DTVA, as well as other sources of accrual-based pretax earnings management (Philips, Pincus, and Rego 2003; Dhaliwal et al. 2004). The coefficient on deferred tax expense is positive and significant in the first, third, and fourth

²⁸ *Compustat* does not report quarterly R&D expense. However, *Compustat* includes R&D expense in total SG&A expense when firms record a separate R&D expense line item in the income statement.

quarter TAX regression, as well as the pooled TAX regression.²⁹ The coefficient on the interaction of deferred tax expense and *MISS* is negative and significant in each regression. However, the results for the main variables of interest (*MISS*, *MISSAMT*, and *MMAMT*) do not change.

6.0. Conclusions

Much accounting research investigates earnings management to achieve earnings targets such as analysts' forecasts. However, this paper is the first to investigate whether discretion in the application of the integral method to interim reporting may contribute to intra-period earnings management. The integral method introduces discretion into the calculation of interim expenses in part because managers decide whether to allocate costs that benefit multiple periods or to defer costs deemed "temporary." For example, managers have discretion over the recognition of "permanent" inventory holding losses when determining cost of goods sold, which could be recognized or deferred as necessary for managers to meet earnings targets.

Our results are consistent with firms reporting income-increasing changes in quarterly COGS, SG&A, and the provision for income taxes when the firm would otherwise miss its analyst earnings forecasts. In addition, we find evidence that for firms that would have made their forecasts absent any change in quarterly COGS, SG&A, and the provision for income taxes the changes in interim expenses reported are income-decreasing consistent with income-smoothing. Our results are robust to controls for changes in sales levels, inventory levels, and the "stickiness" of SG&A documented in prior literature. Finally, we provide evidence that changes in COGS, SG&A, and the provision for income taxes that allow firms to meet earnings targets are complements of one another (i.e., they are positively correlated).

²⁹ The coefficient estimate for deferred tax expense in the second quarter is positive and marginally significant ($t = 2.00$, $p = 0.0596$).

Prior research has documented real earnings management involving COGS and SG&A (e.g., Roychowdhury 2005) and the shifting of COGS and SG&A “below the line” (McVay 2006). Our paper contributes to the literature by providing evidence that managers can opportunistically shift these expenses across quarters through the discretion to allocate costs implicit in the integral method. In addition, prior research has shown that changes in the fourth quarter provision for income taxes are associated with meeting or beating analyst forecasts. We extend these results to quarters one, two, and three. Finally, we also provide evidence that COGS, SG&A, and the provision for income taxes are increased (decreasing income) when firms would have made their forecasts absent a change in these expenses, consistent with income-smoothing.

The SEC has recently released new rules requiring firms to file interim financial statements more quickly. These requirements indicate that the SEC views the information in interim financial statements as important. However, our evidence suggests that the discretion granted managers by the integral method to determine the timing and amount of costs reported in interim financial statements creates an opportunity for intra-period earnings management. This evidence should contribute to the debate on how to improve interim reporting.

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TABLE 1
Descriptive Statistics (n = 61,476)¹

<i>Variable</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>1st Quartile</i>	<i>Median</i>	<i>3rd Quartile</i>
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Panel A: Variables Scaled by Shares Outstanding

<i>Sales</i>	6.4209	6.7724	2.2903	4.2448	7.8291
<i>COGS</i>	4.2427	5.5319	1.0137	2.3601	5.1130
<i>SGA</i>	1.2668	1.1690	0.4902	0.9069	1.6240
<i>PTE</i>	0.5654	0.4486	0.2488	0.4644	0.7534
<i>TAX</i>	0.2024	0.1696	0.0836	0.1628	0.2716
Δ <i>Sales</i>	0.7059	1.3080	0.0922	0.4119	0.9542
Δ <i>COGS</i>	0.4441	1.0380	0.0095	0.1927	0.5873
Δ <i>SGA</i>	0.1415	0.2360	0.0163	0.0855	0.2097
Δ <i>PTE</i>	0.1050	0.2862	-0.0101	0.0792	0.1852
Δ <i>TAX</i>	0.0353	0.1082	-0.0083	0.0253	0.0674

