Making Sense of Cents:
An Examination of Firms That Marginally Miss or Beat Analyst Forecasts

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ABSTRACT

This paper examines the performance consequences of cutting discretionary expenditures and managing accruals to exceed analyst forecasts. We show that firms that just beat analyst forecasts with low quality earnings exhibit a short-term stock price benefit relative to firms that miss forecasts with high quality earnings. This trend, however, reverses over a three-year horizon. Additionally, firms reducing discretionary expenditures to beat forecasts have significantly greater equity issuances and insider selling in the following year, consistent with managers understanding the myopic nature of their actions. Our results confirm survey evidence suggesting managers engage in myopic behavior to beat benchmarks.

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There is growing evidence that managers are willing to sacrifice economic value to meet short-run earnings objectives. For example, Graham, Harvey, and Rajagopal (2005) report that a majority of managers would forgo a project with positive net present value (NPV) if the project would cause them to fall short of the current quarter consensus forecast. When asked what actions they might take in order to meet an earnings target, approximately 80% suggest they would decrease discretionary spending, including R&D and advertising expense. This survey evidence is consistent with other research on myopic behavior and real earnings management (e.g., Baber, Fairfield, and Haggard (1991), Bhojraj and Libby (2005), Roychowdhury (2006)). Jensen (2005) attributes this behavior in part to the agency costs of overvalued equity, noting that "when numbers are manipulated to tell the market what they want to hear…and when real operating decisions that would maximize value are compromised to meet market expectations, real long term value is being destroyed"(p. 8). In this paper we provide evidence on the short- and long-term price and profitability performance associated with managers undertaking myopic actions to meet short-term earnings benchmarks, either through real operating decisions or management of accrual earnings. We then examine whether managers behave in a manner consistent with being aware of the short- and long-term implications of their myopic choices.

We focus primarily on two groups of firms: firms that just beat consensus forecasts (by one cent) but have large income increasing accruals and cuts in discretionary spending, and firms that just miss consensus forecasts (by one cent) but have large income decreasing accruals and increases in discretionary expenditures.[1] We use these two subsamples to yield the best possible contrast in terms of managerial myopia, as they correspond respectively to settings where myopic actions are most likely and least likely to have been taken.[2] Prior work suggests that discretionary accruals, changes in discretionary spending, and beating expectations are each

related to the likelihood of earnings management (e.g. Sloan (1996), Teoh, Welch, and Wong (1998), Degeorge, Patel, and Zeckhauser (1999), Roychowdhury (2006)). These studies imply that the group of firms with small positive forecast errors and income increasing accruals or cuts in discretionary spending is more likely to include those that engage in myopic earnings management behavior. In contrast, the group of firms that miss forecasts while continuing to increase spending on R&D or advertising is less likely to engage in myopic earnings management.[3] For example, a firm that beats expectations by one cent while decreasing R&D or advertising expenditures and reporting a significant amount of income increasing discretionary accruals likely would have missed expectations without these transactions, whereas a firm that misses by only one penny while having increased investment in R&D or advertising and conservative accruals would have had enough slack to beat the benchmark had it not increased spending in those areas.[4]

Using these partitions, we examine the following research questions. First, do firms that manage earnings to beat analyst forecasts have better short-term stock price performance than firms that do not manage earnings but miss their forecasts? Second, do firms that manage earnings to beat analyst forecasts have worse long-term performance, in terms of future profitability or stock returns? Third, do managers take actions that show they understand the short- and long-run performance implications of managing earnings to beat forecasts?

An examination of these research questions captures the tension managers face in deciding whether to manage earnings to exceed analyst forecasts. Beating forecasts increases contemporaneous returns, and a consecutive string of such positive surprises can increase the valuation premium that a firm receives (Bartov, Givoly, and Hayn (2002), Kasznik and McNichols (2002)). In addition, missing analyst forecasts by even a small margin can lead to a

dramatic reduction in stock price (Skinner and Sloan (2002)). However, cutting discretionary expenditures or managing accruals as a way to beat a forecast induces a transitory component to earnings, increasing the likelihood that future earnings will reverse and future performance will suffer. Therefore, we expect to see long-run underperformance associated with these firms. By examining whether the likelihood of stock issuance and insider sales is associated with managing earnings to beat a forecast, we provide insight into whether managers understand the short-term nature of the capital market benefits associated with this strategy.

Our results show that in horizons of one year or less, firms using accruals or cuts in discretionary expenditures (i.e., low quality earnings) to beat a forecast have stock returns that are equal to or marginally better than firms that miss their forecast but maintain high quality earnings. Moreover, both these groups significantly outperform firms that manage earnings upwards but still miss expectations. This finding suggests a short-term benefit to beating expectations. In the long run, however, we find that firms that beat with low quality earnings underperform the firms that miss with high quality earnings, which is consistent with the myopic behavior of managers manifesting itself in the long term.

Examining the future operating performance of these groups, we find that future operating performance improves more for firms that miss with high quality earnings relative to firms that beat with low quality earnings, but this finding is limited to the subset of firms that are profitable. Among profitable firms, return on assets (ROA) increases for missers with high quality earnings relative to beaters with low quality earnings. Similarly, increases in capital expenditures are significantly higher and the market-to-book ratio increases more for firms that miss with high quality earnings.

Last, we show that firms that beat forecasts with low quality earnings are significantly more likely to issue equity in the following year and have significantly greater insider selling. These results hold regardless of whether the firms are compared to those that miss forecasts with high quality earnings or to those that beat forecasts with high quality earnings.[5] This finding provides additional evidence that our categorization of low quality beaters includes a greater proportion of firms engaging in myopic actions to exceed forecasts.

Our results suggest that while managers' intuition regarding stock price benefits is correct in the short term, the long-term rationale of this strategy is harmful because the quality of earnings manifests itself in performance over the long run. We also provide empirical evidence that managers of these firms appear to understand these patterns, as they are significantly more likely to capitalize on the short-term price benefits associated with beating the benchmark. Overall, our evidence empirically validates the survey and experimental evidence suggesting managers will take potentially myopic and value-destroying actions to exceed earnings benchmarks.

The remainder of the paper is organized as follows. Section I discusses the data and sample selection. Section II presents the empirical results. Section III concludes.

I. Sample and Data

A. Sample Selection

Our sample consists of firm-year observations drawn from the I/B/E/S database of analysts from 1988 to 2006, which allows us to compute discretionary accruals using the statement of cash flows (Hribar and Collins (2002)). Only firms with fiscal years ending in 2004 or earlier have a full three years of returns data, but we retain the observations from 2005 and 2006, using only two- and one-year-ahead returns, respectively.[6] To ensure consistency between

actual earnings and analysts' expectations, we obtain both forecast and reported earnings from the I/B/E/S database. All other financial data are from Compustat, while price and returns data are from CRSP. To ensure that micro-cap or penny stocks do not bias our results, firms with assets less than $10 million or a share price less than $5 are omitted from the sample. We also drop firms having Compustat and I/B/E/S report dates more than five days apart. Finally, we exclude utilities and banks from our analysis, since their financial statements tend to be very different from those of other firms. We focus only on the annual (fourth quarter) earnings because the majority of accrual adjustments occur in the fourth quarter and quarterly reporting of R&D and advertising is sparse.

We classify firms into categories based on the difference between actual earnings and analysts' expectations. Because management of cash-based expenditures (R&D and advertising) has to be carried out before fiscal year-end, the manager's target would be the expectation in place during that period. We therefore use the consensus forecast as of the second month of the last quarter of each fiscal year as our proxy for the market expectation, which allows the manager slightly longer than one month to carry out cash-based earnings management.[7] Figure 1 summarizes our timeline, showing the hypothesized periods of earnings management through discretionary expenditures and accruals. For a December year-end firm, analyst forecasts are measured in November, which gives the manager time to make decisions on discretionary expenditures prior to the fiscal year-end and on accrual adjustments after the fiscal year-end but prior to the earnings announcement.

[Insert Figure 1 Here]

The choice of analyst forecast date is difficult because of the need to determine what target managers are aiming for when deciding how to manage earnings. Using a forecast date

two months prior to the end of the fiscal quarter results in differences between our measured analyst forecast error and the earnings surprise computed using the consensus forecast at other dates. We address this concern by presenting the returns analysis for various forecast windows to show how our results change if analyst forecasts are measured at different intervals. We present this discussion in the robustness analysis.

We refer to firms that miss expectations by one cent as "missers," firms that exactly meet expectations as "meeters," and firms that beat by one cent as "beaters." We use firms that miss or beat by only one cent because we are interested in maximizing the likelihood that a firm that beats (misses) would have missed (beaten) had it not (had it) increased earnings through accruals or changes in discretionary expenditures.[8] Our full sample consists of 35,530 observations, with 1,686 firms missing by one cent and 2,893 firms beating by one cent. We use analyst forecast errors measured in cents per share as this measure is widely reported and disseminated and managers claim it to be one of the earnings targets they most manage towards (Graham, Harvey, and Rajgopal (2005)). We use raw forecast data unadjusted for stock splits to correct the ex-post performance bias from excessive rounding in the standard I/B/E/S database (see Diether, Malloy, and Scherbina (2002)).

