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Does Dividend Policy Drive Earnings Smoothing?

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SYNOPSIS: This paper examines the earnings-smoothing behavior of dividend-paying firms. We show that dividend-paying firms engage in more earnings smoothing than non-payers through both real activities and accrual choices. More specifically, dividend-paying firms with positive (negative) pre-managed earnings changes engage in more downward (upward) earnings management than non-payers. Additional tests suggest that the results are driven by dividend-related incentives and not the differences in the economic characteristics of dividend-paying firms, are robust to alternative measures of earnings management, and are not due to spurious correlation. We also show that earnings smoothing, in part, explains the higher earnings persistence of dividend-paying firms. These findings are consistent with a firm's dividend policy having an incremental impact on earnings-smoothing behavior.

Keywords: earnings smoothing; dividend policy; real earnings management; accruals management; earnings persistence.

JEL Classifications: M41; G35.

INTRODUCTION

Survey evidence indicates that dividend-paying firms have a strong desire to maintain their historical dividend policy and that they target both dividend level and dividend payout ratio (Lintner 1956; Baker and Powell 2000; Baker, Veit, and Powell 2001; Brav, Graham, Harvey, and Michaely 2005). The importance of maintaining historical dividend level and payout ratio is supported by empirical research that shows a large negative stock market reaction to unexpected dividend decreases or omission and the stock market's perception of the value

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relevance of dividends (Aharony and Swary 1980; Healy and Palepu 1988; Ghosh and Woolridge 1989; Kallapur 1994; Grullon, Michaely, and Swaminathan 2002). When earnings change relative to the prior year, maintaining the dividend level leads to a change in the dividend payout ratio, while maintaining the payout ratio necessitates a change in the dividend level. "Reducing variation in the change in earnings" (hereafter, earnings smoothing) can reduce the fluctuations in the dividend payout ratio and allow the firm to avoid changing its dividend level. We thus argue that earnings smoothing is more important for dividend-paying firms than for other firms, and that they engage in more downward (upward) earnings management than non-payers in years of positive (negative) pre-managed earnings change to maintain their dividend policy.

To test our argument, we regress our measures of earnings management on a dichotomous variable coded as 1 (0) for dividend-paying firms (non-payers), pre-managed earnings change, and their interaction. In our regressions, we control for various factors that potentially affect firms' incentives to manage earnings and for differences in the life-cycle stage and financial characteristics of dividend-paying firms. Using a sample of firm years obtained from Compustat's ExecuComp database over the 18-year period 1992–2009, we find that, while on average firms engage in earnings smoothing, dividend-paying firms engage in more earnings smoothing than non-payers through both real activities and accrual choices. We then run two separate regressions—one for firm years with positive and one for firm years with negative pre-managed earnings change—to determine if both upward and downward earnings management are at play. We find that dividend-paying firms with positive (negative) pre-managed earnings change manage earnings down (up) more than non-payers. Our results are robust to alternative measures of earnings management, and are not due to spurious correlation.

We conduct three additional tests to ensure that the results are driven by dividend-related incentives and not the differences in the economic characteristics of dividend-paying firms. First, we regress our measure of total earnings management on change in dividend policy and our control variables and find that dividend-paying firms engage in significantly less smoothing in years when they change their dividend level or payout ratio than in years when they do not. Second, using Chi-square tests we show that dividend-paying firms make less of a change in their dividend level and payout ratio in years when they report a small change in earnings (less than one percent) than in years when they do not. Third, because regular repurchasers are likely to have generally similar characteristics as regular dividend-paying firms, but do not have dividend-related incentives (Skinner and Soltes 2011), we repeat our tests using firms that make regular repurchases but do not pay dividends as a control group and find that dividend-paying firms smooth earnings to a greater extent than repurchasers. The results of these three tests confirm our finding that dividend policy drives earnings smoothing.

Finally, we test whether the greater degree of earnings smoothing of the dividend-paying firms is, in part, responsible for their documented higher earnings persistence (e.g., Skinner and Soltes 2011) by developing two models. The first model replicates prior results to confirm that dividend-paying firms have more persistent earnings. The second model modifies the first by breaking out current earnings into pre-managed earnings and earning management. The results support the conjecture that earnings smoothing, in part, drives the higher earnings persistence of dividend-paying firms. Overall, the results of our analyses are consistent with the notion that dividend-paying firms seek to smooth reported earnings to maintain their dividend policy, and indicate that earnings smoothing is more important for dividend-paying firms than for other firms.

Our study makes several contributions to the literature. First, the study's findings extend our understanding of dividend-policy driven earnings management. Kasanen, Kinnunen, and Niskanen (1996) document that Finnish firms manage earnings upward to report earnings high enough to pay out dividends in response to pressure from large institutional shareholders. Daniel, Denis, and Naveen (2008) find that dividend level threshold drives upward accruals management when

pre-managed earnings fall short of last year's dividends. We expand on Daniel et al. (2008) by (1) measuring earnings management relative to last year's earnings, not last year's dividends, and (2) showing that dividend policy drives earnings management in both directions.[1] Thus, our results provide further support to survey and empirical evidence about the importance of maintaining dividend policy.

Second, prior studies on dividend-policy driven earnings management only examine accrual-based earnings management. Earnings are affected by the sum of real activities management and accruals management. Cohen and Zarowin (2010) and Zang (2012) find that firms manage earnings through real activities in addition to, or as a substitute to, accrual-based activities. Zang (2012) in fact argues that real activities manipulation occurs during the fiscal year. At the end of the year, managers adjust the level of accrual-based earnings management based on the outcome of real activities manipulation. If managers use real activities management in addition to, or as a substitute to, accrual-based earnings management, examining only one earnings management technique at a time cannot explain the overall effect of earnings management activities (Fields, Lyz, and Vincent 2001; Zang 2012). By documenting that both real activities and accrual choices are at play, therefore, we provide additional evidence on dividend-policy driving earnings management.

Third, and as important, we provide evidence that the greater earnings persistence of dividend-paying firms that previous studies document (e.g., Skinner and Soltes 2011) is in part driven by earnings management, as conjectured by Dechow, Ge, and Schrand (2010b). That is, we show that dividend-paying firms have greater earnings persistence than non-payers, partially because they smooth earnings to a greater extent to maintain their dividend policy. This finding has implications for studies that examine the earnings quality of dividend-paying firms.

Finally, professional standards require the auditor to plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether caused by errors or fraud. Our research suggests the company's dividend policy as a risk factor (in the form of incentive or pressure to manipulate earnings) for the auditor to consider. Conversations with two partners at Big 4 accounting firms confirm that while auditors typically look to understand whether "earnings pressures" exist that may provide management with the incentive and attitude to undertake inappropriate behavior (including the smoothing of earnings), they have not specifically thought about the company's dividend policy driving such behavior.

We proceed as follows. The second section discusses related research and develops our hypothesis. In the third section, we describe our data and methodology. The fourth section analyzes the association between dividend policy and earnings smoothing. The fifth section examines whether the results are in fact driven by dividend policy. We evaluate the association between earnings smoothing and earnings persistence of dividend-paying firms in the sixth section. The results of supplemental tests are reported in the seventh section. Finally, the eighth section concludes.

RELATED LITERATURE AND HYPOTHESIS DEVELOPMENT

Earnings Management Literature

We focus on three sets of studies that relate to our research questions. The first set examines the upward real and accruals earnings management to meet or beat important earnings benchmarks, such as positive earnings level, positive earnings change, analyst forecast, and prior year's

[1] Measuring earnings smoothing relative to last year's earnings will only smooth the dividend payout ratio if dividend levels remain constant across time. We believe this is a reasonable assumption.

dividends (Burgstahler and Dichev 1997; Degeorge, Patel, and Zeckhauser 1999; Burgstahler and Eames 2006; Roychowdhury 2006; Daniel et al. 2008). We add to this literature by demonstrating that earnings smoothing is more important for dividend-paying firms than for other firms.

Another set of studies explores upward and downward earnings management to smooth earnings. Graham, Harvey, and Rajgopal (2005) find that 97 percent of the surveyed executives prefer smooth earnings, and 78 percent of the surveyed executives admit to giving up economic value in exchange for smooth earnings. Empirical studies have documented various means through which firms smooth their reported earnings, e.g., deferring or accelerating research and development expenses (R&D) (Perry and Grinaker 1994) and using accounting rules for valuing retained interest from securitizations (Dechow, Myers, and Shakespeare 2010a). Empirical studies also have documented varying incentives for earnings smoothing. For example, Bergstresser and Philippon (2006) and Cheng and Warfield (2005) find that accruals management is more pronounced in the presence of higher levels of stock-based incentives; and J. Gaver, K. Gaver, and Austin (1995) show that managers manipulate earnings to maximize bonus compensation. Our paper contributes to this subset of literature by providing evidence that dividend policy has an incremental effect on earnings smoothing.