Panel B: Variables Scaled by Sales

<i>COGS</i>	0.5625	0.1920	0.4245	0.5839	0.7145
<i>SGA</i>	0.2474	0.1442	0.1407	0.2276	0.3250
<i>PTE</i>	0.1286	0.0951	0.0569	0.1052	0.1792
<i>TAX</i>	0.0445	0.0342	0.0190	0.0363	0.0621
Δ <i>Sales</i>	0.1207	0.1715	0.0287	0.1080	0.2091
Δ <i>COGS</i>	0.0600	0.1157	0.0038	0.0536	0.1164
Δ <i>SGA</i>	0.0311	0.0513	0.0041	0.0201	0.0477
Δ <i>PTE</i>	0.0281	0.0803	-0.0020	0.0169	0.0470
Δ <i>TAX</i>	0.0086	0.0275	-0.0019	0.0055	0.0164

Panel C: Other Variables

<i>FE</i>	0.0061	0.0212	-0.0050	0.0100	0.0200
<i>MISS</i> ^{COGS}	0.2310	0.4215	0.0000	0.0000	0.0000
<i>MISSAMT</i>	-0.4501	1.0391	-0.5942	-0.1994	-0.0134
<i>MISS</i> ^{SGA}	0.1843	0.3877	0.0000	0.0000	0.0000
<i>MISSAMT</i>	-0.1477	0.2377	-0.2180	-0.0926	-0.0198
<i>MISS</i> ^{TAX}	0.2964	0.4567	0.0000	0.0000	1.0000
<i>MISSAMT</i>	-0.0414	0.1129	-0.0804	-0.0322	0.0100
<i>YTDETR</i>	0.3501	0.0973	0.3250	0.3691	0.3950
Δ <i>YTDETR</i>	0.0021	0.1463	-0.0056	-0.0000	0.0035

¹ This table presents descriptive statistics for the sample variables. We scale all variables in Panel A by shares outstanding and all variables in Panel B by sales. *Sales* = quarterly sales (*Compustat* quarterly item #2), *COGS* = quarterly cost of goods sold (*Compustat* quarterly item #30), *SGA* = quarterly selling, general, and administrative expense (*Compustat* quarterly item #1), *PTE* = quarterly pretax income (*Compustat* quarterly item #23), *TAX* = quarterly provision for income taxes (*Compustat* quarterly item #6). We compute all change variables relative to the same quarter of the previous fiscal year. *FE* = analyst forecast error, computed as *I/B/E/S* actual quarterly EPS – the last *I/B/E/S* quarterly forecast, *MISS* = a 0/1 dummy variable that equals one if *MISSAMT* > 0, zero otherwise, *MISSAMT* = analyst forecast error assuming no change in the current quarter interim expense (*COGS*, *SG&A*, or *TAX*), computed as the last *I/B/E/S* quarterly forecast – (*I/B/E/S* actual quarterly EPS + the seasonal change in quarterly interim expense (*COGS*, *SG&A*, or *TAX*)), *YTDETR* = year-to-date effective tax rate, computed as the YTD provision for income taxes divided by YTD pretax income.

TABLE 2
Mean Changes in Interim Expenses and Mean Forecast Errors¹

Panel A: Cost of Goods Sold

<i>Pre EM Post EM</i>	<i>n</i>	$\Delta COGS$	<i>FE</i>	<i>MISSAMT</i>
Miss Miss	4,526	-0.3209	-0.0225	0.3424
Miss Beat	9,673	-0.3895	0.0148	0.3755
Beat Beat	47,267	0.6880	0.0070	-0.6950

Panel B: Selling, General, & Administrative Expenses

<i>Pre EM Post EM</i>	<i>n</i>	ΔSGA	<i>FE</i>	<i>MISSAMT</i>
Miss Miss	4,606	-0.0600	-0.0238	0.0820
Miss Beat	6,721	-0.1133	0.0132	0.1006
Beat Beat	50,139	0.1942	0.0079	-0.2021