Figure 2 shows the distribution of earnings relative to analyst expectations for our entire sample. Consistent with prior research, the number of firms marginally beating expectations exceeds the number of firms marginally missing. Figure 2 appears to show a greater tendency to exactly meet or beat by one cent, relative to what would be expected by chance.[9]

[Insert Figure 2 Here]

B. Descriptive Statistics

Table I provides descriptive statistics for the firms in our sample by earnings surprise. Consistent with earlier research, firms that just miss analyst forecasts (-1 group) have a slightly higher book-to-market ratio (0.45 versus 0.40) and earn a lower return on assets (3.82% vs 5.03%) than firms that beat expectations (+1 group). In addition, firms that miss have a lower average market value of equity, $3.15B vs. $4.39B. The requirement of analyst coverage biases our sample towards larger firms relative to all firms for which there are CRSP and Compustat data. The average beta decile is relatively similar across the groups, averaging 4.15 for the firms that miss by one cent and 4.05 for firms that beat by one cent. The earnings yield (E/P) is slightly lower for firms that just miss (0.028) relative to firms that just beat (0.032).

[Insert Table I Here]

C. Earnings Quality Indicators

To construct our earnings quality indicators, we begin with total accruals, measured as the difference between reported earnings and reported cash from operations. This measure captures the non-cash component of earnings. We estimate discretionary accruals (*DACC*), a proxy for earnings management, using the standard model in the accounting literature -- a cross-sectional version of the modified Jones model (Dechow, Sloan, and Sweeney (1995), see the Appendix for estimation details). This measure of accruals provides a directional estimate of accrual-based earnings management, allowing us to distinguish firms using income increasing accruals from firms using income decreasing accruals. This approach is in contrast to unsigned models of earnings quality (e.g., Francis et al. (2005)) that measure unexplained volatility in accruals but do not estimate the direction of the earnings management.

We also include measures of cash-based earnings management from cuts in discretionary expenditures. Due to accounting conventions for categorizing expenses, only advertising and

R&D are readily available, and only for a subset of firms. We only examine firms that report either R&D or advertising expense separately, which helps ensure that our sample firms have the ability to alter reported earnings by reducing these expenditures. Both the level of R&D expense and the change in R&D expense have been shown to be positively associated with future returns (Chan, Lakonishok, and Sougiannis (2001)). However, because we are interested in firms adjusting expenditures in order to exceed the threshold, we examine scaled changes in R&D and advertising as opposed to the level of these expenditures using the following equations:

$$\Delta R\&D = (R\&D_t - R\&D_{t-1}) / TA_{t-1} \quad (1a)$$

$$\Delta Adv = (ADV_t - ADV_{t-1}) / TA_{t-1} , \quad (1b)$$

where *R&D* is R&D expense, *ADV* is advertising expense, and TA_{t-1} is lagged total assets.[10]

Because managers are likely to substitute among the different methods depending on their circumstances, we define an aggregate indicator of earnings quality that takes into account discretionary accruals, changes in R&D, and changes in advertising. We create combined scores by integrating the three individual earnings quality signals using dichotomous variables for each of the individual variables that indicate whether the variable signals high or low quality earnings. If a firm has a scaled change in R&D (advertising) in excess of the median level of the scaled change in R&D (advertising), it receives a value of one, and zero otherwise. Because low accruals indicate high quality earnings, firms with accruals below the median are coded as one and those above the median as zero. We then sum the variables to create an earnings quality statistic (*EarningsQuality)*. The maximum for *EarningsQuality* is three and the minimum is zero. Firms with *EarningsQuality* of two or three are considered to have high quality earnings, while firms with an *EarningsQuality* of zero have low quality.[11]

II. Results

A. Stock Returns and Operating Performance

Table II shows five-day returns surrounding the release of the earnings announcement, for firms falling above and below the median of our three individual earnings quality indicators (discretionary accruals, changes in R&D expense, and changes in advertising expense) and of the aggregate earnings quality indicator. Results for each of the individual signals appear in the first three panels, and results for the aggregate signal are provided at the bottom.

[Insert Table II Here]

We see significantly higher size-adjusted stock returns when firms beat analyst forecasts by one cent (i.e., the "1" group) relative to firms that miss analyst forecasts by one cent (i.e., the "-1" group) within all four samples (*t*-statistics of 3.85, 2.90, 2.18, and 2.30).[12] We see a marginally larger price response to firms reporting low accruals relative to firms reporting high accruals at the earnings announcement date within the full sample (difference = 0.2%, *t*-stat = 1.96). The five-day return difference in the full sample is not significant for any of the other earnings quality indicators.

In the superscripted diagonal cells (denoted "a" and b"), we highlight the differences between firms that beat the consensus forecast but have a low quality signal (either high discretionary accruals, below median changes in R&D, or below median changes in advertising) and firms that miss the consensus forecast but have a high quality signal. In all cases, firms that miss the forecast despite having high quality underperform firms that beat the forecast but have low quality, and the difference is significant for all four of the subsamples (*t*-stats of -4.25, -3.90, -2.18, and -3.87, respectively). Based on the short window analysis, firms that decrease

discretionary spending or use income increasing accruals to beat expectations outperform firms that increase discretionary spending but miss their forecasts.

Next, we examine the future performance of these groups of firms over long horizons. Tables III and IV show the future stock price performance of missers with high quality earnings and beaters with low quality earnings. This analysis requires an adjustment for expected returns. As no consensus exists in the literature regarding appropriate methodology, and as different methods imply different investment strategies (e.g., periodic rebalancing versus buy-and-hold), we use multiple approaches. First, we calculate portfolio-matched buy-and-hold abnormal returns (BHARs) for 3-, 6-, 12-, and 36-months after the earnings announcement date. Second, we compute cumulative abnormal returns (CARs), which are similar to BHARs, but involving summing returns instead of compounding. Finally, we use the calendar-time regression approach advocated by Fama (1998). In all instances, we show the results for both equal-weighted and value-weighted portfolios. [13]

We calculate the BHAR for each firm *i* as

$$BHAR_i = \prod_{t=1}^{T}(1 + R_{it}) - \prod_{t=1}^{T}(1 + R_{benchmark,t}), \quad (2)$$

where $R_{benchmark}$ is the return to the corresponding value-weighted size/book-to-market (BM) portfolio constructed by Fama and French (1993). We match each firm to one of the 25 corresponding size/BM portfolios at the beginning of the announcement year using the size/BM breakpoints from Ken French's website. If a stock stops trading prior to the end of the cumulation window, we include the desisting return and re-invest the proceeds in the matching size/BM portfolio. We report both equal-weighted (EW) and value-weighted (VW) average BHARs for high quality missers and low quality beaters. Following Mitchell and Stafford

(2000), our value weighting procedure weights observations based on the firm's market value of equity at the beginning of the announcement year, scaled by the CRSP value-weighted market index on this date, which controls for changes in the value of the market index over time.

Long-term BHARs can be highly skewed (Barber and Lyon (1997)), so we report both conventional two-sided *p*-values along with bootstrapped *p*-values to test whether BHARs are different from zero. Following Mitchell and Stafford (2000), we calculate bootstrapped *p*-values as follows. For each observation in the sample, we randomly pick another firm in the same year and size/BM category from the COMPUSTAT/CRSP universe with replacement, which yields a pseudo-sample of random firms with similar size/BM characteristics and dispersion in calendar time. We calculate the BHAR for the pseudo-sample and repeat this process 1,000 times, yielding an empirical distribution for the BHARs. The bootstrap *p*-value represents the proportion of BHARs that are larger in magnitude, but of the same sign, as the BHAR of the event sample.

Panel A of Table III summarizes the BHAR results. There is some evidence that low quality beaters outperform high quality missers at the six-month interval on an EW basis, with a difference in cumulative returns of 5.82% (standard *p*-value=0.20, bootstrap *p*-value=0.04). However, on a VW basis, the difference is only 1.27% and is insignificant (standard *p*-value=0.42, bootstrap *p*-value=0.35). Thus, most of the benefit from beating expectations through cuts in discretionary spending appears in the five-day returns in Table II.

[Insert Table III Here]

At the 36-month interval, the return pattern reverses, with high quality missers outperforming low quality beaters by 40.51% on a VW basis (standard *p*-value=0.00, bootstrap *p*-value=0.02). On an EW basis, however, the difference is only 14.9% and is insignificant

(standard *p*-value=0.33, bootstrap *p*-value=0.25). While the BHAR analysis offers some evidence that low quality beaters have poorer future performance than high quality missers, the results appear to be sensitive to the weighting scheme used to calculate average abnormal returns.

Both Fama (1998) and Mitchell and Stafford (2000) advocate using cumulative abnormal returns (CARs), which involves summing abnormal returns, instead of BHARs because BHARs can magnify a single period of abnormal performance due to compounding. In addition, sums behave better statistically than compounded returns, leading to fewer inference problems. We calculate the CAR for firm *i* as:

$$CAR_i = \sum_{t=1}^{T} (R_{it} - R_{benchmark,t}), \quad (3)$$

We use the same portfolio matching procedure described above for benchmark returns and calculate both EW and VW returns in a similar fashion. Panel B of Table III reports our results. There is no evidence of performance differences on a short-term basis. However, at the 36-month horizon, both EW and VW CARs indicate underperformance for low quality beaters relative to high quality missers. On an EW basis, high quality missers outperform low quality beaters by 19.32% (*p*-value=0.01). On a VW basis, the difference is 19.24% (*p*-value=0.00).

A.1. Calendar-time Regressions

Both BHARs and CARs suffer from a lack of independence, emphasized by both Fama (1998) and Brav (2000). Any cross-correlation in event-time returns not accounted for by the model used to adjust returns will lead to biased test statistics. To overcome this problem, Fama (1998) recommends forming portfolios in calendar time based upon the economic hypothesis being tested. The time-series variation in portfolio returns accurately captures the effect of any

cross-correlations on the variance of abnormal returns. Accordingly, we form portfolios every calendar month over the sample period of low quality beaters and high quality missers. We also form a zero-investment hedge portfolio that goes long in beaters and short in missers. To capture any short-term performance differences, we include in the portfolios only those beaters or missers that announced earnings within the six months prior to the calendar date. To capture any long-term differences, we include in the portfolios missers or beaters that announced earnings between 12 and 36 months prior to the calendar date.

