The Earnings Numbers Game: Rewards to Walk Down and Penalties to Walk Up Of Analysts' Forecasts of Earnings

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First draft, July 29, 2008
This draft, July 30, 2009

JEL Classification: G14; M41
Keywords: Analysts' Forecasts; Earnings Guidance; Walk down; Walk up; Market Efficiency

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We appreciate the valuable comments from Ying Cao, Kevin Chen, Taiyuan Chen, Zhaoyang Gu, Gilles Hilary, David Hirshleifer, Kaiwai Hui, Ross Jennings, Bin Ke, Kevin Koh, Clive Lennox, Oliver Li, Tom Lys, Paul Malatesta, Gordon Richardson, Katherine Schipper, Lakshmanan Shivakumar, Franco Wong, Zhihong Chen, TJ Wong, Woody Wu, Guochang Zhang, especially Daniel Cohen, and workshop participants at the Chinese University of Hong Kong, the City University of Hong Kong, University of California, Irvine, Hong Kong University of Science and Techonology, and the 2008 Chulalongkorn Accounting and Finance Symposium.

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Abstract

We provide a comprehensive study of the valuation consequences to meeting/beating analysts' forecasts (*MBE*) versus missing expectations conditioned on the forecast revision path prior to the earnings announcement. We find that investors reward firms that walk down forecasts to achieve a positive earnings surprise and penalize firms that walk up forecasts to achieve a negative earnings surprise. The reward and penalty are not justified by subsequent cash flow performance and the post-event return reversal suggests that investors were partially misled by strategic motives belying the forecast revisions. There is higher insider net selling and more new issues for walk down firms, and higher insider net buying and more repurchases for walk up firms. The capital market incentives for selling and *MBE* reward disappear in recent periods, suggesting that investors learn to discount a walk down. However, the walk up penalty and capital market incentives to depress prices for buying by insiders and the firm remain even in recent years.

1. Introduction

Prior studies have documented that the equity market rewards firms that meet or beat analysts' earnings expectations (hereafter *MBE*) and penalize those that do not.[1] The immediate price reaction to an *MBE* event at the earnings announcement date is generally positive whereas firms that miss forecasts generally experience a negative price reaction. The stock returns in the fiscal period (quarterly or annual) of the earnings are also higher for *MBE* firms than miss firms, even when they have the same initial analysts' forecast at the start of the period and the same actual reported earnings at the end of the period. We refer to the higher period returns for *MBE* firms over miss firms after controlling for the size of the forecast revision if any and the surprise as the *MBE* reward.

Two forecast paths lead to an *MBE* event. The first, which has received attention in the literature, is the walk down revision path *OP* where the initial optimistic forecasts are guided down to pessimistic levels prior to the earnings announcement date. The second path *PP* begins and ends with pessimistic earnings forecasts during the quarter. Similarly, two different forecast revision paths lead to a miss event. The initial pessimistic forecast is guided up to become optimistic before the earnings announcement date in the walk up *PO* path whereas the initial and final forecasts remain optimistic in the *OO* path. Figure 1 summarizes the trajectory of these four analysts' forecast revision paths.

When the underlying economic fundamentals fail to deliver earnings that meet or beat analysts' expectations, managers can avoid negative earnings surprises by managing reported earnings upward (Cheng and Warfield, 2005) or guiding analysts' expectations

[1] See Bartov, Givoly, and Hayn (2002), Kasznik and McNichols (2002), Richardson, Teoh, and Wysocki (2004), Brown and Caylor (2005), Skinner and Sloan (2002), and Vickers (1999). Jiang (2008) shows that beating benchmarks is also rewarded in the debt market.

downwards (Soffer, Thiagarajan, and Walther, 2000). This phenomenon is often referred to as the "earnings numbers game" and is viewed unfavorably by regulators (Levitt, 1998) and the media (Cohen, 1991). Bartov and Cohen (2008) report that forecast guidance is more widespread than earnings management to achieve *MBE*, and so the former is the focus in this paper that considers analysts' revision paths.

Our first objective is to study the incentives of the firm and managers to play the numbers game by managers guiding analysts' forecasts either downwards to a beatable level or upwards for a deliberate miss outcome. While the walk down phenomenon has been studied in the literature, the incentives to a walk up for a miss event have not. For incentives, we consider new equity issues or repurchases by the firm, and insider net selling by the managers in the months after the earnings' announcement.

Our second objective is to investigate the extent to which investors are cognizant of the strategic incentives that belie the earnings numbers game. We compare the period return to the future operating performance between firms with a walk down (*OP*) of analysts' forecasts to an *MBE* event versus firms that did not walk down and so miss expectations (*OO*) to study whether the *MBE* reward is justified. Similarly, we also compare the period return and future operating performance between firms with a walk up (*PO*) of analysts' forecasts to a deliberate miss event versus those that did not and so achieve an *MBE* (*PP*) to study whether the miss penalty is justified.

If investors only partially discount for strategic motives associated with a walk down, they will reward a walk down to an *MBE* firm (*OP*) when compared with *OO*. Similarly, investors will penalize firms that walk up to a miss (*PO*) compared to *PP*. If the subsequent true underlying performance for either the strategically motivated walk down

or walk up firms, however, is not much different from their corresponding benchmark firms, then the reward and penalty are not justified.

We also examine whether investors' response to the earnings surprise is contingent on the revision path prior to the earnings announcement. If investors are somewhat skeptical of the positive earnings surprise from a walk down *OP* firm relative to a *PP* firm, their stock price reaction will be more muted. Similarly, investors' reaction to a negative earnings surprise from a walk up *PO* firm would also be more muted relative to the *OO* firm. However, the positive reaction for *OP* and negative reaction for *PO* are overreactions relative to full discounting by fully attentive investors. Therefore, walk down *OP* firms and walk up *PO* firms will experience a post-event return reversal. Since an *MBE* event is good news and a miss bad news, we need to adjust the post-event returns for the effects of the well-known post-earnings announcement drift anomaly (PEAD).[2]

The general sample period spans from the first quarter of 1984 to the last quarter of 2006.[3] There were dramatic changes in the regulatory regime governing the communication between analysts and management after 2000. Regulation Fair Disclosure (Reg FD) was instituted October 23, 2000, the Sarbanes-Oxley Act (SOX) was enacted on July 30, 2002, and Regulation Analyst Certification (Reg AC) became effective April 14, 2003. Prior research and anecdotal evidence also suggest a substantial increase in the use of analysts' estimates as a benchmark for firm performance, and increased prevalence of the expectations game in the 1990s (e.g. Richardson et al., 2004).[4] The widespread

[2] See Bernard and Thomas (1989).
[3] We choose to study quarterly periods over annual periods to increase the number of observations and so maximize the power of our tests.
[4] Several financial information sources began providing earnings benchmarks based on analysts' forecasts on the Internet in the mid-1990s. One of the best known, First Call, introduced its service to the web in 1994.

publicity and regulatory crack-down on the earnings numbers game in recent years likely have raised investor awareness of the *MBE* phenomenon. (Jain and Rezaee, 2006; Bartov and Cohen, 2008; Koh et al., 2008). Therefore, as a third objective, we examine whether the path-dependant return reactions are also time period specific. Given the likely regime change at the dates noted above, we partition the sample period into three sub-periods, 1984-1994, 1995-2000, and 2001-2006.

For firms with initial optimistic forecasts, we find that the market rewards firms that walk down the forecasts to an *MBE* event (*OP*) compared to the miss firms (*OO*), consistent with Richardson et al. (2004). However, the walk down reward disappears after 1995, consistent with increased investor awareness of the earnings numbers game from the popular press and academics. In contrast, we find that firms that walk up forecasts to a miss event (*PO*) are penalized relative to firms that beat forecasts from the start (*PP*) in all three sub-periods.

For the short-window market reaction to earnings surprises following different forecast revision paths, we find that the market's reaction is significantly smaller for surprises achieved through switching of expectations with walk down *OP* or walk up *PO* revision paths, as compared to their counterparts with consistent optimism (*OO*) or consistent pessimism (*PP*) respectively throughout the quarter. This evidence suggests that investors do discount somewhat for such earnings games. Whether they discount appropriately and sufficiently or not can only be determined by evaluating post-event operating performance and post-event return reversals.

For the walk down *OP* firms relative to the *OO* firms, the subsequent quarter ROA increases only in the two earlier sub-periods. Moreover, the increase is not from an

increase in cash flows from operations. If accruals are more easily managed than cash flows from operations, the results suggest that *OP* firms are in effect no better performers than *OO* firms. The *MBE* reward of *OP* firms over *OO* firms in the early period is therefore not justified, implying that investors are misled by the walk down. The disappearance of the *MBE* reward in later periods, however, suggests that investors learn to discount the walk down.

Similarly, the poorer next quarter earnings performance of walk up *PO* firms relative to *PP* firms occurs only in the early periods, and is not supported by worse cash flows. In other periods, neither the earnings nor cash flow performances are all that different. However, investors continue to punish walk up *PO* firms relative to *PP* firms in later sub-periods, suggesting that investors may not be sufficiently attentive to the strategic incentives of *PO* firms to obtain a miss event.