Finally, the third set of studies relates to earnings persistence of dividend-paying firms. Healy and Palepu (1988) find that dividend-initiating firms show more persistent earnings than dividend-omitting firms, suggesting there is less need for earnings management. Chen, Shevlin, and Tong (2007) find evidence that the initiation of, and increase in, dividend payments is associated with investors perceiving earnings to be of higher quality. Skinner and Soltes (2011) also document higher earnings persistence for dividend-paying firms. While the above studies document that the earnings of dividend-paying firms is more persistent, they do not investigate whether earnings management contributes to the higher earnings persistence. As Dechow et al. (2010b, 351) conjecture, the earnings of dividend-paying firms may be more persistent because these firms engage in more extensive earnings smoothing. By showing that earnings smoothing is at least partially responsible for the documented greater earnings persistence of dividend-paying firms, we provide empirical support for this conjecture.[2]

Dividends Literature

In his pioneering survey of 28 well-established companies, Lintner (1956) finds that managers are reluctant to cut dividends and they target long-term payout ratios when making dividend decisions. Twenty-six out of the 28 sample companies had a specific target payout ratio that did not change over long periods of time. Many survey studies have been conducted since Lintner's. Baker, Farrelly, and Edelman (1985) and Baker and Powell (1999) survey chief financial officers of New York Stock Exchange firms and find that managers generally agree that their firms should avoid making dividend changes that might soon be reversed, and that their firms should have target payout ratios. Baker and Powell (2000) and Baker et al. (2001) find that the desire to maintain a given dividend payout ratio is a moderately important factor relative to dividend level in determining dividend policy, and about half of the responding firms have explicit target payout ratios. Brav et al. (2005) investigate payout policies in the 21st century. Their analysis indicates that about 90 percent of dividend-paying firms have a strong desire to avoid dividend reductions and to

[2] This evidence provides empirical support to what is implied from the finding of Francis, LaFond, Olsson, and Schipper (2004) that earnings persistence is positively associated with earnings smoothness, meaning any earnings figure that is smoother will also be more persistent. And, that since the reported earnings for dividend-paying firms are smoothed relative to pre-managed earnings (and to a greater extent than for non-dividend-paying firms), they should be relatively more persistent than pre-managed earnings (and to a greater extent than for non-dividend-paying firms).

smooth dividend streams from year to year. Eighty-four percent of the executives try to maintain consistency with historical dividend policies. Brav et al.'s (2005) analysis shows that maintaining dividend level is the main variable in deciding dividend policy, and payout ratio is of secondary importance. It also shows that managers believe that dividend decisions convey information to the market and that dividend reductions have negative consequences.[3] Overall, the results of survey studies suggest that firms target both dividend level and dividend payout ratio. The survey results also suggest that managers believe that dividend policy is value-relevant.

The importance of maintaining historical dividend policy is supported by empirical research that shows a large negative stock market reaction to unexpected dividend decreases or omission (Aharony and Swary 1980; Healy and Palepu 1988; Ghosh and Woolridge 1989; Grullon et al. 2002) and the stock market's perception of the value relevance of dividends. In relation to the latter, Kallapur (1994) finds that, after controlling for earnings persistence and riskiness, and riskless interest rates, the earnings response coefficient increases as a firm's payout ratio gets larger. The results of these empirical studies suggest that dividends constitute implicit contracts between shareholders and management and, as such, managers have strong incentives to smooth earnings to maintain the dividend level and payout ratio. By documenting that dividend-paying firms engage in more earnings smoothing, we provide support to survey and empirical evidence about the importance of maintaining dividend policy.

Hypothesis Development

Prior studies on earnings management find that firms, in general, have incentives to manage earnings downward when pre-managed earnings exceed last year's earnings and upward when pre-managed earnings fall short of last year's earnings (Bartov 1993; Perry and Grinaker 1994; Graham et al. 2005; Dechow et al. 2010a). We hypothesize that earnings smoothing is more important for dividend-paying firms and that dividend-paying firms engage in more downward, as well as upward, earnings management than non-payers. The intuition for our hypothesis is as follows.

Survey and empirical studies (presented above) suggest that dividend-paying firms have a strong desire to maintain their historical dividend policy and they target both dividend level and payout ratio. In years of positive pre-managed earnings change, maintaining the dividend level would lead to a decrease in the payout ratio. And, maintaining the payout ratio would require the firm to increase its dividend level, raising the benchmark for future periods. Manipulating earnings downward, therefore, helps dividend-paying firms to maintain (avoid changing) their dividend level and payout ratio. On the other hand, in years of negative pre-managed earnings change, maintaining the dividend level would lead to an increase in the payout ratio. And, maintaining the payout ratio would require the firm to decrease its dividend level, exposing the firm to a potential negative stock market reaction. Manipulating earnings upward, therefore, helps dividend-paying firms to maintain their dividend level and payout ratio.

Relative to non-payers, then, we expect dividend-paying firms to have incremental incentives to smooth reported earnings due to the desire to maintain their dividend level and dividend payout

[3] Mukherjee (2009, 157) concludes: "Researchers consistently report that abnormal return of a dividend-change announcement is of the same sign as the sign of the dividend change. Although researchers have advanced several hypotheses to explain this phenomenon, two highly researched and competing hypotheses are the cash flow signaling hypothesis and the free cash flow hypothesis. According to the cash flow signaling hypothesis, the stock price moves in the same direction as the dividend change because dividend changes convey information about the firm's future growth opportunities. The free cash flow hypothesis suggests that price reacts favorably to the announcement of a dividend increase because dividend increase reduces the agency cost of free cash flow. Similarly, the stock price reacts negatively to an announcement of reduced dividends because the potential for overinvestment increases."

ratio. Further, both downward and upward earnings management should be at play. That is, dividend-paying firms with positive (negative) pre-managed earnings change are expected to engage in more downward (upward) earnings management than non-payers.

Several earnings management studies (e.g., Burgstahler and Dichev 1997; Cohen and Zarowin 2010; Zang 2012) show that firms use real activities in addition to, or in lieu of, accrual choices to manage earnings. Managers may rather manipulate earnings through real activities because real activities manipulation is less likely to draw auditor or regulator scrutiny (Dechow and Skinner 2000; Graham et al. 2005; Roychowdhury 2006; Cohen and Zarowin 2010). On the other hand, managers would likely not know the impact of real activities manipulation on earnings until the end of the fiscal year, at which time they may have to adjust the level of accruals (Cohen and Zarowin 2010; Zang 2012). The costs associated with real activities manipulation may also create an incentive for managers to use accruals manipulation instead (Cohen and Zarowin 2010). We thus expect dividend-paying firms to use both accruals and real activities to smooth earnings.

Formally stated, our hypothesis is:

H: Dividend-paying firms engage in more earnings smoothing than non-payers through real activities *and* accruals.

DATA AND METHODOLOGY

Appendix A describes the variables used in this study. Like Daniel et al. (2008), our sample consists of all publicly traded firms in Compustat's ExecuComp database, because it includes managerial compensation data, which have been shown to be important determinants of earnings management. Our study, however, spans over the period 1992 to 2009, whereas Daniel et al.'s (2008) covers the period 1992–2005. We limit the sample to firms with sufficient annual data to calculate the variables listed in Appendix A. Consistent with prior literature, we omit firms in regulated industries and financial institutions (Roychowdhury 2006; Daniel et al. 2008). To control for outliers, we delete firm years with dividends at the extreme 99th percentile levels and all the other variables at the 1st and 99th percentiles of their respective distributions (Burgstahler and Dichev 1997; Dechow, Kothari, and Watts 1998; Dechow, Richardson, and Tuna 2003). Also, to estimate normal levels of cash flows, production costs, discretionary expenditures, and accruals, we require at least eight observations in each two-digit SIC industry for each year (Cohen, Dey, and Lys 2008; Cohen and Zarowin 2010). Our final sample includes 13,826 firm years.

Because earnings is affected by both real activities and accrual choices, we define total earnings management as the sum of real earnings management and abnormal total accruals. Prior studies (Roychowdhury 2006; Cohen and Zarowin 2010) consider three measures of real earnings management: abnormal cash flows, abnormal production costs, and abnormal discretionary expenditures. We define real earnings management as the negative of the sum of abnormal cash flows and abnormal discretionary expenditures so that a higher value suggests more upward earnings management (Cohen and Zarowin 2010). We do not include abnormal production costs in our measure of real earnings management for our main tests because, as stated in Cohen and Zarowin (2010, 9), the same activities that lead to abnormally high production costs also lead to abnormally low CFO; thus, adding abnormal production costs leads to double counting.[4]

[4] However, to be consistent with Cohen and Zarowin (2010) and Zang (2012), we also measure real earnings management as the sum of abnormal production cost and negative of abnormal discretionary expenditures. As another sensitivity test, we measure real earnings management as the negative of abnormal cash flows for the reasons stated in in the "Supplemental Tests" section. The results of both tests are discussed in the "Supplemental Tests" section.

To estimate normal cash flows, normal production costs, and normal discretionary expenditures, we use the models developed by Dechow et al. (1998) and implemented in other earnings management papers (Roychowdhury 2006; Cohen et al. 2008; Cohen and Zarowin 2010; Zang 2012). Normal total accruals is estimated using the cross-sectional model of Jones (1991) and adjusting for financial performance because Kothari, Leone, and Wasley (2005) find that it is important to control for firm performance when estimating discretionary accruals.[5] Specifically, we develop the following four regressions:

$$CFO_t/Assets_{t-1} = \alpha_0(1/Assets_{t-1}) + \alpha_1(Sales_t/Assets_{t-1}) + \alpha_2(\Delta Sales_t/Assets_{t-1}) + \acute{\varepsilon}_t. \quad (1)$$

$$PROD_t/Assets_{t-1} = \alpha_0(1/Assets_{t-1}) + \alpha_1(Sales_t/Assets_{t-1}) + \alpha_2(\Delta Sales_t/Assets_{t-1}) + \alpha_3(\Delta Sales_{t-1}/Assets_{t-1}) + \acute{\varepsilon}_t. \quad (2)$$

$$DISX_t/Assets_{t-1} = \alpha_0(1/Assets_{t-1}) + \alpha_1(Sales_{t-1}/Assets_{t-1}) + \acute{\varepsilon}_t. \quad (3)$$

$$TA_t/Assets_{t-1} = \alpha_0(1/Assets_{t-1}) + \alpha_1(\Delta Sales_t/Assets_{t-1}) + \alpha_2(PPE_t/Assets_{t-1}) + \alpha_3(IBEI_t/Assets_{t-1}) + \acute{\varepsilon}_t. \quad (4)$$

In the above regressions, *CFO* is cash flow from operations as reported on the statement of cash flows; *Assets* is total assets; *Sales* is total revenues; *PROD* is production costs, defined as the sum of cost of goods sold and change in the inventory; *DISX* is discretionary expenditures, defined as the sum of advertising expenses, R&D expenses, and selling, general and administrative expenses (SG&A); *IBEI* is income before extraordinary items; *TA* is total accruals, defined as *IBEI* less *CFO;* and *PPE* is property, plant, and equipment. Each regression is estimated separately for each two-digit SIC industry for each year.