We calculate both EW and VW portfolio returns. For VW returns, we base the weights on the market values of equity of the firms at the beginning of the announcement year. We then regress the time series of portfolio returns on the three stock market factors identified by Fama and French (1993) to obtain estimates of average abnormal monthly returns (i.e., the regression intercepts). To ensure sufficient portfolio size, we require at least 10 observations per month to form portfolios.[14] We report *p*-values based upon White (1980)-adjusted standard errors to account for heteroskedasticity due to changing portfolio constituents.

Table IV provides the calendar-time regressions. Panel A displays the short-term results. The calendar-time regressions provide no support for short-term performance differences between high quality missers and low quality beaters. On an EW basis, beaters outperform missers by about 64 basis points per month, but this difference is insignificant (*p*-value=0.32). On a VW basis, beaters and missers only differ by one basis point (*p*-value =0.99). However, given the short-term nature of the event window used to form portfolios in calendar time, the specification in Panel A may suffer from low statistical power.

[Insert Table IV Here]

Table IV, Panel B displays results from our long-term calendar-time analysis. Both EW and VW portfolio returns yield similar findings: low quality beaters underperform relative to high quality missers. On an EW basis, missers outperform beaters by an average of 72 basis points per month (p-value = 0.03), while on a VW basis, the difference in average abnormal returns is 62 basis points (p-value=0.07). Results are similar (and slightly stronger) if we include a momentum portfolio as a fourth factor.

Figure 3 graphically displays the portfolio-matched cumulative abnormal returns over the three-year horizon for the high quality missers and low quality beaters to provide a better sense of the evolution of returns. For just over a year following the earnings announcement, the low quality beaters perform in line with or slightly better than the high quality missers, despite the low reported earnings quality. At about a year-and-a-half, the two portfolios are approximately equal, after which they begin to diverge dramatically. In particular, the high quality beaters increase substantially, while the low quality beaters drift downward over the following year. By the end of three years, the difference between the two groups of firms is substantial.

[Insert Figure 3 Here]

In summary, our returns tests provide evidence that firms that miss analysts' expectations with high earnings quality generally outperform firms that beat analysts' expectations with low earnings quality over a 36-month window after the announcement date. These findings are consistent with firms making myopic short-term decisions to beat analysts' earnings forecasts at the expense of long-term performance.

A.2. Future Operating Performance

In addition to the market returns, we investigate whether our grouping identifies changes in future operating performance. If, in fact, our categorization captures myopic behavior and

affects earnings permanence, then we expect changes in future operating performance measures to be greater for firms that continued spending despite missing current analyst forecasts, relative to firms that cut spending on R&D and advertising in order to beat forecasts. Following Loughran and Ritter (1997), we examine future changes in ROA, future capital expenditures, and changes in the market-to-book ratio.

Table V provides the results of this analysis. Future operating performance is displayed for missers with high quality and beaters with low quality, partitioned by profit and loss. The table shows the metric in the current year and each of the next three years for our two groups of firms. In the last column on the right, we display the amount by which the metric changes over the three years for high quality missers minus the amount that the metric changes over the three years for low quality beaters. If there are larger improvements in operating performance for high quality missers, we expect the statistic in the last column to be significantly positive. In all panels, only the results for the profitable firms are statistically significant; there are no significant differences in future operating performance for firms reporting losses. We therefore restrict our discussion to profitable firms.

[Insert Table V Here]

In Panel A we examine future return-on-assets (ROA), defined as income before extraordinary items divided by beginning total assets. Future earnings levels and changes are also divided by total assets outstanding at the beginning of the first year. While this measure is similar to examining ROA, it compensates for the mechanical effect of retained earnings on future asset growth by deflating with a constant denominator measured at the beginning of period *t*. Examining the performance over the following three years, we see that the high quality firms that miss forecasts but continue spending increase ROA by 1.73% on average, while firms that

beat with low quality earnings see a decrease in their ROA of -1.90%. The difference of 3.66% is statistically significant. In Panel B, we observe that high quality missers increase capital expenditures by approximately 19.76% of lagged total assets, while low quality beaters increase capital expenditures by only 5.14% of lagged total assets. The difference of 14.61% is statistically significant. Last, Panel C shows the change in the market-to-book ratio over the following three years, which incorporates the market's expectation of future growth. High quality missers experience an increase in their market-to-book ratio of 1.53, while low quality beaters show a decrease in their market-to-book ratio of -1.20. The difference of 2.74 is marginally significant (*p*-value of 0.032, one-tailed). Overall, the results of these panels suggest that among the profitable subset of firms, low quality missers experience significantly greater increases in their future return on assets, increase capital expenditures by a greater amount in future periods, and show greater increases in their market-to-book ratio.

B. Equity Issuances and Net Insider Sales

Our final tests examine whether managers take actions that reflect an understanding of these patterns. In particular, we examine whether firms that beat with low quality earnings are more likely to issue equity or exhibit higher levels of insider selling in the following year. We use the seasoned equity issuance data from the Securities Data Corporation (SDC) database and compute the frequency of equity issuances in the year following the earnings announcement (e.g., Teoh, Welch, and Wong (1998)). We then use the following logistic model to examine the determinants of the equity issuance decision:

$$Issue_{t,t+1} = \alpha + \beta_1 Beat\_low_t + \beta_2 Miss\_low_t + \beta_3 Beat\_high_t + \beta_4 Issue_{t-2,t} + \beta_5 Sales\_growth_{t-1,t} + \beta_6 Cash\_ratio_t + \beta_7 Return_{t-1,t} + \beta_8 Adj\_leverage_t + \beta_9 B/M_t + \varepsilon, \quad (4)$$

where $Issue_{t,t+1}$ is a dichotomous variable that equals one if the firm issues equity in the year following the earnings announcement; $Beat\_low_t$ is an indicator variable equal to one if the firm beats with low quality earnings; $Miss\_low_t$ is an indicator variable equal to one if the firm misses forecasts with low quality earnings; and $Beat\_high_t$ is an indicator variable equal to one if the firm beats forecasts with high quality earnings. The intercept captures the effect of a firm missing with high quality earnings. The coefficient β_1 thus captures the difference in equity issuance between the two primary groups of interest, *Miss_high* and *Beat_low*. The control variables include past equity issuance ($Issue_{t-2,t}$), recent growth ($Sales\_growth_{t-1,t}$), cash on hand (*Cash_ratio*), recent stock returns ($Return_{t-1,t}$), leverage (*Adj_leverage*), and the book-to-market ratio (*B/M*). These variables are taken from prior research and described in detail in the Appendix.

We use Thomson's insider transaction database to examine insider sales and define insider transactions as purchases or sales by the CEO, chair, officers, vice presidents, and directors. Following Lakonishok and Lee (2001), we use a net measure of insider selling (*InsiderSales*) that is defined as sales minus purchases, divided by the sum of shares purchased and sold.[15] We measure *InsiderSales* for one year, starting three days after the earnings announcement. We then use the following regression model to determine whether insiders are more likely to sell when beating forecasts with low quality earnings:

$$InsiderSales_{t,t+1} = \alpha + \beta_1 Beat\_low_t + \beta_2 Miss\_low_t + \beta_3 Beat\_high_t + \beta_4 Return_{t-1,t} + \beta_5 Return\_5day_{t-1,t} + \beta_6 SalesGrowth + \beta_7 B/M_t + \gamma_k Industry\ Dummy_k + \delta_j Year_j + \varepsilon, \quad (5)$$

The variables $Beat\_low_t$, $Miss\_low_t$, and $Beat\_high_t$ are as defined before. Control variables include the previous year's stock return ($Return_{t-1,t}$), the five-day announcement period return ($Return\_5day_{t-1,t}$), recent growth ($Sales\_growth_{t-1,1}$), and the book-to-market ratio (*B/M*).

Industry and year dummies are included to capture the fixed effects associated with equity-based compensation. As before, β_1 measures the difference in net insider selling between the firms that beat with low quality earnings and firms that miss with high quality earnings, while $\beta_1 - \beta_3$ compares the insider selling between firms that beat expectations with low quality earnings and those that beat with high quality earnings.

The results of estimating both these equations are presented in Table VI. Panel A presents the results for equity issuance and Panel B for insider sales. Panel A shows that after controlling for other factors associated with equity issuance, beating expectations with low quality earnings increases the likelihood that the firm will issue equity in the next year relative to all other groups. Among our two primary groups of interest, firms beating with low quality earnings are significantly more likely to issue equity than firms missing with high quality earnings ($\beta_1 = 0.593$, p=0.027). One potential concern, however, is that the very act of beating (missing) suggests a firm will be more (less) likely to issue equity. However, firms that beat with low quality earnings are also significantly more likely to issue equity than firms that beat *with high quality earnings* ($\beta_1 - \beta_3 = 0.504$, p=0.036). Thus, it is the combination of beating and having low quality earnings that increases the likelihood of issuing equity in the following year.

[Insert Table VI Here]

Consistent with the results in Panel A, Panel B shows that beaters with low quality earnings have significantly greater insider sales than missers with high quality earnings ($\beta_1 = 0.1147$, p=0.0058). Beaters with low quality earnings also have significantly more insider selling in the following year than beaters *with high quality earnings* ($\beta_1 - \beta_3 = 0.0781$, p=0.0301). Once again, it is not the beaten expectations but the interaction between beating and having low quality earnings that is associated with the significantly higher insider sales.[16] The results in

Table VI suggest that firms that beat expectations by cutting discretionary expenditures or managing earnings are significantly more likely to issue equity and exhibit higher insider selling, consistent with managers of these firms taking advantage of the short-term price support provided by beating expectations.