If investors do not fully discount the information in the *positive* earnings surprises achieved through a walk down path, *OP* firms will be temporarily overvalued and a stock return reversal is likely to follow. However, given the existence of the post-earnings announcement drift, which we consider to be driven by a different source, the reversal will dampen the magnitude of the upward-return drift related to PEAD and may not be strong enough to dominate it. A similar argument about temporary undervaluation can be applied to the *PO* path, in which case we expect that the future return reversal for a walk up will offset part of the downward PEAD drift. Consistent with this conjecture, we find that the PEAD effect is dampened among the switching *OP* and *PO* firms than among the consistent *OO* and *PP* firms, controlling for the magnitude of earnings surprises. We find that over time the magnitude of PEAD for *OP* and *PO* firms converges to that of *OO* and

PP firms, which is again consistent with investors' increased awareness of the numbers game.

Turning to incentives, consistent with Richardson et al. (2004), we find that *OP* firms engage in more stock selling activities (insider net sales and equity issuance) than *OO* firms following earnings announcements, but not in the latest sub-period. The disappearance of these incentives in 2001-2006 is consistent with the earlier returns results that investors no longer reward the numbers game and that the managers are aware of the change in investor reaction.

The new finding is that walk up (*PO)* firms engage in more stock purchase activities (insider net purchases and equity repurchases) than *PP* firms following earnings announcements, which supports the interpretation that the walk up *PO* path is a strategy managers employ to depress the firm's short-term stock price to facilitate buying at a cheap price.

We contribute to the literature in several ways. We provide a comprehensive study of the valuation consequences for the four expectations revision patterns. The four-way comparison of the future stock return and operating performance tests allow us to investigate more fully whether the market reward to *MBE* or penalty to a miss is justified. We also contribute to the earnings surprise literature by documenting that the market's reaction to earnings surprises is dependent on the expectations revision path. We extend Richardson et al.'s (2004) analysis on firm and managerial capital market incentives to the walk up sample and demonstrate that managers also have incentives to deliberately miss benchmarks. Overall, our findings have implications for regulators, capital market participants, and researchers who wish to better understand the causes and consequences

of earnings expectations guidance.

2. Related Literature and Research Questions

2.1. Market Reward to Meeting or Beating Earnings Expectations (MBE)

The capital markets penalize severely those firms whose reported earnings fail to meet market expectations (Skinner and Sloan, 2002). Not surprisingly, therefore, anecdotal and academic evidence suggests that firms seek to avoid reporting negative earnings surprises (Degeorge, Patel, and Zeckhauser, 1999; Dechow, Richardson, and Tuna 2003; Brown and Caylor, 2005) either by upward earnings management (Cheng and Warfield, 2005) and/or downward forecast guidance (Matsumoto, 2002; Bartov, Givoly, and Hayn, 2002) to attain *MBE*, with the latter mechanism being more prevalent (Bartov and Cohen, 2008). In addition to the event stock price reactions, Bartov et al. (2002) also document that firms with non-negative earnings surprises have higher stock returns over the whole fiscal period compared to firms with negative earnings surprises controlling for the magnitude of forecast errors.

In interpreting these findings, the literature implicitly assumes that the walk down expectations management strategy (*OP*) is rewarded by the capital markets. However, there has been no systematic study of how and whether the period returns and the event reactions are related to the analyst forecast revision paths leading up to the earnings surprise. Both walk down *OP* and *PP* paths result in *MBE*. Similarly, firms with negative surprises are either walk up *PO* or *OO* firms. To evaluate whether there is an *MBE* reward to a walk down requires conditioning on an initial optimistic forecast and then comparing period returns between final pessimistic forecast firms to firms where the forecasts are

not walked down but stayed optimistic. In other words, the comparison of the period returns should be between *OP* and *OO* firms. Similarly, to evaluate the penalty to a walk up leading to a miss forecast, the comparison should be between *PO* and *PP* firms. To summarize, we evaluate the following:

1a**.** *Ceteris paribus, are stock returns over the quarter higher for OP firms than for OO firms?*

1b. *Ceteris paribus, are the stock returns over the quarter higher for PP firms than for PO firms?*

Our next question relates to the fact that there is no consensus in the literature on whether the reward to *MBE* is rational. On the one hand, Malmendier and Shanthikumar (2007) find that small investors do not account for the bias in analyst forecasts, and that their trading behavior induces negative abnormal returns. On the other hand, Bartov et al. (2002) suggest that the premium to *MBE* is a leading indicator of future performance and is not associated with any subsequent stock return reversal, consistent with a rational explanation for the documented reward. To investigate whether the reward to *MBE* is rational, we conduct three analyses that specifically takes into account path-dependency.

First, we compare the future operating performance between *OP* and *OO* firms, and between *PP* and *PO* firms. If the walk down to achieve *MBE* was strategic to game the market, then the future performance of *OP* firms should not differ much from *OO* firms. Similarly, if the walk up to miss expectations was strategic to game the market, there should also be little difference between the future performance between *PO* and *PP* firms.

2a: *Ceteris paribus, does OP have better future operating performance than OO?*

2b: *Ceteris paribus, does PP have better future operating performance than PO?*

Next, we examine whether the earnings surprise event reaction is also path-dependent. Since both *OP* and *PP* firms achieve *MBE*, it would be useful to know if investors adjust for how *MBE* is achieved. Given the more likely strategic nature of *OP* in achieving *MBE*, if the market is at least partially rational, it would discount the positive earnings surprise of *OP* relative to *PP.* Similarly, when comparing walk up *PO* with *OO*, investors may discount for the strategic motive of the miss event through a walk up.

3a: *Ceteris paribus, is the positive market reaction to an earnings surprise from OP smaller than to an earnings surprise from PP?*

3b: *Ceteris paribus, is the negative market reaction to an earnings surprise from PO smaller than to an earnings surprise from OO?*

Even if the reaction to earnings surprise is path-dependant, the differential reaction does not reveal whether investors are able to see through the expectations guidance game fully. To investigate this question, we need to examine whether subsequent price reversals, if any, are path-dependant. The test here is complicated by the presence of PEAD, which may be driven by other causes. To tease out the effects of PEAD, we use the returns conditioned on the size of SUE from the relatively non-strategic groups *OO* and *PP* groups as estimates of PEAD for the strategic revision path groups *OP* and *PO*. Therefore, we test the following:

4. Is the post-earnings-announcement drift weaker for the OP and PO revision paths than for the PP and OO revision paths?

2.2 Guidance to Drive Down the Firm's Short-term Price

The extant literature on expectations guidance focuses almost exclusively on managers' incentives to achieve *MBE* targets. Richardson et al. (2004) report increased

new issues and net insider selling associated with a walk down *OP* path as compared with the *OO* path. On the flip side, managers may also have incentives to miss forecasts so as to benefit from the temporarily depressed stock prices, as when they intend to purchase the firm's stock either on their firm's behalf (via stock repurchases or a management buyout) or on their own personal account (via insider purchases or options grants). Similar incentives have been documented using the earnings management mechanism (Gong et al. (2008) for stock repurchases, McAnally et al. (2008) for stock option grants). To the best of our knowledge, no study to date has examined the incentives for a walk up revision path as an expectations guidance mechanism to depress price. We test this hypothesis:

H5. *For a firm with an initial pessimistic forecast, the likelihood of observing a walk up forecast revision path prior to the earnings announcement increases in managers' incentives to purchase its firm's stock after the earnings announcement, either via insider net buying on personal account or via a repurchase of the firm's stock.*

3. Data and Descriptive Statistics

3.1 Data

Individual analysts' forecasts of quarterly earnings are from Thompson Financial I/B/E/S for the period spanning 1984 to 2006. Following the literature (Bartov et al., 2002; Kasznik and McNichols, 2002), we require firm quarter observations to satisfy the following criteria: (1) there are at least two individual earnings forecasts in the quarter (not necessarily by the same analyst) at least 20 trading days apart; (2) the release date of the earliest forecast is on the same day of or after the previous quarter's earnings

announcement;[5] and (3) the release date of the latest forecast precedes the current quarter's earnings release date by at least three days.

Actual earnings numbers are from I/B/E/S for comparability with the earnings forecasts. Other financial accounting data are from COMPUSTAT and stock returns data from CRSP. The total number of firm-quarter observations in the full sample is 122,053, covering the period from January 1984 to December 2006.

Insider-trading data are from the Thompson Financial insider trading database (TFN). We follow Richardson et al. (2004) and examine only open market sales and purchases. In addition, we only include trades by directors or officers to ensure that we capture the trading activities of those individuals who most likely have an impact on the reporting process of the firm. The variable *INSIDERSALE* combines the information of insider sales and purchases and denotes the net percentage of shares sold by officers or directors within one-month after the earnings announcement date. It is positive if insiders taken together are net sellers and negative when insiders are net purchasers.

We study a firm's trading incentives by considering two types of securities transactions: equity issuance and equity repurchases. The equity issuance and repurchase variables are derived from the statement of cash flows (COMPUSTAT data item 84 and item 93, respectively) and are scaled by the market capitalization at the beginning of the quarter.[6] To be consistent with the construction of *INSIDERSALE*, we combine the scaled equity issuances and repurchases to create the variable *FIRMSALE*, with a positive value

[5] Bartov et al. (2002) require that all the forecasts be made at least three trading days after the release date of the previous quarter's earnings. However, we find that a significant portion (3% for day 0, 16% for day 1, and 5% for day 2 relative to the preceding earnings announcement day) of all the forecasts for the next quarter is made within three days of the preceding earnings announcement. Following Bartov et al.'s (2002) criteria does not qualitatively change our reported results.

