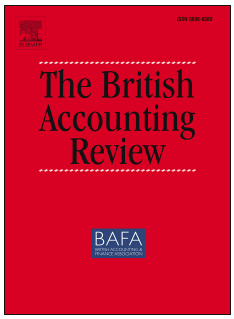

The effect of real earnings management on the persistence and informativeness of earnings

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The Effect of Real Earnings Management on the Persistence and Informativeness of Earnings

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Abstract: This study investigates the effect of real earnings management on two important aspects of earnings quality: earnings persistence and its informativeness about future cash flows. I focus on real earnings management through the abnormal reduction in discretionary expenditures and investigate how this type of real earnings management affects earnings quality. Examining a large sample over a period of four decades, I find that the extent of real earnings management is negatively related to earnings persistence, and this effect is achieved largely through the negative effect of real earnings management on cash flows rather than on accruals. The less persistent current earnings as a result of real earnings management exhibit a weakened ability to predict future cash flows, suggesting a decreased informativeness of current earnings about future cash flows. Moreover, I find that the negative effect of the abnormal reduction in discretionary expenses on earnings persistence and its association with future cash flows from operations is more pronounced in the post-SOX period. Overall, the results suggest that real earnings management through the abnormal reduction in discretionary expenses is associated with deteriorated earnings quality.

Keywords: real earnings management; abnormal reduction in discretionary expenses; cash flow manipulation; R&D; advertising expenses; earnings persistence; earnings quality;

JEL classifications: G31; M40; M41;

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1. Introduction

Prior literature provides evidence on the existence of real earnings management (Roychowdhury, 2006; Cohen et al., 2008). This type of earnings management alters firms' real operations and have potentially long-term operating consequences (Graham et al., 2005). Surprisingly, despite the prevalence of real earnings management, little research addresses how real earnings management affects earning quality. DeFond (2010, 406) points out that "…we know little about whether or how transactions management impacts EQ" and that "transaction management seems like an important area for further research." To answer this call, I investigate whether real earnings management influences earnings persistence and its informativeness about future cash flows (two widely used measures of earnings quality) and whether the influence on earnings persistence is equal across cash flow and accrual components of earnings. My study is the first to provide large-sample empirical evidence on this issue. Following prior literature (Hanlon, 2005; Atwood et al., 2010), I assume that higher persistence reflects higher earnings quality because earnings that possess such properties are viewed by investors as more sustainable, more permanent and less transitory, and, therefore, generally preferable.[1] Similarly, a stronger association between current earnings and future cash flows indicates the greater ability of current earnings to forecast future cash flows.

Real earnings management can appear in many forms.[2] I focus my investigation on one form of real earnings management — the abnormal reduction in discretionary expenses — for

[1] I acknowledge that earnings with high persistence are not always of high quality when underlying economic earnings are volatile. Earnings quality contains many attributes and is not fully captured by one particular attribute. I build on prior literature that considers higher persistence to be of higher earnings quality to conduct my analysis (e.g., Hanlon, 2005; Li, 2008; Atwood et al., 2010).

[2] Other forms of real earnings management include accelerating the timing of production, offering a suboptimal price discount, altering investing (e.g., sales of assets), and financing activities (e.g., stock repurchases).

the following two reasons.[3] First, based on the survey report of financial executives conducted by Graham et al. (2005), the abnormal reduction of discretionary expenses is a more pervasive and preferred form of real earnings management that managers use to boost earnings. Second, the abnormal reduction in discretionary expenses provides a cleaner setting to investigate the effect of real earnings management on earnings quality. Real earnings management has different implications for profit margin and operating cash flows, depending on the specific forms of real earnings management (Kothari et al., 2016). Abnormal reductions in discretionary expenses, such as research and development (R&D), advertising, and selling, general, and administration (SG&A), can temporarily increase current earnings and enable a firm to have higher profit margins and operating cash flows. However, other forms of real earnings management, such as price discounts and overproduction, could overstate earnings but simultaneously decrease profit margins and cash flows from operations (Roychowdhury, 2006; Kothari et al., 2016). When cash flows from operations are abnormally low in the current period while earnings are artificially overstated, low current-period cash flow from operations could reverse and return to the normal level in the future, exhibiting low persistence. At the same time, earnings continue to be high in the next period, exhibiting high persistence. Hence, unlike the abnormal reduction in discretionary expenses, the effect of price discounts and overproduction on earnings persistence is ambiguous.

The first research question I address is whether and how real earnings management through the abnormal reduction in discretionary expenses affects earnings persistence. Depending on different managerial incentives, earnings management can affect earnings persistence differently. On the one hand, firms can use real earnings management to

[3] I follow prior literature to use the terminology "abnormal reduction in discretionary expenses" to define managers' actions to reduce these variable expenses below a normal level in the current period to boost earnings (Roychowdhury, 2006; Cheng et al., 2016).

opportunistically increase current reported earnings and, in turn, reduce earnings persistence; this is because artificially increased current earnings will not persist into the future. On the other hand, firms can use real earnings management to smooth earnings or signal future profitability. As a result, current period earnings, although managed upward, will persist to a future period.[4] Prior literature provides evidence that managers reduce discretionary expenditures such as R&D expenditures (Baber et al., 1991; Dechow & Sloan, 1991), advertising expenses (Mizik & Jacobson, 2007), and SG&A expenses (Roychowdury, 2006) below normal levels to improve current earnings and meet certain earnings goals. These findings are consistent with the abnormal reduction in discretionary expenditures being used to improve current earnings rather than to smooth earnings. Prior studies also examine the signaling theory of real earnings management, but the empirical evidence is inconclusive. The evidence suggests that, in some cases, managers may use real earnings management to signal positive future performance (Gunny, 2010), but in other cases, real earnings management is associated with lower future performance (Cheng et al., 2016; Mizik & Jacobson, 2007). Theoretically, as firms' positive net present value (NPV) projects are funded by the normal level of R&D, advertising, and SG&A expenses, increasing current period earnings through cutting these discretionary expenditures below normal levels is achieved at the cost of forgoing firms' future economic benefit and long-term value. Hence, at the conceptual level, such reduction is more likely to be detrimental to future performance. To the extent that managers do not engage in the abnormal reduction in discretionary expenditures permanently, I conjecture that earnings persistence is decreased by the abnormal reduction in discretionary expenditures. Using a sample of US firms from 1975 to 2016, I find that when real earnings management is measured through cutting discretionary expenditures (Roychowdhury,

[4] I thank an anonymous referee for suggesting this alternative explanation.

2006; Cohen et al., 2008; Cheng et al., 2016), the persistence of current earnings decreases with my measure of real earnings management.

Next, I investigate whether the impact of the abnormal reduction in discretionary expenses on earnings persistence is through its impact on the accruals or cash flows from operations. As discretionary expenses are generally in the form of cash, a reduction in discretionary expenses could lower cash outflows and increase net cash flows from operations in the current period (Bushee, 1998; Roychowdhury, 2006; Lee, 2012). I conjecture that cash flows are more likely to be affected by real earnings management. To test this conjecture, I decompose current earnings into accruals and cash flows from operations. I find that the persistence of cash flows significantly decreases in all cases of the discretionary expense reductions but the persistence of accruals remains unchanged in the cases of real earnings management through the abnormal reduction in R&D, advertising, and total discretionary expense. My results suggest that the impact of real earnings management through the abnormal reduction in discretionary expenditures on earnings persistence largely comes from its negative impact on the persistence of cash flows from operations.

My third analysis focuses on whether real earnings management affects the informativeness of current earnings about future cash flows. Earnings persistence measures the portion of current earnings that persists to future earnings and is related to the usefulness of earnings (Shipper & Vincent, 2003). Highly persistent earnings numbers should be more informative about and highly associated with future cash flows. Since real earnings management through the abnormal reduction in discretionary expenses reduces earnings persistence, it may affect the association between current earnings and future cash flows. Consistent with this notion,

my results show that the abnormal reduction in discretionary expenses significantly decreases the ability of current earnings in predicting future cash flows.

Motivated by the trend of increased use of real earnings management after the passage of the Sarbanes Oxley Act (SOX) (Cohen et al., 2008), I hypothesize that the effect of the abnormal reduction in discretionary expenses on earnings quality is more pronounced in the post-SOX period.[5] My results are generally consistent with this conjecture.

I conduct a battery of additional tests to increase the validity of my findings. First, I find some evidence that the negative effect of real earnings management through the abnormal reduction of discretionary expenses is stronger when firms engage in activities to meet or just beat earnings targets. Second, I control for accruals earnings management and find that real earnings management through the abnormal reduction in discretionary expenses has an incremental negative effect on the persistence and informativeness of current earnings beyond the effect of accruals earnings management. Third, I use alternative real earnings management measures and alternative model specifications. My results are robust to these different approaches. Finally, my inferences do not change when I use different samples, industry classifications, and variable measurement.

This paper makes two important contributions to the existing literature. First, it contributes to the literature on earnings quality. Prior research investigates differential persistence of earnings components and finds that the discretionary accruals component of earnings is less persistent than other components of earnings (e.g., both normal accruals and cash from operations, Xie, 2001). This stream of literature compares the persistence of different earnings components but contains few studies that examine whether managing components of

[5] I thank an anonymous referee for suggesting this set of tests.

earnings affects the overall persistence of earnings.[6] My study fills this gap by directly assessing how real earnings management, one type of earnings management that can affect both the accrual and cash flow components of earnings, affect earnings persistence. If firms manage earnings, either through real earnings management or through accrual earnings management, to smooth earnings, then earnings persistence would increase; if firms manage earnings to temporarily increase reported earnings, current period earnings could become less persistent.[7] Further, if managers manage earnings to communicate private information about firms' future profitability — the signaling theory of earnings management — earnings persistence can also be increased. Therefore, although earnings management in general is a temporary decision by managers, the effect of different types of earnings management, on earnings persistence in particular and earnings quality in general, is not clear ex ante. By providing direct evidence that the abnormal reduction in discretionary expenditures affects the persistence and informativeness of current earnings, my study is the first to answer Defond's (2010) call for more research on real earnings management, and advances our understanding of how real transaction management affects earnings quality. Although earnings management may result in more or less persistent earnings, my empirical results show that real earnings management through the abnormal reduction in discretionary expenditures, on average, reduces earnings persistence and current earnings' informativeness of future cash flows. To mitigate the concern that the negative effect of real earnings management on earnings quality is driven by accrual earnings management, in the sensitivity tests in Section 4.5, I control for the effect of accruals management and find that

[6] A notable exception is the study of DeChow and Dichev (2002) that provides evidence that accruals of poor quality, measured by their AQ measure, are associated with earnings with lower persistence.

[7] Real earnings management and accrual earnings management can both affect firms' total accruals, but their effects on certain types of accruals are fundamentally different. For example, real earnings management through cutting discretionary expenditures more likely affect accrual accounts that rely less on management's estimate (e.g., accounts payable), while accrual earnings management are more likely to affect accrual accounts that are more subject to managers' estimate (e.g., allowance for doubtful accounts). How each type of accruals is affected by different earnings management mechanisms is beyond the scope of this paper and is left to future research.

real earnings management has incremental effects on earnings quality beyond the effect of accrual management.

Second, this paper contributes to the earnings management literature. Earnings consist of two components, accruals and cash flows. Extant research in earnings management largely focuses on accruals earnings management, implicitly assuming cash flows are free of manipulation (e.g., Francis et al., 2005). However, my findings suggest that this is not always the case. I show that real earnings management through the abnormal reduction in discretionary expenses negatively reduces the quality of cash flows from operations, and that such effect, in turn, reduces the persistence and informativeness of current earnings. The negative effect of real earnings management arises because both accruals and cash flows are subject to manipulation in the presence of real earnings management and hence examining the quality of both earnings components in empirical studies provides more confident conclusions. My findings suggest that researchers should consider both accrual and real earnings management when conducting earnings management research.

The remainder of the paper proceeds as follows. Section 2 presents an overview of the related literature and develops hypotheses. Section 3 describes the sample, data, and research design. Section 4 discusses the empirical methodology and analyzes the results. Section 5 concludes the study.

2. Related research and hypotheses development

Following prior literature (Roychowdhury, 2006; Gunny, 2010), I define real earnings management as management actions that deviate from normal business practices, undertaken with the primary objective of influencing current period earnings. By altering underlying

operations, firms that engage in real earnings management influence current period earnings at the cost of future economic value. Real earnings management has gained increasing attention in accounting research. Graham et al. (2005) survey 401 financial executives and report that 78% of the executives interviewed are willing to sacrifice economic value (such as reducing R&D, advertising, and maintenance expenditures) to manage financial reporting perceptions. Cohen et al. (2008) document that real earnings management increased significantly after the passage of SOX in 2002. I focus my study on firm's discretionary expense choices because prior research suggests that discretionary expense manipulations are an important and pervasive form of real earnings management (Kothari et al., 2016; Graham et al., 2005).