C. The Effect of Choosing Different Analyst Expectation Dates

One potential concern with our research design relates to our choice to measure missing or beating relative to analyst expectations two months prior to year-end rather than relative to the most recent analyst forecast. This decision derives from the fact that myopic actions would need to be taken at a point when there exists sufficient time to react and cut expenditures such as R&D and advertising. To examine the extent to which our results are sensitive to this choice, Figure 4 documents the returns patterns (equal-weighted CARs) to portfolios formed using different months for expectations. Figure 4 plots the difference in CARs between low quality beaters and high quality missers (cumulated up to 36 months after the earnings announcement) across five sequential measurements of the consensus earnings forecast. We measure the consensus forecast as of: 1) the first month of the last fiscal quarter, 2) the second month of the last fiscal quarter, 3) the third month of the last fiscal quarter, 4) the first month of the next fiscal year, and 5) five days before the earnings announcement date. Figure 4 indicates that as the measurement date for the consensus forecast gets closer to the earnings announcement date, the long-term under-performance of low earnings quality beaters relative to high earnings quality missers is attenuated.

[Insert Figure 4 Here]

This pattern in abnormal returns lends further support to the significance of myopic decision making. As the measurement date for the consensus forecast nears the announcement

date, firms classified as "beaters" are more likely to rely on the management of analysts' expectations or accounting manipulations recorded after year-end. Such actions are unlikely to involve repercussions for future performance. On the other hand, firms that cut discretionary spending to beat an earnings target months in advance of the announcement date are more likely sacrificing long-term shareholder value.

Note in Figure 4 that using the first month of the last quarter to measure the consensus forecast appears to produce the strongest evidence of underperformance for beaters relative to missers. However, selecting a measurement date this early in the final quarter increases the likelihood that analysts' forecasts do not reflect the announcement of 3rd quarter earnings. Since managers presumably are interested in beating the annual earnings targets that prevail after the announcement of 3rd quarter earnings, we utilize the second month of the final quarter as the measurement date for analysts' forecasts in our returns analysis in Tables II to IV. We believe this choice strikes the necessary balance between selecting a measurement date late enough in the last quarter to allow for the announcement of 3rd quarter earnings, yet early enough to identify firms that behave myopically to beat analysts' expectations.

III. Conclusion

As discussed by Jensen (2005) and documented by the Graham, Harvey, and Rajgopal (2005) survey, managers fixate on whether their reported earnings exceed certain thresholds. Indeed, prior research and anecdotal evidence both suggest that a premium exists for a firm's ability to beat this target and serious repercussions follow if a firm misses it. That managers indicate a willingness to forgo positive NPV projects to beat analyst forecasts and maintain stock price suggests this gaming can lead to value-destructive behavior. We complement these studies by comparing the future performance of firms that barely beat analyst forecasts due to reductions

in discretionary spending and increases in accruals with firms that increase discretionary expenditures and have negative accruals but end up missing analyst forecasts. We show that firms that beat forecasts with low quality earnings have a short-run stock price advantage, which is consistent with managers' reported motivations for engaging in this behavior. However, we also show that these firms underperform at a longer horizon relative to the set of firms that increased discretionary expenditures and missed forecasts. Therefore, our results are broadly consistent with the management behavior described in Jensen (2005) and Graham, Harvey, and Rajgopal (2005).

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Appendix
Description and Calculation of Variables (arranged alphabetically)

In the table below, all item numbers referenced refer to annual Compustat data item numbers.

Variable Name	Description
Adjusted Leverage	Leverage, defined as total debt (#9 + #34) scaled by total shareholders' equity (#216), minus that year's median leverage for firms in the same industry. Industry is classified by two-digit SIC code. Controls for firms moving towards their industry-level capital structure.
Beta Decile	Scholes-Williams Beta decile, calculated yearly by CRSP. Firms with the highest Beta in the past calendar year are placed in the first decile, while firms with the lowest Beta are in the tenth decile.
Book-to-Market	Total book value of shareholders' equity (#216) scaled by the market value of equity (shares outstanding (#25) * fiscal year closing price (#199)). The inverse of this value, market-to-book, is used in Table V. Controls for firms' future expected growth opportunities.
Capital Expenditures Plus R&D to Total Assets	Capital expenditures from the Statement of Cash Flows (#128) plus research and development expense (#46) scaled by total assets at the beginning of the first year (#6).
Cash Ratio	Cash and cash equivalents (#1) scaled by total assets (#6). Captures a firm's need for external financing.
Change in Advertising	Current advertising expense (#45) less prior year's advertising expense, scaled by prior year's total assets (#6). Detailed in equation (2b) in the paper.
Change in R&D	Current R&D expense (#46) less prior year's R&D expense, scaled by prior year's total assets (#6). Detailed in equation (2a) in the paper.

Discretionary Accruals	The difference between total accruals and estimated non-discretionary accruals. Non-discretionary accruals are estimated using a modified Jones model. The following cross-sectional model is run by year and two-digit SIC code: $ACC = \alpha + \beta_1(\Delta Rev) + \beta_2 PPE + \varepsilon,$ where: ACC = Total accruals (defined below) ΔRev = Current sales revenue (#12) less prior year's sales revenue, scaled by prior year's total assets (#6) PPE = Gross property, plant, and equipment (#7), scaled by prior year's total assets (#6). The estimated coefficients from this regression are then used to compute non-discretionary accruals for each firm as follows: $NDACC = \alpha + \hat{\beta}_1(\Delta \text{Re}v - \Delta AR) + \hat{\beta}_2 PPE,$ where: ΔRev and PPE are defined as above and ΔAR = Accounts receivable (#2) less prior year's accounts receivable, scaled by prior year's total assets (#6).
Earnings Quality	A variable ranging from zero to three that proxies for the quality of a firm's earnings. Firms with an earnings quality of two or three are considered to have high quality earnings, while firms with an earnings quality of zero are considered to have low quality earnings. The earnings quality score is the sum of three dichotomous earnings quality indicators, receiving one point for any of the following: 1. If the firm has a change in R&D above the median change in R&D for all firms that year 2. If the firm has a change in advertising above the median change in advertising for all firms that year 3. If the firm has discretionary accruals below the median amount of discretionary accruals for all firms that year. Note: Only firms that report either R&D expense or advertising expense are used in our study. This prevents the low earnings quality group from being populated by firms with only high discretionary accruals. Firms in the low earnings quality group thus have either change in advertising expense or change in R&D expense below median in a given year.
Earnings to Price	Earnings per share excluding extraordinary items (#58) scaled by fiscal year closing price (#199).
Insider Sales	Total insider sales less total insider purchases scaled by total insider sales plus total insider purchases. Insider sales data obtained from the Thomson Financial insider transaction database.

Issue Dummy	Two issue dummies are used in the paper. The first, $Issue_{t,t+1}$, is a dichotomous dependent variable that equals one if a firm issues equity in the year following a firm's earning announcement and zero otherwise. The second, $Issue_{t-2,t}$, is a dichotomous control variable that equals one if a firm issues equity in the two years prior to the firm's earning announcement. Equity issuance data obtained from SDC.
Market Value	The market value of a firm's equity, defined as shares outstanding (#25) * fiscal year closing price (#199).
Return on Assets	Income before extraordinary items (#18) scaled by total assets (#6). Note: In Table I, net income is scaled by the current year's total assets. In Table VI, net income in both the current and future years is scaled by beginning-of-year total assets.
Returns (control variable, Table VI)	Five-day abnormal returns are defined as a firm's cumulative buy-and-hold return in the five-day window starting two days before the earnings announcement and ending two days after the earnings announcement minus the return for the same size portoflio over the same period. Prior year return is a firm's cumulative buy-and-hold return for the year ending two days before the firm's earning announcement minus the return for the same size portoflio over the same period. Control for firms being more likely to issue stock and insiders being more likely to sell shares when the stock price is relatively high.
Returns (other tables)	Returns for all other tables and figures are described in detail in the table captions and paper.
Sales Growth	Current net sales (#12) less prior year net sales, scaled by prior year net sales. Proxies for a firm's overall growth and the increased likelihood of issuing options.
Total Accruals	Income before extraordinary items (#123) minus cash flow from continuing operations (#308 - #124).
Total Assets	Compustat data item #6.

[1] Executives in the Graham, Harvey, and Rajgopal (2005) survey mention a range of activities they would undertake to meet an earnings target. The six most popular choices mentioned are: (i) decreasing discretionary spending, (ii) delaying the start of a new project, (iii) booking revenues now rather than next quarter, (iv) providing incentives for customers to purchase more product this quarter, (v) drawing down previously established reserves, and (vi) postponing an accounting charge. By using an earnings quality measure that incorporates both accruals and changes in R&D and advertising, we capture aspects of five of these methods, the exception being sales incentives.

[2] Of course, earnings management is not necessary for a firm to beat expectations. The sample of firms that beat by one cent includes (1) firms that would have missed but managed earnings through accruals or reductions in discretionary expenditures in order to beat, (2) firms that would have missed but guided analysts downward early in the quarter in order to beat by one cent, and (3) firms that did not have to take any overt actions in order to beat by one cent (i.e., they would have beaten by one penny *or more* without any earnings management or guidance). We are only interested in the first group of firms. To the extent that our partition captures firms of the second or third type, this will reduce the power of our tests.