Panel C: Provision for Income Taxes

<i>Pre EM Post EM</i>	<i>n</i>	$\Delta YTD ETR$	ΔTAX	<i>FE</i>	<i>MISSAMT</i>
Miss Miss	8,559	-0.0027	-0.0402	-0.0236	0.0634
Miss Beat	9,664	-0.0042	-0.0790	0.0111	0.0690
Beat Beat	43,215	0.0044	0.0759	0.0108	-0.0868

¹This table partitions the means of pre earnings management (*Pre EM*) and post earnings management (*Post EM*) changes in interim expenses and changes in forecast errors. If *Pre EM* = Miss (Beat) then quarterly EPS excluding the seasonal change in interim expenses missed (beat) analysts' forecasts. If *Post EM* = Miss (Beat) then actual quarterly EPS missed (beat) analysts' forecasts. We define the variables as follows: $\Delta COGS$ = the seasonal change in quarterly cost of goods sold scaled by shares outstanding. ΔSGA = the seasonal change in quarterly selling, general, and administrative expense scaled by shares outstanding. ΔTAX = the seasonal change in quarterly provision for income taxes scaled by shares outstanding. $\Delta YTD ETR$ = the change in the year-to-date effective tax rate, where we compute the ETR as the YTD provision for income taxes divided by YTD pretax income. *FE* = analyst forecast error, computed as *I/B/E/S* actual quarterly EPS – the last *I/B/E/S* quarterly forecast. *MISSAMT* = analyst forecast error assuming no change in the current quarter interim expense (COGS, SG&A, or TAX), computed as the last *I/B/E/S* quarterly forecast – (*I/B/E/S* actual quarterly EPS + the seasonal change in quarterly interim expense (COGS, SG&A, or TAX)).

TABLE 3
Frequency Distribution of Seasonal Changes in Interim Expenses and Analyst Forecast Errors
Where Quarterly EPS Excluding the Seasonal Change in Interim Expenses Would Miss/Beat the
Forecast¹

Panel A: Cost of Goods Sold

	$\Delta COGS \geq 0$		$\Delta COGS < 0$	
	Firm-Qtrs	Row %	Firm-Qtrs	Row %
<i>MISS</i> = 0	46,483	0.9832	794	0.0168
<i>MISS</i> = 1	525	0.0370	13,674	0.9630

Panel B: Selling, General, & Administrative Expenses

	$\Delta SGA \geq 0$		$\Delta SGA < 0$	
	Firm-Qtrs	Row %	Firm-Qtrs	Row %
<i>MISS</i> = 0	48,606	0.9692	1,543	0.0308
<i>MISS</i> = 1	1,409	0.1244	9,918	0.8756

Panel C: Provision for Income Taxes

	$\Delta TAX \geq 0$		$\Delta TAX < 0$	
	Firm-Qtrs	Row %	Firm-Qtrs	Row %
<i>MISS</i> = 0	40,715	0.9413	2,538	0.0587
<i>MISS</i> = 1	2,487	0.1365	15,736	0.8635

¹This table reports the frequency distribution of firm-quarters whose quarterly EPS excluding the seasonal change in interim expenses missed or exceeded analysts' forecasts. We define the variables as follows: $\Delta COGS$ = the seasonal change in quarterly cost of goods sold scaled by shares outstanding. ΔSGA = the seasonal change in quarterly selling, general, and administrative expense scaled by shares outstanding. ΔTAX = the seasonal change in quarterly provision for income taxes scaled by shares outstanding. *MISS* = a 0/1 dummy variable that equals one if *MISSAMT* > 0, zero otherwise, *MISSAMT* = analyst forecast error assuming no change in the current quarter interim expense (COGS, SG&A, or TAX), computed as the last *I/B/E/S* quarterly forecast - (*I/B/E/S* actual quarterly EPS + the seasonal change in quarterly interim expense (COGS, SG&A, or TAX))

