Do Analysts' Cash Flow Forecasts Encourage Managers to Enhance Real Cash Flows? Evidence from Tax Planning

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ABSTRACT

Recent research finds that analysts' cash flow forecasts have meaningful financial reporting ramifications, but to date, the identified effects are unlikely to yield meaningful cash flow benefits. This study examines whether analysts' cash flow forecasts encourage managers to enhance the firm's cash flow position through tax avoidance activities. We evaluate the change in cash tax avoidance after analysts begin issuing cash flow forecasts relative to a propensity-score matched control sample without cash flow forecasts. Consistent with analysts' cash flow forecasts encouraging tax avoidance that enhances real cash flows, we find a negative association between cash effective tax rates and analysts' cash flow coverage. Additional analysis suggests this association is driven both by strategies to permanently avoid and to defer tax payments, and that increased cash tax avoidance activity represents a significant component of the overall increase in reported operating cash flows after the initiation of analysts' cash flow coverage.

JEL Classification: M40, M41, M49, H25, H26
Key Words: Cash Flow Forecasts, tax planning;

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I. INTRODUCTION

Recent research finds that analysts' cash flow forecasts have meaningful financial reporting ramifications. For example, McInnis and Collins (2011) find that when a firm's analysts begin issuing cash flow forecasts the quality of the firm's reported accruals improves and the probability of meeting or beating earnings benchmarks declines. In addition, Lee (2012) predicts and finds that firms with cash flow forecasts are more likely to alter the classification of cash flows within the cash flow statement and to strategically time certain short-term transactions (i.e., delay payments to suppliers or accelerate collections from customers in the fourth quarter) in an effort to enhance year-end reported operating cash flows. While analysts' cash flow forecasts have been shown to elicit from managers certain financial reporting behaviors, these behaviors are unlikely to have any meaningful effect on the firm's long-term cash flow health. Specifically, altering the classification of cash flows within the cash flow statement has no real cash flow consequence, and delaying payments to suppliers from the fourth quarter of one year to the first quarter of the following year is unlikely to yield meaningful cash flow benefits. In this study, we examine whether cash flow forecasts affect managerial efforts to increase the *real* cash flows of the firm.[1] Specifically, we examine the association between analysts' cash flow forecasts and cash tax avoidance.

[1] Actions that increase "reported" cash flows are those that increase cash flows in one year but likely reverse in the next year (or even the next quarter), whereas "real" cash flows result in a long-term or permanent increase in cash flows.

Tax avoidance is a particularly useful setting to investigate whether cash flow forecasts impact managerial actions to increase the firm's cash flows for several reasons. First, tax avoidance strategies are usually long-term in nature, either permanently avoiding or deferring for several years the payment of taxes. As a result, the cash savings from tax avoidance can be substantial, especially relative to the modest savings that result from deferring payments for only one quarter (or less).[2] Second, the accounting for income taxes allows us to identify a firm's cash tax payments, total tax expense, and the portion of the current year's total tax expense that is being deferred until subsequent years. This allows us to more cleanly measure the extent to which the firm defers or permanently avoids tax payments, something that is much more difficult to quantify with the avoidance of non-tax payments.

Finally, linking cash flow forecasts to cash tax avoidance is of particular interest given recent research (Graham, Hanlon, and Shevlin, 2011; Robinson, Sikes, and Weaver, 2010) and anecdotal evidence that managers tend to focus on tax avoidance that reduces financial statement tax expense, with only a secondary interest in tax avoidance that enhances cash flows (i.e., reduces cash taxes paid). Accordingly, this is a particularly interesting setting to test whether cash flow forecasts actually alter managerial behavior with respect to *real* cash flows.

Prior research posits that analysts' cash flow forecasts create an alternative focal point that demands managers' attention (Lee, 2012), encouraging actions that improve the firm's cash flow position. In addition, Call (2009) finds that after the initiation of analysts' cash flow coverage, investors assign relatively more weight to operating cash flows than in the period before analysts began forecasting cash flows. As a result, when analysts begin issuing cash flow forecasts, managers have increased incentives to improve the firm's operating cash flow position,

[2] Mills, Erickson, and Maydew (1998) estimate an average return of approximately $4 for each $1 invested in tax planning.

and the net benefits of engaging in cash tax avoidance activities similarly increase. Accordingly, we contend that, *ceteris paribus*, cash flow forecasts encourage increased tax avoidance that enhances the firm's real cash flows.

To investigate our hypothesis, we employ a difference-in-differences design and identify a sample of firms for which analysts begin providing cash flow forecasts and a propensity-score matched control sample of firms without cash flow forecasts. The matched sample controls for the fact that (a) the initiation of analysts' cash flow coverage is not an exogenous event, and (b) tax avoidance activity associated with cash flow forecasts could arise from the same underlying economic forces associated with analysts' issuance of cash flow forecasts. We measure "cash" tax avoidance using a firm's cash effective tax rate (cash taxes paid as a percentage of pre-tax income adjusted for special items). We test whether firms in our cash flow forecast sample increase cash tax avoidance (i.e., reduce cash effective tax rates) in the three years following the initiation of analysts' cash flow coverage relative to the three years before analysts began issuing cash flow forecasts. We compare this change in tax avoidance to the corresponding change for the propensity-score matched control sample, controlling for factors associated with both the initiation of analysts' cash flow coverage and tax avoidance (i.e., to ensure that any changes in tax planning are not attributable cross-sectional differences in the determinants of analysts' cash flow coverage or cross-sectional differences in other determinants of tax planning).

Consistent with cash flow forecasts encouraging increased tax avoidance that enhances cash flows, we find that analysts' cash flow forecasts are negatively associated with cash effective tax rates. In terms of economic magnitude, our findings suggest that relative to the propensity-score matched control sample, cash flow forecast firms experience a 1.60 percentage point reduction in cash effective tax rates after analysts begin issuing cash flow forecasts for the

firm (after controlling for other determinants of tax avoidance and cash flow coverage), which equates to approximately $20.7 million less in cash taxes paid over the three-year period following the initiation of analysts' cash flow coverage for the average firm in our sample.

We investigate the relation between cash flow forecasts and cash tax avoidance in more detail by separately analyzing cash tax avoidance attributable to permanent tax planning strategies and tax deferral strategies. Investigating permanent tax planning and tax deferral separately provides insight into the types of tax strategies managers' pursue with increased incentives to engage in cash tax planning. While both permanent and deferral strategies have the potential to yield real cash flow benefits and reduce the firm's cash effective tax rate, all else equal, managers face stronger incentives to engage in permanent tax avoidance activities because they result in tax-related cash flows that are less likely to reverse. Consistent with increased incentives to invest in permanent tax planning strategies, we find that, relative to the propensity-score matched control sample, firms with cash flow forecasts engage in more *permanent* tax avoidance activities, and that as the intensity of analysts' cash flow coverage increases, these firms also increasingly engage in tax *deferral* strategies. In combination, these results suggest analysts' cash flow coverage encourages managers to engage in tax planning activities that meaningfully improve the firm's real cash flow health.

To triangulate our results, we examine the change in reported operating cash flows after analysts begin issuing cash flow forecasts. We find that (a) firms report increased operating cash flows after analysts begin issuing cash flow forecasts, (b) the increase is unique to cash flow forecast firms (i.e., it is not found for the propensity-score matched control firms), and (c) this increase is not explained by other determinants of reported operating cash flows or the determinants of analysts' cash flow coverage. We also find that cash tax savings resulting from

increased tax avoidance activity is responsible for approximately 29 percent of the increase in reported operating cash flows. Together, these results suggest analysts' cash flow forecasts encourage managers to engage in activities that enhance reported cash flows, and that tax avoidance activities that result in *real* enhancements to the firm's cash flow position represent an economically meaningful portion of this increase.

This study makes several contributions to the literature. First, we provide insight into *real* cash flow effects of analysts' cash flow forecasts. Specifically, we find an economically significant relation between cash flow forecasts and tax avoidance that suggests cash flow forecasts encourage managers to focus on *real* activities that significantly enhance the firm's long-term cash position. While prior research suggests cash flow forecasts impact financial reporting behavior, we are the first to document real cash flow effects of analysts' cash flow forecasting activities.

Second, the forecasting literature documents various benefits to firms of analyst coverage and their forecasting activities, including a reduction in information asymmetry between insiders and outsiders (Frankel and Li, 2004), a reduction in the cost of capital (Easley and O'Hara, 2004), and increased external monitoring to reduce earnings management (Yu, 2008). We add to this literature by documenting that analysts' cash flow forecasts encourage firms to avoid tax payments. Given recent evidence that suggests tax planning enhances firm value (Mills et al., 1998; Desai and Dharmapala, 2009; Wilson, 2009; De Simone and Stomberg, 2012; Goh, Lee, Lim, and Shevlin, 2013), our findings suggest a potential benefit to firms of analysts' cash flow coverage.

Finally, this study sheds light on the determinants of tax avoidance, incentives affecting the type of tax avoidance, and the role that an alternative performance metric plays in managers'

attention to tax planning. Given the conclusions of prior research that firms "under-shelter" their income (Weisbach, 2002) and focus on total tax expense reported in the financial statements (instead of cash taxes paid), our evidence suggests one mitigating factor to the somewhat puzzling behavior documented in prior research.

II. PRIOR RESEARCH AND HYPOTHESIS DEVELOPMENT

Analysts' Cash Flow Forecasts

Academic research on analysts' cash flow forecasts began with DeFond and Hung's (2003) analysis of the market demand for cash flow information. They argue that market participants demand supplemental cash flow information when earnings are difficult to interpret and when cash flows are particularly relevant in assessing firm viability. Consistent with these hypotheses, they document that analysts are more likely to issue cash flow forecasts for firms with large accruals, heterogeneous accounting choices relative to other firms in the same industry, volatile earnings, capital-intensive operations, and poor financial health. Their findings suggest analysts respond to market demand by providing cash flow forecasts for firms exhibiting these characteristics.