[3] Consistent with Degeorge, Patel, and Zeckhauser (1999), we focus on the absolute amount of surprise to identify missers and beaters. We use this benchmark because we believe it to be the more salient benchmark to managers when considering whether they meet or beat the consensus forecast. Other research has examined discontinuities when earnings are scaled by price or total earnings. Our results are not sensitive to the choice of scalar.

[4] We do not examine expectations management, or earnings guidance, as a mechanism to exceed analyst forecasts. Although earnings guidance shifts the timing of the earnings surprise, it does not affect future profitability since no economic construct has changed and is therefore strictly a reporting strategy. Richardson, Teoh, and Wysocki (2004) show that earnings guidance to beat analyst forecasts is associated with subsequent equity issuance and insider sales.

[5] Prior work (Stein (1989), Bar-Gill and Bebchuk (2003), Bhojraj and Libby (2005)) suggests that managers carry out earnings management in order to facilitate various actions, including stock issuances and insider sales. Given our research design we cannot make such claims. We instead provide evidence that managers take actions that capitalize on the return patterns associated with beating forecasts using earnings management, irrespective of the incentive for carrying out the earnings management.

[6] Our inferences are unchanged if we only collect financial statement data through 2004, which allows for a full three years of future stock returns for our entire sample.

[7] The consensus forecast is provided by I/B/E/S. Given that this number is what managers focus on, we did not want to complicate issues by creating our own consensus using I/B/E/S individual forecast data. However, in order to control for potential stale forecasts we test an alternative consensus, which uses only the forecasts issued in the month in which the consensus is calculated, with similar results.

[8] Our miss group consists of firms that actively increase their R&D or advertising and decrease their accruals in the period under examination. For this group the average increase in advertising is $12.9 million (13.7 cents per share) and the average increase in R&D is $17 million (30.2 cents per share). Similarly, our beat group consists of firms that actively decrease their R&D and advertising or increase their accruals. For this group the average decrease in advertising is 6.4 cents per share and average decrease in R&D is 7.2 cents per share. The relatively large changes in advertising and R&D in both groups suggest that the penny constraint is unlikely to be binding. In fact, we examine the effect of relaxing the constraint on our results and find that the results continue to hold for groups that miss or beat by 5 cents or less.

[9] Durtschi and Easton (2005) find a similar discontinuity in analysts' forecast errors, but argue it is more reflective of analysts' optimism/pessimism than of earnings management. They argue that the median negative forecast error is much larger than the median positive forecast error for varying levels of earnings per share. However, the pattern they observe is exactly what one observes if firms manage earnings to beat forecasts and take big baths when they

are unable to meet expectations. As there are several reasons for beating expectations, what matters in this paper is that earnings management is one possibility.

[10] We also carry out supplemental analyses using more complex expectation models for R&D and advertising expense. First, we use Penman and Zhang's (2002) Q-score methodology, which incorporates information on both the levels and changes in R&D and advertising for the prior three years in their expectation model. Second, we use industry-adjusted changes, which are calculated by subtracting the median change of the industry from the firm-specific change. These alternative specifications yield similar results, so we only report the results using the relatively simpler measures defined in equations (2a) and (2b).

[11] Most firms do not report both advertising and R&D expense separately. Therefore, we include values of two as high quality earnings, which typically means the firm has low accruals and above-median change in *either* R&D or advertising. We also attempted to implement a continuous measure by summing the dollar values of unexpected R&D, unexpected advertising, and unexpected (discretionary) accruals, all scaled by total assets. However, the comparatively large variance in the discretionary accrual estimate caused this measure to dominate the advertising and R&D metrics, leading to an extremely high correlation between rankings based on accruals and rankings based on aggregate earnings quality.

[12] Because all firms in our sample are required to have accruals, the panel that includes both firms with high accruals and firms with low accruals contains all of the firms in our sample. The panels referring to R&D, advertising, and earnings quality represent subsamples of the total sample.

[13] Despite employing these various methodologies, a concern exists that our results are simply due to the unusual returns patterns during the late 1990s experienced by R&D intensive firms (i.e., the tech bubble). To allay this concern, we run our analysis on a subsample that excludes all technology-heavy firms as a robustness test and obtain similar results. These results are shown in detail in the Internet Appendix available in the "Supplements and Datasets" section at www.afajof.org.

[14] Results are inferentially similar if we do not impose this restriction and instead use weighted least squares, with the number of securities in the portfolio each month serving as the weights.

[15] Note that we get qualitatively similar results if we use an unscaled measure of net insider sales (Total Sales – Total Purchases) or the change in *InsiderSales* as the respective dependent variables.

[16] This result is consistent with McVay, Nagar, and Tang (2006), who report that just meeting analyst forecasts is associated with greater insider selling.

Table I
Summary Statistics by Earnings Per Share Relative to Consensus Forecast

Table values represent the equally weighted average statistics for sample firms based on their earnings surprise in a given fiscal year. The earnings surprise is defined as the difference in cents between a firm's reported earnings per share for the given fiscal year and the I/B/E/S consensus forecast issued during the second month of the firm's fourth quarter. A firm whose earnings were within plus or minus half-a-cent of the consensus forecast would thus have an earnings surprise of zero, while a firm with reported earnings between half-a-cent and one-and-a-half cents above the consensus forecast would have an earnings surprise of one, etc. All values except beta are obtained using COMPUSTAT data for the given fiscal year. Total assets is COMPUSTAT item #6, market value is shares outstanding (item #25)*fiscal year closing stock price (item #199), book to market is book value (item #216) divided by market value, return on assets is net income (item #18) divided by total assets, and earnings to price is earnings per share (item #58) divided by closing stock price. Beta deciles are obtained from the CRSP database.

Earnings Surprise	Statistic	Total Assets	Market Value	Book to Market	Return on Assets	Average Beta Decile	Earnings to Price	Obs.
<-1	Mean	1941.1	1843.1	0.56	0.02%	4.35	0.002	14,117
	Median	275.7	278.4	0.49	3.46%	4.00	0.038	
-1	Mean	2034.4	3154.9	0.45	3.82%	4.15	0.028	1,686
	Median	315.7	446.6	0.39	5.89%	4.00	0.044	
0	Mean	2567.2	4449.1	0.42	4.94%	4.17	0.032	2,788
	Median	352.1	526.8	0.36	6.18%	4.00	0.043	
1	Mean	2959.0	4392.2	0.40	5.03%	4.05	0.032	2,893
	Median	333.5	547.3	0.34	6.49%	4.00	0.042	
>1	Mean	2606.8	3159.4	0.46	3.86%	4.10	0.032	14,046
	Median	358.7	491.3	0.39	5.94%	4.00	0.047	
All Firms	Mean	2340.7	2837.4	0.49	2.51%	4.20	0.020	35,530
	Median	317.0	399.8	0.42	5.04%	4.00	0.043	

Table II
Five-day Abnormal Returns Surrounding the Earnings Announcement

Table values are the size-adjusted returns for firms with high or low discretionary accruals, change in R&D, change in advertising, and high or low *EarningsQuality* (earnings quality indicator) by earnings surprise category. The earnings surprise is defined as the difference in cents between a firm's reported earnings per share for the given fiscal year and the I/B/E/S consensus forecast issued during the second month of the firm's fourth quarter. Firms are ranked as "high" in discretionary accruals if the dollar amount of discretionary accruals for a given fiscal year scaled by the firm's total assets is above the median level of discretionary accruals scaled by total assets for all firms for which discretionary accruals could be calculated in the same fiscal year. Firms are ranked as high in change in R&D and change in advertising if the asset-scaled change in the expenditure is above the median level of change for all firms reporting these expenditures in the same fiscal year. *EarningsQuality* is a ranking from zero to three, with a firm receiving one point for each accounting variable (discretionary accruals, change in R&D, and change in advertising), that is above (below for accruals) the median level for all firms in a given year. No point is awarded for missing variables. "High" *EarningsQuality* is defined as any firm with a rank of two or three. "Low" *EarningsQuality* is defined as a firm with a rank of zero (no accounting variables on the favorable side of the median). The cumulative return is calculated using daily CRSP returns and adjusted by subtracting the cumulative market return of firms in the same CRSP size decile over the same period. Five-day adjusted returns are calculated as the adjusted cumulative return beginning two days before the earnings announcement and ending two days after the earnings announcement. The ordering of high and low categories is different for discretionary accruals than for change in R&D, change in advertising, and *EarningsQuality* because low accruals represent high quality earnings while high change in R&D, change in advertising, and *EarningsQuality* represent high quality earnings. The superscript "a" denotes low quality beaters, while the superscript "b" denotes high quality missers. * and ** denote significance at the 10% and 5% level, respectively, two-tailed.

