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Executive Compensation and Analyst Guidance: The Link between CEO Pay and Expectations Management

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Preliminary draft, comments welcome

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Executive Summary

During the nineties, there has been a strong increase in the number of firms whose earnings consistently met or exceeded analyst consensus forecasts. Positive earnings surprises can be achieved through two principal mechanisms. First, through accounting-based manipulations and discretianary accruals, executives may manage earnings in order to avoid falling short of analyst expectations. The second method is to inject pessimism in analyst forecasts by providing analysts with negative clues leading to downward revisions of their earnings per share estimates. Managers can use numerous mechanisms to achieve this goal. Executives can use public disclosures (e.g. profit warnings), non-formal communications with analysts or pressure on analysts to adjust their forecasts away from their true beliefs.

Another striking development over the last decade has been the strong increase in stock-based and option-based executive compensation. Executives' personal financial wealth has become more directly tied to the stock price performance of their firms. This has led to an increase in managers' potential incentives to affect the share price of their companies.

In this paper, we show that CEO compensation packages provide managers with strong incentives to avoid negative earnings surprises by managing analyst expectations downward. We first analyze those components of CEO compensation contracts together with stock and option ownership, that most influence the extent of analyst guidance, taking into account other firm-specific factors. Consistent with common wisdom, we report a strong positive relationship between the practice of analyst guidance and the value of the CEO's in-the-money exercisable options as well as one between the sensitivity of the option portfolios to stock price movements and analyst guidance. Moreover, we document a positive relationship between the value of shares held by CEOs and analyst guidance. Furthermore, there is a strong positive relationship between analyst guidance and the bonuses paid annually to CEOs, which suggests that meeting or beating analyst expectations constitutes an important determinant of CEO performance assessment. Finally, we document a negative link between CEO base salary and analyst guidance.

In a second set of investigations, we examine the extent to which the stock market is able to discern any pessimistic bias in analyst consensus forecasts induced by expectations management

strategies. We conduct an event study around the earnings announcement dates to measure the valuation effects caused by expectations management strategies and we test whether these effects are related to the factors that explain analyst guidance. Consistent with prior research, we find that firms that meet or beat analyst consensus forecasts display strong positive cumulative abnormal returns during the period surrounding the announcement date. However, for these firms, the market is partially able to discern analyst guidance strategies: companies that are suspected of managing analyst expectations in order to report a positive earnings surprise display a lower abnormal return at the earnings announcement than those not suspected of guiding analysts downward. Further analysis establishes that this lower abnormal return is significantly and positively related to the options held by CEOs.

Overall, our results imply that tying executives' incentives too strongly to stock price produces the perverse effect of encouraging CEOs to manipulate analysts expectations, such that performance dependent CEO compensation is maximized over the short run. However, the good news is that the market is partially able to detect the games played by executives.

Executive Compensation and Analyst Guidance: The Link between CEO Pay and Expectations Management

Abstract

During the last decade, a surprisingly high percentage of U.S. companies has fulfilled or beaten analysts' earnings per share forecasts. One of the most frequently cited reasons for this growing tendency is a change in the nature of U.S. executive compensation structure. As stock options have become an increasingly important part of executive compensation, the preservation or enhancement of short term stock value around the earnings announcement has become a priority for managers. Besides earnings management, a widespread way to meet analyst expectations is to inject pessimism into their forecasts by providing analysts with negative clues, or so-called downward guidance. This paper is the first to investigate the relationship between the practice of analyst guidance and executive compensation packages. We document a strong link between expectations management and the relevant options component of CEO compensation, bonus plan payments, and the value of the firm's shares owned by its managing CEO. In a second set of tests, we show that firms that meet or beat analyst forecasts at the earnings announcement generate positive abnormal returns, which are significantly lower for firms suspected of managing expectations.

JEL classification: G14; G24; M52

Keywords: Analyst guidance, Earnings surprise, Executive compensation, Stock options

1 Introduction

Over the last decade, companies have tried particularly hard to meet analyst expectations. There has been a strong decrease in the tendency of managers to report earnings falling short of analyst estimates (see for example Brown 2001a). Reporting earnings that do not fall short of analyst expectations can be achieved by two principal mechanisms. First, through the manipulation of discretionary accruals, executives are able to manage earnings in order to meet or beat analyst expectations. The second method is to inject pessimism into analyst forecasts by providing analysts with negative clues leading to downward revisions of the consensus estimates. As a result, firms can more easily meet or beat analyst expectations. The business press is replete with articles referring to this practice. In a December 1998 Fortune Magazine article entitled "The Guidance Game", E. Schonfeld writes:

> *"… a company is allowed to provide the analysts with clues, or so-called guidance, about what it thinks earnings will be. The guidance number usually shows up as the consensus estimate among analysts. If the company meets or just beats the consensus, both that company and the analyst win: The stock goes up and everyone looks smart."*

Fuller and Jensen (2002) attribute the increasing tendency of managers engaging in analyst manipulation strategies to a shift in the nature of executive compensation structure. As stock options have become an increasingly important component of executive compensation, the preservation or enhancement of short term stock value around the earnings announcement has become a priority for managers. In the Business Week edition of May 24, 1998, M. Vickers corroborates this explanation:

> *"Companies need to generate positive surprises to keep not only stockholders but also stock-option holders happy – and that group is growing…"*

In this paper, we investigate whether the tendency of executives to manage analyst forecasts downward is related to the incentives provided by their compensation packages. Although past research and financial media have claimed that executives' expectations management practices are

due to the increasing dependence of their compensation on the evolution of short term stock prices, to date no direct empirical tests of this relationship have been performed, taking explicitly into account the degree and nature of management's compensation and ownership exposure to their firm's stock performance.

We conduct two distinct sets of tests. First, we analyze those components of CEO compensation contracts together with stock and option ownership, that most influence the extent of analyst guidance, taking into account other firm-specific factors. We tackle this problem by considering the characteristic components of the CEO compensation package due to their differing risk and incentive profiles. We find that CEO compensation components strongly influence the propensity of managers to engage in expectations management strategies. Consistent with common wisdom, we report a strong positive relationship between the practice of analyst guidance and the value of the CEO's in-the-money exercisable options as well as one between the sensitivity of the option portfolios to stock price movements and analyst guidance. Moreover, we document a positive relationship between the value of shares held by CEOs and analyst guidance. Furthermore, there is a strong positive relationship between analyst guidance and the bonuses paid annually to CEOs suggesting that meeting or beating analyst expectations constitutes an important determinant of CEO performance assessment. Finally, we document a negative link between CEO base salary and analyst guidance.

Second, we examine the extent to which the stock market is able to discern any pessimistic bias in analyst consensus forecasts induced by expectations management strategies. We conduct an event study around the earnings announcement dates to measure the valuation effects induced by expectations management strategies and we investigate whether these valuation effects are related to the factors that explain the extent of analyst guidance. Similar to previous research, we find that firms that meet or beat analyst consensus forecasts display strong positive cumulative abnormal returns during the period surrounding the announcement date. However, for these firms, the market is partially able to discern analyst guidance strategies: companies that are suspected of managing analyst expectations in order to report a positive earnings surprise display a lower abnormal return at the earnings announcement than those not suspected of guiding analysts downward. Further analysis establishes that this lower abnormal return is significantly and positively related to the options held by the CEOs.

Our research makes several contributions to the extant literature. To our knowledge, we are the first to demonstrate the crucial role of executive compensation in explaining analyst guidance. By finding that equity-based compensation induces managers to manipulate analysts, we complement previous research underlining negative consequences of equity-based compensation (cf. Dechow et al. 1996 for instance). Secondly, we extend Matsumoto's (2002) analysis in which she documents that specific firm characteristics explain managerial incentives to avoid negative earnings surprises, although without including the incentives created by executive compensation components. Thirdly, we complement the study of Richardson et al. (2003) which shows that the tendency of managers and firms to sell shares after the earnings announcement creates incentives to guide analyst forecasts downward. Our paper considers the CEO's full pay package with several additional compensation and ownership items. We identify which equity and accounting performance-based compensation components lead managers to manipulate analyst expectations downward. We also extend the results of Aboody and Kasznik (2000), who find that executives manipulate analyst expectations by rushing bad news reports in order to decrease the strike prices of their awarded options. While they consider only the impact of newly awarded options as incentives to manipulate analyst expectations we take into account explicitly the impact of all past and current equity-based compensation components. Finally, our study contributes to the earnings surprise literature by demonstrating that positive cumulative abnormal returns for firms that meet or beat analyst forecasts are smaller if the firms are likely to achieve this through expectations management. This finding is consistent with the results of Bartov et al. (2002), who use a different method to measure expectations management.

The remainder of the paper is organized as follows. In Section 2, we review the literature related to expectations management. In Section 3, we develop hypotheses concerning the cross-sectional relationship between expectations management and CEO compensation components as well as CEO stock and option ownership. Section 4 presents the sample and the empirical design. Results are provided in Section 5. The paper is concluded in Section 6.

2 Literature review

Three important conclusions for expectations management stand out from past research. First, reported earnings impact stock prices. Bartov et al. (2002) document that stocks of firms that meet or beat analyst forecasts command a significantly higher return at the announcement date than those

with unfavorable surprises. Furthermore, they find that the cost of managing analyst expectations downward before the announcement date, is more than compensated by the stock price reaction to positive earnings surprises at the announcement date. More specifically, controlling for the magnitude of the revision and the surprise, the stock price response to surprises at the earnings announcement is 1.5 times stronger than the response to analysts' downward revisions before the announcement date in their sample. Lopez and Rees (2001) report that firms that meet or beat analyst estimates over multiple subsequent quarters experience positive cumulative abnormal returns on the announcement date. Similarly, Kasznik and McNichols (2002) document that subsequent earnings and subsequent market values are higher for firms reporting positive earnings surprises over multiple consecutive quarters. Moreover, Skinner and Sloan (2002) document that firms reporting negative surprises suffer large asymmetric market reactions compared to those reporting positive surprises; this applies in particular to growth firms.

Second, management is concerned about the evolution of short term stock prices for several reasons. As underlined by Richardson et al. (2003), managers of companies that intend to issue new equity are preoccupied with the current price level of their company as it directly impacts the amount of capital raised in the issue. Since many equity issues occur in the period following the public earnings announcement, a sharp price increase at the earnings release is particularly important for the success of such issues. Richardson et al. find that forecast pessimism prior to an earnings announcement is more common for firms that are about to issue new equity.

The structure of management compensation packages is another reason why executives care about their firms' near term stock prices. Murphy (1999) documents a strong increase in option compensation for U.S. CEOs between 1991 and 1996 across all industrial sectors. He also reports a strong increase in the value of stocks held by S&P 500 CEOs over the nineties. Yermack (1997) examines CEO timing ability with respect to corporate news announcements and finds that CEOs receive stock option awards in advance of good earnings news boosting stock prices. By the same token, earnings announcements before CEO stock option awards are less favorable on average. Yermack concludes that CEOs exert influence on the compensation committee and are therefore able to manage the timing of their awards. Aboody and Kasznik (2000) find that CEOs make opportunistic voluntary disclosure decisions that increase the value of their stock option compensation. In particular, they investigate the timing of voluntary disclosures around option awards

to the CEOs of firms with fixed award schedules, and find that managers of such firms manage investor expectations downward prior to the award date, by delaying good news and rushing forward bad news. Richardson et al. (2003) show that analyst forecasts are more pessimistic for firms whose insiders are net sellers of the firm's stock in the period following earnings announcement.

Managers may as well be concerned that a negative earnings surprise will affect their performance evaluation. Matsunaga and Park (2001) document a significant negative effect on the CEO's bonus payment when reported earnings fall short of analyst expectations. Puffer and Weintrop (1991) find an increased probability of CEO turnover when earnings fall short of analyst expectations. In the same vein, Matsumoto (2002) finds that managers of firms with high institutional ownership are more likely to take actions to avoid negative earnings surprises. She attributes her finding to the pressure for near-term performance characterizing institutional investors. Moreover, she finds that firms relying on implicit claims with stakeholders and companies in industries with high litigation risk are more likely to take actions to avoid negative earnings surprises.