[6] As a robustness check, we combine the COMPUSTAT information with equity issuances or repurchases data extracted from the SDC to ensure data accuracy. The results are similar.

denoting net equity issuance and a negative value denoting net equity repurchases.

3.2 Time-series Patterns of the Four Expectations Revision Paths

Table 1 reports the time-series distribution of the four forecast revision paths. We find that the walk down *OP* path is not the most frequent revision path, accounting for only 17% of the total paths in sub-period 1984-1994, increasing to over 25% in sub-period 1995-2000, and declining back to below 15% in the post-scandal sub-period 2001-2006. This observed pattern is consistent with Richardson et al.'s (2004) finding that walk down is most prevalent in the second half of the 1990s. It is also consistent with Bartov and Cohen (2008) and Koh et al. (2008), who argue that managers' financial disclosure and guidance behaviors change following the Sarbanes- Oxley Act of 2002.

The relative frequency of the *PP* path increases dramatically from around 30% in the mid-1980s to about 55% in the mid-2000s, consistent with prior findings of an increased number of *MBE* firms in more recent years. Our evidence indicates that *MBE* firms are not primarily driven by walk down firms especially in more recent years.

In stark contrast to the *PP* path, the relative frequency of *OO* decreases from more than 40% in the mid-1980s to about 20% in our latest sub-period. This may explain why studies in the 1980s tend to document that analysts are on average optimistic, while studies using more recent data find that analysts are on average pessimistic. The walk up *PO* path accounts for less than 10% of the sample in most years and shows a slight decline from 9% in the earliest sub-period to about 6% in the two later sub-periods.

3.3 Descriptive Statistics

Table 2 provides descriptive statistics for our sample partitioned into the four forecast revision paths. *OP* firms are on average larger and have higher market-to-book than *OO* firms. They also outperform *OO* firms both in the current and next quarters, when measured using both return on assets (ROA) and cash flow from operations (CFO).[7] The quarterly returns (CAR_ERROR) and event day returns (CAR_SURP) are also better for *OP* than those for *OO*, whereas the post-quarter return reversals (CAR_PEAD) are larger for *OO* than *OP*. When comparing *PP* to *PO*, we find very similar results in that *PP* firms outperform *PO* firms. These univariate results are consistent with Bartov et al.'s (2002) proposition that *MBE* is a leading indicator of future performance, even for the walk down *OP* firms.

Comparing the two paths *OP* and *PP* that lead to *MBE*, *PP* firms outperform *OP* firms in all dimensions, both current and future ROA and CFO, and stock returns, which suggests that the positive earnings surprises of *PP* firms convey more reliable good news than those of *OP* firms. For the two revision paths leading to a negative surprise or miss event, we find that *OO* firms perform significantly worse than *PO* firms, suggesting that *OO* firms are more reliably bad news firms than *PO* firms.

In the next section, we perform multivariate analyses to control for the magnitude of the earnings surprise, size of the analyst revisions and other confounding factors in the above comparisons that will allow for more definitive inferences. We test for whether the analyst revision path preceding the earnings announcement has implications for firms' future performance, and whether investors understand these implications.

[7] Untabulated t-test results show that all these differences, except for Δ_CFO and CAR_PEAD, are statistically significant.

4. Investor Reactions to the Four Analysts' Revision Paths

4.1 Reward to walk down and penalty to walk up (Q1a and Q1b)

We first examine whether the prior finding of a reward to the *MBE* event itself extends to the more recent periods. As in past studies, the valuation reward is measured as the incremental market-adjusted quarterly return for *MBE* firms (*OP* and *PP*) relative to miss firms (*OO* and *PO*) after controlling for the magnitude of the forecast error and earnings surprise. Specifically, we run the following regression:

$$CAR\_ERROR_{j,q} = \beta_0 + \beta_1 ERROR_{j,q} + \beta_2 SURP_{j,q} + \beta_3 DMBE_{j,q} + \varepsilon_{j,q}, \qquad (1)$$

$CAR\_ERROR_{j,q}$ is firm j's market-adjusted stock return cumulated from three days after the release date of the earliest forecast for quarter q ($FEARLIEST_{j,q}$) to one day after quarter q's earnings announcement.

$ERROR_{j,q} = (EPS_{j,q}-FEARLIEST_{j,q})/PRICE_{j,q-1}$ is the forecast error for quarter q, calculated as quarter q's I/B/E/S actual earnings minus quarter q's earliest forecast, scaled by the beginning-of-quarter stock price.[8]

$SURP_{j,q} = (EPS_{j,q}-FLATEST_{j,q})/PRICE_{j,q-1}$ is firm j's earnings surprise for quarter q, calculated as quarter q's actual earnings minus quarter q's latest forecast ($FLATEST_{j,q}$), scaled by the beginning-of-quarter stock price.

$DMBE_{j,q}$ is the indicator variable set to one if $SURP_{j,q}>=0$, and zero otherwise. If there are multiple forecasts on the earliest or latest forecast day of the quarter, we take the mean forecast of that day to calculate *ERROR* or *SURP*.

To capture the possible nonlinear relation between earnings surprise and returns we split *SURP* into two variables, $SURP^+$ and $SURP^-$ and include an indicator variable

[8] As in Richardson et al. (2004) we also use an alternative specification by identifying *FLATEST* (*FEARLIEST*) as the latest (earliest) consensus analyst forecast using two-week windows. The results are qualitatively similar.

DSMALLSURP in an alternative specification below as:

$$CAR\_ERROR_{j,q} = \beta_0 + \beta_1 ERROR_{j,q} + \beta_2 SURP^{+}{}_{j,q} + \beta_3 SURP^{-}{}_{j,q} + \beta_4 DMBE_{j,q} + \beta_5 DSMALLSURP_{j,q} + \varepsilon_{j,q}. \quad (1a)$$

$SURP^{+}$ ($SURP^{-}$) takes the value of *SURP* when *SURP* is greater (smaller) than zero, and zero otherwise. *DSMALLSURP* equals one if the absolute value of *SURP* is smaller than 0.02% (Koh et al., 2008).[9]

The empirical results for these regressions are in Table 3. Panel A exhibits that, even after controlling for the forecast error (*ERROR*) and earnings surprise, *MBE* firms still observe a higher market-adjusted stock return for the entire quarter in both the earlier Bartov's (2002) sample and more recent sample (1998-2006).[10]

MBE firms include *PP* and *OP* firms. The walk down *MBE* firms (*OP*) are more likely to have behaved strategically and, if investors discount for the greater likelihood of *MBE* gaming, they may not reward *OP* firms with a valuation premium. Therefore, we estimate regression (1) with only *OP* and *OO* firms to test Q1a for each year in our sample.[11] Column I of Table 4 reports only the *DMBE* coefficients and associated *t*-statistics for brevity. For the sub-period before 1995, *DMBE* is significantly positive in nine out of eleven years. During the 1995 to 2000 period, when the financial press and academics focused extensively on the earnings guidance game, the documented reward exists only in one out of the six years. Between 2001 and 2006 period when high profile accounting scandals occurred, the reward completely disappears. The premium average a highly significant 2.5% in the 1984-1994 period but actually reverse sign to an

[9] Other cut-off points are also used; however, the main results are similar.
[10] Bartov et al. (2002) require the firms in their sample to have a December fiscal year-end, while we do not impose this restriction. Untabulated results show that this has little impact on the results.
[11] Untabulated results for each sub-period yield very similar conclusions to the yearly regressions.

insignificant -0.34% in this latest period. Overall, results indicate that investors reward *MBE* regardless of how it is achieved in the early periods but learn to question the credibility of reported good earnings news after a walk down of the analysts' forecast.

To investigate whether investors punish a walk up *PO* path, we present the comparison between *PP* and *PO* in Column II of Table 4. The penalty to *PO* firms relative to *PP* firms (equivalently the reward to *PP* firms relative to *PO* firms), remains high throughout the entire sample period, averaging about 2.4%. Investors therefore do not seem to be aware of potential strategic motives for a walk up to a deliberate miss through time.

Recent evidence suggests that the reward to *MBE* diminishes after the Sarbanes-Oxley Act (Koh et al., 2008). Our analysis implies that this result is driven by the disappearance of the reward in the walk down group.

4.2 Rationality in the Market's Reward to Walk Down and Penalty to Walk Up

We demonstrate that investors penalize walk up *PO* throughout our sample period, and a reward to walk down *OP* in the early sample period. The next question is whether these valuation effects are justified by the underlying performance of the firm. In this sub-section, we conduct three tests to examine this issue.