The abnormal cash flows, abnormal production costs (*APROD*), abnormal discretionary expenditures, and abnormal total accruals (*ATA*) are computed as the difference between the actual values and the normal levels predicted (i.e., they are the residuals) from Regressions (1) through (4).[6] Abnormal cash flows and abnormal discretionary expenditures are multiplied by −1 (and denoted as *ACFO* and *ADISX*, respectively) so that a higher value in all cases indicates greater upward earnings management. We define real earnings management as the sum of *ACFO* and *ADISX*, and total earnings management (*TEM*) as *ACFO* plus *ADISX* plus *ATA*.

Our hypothesis examines whether dividend-paying firms engage in more earnings smoothing than non-payers through real activities and accruals management. It is tested using the following regression:

[5] Since previous research has shown that measures of abnormal accruals are more likely to be misspecified for firms with extreme levels of performance (Dechow, Sloan, and Sweeney 1995) and for fast growing firms (McNichols 2000; Dechow et al. 2003), we re-estimate total accruals using change in sales; property, plant, and equipment; cash flow from operations; and book-to-market ratio as independent variables. The results are qualitatively the same.

[6] Abnormal operating cash flows can be the result of real activities to manage earnings (as discussed above) or opportunistic classification of cash flows within the Statement of Cash Flows. Both activities result in "abnormal cash flows," even though classification shifting has no effect on reported earnings, which is what we intend to measure. That is, classifying an investing cash flow as if it were operating, or *vice versa*, would affect reported operating cash flows but would have no effect on reported earnings. Any misclassifications create noise and bias our results against finding a significant difference in earnings smoothing behavior between payers and non-payers. Further, misclassifications do not affect other measures of real earnings management: *ADISX* and *APROD*. We thank the reviewer who brought this point to our attention.

$$EM = \beta_0 + \beta_1 DP + \beta_2 PMEC + \beta_3 PMEC{*}DP + \beta_4 STOCK + \beta_5 BONUS + \beta_6 PMEC{*}STOCK + \beta_7 PMEC{*}BONUS + \beta_8 BTM + \beta_9 SIZE + \beta_{10} LEV + \beta_{11} RE + \beta_{12} AGE + \beta_{13} GROWTH + \beta_{14} CAPX + \beta_{15} INDYR + \varepsilon. \quad (5)$$

EM is the earnings management proxy, and is initially defined as *TEM* to capture the total effects of real activities and accruals management. To shed light on whether dividend-paying firms engage in income smoothing through real activities, accrual-based activities, or both, and in the case of real activities, whether they do so through revenues or costs, we also estimate the above regression, defining *EM* as *ACFO, APROD, ADISX,* or *ATA*.[7]

The independent variables in Regression (5) are as follows. *DP* is the dividend-paying firm dummy, which equals 1 if the firm pays dividends in both the prior year and the current year, and 0 otherwise; it is included to control for any systematic difference between payers and non-payers.[8] *PMEC* is pre-managed earnings change, and equals earnings change minus the earnings management proxy: *TEM, ACFO, APROD, ADISX,* or *ATA*. The rest of the variables are intended to control for factors that influence management's incentives to manage earnings and for differences in the life-cycle stage and financial characteristics of dividend-paying firms.

Stock incentive ratio (*STOCK*) and bonus (*BONUS*) control for compensation incentives for chief financial officers and chief executive officers (Bergstresser and Philippon 2006; Cohen et al. 2008; Jiang, Petroni, and Wang 2010). As with Daniel et al. (2008), we also control for growth opportunities (*BTM*), firm size (*SIZE*), leverage (*LEV*), and retained earnings (*RE*). Further, since prior research (e.g., Healy and Palepu 1988; Grullon et al. 2002; Skinner and Soltes 2011) has established that the life-cycle stage and financial characteristics of dividend-paying firms differ from non-payers,[9] we add age (*AGE*), sales growth (*GROWTH*), and capital expenditures (*CAPX*) to our regression (Anthony and Ramesh 1992; Tian, Collins, and Hribar 2009). Two-digit SIC and year dummies (*INDYR*) are also included in the regression. Evidence of earnings smoothing would be provided by a negative coefficient on *PMEC,* and evidence that dividend-paying firms engage in more earnings smoothing would be provided by a negative coefficient on $PMEC * DP$. All p-values reported are calculated using two-tailed tests, unless indicated otherwise.

RESULTS

The descriptive statistics for our sample and the correlation coefficients among the earnings management measures are reported in Table 1. In Panel A, we report the descriptive statistics for the dividend-paying firms and non-payers separately. Similar to Daniel et al. (2008), about 50 percent of the whole sample are dividend-paying firms (6,791 over 13,826), and the average dividends paid is about $100 million (not reported in the table). While the average dividend-paying firm has over $4.7 billion in sales and $4.5 billion in assets, the average non-payer firm has less than $1.7 billion in sales and $1.6 billion in assets. Dividend-paying firms are also more profitable than non-payers

[7] Reporting results for the three individual measures of real earnings management (*ACFO, APROD,* and *ADISX*) would also avoid possible dilution of the potentially different implications of the three individual variables for earnings by using an aggregated earnings management measure (Cohen and Zarowin 2010, 9).

[8] Non-payers include firms that paid dividends in prior year but not in the current year, and *vice versa*. To address the concern that this classification of firms as payers and non-payers may have driven the results, we re-run our regression using a new sample excluding these firms (Daniel et al. 2008). Our results hold using this new sample.

[9] Because of differences in the dividend-paying firms' life-cycle stage and financial characteristics, any abnormal accruals or cash flows are likely to have the effect of smoothing earnings regardless of whether managers are using discretion in their accounting choices, or real activities. Also, these differences in financial characteristics can affect the benefits and costs—unrelated to dividends—of managing earnings. We are thankful to one of the reviewers for bringing these issues up and for suggesting tests to address them.

TABLE 1

Descriptive Statistics and Correlation Coefficients

Panel A: Descriptive Statistics

	n	Mean	Median	10th Pctl.	90th Pctl.	Std. Dev.
Dividend-Paying Firms Sample						
Sales	6,791	4,764.0	1,807.4*	381.6	12,348.0	8,224.4
Assets	6,791	4,519.4	1,641.9*	312.9	12,242.0	7,680.1
IBEI	6,791	272.9	78.2*	1.3	738.7	594.9
$IBEI/Assets_{t-1}$	6,791	0.068	0.067*	0.002	0.141	0.064
$CFO/Assets_{t-1}$	6,791	0.121	0.116*	0.042	0.210	0.072
$DISX/Assets_{t-1}$	6,791	0.322	0.272*	0.078	0.635	0.227
$PROD/Assets_{t-1}$	6,791	0.895	0.7568*	0.329	1.620	0.590
$TA/Assets_{t-1}$	6,791	−0.053	−0.050*	−0.120	0.009	0.059
ACFO	6,791	−0.012	−0.012*	−0.092	0.068	0.068
ADISX	6,791	0.002	0.011*	−0.196	0.190	0.173
APROD	6,791	−0.020	−0.019*	−0.218	0.167	0.166
ATA	6,791	−0.007	−0.006*	−0.061	0.047	0.048
TEM	6,791	−0.017	−0.011*	−0.278	0.234	0.219
PMEC	6,791	0.020	0.016*	−0.244	0.291	0.226
Non-Payers Sample						
Sales	7,035	1,687.8	638.7	143.0	3,740.8	3,811.8
Assets	7,035	1,597.9	652.3	153.8	3,869.0	2,957.1
IBEI	7,035	64.1	26.6	−38.6	198.8	256.5
$IBEI/Assets_{t-1}$	7,035	0.048	0.055	−0.071	0.163	0.105
$CFO/Assets_{t-1}$	7,035	0.115	0.108	0.002	0.243	0.099
$DISX/Assets_{t-1}$	7,035	0.394	0.353	0.100	0.739	0.253
$PROD/Assets_{t-1}$	7,035	0.781	0.623	0.176	1.596	0.614
$TA/Assets_{t-1}$	7,035	−0.067	−0.060	−0.167	0.025	0.085
ACFO	7,035	−0.009	−0.008	−0.117	0.094	0.089
ADISX	7,035	−0.047	−0.025	−0.293	0.168	0.202
APROD	7,035	−0.031	−0.027	−0.248	0.166	0.183
ATA	7,035	−0.010	−0.008	−0.092	0.068	0.068
TEM	7,035	−0.065	−0.045	−0.403	0.224	0.272
PMEC	7,035	0.078	0.052	−0.243	0.449	0.301

Panel B: Pearson Correlation Coefficients

	TEM	*ACFO*	*ADISX*	*APROD*	*ATA*
ACFO	0.618				
ADISX	0.878	0.217			
APROD	0.838	0.540	0.798		
ATA	0.562	0.565	0.190	0.242	
PMEC	−0.931	−0.607	−0.818	−0.795	−0.479

* Denotes a significant difference between dividend-paying firms and non-payers at the 1 percent level.
Variables not shown below are defined in Appendix A.

(continued on next page)

TABLE 1 (continued)

Variable Definitions:
IBEI = income before extraordinary items;
CFO = cash flow from operations;
DISX = discretionary expenditures;
PROD = production cost;
TA = total accruals;
ACFO = abnormal cash flow from operations;
ADISX = abnormal discretionary expenditures;
APROD = abnormal production costs;
ATA = abnormal total accruals;
TEM = total earnings management and is equal to *ACFO* + *ADISX* + *ATA*; and
PMEC = pre-managed earnings change (earnings management proxy for *PMEC* calculation in this table is *TEM*).

with average *IBEI* of $273 million compared with $64 million. Including size and retained earnings (a measure of cumulative profitability) in our regressions should control for these differences.

The correlation coefficients are reported in Panel B of Table 1. All coefficients are significant at the 1 percent level. The significant positive correlations between *ATA* and the real earnings management proxies (*ACFO, ADISX,* and *APROD*) suggest that firms employ both accruals management and real earnings management.