In recent years, the literature on analysts' cash flow forecasts has grown to explore a variety of issues related to analysts' cash flow forecasting activities. These topics include country-level institutional factors that predict the incidence of analysts' cash flow forecasts (DeFond and Hung, 2007), analyst-level determinants of cash flow forecast issuance (Ertimur and Stubben, 2005), the market pricing of cash flow surprises (Brown, Huang, and Pinello, 2013), the effect of analysts' cash flow forecasts on the pricing of operating cash flows (Call, 2009) and on market efficiency (Mohanram, 2012), the benefit of forecasting cash flows on analysts' *earnings* forecasts and on analyst turnover (Call, Chen, and Tong, 2009; Pandit, Willis, and Zhou,

2012), and the underlying quality of analysts' cash flow forecasts (Givoly, Hayn, and Lehavy, 2009; Call, Chen, and Tong, 2013).[3]

The studies most relevant to ours are those that explore changes in managers' financial reporting behavior when analysts issue cash flow forecasts. McInnis and Collins (2011) argue that when analysts supplement their earnings forecast with a cash flow forecast, they also implicitly provide a forecast of accruals. They contend that this implicit accrual forecast makes accrual manipulations more transparent, constraining managers' accrual-based earnings management. Consistent with this hypothesis, they find that after analysts start forecasting cash flows for the firm, accrual quality improves and the probability of meeting or beating analysts' earnings expectations declines.

Lee (2012) argues that managers inflate reported operating cash flows when analysts issue cash flow forecasts for the firm. Specifically, she finds that firms with cash flow forecasts are more likely than other firms to file a restatement that decreases operating cash flows, suggesting cash flow forecasts create incentives for managers to opportunistically misclassify the firm's cash flows to inflate reported operating cash flows. Similarly, although prior to July of 2000 GAAP allowed firms to classify the tax benefit of stock options as either an operating, investing, or financing cash flow, Lee (2012) finds that firms whose analysts issued cash flow forecasts were more likely to classify this cash inflow as an operating cash flow. These findings are consistent with analysts' cash flow forecasts encouraging managers to opportunistically classify the firm's cash flows in an effort to inflate reported operating cash flows.

[3] During our sample period, 17 percent of analysts issued at least one annual cash flow forecast for a firm they follow, and among these analysts, the average analyst issues cash flow forecasts for 64 percent of his/her covered firms.

In addition to documenting the opportunistic classification of cash flows, Lee (2012) also finds that managers are more likely to strategically time certain short-term transactions that enhance reported cash flows when analysts issue cash flow forecasts for the firm. Specifically, she finds that managers delay payments in the fourth quarter (e.g., deferring cash payments from the fourth quarter of one year to the first quarter of the following year), and accelerate fourth quarter cash receipts (e.g., shifting cash receipts from the first quarter of the following year to the fourth quarter of the current year) in an effort to report inflated year-end operating cash flows.

In general, both McInnis and Collins (2011) and Lee (2012) provide evidence that analysts' cash flow forecasts encourage managerial behavior that has a meaningful impact on reported earnings and reported cash flows. While these studies find evidence that analysts' cash flow forecasts affect managerial *reporting* choices, they do not speak to the effect of cash flow forecasts on the firm's *real* cash flow health. For example, neither a reduction in accrual-based earnings management nor misclassifications within the statement of cash flows directly affect the firm's *real* cash flows. Similarly, while Lee (2012) documents that cash flow forecasts encourage firms to delay certain cash payments (e.g., payments to suppliers), she finds that these deferrals reverse the very next quarter. As such, while these short-term activities may yield a desired financial reporting outcome at the end of the fourth quarter, they are unlikely to yield any meaningful cash flow benefit to the firm.[4] The purpose of this study is to examine the effect of analysts' cash flow forecasts on managerial efforts to enhance the firm's *real* cash flow position.

Tax Avoidance

Tax avoidance is a particularly useful setting to evaluate managerial efforts to enhance real cash flows. First, tax avoidance strategies are often long-term in nature, either permanently

[4] Short-term efforts to boost year-end cash flows can actually put the firm in a *worse* cash flow position. For example, managers can improve reported cash flows at year-end by factoring the firm's receivables, which often puts the firm in a worse cash flow position.

avoiding or deferring the payment of taxes to future years.[5] As a result, the cash savings from tax avoidance can be substantial, especially relative to the modest savings that result from deferring payments for only one quarter (or less). Indeed, in their study of investments in tax planning, Mills et al. (1998) estimate an average return of approximately $4 for each $1 invested in tax planning. Likewise, Wilson (2009) estimates an average return of approximately $12 for each $1 in fees paid related to tax shelters (ignoring any associated in-house costs).

Second, the accounting for income taxes allows us to identify a firm's cash tax payments, total tax expense, and the portion of the current year's total tax expense that is being deferred until subsequent years. This allows us to more cleanly measure the extent to which the firm defers or permanently avoids tax payments, something that is much more difficult to quantify with the deferral of non-tax payments. In addition, our ability to separately measure changes in tax deferral activity and permanent tax avoidance strategies allows us to more cleanly determine whether any tax avoidance activity driven by analysts' cash flow forecasts is uniquely motivated by a desire to enhance real cash flows (rather than by a desire to boost reported earnings).

Finally, while our understanding of the factors that explain why some corporations engage in more tax avoidance than others remains incomplete, recent research (Graham et al., 2011; Robinson et al., 2010) suggests that when managers engage in tax avoidance, they tend to focus on strategies that reduce financial statement tax expense, with only a secondary interest in tax avoidance that enhances cash flows (i.e., reduces cash taxes paid).[6] For example, in a survey

[5] Tax planning strategies that permanently avoid or defer tax payments range from the "vanilla" strategies of investing in tax exempt municipal bonds or identifying and electing the most accelerated cost recovery available for fixed assets to the more complex and aggressive tax shelter strategies described in Wilson (2009). Public accounting firms typically maintain checklists of accounting methods that facilitate tax deferral for their clients, in addition to offering plans that permanently avoid tax (e.g., research and development credit studies).

[6] Ayers, Laplante, and Schwab (2012) report that the training materials for at least one large international accounting firm discuss clients' hesitancy to engage in tax planning that does not reduce a firm's financial statement tax expense.

of corporate tax executives, Graham et al. (2011) report that 47 percent of the managers in their sample of publicly-traded firms indicate that their firms' effective tax rate is the most important tax metric to top management, whereas only 15 percent state that cash taxes paid is the most important tax metric. Likewise, Robinson et al. (2010) find that evaluating a tax department as a profit center is associated with lower effective tax rates but has no incremental effect on cash tax savings. Furthermore, Armstrong, Blouin, and Larcker (2012) find a strong negative association between tax director incentive compensation and effective tax rates, but no relation between incentive compensation and cash effective tax rates (i.e., cash tax savings). In sum, ample evidence suggests that cash is not "king" in terms of tax planning. Instead, managers tend to focus on tax planning strategies that have a direct impact on earnings, likely because earnings are their main focal point. Accordingly, this is a particularly interesting setting to investigate whether analysts' cash flow forecasts alter managerial behavior with respect to the firm's real cash flows, because evidence suggesting that cash flow forecasts encourage increased cash tax avoidance would be indicative of a fundamental shift in firm strategy.

Hypothesized Relation Between Analysts' Cash Flow Forecasts and Cash Tax Avoidance

DeFond and Hung (2003) predict and find that analysts issue cash flow forecasts when cash from operations is particularly useful to market participants in interpreting earnings and valuing securities. In turn, their evidence suggests the presence of analysts' cash flow forecasts is indicative of the importance market participants place on operating cash flows. Consistent with this conclusion, Call (2009) finds that when setting prices, investors place more weight on cash from operations for firms whose analysts issue cash flow forecasts, and that operating cash flows become incrementally more relevant to the firm's stock price in the years immediately following the initiation of analysts' cash flow coverage.

Further, Lee (2012) argues that managers have incentives to inflate *reported* operating cash flows when analysts issue cash flow forecasts. The increased incentive to inflate operating cash flows is based on the assumption that the presence of a cash flow forecast increases the market's focus on the firm's cash flows.

While Lee (2012) argues that these forecasts result in additional efforts to improve *reported* operating cash flows, we argue that after analysts begin forecasting cash flows, managers allocate additional effort to activities expected to improve the firm's *real* cash flow position. Specifically, because operating cash flows become more relevant to the firm's stock price after analysts begin issuing cash flow forecasts (Call, 2009), managers have increased incentives to improve the firm's operating cash flow position, and the net benefits of engaging in cash tax avoidance activities similarly increase. Accordingly, we predict that the initiation of analysts' cash flow coverage is associated with increased cash tax avoidance.

Our hypothesis implicitly assumes managers have not already exhausted tax avoidance strategies even prior to the initiation of analysts' cash flow coverage. While ultimately this is an empirical question, Weisbach (2002) finds that firms generally "under-shelter" their income, so we believe it is reasonable to assume, *ex ante*, that managers have the opportunity to engage in further tax savings, and that additional incentives arising from analysts' cash flow coverage potentially encourages this behavior.