4.2.1 MBE and Future Operating Performance (Q2a and Q2b)

If the reward to walk down (*OP)* and penalty to walk up (*PO)* are justified, we would like to see that *OP* firms perform better in future relative to *OO* firms, and vice versa between *PP* firms and *PO* firms. We run the following regressions to investigate the issue:

$$\Delta\_ROA_{j,q} = \phi_0 + \phi_1 ERROR_{j,q} + \phi_2 SURP^{+}{}_{j,q} + \phi_3 SURP^{-}{}_{j,q} + \phi_4 DSMALLSURP_{j,q} + \phi_5 DMBE_{j,q} + +\phi_6 MV_{j,q} + \phi_7 MTB_{j,q} + \varepsilon_{j,q} \quad (2)$$

$$\Delta\_CFO_{j,q} = \phi_0 + \phi_1 ERROR_{j,q} + \phi_2 SURP^{+}{}_{j,q} + \phi_3 SURP^{-}{}_{j,q} + \phi_4 DSMALLSURP_{j,q} + \phi_5 DMBE_{j,q} + \phi_6 MV_{j,q} + \phi_7 MTB_{j,q} + \varepsilon_{j,q}, \quad (3)$$

Δ_ROA is the change in return on assets (*ROA*) one quarter ahead.

Δ_CFO is the change in cash flow from operations (*CFO*) one quarter ahead.

MV is the logarithm of the market value of equity.

MTB is the market-to-book ratio.

The results are reported in Table 5. We correct for the time-series dependence of the performance measures by clustering at the firm level to obtain White standard errors to compute *t*-statistics (Petersen, 2009). In Panel A, ROA increase is larger for *OP* than *OO* during 1984 to 2000, but the CFO change between these firms is not significantly different in any of the sub-periods. If managers have more discretion in reporting ROA than CFO using accruals management, these findings suggest that, in the earlier years of the sample, investors reward good news surprises even when the firms do not deliver higher future CFO but they catch on to the walk down game over time.

We use one-quarter-ahead performance measures for the above tests because learning is more likely when the underlying economic fundamentals (i.e., future performance) are revealed within a short period of the gaming event. The results are similar when we use one-year-ahead change in ROA and CFO.

Panel B of Table 5 reports the next-quarter performance of *PP* versus *PO*. The *PP* valuation premium over *PO* does not seem to be justified. *PP* does not deliver consistently higher future operating performance in the three sub-periods. The only significant difference in performance measure is the increase in ROA over the next

quarter for the first sub-period. The change in CFO in the next quarter is no different between the two groups of firms in all three sub-periods, and the change in CFO is actually smaller for *PP* than *PO* firms using annual data in the 1995-2000 sub-period. The evidence therefore suggests that valuation penalty for "walk up to miss" firms is not justified.

4.2.2 Short-window Price Reaction to Earnings Surprises (Q3a and Q3b)

If investors understand the underlying gaming nature of walk down or walk up revision paths, they would consider the forecast revision path leading up to the earnings announcement when responding to the earnings surprise. We test whether they do so using the following regressions in equation (4) for the good news firms *PP* and *OP* and in equation (5) for the bad news firms *OO* and *PO*:[12]

$$CAR\_SURP_{j,q} = \delta_0 + \delta_1 SURP_{j,q} + \delta_2 DSMALLSURP_{j,q} + \delta_3 OP_{j,q} + \varepsilon_{j,q} \quad (4)$$

$$CAR\_SURP_{j,q} = \gamma_0 + \gamma_1 SURP_{j,q} + \gamma_2 DSMALLSURP_{j,q} + \gamma_3 PO_{j,q} + \varepsilon_{j,q}, \quad (5)$$

where $CAR\_SURP_{j,q}$ is the market-adjusted return for firm j in quarter q cumulated from two days after the latest forecast date for the quarter to one day after the earnings release date.[13] *OP* indicator variable is set to one for *OP* firms, and zero for *PP* firms in regression (4). Similarly, *PO* indicator variable is set to one for *PO* firms, and zero for *OO* firms. If investors discount the information in earnings surprises resulting from a walk down *PO* or a walk up *OP*, we predict that $\delta_3<0$ and $\gamma_3>0$.

The results are reported in Table 6 for each year. For brevity, we only report the

[12] Splitting *SURP* into $SURP^+$ and $SURP^-$ in the regression does not qualitatively change the main results. We use this simplified version for brevity.

[13] The results are similar if we use a three-day window around the earnings announcement date.

coefficients and associated *t*-statistics on *OP* and *PO* indicator variables. Consistent with our prediction for Q3a, δ_3 in Column I is significantly negative in all 23 years, indicating that investors do pay attention to the revision path. They are skeptical about the positive earnings surprises achieved through a walk down and hence apply some discounting of the good news. The coefficient is much more negative in the latest 3 years, consistent with heavier discounting in recent years.

Column II also confirms that negative earnings surprises attained through a walk up are perceived by the capital markets to be less credible (*Q3b*). The estimated coefficient on *PO* indicator variable, γ_3, is significantly positive in all 23 years, consistent with investors discounting bad news that is achieved through a walk up.

In summary, investors do seem to realize the strategic nature of the positive earnings news achieved through a walk down and the negative earnings news achieved through a walk up and adjust their price reaction accordingly.

4.2.3 Stock Return Reversal Analyses (Q4)

The above analysis on the short-window price reaction only reveals that investors realize, at least to some degree, the strategic nature associated with both a walk down and a walk up. However, it does not answer the question of whether investors adjust *fully* in their price response. To address this issue, we check for future stock return reversals for the two strategic revision paths, *OP* and *PO*.

For each calendar quarter, we form five equal-sized portfolios based on the magnitude of SURP across all the sample firms. Then, within each quintile we separate firms into two groups, one containing the strategic firms *OP* and *PO* and the other

containing the non-strategic (or at least less strategic) firms *OO* and *PP*. For each group, we calculate the average return in the subsequent quarter (CAR_PEAD) for each quintile for all three sub-periods. The hedge portfolios for the SUE strategy are constructed by buying the highest SURP quintile and shorting the lowest SUE quintile for the strategic *OP* and *PO* sub-group and for the non-strategic *PP* and *OO* sub-group. By ranking all firms on SURP first, we use the same cut-offs for the SUE quintile, and therefore control for the magnitude of earnings surprises between the strategic and non-strategic subgroups. The average CAR_PEAD and the hedge returns are reported in Table 7 for the two sub-groups for each of the sub-periods.

The hedge returns in the *PP* and *OO sub*-group average 4.87%, 6.20%, and 5.0% respectively for the three sub-periods, which are comparable to the magnitudes reported in the literature (Bernard and Thomas, 1989; Livnat and Mendenhall, 2006). In contrast, the hedge return in the *OP* and *PO* sub-group which comprises the walk down and walk up sample is not significant in 1984-1995 sub-period, increases to 2.22% in the second sub-period and to 4.04% during 2001 to 2006.

We interpret the above results as follows. The post-quarter returns are largely driven by the effect of PEAD in the non-strategic sample. For the strategic sample, however, the post-quarter returns will depend on how the PEAD effect offsets the return reversals from insufficient discounting of preceding quarter earnings surprises from strategic walk down or walk up activities. Note that the return reversals operate in the opposite direction from the PEAD effect. In the earliest period, investors did not discount sufficiently for these strategic motives so the return reversals tend to be large and of sufficient magnitude to completely offset the PEAD effect, resulting in no hedge returns. If one uses the hedge

return from PEAD in the non-strategic sample of -4.87% as an estimate of the PEAD effect for this sub-period, then the return reversal from the correction of the overreaction to the earnings surprise in the strategic sample is actually about 4.61%, which is statistically significant.

In contrast, in the latest sub-period when there is much less overreaction to the earnings surprise for the strategic sample (as reported in the previous sub-section), the small return reversals are insufficient to dampen the PEAD effect. Therefore the hedge returns from the SUE strategy show a net significant 4.04% for the strategic sample, which is almost as large as the PEAD effect for the less strategic sample of 5.03%.

Summarizing the results in this section, we find that before 1994, compared to firms with consistent optimistic forecasts *OO*, initial optimistic forecast firms that walked down their forecasts to a positive earnings surprise enjoy a stock return premium that is not justified by later operating performance. This premium is diminished after the mid-1990s. In contrast, firms with consistent pessimistic forecasts *PP* continue to enjoy a premium over those with initial pessimistic forecasts that walk up their forecasts to miss expectations, and this premium is not justified by later operating performance. So while investors have learned to discount *MBE* from a strategic walk down of forecasts, they remain overly pessimistic about walk up firms. A walk up motive seems less intuitive than a walk down motive and has not been of as much focus of attention from the regulators and the media. We consider explicitly the incentives to both a walk down and a walk up by managers and firm next.

5. Equity Trading Incentives

In this section we examine how net selling behavior of insiders and new issues or repurchases by firms may affect incentives to walk down or walk up forecasts.