Table 2 reports the magnitude of the earnings management given the sign of pre-managed earnings change. Here we express earnings management proxies as a fraction of pre-managed earnings change to show the extent to which firms manage earnings to get closer to last year's reported earnings. For example, when pre-managed earnings change is positive (negative), *TEM*/*PMEC* for the median dividend payer is −0.933 (−1.011), meaning that the median dividend payer has managed earnings downward (upward) by 93.3 percent (101.1 percent) of the pre-managed earnings change. The median values of all earnings management proxies for payers and non-payers are negative. Thus, it appears that firms use both real activities and accruals to manage earnings downward when pre-managed earnings change is positive and manage earnings upward when pre-managed earnings change is negative, consistent with earnings smoothing. Further, dividend payers engage in smoothing significantly more so than non-payers as evidenced by p-values based on Wilcoxon tests (the last column).

We extend our univariate analysis by examining the association between dividend-paying status and earnings management after controlling for other factors prior research has shown to affect earnings management and for differences in the life-cycle stage and financial characteristics of dividend-paying firms. We use Rogers standard errors to control for heteroscedasticity and possible correlation of residuals within firm clusters (Daniel et al. 2008; Petersen 2009; Dechow et al. 2010a).

Coefficient estimates and the p-values from Regression (5), when the dependent variable is *TEM,* are reported in Panel A of Table 3. The results for the whole sample (the first two columns) suggest that consistent with our hypothesis, firms engage in earnings smoothing ($\beta_2 = -0.751$; $p < 0.001$) and dividend-paying firms engage in more earnings smoothing than non-payers ($\beta_3 = -0.116$; $p < 0.001$). Thus, for a 1 percent change in *PMEC,* dividend-paying firms smooth earnings by an additional 0.12 percent of beginning assets compared to non-payers. This is an economically significant amount given that the median *IBEI* as a percentage of total assets at the beginning of the year for the dividend-paying firms is around 6.7 percent.[10]

[10] Our measurement of economic significance is consistent with prior research, e.g., Roychowdhury (2006, 350–351).

TABLE 2

Univariate Analysis

Panel A: Firm Years with Positive Pre-Managed Earnings Change (*PMEC* > 0)

	(1) *DP* = 1		(2) *DP* = 0		(1) − (2)	
	n	**Median**	**n**	**Median**	**Difference**	**p-value**
TEM/PMEC	3,652	−0.933	4,155	−0.891	−0.042	< 0.001
ACFO/PMEC	4,041	−0.756	4,035	−0.616	−0.140	< 0.001
ADISX/PMEC	3,274	−0.892	4,115	−0.828	−0.064	< 0.001
APROD/PMEC	3,791	−0.908	4,103	−0.817	−0.091	< 0.001
ATA/PMEC	3,920	−0.597	4,147	−0.472	−0.125	< 0.001

Panel B: Firm Years with Negative Pre-Managed Earnings Change (*PMEC* < 0)

	(1) *DP* = 1		(2) *DP* = 0		(1) – (2)	
	n	**Median**	**n**	**Median**	**Difference**	**p-value**
TEM/PMEC	3,139	−1.011	2,880	−1.001	−0.010	0.008
ACFO/PMEC	2,750	−0.792	3,000	−0.655	−0.137	0.002
ADISX/PMEC	3,517	−1.011	2,920	−0.970	−0.041	< 0.001
APROD/PMEC	3,000	−0.993	2,932	−0.912	−0.081	< 0.001
ATA/PMEC	2,871	−0.738	2,888	−0.561	−0.177	< 0.001

Variables not shown below are defined in Appendix A.

Variable Definitions:
PMEC = pre-managed earnings change;
DP = dividend-paying firm dummy;
TEM = total earnings management and is equal to *ACFO* + *ADISX* + *ATA*;
ACFO = abnormal cash flow from operations;
ADISX = abnormal discretionary expenditures;
APROD = abnormal production costs; and
ATA = abnormal total accruals.

The regression results for years of positive and negative pre-managed earnings change separately are shown in the next four columns of Panel A in Table 3. The coefficient of *PMEC* ∗ *DP* is significantly negative in years of pre-managed earnings increases ($\beta_3 = -0.176$; $p < 0.001$). This finding indicates that dividend-paying firms undertake more downward earnings management when pre-managed earnings change is positive. Similarly, in years of pre-managed earnings decreases, dividend-paying firms engage in more upward earnings management ($\beta_3 = -0.112$; $p = 0.017$) than non-payers. The results of these regressions suggest that when pre-managed earnings change is positive (negative), dividend-paying firms, on average, manage earnings downward (upward) by an additional 0.18 percent (0.11 percent) of beginning assets for a 1 percent increase (decrease) in pre-managed earnings. These, again, are economically significant amounts given that the median *IBEI,* as a percentage of total assets at the beginning of the year, for the dividend-paying firms with pre-managed earnings increases (decreases)—untabulated—is around 8.0 percent (5.3 percent). Altogether, the results in Panel A support our hypothesis.

To determine if firms smooth earnings through real activities, accrual choices, or both, we re-estimate Regression (5) using as dependent variable our other proxies for earnings management;

TABLE 3

Multiple Regression Results

$$EM = \beta_0 + \beta_1 DP + \beta_2 PMEC + \beta_3 PMEC{*}DP + \beta_4 STOCK + \beta_5 BONUS + \beta_6 PMEC{*}STOCK + \beta_7 PMEC{*}BONUS + \beta_8 BTM + \beta_9 SIZE + \beta_{10} LEV + \beta_{11} RE + \beta_{12} AGE + \beta_{13} GROWTH + \beta_{14} CAPX + \beta_{15} INDYR + \varepsilon.$$

Panel A: *EM* = *TEM*

	Whole Sample		*PMEC* > 0		*PMEC* < 0	
	Estimate	**p-value**	**Estimate**	**p-value**	**Estimate**	**p-value**
Intercept	0.012	0.160	−0.054	0.001	0.027	0.024
DP	0.013	< 0.001	0.041	< 0.001	−0.007	0.339
PMEC	−0.751	< 0.001	−0.597	< 0.001	−0.821	< 0.001
PMEC ∗ *DP*	−0.116	< 0.001	−0.176	< 0.001	−0.112	0.017
STOCK	0.030	< 0.001	0.105	< 0.001	−0.009	0.411
BONUS	0.064	< 0.001	0.056	0.080	0.122	0.006
PMEC ∗ *STOCK*	−0.273	< 0.001	−0.460	< 0.001	−0.228	< 0.001
PMEC ∗ *BONUS*	0.000	0.998	−0.011	0.948	0.297	0.328
BTM	0.019	< 0.001	0.038	< 0.001	−0.003	0.351
SIZE	−0.007	< 0.001	−0.008	< 0.001	−0.005	< 0.001
LEV	0.035	< 0.001	0.043	< 0.001	0.040	< 0.001
RE	−0.032	< 0.001	−0.038	< 0.001	−0.005	0.270
AGE	0.007	< 0.001	0.006	0.006	0.008	< 0.001
GROWTH	0.076	< 0.001	0.045	< 0.001	0.096	< 0.001
CAPX	−0.034	0.094	−0.015	0.646	−0.090	0.001
n	13,826		7,807		6,019	
R^2	0.889		0.793		0.818	

Panel B: Results for the Whole Sample When *EM* = Alternative Measures of Earnings Management

	ACFO		*ADISX*		*APROD*		*ATA*	
	Estimate	**p-value**	**Estimate**	**p-value**	**Estimate**	**p-value**	**Estimate**	**p-value**
Intercept	0.009	0.094	0.005	0.613	0.001	0.874	0.000	0.959
DP	0.005	0.004	0.013	< 0.001	0.011	< 0.001	0.007	< 0.001
PMEC	−0.243	< 0.001	−0.623	< 0.001	−0.563	< 0.001	−0.101	< 0.001
PMEC ∗ *DP*	−0.216	< 0.001	−0.188	< 0.001	−0.207	< 0.001	−0.245	< 0.001
STOCK	−0.008	0.032	0.031	< 0.001	0.019	0.000	0.012	0.001
BONUS	0.001	0.929	0.072	< 0.001	0.049	< 0.001	0.025	< 0.001
PMEC ∗ *STOCK*	−0.419	< 0.001	−0.397	< 0.001	−0.377	< 0.001	−0.463	< 0.001
PMEC ∗ *BONUS*	−0.148	0.317	−0.043	0.742	−0.101	0.434	−0.200	0.134
BTM	0.021	< 0.001	0.018	< 0.001	0.028	< 0.001	0.004	0.010
SIZE	−0.005	< 0.001	−0.006	< 0.001	−0.005	< 0.001	−0.004	< 0.001
LEV	0.019	0.000	0.041	< 0.001	0.024	0.000	0.014	0.001
RE	−0.028	< 0.001	−0.020	< 0.001	−0.028	< 0.001	−0.011	< 0.001
AGE	0.007	< 0.001	0.005	0.004	0.006	0.001	0.004	< 0.001
GROWTH	0.064	< 0.001	0.059	< 0.001	0.088	< 0.001	0.041	< 0.001
CAPX	−0.160	0.094	0.001	0.967	−0.065	0.001	0.057	0.000

(continued on next page)

TABLE 3 (continued)

	ACFO		*ADISX*		*APROD*		*ATA*	
	Estimate	**p-value**	**Estimate**	**p-value**	**Estimate**	**p-value**	**Estimate**	**p-value**
n	13,826		13,826		13,826		13,826	
R^2	0.597		0.870		0.825		0.302	

Panel C: Results for Firm Years with *PMEC* > 0 and *PMEC* < 0 When *EM* = Alternative Measures of Earnings Management

	ACFO		*ADISX*		*APROD*		*ATA*	
	Estimate	**p-value**	**Estimate**	**p-value**	**Estimate**	**p-value**	**Estimate**	**p-value**
PMEC > 0								
PMEC	−0.025	0.426	−0.462	< 0.001	−0.344	< 0.001	0.003	0.899
PMEC ∗ *DP*	−0.253	< 0.001	−0.281	< 0.001	−0.312	< 0.001	−0.240	< 0.001
n	8,076		7,389		7,894		8,067	
R^2	0.468		0.717		0.695		0.219	
PMEC < 0								
PMEC	−0.317	< 0.001	−0.662	< 0.001	−0.633	< 0.001	−0.121	0.000
PMEC ∗ *DP*	−0.178	< 0.001	−0.172	0.003	−0.180	0.002	−0.229	< 0.001
n	5,750		6,437		5,932		5,759	
R^2	0.412		0.741		0.746		0.168	

Industry and year dummies are included in the regressions (*INDYR*) but their coefficients are not reported.
Variables not shown below are defined in Appendix A.