III. SAMPLE AND RESEARCH DESIGN

Sample

Table 1 details our sample selection criteria. We begin with all firms on the I/B/E/S detail file for which analysts issue an annual EPS forecast from 1993 through 2010. Consistent with prior tax avoidance studies, we eliminate financial and utility firms, firm-year observations with

negative pretax income, and firm-year observations without Compustat data needed to calculate the tax and accounting variables required in our empirical tests. Because our primary analyses rely on a propensity-score matched sample (which is described in the following section), we eliminate firm-year observations without data needed to compute the selection model variables and, thus, the propensity scores. We retain cash flow forecast firms (and their matched control firms) during the 3 years prior to and the 3 years after analysts' initial cash flow forecast for the firm, thereby eliminating firm-year observations that do not fall in this window. This yields a final sample of 6,982 firm-year observations across the cash flow forecast and control samples.

Research Design

To empirically test our hypothesis that analysts' cash flow forecasts encourage tax avoidance, we examine changes in tax avoidance around the initiation of analysts' cash flow coverage. For each firm with a cash flow forecast, we identify the first available year analysts issue cash flow forecasts for the firm. This year and the following two years constitute the "post" subsample, and the three years prior to the first cash flow forecast constitute the "pre" subsample.[7] We predict that cash flow forecast firms engage in more tax avoidance activity in the "post" period than in the "pre" period. The choice of 3-year windows (e.g., 3 years before and 3 years after the initiation of analysts' cash flow coverage) is consistent with prior research (McInnis and Collins, 2011) and allows us to capture tax avoidance strategies that take more than one year to implement and take effect. The 3-year window also makes it unlikely that one-time tax fluctuations due to IRS settlements or payments would unduly influence our analyses.

Evidence that firms increase their cash tax avoidance activities once analysts begin issuing cash flow forecasts would be consistent with our hypothesis. However, two concerns

[7] If analysts do not issue a cash flow forecast for a firm in the "post" subsample (e.g., either one or two years after the initial cash flow forecast), we omit these observations from the analysis, as outlined in Table 1.

remain. First, analysts do not issue cash flow forecasts for a random set of firms. Rather, these firms are unique from firms without cash flow forecasts in predictable ways, as documented by DeFond and Hung (2003). It is therefore possible that tax avoidance activity is associated with firm characteristics that predict analysts' cash flow coverage, and not with the cash flow forecasts, per se. Second, the provision of cash flow forecasts has increased dramatically through the years. As a result, any evidence that cash flow forecasts are associated with an increase in tax avoidance could simply represent an increased focus on tax avoidance in recent years.

To overcome these two concerns and provide more robust evidence on the effect of analysts' cash flow forecasts on cash tax avoidance, we compare changes in tax avoidance activity of firms whose analysts initiate cash flow coverage to that of a propensity-score matched control sample. The primary benefit of using a control sample matched on propensity scores is that it allows us to compare firms with analysts' cash flow forecasts to a set of firms without cash flow forecasts but that are similar on important observable dimensions associated with the likelihood of analyst cash flow coverage and cash tax planning. This comparison allows us to more clearly attribute any increase in tax avoidance to analysts' initiation of cash flow coverage, rather than to the firm characteristics associated with analysts' cash flow forecasts or other determinants of cash tax planning.

To identify the propensity-score matched control sample, we follow Armstrong, Jagolinzer, and Larcker (2010) and estimate the following propensity-match model as a function of the determinants of the treatment effect (i.e., analysts' cash flow coverage) and the outcome effect (i.e., cash tax planning) for all firms in the I/B/E/S database with available data:[8]

[8] Armstrong et al. (2010) point out that matching on the determinants of the outcome effect (as well as the determinants of the treatment effect) relaxes the assumption of a constant functional relationship between control variables and outcome effect. Our results are robust to computing propensity scores based on only determinants of analysts' cash flow coverage.

$$\text{Prob}(CFF_{it} = 1) = \gamma_0 + \Sigma\gamma_k CFF\_Determinants_{kit} + \Sigma\gamma_k TaxPlanning\_Determinants_{kit} \quad (1)$$

CFF_{it} is an indicator variable equal to one if firm *i* has a cash flow forecast in year *t*, and zero otherwise; $CFF\_Determinants_{kit}$ is a vector of variables previously shown to be associated with analysts' cash flow coverage (Defond and Hung, 2003; McInnis and Collins, 2011); $TaxPlanning\_Determinants_{kit}$ is a vector of variables expected to be associated with tax planning. We discuss these variables below. See the appendix for a detailed definition of each variable.

Determinants of analysts' cash flow forecast coverage.

Absolute accruals: We control for the absolute value of firm *i*'s total accruals in year *t-1 (*$AbsAcc_{it-1}$*).* When a firm's earnings contains of a large accrual component, the risk of misstatement increases, and cash flows are useful in validating earnings information (Penman 2001).

Earnings volatility: Volatile earnings are generally considered less informative and of lower quality, suggesting that operating cash flows become a relatively more important metric. We control for the volatility of firm *i*'s earnings over the most recent five-year period (Vol_{it-1}).

Heterogeneity of accounting choice.: When firms elect accounting methods that are unique from those used by peer firms, earnings comparability is impaired, and information about operating cash flows becomes more important. We therefore control for the heterogeneity of accounting choice relative to industry peers for firm *i* in year *t-1 (*$Hetero_{it-1}$*)*.

Financial health: For firms facing solvency or liquidity concerns, operating cash flows become an important measure of whether the firm will be able to continue as a going concern. We control for firm *i*'s Altman-Z score in year *t-1 (*$Health_{it-1}$*)*.

Capital intensity: Capital-intensive firms are more reliant on operating cash flows to maintain and replace fixed assets. The ability to demonstrate internally-generated cash flows is

therefore more relevant for these firms. We control for the ratio of firm *i*'s property, plant, and equipment to sales in year *t-1 ($CapInt_{it-1}$)*.

Size: DeFond and Hung (2003) find that firm size is positively correlated with analysts' cash flow coverage. We control for the natural log of firm *i*'s market value of equity at the end of year *t-1 ($Size_{it-1}$)*.

Determinants of tax planning[9]

Return on assets: We control for pre-tax return on assets (ROA_{it}) because more profitable firms generally have higher tax payments. All else equal, we expect firms with higher ROA_{it} to be subject to higher tax rates or to have less tax offset by fixed tax shields.

Foreign Operations: An extensive literature establishes that taxpayers respond to tax incentives to place income in low-tax jurisdictions.[10] Because segment disclosures no longer require foreign asset disclosures, we use the absolute ratio of foreign pretax income to worldwide pretax income as a proxy for foreign operations ($Foreign_{it}$). We assign foreign pretax income to zero where missing (following Mills and Newberry, 2004).

Leverage: We control for the ratio of long-term debt to assets (Lev_{it}) because debt provides an important tax shield (Graham, 1996) and, for multinationals, the flexibility to place debt in high-tax locations (Newberry and Dhaliwal, 2001). Firms with high leverage and more financial constraints can structure off-balance-sheet financing to maximize interest deductions without decreasing book income (Mills and Newberry, 2004) and can structure debt to use

[9] For these variables, we make no predictions regarding their association with analysts cash flow forecast coverage, but we anticipate they will be associated with tax planning (i.e., in our second stage analysis). Note that $TaxPlanning\_Determinants_{kit}$ does not include variables that represent size, capital intensity, or distress as $CFF\_Determinants_{kit}$ includes variables that control for these constructs.

[10] See Altshuler and Grubert (2001), Atwood, Drake, Myers, and Myers (2012), Dyreng and Lindsey (2009), Grubert (2003), Grubert and Mutti (2000), Grubert and Slemrod (1998), Gupta and Mills (2003), Gramlich, Limpaphayom, and Rhee (2004), Harris (1993), Harris et al. (1993), Hines and Rice (1994), Jacob (1996), Kemsley (1998), Klassen, Lang, and Wolfson (1993), Klassen and Laplante (2012), Nutter (1999), Rice (1992) and Vines and Moore (1996).

foreign tax credits (Newberry, 1998). Collectively, these studies suggest that debt is negatively associated with tax rates.

Inventory intensity: We include the ratio of inventory to total assets ($InvInt_{it}$) as a proxy for inventory intensity. High inventory intensity does not typically generate tax planning opportunities, suggesting a positive association between $InvInt_{it}$ and tax rates.[11]

Intellectual property: We use the ratio of R&D expense to revenues ($R\&D_{it}$) to proxy for intellectual property. Intellectual property, such as patents and brand intangibles, increases opportunities for income shifting and permanent tax avoidance. As such, we expect $R\&D_{it}$ to be negatively related to tax rates.

Abnormal accruals: We include abnormal accruals ($AbnAcc_{it}$) as a control for earnings quality (Kothari, Leone, and Wasley, 2005). If firms that exhibit lower quality financial earnings are more tax aggressive (Frank, Lynch, and Rego, 2009; Wilson, 2009; Lisowsky, 2010), we expect $AbnAcc_{it}$ to be negatively related to tax rates.

Net operating loss: We include an indicator variable (NOL_{it}) for the presence of net operating loss carryforwards and expect that firms with NOLs have lower tax rates.[12]

Growth: We include the book-to-market ratio (BM_{it}) to control for growth because high growth firms generally have additional deferral opportunities to reduce cash effective tax rates.

Industry: We include industry fixed effects (Barth, Beaver, and Landsman, 1998) because tax subsidies are often unique to particular industries.

Year: We include year fixed effects because tax subsidies vary across time.

[11] Retail firms do not enjoy benefits of capital intensity or intellectual property. For this reason, Brown (2011) notes that the retail industry was ripe for corporate-owned life insurance tax shelter schemes in the 1990s.
[12] Results are similar when we replace NOL_{it} with the change in net operating losses.