Finally, prior research concludes that managers have the ability to manage analyst forecasts. This is achieved by using numerous mechanisms, including public disclosures (Cotter et al. 2002), non-formal communications or by pressure on analysts to adjust their forecasts away from their actual expectations. A crucial input to the analyst is timely access to new information about the covered companies and, most of the time, this information is obtained from the companies themselves. Consequently, analysts have to cooperate with firms to achieve less restricted access to company management (Boni and Womack 2002). Lim (2001) argues that analysts rationally issue biased forecasts in order to obtain valuable future information from management, which is one of their key sources of information. To the extent that the analyst's employer holds large positions or maintains an investment banking relationship with the company covered, the analyst is likely subject to additional pressures regarding his forecasts. Michaely and Womack (1999) and Lin and McNichols (1998) document a systematic bias in recommendations for companies underwritten by the analyst's institution.

Overall, past research concludes that there is a strong relationship between the sign of the earnings surprise and the stock price reaction at the earnings announcement, that managers have strong incentives to avoid negative surprises, and that they have the possibility to manage analysts

through various information channels or by exerting pressure on analysts to issue forecasts that are compatible with managements' own objectives.

3 Hypotheses on expectations management and executive compensation

In this section, we provide a description of the components that constitute most executive compensation packages (Murphy 1999): stocks, stock options, bonus payments, long-term incentive plans, and base salary. For each compensation component we discuss the incentives that are created for managers to manipulate analysts prior to the earnings announcement. We form hypotheses about the relationship between expectations management and these compensation components as an integral part of the CEO's total firm-related financial exposure.

We define expectations management as the tendency of firm managements to avoid negative earnings surprises by maintaining low analyst expectations. Expectations management is measured by comparing the analyst consensus forecast and the expected earnings forecast according to the model described in section 4.2.[3]

We use two measures of the CEO's stock compensation and share ownership in order to examine their influence on expectations management: (1) restricted stocks granted to the CEO during the current fiscal year and (2) the CEO's total stock position.

Restricted stocks are "restricted" because shares are forfeited under certain conditions typically related to employment retention. Their sale is usually prohibited during a three to five year vesting period. The CEO's total stock position includes in addition stocks acquired by the CEO privately and restricted stocks granted during previous years.

Risk averse and liquidity constrained managers tend to sell a large portion of their shares as quickly as possible for liquidity or diversification reasons, at times aiming for personal target levels of share ownership (Ofek and Yermack 2000). However, due to the insider trading restrictions on the US market these sales typically do not occur before the earnings announcement: the bulk of insider trades is concentrated in the week immediately following (Sivakumar and Waymire 1994). Consequently, equity-based compensation components provide executives with strong incentives to take actions which lead to a share price increase around the earnings announcement date. Moreover,

[3] We use the terms expectations management and analyst guidance synonymously in this paper.

executives benefit from a relatively pessimistic outlook during a fiscal year in which stocks are awarded or purchased. By saving good news for the earnings announcement (taking place in the first quarter of the next fiscal year), managers will receive a larger number of shares at times when share price is low.

Hence, we expect a positive relationship between the total values of CEO share positions and expectations management. We also expect a positive relationship between restricted stocks awarded to managers and analyst guidance. However, this relation might be weaker than that of analyst guidance to the total position of unrestricted stocks, as our data contains the restricted stocks granted in the current fiscal year only, which are likely not at the CEO's free disposal yet.[4] This leads to the first hypothesis.

Hypothesis 1: There is a positive relationship between the value of the shares held by CEOs and expectations management.

Stock options provide a direct, albeit non-linear, link between share price appreciation and managerial rewards. Options-based incentives to manipulate analysts' expectations may stem from two distinct sources: (1) newly awarded stock options, and (2) unexercised stock options granted in previous years.

Newly awarded stock options are usually non-tradable and are typically forfeited if the executive leaves the firm before vesting. Murphy (1999) documents that most options expire after ten years, gradually become vested during approximately four years, and are granted with strike prices equal to the "fair market value" on the date of the grant. Despite trading restrictions, there are three reasons why newly awarded stock options can encourage executives to manage analyst expectations downward. First, a low stock price in the year of the option grant will translate into a relatively low strike, thus increasing the future value of the CEO's grant after the positive surprise at the earnings announcement (Aboody and Kasznik 2000). Second, newly awarded options increase executives' risk exposures to their companies. CEOs may thus have an interest to sell non-restricted shares or exercise options to hedge the additional risk created by the newly awarded options (Ofek and Yermack 2000). Finally, compared to out-of-the-money options, the value of newly awarded at-the-money options is more sensitive to stock price changes. As a consequence, chief-level

executives aiming to maximize their yearly stock option compensation may pursue stock price enhancing strategies for behavioral reasons.

In contrast to newly awarded options, exercisable and in-the-money options granted to CEOs during prior years can be cashed in directly after the earnings announcement. The amount of cash that can be raised by exercising the option and reselling the shares immediately is linearly related to the share price. As a consequence, CEOs owning considerable positions of exercisable and in the money options will have strong incentives to push strategies leading to share price increases. Overall, we expect executives with large positions of newly awarded and exercisable in-the-money options to have strong incentives to guide analysts. Hence the second hypothesis states the following:

Hypothesis 2: There is a positive relationship between expectations management and the value of the options held by the CEO.

Bonus plans awarded to top executives are generally based on a single-year performance measure. Murphy (1999) reports that most companies use two or more performance measures to pay the annual bonus to top executives and almost all companies rely on some measure of accounting profits to assess performance. Previous research suggests two reasons why bonus may be related to expectations management. First, the size of the annual bonus is positively related to the success of meeting analyst forecasts (Matsunaga and Park 2001). Therefore, managers receiving bonus plan payments benefit directly from meeting or beating analysts' earnings forecasts. Second, analysts' earnings forecasts are reflected in the board of directors' expectations about future performance of their organizations (Imhoff and Lobo 1984, Fuller and Jensen 2002). Consequently, executives have a strong interest to keep the directors' expectations moderate (via analyst forecasts) in order to set performance thresholds for their bonus plans relatively low. Accordingly our third hypothesis is as follows:

Hypothesis 3: The relationship between expectations management and the amount paid to CEOs according to annual bonus plans is positive.

The structure of typical long-term incentive plans is similar to the structure of bonus plans, with the exception that long-term incentive plans are typically based on rolling-averages of three or five-

[4] The detailed description of the compensation variables is contained in Section 4.3.

year cumulative performance. Hence, managers can similarly benefit from a relatively pessimistic outlook during the year and a positive surprise at the announcement. As a consequence, we expect the relationship between long-term incentive plans and expectations management to be similar to the relationship between bonus plans and expectations management. This leads to our fourth hypothesis.

Hypothesis 4: The relationship between expectations management and the amount paid to CEOs according to long-term incentive plans is positive.

Base salary represents the fixed component in executive compensation contracts. Salaries are typically based on general industry salary surveys, supplemented by detailed analysis of selected industry peers. In contrast to the other compensation items described above, the total amount of salary paid to a CEO in a given fiscal year is independent of the company's accounting performance or stock price development of that same year. Therefore, it unlikely creates any incentives for the CEO to engage in expectations management. To the contrary, CEOs with high salaries might be *less* likely to manage expectations for two reasons.

First, for any given level of performance-linked compensation items, the higher the CEO's base salary, the less likely the liquidity constraints that might force the CEO to cash in any performance dependent compensation items. Hence, the CEO is less likely induced to take short term actions in order to increase the value of the positions to be cashed in.

Second, expectations management might be costly in the sense that it increases the risk of shareholder litigation in response to stock price manipulation. Investors might equally discount stock prices of firms once they have been identified to manipulate analysts. Thus, if expectations management jeopardizes firm reputation and management's credibility, it could ultimately result in the loss of the CEO's job, which would be particularly costly for CEOs with high base salaries at stake. These arguments lead to our fifth hypothesis.

Hypothesis 5: The relationship between the salaries paid to CEOs and expectations management is negative.

4 Sample and methodology

In this section, we first describe our sample selection process. Then, we present the measurement of the variables used in this paper and report their summary statistics. Finally, we describe the methodology used to test our hypotheses.

4.1 Sample selection

We use data from five sources. The CEO compensation information is taken from Standard and Poor's Execucomp database. Execucomp reports components of executive compensation for approximately 1500 U.S. firms (S&P 500, S&P 400 Mid Cap, S&P 600 Small Cap) between 1992 and 2001. Similar to Richardson et al. (2003), we use individual analysts' forecasts to calculate a customized consensus estimate. With this approach, we are able to construct a measure of expectations that is more timely than the I/BE/S monthly consensus mean, which may contain stale forecasts.[5] We compute the monthly consensus forecast for each company using the median of all individual analyst forecasts in that month. The individual analysts' annual earnings forecasts are obtained from Thomson Financial's I/B/E/S Detail History database. Accounting data is taken from Standard and Poor's Compustat. Daily stock returns and market capitalization data are obtained from the Center for Research in Security Prices (CRSP). We use Thomson Financial' s CDA Spectrum Historical Tape Files (13F) for institutional investor data.

The initial sample contains 14'873 observations for 3'956 different firms in the Execucomp database. Firms are excluded from this initial sample if they are financial institutions (SIC codes 6000-6999), utilities (SIC codes 4800-4999), quasi-regulated industries (SIC codes 8000 and above), or if the firms have missing data in I/B/E/S, CRSP, or Compustat. We also exclude firm-year observations in which a company has incomplete or inconsistent details concerning the options granted to its CEO (e.g. missing maturity date, missing exercise price or a maturity date smaller than the grant date). We exclude as well firm-years in which a company belongs to an industry that contains less than 8 other companies for that year. Industries are grouped as in Yermack (1995). Finally, we do not use any observations from the year 1992, for which Execucomp reports

[5] Using the I/B/E/S monthly consensus mean instead of our own consensus yields quantitatively very similar results and does not affect any main result.

compensation data for only 433 CEOs.[6] After filtering the data as described above, only 174 observations remain for or that year. Another reason for the year's exclusion is the fact that it was the first year in which executive compensation information was published in the present format and we do not want to introduce any self-selection biases in case the characteristics of the firms (not) reporting are correlated with the firm characteristics used in the construction of our explanatory variables. The final sample contains 8'714 firm-year observations.

4.2 Measuring expectations management

Measuring true analyst expectations is already a difficult task. Whether analysts have been manipulated by firm managements in order to issue relatively low forecasts (expectations management) cannot, obviously, be directly observed. Prior research has developed two proxies to capture expectations management. One method (cf. Richardson et al. 2003, Chan et al. 2003) makes use of tracking the analyst forecast error over the forecast period. Expectations management is suspected when analyst forecasts are optimistically biased (EPS forecast > EPS announced) at the beginning of the period and end up with a pessimistic bias prior to the announcement (EPS forecast < EPS announced). The alternative method (cf. Matsumoto 2002, Brown and Higgins 2002) is to model the expected forecast as a function of public information about the firm's performance (measured by EPS changes and stock price returns) and compare it with the last consensus forecast. Expectations management is suspected when the last consensus forecast is below the expected forecast.

We apply the Matsumoto (2002) method since the former measure is inappropriate for our study for two main reasons. The main research question of our paper is whether expectations management is related to various CEO compensation components. Hence, the focus of our research is on the manipulation of analysts (as opposed to earnings). However, any measure that involves comparing forecasts with announced earnings cannot differentiate between analyst and earnings manipulation, since announced earnings are directly subject to earnings management. The Matsumoto

[6] In 1992 only S&P500 companies were included in the database.

measure, however, is based on the comparison of the consensus forecast and the expected forecast, which does not contain the *current* year's announced earnings.[7]

The second problem with the former method for our purpose is that certain compensation components are related to the expectations management measure by construction. Suppose, for instance a positive earnings shock during the forecasting period. This implies both a larger bonus and higher EPS announced. If the earnings shock comes as a surprise at the announcement it will not be reflected in the forecast, thus producing a positive correlation between the proxy for expectations measurement and the bonus payment. In contrast, the Matsumoto measure comparing the last consensus with the expected forecast is not flawed with this problem. If the shock is public information then it should be reflected in both forecast and expected forecast (via prices). If it remains a surprise (deliberately or not) until the announcement it should neither affect forecast nor expected forecast.