Variable Definitions:
EM = earnings management proxy;
TEM = total earnings management and is equal to *ACFO* + *ADISX* + *ATA*;
PMEC = pre-managed earnings change;
DP = dividend-paying firm dummy;
STOCK = stock incentive ratio;
BONUS = executive bonus;
BTM = book-to-market ratio;
SIZE = firm size;
LEV = leverage;
RE = retained earnings;
AGE = firm age;
GROWTH = sales growth;
CAPX = capital expenditures;
ACFO = abnormal cash flow from operations;
ADISX = abnormal discretionary expenditures;
APROD = abnormal production costs; and
ATA = abnormal total accruals.

namely, *ACFO, ADISX, APROD,* and *ATA,* and report the results in Panels B and C of Table 3. Panel B reports the results of these cross-sectional regressions for the whole sample. Consistent with our hypothesis, we find that firms manage earnings through both real activities and accrual choices to mitigate changes in pre-managed earnings ($\beta_2 = -0.243, -0.623, -0.563$, and -0.101 for *ACFO, ADISX, APROD,* and *ATA* models, respectively), and dividend-paying firms do so to a greater extent than non-payers ($\beta_3 = -0.216, -0.188, -0.207$, and -0.245 for *ACFO, ADISX, APROD,* and *ATA* models, respectively). Specifically, for a 1 percent change in pre-managed earnings, *ACFO* (*ADISX, APROD,* and *ATA*) for dividend-paying firms change by an additional

0.22 percent (0.19 percent, 0.21 percent, and 0.25 percent) of assets. Again, these seem economically significant amounts given that the median *IBEI,* as a percentage of total assets at the beginning of the year, for the dividend-paying firms is around 6.7 percent.

The regression results for the samples of firm years when $PMEC > 0$ and $PMEC < 0$ are reported in Panel C of Table 3. For brevity only the coefficients for *PMEC* and $PMEC * DP$ and their p-values are reported. The coefficient for $PMEC * DP$ (β_3) ranges from −0.240 to −0.312 for the sample $PMEC > 0$ and from −0.172 to −0.229 for the sample $PMEC < 0$, all significant at the 1 percent level. Overall, Table 3 shows that firms smooth earnings by manipulating sales, production costs, discretionary expenditures, and accruals, and that dividend-paying firms do so to a greater extent than non-payers do.

ARE THE RESULTS DRIVEN BY DIVIDEND POLICY?

A finding that dividend-paying firms smooth earnings to a greater extent than non-payers may be too broad of a result to directly tie to dividend policy. To tie our finding to dividend policy, we conduct three additional tests. One implicit assumption in our arguments is that managers do not want to change their dividend policy (level and payout ratio) because changing dividend policy is more costly than managing earnings. Therefore, when managers do change their dividend policy, we should expect that they do not have as much of an incentive to manage earnings. That is, we expect that dividend-paying firms engage in significantly less smoothing in years when they change their dividend policy than in years when they do not change their dividend policy. To test our expectation, we divide the firm-year observations for dividend-paying firms into two groups based on the absolute value of the percentage change in dividend level and payout ratio,[11] and perform univariate and multivariate analyses. In particular, the first group ($POLICYCHG = 1$) includes firm years associated with the absolute value of percentage change in dividend level or in payout ratio greater than the median value for all firm years. The remaining observations are included in the second group ($POLICYCHG = 0$). The number of observations for these groups is 4,364 and 1,330, respectively.

Consistent with our expectation, the univariate test results (not reported) indicate that the median dividend-payer in the first group has smoothed earnings significantly less than the median firm in the second group (*TEM* as a fraction of *PMEC* for the median dividend payer in the first group is −0.953, while that for the second group is −0.990).[12] The multivariate test re-estimates Regression (5), substituting dividend-paying dummy (*DP*) with policy change dummy (*POLICYCHG*), and limiting the sample to dividend payers. The results, reported in Panel A of Table 4, are also consistent with our expectation. The coefficient of $PMEC * POLICYCHG$ is positive and significant at the 1 percent level, suggesting that dividend-paying firms engage in significantly less smoothing in years when they change their dividend level or payout ratio.

Combining firms that have a change in dividend level or payout ratio in the variable *POLICYCHG* will not allow one to differentiate these effects. To isolate the effect of change in dividend level on earnings smoothing, we re-run the regression above with $POLICYCHG = 1$ based

[11] We define payout ratio as common dividends divided by earnings available to common shareholders. To ensure the change in dividend payout ratio can be calculated, we exclude firm years with zero or negative earnings in the current or previous year (Skinner and Soltes 2011). This results in a loss of about 15 percent of the observations.

[12] Since our arguments are based on earnings smoothing, one may argue that this test should be based on the absolute values of *TEM* and *PMEC*. Using absolute values changes the results only slightly. *TEM* as a fraction of *PMEC* for the median dividend payer in the first group is 0.963, while that for the second group is 0.991. And, the difference between the groups is still significant at the 1 percent level. We believe that the signed *TEM* is a more appropriate numerator because although the ratio of *TEM* to *PMEC* is generally negative for both *PMEC* greater and less than 0 (i.e., *TEM* generally has the opposite sign to *PMEC*), such is not always the case. That is, a small fraction of dividend-paying firms may not engage in earnings smoothing.

TABLE 4

Are the Results Driven by Dividend Policy?

Panel A: Do Firms That Change Their Dividend Policy Smooth Earnings to a Lesser Extent?

$$EM = \beta_0 + \beta_1 POLICYCHG + \beta_2 PMEC + \beta_3 PMEC{*}POLICYCHG + \beta_4 STOCK + \beta_5 BONUS + \beta_6 PMEC{*}STOCK + \beta_7 PMEC{*}BONUS + \beta_8 BTM + \beta_9 SIZE + \beta_{10} LEV + \beta_{11} RE + \beta_{12} AGE + \beta_{13} GROWTH + \beta_{14} CAPX + \beta_{15} INDYR + \varepsilon.$$

	Change in Level or Ratio		Change in Level Only	
POLICYCHG =	**Estimate**	**p-value**	**Estimate**	**p-value**
Intercept	0.002	0.617	0.001	0.743
POLICYCHG	−0.001	0.098	0.000	0.956
PMEC	−0.986	< 0.001	−0.972	< 0.001
*PMEC * POLICYCHG*	0.020	< 0.001	0.007	0.088
STOCK	0.009	0.001	0.009	0.001
BONUS	0.039	< 0.001	0.040	< 0.001
*PMEC * STOCK*	−0.015	0.231	−0.016	0.213
*PMEC * BONUS*	0.011	0.484	0.007	0.651
BTM	0.002	0.260	0.002	0.213
SIZE	−0.001	0.077	−0.001	0.072
LEV	−0.005	0.186	−0.004	0.214
RE	−0.011	< 0.001	−0.011	< 0.001
AGE	0.001	0.089	0.001	0.083
GROWTH	0.060	< 0.001	0.060	< 0.001
CAPX	−0.044	0.004	−0.044	0.003
n	5,694		5,694	
R^2	0.984		0.984	

Panel B: Do Firms That Smooth Earnings Change Their Dividend Policy to a Lesser Extent?

	n	**Mean**	**Median**	**10th Pctl.**	**90th Pctl.**	**Std. Dev.**
EARNSMTH = 1						
Abs. % change in level	1,856	0.142	0.063*	0.005	0.293	0.336
Abs. % change in ratio	1,856	0.205	0.102*	0.017	0.422	0.414
EARNSMTH = 0						
Abs. % change in level	3,838	0.160	0.079	0.006	0.352	0.326
Abs. % change in ratio	3,838	0.662	0.309	0.045	1.222	1.642

(continued on next page)

TABLE 4 (continued)

Panel C: Do Regular Dividend Payers Smooth Earnings to a Greater Extent Than Regular Repurchasers?

$$EM = \beta_0 + \beta_1 DP + \beta_2 PMEC + \beta_3 PMEC{*}DP + \beta_4 STOCK + \beta_5 BONUS + \beta_6 PMEC{*}STOCK + \beta_7 PMEC{*}BONUS + \beta_8 BTM + \beta_9 SIZE + \beta_{10} LEV + \beta_{11} RE + \beta_{12} AGE + \beta_{13} GROWTH + \beta_{14} CAPX + \beta_{15} INDYR + \varepsilon.$$

	Whole Sample		***PMEC* > 0**		***PMEC* < 0**	
	Estimate	**p-value**	**Estimate**	**p-value**	**Estimate**	**p-value**
Intercept	−0.006	0.515	−0.049	0.034	−0.003	0.767
DP	0.019	< 0.001	0.044	0.001	0.003	0.494
PMEC	−0.765	< 0.001	−0.633	< 0.001	−0.834	< 0.001
*PMEC * DP*	−0.106	< 0.001	−0.160	0.005	−0.072	0.008
STOCK	0.026	< 0.001	0.090	0.000	0.004	0.688
BONUS	0.061	< 0.001	0.064	0.030	0.048	< 0.001
*PMEC * STOCK*	−0.212	0.000	−0.395	0.001	−0.116	0.049
*PMEC * BONUS*	−0.121	0.060	−0.114	0.448	−0.136	0.025
BTM	0.016	0.000	0.028	< 0.001	0.002	0.646
SIZE	−0.004	< 0.001	−0.006	< 0.001	−0.002	0.055
LEV	0.015	0.080	0.016	0.217	0.029	0.001
RE	−0.029	< 0.001	−0.032	0.000	−0.010	0.038
AGE	0.004	0.008	0.006	0.011	0.003	0.112
GROWTH	0.069	< 0.001	0.043	0.000	0.086	< 0.001
CAPX	−0.048	0.056	−0.055	0.167	−0.084	0.005
n	7,869		4,666		3,203	
R^2	0.912		0.823		0.867	

* Denotes a significant difference between the two groups at the 1 percent level.
DP in Panel C of this table is equal to 1 for regular dividend payers, and 0 for regular repurchasers (regular payers are those that pay dividends in every year of the sample period, and regular repurchases are firms that make repurchases in half or more of the years of the sample period and do not pay dividends in any year).
Variables not shown below are defined in Appendix A.