Several different incentives can be at play when firms choose to use real earnings management to manage earnings. Specifically, firms can use real earnings management to opportunistically increase reported earnings in the current period, to smooth earnings, or to signal future profitability. In the case of abnormal reductions in discretionary expenditures, accounting treatment allows such reductions to mechanically increase current-period reported earnings. Prior studies provide evidence that managers cut discretionary expenses below normal levels to meet earnings targets or financing goals. For example, Roychowdhury (2006) shows that firms use reductions in discretionary expenses to increase current reported earnings. Perry and Grinaker (1994) find evidence consistent with R&D expenditures being adjusted to meet firms' current earnings goals. Baber et al. (1991) show that managers are more likely to reduce their investments in R&D when such reductions help them meet current period earnings targets. Mizik and Jacobson (2007) find that firms that report higher earnings have lower-than-normal marketing expenses at the time of seasonal equity offering, suggesting that these firms are managing marketing expenses to boost current earnings. Roychowdhury (2006) points out that

SG&A often include discretionary expenses such as employee training, maintenance, and travel etc., which can be reduced to meet earnings targets.[8] Collectively, these findings indicate that firms reduce R&D, advertising, and SG&A expenditures more likely to boost current reported earnings rather than to smooth earnings. Hence, earnings of firms engaging in this type of real earnings management are likely to become less persistent.

The signaling theory of accruals earnings management suggests that managers can manage earnings to communicate private information about future profitability that is not reflected in historical cost accounting and to signal firms' future performance (Subramnayam, 1996) — a line of argument that could be extended to real earnings management. If managers use real earnings management to convey private information and signal future positive profitability, real earnings management is expected to be positively correlated with future performance. Prior studies provide inconclusive evidence on whether managers use real earnings management as a way to signal future performance. Gunny (2010) finds that firms engaging in real earnings management to meet or just beat benchmarks have better subsequent performance. However, Cheng et al. (2016) find that their measure of real earnings management is significantly associated with lower future returns on assets and cash flows from operations. Mizik and Jacobson (2007) find that firms that cut marketing spending in the seasonal equity offering context have inferior long-term stock market performance.[9] The empirical evidence in prior literature suggests that it is possible that, in some cases, managers may use real earnings

[8] Roychowdhury (2006) also finds evidence that managers use price discounts to temporarily increase sales and overproduction to report lower cost of goods sold to improve reported earnings. Because this paper does not intend to analyze every possible type of real earnings management, I focus on investigating managers' decisions to reduce discretionary expenses below normal levels.

[9] In an untabulated analysis, I also find mixed results on the association between real earnings management measures and subsequent industry-adjusted ROA (the proxy for performance in Gunny, 2010). However, I find a consistent negative association between real earnings management and subsequent unadjusted earnings, which is consistent with the findings of Cheng et al. (2016). I also find consistent evidence on the negative effect of real earnings management on earnings persistence when using unadjusted earnings.

management to signal positive future performance and, hence, the increased earnings in the current period may persist into future periods. However, theoretically, compared to accruals earnings management, real earnings management is more costly and more detrimental to firms' operations. To engage in real earnings management, managers have to pass positive NPV projects that are originally funded by the normal level of R&D, advertising, and SG&A expenditures. Passing positive NPV projects will harm firms' future performance.[10] Therefore, at the conceptual level, real earnings management achieved through the abnormal reduction in discretionary expenses by reducing positive NPV projects in the current period, probably is more likely to be detrimental to future performance. Based on the above discussion, I posit that:

H1: The extent of real earnings management through the abnormal reduction in discretionary expenses is negatively associated with earnings persistence.

Discretionary expenses are generally in the form of cash, although, in some cases, can also be in the form of accruals. Roychowdhury (2006) points out that reducing these expenses lowers cash outflows and affects cash flows from operations in the current period. Bushee (1998) finds evidence that firms with cash constraints are more likely to cut R&D to manage earnings, indicating that cutting R&D increases firms' cash flows from operations in the current period. Lee (2012) also points out that reducing discretionary expenditures has a positive effect on current period cash flows from operations. To the extent that discretionary expenses are more likely in the form of cash than accruals, real earnings management through the abnormal reduction in discretionary expenses is more likely to affect cash flows from operations than to affect accruals in the current period. Therefore, I posit that:

[10] If managers have private information about firms or industries' future positive prospects, they are likely to increase investment in R&D, increase advertising expenses to acquire new customers, or increase SG&A in supporting these strategies (Li, 2016). Reducing these expenditures is likely to result in lost opportunities for future growth.

H2: Real earnings management through the abnormal reduction in discretionary expenses affects the persistence of cash flows from operations more than it affects the persistence of accruals.

Another important aspect of earnings quality is the ability of earnings to predict future cash flows. Earnings persistence does not equate the ability to forecast future cash flows. Highly persistent earnings could exhibit a weaker association with future cash flows if the persistent earnings contain less information content (e.g., high persistence achieved by earnings smoothing through accruals management). Therefore, it is important to investigate whether the abnormal reduction in discretionary expenses affects the association between current earnings and future cash flows from operations.

Earnings persistence measures the portion of current earnings that persists to future earnings and is related to the usefulness of earnings (Shipper & Vincent, 2003). Dechow et al. (2010) point out that more persistent earnings are more useful in equity valuation because they better indicate future cash flows. Prior studies provide evidence that more persistent earnings have a stronger stock price response, suggesting that more persistent earnings are more informative about future cash flows because the theoretical value of the firm, reflected in the stock price, is the present value of total future cash flows that the firm can generate (Kormendi & Lipe, 1987; Collins & Kothari, 1989). Further, Dechow and Dichev (2002) find that accrual quality (the extent of current accruals mapping into future cash flows) is positively associated with earnings persistence, indicating that more persistent earnings better map into future cash flows. Relatedly, Atwood et al. (2010) find that book-tax conformity decreases earnings persistence and the association between current earnings and future cash flows. Their results are consistent with the notion that highly persistent earnings are more informative concerning future

cash flows. If real earnings management through the abnormal reduction in discretionary expenses reduces earnings persistence, it should decrease the informativeness of current earnings about future cash flows.

H3: Real earnings management through the abnormal reduction in discretionary expenses weakens the association between current earnings and future cash flows.

Cohen et al. (2008) document that the level of real earnings management activities increased after the passage of SOX because real earnings management techniques are likely to be more difficult to detect. Zang (2012) also finds that real activities manipulation increases after SOX because of the increased level of scrutiny of accounting practice. Therefore, after the passage of SOX, accrual-based earnings management becomes more costly and, hence, firms may switch to real earnings management. As real earnings management is more costly, the switch to real earnings management after SOX increases the average cost of earnings management and consequently has a more pronounced effect on earnings quality. Hence, I hypothesize that

H4a: The effect of real earnings management through the abnormal reduction in discretionary expenses on earnings persistence is stronger in the post-SOX period than in the pre-SOX period.

H4b: The effect of real earnings management through the abnormal reduction in discretionary expenses on the association between current earnings and future cash flows is stronger in the post-SOX period than in the pre-SOX period.

3. Research design

3.1 *Measuring real earnings management*

This study focuses on real earnings management through reducing discretionary expenditures. One difficulty in identifying real earnings management is to distinguish observed operational activities (such as cutting R&D expenditures) as attempts to boost firms' current earnings from such activities as firms' optimal choices. Conceptually, if managers engage in real earnings management by cutting one or more types of discretionary expenses, these firms will show abnormally low discretionary expenses. Empirically, I follow prior literature (Roychowdhury, 2006; Cohen et al., 2008; Cheng et al., 2016) to model the normal level of R&D, advertising, SG&A, and the sum of the three types of discretionary expenses. I express the normal level of discretionary expenses as a function of sales and change in sales in the current period. Specifically, I use equation (1) to estimate the normal level of advertising expenses ($ADV_{i,t}$), SG&A ($SGA_{i,t}$), and total discretionary expenses ($TDISX_{i,t}$). The model is estimated by each industry and year, where industry is defined using Fama-French 48 industry level. I require at least 20 observations for each industry-year in order to estimate the equation:[11]

$$\frac{DISX_{i,t}}{ASSETS_{i,t-1}} = \alpha_1 \frac{1}{AT_{i,t-1}} + \alpha_2 \frac{SALES_{i,t}}{ASSETS_{i,t-1}} + \alpha_3 \frac{\Delta SALES_{i,t}}{ASSETS_{i,t-1}} + \varepsilon_{i,t} \quad (1)$$

where $DISX_{i,t}$ equals advertising expense, SG&A, or the sum of advertising, R&D, and SG&A in year t, $SALES_{i,t}$ is the total revenue in year t, and $\Delta SALES_{i,t}$ equals $SALES_{i,t}$ minus $SALES_{i,t-1}$. All variables are scaled by lagged total assets and winsorized at 1 and 99 percent level.

For each firm-year, the abnormal level of discretionary expenses is the actual discretionary expenses minus the predicted values of discretionary expenses. For example, in a given year t, the abnormal level of advertising expenses equals the difference between the actual advertising expenses and the predicted values of advertising expenses using the estimated coefficients from equation (1) when the dependent variable $DISX_{i,t}$ equals advertising expenses.

[11] In untabulated tests, I change my requirement of a minimum of 20 observations for each industry and year and find that my results are qualitatively similar when I require at least 10, 15, or 25 observations for each industry-year.

In estimating the normal level of total discretionary expenses, I force any missing R&D, advertising, or SG&A expenses to be zero to maximize the number of observations.[12] I then multiply (-1) by the abnormal level of discretionary expenses.[13]

To estimate the normal level of R&D expenditures, I argument equation (1) with lagged R&D:

$$\frac{R\&D_{i,t}}{ASSETS_{i,t-1}} = \alpha_1 \frac{1}{ASSETS_{i,t-1}} + \alpha_2 \frac{SALES_{i,t}}{ASSETS_{i,t-1}} + \alpha_3 \frac{\Delta SALES_{i,t}}{ASSETS_{i,t-1}} + \alpha_3 \frac{R\&D_{i,t-1}}{ASSETS_{i,t-2}} + \varepsilon_{i,t}$$

(2)

where $R\&D_{i,t}$ is the R&D expenditures in year t.

Similarly, equation (2) is also estimated by each industry and year. The abnormal R&D expenditures is the difference between the actual R&D and the predicted R&D expenses using the estimated coefficients from equation (2) and then multiplied by (-1) so that a higher abnormal level of R&D expenditures means more real earnings management.

3.2 Sample selection and descriptive statistics

Table 1 summarizes my sample selection procedures. My sample period covers the years from 1975 to 2016.[14] I sample all firms in the Compustat annual industrial and research files in this period with sufficient data to calculate the variables in Appendix I for every firm-year. First, I require my sample firms to have positive sales, cost of goods for sale, and inventory to minimize data errors from Compustat and require firms' total assets to be greater than one million to focus on relatively influential firms.[15] This step yields 214,170 firm-years. I drop the observations that have missing values for earnings, accruals, and cash flows from operations. My

[12] Results are qualitatively similar if I relax this assumption.
[13] I multiply (-1) by the abnormal level of discretionary expenses to facilitate the interpretation of the results so that a higher abnormal level of discretionary expenses means more real earnings management.
[14] I start the sample from 1975 to control for the effect of Statement of Financial Accounting Standards (SFAS) No.2, Accounting for Research and Development Costs, effective for annual reports issued after January 1, 1975.
[15] Not restricting my sample to have greater than one million assets does not change my inferences.

final sample with sufficient data to calculate total discretionary expenditures consists of 161,941 firm-years.[16] In the separate tests for R&D and advertising expenses, I set R&D and advertising expenses to be zero when SG&A data are available.[17]

Table 2 presents descriptive statistics on the regression variables. Throughout the paper, all variables, except for dummy variables, are winsorized at 1 and 99 percent level. My sample has average total assets of 1,102 million, suggesting that my sample firms are reasonable in size. The distribution of total assets indicates that the sample firms range from small to large firms to ensure my results do not bias towards only large firms. The average cash flow from operations is 3% of average assets, consistent with prior literature (Atwood et al., 2010). The means and medians of the individual real earnings management proxies are close to zero, consistent with prior literature(Cheng et al., 2016). Because my earnings number is the after-tax net income before extraordinary items, my sample exhibits a negative average earnings number and has a slightly higher incidence of loss (33%) than documented by previous research (Atwood et al., 2010).[18]

4. Empirical analysis

The empirical analysis consists of four sets of main analysis. In section 4.1, I investigate the impact of real earnings management on earnings persistence. In section 4.2, I examine which components of earnings are more affected by the abnormal reduction in discretionary expenses: the accrual component or the cash flow component. In section 4.3, I build on the evidence of 4.1

[16] In the tests that require data from the Statement of Cash Flows, my sample period starts from 1988 when the Statement of cash flows were formally required.
[17] In untabulated separate tests for each individual type of discretionary expenses, my results are qualitatively similar when I drop observations that have missing values for a certain type of discretionary expenses.
[18] Atwood et al. (2010) use negative pre-tax book income to define the incidence of loss because their paper tests the effect of book-tax conformity on earnings persistence. When I use the definition of loss and the sample period of Atwood et al. (2010), the incidence of loss is decreased.

and examine whether the impact of real earnings management on earnings persistence affects the relation between current earnings and future cash flows. In Section 4.4, I investigate whether the passage of SOX affects the effect of real earnings management on earnings persistence and its ability to forecast future cash flows. I measure earnings persistence as the slope coefficient from regressing future earnings on current earnings in equation (3):

$$E_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \varepsilon_{i,t} \quad (3)$$

where E_t is net income before extraordinary items in year t.