We adapt Matsumoto's (2002) methodology to annual data. For each firm i in industry j during year t, the yearly change in earnings is modeled as a function of prior yearly change in earnings and returns cumulated over the current year:[8]

$$\frac{\Delta EPS_{ijt}}{P_{ijt-1}} = a_{jt} + b_{1jt} \cdot \frac{\Delta EPS_{ijt-1}}{P_{ijt-2}} + b_{2jt} \cdot CUMRET_{ijt} + e_{ijt}, \qquad (1)$$

where:

ΔEPS_{ijt} = earnings per share for firm i in industry group j in year t, less earnings per share for the same firm one year prior, as reported by I/B/E/S.

P_{ijt} = price per share for firm i in industry group j at the end of year t.

$CUMRET_{ijt}$ = cumulative daily excess return for firm i in industry group j during year t. Returns are cumulated from three days after year *t-1* earnings announcement to 20 days before year t earnings announcement.

[7] Announced earnings only enter indirectly in the computation of the expected EPS change as the *difference* between the earnings of the prior year and the year before that. See below.

[8] Returns are intended to capture additional value-relevant information that an analyst might use to estimate earnings.

The model is estimated for each industry group using all firms in that year that belong to the group. Industry groups are defined as in Yermack (1995). In a year, there must be at least eight companies in a particular industry group for the equation to be estimated. The parameter estimates from the prior industry-year are used to determine the expected change in earnings per share ($E[\Delta EPS]$):

$$E\left[\Delta EPS_{ijt}\right] = \left[\hat{a}_{jt-1} + \hat{b}_{1jt-1} \cdot \frac{\Delta EPS_{ijt-1}}{P_{ijt-2}} + \hat{b}_{2jt-1} \cdot CUMRET_{ijt}\right] \cdot P_{ijt-1}. \quad (2)$$

This value is added to the previous year's earnings to obtain an estimate of the expected analyst forecast ($E[FEPS]$) for the current year's earnings:

$$E\left[FEPS_{ijt}\right] = EPS_{ijt-1} + E\left[\Delta EPS_{ijt}\right]. \quad (3)$$

Similar to Matsumoto, we define a dichotomous variable $DOWN$ comparing the last analyst consensus forecast prior to the earnings announcement date ($FEPS$) and the expected analyst forecast computed from the model:

$$DOWN = 1 \; if \;\; FEPS_{ijt} < E\left[FEPS_{ijt}\right]$$

indicating that analyst expectations can be suspected of having been managed downward, and

$$DOWN = 0 \; if \;\; FEPS_{ijt} \geq E\left[FEPS_{ijt}\right]$$

indicating that analyst expectations have not been managed downward.

In Table 1, we report the average value of the coeffic ients obtained from the industry regressions described in equation (1) as well as the average value of their associated t-statistics, together with regression R-squares.

[Insert Table 1 here]

On average, changes in EPS are positively and significantly associated with cumulative excess returns. EPS changes are also positively associated with past changes in earnings. However, the average significance level is weaker.

Figure 1 depicts the dynamic pattern of the average forecast error over the annual forecast horizon for the full sample and two sub-samples: firm-year observations for which expectations management can be suspected ($DOWN = 1$) and firm-year observations for which expectations management is not suspected ($DOWN = 0$). For each firm and for each month leading up to the earnings announcement, the scaled forecast error is computed as the median of individual analysts' EPS forecasts minus the announced EPS, deflated by the stock price at the previous fiscal year end: $(FEPS_{it} - EPS_{it}) / P_{it-1}$. The graphs display the average values across firms over time. Forecast errors with earnings forecasts issued less than 30 days prior to the earnings announcement are grouped in *month 0*, forecast errors using forecasts released in the window (-60, -31) days are in *month -1*, etc.

[Insert Figure 1 here]

For both sub-samples, analysts are on average too optimistic at the beginning of the period and become increasingly pessimistic as the earnings announcement approaches. However, at the beginning of the forecast period, analysts appear to be far more optimistic for firms that are suspected of manipulating analysts than for those that are not. The difference in the average scaled forecast error remains statistically significant until eight months prior to the earning release date. At the end of the forecast period, there is a reversal in the sign of this difference: analysts are significantly more pessimistic (t-stat. = 1.98) for firms suspected of managing expectations downward. Furthermore, 73.36% of the firm-year observations for which a positive or zero earnings surprise is reported belong to the sample for which expectations management can be suspected, whereas only 69.11% of the firm-year observations belong to this sample when a negative earnings surprise is reported. A Chi-square test indicates that the dependence between $DOWN$ and firms that report a positive earnings surprise is significant ($\chi^2 = 16.23$, p-value<0.001). Overall, this suggests that our measure for expectations management is capable of distinguishing between firms that manipulate analysts in order to report a positive (zero) earnings surprises and those that do not.

4.3 Measuring CEO compensation components and ownership variables

We obtain the dollar value of each CEO's annual base salary, the dollar value of the CEO's annual bonus, the amount paid out to the CEO according to the company's long-term incentive plans

(*LTIP*), and the value of restricted stock grants (*RSG*) awarded during the year directly from the Execucomp database. In addition, we compute the value of the firm's shares held by the CEO at the end of the fiscal year (*SHARE*) to assess the impact of the total share position (as opposed to the stock grants awarded in the present year only) on expectations management.[9] We use the value of in-the-money and exercisable options (*INMONEX*) held by the CEO to measure the impact of the entire relevant option position. This item is provided directly by Execucomp and includes all these options from current and prior year grants.

Considering the non-linear relationship between share and option price and hence differing option sensitivities to stock price changes, we construct a variable measuring the value change of the CEO's newly awarded options due to a one percent increase in the company's stock price (*OPTSENS*). Following Core and Guay (2001), we estimate the sensitivity of stock option value to stock price as the partial derivative of the option value with respect to stock price ("delta"). The option deltas are based on the Black-Scholes (1973) formula, as modified by Merton (1973) to account for dividend payments.[10] The detailed methodology and the parameters used to compute the value of the options awarded annually to CEOs are presented in the appendix. In addition, to measure the impact of the options granted over prior years, we use the value of in-the-money and exercisable options (*INMONEX*) held by the CEO. Since Execucomp reports detailed characteristics (e.g. maturity, strike price) only for the options that have been granted during the current fiscal year, we cannot compute a sensitivity measure for the *INMONEX* options to stock price changes as we do for the current year's options. However, the delta of in-the-money options from previous years approaches the value one relatively quickly once the stock price exceeds the

[9] Execucomp reports the percentage of the firm's shares owned by the CEO as reported in the proxy statement. We multiply this percentage with the market value (taken from CRSP) at the fiscal year end to obtain the value of the firm's share position owned by the CEO. Ownership below 1% does not have to be reported. Following common practice we set missing values equal to zero. Execucomp also contains the number of the company's shares owned by the CEO. This item allows computing positions below the 1% threshold since it contains voluntary disclosures. Likely due to different times of measurement some values above the threshold are inconsistent across the two methods. However, our results in this paper do not depend on which data item is used to compute the value of the CEO's shares.

[10] We are aware that the Black-Scholes approach has many limitations for executive stock options: executives are limited by institutional restrictions to hedge or arbitrage their option values in the secondary market, their options are subject to forfeiture if they leave the company, and they are not free to trade or sell their options. In addition, company executives are undiversified, with their financial as well as human capital invested disproportionately in their company. As a result, CEOs tend to exercise their options much earlier than outside investors would. However, as underlined by Core and Guay (2001), the Black-Scholes model can be considered as an accurate method to produce an instrumental variable to capture cross-sectional variation in option plan deltas.

strike. Therefore, implicitly assuming a delta equal to one, the *INMONEX* value could loosely be interpreted as a sensitivity measure, too. This item is provided by Execucomp and includes all in-the-money exercisable options from the current and prior year grants.

[Insert table 2 here]

Table 2 summarizes the CEO compensation components. The average amount of restricted stocks (*RSG*) granted to CEOs is relatively small compared to other compensation components. Its mean is $308'450 and less than 33% of CEOs receive restricted stocks. The mean (median) value of shares held by CEOs equals $2.61 ($0.24) million, with a range from 0 to $1.32 billion. The average (median) amount of in-the-money exercisable options held by CEOs (*INMONEX*) is $8.88 (1.01) million, with a range from 0 to almost $2 billion. An increase in the share price of 1% leads to an average value increase of the stock options awarded annually to CEOs (*OPTSENS*) of $44'463. This amount varies substantially across sample observations, with a standard deviation of $188'150. The mean annual bonus paid to CEOs equals approximately $0.53 million, ranging from 0 to more than $43 million. The average value of long-term incentive plans paid to CEOs is $135'184. Again, this amount varies substantially across CEOs since less than 33% do receive long-term incentive plan payments. Finally, the average annual base salary paid to CEOs equals $575'141. As it is the case for the other compensation components, the distribution for base salary is highly skewed, some CEOs receiving no annual base salary at all.

Therefore, and for reasons following below, we measure all compensation and ownership variables as well as some highly skewed control variables with the values assigned by their cumulative distribution functions (hereafter referred to as cdf) in the regression analysis. The cdf transformation generates a more uniform distribution of the transformed variables, which enhances the speed of convergence of the parameter estimates to the true population parameters. In addition, the effect of outliers is mitigated without discarding this information completely as done in censoring the sample. Furthermore, this transformation is consistent with imposing decreasing marginal effects as the variables increase. Intuitively, this postulates that the first $1000 of any compensation component have greater importance than a $1000 variation at high income or ownership levels. The cdf transformation is similar to the log transformation commonly applied to firm size. However, the log transformation is less appropriate for the compensation and ownership variables, since there is a

large number of observations with value zero. Moreover, the use of the cdf transformation is not problematic for this study, since we are mainly interested whether distinct components of executive compensation increase or decrease the probability of expectations management (i.e. we are after the sign of the estimated coefficients), rather than estimating precisely the marginal effect of a $1000 increase in executive remuneration on the probability to manage analysts.

4.4 Control variables

We include additional explanatory variables to control for earnings thresholds, information environment, growth prospects, and further firm-specifics that are potentially related to expectations management. Degeorge et al. (1999) suggest that executives acting in self interest and being subject to outside monitoring have strong incentives to manipulate earnings around behavioral thresholds. In their analysis of EPS and forecast error distributions, Degeorge et al. find evidence consistent with earnings management in order to exceed zero earnings, past earnings, and analyst expectations. We include three control variables to capture these thresholds. The indicator variable $LOSS$ equals one if a particular firm reports a loss in the current fiscal year (annual Compustat item A18). $MEET$ is a dummy variable that equals one if the firm's reported EPS at the announcement date meets or beats analyst expectations, as measured by the last consensus estimate prior to the announcement date. The indicator variable $INCEPS$ equals one if the firm reports a positive earnings variation relative to the previous year (Compustat item A18).

A priori, the direction of these threshold variables' influence on the probability of expectations management is not unambiguous. Degeorge et al. (1999) illustrate that depending on how close latent earnings are below or above a performance threshold executives will have various differing incentives to exaggerate reported earnings, rein in, take big baths, or not manipulate at all. Since it is difficult to predict whether analyst guidance will serve as a substitute or complement of earnings management for different levels of latent earnings and for the differing thresholds, we make no prediction regarding the sign of the thresholds included as control variables. As an alternative set of tests we condition the sample on reaching the thresholds.

Brown and Higgins (2002) find that guidance increases with the richness of the firm's information environment. They characterize information environment as the availability and effectiveness of

communication between managers and analysts and document a positive relationship between a firm's analyst coverage and the probability of expectations management. Using the absolute value of the final forecast error as an alternative proxy for information environment, they find a negative relationship between forecast error magnitude and expectations management.