We report the results of estimating equation (1) in Table 2. The coefficient for each of the $CFF\_Determinants_{kit}$ is of the predicted sign and is statistically significant. In addition, all of the $TaxPlanning\_Determinants_{kit}$ are statistically significant.[13]

After estimating equation (1), we calculate a propensity score for each firm-year observation, which represents the probability of receiving the treatment effect (a cash flow forecast), conditional on the independent variables included in equation (1). For each firm for which analysts issue cash flow forecasts, we identify the first year in our sample in which analysts issue a cash flow forecast for the firm. We then select the firm without a cash flow forecast with the closest propensity score in the same year, and designate this firm as the matched control firm. Requiring the matched control firm to be from the same fiscal year as the corresponding cash flow forecast firm controls for potential time-series changes in tax avoidance, as discussed earlier. We identify exactly one propensity-score matched control firm for each cash flow forecast firm in our sample and find the propensity scores for the cash flow forecast firms and their matched control firms are statistically indistinguishable.[14] Because there are significant differences (discussed later in Table 3) across cash flow forecast and control firms on several individual variables included in equation (1), we include both $CFF\_Determinants_{kit}$ and $TaxPlanning\_Determinants_{kit}$ as control variables in our 2nd stage regression. This ensures that any changes in tax planning associated with the initiation of analysts' cash flow coverage are not attributable to cross-sectional differences in the determinants of analysts' cash flow coverage

[13] Consistent with DeFond and Hung (2003), we include the absolute value of accruals in equation (1). In a sensitivity analysis, we replace the absolute value of accruals with signed accruals, which is used by McInnis and Collins (2011). When we make this modification to equation (1), the coefficient on signed accruals is significantly positive, consistent with McInnis and Collins (2011), and our subsequent inferences regarding the effect of analysts' cash flow forecasts on tax avoidance are unchanged.

[14] In the match year, the average propensity score for cash flow forecast firms is 0.3776, which is insignificantly different (p-value = 0.2641) from the average propensity score of 0.3885 for the control firms, suggesting we have identified a reasonable control sample.

or to cross-sectional differences in other determinants of tax planning (Cram, Karan, and Stuart, 2009; Armstrong et al., 2010).

For each control firm, we classify the year of the match and the following two years as the "post" observations, and the three years prior to the match as the "pre" observations.[15] In this way, our treatment (cash flow forecast) and control (no cash flow forecast) firms are aligned in calendar time and matched on firm characteristics associated with analysts' decision to issue cash flow forecasts. Our final cash flow forecast sample consists of 2,082 firm-year observations in the "post" period and 1,354 firm-year observations in the "pre" period, and the propensity-score matched control sample consists of 1,932 firm-year observations in the "post" period and 1,614 firm-year observations in the "pre" period.

We compare changes in tax avoidance activity from the "pre" to the "post" period for the cash flow forecast sample, relative to the corresponding change in tax avoidance activity for the propensity-score matched control sample. To investigate the effect of analysts' cash flow forecasts on cash tax avoidance, we estimate the following equation:

$$CashETR_{it} = \beta_0 + \beta_1 CFF_{it} + \beta_2 Post_{it} + \beta_3 CFF_{it} * Post_{it} + \Sigma\beta_k CFF\_Determinants_{kit} + \Sigma\beta_k TaxPlanning\_Determinants_{kit} + MatchID_{jit} + \varepsilon_{it} \quad (2)$$

$CashETR_{it}$ is firm i's cash effective tax rate in year t, measured as the ratio of cash taxes paid to pretax income adjusted for special items.[16] Consistent with prior literature, if a firm's $CashETR_{it}$ is above one (below zero), we set $CashETR_{it}$ equal to one (zero). Higher values of $CashETR_{it}$ indicate lower levels of cash tax avoidance. Cash effective tax rates are an appropriate

[15] While no control firm has a cash flow forecast in the year of the initial match (by construction), we omit any firm-year observation for a control firm if its analysts ultimately issue a cash flow forecast in a subsequent year during the "post" period.

[16] Although prior research (e.g., Dyreng, Hanlon, and Maydew 2008) typically defines $CashETR_{it}$ as the ratio of cash taxes paid to pretax income adjusted for special items, we re-estimate our tests without subtracting special items and find similar results.

measure of tax avoidance in our setting because tax avoidance strategies aimed at reducing cash taxes in year *t* will reduce the firm's cash effective tax rate.

CFF_{it} equals one if firm *i* is in the treatment (cash flow forecast) sample, and zero if firm *i* is a propensity-score matched control firm. $Post_{it}$ equals one for the cash flow forecast and propensity-score matched control firms during the "post" period, and equals zero in the "pre" period. If cash flow forecasts are associated with increased cash tax avoidance, the coefficient on CFF_{it}*$Post_{it}$ will be significantly negative. $MatchID_{jit}$ is a matched-pair indicator variable that identifies each matched pair in our sample, as suggested by Cram et al. (2009).

Decomposition of $CashETR_{it}$

In supplemental analyses, we decompose $CashETR_{it}$ into two additional measures of tax avoidance and re-estimate equation (2) to better understand the nature of the tax avoidance activities analysts' cash flow forecasts encourage. In general, firms can employ two types of tax planning strategies to reduce their cash effective tax rate. First, firms can engage in tax planning activities that permanently avoid the payment of taxes. We measure the use of permanent tax planning strategies ($Permanent_{it}$) as the difference between the U.S. statutory rate (35%) and the firm's GAAP effective tax rate. Second, firms can reduce their cash effective tax rate by deferring tax payment until future periods. We measure the use of such deferral tax planning strategies ($Deferral_{it}$) as the ratio of deferred tax expense to pretax income adjusted for special items. *Ceteris paribus*, larger values of $Permanent_{it}$ and $Deferral_{it}$ are consistent with a firm having a lower *CashETR*.

These supplemental analyses provide insight into the types of tax strategies managers' pursue after analysts begin issuing cash flow forecasts for the firm and managers have heightened incentives to engage in cash tax planning. Because permanent tax planning provides

tax-related cash flows that are less likely to reverse, to the extent that these strategies have not already been exhausted, we anticipate that firms are more likely to engage in permanent tax planning strategies than deferral tax strategies (which result in tax-related cash flows that reverse over time).

IV. RESULTS

Descriptive Statistics

In Table 3 we report mean values of the percentage of firm *i*'s analysts issuing an earnings forecast who also issue a cash flow forecast in year *t* (*CFF%*), tax avoidance measures, $CFF\_Determinants_{kit}$ and $TaxPlanning\_Determinants_{kit}$ separately for our cash flow forecast and control firms in the "pre" and "post" periods. Focusing on the level of cash tax avoidance in the "pre" period, cash flow forecast firms report a mean cash ETR of 25.66 percent, which is not statistically different from the mean cash ETR of 25.17 percent for our control sample. In the "post" period, however, cash flow forecast firms report a mean cash ETR of 22.43 percent which is statistically lower than (a) control firms' mean cash ETRs of 24.66 percent and (b) cash flow forecast firms' mean cash ETR in the "pre" period (untabulated, *p*-value < .01). These univariate statistics provide preliminary evidence of increased cash tax avoidance for cash flow forecast firms after the initiation of cash flow coverage. Univariate tests also reveal that cash flow forecast firms have lower levels of *Permanent* in the "pre" period and statistically similar levels of *Permanent* in the "post" period, and we find no statistical difference in the level of *Deferral* between cash flow forecast and control firms in either the "pre" or "post" periods. We refrain from drawing further conclusions regarding the effect of analysts' cash flow coverage on cash tax avoidance until we conduct our multivariate analyses based on a difference-in-differences methodology that controls for known determinants of tax avoidance.

Among the control variables reported in Table 3, we find various significant differences between cash flow forecast and control firms in the "pre" period that sometimes persist in the "post" period. These differences highlight the importance of controlling for determinants of cash flow forecasts and determinants of tax avoidance in our multivariate analyses.

Multivariate Results

We first examine the effect of analysts' cash flow forecasts on cash tax avoidance by estimating equation (2). We present the results in Table 4. Consistent with our prediction, the coefficient on the CFF_{it}*$Post_{it}$ interaction is negative and significant (p-value = 0.0402). The magnitude of the coefficient (-0.0160) is also economically meaningful as it suggests that, relative to the propensity-score matched control sample, cash flow forecast firms experience a 1.6 percent reduction in cash ETRs after analysts begin issuing cash flow forecasts for the firm. In terms of cash taxes saved, this reduction equates to approximately $20.7 million less in cash taxes paid over the three-year period following the initiation of analysts' cash flow coverage for the average firm.[17] Consistent with prior studies, we also find that cash ETRs are increasing in inventory intensity ($InvIntensity_{it}$) and decreasing in leverage ($Leverage_{it}$), research and development expenditures ($R\&D_{it}$), the presence of net operating losses (NOL_{it}), capital intensity ($CapitalIntensity_{it-1}$), and financial distress ($Health_{it-1}$). We also find a positive association between cash ETRs and size ($Size_{it-1}$), foreign activities ($Foreign_{it}$) and the book-to-market ratio (BM_{it}) and a negative association between cash ETRs and the absolute value of total accruals ($AbsAcc_{it-1}$) and earnings volatility (Vol_{it-1}).

In Table 5, we report results for tests estimating equation (2) using two alternative measures of tax avoidance. First, we replace $CashETR_{it}$ with $Permanent_{it}$, which captures tax

[17] $20.7 million equals -1.60% (coefficient on CFF_{it}*$Post_{it}$) multiplied by $431.94 (average one-year adjusted pretax income in the "post" period for cash flow forecast firms, the denominator of *CashETR*) multiplied by 3 years (the maximum number of years a cash flow forecast firm is included in the "post" period).

avoidance activity that permanently avoids the payment of taxes. Such activity not only reduces cash effective tax rates, but also reduces effective tax rates (i.e., reduces total tax expense in the financial statements). Second, we replace $CashETR_{it}$ with $Deferral_{it}$, which captures efforts to enhance cash flows by deferring the payment of taxes. Tax deferral strategies reduce the firm's cash effective tax rate in year *t*, but have no impact on effective tax rates or reported earnings in year *t* because they have no impact on the firm's total tax expense for financial statement purposes. Decomposing $CashETR_{it}$ in this way is interesting because it sheds light on the mechanism through which firms reduce their cash effective tax rate following analysts' initiation of cash flow coverage.