4.1 The effects of real earnings management on earnings persistence

To test H1, I use a model that is based on a variation of the cross-sectional model used by Hou et al. (2012) and Call et al. (2016). The advantage of this model is twofold: it does not require a longer time period to introduce survivorship bias (Hou et al., 2012) and it incorporates other financial statement information aside from earnings (e.g., dividends) to better control for the confounding factors.[19] Recall that H1 predicts that real earnings management by the abnormal reduction in discretionary expenses negatively affects earnings persistence. As shown in equation (4), I test this hypothesis by including a variable $RM_{i,t}$ and an interaction term $RM_{i,t}$* $E_{i,t}$. I estimate this equation by running pooled regressions for each type of discretionary expenses and for the total discretionary expenses separately.

$$E_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t} \quad (4)$$

[19] Prior literature examining earnings persistence offers different model specifications to tailor to their specific research questions. Hanlon (2005) uses a simple model by regressing future pre-tax earnings on current pre-tax earnings to test the persistence and pricing of earnings when firms have large book-tax differences. Li (2008) examines the readability of annual reports on earnings persistence, and he adds in the basic earnings persistence model variables that influence firms' annual report readability. Atwood et al. (2010) examine the effects of book-tax conformity on earnings persistence and use a model that includes tax rate variables. I use a more general approach developed by Hou et al. (2012) in my analysis. In the sensitivity tests of Section 4.5, I also use the alternative model specifications, and my inferences do not change.

where $RM_{i,t}$ is the measure of real earnings management and equal to the abnormal level of R&D, advertising, SG&A or total discretionary expenses, respectively. $E_{i,t}$ is as previously defined. The control variables include the natural log of total assets ($Log(ASSETS_{i,t})$), dividends ($DIV_{i,t}$) scaled by average total assets, a dummy variable to identify firms that pay dividends in year t ($DIVDUM_{i,t}$), a dummy variable to indicate loss ($LOSS_{i,t}$), and total accruals ($ACC_{i,t}$) scaled by average assets.[20] All variables are defined in Appendix I. To control for unobservable industry effect and time-series correlations, I also include industry and year dummies in all the regressions. In all tests, I cluster standard errors by firm to account for within-firm correlations.

The sign of the interaction term $RM_{i,t}$* $E_{i,t}$ captures the slope change of the estimation of equation (4) and indicates whether real earnings management reduces the persistence of current earnings for future earnings. A significantly negative α_3 is expected to suggest that real earnings management is negatively associated with earnings persistence.

Table 3 reports the results. Consistent with prior literature, the coefficient on $E_{i,t}$ is significantly positive (0.708, t=114.622), suggesting that current earnings are informative of future earnings. Looking at the interaction terms in model (2) through model (5), all the coefficients on these interaction terms are significantly negative. Specifically, the coefficients on $RM_{i,t}$*$E_{i,t}$ for the models of $RM\_R\&D_{i,t}$, $RM\_ADV_{i,t}$, $RM\_SGA_{i,t}$, and $RM\_TDISX_{i,t}$ are -0.119 (t = -2.051), -0.604 (t = -4.09), -0.136 (t = -10.681), and -0.188 (t = -7.131), respectively. The results suggest that real earnings management through the abnormal reduction in discretionary expenses decreases earnings persistence significantly. The impact of such real earnings management on earnings persistence occurs not only when reducing the total discretionary expenses but also when reducing only one type of discretionary expenses. The coefficients on $log(ASSETS)_{i,t}$, $DIV_{i,t}$,

[20] In untabulated tests, I adopt the earnings persistence model used by Li and Mohanram (2014) to control for the differential effect of loss on persistence and informativeness by including an interaction term of ($LOSS_{i,t}$*$E_{i,t}$) in my main models. My results remain qualitatively unchanged.

and $DIVDUM_{i,t}$ are significantly positive, suggesting that bigger firms and firms that pay dividends generally have higher future earnings. $ACC_{i,t}$ are negatively related to future earnings because current earnings are also on the right hand side. $LOSS_{i,t}$ is negatively related to future earnings due to mean reversion. In general, the coefficients on control variables are mostly consistent with prior literature.

4.2 The persistence of accruals and of cash flows from operations

H2 predicts that real earnings management through the abnormal reduction in discretionary expenses affects the persistence of cash flows from operations more than it affects that of accruals. To test this, I decompose current earnings into cash flow component and accrual component and estimate the following equation.

$$E_{i,t+1} = \alpha_0 + \alpha_1 ACC_{i,t} + \alpha_2 CFO_{i,t} + \alpha_3 RM_{i,t} + \alpha_4 RM_{i,t} * ACC_{i,t} + \alpha_5 RM_{i,t} * CFO_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t} \quad (5)$$

where $RM_{i,t}$ and $E_{i,t}$ are the same as previously defined, $ACC_{i,t}$ is total accruals and is defined in Appendix I, and $CFO_{i,t}$ represents cash flows from operations in year t and equals E_t minus $ACC_{i,t}$.[21] I include the same control variables as in equation (4).

Table 4 reports the results. In the first model where I regress $E_{i,t+1}$ on accruals and cash flows from operations, the coefficients on both accruals and cash from operations are positive and highly significant, but the coefficient on cash from operations is significantly greater than the coefficient on $ACC_{i,t}$ (α_1 =0.566, α_2=0.662, p<0.001). These results are consistent with prior literature (Xie, 2001; Call et al., 2016) that documents the differential persistence of cash from operations and accruals. In the second model, where $RM_{i,t}$ equals abnormal R&D, the

[21] I also use total current accruals and operating accruals in Section 4.5. The inferences do not change.

coefficients on the interaction terms $RM_{i,t}*ACC_{i,t}$ (α_4) and $RM_{i,t}*CFO_{i,t}$ (α_5) are all negative, but α_4 is insignificant and α_5 is significant and negative. Consistent with H2, the results suggest that real earnings management through a cut in R&D significantly and negatively affects the persistence of cash flows from operations but not accruals, implying that the impact of this type of real earnings management on earnings persistence is largely through its negative effect on cash from operations rather than its impact on accruals. The main effects of the accruals and cash flows from operations remain unchanged compared with the basic model (1). Turning to the models of other types of discretionary expenses, the results of real earnings management through a reduction in advertising expenses (the $RM\_ADV_{i,t}$ model) and total discretionary expenses (the $RM\_TDISX_{i,t}$ model) are qualitatively similar to the results of the $RM\_R\&D_{i,t}$ model and are all consistent with H2. In model (4) of Table 4, where RM equals real earnings management measures achieved by cutting SG&A ($RM\_SGA_{i,t}$), the coefficients on the interaction term $RM_{i,t}*ACC_{i,t}$ and $RM_{i,t}*CFO_{i,t}$ are both significantly negative, suggesting that real earnings management through SG&A affects both accruals and cash flows from operations. However, the coefficient on $RM_{i,t}*ACC_{i,t}$ (α_4 = -0.097, t= -4.069) is smaller in the absolute magnitude than the coefficient on $RM_{i,t}*CFO_{i,t}$ (α_5 = -0.227, t= -16.153). The F-test comparing these two coefficients suggests that α_5 is more negative than α_4, meaning that although reducing SG&A affects the persistence of both accruals and cash from operations, it affects cash flows from operations to a greater extent than it affects accruals. In sum, the results in Table 4 are consistent with H2, suggesting that the negative effect of the abnormal reduction in discretionary expenses on earnings persistence is largely through its negative impact on the persistence of cash flows from operations rather than through its impact on accruals.

4.3 The informativeness of current earnings

H3 predicts that real earnings management through the abnormal reduction in discretionary expenses weakens the association between current earnings and future cash flows. To test this hypothesis, I estimate equation (6).

$$OANCF_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t} \quad (6)$$

where $OANCF_{i,t}$ represents cash flows from operations directly taken from the Statement of Cash Flows scaled by average assets.[22] Other variables are as defined in the previous models.

Table 5 reports the results. In all models, the coefficients on $E_{i,t}$ are positive and highly significant, consistent with prior literature (Atwood et al., 2010) and suggest that future cash flows are positively associated with current earnings. When adding the $RM_{i,t}$ variables, the coefficients on all the interaction terms $RM_{i,t}$*$E_{i,t}$ are significantly negative. Specifically, the coefficients on $RM_{i,t}$*$E_{i,t}$ for the models of $RM\_R\&D_{i,t}$, $RM\_ADV_{i,t}$, $RM\_SGA_{i,t}$, and $RM\_TDISC_{i,t}$ are -0.384 (t = -7.451), -0.549 (t = -3.887), -0.198 (t = -17.083), -0.347 (t = -13.812), respectively, suggesting that current earnings are less informative about future cash flows when firms abnormally reduce R&D, advertising, SG&A and total discretionary expenditures.

Overall, the results indicate that real earnings management through the abnormal reduction in discretionary expenses weakens the association between current earnings and future cash flows. The results are consistent with the notion that real earnings management is detrimental rather than is an optimal choice for firms.

4.4 Real earnings management effect in the pre- and post- Sarbanes-Oxley periods

H4a (H4b) predicts that the effect of real earnings management on earnings persistence (informativeness about future cash flows) is stronger in the post-SOX period. I test these

[22] Here, I use cash flows from operations directly taken from the Statement of Cash Flows to ensure the measure of cash flows from operations is free of estimation errors. In robust tests, I also use cash flows from operations measures derived from the difference between earnings and accruals, and the results are qualitatively identical.

hypotheses by augmenting a dummy variable $SOX_{i,t}$ equal to 1 for the period of 2002 and beyond, and 0 for the period before the year of 2002, and an interaction term of $RM_{i,t}$*$E_{i,t}$ *$SOX_{i,t}$ to equation (4) and (6).

$$E_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + \alpha_4 SOX_{i,t} + \alpha_5 RM_{i,t} * E_{i,t} * SOX_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t} \quad (7a)$$

$$OANCF_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + \alpha_4 SOX_{i,t} + \alpha_5 RM_{i,t} * E_{i,t} * SOX_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t} \quad (7b)$$

Table 6 Panel A reports the results of equation (7a). Again, the coefficients on $E_{i,t}$ are significantly positive in all model specifications. The variable of interest is the coefficients (α_5) on the three-way interaction term $RM_{i,t}$*$E_{i,t}$ *$SOX_{i,t}$. In all the models except for the $RM\_ADV_{i,t}$ model, the coefficients are significantly negative, suggesting that the effect of real earnings management through the abnormal reduction in R&D, SG&A, and total discretionary expenses on earnings persistence is more profound in the post-SOX period. The results are generally consistent with H4a. The coefficient on the three-way interaction term is negative but insignificant in the $RM\_ADV_{i,t}$ model, suggesting that an abnormal reduction in advertising expenses does not seem to affect the earnings persistence differently in the pre- and post-SOX periods. However, the F-test suggests that the sum of coefficients of $RM_{i,t}$*$E_{i,t}$ and the coefficients on the three-way interaction terms ($\alpha_3 + \alpha_5$) in the $RM\_ADV_{i,t}$ model is significantly negative ($p<0.05$), consistent with my main results.

Table 6 Panel B reports the results of equation (7b). Similar to Table 6 Panel A, the coefficients on the three-way interaction term $RM_{i,t}$*$E_{i,t}$*$SOX_{i,t}$ are significantly negative in the $RM\_R\&D_{i,t}$, $RM\_SGA_{i,t}$, and $RM\_TDISX_{i,t}$ models, suggesting that real earnings management through the abnormal reduction in R&D, SG&A, and total discretionary expenses weakens the

association between current earnings and future cash flows after the passage of SOX. Again, the coefficients on the three-way interaction term in the $RM\_ADV_{i,t}$ model are negative but insignificant, indicating that a reduction in advertising expenses does not seem to affect the informativeness of current earnings about future cash flows differently before and after the passage of SOX. Again, the F-test suggests that the sum of α_3 and α_5 in the $RM\_ADV_{i,t}$ model is significantly negative ($p<0.05$), consistent with my main results.