We measure a firm's informational environment by using two related proxies. First, we include residual analyst coverage (*RCOV*) as proposed by Hong et al. (2000). Residual analyst coverage is the residual from the regression of the logarithm of one plus the number of analysts following the firm on the logarithm of the market value of the company taken at the beginning of the fiscal year. The number of analysts for a particular firm-year corresponds to the number of estimates which constitute the last consensus forecast released before the earnings announcement date. Using residual coverage instead of the number of analysts following the firm provides a measure that does not proxy for a firm's market capitalization. As shown by Hong et al. (2000), market value is the most important determinant of analyst coverage. Consistent with Brown and Higgins (2002), we expect a positive relationship between expectations management and residual analyst coverage. Our second proxy for informational environment is the absolute value of the initial forecast error (*IFE*) as in Matsumoto (2002). We compute it as $|FEPS_{it}^{ini} - EPS_{it}| / P_{it}$, where $FEPS_{it}^{ini}$ is the first consensus forecast released by analysts for company i in year t, EPS_{it} is the company's actual earnings per share, and P_{it} is the company's share price at the beginning of the fiscal year. Matsumoto documents a strong negative relationship between the initial forecast error and the probability that a firm meets or beats analyst expectations.[11]

We include the firm's long-term earnings growth forecast (*LTG*) as a proxy for its growth prospects, using the first consensus *LTG* released by I/B/E/S during the fiscal year. Prior research has found growth firms (high *LTG*) to suffer large and asymmetric reactions to negative earnings surprises (Skinner and Sloan 2002). Brown (2001b) shows that growth firms have a higher probability of managing analysts compared to value firms. He accounts for this by the increase in managerial compensation in stocks and options. Due to the asymmetric market reaction to bad news,

[11] Note that Matsumoto (2002) also uses the logarithm of the firm market value as control variable for the firm information environment. Due to potential multi-collinearity problems between market capitalization and most of the compensation variables, we do not include this proxy for the informational environment. However, including the logarithm of the market value does not change any main conclusions.

growth firm managers' portfolios will suffer a higher loss following a negative earnings surprise than those of value firm managers. Thus, if this explanation is valid, by including stock-based compensation and a proxy for growth jointly as explanatory variables for expectations management, there should not be any difference between the propensity of growth and value firms to engage in expectations management strategies. However, if the motives for growth firm managements to avoid negative surprises are not exclusively due to the structure of their management compensation, the growth proxy should remain positive and significant in explaining earnings management. For instance, Liu and Yao (2003) argue that firms use earnings guidance and consensus beating as a mechanism to credibly signal their growth potential. Matsumoto reports that firms with high growth prospects (measured by the analyst consensus long-term EPS growth forecast for the firm) are more likely to take actions to avoid negative surprises.[12] Alternatively, firms in distress (with very low market-to-book) might depend particularly on short-term earnings surprises in order to obtain additional financing or signal recovery to stakeholders, which would suggest a negative relationship between analyst guidance and growth prospects.

We include three additional variables to control for the value-relevance of earnings, reliance on implicit claims with stakeholders, and litigation risk. Matsumoto (2002) shows that firms with low value-relevance of earnings are less likely to avoid negative earnings surprises, since market reactions are expected to be relatively moderate. We use *EARNRET* to control for the value-relevance of earnings. It is computed as the decile rank of the R^2 from yearly industry-specific regressions of cumulative excess returns on yearly changes in earnings.[13] Matsumoto finds that firms depending particularly on implicit claims with stakeholders are more likely to take actions to avoid negative earnings surprises. She argues that avoiding negative surprises at the earnings announcement yields more favorable terms of trade with stakeholders, such as suppliers, clients, and employees. These groups are likely to limit their assessment of a company's financial performance to reported earnings, since the financial press focuses its attention primarily on earnings announcements rather than initial

[12] Instead of using *LTG* we also perform our estimations with the market-to-book ratio. Our results are insensitive to this modification.

[13] Firms are grouped into industry sets as in Yermack (1995). Every year, for each industry group, we regress cumulated daily excess returns (cumulated from three days after the fiscal year *t-1* earnings announcement date to 20 days before fiscal year *t* earnings announcement) on the change in earnings per share from fiscal year *t-1* to fiscal year *t*, scaled by the share price at the end of fiscal year *t-1*. We require each industry group to contain at least 8 firms. The firms with R^2 s in the highest (lowest) 10% of the distribution are assigned a value of 10 (1).

analyst forecasts. We use the proxies *LABOR*, *DUR*, and *R&D*, developed by Bowen et al. (1995) to measure reliance on implicit claims. *LABOR* is a measure of labor intensity, defined as one minus the ratio of total gross property, plant, and equipment (Compustat item A7) to firm size, measured by total gross assets (total assets plus accumulated depreciation, depletion, and amortization with Compustat items A6 and A196 respectively). The indicator variable DUR denotes membership in the durable goods industry sectors and equals one for firms with primary (three-digit) SIC codes 150-179, 245, 250-259, 283, 301, and 324-399. *R&D* denotes research intensity, computed as annual research and development expenditures (Compustat item A46) divided by total assets (Compustat item A6). Employing factor analysis with principal component factors we transform *LABOR*, *DUR*, and *R&D* into the single variable *ICLAIM*, representing reliance on implicit claims.[14]

Furthermore, a strong price drop at the earnings announcement can give rise to shareholder litigation. Therefore, firms with a higher risk of shareholders filing lawsuits may take more actions to avoid negative earnings surprises. Consistent with Francis et al. (1994), Soffer et al. (2000), Ali and Kallapur (2001), and Matsumoto (2002), we control for litigation risk by including the dummy variable *LIT* indicating whether a firm belongs to an industry classified as litigious. *LIT* equals one for firms with primary SIC codes 2833-2836, 3570-3577, 3600-3674, 5200-5961, and 7370-7374 (biotechnology, electronics, retailing, and computers).

Finally we control for institutional ownership. Matsumoto (2002) finds that firms with a higher percentage of institutional owners are more likely to guide analysts in order to avoid negative earnings surprises. In particular transient institutional investors with relatively high portfolio turnover, diversified positions, and high use of momentum strategies are likely to create incentives for executives to avoid negative surprises due to their strong short-term focus. *TRAN* measures the percentage of a firm's shares held by transient institutional investors. In order to classify institutional

[14] Almost one third of the observations for *R&D* are missing. Following Bowen et al. (1995) and Matsumoto (2002) we replace missing values by the value zero. The results do not depend on this ad-hoc assumption. We also perform all regressions with *LABOR*, *DUR*, and *R&D* jointly and individually included as additional explanatory variables. The coefficients of *DUR* and *R&D* are never significantly different from zero. Only *LABOR* is (highly) significant and positive, thus behaving identically as *ICLAIM*.

investors into different types, we apply the cluster analysis approach developed by Bushee (1998), using Thomson Financial' s CDA Spectrum Historical Tape Files (13F).[15]

[Insert table 3 here]

Table 3 displays descriptive statistics of the control variables. Only 8.0% of the firm-year observations are firms with reported losses. The thresholds of meeting or beating analyst forecasts and reporting increased EPS have been reached in 71% and 67% of firm-years respectively. Residual analyst coverage ranges from -1.73 to 1.33 with the median of 0.021 close to zero. *IFE* contains very large outliers. With 17.5% the average long-term growth consensus forecast is relatively high. More than 66% of the firm-year observations have long-term growth forecasts that are higher than 12.9%. Firms in the durable goods industries account for 41.7% of the firm-year observations, firms in litigious industries account for 35.5%. Due to the replacement of missing values with zeros, *R&D* is highly skewed as well, with about 30% of the values being zero. We use it together with *LABOR* and *DUR* to generate *ICLAIM*, which has zero mean and variance one by construction. Finally, the percentage of firm shares held by transient institutional investors (*TRAN*) is 4.9% on average and ranges from 0.0% to 53.8%.

[Insert Table 4 here]

In Table 4, we report Pearson correlation coefficients between *DOWN* and the exogenous variables, where *SALARY*, *BONUS*, *LTIP*, *RSG*, *SHARE*, *INMONEX*, *OPTSENS*, *IFE*, *LTG* and *TRANS* are expressed as the values assigned by their cumulative distribution functions. As hypothesized, *DOWN* is positively and significantly correlated with *INMONEX*, *OPTSENS*, *BONUS*, and *LTIP*. *SALARY* is also positively correlated with *DOWN* unconditionally, which is in opposition to the prediction. Consistent with prior research, there is a significant negative correlation between *DOWN* and *IFE* as well as a significant positive correlation between *DOWN* and *ICLAIM*. Contrary to expectation, *RCOV* and *EARNRET* are significantly negatively correlated

[15] Bushee (1998) constructs a set of nine variables that characterize the past investments of institutional investors. These variables are related to the degree of portfolio diversification, turnover, and the institution's trading sensitivity to current earnings. Principal factor analysis with an oblique rotation is used to reduce the nine variables to three common factors. The factor scores are employed in the subsequent cluster analysis (k-means) to separate the institutions into three groups: transient (high turnover, high diversification, and high use of momentum strategies), dedicated (low turnover, high concentration, and little trading sensitivity to current earnings), and quasi-indexers (low turnover, high diversification, and contrarian-trading tendencies). A detailed description of the procedure is given in Bushee (1998).

with $DOWN$. Among the explanatory variables, the compensation components and ownership variables are generally significantly positively correlated,[16] except for the value of company shares owned by CEOs, which is negatively correlated with the compensation components and option ownership. The annual bonus awarded to CEOs is positively related to $MEET$ and $INCEPS$ and negatively related to $LOSS$. The methodology for the multivariate tests is set up in the following section.

4.5 Measuring the impact of CEO compensation on expectations management

To test whether executive compensation components are associated with expectations management as postulated in our hypotheses, we perform a logit regression, modeling the probability that analyst expectations have been managed downward.

For the limited dependent variable model, the existence of a latent variable D^* is assumed such that:

$$DOWN_i = \begin{cases} 1 & \text{if } D^* > 0 \\ 0 & \text{if } D^* < 0 \end{cases}$$

with $D^* = x_i'b + n_i$, $n_i \sim \text{logistic}(0, p^2/3)$.

This corresponds to:

$$\Pr ob(DOWN_i = 1) = \Lambda(x_i'b) = \frac{e^{x_i'b}}{1 + e^{x_i'b}},$$

where Λ is the cdf of the logistic distribution and

$$\begin{aligned} x_i'b = {} & b_0 + b_1 SALARY_i + b_2 BONUS_i + b_3 LTIP_i + b_4 RSG_i \\ & + b_5 SHARE_i + b_6 INMONEX_i + b_7 OPTSENS_i + b_8 LOSS_i + b_9 INCEPS_i + \\ & b_{10} MEET_i + b_{11} IFE_i + b_{12} EARNRET + b_{13} LTG_i + b_{14} RCOV_i + b_{15} ICLAIM_i \\ & + b_{16} LIT_i + b_{17} TRAN_i + g_1 I_1 + \ldots + g_{N-1} I_{N-1} + d_{94} Y_{94} + \ldots + d_{01} Y_{01} \end{aligned} \tag{4}$$

[16] We conduct multicollinearity diagnostic tests computing the variance inflation factors (Kennedy 2000) for all variables used in the regression analysis. None of these factors displays a value greater than 10, thus indicating that multicollinearity does not cause any concern.

Consistent with prior research on expectations management and forecast guidance (Matsumoto 2002, Richardson et al. 2003), we pool the observations from 1993 to 2001 performing the logit regression for the entire sample.[17] In all regressions indicator variables Y_{94} to Y_{01} control for year effects (relative to the base year 1993), which are not captured by the compensation and control variables. The indicator variables I_1 to I_{N-1} represent industry effects. Industries are grouped as in Yermack (1995).

One potential drawback of the pooled logit specification is unobserved heterogeneity. For instance, the CEO's ability to guide or manipulate analysts is difficult to measure, but might be correlated with other explanatory variables, thus causing biased coefficient estimates. The executive's skill to negotiate his or her compensation components with the compensation committee, for example, is likely to be correlated with the skill to deal with analysts, and will be reflected in the compensation variables. Moreover, differing attitudes toward business ethics or moral standards are just as hard to observe, but undeniably play a role in the CEO's propensity to manage analysts. Therefore we estimate a fixed effects logit model, allowing for unobserved heterogeneity at the firm level.