5.1 The Walk Down Revision Path and Equity Transaction Incentives (H5)

Richardson et al. (2004) find that firms that issue more equity and whose managers are net sellers of the firm's stock after an earnings announcement are more likely to walk down forecasts. They hypothesize that these incentives are induced by the market reward to *MBE*. Since our previous section results show that the *MBE* reward from a walk down is much diminished in later periods, we test whether these incentives have diminished in the more recent periods. Following Richardson et al., we estimate the following logistic regression for the *OP* and *OO* sample:

$$\begin{aligned} OP_{j,q} = {} & \beta_0 + \beta_1 INSIDERSALE_{j,q} + \beta_2 FIRMSALENOW_{j,q} + \beta_3 FIRMSALESNEXT_{j,q} \\ & + \beta_4 MTB_{j,q} + \beta_5 SIZE_{j,q} + \beta_6 ROA_{j,q} + \beta_7 RD_{j,q} + \beta_8 LITG_{j,q} + \beta_9 CHEARN_{j,q} + \varepsilon_{j,q} \end{aligned}, \qquad (6)$$

INSIDERSALE is the net percentage of shares traded within one month after the earnings announcement; it is positive when insiders are net sellers and negative when insiders are net purchasers.

FIRMSALENOW is the issuance or repurchase of common and preferred equity during the quarter; a positive amount denotes equity issuance (COMPUSTAT data item 8 deflated by beginning-of-quarter market value) and a negative amount denotes stock repurchases (COMPUSTAT data item 93 deflated by beginning-of-quarter market value).

FIRMSALENEXT is the *FIRMSALENOW* value in the subsequent quarter.

RD is the research and development expenditure scaled by average total assets.

LITIG is an indicator variable equal to one for high litigation risk industries as defined in Matsumoto (2002), and zero otherwise.

CHEARN is an indicator variable equal to one for a positive change in earnings from the same quarter in the prior year, and zero otherwise.

The results of regression (6) are in Panel A of Table 8. Consistent with Richardson et al. (2004), we find that *OP* revision path is more frequent in firms with subsequent net insider sales and equity issuance in the early sub-period. Interestingly, net insider sales is statistically insignificant and equity issuance even reverses its sign in the post-scandal period (2001-2006), which suggests that these incentives disappear once investors stop rewarding a walk down to *MBE*.

5.2 Walk Up and Equity Transaction Incentives (H5)

We observe in our sample period a relatively small and somewhat stable proportion (9% in earliest period and 6% in later sub-periods) of walk up *PO* firms. Are these *PO* paths merely a random outcome or are they also driven by capital market-related incentives? To test our hypothesis *H5*, that *PO* is a strategic move by managers to walk up forecasts to elicit a temporarily dampening of the stock price and thereby facilitate equity buying, we re-estimate regression (6) by contrasting *PO* and *PP* firms with the indicator variable set to one for *PO*. We expect that $\beta_1<0$ and $\beta_3<0$.

Panel B of Table 8 reports our findings. The coefficient estimate on INSIDERSALE, β_1, is significantly negative for each of the three sub-periods, consistent with the prediction that insiders buy more following a walk up of forecasts to a deliberate miss. FIRMSALENEXT is significantly negative, indicating firm repurchase of stock, in the earliest period 1984-1994. In sum, the walk down and walk up paths are related to managerial incentives to sell equity for the former and to buy equity for the latter either

on personal account or on behalf of the firm. The insignificant coefficients on *FIRMSALENEXT* in periods after 1995, in contrast to the persistent significance of *INSIDERSALE* suggest that managers have stronger incentives to trade on their own account than for the firms' benefit when playing the numbers game.

We also consider analysts' incentives to cooperate in this earnings numbers game. We find that analysts of walk down firms and those of walk up firms are rewarded with greater accuracy in the subsequent quarter or year. We do not tabulate these results as they are similar to Ke and Yu (2006) though they did not interpret their results for the walk up case and their period ends in 2000. As Ke and Yu suggests, the results imply that cooperative analysts are rewarded with greater access to management, and so are able to be more accurate (though more biased). Past literature also note that investment banks that employ analysts with favorable forecasts are more likely to be selected to underwrite new equity issuances and tender offer repurchases.

7. Conclusions

In this paper we find evidence of a coherent relation between managers' incentives and investors' response to the *MBE* event via a walk down of analysts' forecasts and a miss event via a walk up of analysts' forecasts, and how the relation evolved over time. The past literature suggests that managers walk down analyst forecasts to report positive earnings surprises so as to boost firms' stock prices and facilitate stock selling.

Consistent with this view, we find that investors do reward a walk down with a valuation premium over the quarter that the phenomenon occurs, and that managers take advantage of the temporary valuation premium to sell equity on personal account or on

behalf of the firm. However, the valuation premium is erased once investors become aware of the strategic motive underlying a walk down of analysts' forecasts to achieve a positive earnings surprise in recent years. Once the valuation premium is erased, managers have less incentive to sell stock.

On the flip-side, we find that managers have incentives to depress stock prices to facilitate their buying shares on personal account or firm repurchases with a walk up of forecasts to deliberately miss analysts' expectations. Our evidence shows that walk up firms are indeed punished by investors relative to those that experience consistent pessimistic forecasts in the quarter and so meet or beat expectations. In response, managers are more likely to buy shares on personal account or the firm to repurchase stocks in walk up firms. Investors do not appear to have learned to discount for these strategic motives even in recent years.

When they exist, the valuation premium for a walk down to *MBE* and the penalty of a walk up to a miss are not warranted by future operating performance. In general, the future cash flows are no different for walk down firms and walk up firms when compared to consistent optimistic forecast firms and consistent pessimistic forecast firms respectively. In more careful tests, we find that the valuation premium or penalty is the result of insufficient discounting for potential strategic motives behind walk down or walk up gaming. Instead, investors overreact to earnings surprises following walk down or walk up, and their subsequent return reversals offset the well-known PEAD effect.

In sum, we find evidence that there are rewards to the earnings numbers game for firms and managers at investors' expense. In more recent years, the rewards to a walk down have largely disappeared when investors have become aware of the phenomenon.

However, the rewards to a walk up, a phenomenon that has been largely ignored in the literature and by regulators and the press, continue to exist. Investors therefore need to be more skeptical of intentional bad news surprises from a walk up revision of analysts' forecasts.

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TABLE 1: Annual Distribution of the Four Expectations Revision Paths

Year	OP	OP(%)	OO	OO(%)	PP	PP(%)	PO	PO(%)	Total	OP(%)	OO(%)	PP(%)	PO(%)
1984	258	16.0	689	42.8	506	31.4	158	9.8	1,611				
1985	358	15.8	1,024	45.2	654	28.9	228	10.1	2,264				
1986	447	17.2	1,024	39.4	855	32.9	273	10.5	2,599				
1987	400	15.4	927	35.7	998	38.4	273	10.5	2,598				
1988	487	15.6	1,080	34.5	1,270	40.6	292	9.3	3,129				
1989	557	15.2	1,464	40.1	1,284	35.1	349	9.6	3,654				
1990	680	17.7	1,533	39.9	1,285	33.4	344	9.0	3,842				
1991	766	19.0	1,519	37.6	1,436	35.5	321	7.9	4,042				
1992	836	18.1	1,584	34.2	1,834	39.6	376	8.1	4,630				
1993	804	19.5	1,245	30.3	1,740	42.3	325	7.9	4,114				
1994	1,228	18.6	1,769	26.8	3,107	47.1	492	7.5	6,596	0.17	0.35	0.38	0.09
1995	1,416	20.6	1,763	25.7	3,216	46.8	470	6.8	6,865				
1996	1,519	21.1	1,571	21.8	3,582	49.8	527	7.3	7,199				
1997	1,567	20.4	1,588	20.6	4,069	52.9	467	6.1	7,691				
1998	1,848	25.1	1,536	20.9	3,629	49.3	346	4.7	7,359				
1999	1,572	22.8	1,210	17.5	3,811	55.2	315	4.6	6,908				
2000	1,271	21.9	1,015	17.5	3,247	55.9	278	4.8	5,811	0.22	0.21	0.52	0.06
2001	1,892	29.8	1,161	18.3	3,029	47.6	276	4.3	6,358				
2002	1,326	20.6	1,092	16.9	3,689	57.3	336	5.2	6,443				
2003	1,156	17.2	1,318	19.6	3,835	57.0	421	6.3	6,730				
2004	1,178	16.2	1,452	20.0	4,141	57.0	500	6.9	7,271				
2005	1,246	15.9	1,724	21.9	4,330	55.1	555	7.1	7,855				
2006	942	14.5	1,510	23.3	3,583	55.3	449	6.9	6,484	0.19	0.20	0.55	0.06
Total	23,754	0.19	30,798	0.25	59,130	0.48	8,371	0.07	122,053				

In the denotation of each of the paths (*OP*, *OO*, *PP*, and *PO*), the first letter refers to the optimistic(O)/pessimistic(P) status of the first forecast of the quarter, and the second letter refers to the optimistic(O)/pessimistic(P) status of the last forecast of the quarter. A forecast is labeled as O (P) if it is higher than (lower than or equal to) the actual earnings of the quarter. *OP* corresponds to walk down and *PO* corresponds to walk up.