Variable Definitions:
EM = earnings management, and is equal to *TEM* in this table;
TEM = total earnings management and is equal to *ACFO* + *ADISX* + *ATA*;
POLICYCHG = dividend policy change dummy;
PMEC = pre-managed earnings change;
STOCK = stock incentive ratio;
BONUS = executive bonus;
BTM = book-to-market ratio;
SIZE = firm size;
LEV = leverage;
RE = retained earnings;
AGE = firm age;
GROWTH = sales growth;
CAPX = capital expenditures; and
EARNSMTH = earnings smoothing dummy.

on percentage change in dividend level only. As shown in the last two columns in Panel A of Table 4, the coefficient of *PMEC* ∗ *POLICYCHG* is positively significant at the ten percent level. That is, dividend-paying firms engage in significantly less smoothing in years when they change their dividend level.[13]

The second additional test we perform is whether smoothed earnings is associated with lower changes in dividend policy. Based on our arguments related to the incentive for dividend-paying firms to smooth earnings, we expect that dividend-paying firms will make less of a change in their dividend level and payout ratio in years when they do report smooth earnings than in years when they do not. We thus divide the firm-year observations for dividend-paying firms into two groups based on the smoothness of the reported earnings. The first group, denoted as *EARNSMTH* = 1, includes firm-year observations with the absolute value of change in reported earnings of less than 1 percent. Other firm-year observations are included in the second group, denoted as *EARNSMTH* = 0. We report the descriptive statistics on the absolute value of percentage change in dividend level and dividend payout ratio for the two groups in Panel B of Table 4. As expected, the median change in dividend level for the first group (6.3 percent) is significantly lower than that (7.9 percent) for the second group (p-value < 0.001, one-tailed). The median change in dividend payout ratio for the first group is 10.2 percent, which also is significantly less than the 30.9 percent for the second group (p-value < 0.001, one-tailed).[14]

Next, to test whether the earnings smoothing observed in the results is due to economic reasons rather than due to earnings management, we use firms that make regular repurchases but that do not pay dividends as a control group. Regular repurchasers are likely to have generally similar characteristics as regular dividend-paying firms but do not have dividend-related incentives (Skinner and Soltes 2011).[15] The comparison of earnings smoothing between dividend payers and repurchasers tests the incentives related to the dividend policy, while controlling for some of the financial characteristics that distinguish dividend-payers from non-payers.

The median values of *TEM* as a fraction of *PMEC* for regular dividend payers (2,624 firm years) and regular repurchasers (5,245 firm years) are −0.962 and −0.934, respectively. Wilcoxon test (not reported) indicates that regular dividend payers have smoothed earnings more than the regular repurchasers. The difference is significant at the 1 percent level. The results of our regression analysis when regular repurchasers are used as a control group are reported in Panel C of Table 4. In this regression, the sample is limited to regular payers and regular repurchasers; and, *DP* is set equal to 1 for regular dividend payers and 0 for regular repurchasers. Consistent with the notion that the incentive to maintain dividend policy drives earnings smoothing for dividend payers, we find a significant difference between dividend payers and repurchasers (β_3 is significant at the 1 percent level for the whole sample, *PMEC* > 0 sample, and *PMEC* < 0 sample). Overall, the additional tests lend support to our conclusion that dividend policy, and not the differences in the economic characteristics of dividend payers and non-payers, is driving the results.

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[13] We believe the results are weakened because the argument that "when managers do change their dividend policy, we should expect that they do not have as much of an incentive to manage earnings" applies equally to firms that have changed their dividend level or payout ratio. Including firms that change their payout ratio in the *POLICYCHG* = 0 group results in misclassifications and, thus, weakens the results.

[14] As designed, our test compares firms based upon the size of the change in reported earnings without respect to whether the firm managed earnings to reduce the change in earnings. We re-run this test dividing the firm-year observations for dividend-paying firms into two groups based on whether they smooth earnings. That is, the first group, denoted as *EARNSMTH* = 1, includes firm-year observations with positive (negative) pre-managed earnings change and negative (positive) total earnings management, and a reported change in earnings of less than 1 percent. The results, not reported, are very similar.

[15] Regular payers are those that pay dividends in every year of the sample period, and regular repurchases are firms that make repurchases in half or more of the years of the sample period and do not pay dividends in any year (Skinner and Soltes 2011, 17).

TABLE 5

The Relation between Earnings Smoothing and Earnings Persistence

$$Model\ 1: \quad ROA_{t+1} = \alpha_0 + \alpha_1 DP_t + \alpha_2 ROA + \alpha_3 ROA_t * DP_t + \varepsilon.$$

$$Model\ 2: \quad ROA_{t+1} = \beta_0 + \beta_1 DP_t + \beta_2 PMROA_t + \beta_3 PMROA_t * DP_t + \beta_4 TEM_t + \beta_5 TEM_t * DP_t + \varepsilon.$$

Model 1			Model 2		
Variable	**Estimate**	**p-value**	**Variable**	**Estimate**	**p-value**
Intercept	0.023	< 0.001	Intercept	0.023	< 0.001
DP	−0.014	< 0.001	*DP*	−0.012	< 0.001
ROA	0.914	< 0.001	*PMROA*	0.914	< 0.001
ROA ∗ *DP*	0.073	< 0.001	*PMROA* ∗ *DP*	0.062	0.089
			TEM	0.916	< 0.001
			TEM ∗ *DP*	0.045	0.044
n	10,308			10,308	
R^2	0.600			0.627	

The number of observations is lower because we require two consecutive years of *ROA* and *PMROA* data. Variables not shown below are defined in Appendix A.

Variable Definitions:
ROA = return on assets;
DP = dividend-paying firm dummy;
PMROA = pre-managed return on assets; and
TEM = total earnings management and is equal to *ACFO* + *ADISX* + *ATA*.

THE ASSOCIATION BETWEEN EARNINGS SMOOTHING AND EARNINGS PERSISTENCE

Prior studies (Healy and Palepu 1988; Chen et al. 2007; Skinner and Soltes 2011) document that dividend-paying firms have higher earnings persistence than non-payers. Skinner and Soltes (2011) conclude that dividends provide information about earnings quality. However, the higher earnings persistence of dividend-paying firms may be due to a greater degree of earnings smoothing. We test this potential explanation by developing two models. Model 1 replicates prior results to confirm that dividend-paying firms have more persistent earnings. Model 2 modifies Model 1 by breaking out current earnings (*ROA*) into components of *PMROA* and *TEM* to determine if the higher persistence in earnings of dividend-paying firms is completely driven by pre-managed earnings:

$$\text{Model 1}: \quad ROA_{t+1} = \alpha_0 + \alpha_1 DP_t + \alpha_2 ROA_t + \alpha_3 ROA_t * DP_t + \varepsilon.$$

$$\text{Model 2}: \quad ROA_{t+1} = \beta_0 + \beta_1 DP_t + \beta_2 PMROA_t + \beta_3 PMROA_t * DP_t + \beta_4 TEM_t + \beta_5 TEM_t * DP_t + \varepsilon.$$

Table 5 shows that, consistent with prior literature (Skinner and Soltes 2011), dividend payers have more persistent reported earnings than non-payers ($\alpha_3 = 0.073$; p-value < 0.001).

Dividend-paying firms also have more persistent pre-managed earnings ($\beta_3 = 0.062$; p-value = 0.089). However, the coefficient of $TEM * DP$ is also significantly different from 0 ($\beta_5 = 0.045$; p-value = 0.044), suggesting that the higher earnings persistence of dividend payers can at least be partially explained by earnings management.[16]

SUPPLEMENTAL TESTS

Our results suggest that earnings smoothing is more important for dividend-paying firms than for non-payers. That is, dividend-paying firms want to smooth earnings so they can maintain their dividend level and payout ratio. A natural question, therefore, is whether dividend-paying firms are more likely than non-payers to report a small earnings change. Specifically, following Dechow et al. (2010a), we test the difference between payers and non-payers in the likelihood of reporting a change in earnings of less than 1 percent ($EARNSMTH = 1$). The univariate results, reported in Panels A and B of Table 6, indicate that payers are more likely to report a small change in earnings when $PMEC > 0$ (27.88 percent versus 14.32 percent; Chi-square = 217.82), and they are more likely to report a small change in earnings when $PMEC < 0$ (29.15 percent versus 18.13 percent; Chi-square = 100.44).

We also estimate a logistic regression to model the probability of reporting a small change in earnings as a function of the dividend-paying firm dummy (DP) and control variables, separately, for firm-year observations with positive and negative pre-managed earnings change. In this regression, the dependent variable takes a value of 1 if the absolute value of change in reported earnings is less than 1 percent (a small change), and 0 otherwise. The control variables are pre-managed earnings change, managerial incentives, book-to-market ratio, firm size, leverage, retained earnings, age, growth, capital expenditures, and two-digit industry and year dummies. As Panel C of Table 6 indicates, the coefficient of DP for the samples of positive and negative pre-managed earnings change is 0.385 and 0.420, both significant at the 0.001 level. The average marginal effect of dividend-paying status, i.e., the predicted change in the probability of reporting a small change in earnings, holding all other independent variables constant, is 0.028 and 0.024 for the sample of positive and negative pre-managed earnings change, respectively. This result confirms our conclusion that dividend-paying firms are more likely to report a small change in earnings than non-payers.