Since the estimation of the conditional logit model restricts the sample to firms with temporal variation in the endogenous variable, all the firms that are found to manage expectations throughout the entire sample period must be excluded from the regression as well as the firms for which the *DOWN* variable is 0 throughout. Moreover, the conditional logit estimator requires at least two years of observations for each firm. Since the exclusion of these "extreme" observations may diminish the significance of explanatory variables due to sample restriction, as opposed to correcting for unobserved heterogeneity, we estimate the random effects probit model, which is an alternative panel specification that takes unobserved heterogeneity into account without losing the firms deleted with the fixed effects logit method.

In addition, we perform further sensitivity analyses relating to variable measurement and conditioning the sample on behavioral thresholds.

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[17] This implies the assumption that observations $i = 1,...,N$ are independent, including consecutive observations of the same firm. In order to correct for firm clustering we compute robust standard errors adjusted for clustering. However, the corresponding *p*-values differ by less than 0.01 for the significant variables, so we do not report these standard errors (available upon request).

5 Results

5.1 CEO compensation and expectations management

Table 5 displays the results of the pooled logit regression of the analyst guidance measure *DOWN* on the compensation and ownership variables, controlling for year and industry effects and further firm-specific variables.[18]

[Insert Table 5 here]

Consistent with our first hypothesis, the value of shares owned by the CEO is positively and significantly related to the probability of expectations management. However, the variable *RSG* (restricted stock grants) is not significantly different from zero and has a negative sign. We attribute this result to the failure of the variable (in the raw form) to measure the value of stock at the disposal of the executive for short term transactions. *RSG* measures the value of the restricted stocks awarded in the current year only, during which the vesting period has typically not yet ended. *SHARE* is likely a much better proxy to measure the CEO's incentive from stock ownership than *RSG*, since it measures the value of the CEO's total position of firm shares.

Supporting our second hypothesis, there is a positive and highly significant relationship between the value of in-the-money exercisable options and expectations management. Further support of our hypothesis is given by the positive and again highly significant coefficient of *OPTSENS*, indicating that analyst guidance is positively associated with the stock price sensitivity of option grants.

Consistent with our third hypothesis, the relationship between bonus and analyst guidance is positive and highly significant. Although the large positive coefficient on long-term incentive plans *LTIP* is consistent with our fourth hypothesis, it is not statistically significant.[19]

Consistent with our fifth hypothesis, salary has a highly significant negative influence on the probability of expectations management.

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[18] Coefficients on the year and industry dummies are not reported. Each group of dummy variables is jointly highly significant.

[19] Recall that long-term incentive plan payments are zero for 86% of the firm year observations, which leads to a large standard error. Dropping this variable does not affect the results for the other variables.

The three threshold variables *LOSS*, *INCEPS*, and *MEET* are all strongly significant, with *INCEPS* having a negative coefficient. Consistent with prior research (Matsumoto 2002), the variable proxying for forecasting uncertainty *IFE*, is negative and highly significant. In contrast to Matsumoto, we do not find *EARNRET* significant. Nor is it the case for long-term growth forecast *LTG*, residual analyst coverage *RCOV*, implicit claims *ICLAIM*, and litigation risk *LIT*.

In particular, the rejection of a positive coefficient on *LTG* is in sharp contrast to prior research neglecting CEO compensation variables. Likely, as conjectured by Brown (2001b), market-to-book was found positive and significant in explaining analyst management due to growth firms' pronounced stock and option remuneration practices.[20] In our sample, we control for these effects and find no more positive effect of *LTG* on expectations management. This is consistent with Brown's (2001b) view and contradicts the argument of Liu and Tao (2003) that growth firms use analyst guidance as a device for signaling future earnings growth.

As in Matsumoto (2002), *LIT* is negative and insignificant, whereas *TRAN* is positive as predicted and highly significant, which supports the hypothesis that transient institutional investors create pressure on managements to boost short-term performance with earnings surprises.

In summary, the pooled regression with firm-specific control variables, year and industry effects strongly supports our hypotheses about the relationship between expectations management and the CEO compensation components salary and bonus, stock and option positions, as well as option sensitivity.

5.2 Sensitivity tests

The results of modeling the dependence across units in a panel framework are presented in Table 6. The fixed effects logit regression of *DOWN* on the compensation, ownership, and control variables is displayed in Panel A.

[Insert Table 6 here]

[20] In order to replicate these results of previous research, we regress *DOWN* on the market-to-book ratio alone and the year effects: as expected the coefficient of *MTB* is significantly positive when executive compensation is not controlled for.

All compensation and ownership components maintain their sign, but compared to the pooled logit estimation, the marginal effect of the in-the-money exercisable options *INMONEX* is now twice as large. *INMONEX* and *OPTSENS* are still highly significant. *SALARY* and *BONUS* remain significant at the conventional level. No longer significant however, is the CEO's position of the firm's stocks *SHARE*.

In the set of control variables, the thresholds *LOSS*, *INCEPS*, and *MEET* remain highly significant. As in the pooled logit estimation, the initial forecast error has the predicted negative influence on expectations management and the percentage of shares held by transient institutional investors has the predicted positive influence at high levels of significance. The signs of *EARNRET*, *LTG* and *LIT* are in opposition to the prediction as before. However, compared to the pooled logit estimation, residual analyst coverage and implicit claims become significant and weakly significant respectively, both with the predicted positive signs.

The strong changes in the magnitudes of *LTIP* and *INMONEX* could be a sign of unobserved heterogeneity at the firm or equivalently CEO level, possibly relating to skill or ethical standards. However, the conditional logit approach is flawed with the deletion of all firms with the endogenous variable indicating expectations management in all years as well as the firms without expectations management in each year. This way 1'166 "extreme" observations (13.4% of the sample) are ignored. Therefore, the results must be interpreted with some caution. Nevertheless, the fixed effects logit estimation corroborates the pooled logit results that analyst guidance is negatively related to the CEO compensation component salary and positively related to the CEO's bonus, as well as to the CEO's in-the-money exercisable option position and the option sensitivity.

Compared to the fixed effect logit regression, the random effect probit approach has the advantage that it does not discard any firms without time series variation in *DOWN*, but it imposes the restriction that the unit specific effects be uncorrelated with the explanatory variables. The results are displayed in Table 6, Panel B. All the variables that were significant in the pooled logit regression remain significant with the same signs as in the random effects probit regression. Again with the exception of *RSG* and *LTIP*, the coefficients of all compensation and ownership variables support our hypotheses relating expectations management to executive compensation. *SALARY*, *BONUS*, *SHARE*, *INMONEX, and OPTSENS* are highly significant (with p-values <0.01).

We take the pooled logit specification to another sensitivity analysis conditioning on the behavioral thresholds rather than including each threshold directly in the regressions. This appears appropriate if the incentives to manage analysts, produced by executive compensation components, depend on reaching the earnings thresholds: positive profits (LOSS = 0), positive change in earnings (*INCEPS* = 1), and reported earnings = consensus forecast (*MEET* = 1). The results of conditioning the logit regression on these thresholds are displayed in Table 7.

[Insert Table 7 here]

The evidence is consistent with the view that reaching earnings thresholds is important for the influence of *certain* incentive variables on expectations management, although not for all variables. *INMONEX* is always positive and significant, independent of reaching any of the thresholds. The same holds true for *OPTSENS* except for restricting the sample to firms with decreasing EPS. *SALARY*, *BONUS*, and *SHARE* are highly significant with the predicted signs in all regressions, conditional on reaching the respective thresholds (Panel A). When the thresholds have not been reached (Panel B), these variables are typically not significant anymore, except *BONUS* conditional on decreasing EPS. The control variables *IFE* and *TRAN* are always highly significant with the predicted signs when the respective thresholds have been reached. When thresholds have not been reached, these variables are only significant in the case that the forecast was missed. In each subsample, the remaining two threshold variables stay significant, except *LOSS* when conditioning on missing the forecast. The coefficient of *LTG* is negative throughout.

Again we interpret these results as strong support for our hypotheses, with the compensation in stock options providing a particularly strong incentive to manage analysts in all the scenarios under test. The result that *SALARY*, *BONUS*, and *SHARE* while being highly significant in the unconditional regressions, are not significant when earnings thresholds have not been reached, can be reconciled with the fact that thresholds have been reached far more often than missed in our sample.

To summarize, we find that pooling observations, estimating panel models, and conditioning the sample on behavioral thresholds altogether lend strong support to our hypotheses. Our major conclusions are not sensitive to the method applied.

5.3 CEO compensation and small earnings surprises

With the results in the previous subsections we have demonstrated the strong role of CEO remuneration in explaining analyst guidance. A related question is whether the same compensation and ownership variables also predict the occurrence of small earnings surprises, measured by *BEAT*, which equals one if the announced EPS exceed the consensus forecast by no more than five cents. Reporting small surprises is a feature of growth stocks that has been observed in prior research (Brown 2001b). Besides chance, an increased propensity to report small earnings surprises could be the result of either analyst guidance (low consensus) or earnings management (discretionary accruals). We expect the same signs for the coefficients of the compensation and ownership variables as in explaining downward guidance.

[Insert Table 8 here]

Table 8 shows that most of all, *SHARE* and *INMONEX* positively predict the occurrence of small earnings surprises. *SHARE* is highly significant while *INMONEX* is significant at the conventional level (p-value 0.016). *SALARY* has the expected negative coefficient, *BONUS* displays the predicted positive effect. However, these variables are only weakly significant. Moreover, the earnings threshold variables *LOSS* and *INCEPS* are highly significant as well as *RCOV*, *IFE*, and *LTG,* all with the expected signs. As expected, *TRAN* has a significant positive effect on the occurrence of small earnings surprises.

We infer that in-the-money exercisable options, and the CEO's position of the firm's shares have an equally important role in explaining small earnings surprises as they have in downward guidance of analyst forecasts.

5.4 Does the market figure it out?

In contrast to earnings management, expectations management does not induce managers to borrow against future earnings in order to reach the target set by analysts. However, investors seem to punish firms that do not reach analysts' expectations (Skinner and Sloan 2003). Yet, to date it is unknown whether and to what extent the market reacts to predictable expectations management by executives.

We conduct an event study to investigate whether the market takes into account any discernible expectations management strategies. This requires the calculation of the cumulative abnormal returns around the earnings announcement date. We estimate the following equation:

$$R_{it} = a_i + b_i R_{mt} + l_i D_{it} + e_{it} \qquad (5)$$

$$t \in [A_i - 250; A_i + 2]$$

$$D_{it} = \begin{cases} 1/5 & \text{if } t \in [A_i - 2; A_i + 2] \\ 0 & \text{otherwise} \end{cases}$$

where

A_i = earnings announcement date for firm i

R_{it} = log return of stock i on day t adjusted for capital changes and dividends

R_{mt} = log return of the market index on day t

l_i = Cumulative abnormal return for stock i between $A_i - 2$ and $A_i + 2$.[21]

The earnings announcement date is taken from I/B/E/S, individual stock returns are obtained from CRSP, and the market index is the CRSP value-weighted stock index. Equation (5) is estimated with a weighted least square regression as in Heinkel and Kraus (1988)[22] to correct for missing returns. Announcement date returns are missing for 51 observations. As a result, we estimate the model for 8'663 firm-year observations.

Table 9 summarizes the cumulative abnormal returns earned by firms at the announcement dates. Consistent with previous research, firms that meet or beat analyst expectations (zero or positive earnings surprise) earn a significant positive abnormal return of 1.30% during the period surrounding the announcement date. On the other hand, firms that fail to meet analyst expectations display a cumulative abnormal return of –1.50% during that period. The return differential between firms that meet or beat expectations and those that fail to do so equals a highly significant 2.80%.

[Insert Table 9 here]

[21] As a first step we conduct an analysis of abnormal returns around the earnings announcement date. We observe most significant abnormal returns during the five days chosen as the event window.

In Table 10, we present cumulative abnormal returns conditional on whether a particular company meets or beats analyst expectations and conditional on whether expectations management can be suspected according to our method.