TABLE 2: Descriptive Statistics by Earnings Expectation Revision Path

Panel A: Firm-Level Variables

	OP (Walk Down)		OO		PP		PO (Walk Up)	
Variable	Mean	Median	Mean	Median	Mean	Median	Mean	Median
ERROR	-0.004	-0.002	-0.008	-0.004	0.003	0.001	0.002	0.001
SURP	0.001	0.001	-0.005	-0.002	0.002	0.001	-0.002	-0.001
ROA	0.006	0.009	0.001	0.007	0.015	0.015	0.010	0.012
Δ_ROA	-0.007	-0.002	-0.009	-0.002	0.002	0.001	0.000	0.000
CFO	0.019	0.021	0.015	0.018	0.027	0.027	0.023	0.025
Δ_CFO	-0.002	-0.002	-0.003	-0.002	0.001	0.001	0.000	-0.000
CAR_ERROR	-0.056	-0.047	-0.061	-0.053	0.049	0.034	0.021	0.010
CAR_SURP	0.001	-0.003	-0.030	-0.024	0.025	0.016	-0.001	-0.004
CAR_PEAD	-0.005	-0.008	-0.020	-0.021	0.015	0.010	-0.011	-0.010
MV	4337	812	3346	707	5566	1116	5219	1050
MTB	2.627	2.025	2.438	1.865	3.263	2.454	2.927	2.205
INSIDERSALE	0.001	0.000	0.004	0.000	0.002	0.000	0.001	0.000
FIRMSALENOW	0.005	0.000	0.005	0.000	0.006	0.000	0.005	0.000
FIRMSALENEXT	0.004	0.000	0.003	0.000	0.005	0.000	0.005	0.000
RD	0.004	0.000	0.004	0.000	0.004	0.000	0.004	0.000
CHEARN	-0.034	-0.002	-0.033	-0.003	-0.028	0.001	-0.023	0.000
LITIG	0.230	0.000	0.191	0.000	0.236	0.000	0.183	0.000

OP, PP, OO and PP refer to patterns of forecast revision paths for each firm-quarter. The first letter refers to the optimistic(O)/pessimistic(P) status of the first forecast of the quarter, and the second letter refers to the optimistic(O)/pessimistic(P) status of the last forecast of the quarter. A forecast is labeled as O (P) if it is higher than (lower than or equal to) the actual earnings of the quarter. *ERROR* is the difference between the actual EPS from I/B/E/S and the earliest EPS forecast made for the quarter, deflated by the beginning-of-quarter stock price. *SURP* is the difference between the actual EPS from I/B/E/S and the latest EPS forecast made for the quarter, deflated by the beginning-of-quarter stock price. *ROA* is return on assets. *CFO* is cash flow from operations deflated by assets. The quarterly change of ROA or CFO is measured relative to the same quarter in the previous year, namely, $\Delta\_ROA_q = ROA_{q+1} - ROA_{q-3}$; $\Delta\_CFO_q = CFO_{q+1} - CFO_{q-3}$.

CAR_ERROR is cumulative market-adjusted returns over the period from three trading days after the first forecast to one trading day after the current-quarter earnings announcement. *CAR_SURP* is cumulative market-adjusted returns for the period from the last forecast for the quarter to one day after the current-quarter earnings announcement. *CAR_PEAD* is cumulative market-adjusted returns over the period from one day after the current-quarter earnings announcement to the next earnings announcement. *MV* is the logarithm of the market value of equity. *MTB* is the market-to-book ratio.

INSIDERSALE is the net percentage shares sold/purchased by the top management or directors of the firm within the one-month period after the earnings announcement. It is positive for net insider sales, and negative for net insider purchases. *FIRMSALENOW* is the issuance/repurchase of common and preferred equity during the quarter. It represents equity issuance (COMPUSTAT#*8* deflated by beginning-of-quarter market value) when positive; and stock repurchase (COMPUSTAT#*93* deflated by beginning-of-quarter market value) when negative. *FIRMSALENEXT* is the issuance/repurchase of common and preferred equity in the quarter subsequent to the quarter concerned. *RD* denotes R&D expenditures scaled by average total assets. *LITIG i*s an indicator variable equal to one for high litigation risk industries as defined in Matsumoto (2002), and zero otherwise. *CHEARN* is an indicator variable equal to one for a positive change in earnings from the same quarter in the prior year, zero otherwise.

TABLE 3: The Existence of MBE Reward

	ERROR	SURP	D*MBE*	$SURP^+$	$SURP^-$	DSMALLSURP	Adjusted R^2	Nobs
Panel A: 1984-1997 sample period								
MODEL1	5.292	-0.464					6.8%	60834
	51.39	***-3.32***						
MODEL2	5.220	-2.135	0.042				7.8%	60834
	50.94	***-13.91***	***25.48***					
MODEL3	5.559			3.125	-2.157	-0.008	7.5%	60834
	53.68			***12.90***	***-12.83***	***-4.21***		
MODEL4	5.437		0.047	0.396	-3.583	-0.026	8.5%	60834
	52.77		***26.86***	*1.51*	***-20.43***	***-12.54***		
Panel B: 1998-2006 sample period								
MODEL1	7.609	-0.826					6.7%	61219
	55.78	***-3.93***						
MODEL2	7.519	-2.304	0.033				7.0%	61219
	55.17	***-9.94***	***15.04***					
MODEL3	7.828			2.376	-3.389	-0.021	7.2%	61219
	57.21			***7.38***	***-12.30***	***-9.29***		
MODEL4	7.710		0.045	0.306	-5.434	-0.033	7.8%	61219
	56.48		***19.69***	*0.91*	***-18.50***	***-14.22***		

The dependent variable CAR_ERROR is defined as the cumulative market-adjusted returns over the period from three trading days after the first forecast to one trading day after the current-quarter earnings announcement.

ERROR is defined as actual EPS from I/B/E/S minus the earliest EPS forecast made for the quarter, deflated by the beginning-of-quarter stock price. SURP is actual EPS from I/B/E/S minus the latest EPS forecast made for the quarter, deflated by the beginning-of-quarter stock price. DMBE equals one if SURP>=0, and zero if SURP<0. $SURP^+$ equals SURP when SURP>=0, and zero otherwise. $SURP^-$ is set to SURP when SURP<0, and zero otherwise. DSMALLSURP equals one if the absolute value of SURP is smaller than 0.02%, and zero otherwise.

Bold numbers indicate significance at the 5% level (two-tailed *t*-test).

TABLE 4: Time Series Pattern of the Rewards to MBE

Dependant Variable: CAR_ERROR

	I		II	
Year	OP vs. OO	*t-stat*	PP vs. PO	*t-stat*
1984	0.0391	***3.08***	0.0105	*0.77*
1985	0.0364	***3.39***	0.0122	*1.08*
1986	0.022	***1.96***	0.0379	***3.36***
1987	0.0346	***3.16***	0.0249	***2.28***
1988	0.0294	***2.90***	0.0277	***2.99***
1989	0.0128	*1.40*	0.0268	***2.98***
1990	0.0229	***2.15***	0.0053	*0.42*
1991	0.0316	***3.36***	0.0265	***2.29***
1992	0.0201	***2.14***	0.0321	***3.00***
1993	0.0052	*0.50*	0.0318	***2.88***
1994	0.0209	***2.59***	0.0105	*1.16*
1984-1994	0.0250	***7.98***	0.0224	***6.85***
1995	0.0096	*1.11*	0.0407	***4.18***
1996	-0.0059	*-0.63*	0.0185	***1.97***
1997	0.0204	***2.27***	0.0351	***3.29***
1998	-0.0073	*-0.80*	0.0141	*1.07*
1999	0.0117	*0.94*	0.0514	***3.31***
2000	0.0019	*0.13*	0.0278	*1.42*
1995-2000	0.0051	*1.15*	0.0313	***5.47***
2001	0.0132	*1.30*	0.0152	*0.93*
2002	-0.0236	***-2.06***	0.027	***2.15***
2003	-0.0093	*-0.93*	0.0144	*1.37*
2004	-0.0034	*-0.38*	0.0243	***3.01***
2005	0.0072	*0.92*	0.0192	***2.35***
2006	-0.0042	*-0.48*	0.0277	***3.02***
2001-2006	-0.0034	*-0.64*	0.0213	***8.90***
1984-2006	0.0124	***3.59***	0.0244	***10.55***

For Column I and II, we report β_4 and its *t*-statistics for the regression:

$$CAR\_ERROR_{j,q} = \beta_0 + \beta_1 ERROR_{j,q} + \beta_2 SURP^{+}{}_{j,q} + \beta_3 SURP^{-}{}_{j,q} + \beta_4 DMBE_{j,q} + \beta_5 DSMALLSURP_{j,q} + \varepsilon_{j,q} \quad (1a)$$

CAR_ERROR is cumulative market-adjusted returns over the period from three trading days after the first forecast to one trading day after the current quarter earnings announcement. CAR_SURP is cumulative market-adjusted returns for the period from the last forecast for the quarter to one day after the current-quarter earnings announcement.

ERROR is defined as actual EPS from I/B/E/S minus the earliest EPS forecast made for the quarter, deflated by the beginning-of-quarter stock price. SURP is actual EPS from IBES minus the latest EPS forecast made for the quarter, deflated by the beginning-of-quarter stock price. DMBE equals one if SURP>=0, and zero if SURP<0. $SURP^{+}$ equals SURP when SURP>=0, and zero otherwise. $SURP^{-}$ is set to SURP when SURP<0, and zero otherwise. DSMALLSURP equals one if the absolute value of SURP is smaller than 0.02%, and zero otherwise.

Bold numbers indicate significance at the 5% level (two-tailed *t*-test).