TABLE 4
Sample Correlations (n = 61,476)¹

	<i>Sales</i>	<i>COGS</i>	<i>SGA</i>	<i>PTE</i>	<i>TAX</i>	<i>YTDETR</i>	<i>MISS</i> ^{COGS}	<i>MISS</i> ^{SGA}	<i>MISS</i> ^{TAX}
<i>Sales</i>									
<i>COGS</i>	0.9800								
<i>SGA</i>	0.7122	0.5870							
<i>PTE</i>	0.4865	0.3846	0.4553						
<i>TAX</i>	0.5059	0.4100	0.4647	0.9561					
<i>YTDETR</i>	0.1509	0.1449	0.1244	0.0844	0.2369				
<i>MISS</i> ^{COGS}	-0.0549	-0.0602	-0.0326	-0.0349	-0.0472	-0.0457			
<i>MISS</i> ^{SGA}	-0.0114	0.0039	-0.0647	-0.0776	-0.0727	-0.0240	0.3064		
<i>MISS</i> ^{TAX}	-0.0022	0.0085	-0.0040	-0.1712	-0.1817	-0.0280	0.1777	0.1715	
	Δ <i>Sales</i>	Δ <i>COGS</i>	Δ <i>SGA</i>	Δ <i>PTE</i>	Δ <i>TAX</i>	Δ <i>YTDETR</i>	<i>MISS</i> ^{COGS}	<i>MISS</i> ^{SGA}	<i>MISS</i> ^{TAX}
Δ <i>Sales</i>									
Δ <i>COGS</i>	0.9552								
Δ <i>SGA</i>	0.6232	0.4727							
Δ <i>PTE</i>	0.2969	0.1701	0.1059						
Δ <i>TAX</i>	0.3018	0.1814	0.1213	0.8850					
Δ <i>YTDETR</i>	-0.0092	-0.0048	-0.0184	-0.0072	0.0256				
<i>MISS</i> ^{COGS}	-0.4208	-0.4286	-0.2428	-0.0986	-0.1027	-0.0012			
<i>MISS</i> ^{SGA}	-0.2815	-0.2071	-0.4695	-0.0427	-0.0529	0.0054	0.3064		
<i>MISS</i> ^{TAX}	-0.2042	-0.1196	-0.1026	-0.5255	-0.5767	-0.0247	0.1777	0.1715	

¹ This table presents Pearson correlation coefficients for selected sample variables (scaled by shares outstanding). The first panel presents correlations of the levels of selected sample variables, while the second panel presents correlations of the seasonal changes in selected sample variables. We define the variables as follows: *Sales* = quarterly sales. *COGS* = quarterly cost of goods sold. *SGA* = quarterly selling, general, and administrative expense. *PTE* = quarterly pretax income. *TAX* = quarterly provision for income taxes. *YTDETR* = year-to-date effective tax rate, computed as the YTD provision for income taxes divided by YTD pretax income. *MISS* = a 0/1 dummy variable that equals one if *MISSAMT* > 0, zero otherwise, *MISSAMT* = analyst forecast error assuming no change in the current quarter interim expense (*COGS*, *SG&A*, or *TAX*), computed as the last *I/B/E/S* quarterly forecast – (*I/B/E/S* actual quarterly EPS + the seasonal change in quarterly interim expense (*COGS*, *SG&A*, or *TAX*)).

TABLE 5
Regression Results of the Relationship between Seasonal Changes in Cost of Goods Sold and Earnings Management¹

$$\Delta COGS_{itq} = \delta_0 + \delta_1 \Delta COGS_{itq-1} + \delta_2 MISS_{itq} + \delta_3 MISSAMT_{itq} + \delta_4 MMAMT_{itq} + \delta_5 \Delta SALES_{itq} + \delta_6 SD_{itq} + \delta_7 SALESDECR_{itq} + \varepsilon_{itq}$$