[Insert Table 10 here]

The cumulative abnormal returns earned by firms that meet or beat analyst forecasts by managing analyst expectations downward are 0.93% lower than the cumulative abnormal returns of firms reporting a zero or positive surprise without managing expectations downward. On average, managers who engage in analyst manipulation still earn a positive abnormal return, but this abnormal return amounts to only 1.03% over the period surrounding the announcement date. This suggests that the market has some ability to anticipate the expectations management strategies implemented by managers. For firms that do not meet analyst expectations, no significant difference is observed in cumulative abnormal returns conditional on whether expectations management is suspected.

The objective of the following analysis is to investigate whether the lower abnormal returns reported for firms suspected of managing analyst expectations downward depend on CEO compensation components and on firm-specific variables which have been shown to impact analyst guidance. Thus, we aim to assess which variables are taken into account by investors to detect potential analyst manipulation strategies. We model cumulative abnormal returns of firms that meet or beat analyst expectations as a function of a subset of the explanatory variables used in the preceding analysis. This subset contains only those explanatory variables that were significant in our first set of tests and those that are either partially or fully known by the market at the earnings announcement date.

We estimate the following model:

$$l_i = a_0 + a_1 SHARE + a_2 INMONEX_i + a_3 INST_i + g_1 I_1 + \ldots + g_{N-1} I_{N-1} + d_{94} Y_{94} + \ldots + d_{01} Y_{01} + e_i, \quad (6)$$

where $INST$ is the percentage of the firm's shares held by institutional investors at the end of the fiscal year. We substitute the percentage of shares held by transient institutional investors by the percentage of shares held by all categories of institutional investors at the end of the fiscal year,

[22] The weights are the square roots of the number of days over which the return is computed.

because the variable *TRAN* contains future information, to an extent.[23] It was constructed with principal factor analysis over the entire sample characterizing institutional investors according to their investment strategies.[24] Hence, including *TRAN* in the regression could create a look-ahead bias. Beside the significant impact of institutional ownership on expectations management, its inclusion is further motivated by recent research that documents a relationship between institutional ownership and market reaction at earnings announcements (Hotchkiss and Strickland 2003). The other variables are defined as before.[25]

Table 11 summarizes the estimation results for equation (6). Only the coefficient of *INMONEX* is significant at the conventional level. For firms that meet or beat market expectations, *INMONEX* is significantly negatively related to the market reaction following the earnings announcement. Hence, market participants seem to react less strongly to positive earnings surprises when the CEO holds a large amount of options that can be exercised after the earnings release date. Investors appear to be able to infer from CEOs' option positions which managers are more likely to play the guidance game. Naturally, we cannot rule out that *INMONEX* is related to omitted firm characteristics that explain how stock prices will respond to earnings news. Regarding the low adjusted R^2, there might indeed be other variables that can explain the documented lower abnormal return at the announcement for firms that manage analyst expectations downward. We leave this issue for further research.

[Insert Table 11 here]

In summary, we show that the gains for CEOs from managing earnings expectations downward also comes at a cost for executives. The abnormal return for firms that manage to meet or beat analyst forecasts by manipulating expectations downward is significantly lower than the abnormal return for firms that fulfill market estimates without manipulating analyst expectations. Our results

[23] Replacing *TRAN* with *INST* in the preceding analysis does not affect any results. Like *TRAN*, *INST* is positive and highly significant throughout.

[24] Although institutional investors are classified annually according to their investment strategies of the previous year, the factor analysis reducing the nine investment variables into three common factors is performed over the pooled sample.

[25] Note that it is probably difficult for investors to assess the exact value of *INMONEX* at the announcement date. However, due to the vesting period attached to the awarded stock options, *INMONEX* contains options that have generally been granted to CEOs during past fiscal years. Investors are therefore able to estimate the approximate value of *INMONEX* from companies' previous proxy statements. Concerning *SHARE*, investors can also infer the shares owned by CEOs from the proxy statement. Moreover, companies have to report all insider trades on a regular basis.

indicate that the reduced abnormal return for companies suspected of managing analysts is positively related to the value of in-the-money exercisable options owned by CEOs.

6 Conclusion

This paper investigates whether the increasing tendency of executives to manage analyst forecasts downward is, as informally suggested by past academic research and financial media, related to a change in the structure of executive compensation packages. Using CEO compensation components in conjunction with their share and option ownership, our results are consistent with this explanation. We show that CEOs who hold considerable share and option positions are more likely to manage analyst expectations downward. Moreover, other compensation components that are not directly related to share price movements are shown to have a significant impact on CEOs' analyst guidance motives. Expectations management is negatively related to salary, indicating that high fixed compensation decreases the incentives of managers to manipulate analyst forecasts. Furthermore, we document a positive relationship between the annual bonus paid to CEOs and expectations management. This suggests that board of directors' expectations are related to analyst expectations and that meeting analyst expectations may be an important criterion used by boards of directors to measure CEO performance.

In a second set of tests, we find that the cumulative abnormal return for firms that meet or beat analyst forecasts at the announcement date is significantly lower for firms that are likely to pursue expectations management strategies. We show that this lower return is significantly related to the amount of options held by CEOs. This suggests that the market has some ability to identify firms that manage analysts in order to meet or beat their forecasts more easily.

Using a large U.S. sample, we document for the first time the importance and impact of CEO compensation components on expectations management. However, our results may not generalize to all market segments, since the substantial amount of data needed to conduct this study requires a sample with relatively large firms. Moreover, since executive compensation components are only available from the main provider on an annual basis, we conduct our study with annual EPS forecasts. As a result, our results may not be generalized to quarterly earnings forecasts.

Promising directions for further research include extending the set of executives beyond the CEO to study compensation and ownership effects on expectations management as well as devising trading strategies based on executive compensation information and earnings "surprises". Finally, temporal trends could be modeled more explicitly in order to examine whether the documented temporal patterns in analyst guidance and earnings surprises can be entirely explained by the strong growth in stock price sensitive components of executive compensation.

Appendix

Measuring the sensitivity of the CEO's stock option award to a 1% price change of the underlying company's stock price

The value of the options awarded yearly to CEOs can be calculated with the following formula:

$$Awardvalue = N\left[Se^{-dT}\Phi(d1) - Xe^{-rT}\Phi(d1 - s\sqrt{T})\right] \quad (7)$$

where

$$d1 = \frac{\ln(S/X) + (r - d + s^2/2)T}{s\sqrt{T}} \quad (8)$$

N = number of shares covered by the award,[26]

S = price of the underlying stock,

X = exercise price,

r = risk-free interest rate,

d = expected dividend rate over the life of the option,

s = expected stock return volatility over the life of the option,

T = time to maturity,

Φ = cumulative probability for the normal distribution.

The sensitivity of the CEO's stock option award to a 1% price change of the underlying company's stock price in a given year ($OPTSENS$) is estimated in the following way:

$$OPTSENS = N \cdot \Delta \cdot (S/100), \quad (9)$$

where $\Delta = e^{-dT}\Phi(d1)$.

[26] We consider all awarded options in our measure, including those that are awarded to adjust existing options ("reload" options). The results are not sensitive to this inclusion.

We use the following assumptions to estimate the parameters of the Black-Scholes formula:

S = market price of the company's stock on the date of the option grant.

r = ln(1+riskless interest rate), where the risk-free interest rate is the approximate average yield that could have been earned in the year in which the option was granted by investing in a U.S. Treasury bond carrying a seven year term. This yield is obtained from Execucomp.

d = ln(1+dividend rate), with dividend rate defined as the company's average dividend rate over the past three years. If, in a particular year, the dividend rate is above the 95th percentile of the distribution of yields for that year, it is reduced to the 95th percentile value. Dividend rate and 95th percentile values are obtained from Execucomp.

s = annualized volatility, estimated from past 60 months' returns. If, in a particular year, a company's stock volatility is in the bottom or top 5% of the cross-sectional volatility distribution, its volatility is increased or decreased to the 5th or 95th percentile values. Annualized volatility and percentile values are taken from Execucomp.

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Table 1

Summary statistics for the expectations management proxy construction

	Mean	Std. dev.	Average t-stat.	Q1	Median	Q3
a	0.024	0.074	0.796	-0.002	0.023	0.037
b_1	0.046	0.409	0.252	-0.100	0.039	0.161
b_2	0.153	0.167	2.287	0.083	0.112	0.164
Adj. R^2	0.187	0.190	n.a.	0.085	0.157	0.244

Reported average parameter estimates, standard deviations, and average *t*-statistics from the regression of changes in EPS on past changes in EPS and cumulative excess stock returns. The regression is estimated each year using data for all firms in the same industries, grouped as in Yermack (1995). Altogether 196 regressions are performed for a maximum of 22 different industry groups from 1992 to 2000.

Table 2

Summary statistics for CEO compensation components

	Mean	Std. dev.	Min	Q1	Median	Q3	Max
RSG	308.45	7086.57	0.00	0.00	0.00	0.00	650812.05
SHARE	2611.07	25976.39	0.00	106.03	236.71	539.70	1318976.32
INMONEX	8878.89	44889.17	0.00	192.48	1014.03	2977.11	1959915.45
OPTSENS	44.46	188.15	0.00	3.28	10.52	22.77	9993.09
BONUS	531.23	938.88	0.00	150.00	300.00	500.00	43511.53
LTIP	135.18	685.66	0.00	0.00	0.00	0.00	16092.70
SALARY	575.14	309.53	0.00	405.00	518.11	650.00	3649.13

SHARE is the market value of firm shares held by CEOs at the end of a given fiscal year. *RSG* is the value of restricted shares awarded to CEOs in a given fiscal year. *INMONEX* is the value of in-the-money exercisable options held by CEOs at the end of the fiscal year. Option sensitivity (*OPTSENS*) is the dollar amount of option value change (options granted during the current fiscal year) if the underlying stock price moves up 1%. *BONUS* denotes the annual bonus paid to CEOs. *LTIP* is the sum paid to CEOs in a given fiscal year according to the long-term incentive plan. *SALARY* is the annual base salary paid to CEOs. All variables are expressed in thousands of dollars. The total number of observations is 8'714.

Table 3

Summary statistics for control variables

	Mean	Std. dev.	Min	T1	Median	T2	Max
LOSS	0.080	0.271	0.000	0.000	0.000	0.000	1.000
INCEPS	0.669	0.471	0.000	1.000	1.000	1.000	1.000
MEET	0.706	0.456	0.000	1.000	1.000	1.000	1.000
RCOV	0.000	0.454	-1.729	-0.180	0.021	0.212	1.330
IFE	0.023	0.059	0.000	0.004	0.008	0.016	3.012
EARNRET	5.459	2.427	1.000	4.000	5.000	7.000	10.000
LTG	0.175	0.087	-0.250	0.129	0.150	0.186	1.250
LABOR	0.565	0.221	0.024	0.481	0.592	0.689	0.995
DUR	0.417	0.493	0.000	0.000	0.000	1.000	1.000
R&D	0.036	0.068	0.000	0.000	0.006	0.028	1.464
ICLAIM	0.000	1.000	-1.720	-0.560	-0.099	0.521	10.241
LIT	0.355	0.478	0.000	0.000	0.000	1.000	1.000
TRAN	0.049	0.059	0.000	0.017	0.032	0.050	0.538

LOSS is an indicator variable which equals one if a loss is reported in the current fiscal year. Increasing EPS *INCEPS* is an indicator variable that equals one if reported EPS exceed the previous year's EPS. *MEET* is an indicator variable which equals one if reported earnings meet or beat the last consensus estimate prior to the announcement. Residual analyst coverage *RCOV* is the residual from a regression of the log of one plus the number of analysts contributing to the last consensus estimate prior to the announcement on the log market value of the company at the beginning of the fiscal year. Initial forecast error *IFE* is the absolute value of the difference between the first consensus estimate in the fiscal year and reported EPS, scaled by share price at the beginning of the fiscal year. Returns on earnings *EARNRET* is the decile rank from industry specific regressions of cumulative excess returns on yearly changes in earnings. Long-term growth *LTG* is the first consensus long-term earnings growth forecast estimate in the fiscal year. Labor intensity *LABOR* is defined as one minus the ratio of gross property, plant, and equipment to total gross assets. *DUR* is a dummy variable indicating membership in durable goods industries (SIC codes 150-179, 245, 250-259, 283, 301, 324-399). *R&D* is annual research expenses divided by total assets. Missing values for *R&D* are set to zero. *ICLAIM* is the score of the factor analysis combining *LABOR*, *DUR*, and *R&D* into a single variable measuring reliance on implicit claims. *LIT* is a dummy variable indicating membership in litigious industries (SIC codes 2833-2836, 3570-3577, 3600-3674, 5200-5961, 7370-7374). Transient institutional investors *TRAN* measures the percentage of a firm's shares held by transient institutional investors. This variable is constructed as in Bushee (1998). The total number of observations is 8'714.