In sum, the results suggests that in the post-SOX periods, the effect of real earnings management through R&D, SG&A, and total discretionary expenses reduces current earnings persistence and its informativeness about future cash flows to a greater extent.

4.5 Additional analysis and sensitivity tests

In this section, I conduct series of additional analysis and sensitivity tests to further validate my findings.

4.5.1 The case of meeting or just beating earnings targets

Prior studies find persuasive evidence that earnings are likely managed when firms just meet or beat earnings target (Dechow et al., 2003; Beaver et al., 2003). Firms are also likely to use real earnings management to meet or just beat earnings benchmarks. If meeting or just beating earnings benchmarks is more likely to be associated with managers' opportunistic behavior (e.g., to increase managers' compensation), the effect of real earnings management on earnings quality is likely to be more pronounced when firms use real earnings management to meet or just beat earnings benchmarks. However, because firms meet or just beat earnings targets for different reasons, how meeting or beating earnings benchmarks affects the negative effect of real earnings management on earnings quality is not entirely clear. To investigate this issue, following Gunny (2010), I define a variable $MBT_{i,t}$ equal to one if firms meet the zero earnings

target or last year's target, or if current earnings are greater than zero earnings or last year's earnings by 0.01. I then estimate equation (8a) and (8b) to test whether the negative effect of real earnings management through the abnormal reduction in discretionary expenditures is stronger for firms that meet or just beat earnings targets.

$$E_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + \alpha_4 MBT_{i,t} + \alpha_5 RM_{i,t} * E_{i,t} * MBT_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t} \quad (8a)$$

$$OANCF_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + \alpha_4 MBT_{i,t} + \alpha_5 RM_{i,t} * E_{i,t} * MBT_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t} \quad (8b)$$

The variable of interest is the interaction term of $RM_{i,t}$*$E_{i,t}$ *$MBT_{i,t}$. A negative coefficient indicates that firms that engage in real earnings management to meet or just beat earnings targets have even lower earnings persistence. Table 7 reports the results.[23] In both Panel A and Panel B, the coefficients on $RM_{i,t}$*$E_{i,t}$*$MBT_{i,t}$ are significantly negative for the models of $RM\_R\&D_{i,t}$ and $RM\_TDISX_{i,t}$, suggesting that the negative effect of the abnormal reduction in R&D and total discretionary expenses on earnings persistence and current earnings' ability to predict future cash flows are worsened when firms meet or just beat earnings targets. In the tests of $RM\_SGA_{i,t}$, the coefficients on the three-way interaction term are significantly negative in the earnings persistence tests (Table 7 Panel A) but insignificant in the future cash flow informativeness tests (Table 7 Panel B). Further, the tests of $RM\_ADV_{i,t}$ show insignificant coefficients on both tests. In sum, I find evidence that the negative effect of abnormal reductions in R&D and total discretionary expenses is stronger for firms that meet or just beat earnings targets but mixed evidence on the effect of abnormal reductions in other types of discretionary expenses.

4.5.2 Controling for accrual earnings management

[23] The significant negative coefficient on $MBT_{i,t}$ in the basic model of Table 7 Panel A probably is due to the fact that $MBT_{i,t}$ is associated with earnings management and that current period earnings management has a negative effect on future earnings.

The extant literature generally indicates that large accruals are less persistent (Sloan, 1996; Richardson et al., 2005). Xie (2001) finds that discretionary accruals have a significantly positive but lower persistence coefficient than normal accruals and cash flows from operations. Blaylock et al. (2012) documents that firms with large positive book-tax differences consisting of large positive accruals have less persistent earnings. Real earnings management affects both accruals and cash flows, and it is possible that the effect of the abnormal reduction in discretionary expenses on earnings persistence and its informativeness about future cash flows are driven by the effect of accrual earnings management (proxied by large accruals). To mitigate this concern, I control for the effect of accrual earnings management and rerun my tests. I proxy accrual earnings management by top quintile of the absolute values of discretionary accruals, defined as the residuals of the modified Jones model.[24] I then estimate equation (9a) and (9b) to test whether real earnings management has incremental effects on earnings quality.[25]

$$E_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + \alpha_4 DA_{i,t} + \alpha_5 * E_t * DA_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t} \quad (9a)$$

$$OANCF_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + \alpha_4 DA_{i,t} + \alpha_5 E_{i,t} * DA_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t} \quad (9b)$$

where $DA_{i,t}$ equals one for firm-year observations with the absolute values of modified Jones model discretionary accruals in the top quintile of all firm-years in the sample. Table 8 reports the results. The coefficients on the interaction terms of $RM_{i,t}$*$E_{i,t}$ are significantly negative for all RM models, even after controlling for the effect of accrual earnings management on earnings persistence. The results suggest that real earnings management affects earnings persistence and

[24] To identify the strongest setting of accrual management, I use the top quintile of the absolute values of discretionary accruals. Untabulated results are generally similar when I proxy accruals management by the level of discretionary accruals.

[25] In untabulated tests, I include all the control variables used in my main analysis except for $ACC_{i,t}$. My inferences do not change.

its association with future cash flows beyond the effect of accrual earnings management. Consistent with prior literature (Blaylock et al., 2012; Richardson et al., 2005) that larger accruals are less persistent, the coefficients on $DA_{i,t}$ and $DA_{i,t}*E_{i,t}$ are also significantly negative. In sum, the results of Table 8 indicate that the effects of real earnings management on earnings persistence and its informativeness about future cash flows are incremental to the effects of accruals and accruals earnings management.

4.5.3 Alternative real earnings management measures

In my main tests, I follow prior literature to measure the extent of real earnings management through the abnormal reduction in discretionary expenses. One difficulty in measuring the abnormal level is that the optimal level of discretionary expenses is subject to the specification of the model. To test whether my results are robust to an alternative measure of real earnings management, I use a different R&D model to estimate the normal level of R&D expenditures. Ewert and Wagenhofer (2005) develop an analytical model and demonstrate that firms with less accrual flexibility are more likely to choose real earnings management. Using the R&D model developed by Berger (1993) and the theory of Ewert and Wagenhofer (2005), I identify firms suspected of real earnings management by focusing on the firms with both abnormally low R&D expenditures and low accounting flexibility.[26] The suspect real earnings maangement sample is 5% (3,688 firm-years) of the sample used for this test (total 81,652 firm years). I define a new dummy variable $DRM\_AR\&D_{i,t}$ equal to 1 for firm-years in the suspect real earnings management sample and 0 otherwise.

I rerun equation (4) and (6) using the alternative measure of real earnings management. Table 9 reports the results. Consistent with H1 and H3, the interaction terms $DRM\_AR\&D_{i,t}*E_{i,t}$

[26] See Appendix I for an alternative definition of real earnings management.

are significantly negative in both the earnings persistence model and future cash flow model. Therefore, my results are robust to the alternative measure of real earnings management.

4.5.4 Other sensitivity tests

To examine whether my results are robust to different model modifications, I test my hypotheses by using alternative earnings persistence models. In untabulated tests, I use persistence models developed by Li (2008), Li and Mohanram (2014), and So (2013) that include a different set of control variables, and my results are robust to these alternative model specifications. [27]

In my main tests, I classify industries based on Fama-French 48 classification. As a robustness check, I use two-digit SIC code to define industries. Untabulated results are qualitatively similar. To check whether firms abnormally reduce discretionary expenses consecutively, I calculate serial correlation of the firms' real earnings management level in my sample. Untabulated results show positive but small serial correlations for my measures of real earnings management, suggesting that the abnormal reduction in discretionary expenses may last more than one year. However, my findings suggest that real earnings management through the abnormal reduction in discretionary expenses, on average, decreases earnings persistence.

To examine whether my results are sensitive to the definition of earnings, cash flows from operations, and accruals, I re-examine all my hypotheses using other definitions of these variables. I follow Atwood et al. (2010) to examine pre-tax income persistence and the association between earnings and cash flows from operations where cash from operations is defined as pre-tax income minus accruals. I also use current accruals and operating accruals (Call

[27] The Li and Mohanram (2014) model is essentially a model to control for negative earnings. The model of So (2013) is also used by Call et al. (2016). When using the Li (2008) model, due to a significant reduction in sample size, the coefficient on $RM_{i,t}$ *$E_{i,t}$ in the $RM\_ADV_{i,t}$ model is negative but insignificant. However, in all other specifications, I find consistent results with my main analysis.

et al., 2016) instead of total accruals to test H2. Untabulated results suggest that my inferences do not change.

In my main tests, I use different samples for the tests of each individual type of discretionary expenses to maximize my sample size.[28] In sensitivity tests, I construct a common sample that have non-missing data for all types of discretionary expenses to re-run all my tests. Restricting observations to have all the available data for R&D, advertising, and SG&A expenses significantly reduces my sample to 34,407 firm-years. The purpose of these tests is to check whether my results are sensitive to different samples. All my results (untabulated) remain qualitatively similar except for one case.[29]

5. Conclusions

In this paper, I examine whether real earnings management affects two important aspects of earnings quality: the persistence and informativeness of current earnings. I focus my study of real earnings management on the abnormal reduction in discretionary expenses and use the models developed by Roychowdhury (2006) to estimate the abnormal level of discretionary expenses. Managers can cut discretionary expenditures to opportunistically increase current period earnings or to signal their private information about positive future profitability. Because real earnings management through the abnormal reduction in discretionary expenses is usually achieved at the cost of forgoing positive NPV projects, such type of earnings management is more likely to be detrimental to future performance. Therefore, real earnings management

[28] For example, in testing the abnormal reduction in R&D expenditures, I set missing $R\&D_{i,t}$ to be zero but do not set missing $SGA_{i,t}$ and $ADV_{i,t}$ to be zero. When testing the advertising expenses, I set missing $ADV_{i,t}$ to be zero but do not set missing $R\&D_{i,t}$ and $SGA_{i,t}$ to be zero. Therefore, my samples for each specific type of real earnings management are slightly different.

[29] In testing H2 for opportunistic R&D reduction, the coefficients on $RM\_R\&D_{i,t}*CFO_{i,t}$ is not greater in magnitude than $RM\_R\&D_{i,t}*ACC_{i,t}$, although both are significantly negative.

through the abnormal reduction in discretionary expenses is more likely to decrease earnings persistence.

Examining a sample over a period of 41 years, I find that earnings persistence decreases in all my measures of real earnings management. The results are consistent with prior research that documents the negative association between real earnings management and firms' future performance. In testing whether such an effect on earnings persistence is through cash flows or accruals, I find that real earnings management by abnormal reductions in all types of discretionary expenditures affects cash from operations more than it affects accruals. Furthermore, my results suggest that the less persistent earnings as a result of real earnings management are less informative about future cash flows.

This study contributes to the literature on examining earnings quality under a certain type of earnings management. Prior study documents a trend that managers increase the use of real operational activities to manage earnings after the passage of SOX. The results of my study indicate that real earnings management negatively affects earnings quality, especially the quality of cash flows. Extant research examining earnings quality largely focuses on accrual quality, implicitly assuming cash flows are free of manipulation. My findings suggest that future researchers should consider both accrual and real earnings management when conducting earnings quality research.

References

Atwood, T. J., M. S. Drake, and L. A. Myers, 2010. Book-tax conformity, earnings persistence and the association between earnings and future cash flows. *Journal of Accounting and Economics* 50: 111-125.

Baber, W., P. Fairfield, and J. Haggard, 1991. The effect of concern about reported income on discretionary spending decisions. *The Accounting Review* 66: 818-829.

Barton, J. and P. Simko, 2002. The balance sheet as an earnings management constraint. *The Accounting Review* 77: 1-27.

Beaver, W., M. McNichols, and K. Nelson, 2003. Management of the loss reserve accrual and the distribution of earnings in the property-casualty insurance industry. *Journal of accounting and Economics* 35: 347-376.

Blaylock, B., T. Shevlin., R. J. Wilson, 2012. Tax avoidance, large positive temporary book-tax differences, and earnings persistence. *The Accounting Review* 87(1):91-120.

Bushee, B., 1998. The influence of institutional investors on myopic R&D investment behavior. *The Accounting Review* 73: 305-33.

Call, A. C., M. Hewitt, T. Shevlin, and T. L. Yohn, 2016. Firm-specific estimates of differential persistence and their incremental usefulness for forecasting and valuation. *The Accounting Review* 91(3): 811-833.

Cohen, D. A., A. Dey, and T. Z. Lys, 2008. Real and accrued-based earnings management in the pre- and post-Sarbanes-Oxley periods. *The Accounting Review* 83 (3):757-787.

Collins, D. W. and S. P. Kothari. 1989. An analysis of intertemporal and cross-sectional determinants of earnings response coefficients. *Journal of Accounting and Economics* 11: 143-181.