Consistent with expectations, the coefficient on CFF_{it}*$Post_{it}$ is positive and significant (*p*-value = 0.0082) when $Permanent_{it}$ is the dependent variable. When $Deferral_{it}$ is the dependent variable, the coefficient on CFF_{it}*$Post_{it}$ is positive but insignificant (*p*-value = 0.1914). These findings suggest that relative to a propensity-score matched control sample, managers of firms whose analysts initiate cash flow coverage utilize permanent tax strategies that help reduce cash taxes. In subsequent analyses, we revisit this issue and examine whether the tax avoidance strategies managers employ (permanent- vs. deferral-based strategies) after analysts initiate cash flow coverage varies with the intensity of the cash flow coverage.

Alternative Measure of Analysts' Cash Flow Coverage

In Tables 4 and 5, we measure analysts' cash flow coverage with CFF_{it}, an indicator based on whether at least one analyst following the firm initiates cash flow coverage. As an alternative measure of analysts' cash flow coverage, we capture the intensity of analysts' cash flow coverage. Specifically, we re-estimate equation (2), replacing CFF_{it} with $CFF\%_{it}$, where $CFF\%_{it}$ is the percentage of analysts issuing earnings forecasts for the firm who also issue a cash

flow forecast. For cash flow forecast firms, $CFF\%_{it}$ equals zero in the "pre" period and ranges from 1.85 percent to 100 percent (mean = 26.40 percent; median = 16.67 percent) in the "post" period. For control firms, $CFF\%_{it}$ equals zero in both the "pre" and "post" periods.

We report the results of re-estimating equation (2) using $CFF\%_{it}$ in Table 6. When $CashETR_{it}$ is the dependent variable, the coefficient on $CFF\%_{it}*Post_{it}$ continues to be negative and significant (p-value = 0.0430). However, unlike the findings reported in Table 5, the coefficient on $CFF\%_{it}*Post_{it}$ is positive but insignificant (p-value = 0.2317) when $Permanent_{it}$ is the dependent variable, while the same coefficient is positive and significant (p-value = 0.0059) when $Deferral_{it}$ is the dependent variable. These findings suggest that as the intensity of analysts' cash flow coverage increases, managers are increasingly likely to turn to deferral-based tax planning strategies to reduce cash taxes paid. In the next subsection we further investigate the role of permanent- and deferral-based strategies to reduce cash taxes paid after analysts' begin issuing cash flow forecasts.

Intensity of Analysts' Cash Flow Coverage

To help reconcile the findings that (a) the existence of analysts' cash flow forecasts encourages managers to reduce cash taxes paid via permanent tax strategies (Table 5), and (b) managers increasingly rely on deferral-based tax strategies when the intensity of cash flow coverage increases (Table 6), we estimate the following regression:

$$TaxAvoidance_{it} = \beta_0 + \beta_1 CFF_{it} + \beta_2 Post_{it} + \beta_3 CFF_{it}*Post_{it} + + \beta_4 CFF\%_{it} + \Sigma\beta_k CFF\_Determinants_{kit} + \Sigma\beta_k\ TaxPlanning\_Determinants_{kit} + MatchID_{jit} + \varepsilon_{it} \quad (3)$$

$TaxAvoidance_{it}$ in equation (3) is measured separately as $CashETR_{it}$, $Permanent_{it}$, or $Deferral_{it}$. The coefficient on $CFF_{it}*Post_{it}$ represents the change in tax avoidance due to the mere existence of analysts' cash flow coverage. The coefficient on $CFF\%_{it}$ represents the incremental effect of

the intensity of analysts' cash flow coverage on tax avoidance.[18] As a result, equation (3) allows us to further explore variation in managers' tax avoidance activity as analysts' cash flow coverage varies in intensity.

We report the results of estimating equation (3) in Table 7. We find that when $CashETR_{it}$ is the dependent variable, both the coefficients on CFF_{it}*$Post_{it}$ and on $CFF\%_{it}$ are negative but insignificant (*p*-values = 0.1348 and 0.1704, respectively). An untabulated F-test reveals that the combined effect of these two coefficients for the average cash flow forecast firm in the post period (where $CFF\%_{it}$ = 26.4 percent) is statistically significant (*p*-value = 0.0350), suggesting that the existence and intensity of analysts' cash flow coverage collectively result in a decrease in cash effective tax rates for cash flow forecast firms in the "post" period that exceeds that for the propensity-score matched control sample.

Also reported in Table 7, we find that the coefficient on CFF_{it}*$Post_{it}$ is significantly positive when $Permanent_{it}$ is the dependent variable (*p*-value = 0.0119), and that the coefficient on $CFF\%_{it}$ is significantly positive when $Deferral_{it}$ is the dependent variable (*p*-value = 0.0097). These findings help reconcile the results reported in Tables 5 and 6 and indicate that the mere existence of a cash flow forecast encourages managers to engage in permanent tax avoidance strategies, and that as the intensity of analysts' focus on cash flows increases, managers also turn to deferral tax avoidance strategies. Given that permanent tax strategies are more likely to yield sustainable cash savings, it is economically intuitive that managers first turn to these strategies, and only employ deferral strategies when analysts' cash flow coverage is more intense.

VI. SUPPLEMENTAL ANALYSIS

Balanced Samples

[18] Because CFF_{it}*$Post_{it}$ is already included in equation (3), $CFF\%_{it}$ is the equivalent of interacting $CFF\%_{it}$ and $Post_{it}$. As a result, we simply include $CFF\%_{it}$, which captures the effect on cash tax avoidance of cash flow forecast intensity, incremental to the effect of the mere existence of cash flow coverage.

In our difference-in-differences research design, for each treatment (cash flow forecast) and control (no cash flow forecast) firm, we include up to three firm-year observations in the "post" period and up to three firm-year observations in the "pre" period. This design ensures that the number of unique cash flow forecast firms in our analysis is exactly equal to the number of unique control firms. However, the number of firm-year observations is not identical between cash flow forecast and control samples because data limitations eliminate some firm-year observations from the analysis. In addition, any cash flow forecast (control) firm-year observation in the "post" period without (with) a cash flow forecast is removed from the analysis. The result is a slight imbalance in the number of firm-year observations in the cash flow forecast and control samples, as evidenced in Table 3.

While this imbalance unlikely biases our analysis in any direction, it is possible that, for example, having more cash flow forecast observations than control observations in the "post" period induces the finding that firms reduce cash taxes paid following the initiation of analysts' cash flow coverage, especially if tax avoidance activities have become more common over time. To address this concern, we re-estimate our analyses after requiring that each firm-year observation from the cash flow forecast sample (in either the "pre" or "post" period) is matched to a specific firm-year observation from the corresponding control firm in the same fiscal year. Specifically, if a firm-year observation for a cash flow forecast (control) firm is eliminated from our analysis for any reason, we also eliminate the firm-year observation for the corresponding control (cash flow forecast) firm. This requirement ensures that the cash flow forecast and control samples are perfectly aligned in calendar time. This procedure results in a total of 742 (742) cash flow forecast (control) observations in the "pre" period and 1,509 (1,509) cash flow forecast (control) observations in the "post" period.

When we re-estimate our analyses using this balanced sample, our inferences remain unchanged. Specifically, firms whose analysts begin issuing cash flow forecasts reduce their cash effective tax rate by almost 3 percentage points (p-value = 0.0047), and the existence (intensity) of analysts' cash flow coverage is associated with an increase in permanent (deferral) tax avoidance strategies.

Reported Operating Cash Flows in the "Post" Period

Our analyses suggest that upon initiation of analysts' cash flow coverage, firms more actively engage in cash tax avoidance to improve their cash flow position. A natural follow-up question is whether firms' total *reported* operating cash flows increase after the initiation of analysts' cash flow coverage, and if so, the extent to which cash tax avoidance contributes to this increase. To evaluate the change in reported operating cash flows for cash flow forecast firms from the "pre" to the "post" period relative to the corresponding change for our propensity-score matched sample, we adapt the operating cash flow prediction model developed by Barth, Cram, and Nelson (2001), as follows:

$$\begin{aligned} OCF_{it} = \; & \beta_0 + \beta_1 CFF_{it} + \beta_2 Post_{it} + \beta_3 CFF_{it} * Post_{it} + OCF_{it-1} + \Delta AR_{it-1} + \Delta Inv_{it-1} + \\ & \Delta AP_{it-1} + Depr_{it-1} + Amort_{it-1} + Other_{it-1} + \Sigma \beta_k CFF\_Determinants_{kit} + \varepsilon_{it} \end{aligned} \quad (4)$$

OCF_{it} (OCF_{it-1}) equals reported operating cash flows in year t (year t-1), ΔAR_{it} is the change in accounts receivable from year t-2 to year t-1, ΔInv_{it} is the change in inventory from year t-2 to year t-1, ΔAP_{it} is the change in accounts payable from year t-2 to year t-1, $Depr_{it}$ is depreciation expense in year t-1, $Amort_{it}$ is amortization expense in year t-1, and $Other_{it}$ is all other accruals in year t-1. Barth et al. (2001) find that year t-1 operating cash flows, change in accounts receivable, change in inventory, change in accounts payable, depreciation, amortization, and other accruals have significant predictive ability for year t operating cash flows. We also include the determinants of analysts' cash flow coverage in equation (4), as previously defined, to account

for any effect of these firm characteristics on reported operating cash flows. We further augment the model with CFF_{it}, $Post_{it}$, and $CFF_{it}*Post_{it}$. The coefficient on $CFF_{it}*Post_{it}$ captures the change in reported operating cash flows in the "post" period relative to the "pre" period that is (a) unique to cash flow forecast firms and (b) not captured by other determinants of operating cash flows. We conduct two alternative specifications. In the first alternative, we first replace $CFF_{it}*Post_{it}$ in equation (4) with $CFF\%_{it}*Post_{it}$. In the second alternative, we supplement equation (4) by adding $CFF\%_{it}$. These specifications test whether any increase in reported operating cash flows is due to the presence or the intensity of analysts' cash flow coverage.