Table 4

Correlation coefficients for regression variables

	RSG	SHARE	INMONEX	OPTSENS	BONUS	LTIP	SALARY	LOSS	INCEPS	MEET	RCOV	IFE	EARNRET	LTG	ICLAIM	LIT	TRAN
DOWN	0.008	-0.013	*0.110*	*0.097*	*0.056*	*0.033*	*0.034*	0.010	*-0.093*	*0.043*	*-0.031*	*-0.048*	*-0.096*	-0.005	*0.078*	0.005	-0.002
RSG		*-0.120*	*0.052*	*0.127*	*0.178*	*0.038*	*0.211*	**-0.023**	**0.021**	0.004	-0.014	*-0.033*	-0.017	*-0.144*	*-0.055*	*-0.089*	*-0.037*
SHARE			*-0.027*	*-0.140*	*-0.122*	*-0.121*	*-0.121*	*-0.040*	*0.034*	**0.024**	-0.008	*-0.053*	*0.044*	*0.274*	0.009	*0.090*	-0.002
INMONEX				*0.453*	*0.400*	*0.152*	*0.292*	*-0.150*	*0.233*	*0.103*	*0.079*	*-0.257*	*-0.050*	*0.151*	*0.138*	*0.124*	*0.068*
OPTSENS					*0.357*	*0.127*	*0.352*	*-0.077*	*0.085*	*0.075*	*0.066*	*-0.131*	*-0.069*	*0.062*	*0.125*	*0.110*	-0.007
BONUS						*0.234*	*0.521*	*-0.232*	*0.331*	*0.114*	*0.039*	*-0.282*	*-0.044*	*-0.187*	**-0.019**	*-0.102*	*0.062*
LTIP							*0.261*	*-0.071*	*0.051*	0.012	*-0.034*	*-0.086*	*-0.046*	*-0.202*	*-0.043*	*-0.105*	*-0.028*
SALARY								*-0.116*	**0.019**	*0.042*	-0.002	*-0.095*	-0.004	*-0.344*	*-0.153*	*-0.111*	*-0.055*
LOSS									*-0.281*	*-0.153*	*-0.031*	*0.353*	-0.006	*0.065*	*0.143*	*0.095*	*-0.085*
INCEPS										*0.189*	*0.121*	*-0.511*	*-0.027*	*0.052*	0.009	*0.027*	*0.211*
MEET											*0.051*	*-0.139*	0.002	*0.053*	**0.024**	*0.038*	*0.044*
RCOV												*-0.027*	*0.052*	*0.104*	*-0.085*	*0.095*	*0.217*
IFE													*0.030*	*-0.063*	-0.010	**-0.023**	*-0.052*
EARNRET														*0.025*	*-0.157*	*0.086*	*0.047*
LTG															*0.327*	*0.411*	*0.062*
ICLAIM																*0.277*	*0.067*
LIT																	*0.057*

Summary of the correlation coefficients for the variables used in the regression analysis. *RSG*, *SHARE*, *INMONEX*, *OPTSENS*, *BONUS*, *LTIP*, *SALARY*, *IFE*, *LTG* and *TRAN* are measured as the values of their cumulative distribution functions. The other variables are measured as described in Table 3. The total number of observations is 8'714. Bold figures denote significance at the 1% level. Figures in italic denote significance at the 5% level.

Table 5

The relation between downward guidance, CEO compensation components, and other firm characteristic control variables

Endogenous variable: *DOWN*

Variable	Predicted sign	Coefficient	*p*-value	Marginal Effect
SHARE	+	0.328	0.0241	0.060
RSG	+	-0.478	0.7800	-0.088
INMONEX	+	0.805	0.0000	0.148
OPTSENS	+	0.415	0.0008	0.076
BONUS	+	0.517	0.0001	0.095
LTIP	+	0.879	0.1789	0.162
SALARY	-	-0.583	0.0000	-0.107
LOSS	+/-	0.294	0.0065	0.051
INCEPS	+/-	-1.052	0.0000	-0.175
MEET	+/-	0.319	0.0000	0.061
RCOV	+	0.018	0.3930	-0.003
IFE	-	-1.023	0.0000	-0.188
EARNRET	+	-0.035	0.9977	-0.006
LTG	+	-0.473	0.9999	-0.087
ICLAIM	+	-0.089	0.9580	-0.016
LIT	+	-0.093	0.7980	-0.017
TRAN	+	0.600	0.0000	0.110
Chi2(46)	1'127.82		N	8'714
Prob > chi2	0.0000		Pseudo R2	0.1394

Pooled logit regression estimates of *DOWN* on compensation variables and other firm characteristics; year and industry effects are included but not reported. All exogenous variables are defined in Table 2 and Table 3. *SALARY*, *BONUS*, *LTIP*, *RSG*, *SHARE*, *INMONEX*, *OPTSENS*, *IFE*, *LTG*, and *TRAN* are expressed in terms of the values assigned by their cumulative distribution functions. *p*-values are computed with robust standard errors and correspond to one-sided hypothesis tests. If no prediction is made (+/-), the *p*-values are given for two-sided tests. Marginal effects are computed as $e^{b'X}/(1+e^{b'X})^2$, evaluated at the means of the elements of X. The chi2 statistic and the corresponding *p*-value are given for the joint test of significance of the model coefficients. *N* is the number of firm-year observations. Pseudo R2 is McFadden's measure of goodness of fit, computed as $1-(L_u/L_c)$, where L_u denotes the unconstrained Log-Likelihood of the (full) model and L_c denotes the constrained Log-Likelihood of the constrained (intercept only) model.

Table 6

Fixed and random effects estimations of the relation between downward guidance, CEO compensation components, and other firm characteristic control variables

Endogenous variable: *DOWN*		**Panel A: Fixed effects logit**			**Panel B: Random effects probit**		
Variable	Predicted sign	Coeff.	*p*-value	Marginal Effect	Coeff.	*p*-value	Marginal Effect
SHARE	+	0.304	0.1873	0.061	0.186	0.0277	0.059
RSG	+	-0.483	0.7182	-0.107	-0.250	0.7422	-0.079
INMONEX	+	1.472	0.0000	0.318	0.466	0.0000	0.148
OPTSENS	+	0.565	0.0003	0.235	0.254	0.0005	0.080
LTIP	+	0.708	0.3269	0.218	0.541	0.1804	0.171
BONUS	+	0.481	0.0056	0.108	0.298	0.0001	0.094
SALARY	-	-0.601	0.0164	-0.140	-0.340	0.0000	-0.108
LOSS	+/-	0.888	0.0000	0.205	0.177	0.0065	0.053
INCEPS	+/-	-1.056	0.0000	-0.254	-0.617	0.0000	-0.180
MEET	+/-	0.295	0.0000	0.075	0.183	0.0000	0.059
RCOV	+	0.217	0.0268	0.047	0.014	0.3630	0.004
IFE	-	-0.290	0.0225	-0.069	-0.608	0.0000	-0.193
EARNRET	+	-0.039	0.9991	-0.010	-0.018	0.9952	-0.006
LTG	+	-1.001	1.0000	-0.251	-0.283	1.0000	-0.090
ICLAIM	+	0.198	0.0758	0.050	-0.052	0.9668	-0.016
LIT	+	-0.189	0.6941	-0.039	-0.054	0.7976	-0.017
TRAN	+	0.737	0.0000	0.176	0.346	0.0000	0.110
Chi2				1’120.14			1’250.07
Prob > chi2				0.0000			0.0000
N				7’548			8’714
Pseudo R2				0.1834			0.1397

Conditional logit (fixed effects) and random effects probit estimates of *DOWN* on all explanatory variables; year effects are included but not reported. Industry effects (not reported) are only jointly significant in the random effects specification and are dropped in the fixed effects estimation. Chi2 is Chi2(25) for fixed effects and Chi2(45) for the random effects specification. All exogenous variables are defined in Table 2 and Table 3. *SALARY*, *BONUS*, *LTIP*, *RSG*, *SHARE*, *INMONEX*, *OPTSENS*, *IFE*, *LTG*, and *TRAN* are expressed in terms of the values assigned by their cumulative distribution functions. All reported items are defined as in Table 5.

Table 7

Panel A: Conditioning on *reaching* behavioral thresholds

The relation between downward guidance, CEO compensation components, and other firm characteristic control variables

Endogenous variable: *DOWN*		**profit reporting firms**			**firms with increasing EPS**			**firms that meet or beat analyst forecast**		
Variable	Pred. sign	Coeff.	*p*-value	Marginal Effect	Coeff.	*p*-value	Marginal Effect	Coeff.	*p*-value	Marginal Effect
SHARE	+	0.307	0.0366	0.057	0.496	0.0062	0.099	0.520	0.0044	0.093
RSG	+	-0.568	0.8166	-0.105	-0.095	0.5483	-0.019	-0.306	0.6665	-0.054
INMONEX	+	0.783	0.0000	0.145	0.907	0.0000	0.181	0.927	0.0000	0.165
OPTSENS	+	0.372	0.0032	0.069	0.440	0.0023	0.088	0.409	0.0042	0.073
BONUS	+	0.501	0.0002	0.093	0.616	0.0001	0.123	0.556	0.0003	0.099
LTIP	+	1.055	0.1392	0.195	1.014	0.1675	0.202	1.473	0.1056	0.262
SALARY	-	-0.627	0.0000	-0.116	-0.793	0.0000	-0.158	-0.791	0.0000	-0.141
LOSS	+/-				-0.796	0.0003	-0.181	0.580	0.0006	0.089
INCEPS	+/-	-0.889	0.0000	-0.149				-0.977	0.0000	-0.153
MEET	+/-	0.257	0.0000	0.049	0.273	0.0002	0.056			
RCOV	+	-0.015	0.7245	-0.003	-0.068	0.7918	-0.014	0.005	0.4776	0.001
IFE	-	-0.932	0.0000	-0.172	-1.238	0.0000	-0.247	-0.742	0.0000	-0.132
EARNRET	+	-0.039	0.9990	-0.007	-0.038	0.9957	-0.008	-0.028	0.9713	-0.005
LTG	+	-0.503	0.9999	-0.093	-0.282	0.9684	-0.056	-0.523	0.9996	-0.093
ICLAIM	+	-0.009	0.5611	-0.002	0.018	0.3880	0.004	-0.075	0.8730	-0.013
LIT	+	-0.100	0.8018	-0.019	-0.055	0.6626	-0.011	-0.170	0.8985	-0.031
TRAN	+	0.561	0.0000	0.104	0.790	0.0000	0.158	0.638	0.0000	0.114
Wald chi2(45)				1'014.10			794.84			723.02
Prob >chi2				0.0000			0.0000			0.0000
N				8'018			5'832			6'153
Pseudo R2				0.1350			0.1428			0.1276

Pooled logit estimates of *DOWN* on all explanatory variables except for the three threshold variables on which the regressions are conditioned; year and industry effects are included but not reported. All exogenous variables are defined in Table 2 and Table 3. *SALARY*, *BONUS*, *LTIP*, *RSG*, *SHARE*, *INMONEX*, *OPTSENS*, *IFE*, *LTG*, and *TRAN* are expressed in terms of the values assigned by their cumulative distribution functions. All reported items are defined as in Table 5.

Table 7

Panel B: Conditioning on *missing* behavioral thresholds.