Our next supplemental test uses alternative definitions of TEM. We have defined TEM as the sum of $ACFO$, $ADISX$, and ATA based on the argument in Cohen and Zarowin (2010) that adding abnormal production costs leads to double counting. As an extension of their argument, we estimate TEM as the total of $ACFO$ and ATA because $ADISX$ also affects $ACFO$. Our results (not reported) hold using this alternative definition. To be consistent with Cohen and Zarowin (2010) and Zang (2012), we also measure real earnings management as the sum of $APROD$ and $ADISX$ (and, thus, TEM as $ATA + APROD + ADISC$). We find significantly negative coefficients on $PMEC * DP$ for the whole sample and for firm years with positive $PMEC$, but an insignificant negative coefficient for firm years with negative $PMEC$.

Yet, another test attempts to address the potential spurious correlation issue. The dependent variable in our main regression is TEM, and the independent variable is $PMEC * DP$, where $PMEC$ is calculated as $(IBEI_t - IBEI_{t-1})/Assets_{t-1} - TEM_t$. When the dependent variable is the earnings management measure and the independent variable is earnings change minus the earnings management measure, the "backing out" method could lead to a potential spurious correlation due

[16] This conclusion depends on the validity of our EM constructs. However, the validity of these constructs has been substantiated by past research (e.g., Cohen and Zarowin 2010; Zang 2012).

TABLE 6

Are Dividend Payers More Likely to Report a Small Change in Earnings?

Panel A: The Likelihood of Reporting a Small Earnings Change When *PMEC* > 0

	***EARNSMTH* = 0**	***EARNSMTH* = 1**	**Total**
DP = 1	2,634	1,018	3,652
	72.12%	27.88%	100%
DP = 0	3,560	595	4,155
	85.68%	14.32%	100%
Total	6,194	1,613	7,807
	79.34%	20.66%	100%

Chi-square = 217.82

Panel B: The Likelihood of Reporting a Small Earnings Change When *PMEC* < 0

	***EARNSMTH* = 0**	***EARNSMTH* = 1**	**Total**
DP = 1	2,224	915	3,139
	70.85%	29.15%	100%
DP = 0	2,358	522	2,880
	81.88%	18.13%	100%
Total	4,582	1,437	6,019
	76.13%	23.87%	100%

Chi-square = 100.44

Panel C: Logistic Regression Results

$$Prob(EARNSMTH = 1) = F(\beta_0 + \beta_1 DP + \beta_2 PMEC + \beta_3 STOCK + \beta_4 BONUS + \beta_5 BTM + \beta_6 SIZE + \beta_7 LEV + \beta_8 RE + \beta_9 AGE + \beta_{10} GROWTH + \beta_{11} CAPX + \beta_{12} INDYR + \varepsilon).$$

	***PMEC* > 0**		***PMEC* < 0**	
	Estimate	**p-value**	**Estimate**	**p-value**
Intercept	−2.335	< 0.001	−2.582	< 0.001
DP	0.385	< 0.001	0.420	< 0.001
PMEC	−1.352	< 0.001	0.718	0.002
STOCK	0.094	0.574	−0.383	0.066
BONUS	−0.240	0.332	0.911	0.000
BTM	0.133	0.157	0.003	0.974
SIZE	0.102	0.000	0.133	< 0.001
LEV	0.973	< 0.001	1.063	< 0.001
RE	0.516	< 0.001	0.620	< 0.001
AGE	0.052	0.345	−0.020	0.711
GROWTH	−0.979	< 0.001	0.074	0.620
CAPX	−0.665	0.429	−1.233	0.162
n	7,807		6,019	
Chi-square	650.114		392.545	
Average marginal effect of *DP*	0.028		0.024	

(continued on next page)

TABLE 6 (continued)

Variables not shown below are defined in Appendix A.

Variable Definitions:
EARNSMTH = earnings smoothing dummy;
DP = dividend-paying firm dummy;
PMEC = pre-managed earnings change;
STOCK = stock incentive ratio;
BONUS = executive bonus;
BTM = book-to-market ratio;
SIZE = firm size;
LEV = leverage;
RE = retained earnings;
AGE = firm age;
GROWTH = sales growth; and
CAPX = capital expenditures.

to endogeneity caused by the measurement error in *PMEC* (Lim and Lustgarten 2002; Elgers, Pfeiffer, and Porter 2003).[17] To address this concern, we instrument for *PMEC*. Specifically, following Daniel et al. (2008), we redefine pre-managed earnings as *CFO* and pre-managed earnings change as $(CFO_t - IBEI_{t-1})/Assets_{t-1}$.[18] This we label *IPMEC*. As reported in Panel A of Table 7, the coefficient for *IPMEC* $*$ *DP* is negative and significant ($\beta_3 = -0.434$; $p < 0.001$) when *EM* = *TEM*. Because cash flow from operations (*CFO*) is used as the instrument on the right-hand side and abnormal cash flows (*ACFO*) is included in our measure of earnings management on the left-hand side, we also perform this test using only abnormal accruals as the dependent variable. The coefficients for *IPMEC* $*$ *DP* is still negative and significant ($\beta_3 = -0.193$; $p < 0.001$), indicating that measurement error in *PMEC* has not influenced our results.

It is also possible that our results are influenced by endogeneity introduced by simultaneity (in the context of our study, the possibility that earnings management might influence dividend policy) in addition to measurement error. If simultaneity existed, the estimated pre-managed earnings change (*PMEC*) coefficients would be inconsistent and they would measure only the magnitude of the association, rather than the magnitude and direction of causation. To address this problem, we employ a two-stage least squares regression model. Specifically, in the first stage, we regress *PMEC* and the interaction terms with *PMEC* on *IPMEC*, the interaction terms with *IPMEC* and all the exogenous variables in Regression (5). In stage two, we estimate Regression (5) using the predicted values from stage one as replacements for the endogenous regressors. As reported in Panel B of Table 7, while firms smooth earnings in general ($\beta_2 = -0.286$; $p < 0.001$), dividend-paying firms do so to a greater extent ($\beta_3 = -0.272$; $p < 0.001$). We also perform this test using only abnormal accruals for the reason stated above. Consistent with our hypothesis, we still find a significant

[17] The problem of endogeneity occurs when an explanatory variable is related to the error term, which causes the ordinary least squares estimates of the coefficients to be biased and inconsistent. Omitted variables that are correlated with included explanatory variables, simultaneity and errors-in-variables (measurement errors) all cause endogeneity problems for which single equation estimation is not sufficient. The solution to the problem of endogeneity due to measurement error is to use an instrument variable, i.e., a variable that is highly correlated with the offending regressor but that is not correlated with the error term. Endogeneity problems due to simultaneity can be addressed using a two-stage least squares regression model, a procedure we use for our next test.

[18] This measure of operating cash flow from the statement of cash flow does not have the "backing out" problem (Elgers et al. 2003; Daniel et al. 2008).

TABLE 7

Instrument Test

Panel A: Ordinary Least Square Test

$$EM = \beta_0 + \beta_1 DP + \beta_2 IPMEC + \beta_3 IPMEC{*}DP + \beta_4 STOCK + \beta_5 BONUS + \beta_6 IPMEC{*}STOCK + \beta_7 IPMEC{*}BONUS + \beta_8 BTM + \beta_9 SIZE + \beta_{10} LEV + \beta_{11} RE + \beta_{12} AGE + \beta_{13} GROWTH + \beta_{14} CAPX + \beta_{15} INDYR + \varepsilon.$$

	EM = TEM		***EM = ATA***	
	Estimate	**p-value**	**Estimate**	**p-value**
Intercept	0.022	0.567	0.014	0.014
DP	0.083	< 0.001	0.016	< 0.001
IPMEC	−0.366	< 0.001	−0.120	< 0.001
*IPMEC * DP*	−0.434	< 0.001	−0.193	< 0.001
STOCK	−0.046	0.086	0.025	< 0.001
BONUS	0.007	0.812	0.019	0.037
*IPMEC * STOCK*	−1.345	< 0.001	−0.429	< 0.001
*IPMEC * BONUS*	−0.113	0.706	−0.115	0.339
BTM	0.124	< 0.001	0.011	< 0.001
SIZE	−0.032	< 0.001	−0.005	< 0.001
LEV	0.234	< 0.001	0.022	< 0.001
RE	−0.024	0.034	−0.013	< 0.001
AGE	0.018	0.030	0.003	0.002
GROWTH	0.091	< 0.001	0.033	< 0.001
CAPX	0.282	0.001	0.200	< 0.001
n	13,826		13,826	
R^2	0.208		0.251	

Panel B: Stage 2 Results of the Two-Stage Regression Analysis

$$EM = \beta_0 + \beta_1 DP + \beta_2 \hat{PMEC} + \beta_3 \hat{PMEC}{*}DP + \beta_4 STOCK + \beta_5 BONUS + \beta_6 \hat{PMEC}{*}STOCK + \beta_7 \hat{PMEC}{*}BONUS + \beta_8 BTM + \beta_9 SIZE + \beta_{10} LEV + \beta_{11} RE + \beta_{12} AGE + \beta_{13} GROWTH + \beta_{14} CAPX + \beta_{15} INDYR + \varepsilon.$$

	EM = TEM		***EM = ATA***	
	Estimate	**p-value**	**Estimate**	**p-value**
Intercept	−0.022	0.009	0.000	0.704
DP	0.031	< 0.001	0.007	0.000
$\hat{PMEC}$	−0.286	< 0.001	−0.064	< 0.001
$\hat{PMEC}{*}DP$	−0.272	< 0.001	−0.264	0.001
STOCK	0.008	0.252	0.014	< 0.001
BONUS	0.026	0.002	0.028	< 0.001
$\hat{PMEC}{*}STOCK$	−0.652	< 0.001	−0.591	< 0.001
$\hat{PMEC}{*}BONUS$	−0.120	0.013	−0.314	0.920
BTM	0.047	< 0.001	0.004	< 0.001
SIZE	−0.015	< 0.001	−0.004	< 0.001
LEV	0.105	< 0.001	0.013	0.008
RE	−0.012	< 0.001	−0.011	< 0.001

(continued on next page)

TABLE 7 (continued)

	EM = TEM		*EM = ATA*	
	Estimate	**p-value**	**Estimate**	**p-value**
AGE	0.010	< 0.001	0.004	0.000
GROWTH	0.064	< 0.001	0.042	< 0.001
CAPX	−0.025	0.334	0.053	0.035
n	13,826		13,826	
R^2	0.492		0.290	

$\hat{PMEC}$, $\hat{PMEC}$*DP*, $\hat{PMEC}$*STOCK*, and $\hat{PMEC}$*BONUS* are predicted values of *PMEC, PMEC * DP, PMEC * STOCK,* and *PMEC * BONUS* from Stage 1 of the two-stage regression analysis.
Variables not shown below are defined in Appendix A.