Cheng, Q., J. Lee, and T. Shevlin, 2016. Internal governance and real earnings management. The Accounting Review 91 (4):1051-1085.

Dechow, P. M. and I. D. Dichev, 2002. The quality of accruals and earnings: the role of accrual estimation errors. *The Accounting Review* 77 (Supplement): 35-42.

Dechow, P. M., W. Ge, and C. Schrand. 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. Journal of Accounting and Economics

Dechow, P. M., Richardon, S., and I. Tuna, 2003. Why are earnings kinky? An examination of the earnings management explanation. *Review of Accounting Studies* 8: 355-384.

Dechow, P. M. and R. Sloan, 1991. Executive incentives and the horizon problem: an empirical investigation. *Journal of Accounting and Economics* 14: 51-89.

Dechow, P. M., R. Sloan, and A. Sweeney, 1995. Detecting earnings management. *The Accounting Review* 70:193-225.

DeFond, M. L., 2010. Earnings quality research: advances, challenges and future research. *Journal of Accounting and Economics* 50: 402-409.

Ewert, R. and A. Wagenhofer, 2005. Economic effects of tightening accounting standards to restrict earnings management. *The Accounting Review* 80: 1101-1124.

Francis, J., R. LaFond, P. Olsson and K. Schipper, 2005. The market pricing of accruals quality. *Journal of Accounting and Economics* 39: 295-327.

Graham, J., C. Harvey, and S. Rajpogpal, 2005. The Economic Implications of Corporate Financial Reporting. *Journal of Accounting and Economics* 40: 3-73.

Gunny, K, 2010. The relation between earnings management using real activity and future performance: evidence from meeting earnings benchmarks. *Contemporary Accounting Research* 27 (3): 855-888.

Hanlon, M., 2005. The persistence and pricing of earnings, accruals, and cash flows when firms have large book-tax differences. *The Accounting Review* 80(1): 137-166.

Hayn, C., 1995. The information content of losses. Journal of Accunting & Economics 20: 125-153.

Hou, K., M. A. Van Dijk, and Y. Zhang, 2012. The implied cost of capital: A new approach. *Journal of Accounting and Economics* 53: 504-526.

Kothari, S. P., N. Mizik, and S. Roychowdhury, 2016. Managing for the moment: The role of earnings management via real activies versus accruals in SEO valuation. *The Accounting Review* 91(2): 559-586.

Kormendi, R. and R. Lipe. 1987. Earnings Innovations, Earnings Persistence, and Stock Returns. *The Journal of Business* 60(3): 323-345.

Lee, L. F., 2012. Incentives to inflate reported cash from operations using classification and timing. *The Accounting Review* 87(1): 1-33.

Li, F., 2008. Annual report readability, current earnings, and earnings persistence. *Journal of Accounting and Economics* 45: 221-247.

Li, K. K. and P. Mohanram, 2014. Evaluating cross-sectional forecasting models for implied cost of capital. *Review of Accounting Studies* 19: 1152-1185.

Li, V., 2016. Do False Financial Statements Distort Peer Firms' Decisions? *The Accounting Review* 91(1): 251-278.

Mizik, N. and R. Jacobson, 2007. Myopic marketing management: evidence of the phenomenon and its long-term performance consequences in the SEO context. *Marketing Science* 26(3): 361-379.

Perry, S. and R. Grinaker, 1994. Earnings expectations and discretionary research and development spending. *Accounting Horizons* 8: 43-51.

Richardson, S.A., R.G. Sloan, M.T. Soliman, and I. Tuna, 2005. Accrual reliability, earnings persistence and stock prices. *Journal of Accounting and Economics* 39: 437-485.

Roychowdhury, S., 2006. Earnings Management through real activities manipulation. *Journal of Accounting and Economics* 42: 335-370.

Shipper, K., and L. Vincent, 2003. Earnings quality. *Accounting Horizons* 17: 97-110.

Sloan, R., 1996. Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review* 71: 289-315.

So, E. C., 2013. A new approach to predicting analyst forecast errors: Do investors overweight analyst forecasts? *Journal of Financial Economics* 108: 615-640.

Subramanyam, K. R., 1996. The pricing of discretionary accruals. Journal of Accounting and Economics 22: 249-281.

Xie, H., 2001. The mispricing of abnormal accruals. The Accounting Review 76(3): 357-373.

Zang, A.Y., 2012. Evidence on the tradeoff between real manipulation and accrual-based earnings management. *The Accounting Review* 87 (2): 675-703.

Appendix I
Variable Definitions

Variables in the main tests	
$ACC_{i,t}$	Total Accruals $\Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} + \Delta STDEBT_{i,t} - Depreciation_{i,t}$ $\Delta CA_{i,t}$ = change in current assets between year t – 1 and year t, $\Delta CL_{i,t}$ = change in current liabilities between year t – 1 and year t, $\Delta Cash_{i,t}$ = change in cash between year t – 1 and year t, $\Delta STDEBT_{i,t}$ = change in debt in current liabilities between year t – 1 and year t, $Depreciation_{i,t}$ = depreciation in year t.
$ADV_{i,t}$	Advertising expenditures
$ASSETS_{i,t}$	Total assets
$CFO_{i,t}$	Cash flows from operations, equal to $E_{i,t} - ACC_{i,t}$
$DIV_{i,t}$	Dividends
$DIVDUM_{i,t}$	Equals 1 when firm pays dividends in year t.
$E_{i,t}$	Net income before extraordinary items in year t, scaled by average assets
$LOSS_{i,t}$	Equals 1 when firm has a loss in year t.
$OANCF_{i,t}$	Cash flows from operations directly taken from statement of cash Flows
$RM\_ADV_{i,t}$	(-1)* residual from estimating the Advertising model: $\frac{ADV_{i,t}}{AT_{i,t-1}} = \alpha_1 \frac{1}{AT_{i,t-1}} + \alpha_2 \frac{SALES_{i,t}}{AT_{i,t-1}} + \alpha_3 \frac{\Delta SALES_{i,t}}{AT_{i,t-1}} + \varepsilon_{i,t}$ The model is estimated by industry (defined by Fama-French 48 industry level) and year with at least twenty observations for each industry-year. I set missing Advertising expenses equal to zero when SG&A is not missing.
$RM\_R\&D_{i,t}$	(-1)* residual from estimating the R&D model: $\frac{R\&D_{i,t}}{AT_{i,t-1}} = \alpha_1 \frac{1}{AT_{i,t-1}} + \alpha_2 \frac{SALES_{i,t}}{AT_{i,t-1}} + \alpha_3 \frac{\Delta SALES_{i,t}}{AT_{i,t-1}} + \alpha_3 \frac{R\&D_{i,t-1}}{AT_{i,t-2}} + \varepsilon_{i,t}$ The model is estimated by industry (defined by Fama-French 48 industry level) and year with at least twenty observations for each industry-year. I set missing R&D equal to zero when SG&A is not missing.
$RM\_SGA_{i,t}$	(-1)* residual from estimating the SG&A model: $\frac{SGA_{i,t}}{AT_{i,t-1}} = \alpha_1 \frac{1}{AT_{i,t-1}} + \alpha_2 \frac{SALES_{i,t}}{AT_{i,t-1}} + \alpha_3 \frac{\Delta SALES_{i,t}}{AT_{i,t-1}} + \varepsilon_{i,t}$ The model is estimated by industry (defined by Fama-French 48 industry level) and year with at least twenty observations for each industry-year.
$RM\_TDISX_{i,t}$	(-1)* residual from estimating the Total Discretionary Expense model: $\frac{TDISX_{i,t}}{AT_{i,t-1}} = \alpha_1 \frac{1}{AT_{i,t-1}} + \alpha_2 \frac{SALES_{i,t}}{AT_{i,t-1}} + \alpha_3 \frac{\Delta SALES_{i,t}}{AT_{i,t-1}} + \varepsilon_{i,t}$ The model is estimated by industry (defined by Fama-French 48 industry level) and year with at least twenty observations for each industry-year. Missing advertising, R&D and SG&A are set to be zero.
$R\&D_{i,t}$	R&D expenditures
$SALES_{i,t}$	Total revenue
$SGA_{i,t}$	SG&A expenses
$TDISX_{i,t}$	$R\&D_{i,t} + ADV_{i,t} + SG\&A_{i,t}$

Appendix I (Continued)

Variables in the additional tests	
$DA_{i,t}$	Equals 1 for firms with discretionary accruals in the top quintile of absolute residuals estimated from the Modified Jones model (Dechow et al., 1995): $$ACC_{i,t} = \alpha + \beta_1(\Delta Rev_{i,t} - \Delta Rec_{i,t}) + \beta_2 PPE_{i,t} + \varepsilon_{i,t}$$ where $Rev_{i,t}$ is total sales; $Rec_{i,t}$ is accounts receivable, and $PPE_{i,t}$ is property, plant, and equipment all scaled by average total assets; and 0 otherwise.
$DRM\_AR\&D_{i,t}$	Equals 1 for firm-year suspected of engaging in real earnings management, and 0 otherwise. Suspected real earnings management firm-years are those in the lowest abnormal R&D expense quintile and the highest NOA quintile. The abnormal R&D is (-1)* residuals from the alternative R&D model, estimated cross-sectionally for each Fama-French 48 industry group each year. $R\&D_{i,t} = \alpha_0 + \beta_1 R\&D_{i,t-1} + \beta_2 INT_{i,t} + \beta_3 Q_{i,t} + \beta_4 CX_{i,t} + \beta_5 MV_t + \varepsilon_{i,t}$ where $INT_{i,t}$ is Internal fund, equal to ($E_{i,t}$ + $R\&D_{i,t}$ + $Depreciation_{i,t}$)/$SALES_{i,t}$; $Q_{i,t}$ is Tobin's Q deflated by lagged total assets and calculated as (market value of equity + book value of preferred stock + short-term debt + long-term debt) / total assets; $CX_{i,t}$ is capital expenditures scaled by lagged total assets; $MV_{i,t}$ is log of market value of equity; $NOA_{i,t-1}$ is net operating assets in year t – 1 as defined in Barton and Simko (2002), and calculated as $(EQUITY_{i,t-1} - CASH_{i,t-1} - MKTSEC_{i,t-1} + DEBT_{i,t-1})/SALES_{i,t-1}$, where $EQUITY_{i,t-1}$ is the lagged shareholder's equity; $CASH_{i,t-1}$ is lagged cash; $MKESEC_{i,t-1}$ is lagged marketable security; $DEBT_{i,t-1}$ is lagged total debt.[30]
$MBT_{i,t}$	Equals 1 if firms just meet the zero earnings targets or last years' earnings or if current earnings are greater than zero earnings or last years' earnings scaled by total assets by 0.01.
$SOX_{i,t}$	Equals 1 for the year of 2002 and beyond, and 0 otherwise.

[30] This procedure is stricter and less commonly used in prior literature. Therefore, I do not use this approach in my main tests.

Table 1
Derivation of Sample: 1975 – 2016

Firm-years with positive sales, cost of goods for sale, inventory, assets greater than 1 million	214,170
Firm-years with non-missing earnings	176,460
Firm-years with sufficient data to calculate accruals and CFO	171,280
Final sample with sufficient data to calculate total discretionary expenses	**161,941**

Samples used to estimate different types of real earnings management are different in size to maximize the sample size for each test.

Table 2
Descriptive Statistics

Variable	N	Mean	sddev	Min	Q1	Median	Q3	Max
$ASSETS_{i,t}$	176460	1101.7	3555	1.39	18.62	87.28	470.58	26144
$E_{i,t}$	176460	-0.013	0.181	-0.744	-0.038	0.034	0.080	0.309
$OANCF_{i,t}$	125391	0.032	0.178	-0.722	-0.014	0.066	0.129	0.380
$LOSS_{i,t}$	176460	0.330	0.470	0.000	0.000	0.000	1.000	1.000
$RM\_R\&D_{i,t}$	148504	-0.004	0.056	-0.309	-0.002	0.000	0.005	0.190
$RM\_ADV_{i,t}$	160943	0.000	0.037	-0.195	-0.003	0.003	0.010	0.101
$RM\_SGA_{i,t}$	156943	-0.025	0.283	-1.082	-0.133	-0.009	0.088	1.002
$RM\_TDISX_{i,t}$	166336	-0.007	0.085	-0.220	-0.029	0.002	0.025	0.284

$ASSETS_{i,t}$ is Total Assets; $E_{i,t}$ is net income before extraordinary items; $OANCF_{i,t}$ is cash flows from operations from Statement of Cash flows; $LOSS_{i,t}$ equals 1 if firms have a loss in year t and zero otherwise; $RM\_R\&D_{i,t}$ is the abnormal level of R&D expenditures; $RM\_ADV_{i,t}$ is the abnormal level of advertising expenditures; $RM\_SGA_{i,t}$ is the abnormal level of SG&A expenditures; and $RM\_TDISX_{i,t}$ is the abnormal level of total discretionary expenditures. All variables are defined in Appendix I, and, except for the dummy variables, are scaled by average assets and winsorized at 1 and 99 percent level.