Consistent with our central hypothesis that analysts' cash flow forecasts increase the net benefit of efforts to enhance the firm's cash flow position, columns (1) and (2) of Table 8 report positive and significant coefficients on $CFF_{it}*Post_{it}$ (p-value = 0.0627) and $CFF\%_{it}*Post_{it}$ (p-value = 0.0137), respectively. These results suggest that, relative to the propensity-score matched control sample, cash flow forecast firms report higher operating cash flows in the "post" period for reasons other than the determinants of operating cash flows identified by Barth et al. (2001) and the determinants of analysts' cash flow coverage identified by DeFond and Hung (2003). Moreover, these results suggest that the increase in reported cash flows is positively associated with the intensity of analysts' cash flow forecasts. In column (3) of Table 8, the insignificant coefficient on $CFF_{it}*Post_{it}$ (p-value = 0.2909) and positive and significant coefficient on $CFF\%_{it}$ (p-value = 0.0482) indicate that the increase in reported operating cash flows in response to analysts' cash flow forecasts is primarily related to the intensity of cash flow forecasts.

In terms of economic interpretation, we focus on the coefficient for $CFF_{it}*Post_{it}$ in the first column of Table 8. Our evidence suggests that, relative to the "pre" period, reported operating cash flows in the "post" period increase by $61.4 million for the mean cash flow

forecast firm in our sample. In comparison, the mean cash flow forecast firm in this sample enjoys decreased cash tax payments in the "post" period of $17.8 million, suggesting that 29.0 percent of the overall increase in reported operating cash flows for the mean firm in our sample is attributable to increased efforts to avoid cash tax payments.[19] In sum, these findings suggest managers likely engage in a variety of activities to enhance *reported* operating cash flows after analysts initiate cash flow coverage, and that improvements in *real* cash flows through additional cash tax avoidance activities represent an important component of these strategies.

VII. CONCLUSION

We investigate whether analysts' cash flow forecasts encourage managers to take action to enhance the firm's cash flow position through tax avoidance activities. We hypothesize that when analysts initiate cash flow coverage of a firm, the firm's managers increase their efforts to avoid tax payments. To investigate our hypothesis, we employ a difference-in-differences design where we examine changes in tax avoidance in the years surrounding analysts' initiation of cash flow coverage, relative to changes in tax avoidance over the same period for a propensity-score matched control sample of firms without analysts' cash flow forecasts. Controlling for factors associated with the initiation of analysts' cash flow coverage and other known determinants of tax avoidance, we find that the initiation of cash flow coverage is negatively associated with

[19] To make valid comparisons between reductions in cash taxes paid and increases in reported operating cash flows, we use a common set of firms to estimate both amounts. As a result, for purposes of this comparison, we re-estimate the decrease in cash taxes paid (from equation (2)) using a slightly reduced sample of firms with available data to also estimate the increase in operating cash flows (from equation (4)). Hence, the difference between the $17.8 million reduction in cash tax payments for this sample versus the $20.7 million reduction reported earlier for the broader sample. We calculate the $17.8 million decrease in $CashETR_{it}$ as the product of the mean firm's adjusted pretax income (the denominator of $CashETR_{it}$) and the coefficient on *CFF*Post* in equation (2) when re-estimated using this sample (i.e., $391.25 million * -0.0152 * 3 years = $17.8 million). We calculate the $61.4 million increase in operating cash flows as the product of the mean firm's average total assets (the denominator of OCF_{it}) and the coefficient on *CFF*Post* in equation (4) (i.e., $3,932.95 * 0.0052 * 3 years = $61.4 million).

changes in cash effective tax rates. This result is consistent with cash flow forecasts encouraging increased tax avoidance that enhances the firm's cash flow position.

We also investigate the relation between cash flow forecasts and cash tax avoidance in more detail by separately analyzing cash tax avoidance attributable to permanent and deferral tax planning strategies, both of which have the potential to yield real cash flow benefits and reduce the firm's cash effective tax rate. We find that analysts' cash flow coverage is positively (and significantly) associated with permanent tax avoidance, and that managers employ deferral tax avoidance strategies as analysts' cash flow coverage becomes more intense. In combination, these results suggest managers utilize both permanent and deferral tax strategies to reduce cash taxes following analysts' issuance of cash flow forecasts.

Finally, we conduct additional tests to determine if *reported* operating cash flows increase for cash flow forecast firms after the initiation of analysts' cash flow coverage, and to determine the role of cash tax avoidance strategies in this increase. We find that firms report higher operating cash flows following the initiation of analysts' cash flow coverage, and that increased cash tax avoidance is responsible for approximately 29 percent of this increase in operating cash flows. These findings further reinforce the notion that analysts' cash flow forecasts encourage managers to engage in activities, such as cash tax avoidance, that enhance the firm's *real* cash flow position in non-trivial ways.

This study makes several contributions to the literature. First, we provide insight into the *real* cash flow effects of analysts' cash flow forecasts. Specifically, we find an economically significant relation between cash flow forecasts and tax avoidance that suggests cash flow forecasts encourage managers to focus on activities that significantly enhance the firm's long-

term cash position. While prior research suggests cash flow forecasts impact financial reporting behavior, we are the first to document real cash flow effects of cash flow forecasting activities.

Second, the forecasting literature documents various benefits to firms of analyst coverage and their forecasting activities (Frankel and Li, 2004; Easley and O'Hara, 2004; Yu, 2008). We add to this literature by documenting that analysts' cash flow forecasts encourage firms to avoid tax payments. Given recent evidence that suggests tax planning enhances firm value (Mills et al., 1998; Desai and Dharmapala, 2009; Wilson, 2009; De Simone and Stomberg, 2012; Goh et al., 2013), our findings suggest a potential benefit to firms of analysts' cash flow forecasts.

Finally, our findings shed light on the determinants of tax avoidance, the type of tax avoidance, and the role that an alternative performance metric plays in managers' focus on tax planning. Given general conclusions from prior research that firms "under-shelter" their income (Weisbach, 2002) and focus on total tax expense reported in the financial statements (instead of cash taxes paid), our evidence suggests analysts' cash flow forecasts are a mitigating factor to the somewhat puzzling behavior documented in prior research.

Appendix
Variable Definitions

Variable	Definition
Cash Flow Forecast Variables	
CFF	An indicator variable equal to one if firm t's analysts issue a cash flow forecast in year t, and zero otherwise.
CFF%	The percentage of firm i's analysts issuing an earnings forecast who also issue a cash flow forecast in year t.
Tax Avoidance Variables	
CashETR	The ratio of taxes paid to pretax income adjusted for special items (txpd/(pi-spi)).
Permanent	The U.S. statutory rate less the ratio of total tax expense to pretax income adjusted for special items (35% - txt/(pi - spi)).
Deferral	The ratio of deferred tax expense to pretax income adjusted for special items ((txdfed + txdfo)/(pi – spi)); if missing (txdfed + txdfo), then (txdi/(pi – spi)).
First-Stage Selection Model Variables	
AbsAcc	Income before extraordinary items (ib) minus cash from operations (oancf), scaled by total assets (at). This variable is calculated in year t.
Vol	The coefficient of variation of earnings (ib) measured over year t and the previous 4 years scaled by the coefficient of variation of operating cash flows (oancf) measured over the same period. This variable is calculated as (|standard deviation of earnings / mean of earnings|) / (|standard deviation of operating cash flows / mean of operating cash flows|).
Hetero	An index ranging from 0 to 1 that captures the similarity of a firm's accounting choices in year t relative to other firms in the same industry. In each year, I examine five accounting choices, and for each accounting choice, assign the firm a value of one if its chosen method differs from the most frequently chosen method in its industry group, and zero otherwise. The five accounting choices are: (1) inventory valuation, (2) investment tax credit, (3) depreciation, (4) successful-efforts vs. full-cost for companies with extraction activities, and (5) purchase vs. pooling. The five scores are summed and divided by the number of accounting choices in the industry (which for some industries is less than five). Higher (lower) index values are consistent with heterogeneous (homogeneous) accounting choices.
Health	We estimate Altman's Z-score in year t as a proxy for financial health. Consistent with Altman (1968), the Z score equals 1.2*(Net working capital / Total assets) + 1.4*(Retained earnings / Total assets) + 3.3*(Earnings before interest and taxes / Total assets) + 0.6*(Market value of equity / Book value of liabilities) + 1.0*(Sales / Total assets). Lower Altman's Z-scores indicate poorer financial health. In the empirical tests that follow, we multiply the Altman's Z-scores by negative one, such that higher values are consistent with cash flow information being a more useful performance metric.
CapInt	The ratio of gross property, plant, and equipment (ppegt) divided by sales revenue (sale). This variable is calculated as of year t.
Size	The natural logarithm of market value of equity (prcc_f * csho) in millions of dollars, measured as of the beginning of year t.