Variable Definitions:
EM = earnings management;
TEM = total earnings management and is equal to *ACFO* + *ADISX* + *ATA*;
ATA = the abnormal total accruals;
DP = dividend-paying firm dummy;
IPMEC = instrument of *PMEC*;
STOCK = stock incentive ratio;
BONUS = executive bonus;
BTM = book-to-market ratio;
SIZE = firm size;
LEV = leverage;
RE = retained earnings;
AGE = firm age;
GROWTH = sales growth; and
CAPX = capital expenditures.

difference between dividend paying firms and non-payers ($\beta_3 = -0.264$; $p < 0.001$).[19] We conclude, therefore, that our findings do not appear to be driven by endogeneity introduced by simultaneity or measurement errors.

The last test examines the sensitivity of our results to including additional interaction terms in our regressions. Ideally, we want to include the interactions terms related to *SIZE, AGE, GROWTH,* and *CAPX* in our regressions to rule out the alternative explanation that firm characteristics can explain dividend-paying firms' earnings smoothing. However, including too many interaction terms can induce multicollinearity and, thus, render the coefficients non-interpretable. In our regressions, including interaction terms related to only the compensation variables does not result in multicollinearity problems; the largest variance inflation factor is 2.2. Including interaction terms related to *SIZE, AGE, GROWTH,* and *CAPX* leads to several variance inflation factors of more than 20, indicating severe multicollinearity problems. Our conclusions still hold after including these additional interaction terms. That is, the coefficients for *PMEC * DP* and *PMEC * POLICYCHG* in Tables 3 and 4 have the same sign and significance, as do the coefficients for *IPMEC * DP* and $\hat{PMEC}$*DP* in Table 7. However, the coefficient for *PMEC* in the regressions for the samples of

[19] Tsoutsoura (2014) uses this approach to study the effect of succession taxes on family firm investment. As an alternative to predicting *PMEC* and the interaction terms with *PMEC*, we predict only *PMEC* and use the predicted value of *PMEC* in the interaction terms in Regression (5). The results, not reported, are qualitatively the same: $\beta_3 = -0.153$ and -0.231; $p < 0.01$, for the two regressions. As another alternative, we predict *PMEC* and *DP* in the first stage and use the predicted values as replacement for these regressors and their interaction terms in Regression (5). Again, the results are qualitatively the same: $\beta_3 = -0.510$ and -0.301; $p < 0.01$, for the two regressions.

firm years when $PMEC > 0$ (reported in Panel C of Table 3) becomes positive, as do the coefficients for *IPMEC* and *PMEC* in the regressions reported in Panels A and B of Table 7, reflecting the effect of multicollinearity problems.

Overall, our supplemental tests support our findings that dividend-paying firms engage in more earnings smoothing than non-payers. And, both real activities and accruals management are used to achieve the smoothing.

CONCLUSIONS

We investigate whether dividend-paying firms smooth earnings through accruals and/or real activities to a greater extent than other firms. That is, we examine whether earnings smoothing is more important for dividend-paying firms than for non-payers. Using Compustat's ExecuComp database, we first show that payers engage in more downward earnings management in years of positive pre-managed earnings change, and more upward earnings management in years of negative pre-managed earnings change, than non-payers. Second, we show that dividend-paying firms use both real activities and accrual choices to smooth earnings. The results hold with alternative definitions of dividend-paying firms and non-payers, abnormal total accruals, and an earnings management proxy. And, they are not likely to be driven by the differences in the economic characteristics of dividend-paying firms or spurious correlation. Finally, we show that the higher earnings persistence of dividend payers that previous studies document (e.g., Skinner and Soltes 2011) can at least be partially explained by earnings management. Overall, the results are consistent with the notion that dividend policy has an incremental effect on earnings smoothing.

Our study contributes to the earnings management and dividend payout policy literatures in several ways. First, we expand on the analysis of the dividend policy driving earnings management. Daniel et al. (2008) find that payers manage accruals upward to attain dividend targets when pre-managed earnings is below last year's dividends. We expand on Daniel et al. (2008) by documenting that (1) earnings smoothing is more important for dividend-paying firms than for non-payers, and (2) that dividend policy drives earnings management in both directions. Second, we document that firms use both real activities and accrual choices to smooth reported earnings, and dividend payers do so to a greater extent. Third, we provide evidence that earnings management, in part, drives the greater earnings persistence of dividend-paying firms. Finally, we show that knowledge of the potential occurrence and sources of earnings smoothing (real activities or accruals) for dividend-paying firms helps practicing auditors in their assessment of the risks of material misstatement in the financial statements.

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APPENDIX A

ACFO	abnormal cash flow from operations = residual from the following regression for each two-digit SIC industry per year multiplied by −1: $CFO_t/Assets_{t-1} = \alpha_0(1/Assets_{t-1}) + \alpha_1(Sales_t/Assets_{t-1}) + \alpha_2(\Delta Sales_t/Assets_{t-1}) + \acute{\varepsilon}_t$;
ADISX	abnormal discretionary expenditures = residual from the following regression for each two-digit SIC industry per year multiplied by −1: $DISX_t/Assets_{t-1} = \alpha_0(1/Assets_{t-1}) + \alpha_1(Sales_{t-1}/Assets_{t-1}) + \acute{\varepsilon}_t$;
AGE	firm age = natural log of the age of the firm as of year *t*, defined as the difference between year *t* and the first year in which the firm appears in Compustat database;
APROD	abnormal production costs = residual from the following regression for each two-digit SIC industry per year: $PROD_t/Assets_{t-1} = \alpha_0(1/Assets_{t-1}) + \alpha_1(Sales_t/Assets_{t-1}) + \alpha_2(\Delta Sales_t/Assets_{t-1}) + \alpha_3(\Delta Sales_{t-1}/Assets_{t-1}) + \acute{\varepsilon}_t$;
ATA	abnormal total accruals = residual from the following regression for each two-digit SIC industry per year: $TA_t/Assets_{t-1} = \alpha_0(1/Assets_{t-1}) + \alpha_1(\Delta Sales_t/Assets_{t-1}) + \alpha_2(PPE_t/Assets_{t-1}) + \alpha_3(IBEI_t/Assets_{t-1}) + \acute{\varepsilon}_t$;
BONUS	executive bonus = executive bonus/total compensation;
BTM	book-to-market ratio = book value of common equity$_{t-1}$/market value of common equity$_{t-1}$, where market value of common equity = common shares outstanding ∗ year-end price;
CAPX	capital expenditures = capital expenditures scaled by $Assets_{t-1}$;
CFO	cash flow from operations;
DP	dividend-paying firm dummy = 1 if the firm pays dividend in both the prior year and the current year, and 0 otherwise;
EARNSMTH	earnings smoothing dummy = 1 if the absolute value of change in reported earnings $(IBEI_t - IBEI_{t-1})/Assets_{t-1}$ is less than 0.01, and 0 otherwise;
GROWTH	sales growth = $\Delta Sales_t/Assets_{t-1}$;
IBEI	income before extraordinary items;
IPMEC	instrument of $PMEC = (CFO_t - IBEI_{t-1})/Assets_{t-1}$;
LEV	leverage = total debt$_{t-1}$/$Assets_{t-1}$;
Payout ratio	common dividends divided by earnings available to common shareholders;
PMEC	pre-managed earnings change = $(IBEI_t - IBEI_{t-1})/Assets_{t-1} - EM_t$, where *EM* is the earnings management proxy and equals to *TEM, ACFO, ADISX, APROD,* or *ATA,* consistent with the dependent variable used in the regression of *EM* on *DP, PMEC, DP ∗ PMEC,* and controls (Regression 5);
PMROA	pre-managed return on assets = (operating income − $TEM)_t/Assets_{t-1}$;
POLICYCHG	dividend policy change dummy = 1 if the absolute value of percentage change in dividend level or in payout ratio is greater than the median value for all firm years, and 0 otherwise;
PPE	property, plant, and equipment;
PROD	production costs = cost of goods sold + change in inventory;
RE	retained earnings = retained earnings$_{t-1}$/$Assets_{t-1}$;
ROA	return on assets = operating income$_t$/$Assets_{t-1}$;

(continued on next page)

APPENDIX A (continued)

SIZE	firm size = natural log of $Assets_{t-1}$;
STOCK	stock incentive ratio = *SENSITIVE*/(*SENSITIVE* + salary + bonus), where *SENSITIVE* is the sensitivity of equity compensation to stock price and = 0.01 ∗ stock price ∗ (number of shares held by CEO and CFO + number of options held by CEO and CFO);
TA	total accruals = *IBEI* – *CFO*; and
TEM	total earnings management = $ACFO_t + ADISX_t + ATA_t$.