<i>QTR</i>	δ_0	δ_1	δ_2	δ_3	δ_4	δ_5	δ_6	δ_7	\bar{R}^2
1	0.0043 3.95	0.0744 5.83	-0.0598 -18.67	-0.0284 -21.80	-0.0210 -5.88	0.3983 25.48	0.0400 12.98	-0.0198 -1.03	0.8298 102.90
2	0.0027 2.61	0.2422 20.84	-0.0511 -17.22	-0.0241 -24.16	-0.0150 -4.64	0.3336 32.23	0.0303 8.51	0.0055 0.30	0.8603 152.77
3	0.0064 5.68	0.1422 18.69	-0.0616 -20.71	-0.0284 -35.58	-0.0167 -6.52	0.3489 32.46	0.0375 16.94	0.0216 1.53	0.8396 104.58
4	0.0054 5.86	0.2409 16.44	-0.0639 -23.26	-0.0269 -27.62	-0.0145 -4.69	0.3022 29.10	0.0360 13.75	-0.0008 -0.05	0.8282 112.11
Pooled	0.0047 8.79	0.1749 17.97	-0.0591 -38.00	-0.0270 -49.55	-0.0168 -10.74	0.3457 49.33	0.0359 24.25	0.0016 0.19	0.8395 216.96

¹This table presents the results of quarterly (n = 21) and pooled (n = 84) cross-sectional OLS regressions of seasonally differenced COGS on lagged seasonally differenced COGS, variables that capture earnings management incentives, and additional controls for the nondiscretionary components of seasonally differenced COGS. We estimate the cross-sectional regressions by year and quarter (Fama and MacBeth 1973) and use average slopes and their time-series standard errors to draw inferences (we list mean coefficients first, followed by the *t*-statistic). We define the variables as follows: $\Delta COGS$ = Seasonal change in quarterly cost of goods sold scaled by sales. $MISS$ = a 0/1 dummy variable that equals one if $MISSAMT > 0$, zero otherwise. $MISSAMT$ = analyst forecast error assuming no change in the current quarter COGS, computed as the last *I/B/E/S* quarterly forecast – (*I/B/E/S* actual quarterly EPS + the seasonal change in quarterly COGS). $MMAMT$ = The interaction of $MISS$ and $MISSAMT$. $\Delta SALES$ = Seasonal change in quarterly sales, scaled by sales. SD = a dummy variable that takes the value of one if $\Delta SALES$ is negative, zero otherwise. $SALESDECR$ = The interaction of $\Delta SALES$ and SD .

TABLE 6
Regression Results of the Relationship between Seasonal Changes in SG&A Expenses and Earnings Management¹

$$\Delta SG A_{itq} = \delta_0 + \delta_1 \Delta SG A_{itq-1} + \delta_2 MISS_{itq} + \delta_3 MISSAMT_{itq} + \delta_4 MMAMT_{itq} + \delta_5 \Delta SALES_{itq} + \delta_6 SD_{itq} + \delta_7 SALESDECR_{itq} + \varepsilon_{itq}$$

<i>QTR</i>	δ_0	δ_1	δ_2	δ_3	δ_4	δ_5	δ_6	δ_7	\bar{R}^2
1	0.0022 2.74	0.2552 13.96	-0.0197 -15.50	-0.0676 -13.08	-0.0288 -5.76	0.1053 18.97	0.0125 10.27	-0.0589 -4.75	0.6025 57.04
2	0.0009 1.14	0.5640 30.36	-0.0138 -12.65	-0.0405 -18.98	-0.0186 -4.07	0.0591 13.80	0.0062 7.08	-0.0225 -3.11	0.7769 80.91
3	0.0010 1.69	0.5301 29.54	-0.0167 -18.77	-0.0408 -13.22	-0.0117 -1.55	0.0682 17.77	0.0095 10.84	-0.0371 -3.30	0.7606 65.61
4	0.0014 1.17	0.5304 24.94	-0.0213 -18.90	-0.0477 -16.54	-0.0259 -3.59	0.0618 9.93	0.0097 9.33	-0.0408 -3.49	0.7483 68.25
Pooled	0.0014 3.18	0.4699 28.33	-0.0179 -28.49	-0.0491 -23.36	-0.0212 -6.76	0.0736 22.88	0.0095 17.10	-0.0398 -7.24	0.7221 77.75