Appendix (continued)
Variable Definitions

Variable	Definition
Tax planning opportunities	
ROA	The ratio of pretax income to total assets (pi/at) in year t.
Foreign	The absolute ratio of pretax foreign income to total pretax income (|pifo/pi|) in year t; if missing pretax foreign income, foreign pretax income is set equal to zero.
Lev	The ratio of total debt to total assets (dltt+dlc)/at in year t.
CapInt	The ratio of net property, plant and equipment to total assets (ppent/at) in year t.
InvInt	The ratio of inventory to total assets (invt/at) in year t.
R&D	The ratio of R&D expense to total revenues (xrd/revt) in year t.
AbnAcc	Abnormal accruals computed at the end of the year estimated using a modified Jones' model (Kothari et al., 2005) in year t.
NOL	An indicator variable if the firm reported a net operating loss (tlcf) in any of the last three years and zero otherwise in year t.
BM	The ratio of the book value of equity to the market value of equity (ceq/(csho*prcc_f)) in year t.
Determinants of Operating Cash Flows	
OCF_{it}	Operating cash flows (oancf) in year t, or alternatively, in year t-1.
ΔAR_{it}	The change in accounts receivable (recch) from year t-2 to year t-1.
ΔInv_{it}	The change in inventory (invch) from year t-2 to year t-1.
ΔAP_{it}	The change in accounts payable (apalch) from year t-2 to year t-1.
$Depr_{it}$	Depreciation expense (dp-am) in year t-1.
$Amort_{it}$	Amortization expense (am) in year t-1.
$Other_{it}$	Other accruals (ib – (oancf - xidoc + ΔAR + ΔInv - ΔAP - *Depr* - *Amort*) in year t-1.

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Table 1
Sample Selection

Data Restrictions	N
Starting I/B/E/S Sample	67,787
Less:	
Financial and utility firms	-15,277
Firm-years with negative pretax income	-15,320
Firm-years missing tax measures	-3,726
Firm-years missing control variables	-6,318
Firm-years missing selection model variables	-4,601
Post-forecast firm-years for firms without continuous cash flow forecasts	-3,726
Subsample used to estimate propensity scores (in Table 2)	18,819
Less:	
Firm-year observations outside of the matched sample window	-8,197
Firm-year observations without quality match	-3,261
Firm-year control observations with a cash flow forecast	-379
Propensity-score matched sample	6,982

Table 2
Selection Model

Variable	Pred.	Coeff.	***(p-value)***
Intercept	?	-4.5147	***(<0.0001)***
$AbsAcc_{it-1}$	?	0.8948	***(0.0035)***
Vol_{it-1}	+	0.0142	***(0.0001)***
$Hetero_{it-1}$	+	0.9129	***(<0.0001)***
$Health_{it-1}$	-	-0.0152	***(0.0005)***
$CapInt_{it-1}$	+	0.3924	***(<0.0001)***
$Size_{it-1}$	+	0.5586	***(<0.0001)***
ROA_{it}	?	-0.7896	***(0.0119)***
$Foreign_{it}$	?	0.5503	***(<0.0001)***
Lev_{it}	?	-0.7673	***(<0.0001)***
$InvInt_{it}$	?	-2.3739	***(<0.0001)***
$R\&D_{it}$	?	-2.3438	***(<0.0001)***
$AbnAcc_{it}$	?	0.6396	***(0.0241)***
NOL_{it}	?	0.6917	***(<0.0001)***
BM_{it}	?	-0.1979	***(0.0025)***
N		18,819	
Pseudo-R^2		23.07%	

This table reports the logistic regression that is the basis of our propensity scores. See the appendix for variable definitions.

Table 3
Descriptive Statistics

	"Pre"			***"Post"***		
Variable	Control (N = 1,614)	Cash Flow Forecast (N = 1,354)		Control (N = 1,932)	Cash Flow Forecast (N = 2,082)	
Cash Flow Forecast Measures						
CFF%	0.0000	0.0000		0.0000	0.2640	***
Tax Avoidance Measures						
CashETR	0.2517	0.2566		0.2466	0.2243	***
Permanent	0.0578	0.0353	***	0.0691	0.0772	
Deferral	0.0193	0.0177		0.0106	0.0162	
Determinants of Cash Flow Forecasts						
$AbsAcc_{it-1}$	0.0692	0.0652	*	0.0722	0.0730	
Vol_{it-1}	1.8312	1.5956		2.3047	2.1592	
$Hetero_{it-1}$	0.2224	0.2109	**	0.2378	0.2311	
$Health_{it-1}$	5.7045	5.7657		5.2380	5.2685	
$CapInt_{it-1}$	0.5329	0.5685		0.6016	0.7259	***
$Size_{it-1}$	6.2859	6.7968	***	6.4995	6.9017	***
Determinants of Tax Avoidance						
ROA_{it}	0.1136	0.1136		0.1000	0.1038	*
$Foreign_{it}$	0.1964	0.1836		0.2460	0.2207	**
Lev_{it}	0.1887	0.2262	***	0.1930	0.2190	***
$InvInt_{it}$	0.1267	0.1380	**	0.1103	0.1078	
$R\&D_{it}$	0.0344	0.0308	*	0.0364	0.0340	
$AbnAcc_{it}$	0.0041	0.0071		0.0066	0.0053	
NOL_{it}	0.3265	0.2740	***	0.4705	0.4011	***
BM_{it}	0.4725	0.4257	***	0.5112	0.4590	***

See the Appendix for variable definitions. ***, **, and * indicate a significant difference between treatment and control firm-year observations (pre-CFF and post-CFF firm-year observations) at the 1%, 5%, and 10% respectively.

Table 4
Cash Flow Forecasts and Cash Tax Planning

		$CashETR_t$	
Variable	Pred.	Coeff.	***(p-value)***
Intercept	?	0.1274	***(0.0556)***
CFF_{it}	*?*	-0.0051	***(0.4814)***
$Post_{it}$	*?*	0.0159	***(0.0708)***
CFF_{it}*****$Post_{it}$	-	-0.0160	***(0.0402)***
$AbsAcc_{it-1}$	*?*	-0.0788	***(0.0572)***
Vol_{it-1}	*?*	-0.0019	***(0.0002)***
$Hetero_{it-1}$	*?*	-0.0314	***(0.1619)***
$Health_{it-1}$	-	-0.0012	***(0.0454)***
$CapInt_{it-1}$	-	-0.0196	***(0.0017)***
$Size_{it-1}$	*?*	0.0167	***(<0.0001)***
ROA_{it}	+	-0.0498	***(0.1833)***
$Foreign_{it}$	*?*	0.0519	***(<0.0001)***
Lev_{it}	-	-0.1080	***(<0.0001)***
$InvInt_{it}$	+	0.1388	***(0.0003)***
$R\&D_{it}$	-	-0.2843	***(0.0003)***
$AbnAcc_{it}$	-	0.0486	***(0.1086)***
NOL_{it}	-	-0.0300	***(<0.0001)***
BM_{it}	*?*	0.0442	***(0.0004)***
Adj R^2		0.2279	
N		6,982	

We report OLS regressions and control for industry, year, and matched-pair fixed-effects. Huber-White robust standard errors are clustered by firm and are used to control for heteroscedasticity and serial correlation. When predictions are made, *p*-values are one-tailed. Variables are defined in the appendix.

Table 5
Cash Flow Forecasts and Sources of Cash Tax Planning

		Permanent$_t$		***Deferral$_t$***	
Variable	Pred.	Coeff.	***(p-value)***	Coeff.	***(p-value)***
Intercept	?	0.2885	***(0.0475)***	0.1430	***(0.0100)***
CFF_{it}	*?*	-0.0123	***(0.1096)***	-0.0061	***(0.4370)***
$Post_{it}$	*?*	-0.0042	***(0.6673)***	-0.0093	***(0.4199)***
CFF_{it}*****$Post_{it}$	+	0.0240	***(0.0082)***	0.0094	***(0.1914)***
$AbsAcc_{it-1}$	*?*	0.1004	***(0.0938)***	0.0124	***(0.8596)***
Vol_{it-1}	*?*	0.0009	***(0.1831)***	0.0003	***(0.6358)***
$Hetero_{it-1}$	*?*	-0.0179	***(0.4840)***	0.0449	***(0.0738)***
$Health_{it-1}$	+	0.0004	***(0.3616)***	-0.0006	***(0.2549)***
$CapInt_{it-1}$	+	0.0271	***(0.0001)***	0.0158	***(0.0209)***
$Size_{it-1}$	*?*	-0.0039	***(0.3827)***	-0.0066	***(0.1625)***
ROA_{it}	-	-0.5812	***(<0.0001)***	0.4828	***(<0.0001)***
$Foreign_{it}$	*?*	0.0357	***(0.0236)***	-0.0715	***(<0.0001)***
Lev_{it}	+	-0.0702	***(0.0058)***	0.1673	***(<0.0001)***
$InvInt_{it}$	-	-0.1396	***(0.0012)***	0.0251	***(0.2911)***
$R\&D_{it}$	+	0.2684	***(0.0051)***	-0.0845	***(0.2028)***
$AbnAcc_{it}$	+	0.2464	***(<0.0001)***	-0.0815	***(0.0767)***
NOL_{it}	+	0.0096	***(0.1264)***	0.0251	***(0.0019)***
BM_{it}	*?*	-0.0833	***(<0.0001)***	0.0912	***(<0.0001)***
Adj R^2		0.2205		0.1217	
N		6,982		6,982	

We report OLS regressions and control for industry, year, and matched-pair fixed-effects. Huber-White robust standard errors are clustered by firm and are used to control for heteroscedasticity and serial correlation. When predictions are made, p-values are one-tailed. Variables are defined in the appendix.