	Earnings Surprise			t-statistic	
	-1	0	1	1 minus -1	All Firms
High Discretionary Accruals	-0.004	-0.003	0.006[a]	2.59	0.004
Low Discretionary Accruals	-0.011[b]	-0.004	0.001	2.92**	0.006
Total	-0.007	-0.004	0.003	3.85**	
t-statistic low-high	-1.59		-1.53		1.96*
t-statistic a-b	-4.25**				
Low R&D	-0.004	-0.003	0.002[a]	1.08	0.004
High R&D	-0.021[b]	-0.011	-0.002	2.91**	0.002
Total	-0.013	-0.007	-0.001	2.90**	
t-statistic high-low	-2.55**		-0.80		-0.30
t-statistic a-b	-3.90**				
Low Advertising	-0.004	-0.004	0.008[a]	1.79*	0.005
High Advertising	-0.007[b]	-0.012	0.002	1.27	0.006
Total	-0.005	-0.008	0.005	2.18**	
t-statistic high-low	-0.35		-1.12		-0.17
t-statistic a-b	-2.18**				
Low *EarningsQuality*	0.001	-0.001	0.004[a]	0.65	0.004
High *EarningsQuality*	-0.021[b]	-0.011	-0.004	2.52**	0.003
Total	-0.012	-0.007	-0.001	2.30**	
t-statistic high-low	-2.70**		-1.51		0.17
t-statistic a-b	-3.87**				

Table III
Future Stock Performance Based on Earnings Quality and Miss/Beat

Panel A presents average compounded buy-and-hold abnormal returns (BHARs) for firms with low earnings quality that beat the consensus analyst forecast by one penny ("beaters") and firms with high earnings quality that miss the consensus analyst forecast by one penny ("misers"). Returns are compounded 3, 6, 12, and 36 months after the announcement of earnings. We assign firms to matching book-to-market /size portfolios using the quintile breakpoints from Ken French's website. We calculate BHARs by first compounding returns for each firm and then subtracting the compounded return on the matching BM/ME portfolio. We report both equal-weighted (EW) and value-weighted (VW) average returns. For VW returns, we construct the weights using the firm's ME at the beginning of the announcement year, scaled by the level of the CRSP VW index at that date. We report both standard two-sided *p*-values from conventional means tests along with bootstrapped *p*-values using the methodology in Mitchell and Stafford (2000). For each observation in the sample, we pick another firm in the same year and BM/ME category at random (with replacement), which yields a pseudo-sample of random firms with similar size/BM characteristics and a similar dispersion in calendar time. We then calculate the BHAR for the pseudo-sample and repeat this process 1,000 times. The *p*-value we report represents the proportion of BHARs that are larger in magnitude, but of the same sign, as the BHAR of the event sample. Panel B presents cumulative abnormal returns (CARs) for beaters and missers. The CARs are similar to the BHARs, except we subtract the matching portfolio return each month and then sum (rather than compound) returns over the cumulation window. All returns presented in the table are expressed as percentages.

Panel A: Buy-and-Hold Abnormal Returns (BHARs)

		Equal-Weighted			Value-Weighted		
Month		BHAR	Standard p-value	Bootstrap p-value	BHAR	Standard p-value	Bootstrap p-value
3	beaters	1.49	0.18	0.26	1.96	0.01	0.32
	misers	3.57	0.02	0.10	4.77	0.00	0.08
	diff.	-2.09	0.27	0.28	-2.81	0.02	0.30
6	beaters	5.69	0.12	0.06	0.76	0.45	0.48
	misers	-0.13	0.96	0.23	-0.51	0.68	0.33
	diff.	5.82	0.20	0.04	1.27	0.42	0.35
12	beaters	6.81	0.27	0.13	-2.44	0.11	0.34
	misers	7.94	0.10	0.11	-2.50	0.28	0.29
	diff.	-1.13	0.89	0.49	0.07	0.98	0.47
36	beaters	7.61	0.50	0.17	-10.31	0.00	0.30
	misers	22.51	0.02	0.08	30.20	0.00	0.01
	diff.	-14.90	0.33	0.25	-40.51	0.00	0.02

Table III-*Continued*

Panel B: Cumulative Abnormal Returns (CARs)

		Equal-Weighted		Value-Weighted	
Month		CAR	p-value	CAR	p-value
3	beaters	1.89	0.09	2.35	0.00
	missers	4.17	0.01	4.43	0.00
	diff.	-2.28	0.22	-2.08	0.09
6	beaters	3.55	0.07	1.80	0.04
	missers	1.47	0.50	-0.26	0.82
	diff.	2.08	0.48	2.06	0.16
12	beaters	3.31	0.22	-0.82	0.47
	missers	9.38	0.01	-1.29	0.44
	diff.	-6.06	0.15	0.47	0.81
36	beaters	4.89	0.29	-1.31	0.52
	missers	24.21	0.00	17.93	0.00
	diff.	-19.32	0.01	-19.24	0.00

Table IV
Calendar-time Regressions of Portfolios Formed on Earnings Quality and Miss/Beat

This table presents calendar-time regressions of portfolios formed on earnings quality and miss/beat. Panel A presents short-term calendar-time regressions. Each month over the sample period, we form portfolios of all beaters and missers that announced earnings within the last six months. We also form a zero-investment hedge portfolio that goes long (short) in beaters (missers). To ensure adequate portfolio size, we require at least 10 monthly observations to form the portfolio. We calculate both EW and VW portfolio returns. We regress monthly portfolio returns on the three factors in Fama and French (1993). To control for heteroskedasticity due to changing portfolio constituents, we report two-tailed *p*-values using White (1980) -adjusted standard errors. Panel B reports long-term calendar-time regressions. These are similar to the regressions in Panel A, except we form portfolios of all beaters and missers that announced earnings between 12 and 36 months of the calendar date. We report both equal-weighted (EW) and value-weighted (VW) average returns. For VW returns, we construct the weights using the firm's ME at the beginning of the announcement year, scaled by the level of the CRSP VW index at that date.

Panel A: Short-term Calendar-time Regressions (months 1 through 6)

Equal-Weighted

Beaters			Missers			Hedge		
	Estimate	p-value		Estimate	p-value		Estimate	p-value
alpha	-0.02	0.95	alpha	-0.67	0.22	alpha	0.64	0.32
mktret	1.26	0.00	mktret	1.59	0.00	mktret	-0.33	0.12
smb	0.68	0.00	smb	0.50	0.01	smb	0.18	0.41
hml	0.49	0.00	hml	-0.49	0.04	hml	0.98	0.00
R^2	0.77			0.75			0.31	

Value-Weighted

Beaters			Missers			Hedge		
	Estimate	p-value		Estimate	p-value		Estimate	p-value
alpha	-0.32	0.59	alpha	-0.30	0.79	alpha	-0.01	0.99
mktret	1.21	0.00	mktret	1.69	0.00	mktret	-0.48	0.15
smb	0.00	0.99	smb	-0.35	0.31	smb	0.36	0.19
hml	0.39	0.09	hml	-0.84	0.11	hml	1.23	0.00
R^2	0.45			0.50			0.27	

Panel B: Long-term Calendar-time Regressions (months 12 through 36)

Equal-Weighted

Beaters			Missers			Hedge		
	Estimate	p-value		Estimate	p-value		Estimate	p-value
alpha	-0.08	0.67	alpha	0.64	0.06	alpha	-0.72	0.03
mktret	1.04	0.00	mktret	1.23	0.00	mktret	-0.20	0.03
smb	0.62	0.00	smb	0.73	0.00	smb	-0.10	0.35
hml	0.28	0.00	hml	-0.10	0.92	hml	0.38	0.02
R^2	0.76			0.71			0.18	

Value-Weighted

Beaters			Missers			Hedge		
	Estimate	p-value		Estimate	p-value		Estimate	p-value
alpha	0.11	0.71	alpha	0.73	0.02	alpha	-0.62	0.07
mktret	0.84	0.00	mktret	1.05	0.00	mktret	-0.21	0.12
smb	-0.25	0.01	smb	0.02	0.77	smb	-0.27	0.03
hml	0.09	0.42	hml	-0.04	0.77	hml	0.14	0.45
R^2	0.49			0.51			0.10	

Table V
Future Operating Performance of Firms Based on Earnings Quality and Miss/Beat, Segmented by Profit and Loss

This table shows future performance metrics over the next three years for firms with high or low earnings quality by earnings surprise category. Panel A examines future ROA, defined as income before extraordinary items, COMPUSTAT item #18, divided by beginning of period total assets (item #6). Panel B investigates future capital expenditures (item #128) and research and development expenses (item #46), scaled by beginning-of-period total assets (item #6). Panel C shows future market-to-book, defined as shares outstanding (#25)*fiscal year closing price (#199), divided by the book value of shareholders' equity (#216). Panels are segmented to show the results for profit and loss firms separately, defined as whether the firm had a positive or negative net income (#172) in the event year. The first column in each panel shows the value of the performance metric in the event year, the second through fourth columns show the metric's value in each of the next three successive years, and the final column shows the overall change from the event year to the end of the third year. Assets at the beginning of the event year are used as a constant scalar for both ROA and CapEx+R&D in all future years. ROA and CapEx+R&D are also both winsorized at the 1% level in order to reduce variance. The earnings surprise is defined as the difference in cents between a firm's reported earnings per share for the given fiscal year and the I/B/E/S consensus forecast issued during the second month of the firm's fourth quarter. "Miss" implies that earnings were one cent below expectations; "beat" implies that earnings were one cent above expectations. Earnings quality is measured using *EarningsQuality*. *EarningsQuality* is a ranking from zero to three with a firm receiving one point for each accounting variable (total accruals, change in R&D, and change in advertising) that is above (below for total accruals) the median level for all firms in a given year. No point is awarded for missing variables. A firm with a rank of three would thus have scaled total accruals below median and scaled change in R&D and change in advertising above the median. "High" *EarningsQuality* is defined as any firm with a rank of two or three. "Low" *EarningsQuality* is defined as a firm with a rank of zero (no accounting variables on the favorable side of the median). * and ** denote significance at the 10% and 5% level, respectively, two-tailed.