Table 3
Association between Earnings Persistence and Real Earnings Management

Model: $E_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t}$

VARIABLES	(1) Basic	(2) RM_R&D$_{i,t}$	(3) RM_ADV$_{i,t}$	(4) RM_SGA$_{i,t}$	(5) RM_TDISX$_{i,t}$
$E_{i,t}$	0.708***	0.702***	0.693***	0.645***	0.665***
	(114.622)	(98.567)	(103.909)	(86.773)	(95.086)
$RM_{i,t}$		0.070***	0.075***	0.021***	0.080***
		(4.653)	(5.203)	(11.003)	(13.154)
$RM_{i,t} * E_{i,t}$		-0.119**	-0.604***	-0.136***	-0.188***
		(-2.051)	(-4.090)	(-10.681)	(-7.131)
$Log(ASSETS)_{i,t}$	0.010***	0.010***	0.010***	0.009***	0.011***
	(32.707)	(30.286)	(31.092)	(29.787)	(33.307)
$DIV_{i,t}$	0.292***	0.305***	0.270***	0.282***	0.307***
	(15.210)	(14.464)	(13.857)	(13.754)	(15.590)
$DIVDUM_{i,t}$	0.007***	0.006***	0.007***	0.007***	0.006***
	(7.940)	(6.831)	(8.177)	(8.222)	(6.482)
$LOSS_{i,t}$	-0.014***	-0.014***	-0.015***	-0.020***	-0.018***
	(-10.253)	(-8.987)	(-10.564)	(-13.372)	(-12.295)
$ACC_{i,t}$	-0.126***	-0.126***	-0.122***	-0.115***	-0.121***
	(-23.654)	(-21.126)	(-22.694)	(-21.237)	(-22.214)
Constant	-0.026***	-0.029***	-0.027***	-0.026***	-0.028***
	(-5.398)	(-4.191)	(-4.857)	(-4.328)	(-4.967)
Observations	171,280	144,904	156,809	153,218	161,941
Adjusted R-squared	0.493	0.489	0.464	0.462	0.495
IndDummies	Yes	Yes	Yes	Yes	Yes
YearDummies	Yes	Yes	Yes	Yes	Yes
SE ClusteredBy	Firm	Firm	Firm	Firm	Firm

Model is estimated by running a pooled regression on all firm-years 1975-2016. $E_{i,t}$ is net income before extraordinary items. $RM_{i,t}$ equals $RM\_R\&D_{i,t}$, $RM\_ADV_{i,t}$, $RM\_SGA_{i,t}$, and $RM\_TDISX_{i,t}$ in model (2), (3), (4), and (5), respectively. $RM\_R\&D_{i,t}$ is the abnormal level of R&D expenditures; $RM\_ADV_{i,t}$ is the abnormal level of advertising expenditures; $RM\_SGA_{i,t}$ is the abnormal level of SG&A expenditures; and $RM\_TDISX_{i,t}$ is the abnormal level of total discretionary expenditures. $Log(ASSETS)_{i,t}$ is the nature log of total assets; $DIV_{i,t}$ is dividends, $DIVDUM_{i,t}$ equals 1 when firm i pays dividends in year t, and 0 otherwise; $LOSS_{i,t}$ equals 1 when firm i has a loss in year t., and 0 other wise; $ACC_{i,t}$ is total accruals. All variables are defined in Appendix I, and, except for the dummy variables, are scaled by average assets and winsorized at 1 and 99 percent level. Standard errors are clustered by firm. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1, based on two-tailed tests.

Table 4
The Effect of Real Earnings Management on Accruals and Cash Flows from Operations

Model: $E_{i,t+1} = \alpha_0 + \alpha_1 ACC_{i,t} + \alpha_2 CFO_{i,t} + \alpha_3 RM_{i,t} + \alpha_4 RM_{i,t} * ACC_{i,t} + \alpha_5 RM_{i,t} * CFO_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t}$

VARIABLES	(1) Basic	(2) RM_R&D$_{i,t}$	(3) RM_ADV$_{i,t}$	(4) RM_SGA$_{i,t}$	(5) RM_TDISX$_{i,t}$
ACC$_{i,t}$	0.566***	0.557***	0.554***	0.502***	0.520***
	(70.560)	(62.052)	(66.153)	(57.245)	(61.137)
CFO$_{i,t}$	0.662***	0.654***	0.647***	0.582***	0.608***
	(105.005)	(90.344)	(94.734)	(78.845)	(85.852)
RM$_{i,t}$		0.075***	0.096***	0.031***	0.081***
		(5.078)	(5.386)	(14.127)	(13.124)
*RM$_{i,t}$*ACC$_{i,t}$*		-0.069	-0.306	-0.097***	0.025
		(-0.414)	(-1.348)	(-4.069)	(0.388)
*RM$_{i,t}$*CFO$_{i,t}$*		-0.269***	-0.803***	-0.227***	-0.352***
		(-4.030)	(-5.325)	(-16.153)	(-12.130)
Log(ASSETS)$_{i,t}$	0.011***	0.011***	0.011***	0.010***	0.012***
	(33.678)	(31.128)	(31.563)	(30.259)	(33.849)
DIV$_{i,t}$	0.360***	0.376***	0.334***	0.343***	0.373***
	(16.992)	(16.207)	(15.562)	(15.283)	(17.291)
DIVDUM$_{i,t}$	0.004***	0.004***	0.004***	0.005***	0.003***
	(3.813)	(3.543)	(4.444)	(5.184)	(3.299)
LOSS$_{i,t}$	-0.030***	-0.030***	-0.032***	-0.037***	-0.035***
	(-21.129)	(-18.990)	(-21.215)	(-24.521)	(-23.299)
Constant	-0.044***	-0.049***	-0.045***	-0.041***	-0.044***
	(-7.630)	(-6.189)	(-7.021)	(-6.075)	(-6.916)
Observations	171,280	144,904	156,809	153,218	161,941
Adjusted R-squared	0.479	0.476	0.448	0.450	0.483
IndDummies	Yes	Yes	Yes	Yes	Yes
YearDummies	Yes	Yes	Yes	Yes	Yes
SE ClusteredBy	Firm	Firm	Firm	Firm	Firm

Model is estimated by running a pooled regression on all firm-years 1975-2016. *E$_{i,t}$* is net income before extraordinary items. *RM$_{i,t}$* equals *RM_R&D$_{i,t}$*, *RM_ADV$_{i,t}$*, *RM_SGA$_{i,t}$*, and *RM_TDISX$_{i,t}$* in model (2), (3), (4), and (5), respectively. *RM_R&D$_{i,t}$* is the abnormal level of R&D expenditures; *RM_ADV$_{i,t}$* is the abnormal level of advertising expenditures; *RM_SGA$_{i,t}$* is the abnormal level of SG&A expenditures; and *RM_TDISX$_{i,t}$* is the abnormal level of total discretionary expenditures. *Log(ASSETS)$_{i,t}$* is the nature log of total assets; *DIV$_{i,t}$* is dividends, *DIVDUM$_{i,t}$* equals 1 when firm i pays dividends in year t, and 0 otherwise; *LOSS$_{i,t}$* equals 1 when firm i has a loss in year t., and 0 other wise; *ACC$_{i,t}$* is total accruals. CFO is cash flows from operations. All variables are defined in Appendix I, and, except for the dummy variables, are scaled by average assets and winsorized at 1 and 99 percent level. Standard errors are clustered by firm. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1, based on two-tailed tests.

Table 5
The Effect of Real Earnings Management on the Association between Current Earnings and Future Cash Flows

Model: $OANCF_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t}$

VARIABLES	(1) Basic	(2) $RM\_R\&D_{i,t}$	(3) $RM\_ADV_{i,t}$	(4) $RM\_SGA_{i,t}$	(5) $RM\_TDISX_{i,t}$
$E_{i,t}$	0.540***	0.517***	0.520***	0.453***	0.474***
	(89.644)	(77.566)	(81.608)	(67.203)	(72.925)
$RM_{i,t}$		0.077***	0.052***	0.017***	0.073***
		(5.568)	(3.351)	(8.327)	(10.666)
$RM_{i,t} * E_{i,t}$		-0.384***	-0.549***	-0.198***	-0.347***
		(-7.451)	(-3.887)	(-17.083)	(-13.812)
$Log(ASSETS)_{i,t}$	0.011***	0.011***	0.011***	0.010***	0.012***
	(29.658)	(28.133)	(29.775)	(28.566)	(31.265)
$DIV_{i,t}$	0.255***	0.380***	0.242***	0.276***	0.303***
	(5.242)	(7.177)	(4.941)	(5.398)	(6.050)
$DIVDUM_{i,t}$	0.009***	0.007***	0.008***	0.009***	0.008***
	(7.066)	(5.230)	(6.881)	(6.892)	(6.016)
$LOSS_{i,t}$	0.004***	0.002	0.003**	-0.004***	-0.003**
	(2.763)	(1.537)	(2.032)	(-3.010)	(-2.231)
$ACC_{i,t}$	-0.208***	-0.194***	-0.205***	-0.193***	-0.196***
	(-34.030)	(-29.178)	(-32.873)	(-30.796)	(-31.295)
Constant	-0.028***	-0.018	-0.026**	-0.020*	-0.028***
	(-2.787)	(-1.568)	(-2.455)	(-1.892)	(-2.629)
Observations	121,736	106,434	111,073	108,928	115,563
Adjusted R-squared	0.474	0.473	0.430	0.432	0.482
IndDummies	Yes	Yes	Yes	Yes	Yes
YearDummies	Yes	Yes	Yes	Yes	Yes
SE ClusteredBy	Firm	Firm	Firm	Firm	Firm

Model is estimated by running a pooled regression on all firm-years 1988-2016. OANCF is Cash flows from operations directly taken from Statement of Cash Flows; $E_{i,t}$ is net income before extraordinary items. $RM_{i,t}$ equals $RM\_R\&D_{i,t}$, $RM\_ADV_{i,t}$, $RM\_SGA_{i,t}$, and $RM\_TDISX_{i,t}$ in model (2), (3), (4), and (5), respectively. $RM\_R\&D_{i,t}$ is the abnormal level of R&D expenditures; $RM\_ADV_{i,t}$ is the abnormal level of advertising expenditures; $RM\_SGA_{i,t}$ is the abnormal level of SG&A expenditures; and $RM\_TDISX_{i,t}$ is the abnormal level of total discretionary expenditures. $Log(ASSETS)_{i,t}$ is the nature log of total assets; $DIV_{i,t}$ is dividends, $DIVDUM_{i,t}$ equals 1 when firm i pays dividends in year t, and 0 otherwise; $LOSS_{i,t}$ equals 1 when firm i has a loss in year t., and 0 other wise; $ACC_{i,t}$ is total accruals. All variables are defined in Appendix I, and, except for the dummy variables, are scaled by average assets and winsorized at 1 and 99 percent level. Standard errors are clustered by firm. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1, based on two-tailed tests.