¹This table presents the results of quarterly (n = 21) and pooled (n = 84) cross-sectional OLS regressions of seasonally differenced SG&A on lagged seasonally differenced SG&A, variables that capture earnings management incentives, and additional controls for the nondiscretionary components of seasonally differenced SG&A. We estimate the cross-sectional regressions by year and quarter (Fama and MacBeth 1973) and use average slopes and their time-series standard errors to draw inferences (we list mean coefficients first, followed by the *t*-statistic). We define the variables as follows: $\Delta SG A$ = Seasonal change in quarterly SG&A scaled by sales. $MISS$ = a 0/1 dummy variable that equals one if $MISSAMT > 0$, zero otherwise. $MISSAMT$ = analyst forecast error assuming no change in the current quarter SG&A, computed as the last *I/B/E/S* quarterly forecast - (*I/B/E/S* actual quarterly EPS + the seasonal change in quarterly SG&A). $MMAMT$ = The interaction of $MISS$ and $MISSAMT$. $\Delta SALES$ = Seasonal change in quarterly sales, scaled by sales. SD = a dummy variable that takes the value of one if $\Delta SALES$ is negative, zero otherwise. $SALESDECR$ = The interaction of $\Delta SALES$ and SD .

TABLE 7
Regression Results of the Relationship between Seasonal Changes in the Provision for Income Taxes and Earnings Management¹

$$\Delta TAX_{itq} = \delta_0 + \delta_1 \Delta TAX_{itq-1} + \delta_2 MISS_{itq} + \delta_3 MISSAMT_{itq} + \delta_4 MMAMT_{itq} + \delta_5 \Delta PTE_{itq} + \delta_6 PTED_{itq} + \delta_7 PTEDECR_{itq} + \varepsilon_{itq}$$

<i>QTR</i>	δ_0	δ_1	δ_2	δ_3	δ_4	δ_5	δ_6	δ_7	\bar{R}^2
1	-0.0004 -1.63	0.0336 9.34	-0.0036 -6.71	-0.0592 -9.45	0.0056 1.25	0.2432 18.31	0.0026 4.21	0.0298 3.75	0.8316 52.98
2	-0.0002 -0.78	0.0936 8.49	-0.0052 -11.36	-0.0607 -12.04	0.0004 0.92	0.2241 19.19	0.0045 10.10	0.0325 2.70	0.8236 67.93
3	-0.0005 -2.14	0.0949 7.73	-0.0058 -6.97	-0.0732 -12.05	-0.0020 -0.32	0.2145 18.40	0.0059 7.55	0.0241 2.51	0.8033 60.87
4	0.0003 0.67	0.0590 10.08	-0.0085 -14.92	-0.0735 -11.13	-0.0097 -1.58	0.2046 25.50	0.0074 10.18	0.0303 2.56	0.7897 55.88
Pooled	-0.0002 -1.30	0.0702 13.48	-0.0058 -16.10	-0.0666 -21.87	-0.0004 -0.16	0.2216 38.36	0.0051 13.60	0.0292 5.65	0.8121 115.40

¹This table presents the results of quarterly (n = 21) and pooled (n = 84) cross-sectional OLS regressions of seasonally differenced provision for income taxes on lagged seasonally differenced provision for income taxes, variables that capture earnings management incentives, and additional controls for the nondiscretionary components of seasonally differenced provision for income taxes. We estimate the cross-sectional regressions by year and quarter (Fama and MacBeth 1973) and use average slopes and their time-series standard errors to draw inferences (we list mean coefficients first, followed by the *t*-statistic). We define the variables as follows: ΔTAX = Seasonal change in the quarterly provision for income taxes scaled by sales. $MISS$ = a 0/1 dummy variable that equals one if $MISSAMT > 0$, zero otherwise. $MISSAMT$ = analyst forecast error assuming no change in the current quarter provision for income taxes, computed as the last *I/B/E/S* quarterly forecast – (*I/B/E/S* actual quarterly EPS + the seasonal change in quarterly provision for income taxes). $MMAMT$ = The interaction of $MISS$ and $MISSAMT$. ΔPTE = Seasonal change in quarterly pretax income, scaled by sales. $PTED$ = a dummy variable that takes the value of one if ΔPTE is negative, zero otherwise. $PTEDECR$ = The interaction of ΔPTE and $PTED$.