Panel A: Return on assets

	ROA_t	NI_{t+1} / $Assets_{t-1}$	NI_{t+2} / $Assets_{t-1}$	NI_{t+3} / $Assets_{t-1}$	NI_{t+3}-NI_t / $Assets_{t-1}$
		Profit Firms			
Miss; high earnings quality	0.1142	0.0982	0.1257	0.1338	0.0173
Beat; low earnings quality	0.0927	0.0728	0.0715	0.0743	-0.0190
Difference	0.0215**	0.0253**	0.0542**	0.0595**	0.0366*
t-stat	3.27	2.19	3.40	2.88	1.90
		Loss Firms			
Miss; high earnings quality	-0.389	-0.435	-0.398	-0.286	0.08
Beat; low earnings quality	-0.146	-0.152	-0.202	-0.061	0.078
Difference	-0.243**	-0.282**	-0.196	-0.225*	0.002
t-stat	-3.19	-2.62	-1.35	-1.86	0.02

Panel B: Capital expenditures plus research and development to assets

	$CapEx_t$ / $Assets_{t-1}$	$CapEx_{t+1}$ / $Assets_{t-1}$	$CapEx_{t+2}$ / $Assets_{t-1}$	$CapEx_{t+3}$ / $Assets_{t-1}$	$\Delta CapEx_{t,t+3}$ / $Assets_{t-1}$
		Profit Firms			
Miss; high earnings quality	0.1965	0.252	0.3167	0.3894	0.1976
Beat; low earnings quality	0.1198	0.1408	0.1509	0.1692	0.0514
Difference	0.0766**	0.1112**	0.1658**	0.2202**	0.1461**
t-stat	7.58	6.87	6.57	5.70	4.50
		Loss Firms			
Miss; high earnings quality	0.4537	0.5128	1.0774	0.5852	0.1287
Beat; low earnings quality	0.1975	0.1908	0.1917	0.2454	0.043
Difference	0.2563	0.322	0.8857	0.3399	0.0857
t-stat	3.84**	4.03**	1.60	2.44**	0.79

Table V-*Continued*

Panel C: Market-to-book ratio					
	M/B_t	M/B_{t+1}	M/B_{t+2}	M/B_{t+3}	$\Delta M/B_{t,t+3}$
		Profit Firms			
Miss; high earnings quality	4.0671	3.8821	3.3316	5.6369	1.5381
Beat; low earnings quality	3.3816	2.9445	2.9099	2.2856	-1.196
Difference	0.6856*	0.9376*	0.4217	3.3514*	2.7338*
t-stat	1.65	1.98	0.84	1.99	1.85
		Loss Firms			
Miss; high earnings quality	6.47	17.686	4.68	4.2124	-1.347
Beat; low earnings quality	3.1815	5.3053	5.8896	1.3369	-1.987
Difference	3.2885	12.38	-1.21	2.8755	0.6397
t-stat	2.71**	0.99	-0.58	1.03	0.24

Table VI
Equity Issuance and Insider Sales in the Year Following the Earnings Announcement

This table models the likelihood of issuing equity and net insider sales in the year following the earnings announcement for all firms that miss or beat earnings expectations by one cent between 1988 and 2006. Panel A examines equity issuance using a logistic regression. The dependent variable is $Issue_{t,t+1,}$ which is a dichotomous variable that equals one if the firm issues equity in the year following the earnings announcement, and zero otherwise. Panel B models net insider sales in the year following the earnings announcement using ordinary least squares. The dependent variable is $InsiderSales_{t,t+1}$, which is equal to (sales - purchases) divided by (sales + purchases). $Miss\_high_t$ is an indicator variable equal to one if the firm misses by one cent with high quality earnings, $Beat\_low_t$ is an indicator variable equal to one if the firm beats by one cent with low quality earnings, $Beat\_high_t$ is an indicator variable equal to one if the firm beats by one cent with high quality earnings. $Issue_{t-2,t}$ is an indicator variable equal to one if the firm issued equity in the past two years; *Sales_growth* measures the growth in sales over the past year; *Cash_ratio* is the ratio of cash to total assets; $Return_{t-1,t}$ is the market-adjusted return over the past year; *Adj_leverage* is the industry-adjusted leverage of the firm; *B/M* is the book value of equity divided by market value of equity; and *Ret_5day* is the five-day market-adjusted return surrounding the earnings announcement. Industry dummies and year dummies are included as fixed effects.

Panel A. Equity Issuance (N=1851). $Issue_{t,t+1} = \alpha + \beta_1 Beat\_low_t + \beta_2 Miss\_low_t + \beta_3 Beat\_high_t + \beta_4 Issue_{t-2,t} + \beta_5 Sales\ growth_{t-1,t} + \beta_6 Cash\_ratio_t + \beta_7 Return_{t-1,t} + \beta_8\ Adj\_leverage_t + \beta_9\ B/M_t + \varepsilon_t$

	Intercept	$Beat\_low_t$	$Miss\_low_t$	$Beat\_high_t$	$Issue_{t-2,\,t}$	*Sales growth*$_{t-1,\,t}$	*Cash Ratio*$_{t-1}$	$Return_{t-1,t}$	*Adjusted Leverage*$_{t-1}$	B/M_t
Predicted Sign		+	?	?	+	+	-	+	+	-
Estimate	-3.047	0.593	0.093	0.089	0.652	-0.089	0.210	0.784	-0.561	-0.707
Standard Error	0.289	0.274	0.316	0.337	0.225	0.097	0.432	0.131	0.483	0.384
p-value	<0.001	0.027	0.768	0.792	0.004	0.355	0.627	<0.001	0.245	0.004

Goodness of Fit Model Chi-Square statistic: 64.65 (df=9); p<0.0001.

Beat_ low - Miss_high = 0.593, Prob > χ^2 = 0.027 *Beat_low - Beat_ high* = 0.504, Prob > χ^2 = 0.036.

Panel B. Insider Trading (N=1485). $InsiderSales_{t,t+1} = \alpha + \beta_1 Beat\_low_t + \beta_2 Miss\_low_t + \beta_3 Beat\_high_t + \beta_4 Return_{t-1,t} + \beta_5 Return\_5day_{t-1,t} + \beta_6\ Sales\ growth_{t-1,\,t} + \beta_7\ B/M_t + \gamma_k\ Industry\ Dummy_k + \delta_j\ Year_j + \varepsilon_t$

	Intercept	$Beat\_low_t$	$Miss\_low_t$	$Beat\_high_t$	$Return_{t-1,\,t}$	*Ret_5day*	*Sales growth*$_{t-1,\,t}$	B/M_t	Adj R^2
Predicted Sign		+	?	?	+	+	+	-	
Estimate	0.0017	0.1147	0.0418	0.0366	0.0341	0.1616	0.0464	-0.2028	6.54%
Standard Error	0.0469	0.0415	0.0441	0.0456	0.0241	0.1433	0.0167	0.0457	
p-value	0.9710	0.0058	0.3434	0.4224	0.1574	0.2597	0.0054	<.0001	

Beat_ low - Miss_high = 0.1147, p-value = 0.0058. *Beat_low - Beat_ high* = 0.0781, p-value = 0.0301.

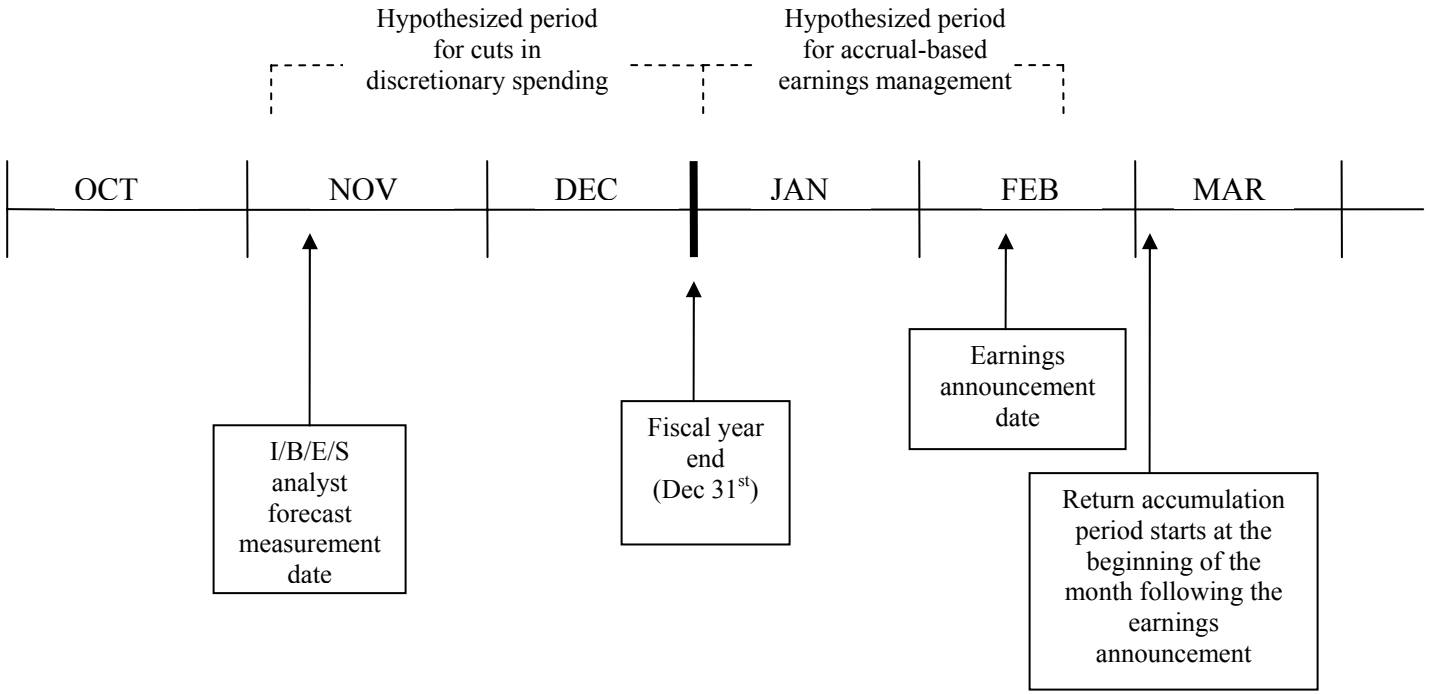

Figure 1. Timeline for measuring earnings management, analyst forecasts, and returns accumulation for a December 31st year-end firm.