Table 6
The Effect of Real Earnings Management on Earnings Quality Pre- and Post- SOX

Panel A: $E_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + \alpha_4 SOX_{i,t} + \alpha_5 RM_{i,t} * E_{i,t} * SOX_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t}$

VARIABLES	(1) Basic	(2) $RM\_R\&D_{i,t}$	(3) $RM\_ADV_{i,t}$	(4) $RM\_SGA_{i,t}$	(5) $RM\_TDISX_{i,t}$
$E_{i,t}$	0.735***	0.732***	0.722***	0.676***	0.697***
	(118.610)	(101.337)	(107.728)	(88.390)	(97.170)
$RM_{i,t}$		0.035**	0.059***	0.020***	0.057***
		(2.277)	(4.163)	(10.286)	(9.390)
$RM_{i,t} * E_{i,t}$		-0.042	-0.747***	-0.089***	-0.139***
		(-0.577)	(-4.565)	(-5.397)	(-4.452)
$SOX_{i,t}$	-0.009	-0.007	-0.007	-0.008	-0.008
	(-1.038)	(-0.796)	(-0.816)	(-0.823)	(-0.910)
$RM_{i,t} * E_{i,t} * SOX_{i,t}$		-0.200**	0.477	-0.095***	-0.123***
		(-2.193)	(1.458)	(-4.085)	(-3.105)
$Log(ASSETS)_{i,t}$	-0.046***	-0.036***	-0.055***	-0.044***	-0.033***
	(-12.058)	(-7.527)	(-13.751)	(-10.310)	(-7.927)
$DIV_{i,t}$	-0.089***	-0.086***	-0.091***	-0.078***	-0.093***
	(-5.639)	(-5.015)	(-5.686)	(-4.623)	(-5.763)
$DIVDUM_{i,t}$	0.028***	0.028***	0.027***	0.028***	0.029***
	(37.699)	(34.984)	(37.251)	(36.792)	(37.919)
$LOSS_{i,t}$	-0.018***	-0.017***	-0.019***	-0.023***	-0.021***
	(-12.663)	(-10.875)	(-12.913)	(-15.227)	(-14.255)
$ACC_{i,t}$	-0.117***	-0.121***	-0.108***	-0.106***	-0.118***
	(-20.135)	(-18.745)	(-18.476)	(-17.946)	(-19.945)
Constant	0.046***	0.033***	0.054***	0.042***	0.032***
	(7.516)	(3.989)	(7.696)	(5.676)	(4.531)
Observations	171,280	144,904	156,809	153,218	161,941
Adjusted R-squared	0.489	0.484	0.460	0.458	0.489
IndDummies	Yes	Yes	Yes	Yes	Yes
YearDummies	Yes	Yes	Yes	Yes	Yes
SE ClusteredBy	Firm	Firm	Firm	Firm	Firm

Model is estimated by running a pooled regression on all firm-years 1975-2016. $E_{i,t}$ is net income before extraordinary items. $RM_{i,t}$ equals $RM\_R\&D_{i,t}$, $RM\_ADV_{i,t}$, $RM\_SGA_{i,t}$, and $RM\_TDISX_{i,t}$ in model (2), (3), (4), and (5), respectively. $RM\_R\&D_{i,t}$ is the abnormal level of R&D expenditures; $RM\_ADV_{i,t}$ is the abnormal level of advertising expenditures; $RM\_SGA_{i,t}$ is the abnormal level of SG&A expenditures; and $RM\_TDISX_{i,t}$ is the abnormal level of total discretionary expenditures. $Log(ASSETS)_{i,t}$ is the nature log of total assets; $DIV_{i,t}$ is dividends, $DIVDUM_{i,t}$ equals 1 when firm i pays dividends in year t, and 0 otherwise; $LOSS_{i,t}$ equals 1 when firm i has a loss in year t., and 0 other wise; $ACC_{i,t}$ is total accruals; $SOX_{i,t}$ equals 1 for period of year 2002 and beyond; 0 otherwise. All variables are defined in Appendix I, and, except for the dummy variables, are scaled by average assets and winsorized at 1 and 99 percent level. All variables except for dummy variables are scaled by average assets and winsorized at 1 and 99 percent level. Standard errors are clustered by firm. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1, based on two-tailed tests.

Table 6 (Continued)

Panel B: $OANCF_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + \alpha_4 SOX_{i,t} + \alpha_5 RM_{i,t} * E_{i,t} * SOX_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t}$

VARIABLES	(1) Basic	(2) $RM\_R\&D_{i,t}$	(3) $RM\_ADV_{i,t}$	(4) $RM\_SGA_{i,t}$	(5) $RM\_TDISX_{i,t}$
$E_{i,t}$	0.570***	0.570***	0.568***	0.487***	0.510***
	(95.260)	(84.997)	(87.103)	(71.297)	(77.708)
$RM_{i,t}$		0.041***	0.036**	0.016***	0.050***
		(2.901)	(2.360)	(7.734)	(7.256)
$RM_{i,t} * E_{i,t}$		-0.533***	-0.486***	-0.170***	-0.310***
		(-8.570)	(-3.002)	(-11.397)	(-10.835)
$SOX_{i,t}$	0.009	-0.003	0.004	0.012	0.013
	(0.953)	(-0.257)	(0.438)	(1.315)	(1.370)
$RM_{i,t} * E_{i,t} * SOX_{i,t}$		-0.249***	-0.247	-0.042**	-0.078**
		(-3.154)	(-0.859)	(-1.994)	(-2.206)
$Log(ASSETS)_{i,t}$	-0.054***	-0.023***	-0.056***	-0.046***	-0.034***
	(-16.032)	(-5.716)	(-16.268)	(-12.650)	(-9.268)
$DIV_{i,t}$	-0.292***	-0.224***	-0.306***	-0.258***	-0.284***
	(-6.330)	(-4.530)	(-6.415)	(-5.280)	(-5.919)
$DIVDUM_{i,t}$	0.029***	0.029***	0.029***	0.029***	0.031***
	(25.773)	(26.843)	(27.063)	(25.572)	(26.708)
$LOSS_{i,t}$	-0.000	-0.000	0.001	-0.007***	-0.006***
	(-0.286)	(-0.322)	(0.485)	(-5.371)	(-4.650)
$ACC_{i,t}$	-0.198***	-0.233***	-0.226***	-0.186***	-0.196***
	(-31.031)	(-32.907)	(-33.875)	(-28.348)	(-29.835)
Constant	0.068***	0.064***	0.095***	0.066***	0.048***
	(6.535)	(9.062)	(14.561)	(5.958)	(4.338)
Observations	121,736	106,434	111,073	108,928	115,563
Adjusted R-squared	0.466	0.445	0.408	0.423	0.472
IndDummies	Yes	Yes	Yes	Yes	Yes
YearDummies	Yes	Yes	Yes	Yes	Yes
SE ClusteredBy	Firm	Firm	Firm	Firm	Firm

Model is estimated by running a pooled regression on all firm-years 1988-2016. $OANCF_{i,t}$ is Cash flows from operations directly taken from Statement of Cash Flows; $E_{i,t}$ is net income before extraordinary items. $RM_{i,t}$ equals $RM\_R\&D_{i,t}$, $RM\_ADV_{i,t}$, $RM\_SGA_{i,t}$, and $RM\_TDISX_{i,t}$ in model (2), (3), (4), and (5), respectively. $RM\_R\&D_{i,t}$ is the abnormal level of R&D expenditures; $RM\_ADV_{i,t}$ is the abnormal level of advertising expenditures; $RM\_SGA_{i,t}$ is the abnormal level of SG&A expenditures; and $RM\_TDISX_{i,t}$ is the abnormal level of total discretionary expenditures. $Log(ASSETS)_{i,t}$ is the nature log of total assets; $DIV_{i,t}$ is dividends, $DIVDUM_{i,t}$ equals 1 when firm i pays dividends in year t, and 0 otherwise; $LOSS_{i,t}$ equals 1 when firm i has a loss in year t., and 0 other wise; $ACC_{i,t}$ is total accruals; $SOX_{i,t}$ equals 1 for period of year 2002 and beyond; 0 otherwise. All variables are defined in Appendix I, and, except for the dummy variables, are scaled by average assets and winsorized at 1 and 99 percent level. All variables except for dummy variables are scaled by average assets and winsorized at 1 and 99 percent level. Standard errors are clustered by firm. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1, based on two-tailed tests.

Table 7
The Case of Meeting or Just Beating Earnings Targets

Panel A: $E_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + \alpha_4 MBT_{i,t} + \alpha_5 RM_{i,t} * E_{i,t} * MBT_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t}$

VARIABLES	(1) Basic	(2) $RM\_R\&D_{i,t}$	(3) $RM\_ADV_{i,t}$	(4) $RM\_SGA_{i,t}$	(5) $RM\_TDISX_{i,t}$
$E_{i,t}$	0.707***	0.701***	0.692***	0.643***	0.663***
	(113.570)	(97.975)	(103.201)	(85.906)	(94.343)
$RM_{i,t}$		0.071***	0.074***	0.022***	0.081***
		(4.715)	(5.099)	(10.982)	(13.225)
$RM_{i,t} * E_{i,t}$		-0.113*	-0.618***	-0.138***	-0.189***
		(-1.929)	(-4.145)	(-10.687)	(-7.107)
$MBT_{i,t}$	-0.005***	-0.005***	-0.006***	-0.007***	-0.006***
	(-6.548)	(-6.491)	(-7.436)	(-9.454)	(-8.276)
$RM_{i,t} * E_{i,t} * MBT_{i,t}$		-0.575*	0.351	-0.122**	-0.302*
		(-1.902)	(0.992)	(-1.975)	(-1.924)
$Log(ASSETS)_{i,t}$	0.010***	0.010***	0.010***	0.009***	0.011***
	(32.735)	(30.452)	(31.285)	(30.056)	(33.532)
$DIV_{i,t}$	0.290***	0.304***	0.268***	0.280***	0.305***
	(15.222)	(14.417)	(13.799)	(13.687)	(15.535)
$DIVDUM_{i,t}$	0.007***	0.006***	0.007***	0.007***	0.006***
	(8.067)	(6.886)	(8.242)	(8.303)	(6.550)
$LOSS_{i,t}$	-0.015***	-0.014***	-0.016***	-0.021***	-0.019***
	(-10.641)	(-9.439)	(-11.065)	(-14.018)	(-12.850)
$ACC_{i,t}$	-0.127***	-0.126***	-0.122***	-0.115***	-0.121***
	(-23.740)	(-21.158)	(-22.729)	(-21.276)	(-22.255)
Constant	-0.025***	-0.028***	-0.026***	-0.025***	-0.027***
	(-5.212)	(-4.044)	(-4.700)	(-4.126)	(-4.794)
Observations	170,766	144,900	156,804	153,213	161,936
Adjusted R-squared	0.493	0.489	0.464	0.463	0.495
IndDummies	Yes	Yes	Yes	Yes	Yes
YearDummies	Yes	Yes	Yes	Yes	Yes
SE ClusteredBy	Firm	Firm	Firm	Firm	Firm

Model is estimated by running a pooled regression on all firm-years 1975-2016. $E_{i,t}$ is net income before extraordinary items. $RM_{i,t}$ equals $RM\_R\&D_{i,t}$, $RM\_ADV_{i,t}$, $RM\_SGA_{i,t}$, and $RM\_TDISX_{i,t}$ in model (2), (3), (4), and (5), respectively. $RM\_R\&D_{i,t}$ is the abnormal level of R&D expenditures; $RM\_ADV_{i,t}$ is the abnormal level of advertising expenditures; $RM\_SGA_{i,t}$ is the abnormal level of SG&A expenditures; and $RM\_TDISX_{i,t}$ is the abnormal level of total discretionary expenditures. $Log(ASSETS)_{i,t}$ is the nature log of total assets; $DIV_{i,t}$ is dividends, $DIVDUM_{i,t}$ equals 1 when firm i pays dividends in year t, and 0 otherwise; $LOSS_{i,t}$ equals 1 when firm i has a loss in year t., and 0 other wise; $ACC_{i,t}$ is total accruals; $MBT_{i,t}$ equals 1 if firms just meet the zero earnings target or last years' earnings or if current earnings are greater than zero earnings or last years' earnings scaled by total assets by 0.01, and 0 otherwise. All variables are defined in Appendix I, and, except for the dummy variables, are scaled by average assets and winsorized at 1 and 99 percent level. Standard errors are clustered by firm. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1, based on two-tailed tests.

Table 7 (Continued)

Panel B: $OANCF_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + \alpha_4 MBT_{i,t} + \alpha_5 RM_{i,t} * E_{i,t} * MBT_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t}$

VARIABLES	(1) Basic	(2) $RM\_R\&D_{i,t}$	(3) $RM\_ADV_{i,t}$	(4) $RM\_SGA_{i,t}$	(5) $RM\_TDISX_{i,t}$
$E_{i,t}$	0.540***	0.517***	0.520***	0.451***	0.479***
	(88.934)	(77.259)	(81.268)	(66.780)	(73.941)
$RM_{i,t}$		0.078***	0.050***	0.017***	0.082***
		(5.626)	(3.193)	(8.320)	(12.192)
$RM_{i,t} * E_{i,t}$		-0.379***	-0.566***	-0.200***	-0.447***
		(-7.299)	(-3.964)	(-17.051)	(-18.419)
$MBT_{i,t}$	-0.002***	-0.004***	-0.003***	-0.006***	-0.004***
	(-2.656)	(-4.381)	(-3.724)	(-6.553)	(-4.662)
$RM_{i,t} * E_{i,t} * MBT_{i,t}$		-0.507**	0.534	0.007	-0.217*
		(-2.014)	(1.073)	(0.122)	(-1.670)
$Log(ASSETS)_{i,t}$	0.011***	0.011***	0.011***	0.010***	0.012***
	(29.672)	(28.281)	(29.897)	(28.791)	(32.910)
$DIV_{i,t}$	0.258***	0.380***	0.241***	0.275***	0.342***
	(5.329)	(7.181)	(4.936)	(5.396)	(6.808)
$DIVDUM_{i,t}$	0.009***	0.007***	0.008***	0.009***	0.006***
	(7.055)	(5.272)	(6.922)	(6.960)	(4.798)
$LOSS_{i,t}$	0.003**	0.001	0.002	-0.005***	-0.004***
	(2.473)	(1.053)	(1.607)	(-3.675)	(-3.002)
$ACC_{i,t}$	-0.208***	-0.194***	-0.205***	-0.193***	-0.224***
	(-34.017)	(-29.204)	(-32.887)	(-30.828)	(-35.239)
Constant	-0.026***	-0.017	-0.026**	-0.019*	-0.009
	(-2.600)	(-1.491)	(-2.401)	(-1.793)	(-1.624)
Observations	121,328	106,432	111,070	108,925	115,560
Adjusted R-squared	0.473	0.473	0.430	0.432	0.470
IndDummies	Yes	Yes	Yes	Yes	Yes
YearDummies	Yes	Yes	Yes	Yes	Yes
SE ClusteredBy	Firm	Firm	Firm	Firm	Firm