The relation between downward guidance, CEO compensation components, and other firm characteristic control variables

Endogenous variable: *DOWN*		**loss reporting firms**			**firms with decreasing EPS**			**firms that miss analyst forecast**		
Variable	Pred. sign	Coeff.	*p*-value	Marginal Effect	Coeff.	*p*-value	Marginal Effect	Coeff.	*p*-value	Marginal Effect
SHARE	+	-0.830	0.8482	-0.115	-0.436	0.9133	-0.060	-0.230	0.7707	-0.044
RSG	+	4.129	0.1449	0.571	-0.898	0.7956	-0.123	-0.798	0.7313	-0.155
INMONEX	+	1.340	0.0226	0.185	0.780	0.0018	0.107	0.457	0.0374	0.088
OPTSENS	+	1.793	0.0016	0.248	0.150	0.2871	0.021	0.530	0.0207	0.103
BONUS	+	0.074	0.4579	0.010	0.456	0.0430	0.063	0.284	0.1415	0.055
LTIP	+	-8.255	0.8281	-1.142	0.026	0.4958	0.004	-1.403	0.7471	-0.272
SALARY	-	0.301	0.7101	0.042	-0.249	0.1344	-0.034	-0.063	0.3881	-0.012
LOSS	+/-				0.522	0.0006	0.064	0.135	0.3808	0.026
INCEPS	+/-	-3.014	0.0000	-0.583				-1.313	0.0000	-0.247
MEET	+/-	0.959	0.0001	0.131	0.378	0.0003	0.053			
RCOV	+	0.253	0.1373	0.035	0.235	0.0269	0.032	-0.018	0.5600	-0.004
IFE	-	-0.642	0.2005	-0.089	0.538	0.9830	0.074	-1.912	0.0000	-0.371
EARNRET	+	-0.027	0.6664	-0.004	-0.041	0.9471	-0.006	-0.049	0.9816	-0.009
LTG	+	-0.329	0.7948	-0.046	-1.278	1.0000	-0.175	-0.405	0.9715	-0.078
ICLAIM	+	-0.148	0.8295	-0.021	-0.171	0.9757	-0.023	-0.118	0.8961	-0.023
LIT	+	-0.464	0.8266	-0.064	-0.350	0.9364	-0.050	0.101	0.3090	0.019
TRAN	+	0.648	0.0898	0.090	0.153	0.2687	0.021	0.410	0.0341	0.079
Wald chi2(45)				182.51			427.58			428.67
Prob >chi2				0.0000			0.0000			0.0000
N				696			2’882			2’561
Pseudo R2				0.3501			0.1943			0.1881

Pooled logit estimates of *DOWN* on all explanatory variables except for the three threshold variables on which the regressions are conditioned; year and industry effects are included but not reported. All exogenous variables are defined in Table 2 and Table 3. *SALARY*, *BONUS*, *LTIP*, *RSG*, *SHARE*, *INMONEX*, *OPTSENS*, *IFE*, *LTG*, and *TRAN* are expressed in terms of the values assigned by their cumulative distribution functions. All reported items are defined as in Table 5.

Table 8

The relation between marginally beating consensus forecast,

CEO compensation components, and other firm characteristic control variables

Endogenous variable: *BEAT*

Variable	Predicted sign	Coefficient	*p*-value	Marginal Effect
SHARE	+	0.357	0.0065	0.085
RSG	+	-0.769	0.9055	-0.183
INMONEX	+	0.238	0.0163	0.057
OPTSENS	+	0.124	0.1376	0.030
BONUS	+	0.158	0.0930	0.038
LTIP	+	-1.284	0.9194	-0.306
SALARY	-	-0.158	0.0731	-0.038
LOSS	+/-	-0.862	0.0000	-0.183
INCEPS	+/-	0.352	0.0000	0.083
RCOV	+	0.392	0.0000	0.093
IFE	-	-0.750	0.0000	-0.179
EARNRET	+	-0.007	0.7292	-0.002
LTG	+	0.456	0.0000	0.109
ICLAIM	+	0.015	0.3585	0.004
LIT	+	0.032	0.3673	0.008
TRAN	+	0.239	0.0120	0.057
Wald chi2(45)	652.46		N	8'714
Prob > chi2	0.0000		Pseudo R2	0.0644

Pooled logit regression results of *BEAT* on all explanatory variables. *BEAT* equals one if announced *EPS* exceed the consensus forecast by no more than 5 cents. Year effects are included but not reported. All exogenous variables are defined in Table 2 and Table 3. *SALARY*, *BONUS*, *LTIP*, *RSG*, *SHARE*, *INMONEX*, *OPTSENS*, *IFE*, *LTG*, and *TRAN* are expressed in terms of the values assigned by their cumulative distribution functions. All reported items are defined as in Table 5.

Table 9

Cumulative abnormal returns at announcement date

	Earnings surprise		
	Zero or Positive	Negative	Difference
CAR	0.013	-0.015	0.028
(p-value)	*<0.01*	*<0.01*	*<0.01*
N	6'119	2'544	8'663

Cumulative abnormal returns (*CAR*) for 8'663 firm-year observations around the earnings announcement dates between 1993 and 2001. *CAR*s are estimated with a market model type regression over 252 days, ending two days after the earnings announcement using a WLS regression as in Heinkel and Krauss (1998). The event window ranges from two days preceding the earnings announcement to two days after this date. Companies' cumulative abnormal returns are classified into two distinct categories according to the sign of their earnings surprise. The earnings surprise is computed as the difference between the released EPS and the last consensus issued by analysts for a particular firm in a given year.

Table 10

Market anticipation of expectations management at announcement date

Earnings surprise	Expectations management	N	CAR *(p-value)*	Difference *(p-value)*
Zero or Positive	Suspected (*DOWN=1*)	4'489	0.010	
			(<0.01)	
	Not suspected *(DOWN=0)*	1'630	0.020	-0.009
			(<0.01)	*(<0.01)*
Negative	Suspected *(DOWN=1)*	1'758	-0.016	
			(<0.01)	
	Not suspected *(DOWN=0)*	786	-0.011	-0.005
			(<0.01)	*(0.2215)*

Cumulative abnormal returns (*CAR*) for 8'663 firm-year observations around the earnings announcement dates between 1993 and 2001. CARs are estimated with a market model type regression over 252 days ending two days after the earnings announcement with a WLS regression as in Heinkel and Krauss (1998). The event window ranges from two days preceding the earnings announcement to two days after this date. Companies' cumulative abnormal returns are classified into four distinct categories according to whether their earnings surprise is positive or strictly negative and whether expectations management can be suspected. Earnings surprise is computed as the difference between the announced EPS and the last consensus issued by analysts for a particular firm in a given year. A given company is suspected of managing expectations if $FEPS < E[FEPS]$. $E[FEPS]$ is computed as described in section 4.

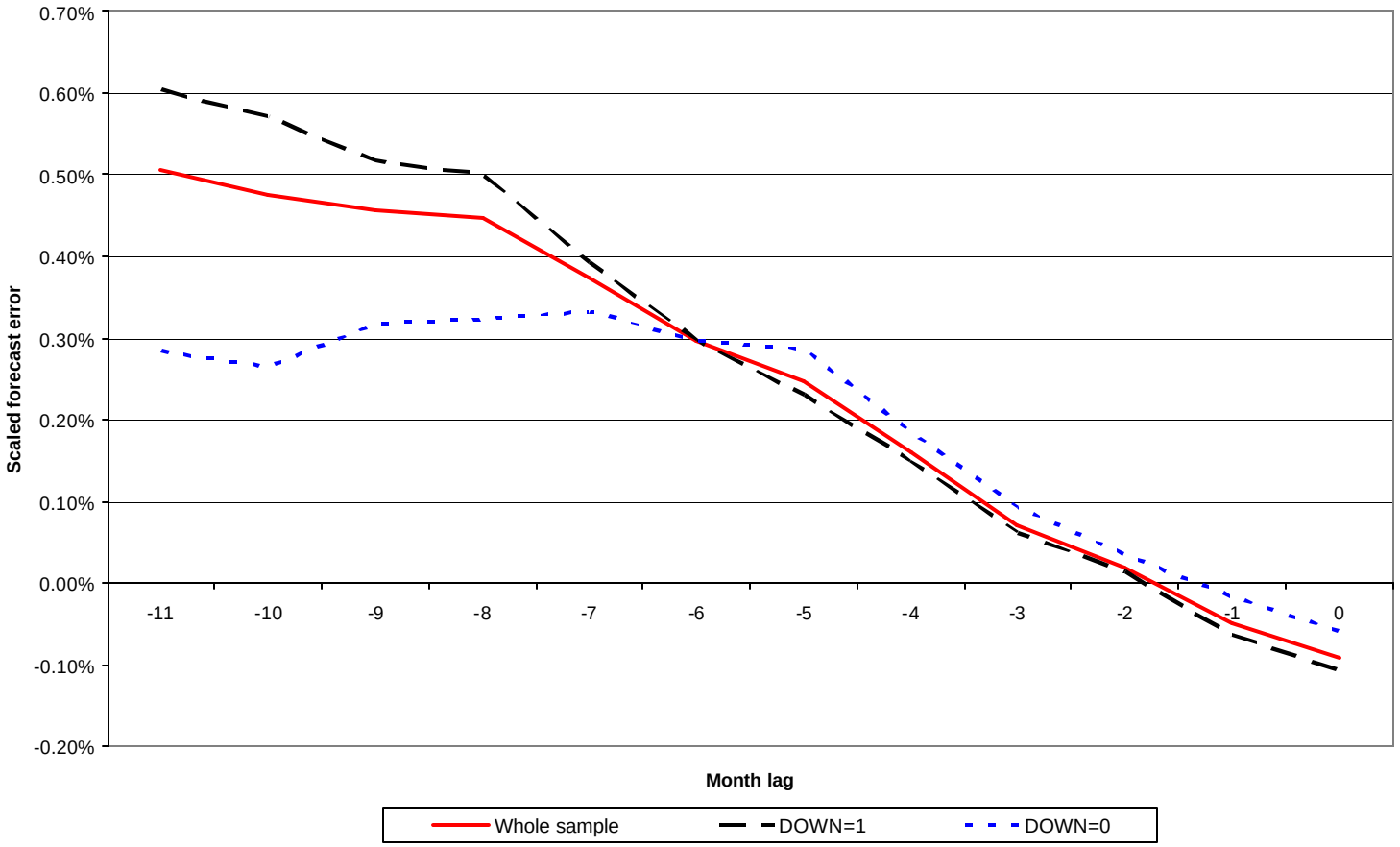
Table 11

Explaining the reduced abnormal returns for firms suspected of managing earnings

	Coefficient	*t*-stat.	(*p*-value)
Intercept	-0.000	-0.033	0.9738
SHARE	0.003	0.509	0.6109
INMONEX	-0.012	-2.731	0.0063
INST	0.003	0.624	0.5326
N	6119		
Adj. R^2	0.69%		
F test	2.229		
(p-value)	*<0.01*		

Cumulative abnormal returns (*CAR*) of firms that meet or beat analyst forecasts are regressed on CEO compensation components and firm-specific control variables, which are partially or entirely known by the market at the earnings announcement dates. CARs are estimated with a market model type regression over 250 days ending two days after the event date with a WLS regression as in Heinkel and Krauss (1998). The event window ranges from two days preceding the earnings announcement date to two days after this date. *INST* is the percentage of shares held by institutional investors at the end of the fiscal year. Other variables are defined as above. *SHARE*, *INMONEX*, *INST* and *MCAP* are expressed in terms of the values assigned by their cumulative distribution functions. Reported *t*-statistics are based on White (1980).

Figure 1: The dynamics of scaled forecast errors



The average forecast error is computed as the mean of all analyst forecasts of EPS in month *t* preceding the announcement minus announced EPS . This difference is scaled by stock price at the prior fiscal year end. Month -11 is the first and month 0 is the last month of the forecasting period. The solid line shows the average scaled forecast error for the entire sample of observations. The dashed line displays the average scaled forecast error for firms suspected of managing expectations downward (*DOWN*=1) and the dotted line depicts the average forecast error for firms that are not suspected of managing expectations downward (*DOWN*=0).

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