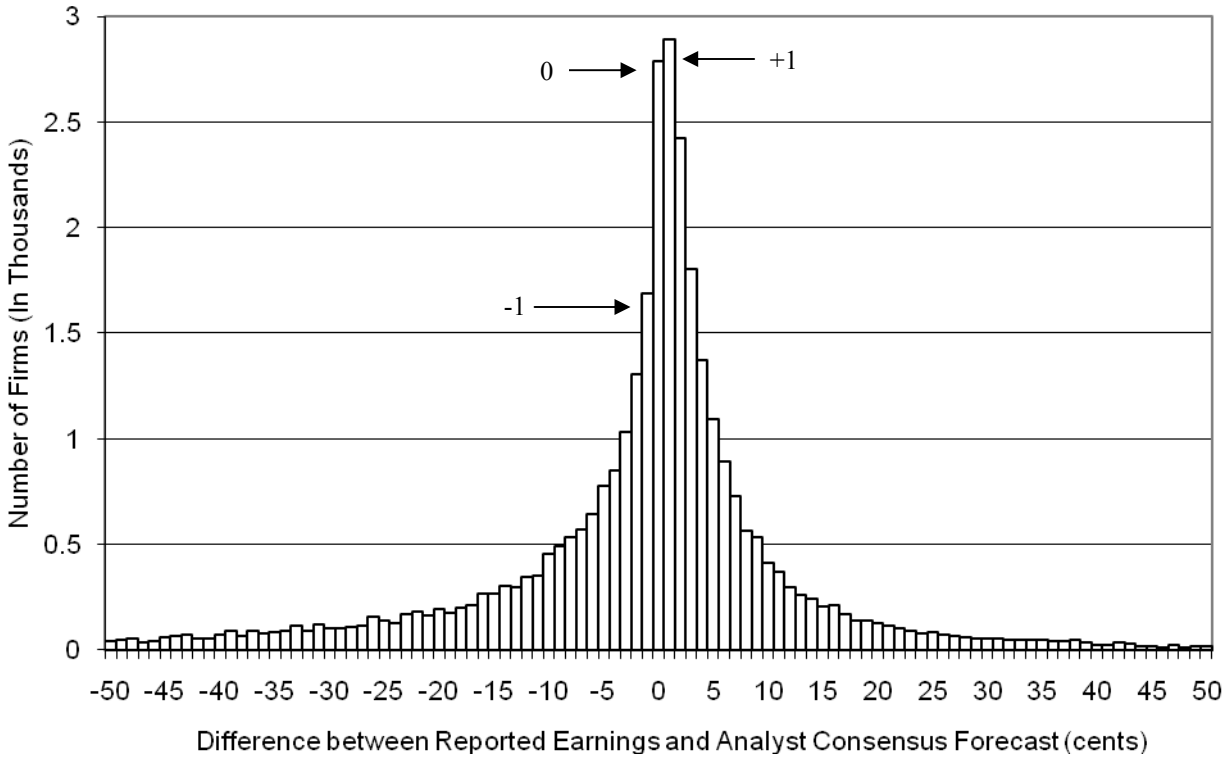

Figure 2. Distribution of yearly earnings surprises relative to analysts' consensus forecast (in cents). This figure shows the distribution of yearly earnings surprises relative to analysts' consensus forecast. The earnings surprise is defined as the difference in cents between a firm's reported earnings per share for the given fiscal year and the I/B/E/S consensus forecast issued during the second month of the firm's fourth quarter. A firm whose earnings were within plus or minus half-a-cent of the consensus forecast would thus have an earnings surprise of zero, while a firm with reported earnings between half-a-cent and one-and-a-half cents above the consensus forecast would have an earnings surprise of one, etc. The figure shows the total number of firms in the sample period, 1988 to 2006, in a given earnings surprise category. We use raw unadjusted I/B/E/S data to control for the bias induced by the split-adjusted data.

Figure 3. Value-weighted cumulative abnormal returns (CARs). This graph plots the cumulative portfolio matched (size and B/M) abnormal returns for firms with high *EarningsQuality* that miss forecasts by a penny and firms with low *EarningsQuality* that beat forecasts by a penny. The earnings surprise is defined as the difference in cents between a firm's reported earnings per share for the given fiscal year and the I/B/E/S consensus forecast issued during the second month of the firm's fourth quarter. *EarningsQuality* is an earnings quality ranking from zero to three, with a firm receiving one point for each accounting variable (discretionary accruals, change in R&D, and change in advertising) each scaled by total assets, that is above (below for discretionary accruals) the median level for all firms in a given year. A firm with a rank of three would thus have scaled discretionary accruals below median and scaled change in R&D and change in advertising above the median. "High" *EarningsQuality* is defined as any firm with a rank of two or three. "Low" *EarningsQuality* is defined as a firm with a rank of zero (no accounting variables on the favorable side of the median).

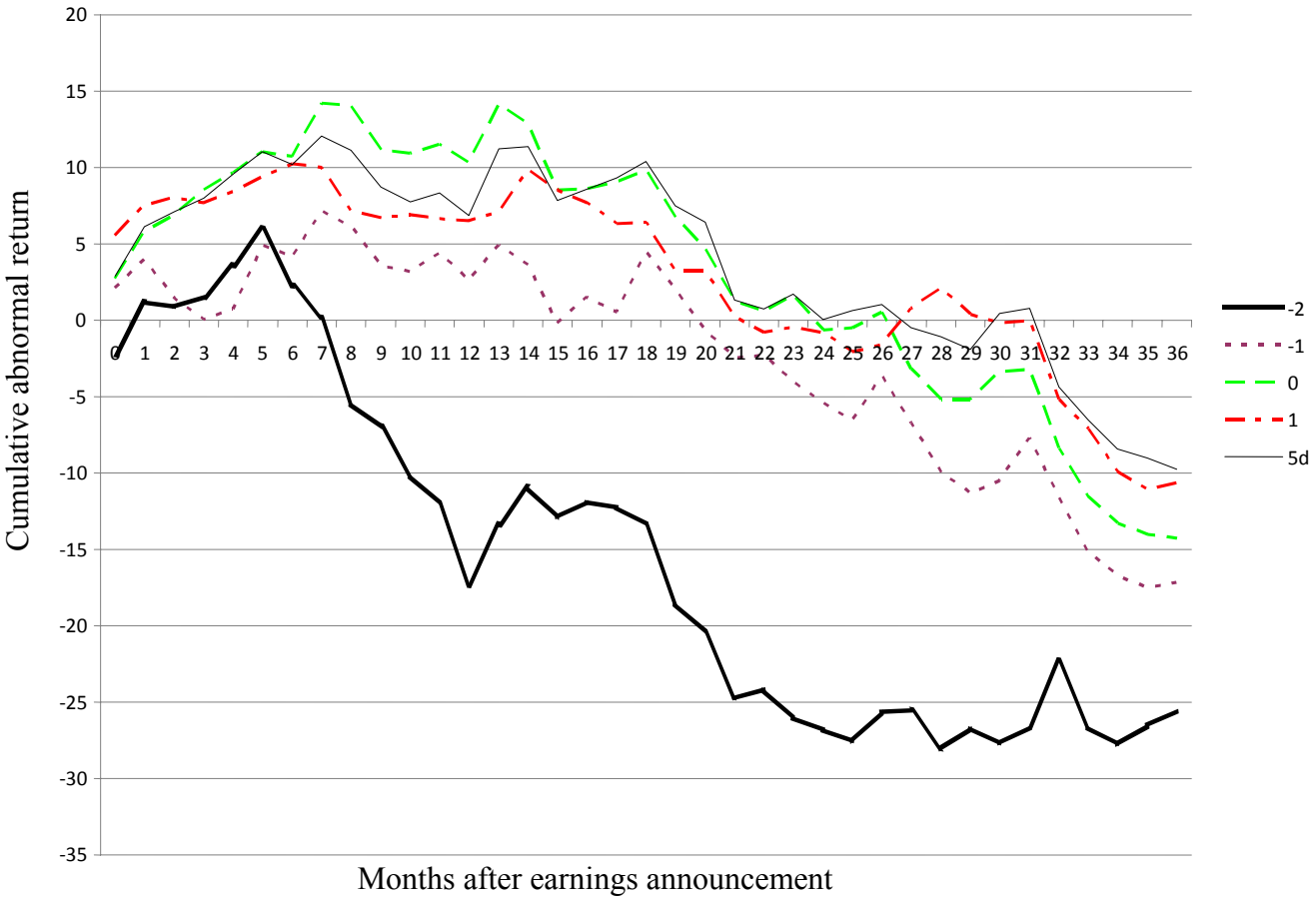

Figure 4. Equal-weighted hedge portfolio returns measured using alternative analyst expectation measurement dates. This graph plots the cumulative portfolio-matched (size and B/M) difference in abnormal returns between firms with high *EarningsQuality* that miss forecasts by a penny and firms with low *EarningsQuality* that beat forecasts by a penny. The earnings surprise is defined as the difference in cents between a firm's reported earnings per share. Analyst expectations are measured at five different horizons: -2 refers to the consensus analyst forecast two months prior to the month of the fiscal year-end, -1 refers to one month prior to the month of the fiscal year-end, 0 is the consensus forecast in the month of the fiscal year-end, 1 is the consensus forecast one month after the fiscal year-end, and 5d is the forecast five days before the earnings announcement. The horizontal axis displays months relative to the month of the earnings announcement.