Model is estimated by running a pooled regression on all firm-years 1988-2016. $OANCF_{i,t}$ is Cash flows from operations directly taken from Statement of Cash Flows; $E_{i,t}$ is net income before extraordinary items. $RM_{i,t}$ equals $RM\_R\&D_{i,t}$, $RM\_ADV_{i,t}$, $RM\_SGA_{i,t}$, and $RM\_TDISX_{i,t}$ in model (2), (3), (4), and (5), respectively. $RM\_R\&D_{i,t}$ is the abnormal level of R&D expenditures; $RM\_ADV_{i,t}$ is the abnormal level of advertising expenditures; $RM\_SGA_{i,t}$ is the abnormal level of SG&A expenditures; and $RM\_TDISX_{i,t}$ is the abnormal level of total discretionary expenditures. $Log(ASSETS)_{i,t}$ is the nature log of total assets; $DIV_{i,t}$ is dividends, $DIVDUM_{i,t}$ equals 1 when firm i pays dividends in year t, and 0 otherwise; $LOSS_{i,t}$ equals 1 when firm i has a loss in year t., and 0 other wise; $ACC_{i,t}$ is total accruals; $MBT_{i,t}$ equals 1 if firms just meet the zero earnings target or last years' earnings or if current earnings are greater than zero earnings or last years' earnings scaled by total assets by 0.01, and 0 otherwise. All variables are defined in Appendix I, and, except for the dummy variables, are scaled by average assets and winsorized at 1 and 99 percent level. Standard errors are clustered by firm. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1, based on two-tailed tests.

Table 8
Sensitivity Test - Controlling for Accrual Earnings Management

Panel A: $E_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + \alpha_4 DA_{i,t} + \alpha_5 E_{i,t} * DA_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t}$

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Basic	$RM\_R\&D_{i,t}$	$RM\_ADV_{i,t}$	$RM\_SGA_{i,t}$	$RM\_TDISX_{i,t}$
$E_{i,t}$	0.706***	0.706***	0.686***	0.651***	0.679***
	(86.428)	(79.582)	(79.547)	(72.115)	(79.597)
$RM_{i,t}$		0.085***	0.064***	0.021***	0.082***
		(5.400)	(4.147)	(10.087)	(12.456)
$RM_{i,t} * E_{i,t}$		-0.137**	-0.491***	-0.116***	-0.144***
		(-2.096)	(-3.068)	(-8.102)	(-4.719)
$DA_{i,t}$	-0.015***	-0.015***	-0.014***	-0.013***	-0.014***
	(-11.455)	(-10.414)	(-10.719)	(-9.818)	(-10.425)
$DA_{i,t} * E_{i,t}$	-0.035***	-0.045***	-0.027***	-0.037***	-0.044***
	(-3.792)	(-4.457)	(-2.743)	(-3.666)	(-4.771)
$Log(ASSETS)_{i,t}$	0.009***	0.009***	0.009***	0.009***	0.010***
	(27.925)	(26.348)	(26.568)	(25.528)	(28.629)
$DIV_{i,t}$	0.259***	0.277***	0.241***	0.254***	0.268***
	(12.888)	(12.553)	(11.746)	(11.881)	(13.036)
$DIVDUM_{i,t}$	0.007***	0.006***	0.007***	0.007***	0.006***
	(7.738)	(6.391)	(7.795)	(7.658)	(6.225)
$LOSS_{i,t}$	-0.016***	-0.015***	-0.017***	-0.020***	-0.018***
	(-10.114)	(-8.714)	(-10.703)	(-12.511)	(-10.981)
$ACC_{i,t}$	-0.123***	-0.124***	-0.118***	-0.112***	-0.118***
	(-20.807)	(-18.953)	(-19.798)	(-18.734)	(-19.760)
Constant	-0.023***	-0.025***	-0.024***	-0.025***	-0.026***
	(-4.184)	(-3.275)	(-3.729)	(-3.563)	(-4.064)
Observations	139,905	119,999	129,964	127,141	133,677
Adjusted R-squared	0.469	0.467	0.445	0.444	0.470
IndDummies	Yes	Yes	Yes	Yes	Yes
YearDummies	Yes	Yes	Yes	Yes	Yes
SE ClusteredBy	Firm	Firm	Firm	Firm	Firm

Model is estimated by running a pooled regression on all firm-years 1975-2016. $E_{i,t}$ is net income before extraordinary items. $RM_{i,t}$ equals $RM\_R\&D_{i,t}$, $RM\_ADV_{i,t}$, $RM\_SGA_{i,t}$, and $RM\_TDISX_{i,t}$ in model (2), (3), (4), and (5), respectively. $RM\_R\&D_{i,t}$ is the abnormal level of R&D expenditures; $RM\_ADV_{i,t}$ is the abnormal level of advertising expenditures; $RM\_SGA_{i,t}$ is the abnormal level of SG&A expenditures; and $RM\_TDISX_{i,t}$ is the abnormal level of total discretionary expenditures. $Log(ASSETS)_{i,t}$ is the nature log of total assets; $DIV_{i,t}$ is dividends, $DIVDUM_{i,t}$ equals 1 when firm i pays dividends in year t, and 0 otherwise; $LOSS_{i,t}$ equals 1 when firm i has a loss in year t., and 0 other wise; $ACC_{i,t}$ is total accruals; $DA_{i,t}$ equals 1 for firms with discretionary accruals in the top quintile of the absolute values of the residuals estimated from modified Jones model, and 0 otherwise.
All variables are defined in Appendix I, and, except for the dummy variables, are scaled by average assets and winsorized at 1 and 99 percent level. Standard errors are clustered by firm. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1, based on two-tailed tests.

Table 8 (Continued)

Panel B: $OANCF_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + \alpha_4 DA_{i,t} + \alpha_5 E_{i,t} * DA_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t}$

VARIABLES	(1) Basic	(2) $RM\_R\&D_{i,t}$	(3) $RM\_ADV_{i,t}$	(4) $RM\_SGA_{i,t}$	(5) $RM\_TDISX_{i,t}$
$E_{i,t}$	0.540***	0.522***	0.516***	0.465***	0.491***
	(69.786)	(64.224)	(64.350)	(56.793)	(62.655)
$RM_{i,t}$		0.088***	0.051***	0.016***	0.070***
		(6.150)	(3.119)	(7.315)	(9.959)
$RM_{i,t} * E_{i,t}$		-0.377***	-0.497***	-0.180***	-0.324***
		(-6.562)	(-3.375)	(-14.274)	(-11.293)
$DA_{i,t}$	-0.017***	-0.014***	-0.016***	-0.014***	-0.015***
	(-13.881)	(-10.736)	(-12.617)	(-11.327)	(-12.116)
$DA_{i,t} * E_{i,t}$	-0.036***	-0.041***	-0.032***	-0.042***	-0.045***
	(-4.559)	(-4.947)	(-3.824)	(-5.054)	(-5.762)
$Log(ASSETS)_{i,t}$	0.010***	0.010***	0.010***	0.010***	0.011***
	(26.747)	(25.852)	(27.038)	(25.942)	(28.256)
$DIV_{i,t}$	0.255***	0.383***	0.250***	0.284***	0.293***
	(5.190)	(7.180)	(5.073)	(5.570)	(5.783)
$DIVDUM_{i,t}$	0.008***	0.006***	0.007***	0.007***	0.007***
	(5.945)	(4.466)	(5.749)	(5.647)	(4.974)
$LOSS_{i,t}$	0.004***	0.003**	0.003*	-0.002	-0.000
	(2.968)	(2.217)	(1.920)	(-1.592)	(-0.285)
$ACC_{i,t}$	-0.204***	-0.190***	-0.200***	-0.190***	-0.193***
	(-31.479)	(-27.171)	(-30.462)	(-28.816)	(-29.206)
Constant	-0.031**	-0.023*	-0.028**	-0.020	-0.030**
	(-2.538)	(-1.797)	(-2.174)	(-1.617)	(-2.404)
Observations	103,982	91,893	96,237	94,438	99,490
Adjusted R-squared	0.442	0.442	0.406	0.407	0.449
IndDummies	Yes	Yes	Yes	Yes	Yes
YearDummies	Yes	Yes	Yes	Yes	Yes
SE ClusteredBy	Firm	Firm	Firm	Firm	Firm

Model is estimated by running a pooled regression on all firm-years 1988-2016. OANCF is Cash flows from operations directly taken from Statement of Cash Flows; $E_{i,t}$ is net income before extraordinary items. $RM_{i,t}$ equals $RM\_R\&D_{i,t}$, $RM\_ADV_{i,t}$, $RM\_SGA_{i,t}$, and $RM\_TDISX_{i,t}$ in model (2), (3), (4), and (5), respectively. $RM\_R\&D_{i,t}$ is the abnormal level of R&D expenditures; $RM\_ADV_{i,t}$ is the abnormal level of advertising expenditures; $RM\_SGA_{i,t}$ is the abnormal level of SG&A expenditures; and $RM\_TDISX_{i,t}$ is the abnormal level of total discretionary expenditures. $Log(ASSETS)_{i,t}$ is the nature log of total assets; $DIV_{i,t}$ is dividends, $DIVDUM_{i,t}$ equals 1 when firm i pays dividends in year t, and 0 otherwise; $LOSS_{i,t}$ equals 1 when firm i has a loss in year t., and 0 other wise; $ACC_{i,t}$ is total accruals; $DA_{i,t}$ equals 1 for firms with discretionary accruals in the top quintile of the absolute values of the residuals estimated from modified Jones model, and 0 otherwise. All variables are defined in Appendix I, and, except for the dummy variables, are scaled by average assets and winsorized at 1 and 99 percent level. Standard errors are clustered by firm. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1, based on two-tailed tests.

Table 9
Alternative $RM\_R\&D_{i,t}$ Measures

Model: $E_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t}$

$OANCF_{i,t+1} = \alpha_0 + \alpha_1 E_{i,t} + \alpha_2 RM_{i,t} + \alpha_3 RM_{i,t} * E_{i,t} + Controls\Gamma_{i,t} + \varepsilon_{i,t}$

	(1)	(2)
VARIABLES	$E_{i,t+1}$	$OANCF_{i,t+1}$
$E_{i,t}$	0.767***	0.488***
	(76.401)	(60.642)
$DRM\_AR\&D_{i,t}$	0.012***	0.003
	(3.108)	(0.842)
$DRM\_AR\&D_{i,t}*E_{i,t}$	-0.116***	-0.070***
	(-3.329)	(-2.662)
$Log(ASSETS)_{i,t}$	0.021***	0.019***
	(20.836)	(19.169)
$DIV_{i,t}$	0.167	0.218
	(1.201)	(0.828)
$DIVDUM_{i,t}$	-0.000	0.001
	(-0.076)	(0.358)
$LOSS_{i,t}$	0.008**	-0.011***
	(2.264)	(-3.578)
$ACC_{i,t}$	-0.002	-0.001
	(-1.579)	(-0.891)
Constant	-0.074***	-0.042***
	(-16.163)	(-4.402)
Observations	81,652	64,284
Adjusted R-squared	0.632	0.587
IndustryDummies	Yes	Yes
YearDummies	Yes	Yes
SE ClusteredBy	Firm	Firm

Model is estimated by running a pooled regression. $OANCF_{i,t}$ is Cash flows from operations directly taken from Statement of Cash Flows; $E_{i,t}$ is net income before extraordinary items. $DRM\_AR\&D_{i,t}$ is dummy variable based on alternative R&D model; $Log(ASSETS)_{i,t}$ is the nature log of total assets; $DIV_{i,t}$ is dividends, $DIVDUM_{i,t}$ equals 1 when firm i pays dividends in year t, and 0 otherwise; $LOSS_{i,t}$ equals 1 when firm i has a loss in year t., and 0 other wise; $ACC_{i,t}$ is total accruals; $DA_{i,t}$ equals 1 for firms with discretionary accruals in the top quintile of the absolute values of the residuals estimated from modified Jones model, and 0 otherwise. All variables are defined in Appendix I, and, except for the dummy variables, are scaled by average assets and winsorized at 1 and 99 percent level. Standard errors are clustered by firm. Robust t-statistics in parentheses. *** p<0.01, ** p<0.05, * p<0.1, based on two-tailed tests.