TABLE 5: Comparison of Future Performance between MBE vs. non-MBE firms

Panel A OP (Walk Down) vs. OO

		INTERCEPT	ERROR	SURP+	SURP-	DSMALL SURP	DMBE (OP)	SIZE	MTB	Adjusted R^2
Δ_ROA	Sub 1: 1984-1994	-0.012	0.403	0.049	-0.134	-0.002	0.003	0.002	-0.001	
		-4.28	***7.81***	*0.20*	***-1.83***	***-1.88***	***4.03***	***7.99***	***-2.09***	*2.2%*
	Sub 2: 1995-2000	-0.013	0.823	-0.077	0.020	-0.003	0.003	0.002	0.000	
		-5.12	***6.83***	*-0.14*	*0.11*	***-2.04***	***2.06***	***6.63***	*-0.76*	*3.2%*
	Sub 3: 2001-2006	-0.046	0.540	0.336	0.077	-0.001	0.000	0.002	0.001	
		-7.61	***4.05***	*0.74*	*0.30*	*-0.40*	*-0.20*	***5.77***	***4.00***	*2.7%*

		INTERCEPT	ERROR	SURP+	SURP-	DSMALLSURP	DMBE (OP)	SIZE	MTB	Adjusted R^2
Δ_CFO	Sub 1: 1984-1994	0.004	0.160	0.164	-0.141	-0.001	0.001	0.000	-0.001	
		1.16	***1.77***	*0.42*	*-0.90*	*-0.60*	*0.85*	*-1.20*	***-2.78***	*0.4%*
	Sub 2: 1995-2000	-0.004	0.294	0.249	-0.268	-0.001	0.000	0.000	-0.001	
		-1.22	***3.08***	*0.60*	***-1.93***	*-0.81*	*-0.13*	*0.36*	*-1.29*	*0.5%*
	Sub 3: 2001-2006	-0.006	0.105	-0.153	-0.184	0.000	0.001	0.000	0.000	
		-1.64	*0.78*	*-0.49*	*-1.05*	*0.04*	*1.19*	*1.41*	*0.61*	*0.3%*

TABLE 5: Comparison of Future Performance between MBE vs. non-MBE firms (Cont')

Panel B: PP vs PO (Walk Up)

		INTERCEPT	ERROR	SURP+	SURP-	DSMALLSURP	DMBE (PP)	SIZE	MTB	Adjusted R^2
Δ_ROA	Sub 1: 1984-1994	-0.004	0.347	-0.115	-0.334	-0.001	0.002	0.000	0.000	
		-1.68	***3.09***	*-0.95*	*-1.07*	*-1.77*	***2.49***	***3.24***	***2.78***	*0.9%*
	Sub 2: 1995-2000	-0.002	0.700	-0.130	0.270	-0.003	0.001	0.000	0.001	
		-0.96	***4.36***	*-0.52*	*0.46*	***-4.18***	*0.90*	*-0.10*	***5.61***	*1.2%*
	Sub 3: 2001-2006	-0.014	1.020	-0.628	0.639	-0.001	0.001	0.000	0.001	
		-4.11	***6.51***	***-2.28***	*1.31*	*-1.34*	*1.04*	*0.84*	***5.31***	*1.3%*
		INTERCEPT	ERROR	SURP+	SURP-	DSMALLSURP	DMBE (PP)	SIZE	MTB	Adjusted R^2
Δ_CFO	Sub 1: 1984-1994	0.001	0.207	-0.041	0.545	-0.002	0.001	0.000	0.000	
		0.36	*1.21*	*-0.19*	*1.06*	***-1.84***	*0.79*	*-0.08*	*-1.76*	*0.4%*
	Sub 2: 1995-2000	-0.003	0.467	0.093	-0.742	0.000	-0.001	0.000	0.000	
		-1.14	***2.24***	*0.39*	***-1.93***	*0.35*	*-0.61*	*-0.84*	*1.59*	*0.4%*
	Sub 3: 2001-2006	0.005	0.521	0.159	0.189	0.000	0.001	-0.001	0.001	
		1.54	***3.64***	*0.72*	*0.64*	*0.49*	*0.69*	***-2.79***	***3.75***	*0.6%*

ROA is return on assets. CFO is cash flow from operations deflated by total assets. The quarterly change of ROA or CFO is measured relative to the same quarter in the previous year, namely, $\Delta\_ROA_q = ROA_{q+1} - ROA_{q-3}$; $\Delta\_CFO_q = CFO_{q+1} - CFO_{q-3}$. SIZE is the logarithm of the market value of equity. MTB is the market-to-book ratio. All ROA- and CFO-related variables are restricted to be within 100% of total assets.

ERROR is defined as actual EPS from I/B/E/S minus the earliest EPS forecast made for the quarter, deflated by the beginning-of-quarter stock price. SURP is actual EPS from I/B/E/S minus the latest EPS forecast made for the quarter, deflated by the beginning-of-quarter stock price. DMBE equals one if SURP>=0, and zero if SURP<0. $SURP^+$ equals SURP when SURP>=0, and zero otherwise. $SURP^-$ is set to SURP when SURP<0, and zero otherwise. DSMALLSURP equals one if the absolute value of SURP is smaller than 0.002%, and zero otherwise.

All regressions include quarter dummies and the errors are clustered by firm. Bold numbers indicate significance at the 5% level (two-tailed *t*-test).

TABLE 6: Short Window Price Reaction to Earnings Surprises of Different Paths Leading to MBE vs. non-MBE

	Dependant Variable: CAR_SURP			
	I (MBE)		II (non-MBE)	
Year	OP. vs. PP	t-stat	PO. vs. OO	t-stat
1984	-0.0103	*-1.35*	0.0213	***2.30***
1985	-0.0130	***-2.05***	0.0282	***4.23***
1986	-0.0203	***-3.14***	0.0131	***2.05***
1987	-0.0209	***-3.08***	0.0243	***3.07***
1988	-0.0134	***-2.83***	0.0084	*1.34*
1989	-0.0157	***-3.08***	0.0158	***3.00***
1990	-0.0197	***-3.45***	0.0239	***3.22***
1991	-0.0167	***-3.04***	0.0220	***3.1***
1992	-0.0121	***-2.44***	0.0185	***2.61***
1993	-0.0082	*-1.72*	0.0159	***2.42***
1994	-0.0095	***-2.66***	0.0204	***3.86***
1984-1994	-0.0145	***-10.79***	0.0193	***11.30***
1995	-0.0139	***-3.70***	0.0231	***3.98***
1996	-0.0105	***-2.70***	0.0274	***4.37***
1997	-0.0160	***-4.23***	0.0268	***4.12***
1998	-0.0106	***-2.27***	0.0321	***3.56***
1999	-0.0076	*-1.53*	0.0125	*1.21*
2000	-0.0138	***-2.00***	0.0215	*1.48*
1995-2000	-0.0121	***-9.70***	0.0239	***8.74***
2001	-0.0058	*-1.05*	0.0370	***3.21***
2002	-0.0158	***-3.17***	0.0149	*1.45*
2003	-0.0131	***-3.18***	0.0250	***3.99***
2004	-0.0163	***-4.28***	0.0248	***4.17***
2005	-0.0237	***-6.67***	0.0317	***6.23***
2006	-0.0248	***-6.01***	0.0252	***4.29***
2001-2006	-0.0166	***-5.78***	0.0264	***8.67***
1984-2006	-0.0144	***-13.78***	0.0223	***15.56***

For Column I , we report δ_3 and its *t*-statistics for the regression:

$$CAR\_SURP_{j,q} = \delta_0 + \delta_1 SURP_{j,q} + \delta_2 DSMALLSURP_{j,q} + \delta_3 OP_{j,q} + \varepsilon_{j,q} \qquad (4)$$

For Column II, we report γ_3 and its *t*-statistics for the regression:

$$CAR\_SURP_{j,q} = \gamma_0 + \gamma_1 SURP_{j,q} + \gamma_2 DSMALLSURP_{j,q} + \gamma_3 PO_{j,q} + \varepsilon_{j,q} \qquad (5)$$

CAR_ERROR is cumulative market-adjusted returns over the period from three trading days after the first forecast to one trading day after the current-quarter earnings announcement. CAR_SURP is cumulative market-adjusted returns for the period from the last forecast for the quarter to one day after the current-quarter earnings announcement.

SURP is actual EPS from I/B/E/S minus the latest EPS forecast made for the quarter, deflated by the beginning-of-quarter stock price. DSMALLSURP equals one if the absolute value of SURP is smaller than 0.02%, and zero otherwise.

Bold numbers indicate significance at the 5% level (two-tailed *t*-test).