Table 6
Cash Flow Forecast Intensity and Cash Tax Planning

		$CashETR_t$		$Permanent_t$		$Deferral_t$	
Variable	Pred.	Coeff.	***(p-value)***	Coeff.	***(p-value)***	Coeff.	***(p-value)***
Intercept	?	0.1354	***(0.0439)***	0.2816	***(0.0566)***	0.1316	***(0.0158)***
CFF_{it}	*?*	-0.0098	***(0.0796)***	-0.0005	***(0.9429)***	-0.0095	***(0.1495)***
$Post_{it}$	*?*	0.0121	***(0.1339)***	0.0045	***(0.6216)***	-0.0110	***(0.3092)***
$CFF\%_{it}*Post_{it}$	-/+/+	-0.0307	***(0.0430)***	0.0163	***(0.2317)***	0.0575	***(0.0059)***
$AbsAcc_{it-1}$	*?*	-0.0782	***(0.0594)***	0.1004	***(0.0939)***	0.0110	***(0.8758)***
Vol_{it-1}	*?*	-0.0019	***(0.0002)***	0.0009	***(0.1910)***	0.0003	***(0.6572)***
$Hetero_{it-1}$	*?*	-0.0295	***(0.1896)***	-0.0191	***(0.4575)***	0.0415	***(0.0990)***
$Health_{it-1}$	-/+/+	-0.0012	***(0.0443)***	0.0004	***(0.3615)***	-0.0006	***(0.2639)***
$CapInt_{it-1}$	-/+/+	-0.0186	***(0.0027)***	0.0266	***(0.0002)***	0.0140	***(0.0360)***
$Size_{it-1}$	*?*	0.0164	***(<0.0001)***	-0.0038	***(0.4027)***	-0.0058	***(0.2203)***
ROA_{it}	+/-/-	-0.0495	***(0.1847)***	-0.5802	***(<0.0001)***	0.4806	***(<0.0001)***
$Foreign_{it}$	*?*	0.0522	***(<0.0001)***	0.0353	***(0.0254)***	-0.0720	***(<0.0001)***
Lev_{it}	-/+/+	-0.1090	***(<0.0001)***	-0.0699	***(0.0060)***	0.1693	***(<0.0001)***
$InvInt_{it}$	+/-/-	0.1369	***(0.0004)***	-0.1400	***(0.0011)***	0.0304	***(0.2527)***
$R\&D_{it}$	-/+/+	-0.2892	***(0.0003)***	0.2720	***(0.0047)***	-0.0768	***(0.2245)***
$AbnAcc_{it}$	-/+/+	0.0483	***(0.1094)***	0.2457	***(<0.0001)***	-0.0798	***(0.0806)***
NOL_{it}	-/+/+	-0.0296	***(<0.0001)***	0.0091	***(0.1384)***	0.0245	***(0.0025)***
BM_{it}	*?*	0.0440	***(0.0004)***	-0.0832	***(<0.0001)***	0.0916	***(<0.0001)***
Adj R^2		0.2279		0.2198		0.1226	
N		6,982		6,982		6,982	

We report OLS regressions and control for industry, year, and matched-pair fixed-effects. Huber-White robust standard errors are clustered by firm and are used to control for heteroscedasticity and serial correlation. When predictions are made, *p*-values are one-tailed. Variables are defined in the appendix.

Table 7
The Effect of the Presence and Intensity of Cash Flow Forecasts on Cash Tax Planning

		CashETR$_t$		***Permanent$_t$***		***Deferral$_t$***	
Variable	Pred.	Coeff.	***(p-value)***	Coeff.	***(p-value)***	Coeff.	***(p-value)***
Intercept	?	0.1315	***(0.0502)***	0.2905	***(0.0464)***	0.1299	***(0.0188)***
CFF_{it}	*?*	-0.0047	***(0.5132)***	-0.0122	***(0.1163)***	-0.0072	***(0.3554)***
$Post_{it}$	*?*	0.0159	***(0.0706)***	-0.0042	***(0.6676)***	-0.0093	***(0.4175)***
$CFFit*Post_{it}$	-/+/+	-0.0115	***(0.1348)***	0.0262	***(0.0119)***	-0.0051	***(0.3442)***
$CFF\%_{it}$	-/+/+	-0.0194	***(0.1704)***	-0.0097	***(0.3533)***	0.0625	***(0.0097)***
$AbsAcc_{it-1}$	*?*	-0.0783	***(0.0590)***	0.1007	***(0.0933)***	0.0109	***(0.8763)***
Vol_{it-1}	*?*	-0.0019	***(0.0002)***	0.0009	***(0.1811)***	0.0003	***(0.6609)***
$Hetero_{it-1}$	*?*	-0.0302	***(0.1780)***	-0.0173	***(0.5002)***	0.0412	***(0.1024)***
$Health_{it-1}$	-/+/+	-0.0012	***(0.0445)***	0.0004	***(0.3631)***	-0.0006	***(0.2644)***
$CapInt_{it-1}$	-/+/+	-0.0190	***(0.0023)***	0.0275	***(0.0001)***	0.0138	***(0.0380)***
$Size_{it-1}$	*?*	0.0165	***(<0.0001)***	-0.0040	***(0.3718)***	-0.0057	***(0.2261)***
ROA_{it}	+/-/-	-0.0492	***(0.1863)***	-0.5808	***(<0.0001)***	0.4807	***(<0.0001)***
$Foreign_{it}$	*?*	0.0520	***(<0.0001)***	0.0358	***(0.0234)***	-0.0721	***(<0.0001)***
Lev_{it}	-/+/+	-0.1087	***(<0.0001)***	-0.0706	***(0.0056)***	0.1694	***(<0.0001)***
$InvInt_{it}$	+/-/-	0.1371	***(0.0004)***	-0.1405	***(0.0011)***	0.0305	***(0.2520)***
$R\&D_{it}$	-/+/+	-0.2870	***(0.0003)***	0.2670	***(0.0052)***	-0.0758	***(0.2269)***
$AbnAcc_{it}$	-/+/+	0.0481	***(0.1107)***	0.2462	***(<0.0001)***	-0.0799	***(0.0804)***
NOL_{it}	-/+/+	-0.0298	***(<0.0001)***	0.0097	***(0.1232)***	0.0244	***(0.0026)***
BM_{it}	*?*	0.0440	***(0.0004)***	-0.0834	***(<0.0001)***	0.0916	***(<0.0001)***
Adj R^2		0.2279		0.2204		0.1225	
N		6,982		6,982		6,982	

We report OLS regressions and control for industry, year, and matched-pair fixed-effects. Huber-White robust standard errors are clustered by firm and are used to control for heteroscedasticity and serial correlation. When predictions are made, *p*-values are one-tailed. Variables are defined in the appendix.

Table 8

The Effect of the Presence and Intensity of Cash Flow Forecasts on Operating Cash Flows

Variable	Pred.	Coeff. *(p-value)*	Coeff. *(p-value)*	Coeff. *(p-value)*
Intercept	?	0.0089	0.0062	0.0069
		(0.6716)	***(0.7673)***	***(0.7435)***
CFF_{it}	?	-0.0020	-0.0014	-0.0023
		(0.4547)	***(0.5095)***	***(0.3986)***
$Post_{it}$	?	-0.0052	-0.0045	-0.0052
		(0.1465)	***(0.1914)***	***(0.1436)***
CFF_{it}*$Post_{it}$	+	0.0052		0.0021
		(0.0627)		***(0.2909)***
$CFF\%_{it}$*$Post_{it}$	+		0.0157	
			(0.0137)	
$CFF\%_{it}$	+			0.0136
				(0.0482)
OCF_{it-1}	?	0.2372	0.2369	0.2369
		(<0.0001)	***(<0.0001)***	***(<0.0001)***
ΔAR_{it-1}	+	0.0943	0.0945	0.0944
		(0.0140)	***(0.0139)***	***(0.0139)***
ΔInv_{it-1}	?	0.1617	0.1603	0.1605
		(0.0007)	***(0.0008)***	***(0.0008)***
ΔAP_{it-1}	-	-0.2121	-0.2110	-0.2111
		(<0.0001)	***(<0.0001)***	***(<0.0001)***
$Depr_{it-1}$	-	0.8805	0.8809	0.8808
		(<0.0001)	***(<0.0001)***	***(<0.0001)***
$Amort_{it-1}$	-	0.2017	0.2046	0.2045
		(0.0776)	***(0.0751)***	***(0.0751)***
$Other_{it-1}$	+	0.1276	0.1272	0.1272
		(<0.0001)	***(<0.0001)***	***(<0.0001)***
$AbsAcc_{it-1}$	?	0.1188	0.1177	0.1178
		(<0.0001)	***(<0.0001)***	***(<0.0001)***
Vol_{it-1}	?	-0.0001	-0.0001	-0.0001
		(0.5246)	***(0.5136)***	***(0.5180)***
$Hetero_{it-1}$	?	-0.0272	-0.0281	-0.0279
		(0.0015)	***(0.0011)***	***(0.0012)***
$Health_{it-1}$	?	0.0027	0.0028	0.0027
		(<0.0001)	***(<0.0001)***	***(<0.0001)***
$CapInt_{it-1}$	?	-0.0032	-0.0036	-0.0035
		(0.3036)	***(0.2422)***	***(0.2518)***
$Size_{it-1}$	?	0.0037	0.0040	0.0039
		(0.0113)	***(0.0065)***	***(0.0068)***
Adj R^2		0.4372	0.4375	0.4374
N		6,434	6,434	6,434

OLS regressions control for industry, year, and matched-pair fixed-effects. Huber-White robust standard errors are clustered by firm to control for heteroscedasticity and serial correlation. When predictions are made, p-values are one-tailed. Variables are defined in the appendix.