Table 7 Comparison of Trading Profits of the PEAD Strategy

Panel A: 1984-1994 period

SURP	OP and PO		PP and OO		Difference	
Rank	CAR_PEAD	t-stat	CAR_PEAD	t-stat	CAR_PEAD	t-stat
1	0.0029	*0.33*	-0.0225	***-5.18***	-0.0258	***-2.72***
2	-0.0094	***-2.47***	-0.0200	***-6.74***	-0.0098	***-2.49***
3	-0.0092	***-2.15***	0.0021	*0.6*	0.0113	***1.99***
4	-0.0024	*-0.61*	0.0213	***8.02***	0.0237	***5.54***
5	0.0055	*1.09*	0.0262	***7.71***	0.0207	***3.77***
Hedge	0.0026	*0.32*	0.0487	***11.47***	-0.0471	***-4.59***

Panel B: 1995-2000 period

SURP	OP and PO		PP and OO		Difference	
Rank	CAR_PEAD	t-stat	CAR_PEAD	t-stat	CAR_PEAD	t-stat
1	-0.0287	***-2.07***	-0.0404	***-3.95***	-0.0232	*-1.42*
2	-0.0349	***-2.98***	-0.0192	*-1.77*	0.0034	*0.25*
3	-0.0196	*-1.56*	-0.0094	*-1.83*	0.0010	*0.08*
4	-0.0024	*-0.16*	0.0086	*1.25*	-0.0087	*-0.52*
5	-0.0065	*-0.35*	0.0216	***2.47***	0.0119	*0.61*
Hedge	0.0222	***2.07***	0.06200	***8.68***	-0.0399	***-2.62***

Panel C: 2001-2006 period

SURP	OP and PO		PP and OO		Difference	
Rank	CAR_PEAD	t-stat	CAR_PEAD	t-stat	CAR_PEAD	t-stat
1	-0.0080	*-1.02*	-0.0060	*-0.63*	0.0020	*0.24*
2	-0.0003	*-0.04*	-0.0032	*-0.45*	-0.0030	*-0.51*
3	0.0047	*0.66*	0.0037	*0.86*	-0.0010	*-0.15*
4	0.0118	*1.14*	0.0232	***3.15***	0.0114	***2.02***
5	0.0324	***2.50***	0.0443	***5.20***	0.0119	*1.36*
Hedge	0.0404	***3.37***	0.0503	***10.41***	-0.0100	*-0.75*

For each calendar quarter, we form five equal-sized portfolios based on the magnitude of SURP. Then we construct two hedge portfolios by buying the highest SURP quintile and shorting the lowest SURP quintile within the OP-PO group and PP-OO group, respectively. The average hedging returns over the subsequent quarter (CAR_PEAD) and its associated t-statistics are reported for each group and sub-period.

Bold numbers indicate significance at the 5% level (two-tailed *t*-test).

TABLE 8: Incentives and Alternative Analysts' Forecast Revision Paths

Panel A: Insider Sales/ Stock Issuance and Walk Down

OP vs. OO (PATH=1 for OP, 0 for OO)

	1984-1994		1995-2000		2001-2006	
Variable	Estimate	P-value	Estimate	P-value	Estimate	P-value
INTERCEPT	-0.945	**0.000**	-0.071	**0.005**	-0.130	**0.000**
INSIDERSALE	42.582	**0.000**	27.299	**0.001**	10.982	0.155
FIRMSALENOW	1.372	0.070	1.153	0.118	-2.900	**0.000**
FIRMSALENEXT	3.226	**0.000**	2.276	**0.018**	-1.328	0.160
MTB	0.008	0.445	0.013	0.097	-0.018	**0.037**
SIZE	0.000	**0.009**	0.000	**0.015**	0.000	**0.018**
ROA	13.486	**0.000**	7.484	**0.000**	4.866	**0.000**
RD	4.107	**0.040**	2.438	0.112	5.185	**0.006**
CHEARN	-0.170	0.069	-0.245	**0.005**	0.159	0.213
LITIG	0.047	0.234	0.112	**0.004**	0.432	**0.000**
-2 Log L	25133.27		23165.07		21019.60	
Likelihood	354.34	0.00	251.34	0.00	227.88	0.00
1	6637		8724		7459	
0	13448		8180		7876	

Panel B: Insider Purchase/ Stock Repurchase and Walk Up

PO vs. PP (PATH=1 for PO, 0 for PP)

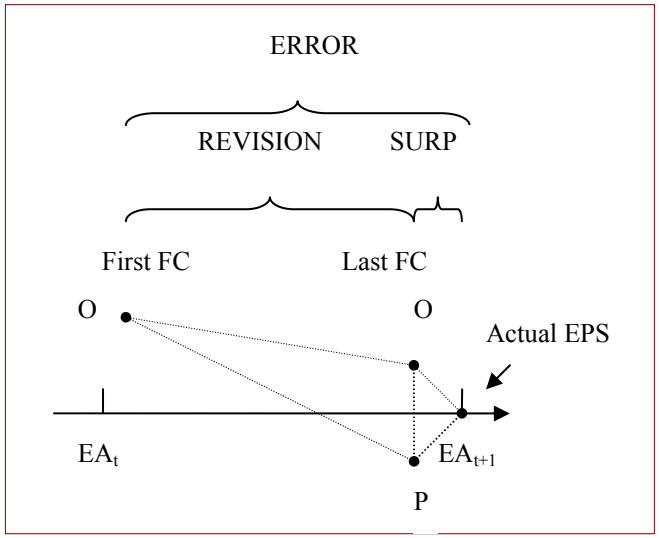
	1984-1994		1995-2000		2001-2006	
Variable	Estimate	P-value	Estimate	P-value	Estimate	P-value
INTERCEPT	-1.287	**0.000**	-1.892	**0.000**	-2.057	**0.000**
INSIDERSALE	-46.641	**0.000**	-39.977	**0.000**	-47.513	**0.000**
FIRMSALE	-0.398	0.664	-1.447	0.122	2.017	**0.026**
FIRMSALENEXT	-2.383	**0.046**	-0.579	0.616	0.211	0.855
MTB	-0.002	0.845	-0.045	**0.000**	0.010	0.324
SIZE	0.000	0.705	0.000	**0.009**	0.000	0.163
ROA	-7.855	**0.000**	-6.717	**0.000**	-4.730	**0.000**
RD	-1.756	0.442	0.505	0.782	-4.545	0.090
CHEARN	0.370	**0.004**	0.195	0.100	-0.023	0.888
LITIG	-0.012	0.815	-0.201	**0.001**	-0.362	**0.000**
-2 Log L	17154.185		14512.371		15586.838	
Likelihood	110.532	0.000	185.562	0.000	139.164	0.000
1	3345		2261		2420	
0	14607		20338		21742	

INSIDERSALE is the net percentage of shares traded in the one-month period after the earnings announcement, and it is positive when insiders are net sellers and negative when insiders are net purchasers. FIRMSALENOW is issuance/repurchase of common and preferred equity during the current quarter. It represents net equity issuance (COMPUSTAT data item 8 deflated by beginning-of-quarter market value) when positive; and net stock repurchase (COMPUSTAT data item 93 deflated by beginning-of-quarter market value) when negative. FIRMSALENEXT is the issuance/repurchase of common and preferred equity in the quarter subsequent to the quarter concerned. RD denotes research and development expenditures scaled by average total assets. LITIG is an indicator variable equal to one for high litigation risk industries as defined in Matsumoto (2002), and zero otherwise. CHEARN is an indicator variable equal to one for a positive change in earnings from the same quarter in the prior year, zero otherwise. SIZE is the logarithm of market value of equity. MTB is the market-to-book ratio. ROA is return on assets.

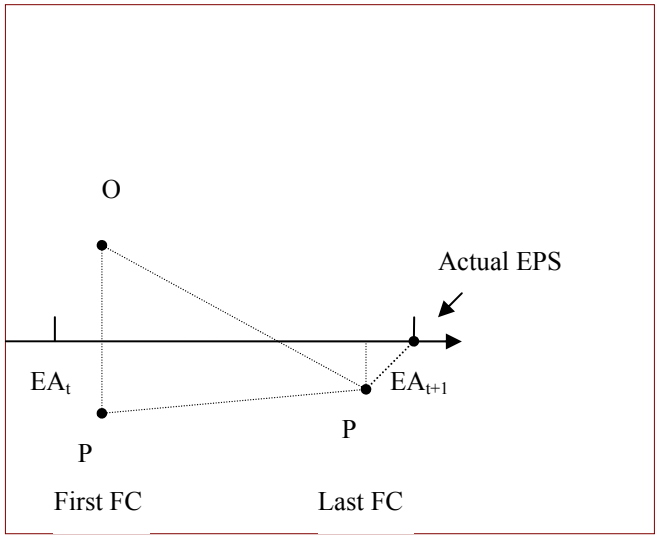
Bold numbers indicate significance at less than the 5% level (chi-square test).

Figure 1: Four-way comparison

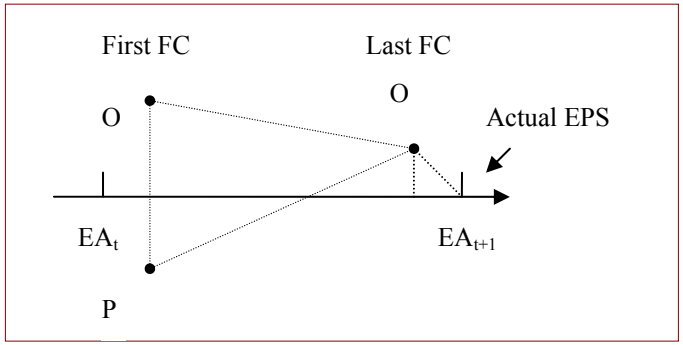
OP vs. OO



OP vs. PP



OO vs. PO



PO vs. PP