Investors' Reactions to Management Earnings Guidance: The Joint Effect of Investment Position, News Valence, and Guidance Form

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ABSTRACT

We report the results of an experiment which shows that investors' earnings- and investment-related judgments are jointly influenced by their investment position (long versus short), the news valence of guidance issued by management, and the amount of ambiguity in the guidance. Prior research indicates that guidance form (point versus range) has no effect on investors' earnings estimates made in reaction to management guidance. We extend this research by showing that guidance form matters, conditional on investment position and news valence. Similarly, prior research indicates that investors who hold long (short) positions in a stock are more optimistic (pessimistic) about the company's prospects. We extend this research by showing that the effect of investment position documented in prior studies is conditional on news valence and guidance form. We contribute to prior literature on the effects of investment position and guidance form by delineating boundary conditions for each of these effects.

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1. Introduction

In this paper, we investigate how investors' earnings- and investment-related judgments are jointly influenced by their investment position (long versus short), the news valence of guidance issued by management, and the amount of ambiguity in the guidance. We assess whether the effect of guidance form (Hirst et al. [1999], Libby et al. [2006]) is conditional on investment position and news valence, and whether the effect of investment position documented in prior studies (Hales [2007]) is conditional on news valence and guidance form. In doing so, we extend the theory in each of these two research streams.

The first stream of research relates to management guidance. Research shows that management guidance has increased in popularity over time (Healy and Palepu [2001], Kothari [2001]), and that they are issued in different forms — point, range, open-ended, or qualitative. Among these guidance forms, point and range guidance are most popular. Hirst et al. [1999] theorize and demonstrate using a controlled experiment that the issuance of guidance in the point form versus range form does not influence investors' earnings estimates made after receiving the management guidance, but influences their confidence in these earnings estimates. They infer that this is because investors impute the midpoint of the range as their best estimate of the range guidance, which is equal to the point estimate (Hirst et al. [1999]). This theoretical argument and associated finding of no guidance form effect on earnings estimates have been considered surprising (see discussion by Kennedy [1999]). Note that Hirst et al.'s [1999] study involves a context where participants do not have an investment position in the firm, or are not instructed about their investment position. In practice, however, investors can have a long, short or no investment position in a stock at the time when they assess management guidance. As we discuss

later, psychology theory (e.g., Hsee [1995], [1996]) suggests that guidance form does influence investors' earnings estimates when they have an investment position, contrary to the conclusion in prior research on the null effects of guidance form on investors' earnings estimates.

The second stream of research relates to motivated reasoning or directional preferences. Hales [2007] documents that investors are susceptible to motivated reasoning or directional preferences in that the manner they interpret information is a function of their investment position — those holding a long position in a stock tend to place more weight on analysts' forecasts that are more optimistic about the company's prospects than those holding a short position. Hales' [2007] experiment involves a context where investors interpret several analysts' earnings forecasts that vary in terms of their optimism about the company's prospects, and all of these forecasts are in the form of point estimates. Whether Hales' [2007] results are generalizable to investors' interpretation of management guidance is an open question. Management guidance generally comes in the form of range or point estimates, whereas analysts' forecasts are generally more precise and come in the form of point estimates. However, the analysts' forecasts presented to Hales' participants also have features of a range forecast in that the different point forecasts made by analysts suggest that a range of earnings estimates is possible. It is therefore difficult to determine the extent to which results in Hales [2007] apply to point versus range management guidance.

In addition, another feature of management guidance is the favorability of its implications for the company. Guidance that implies positive news for the company is likely to be deemed less credible than guidance that implies negative news because managers have more incentives (e.g., better stock market reaction, better reputation) to issue positive news than negative news (Lang and Lundholm [2000]). Whether the effect of directional preferences is moderated by this

factor has not been investigated. To the extent that effects of directional preferences are muted in a more credible negative news setting, concerns about biased judgments associated with directional preferences may be allayed in that the adverse economic impact of biased decisions is arguably greater in a negative news context.

In our study, we develop and test a theory of investors' interpretation of management guidance, and posit that three factors jointly influence investors' judgments made in response to management guidance: investors' investment position (long versus short), guidance form (point versus range), and news valence (positive versus negative). To address both the management guidance and directional preferences literature, we present and test our theory from both perspectives. Using the directional preferences literature as a starting point, our premise is that investors with a long (short) investment position have a directional preference to interpret management guidance positively (negatively). Two features of management guidance are relevant to our discussion. One, range guidance is more vague and implies greater outcome uncertainty (i.e., elasticity; see Schweitzer and Hsee [2002]) as opposed to point guidance, and therefore provides greater latitude and justification (Hsee [1995], [1996]) for investors with directional preferences to selectively process the news. Two, effects of directional preferences are more apparent when guidance consists of positive news than negative news. Because the issuance of positive news by management is consistent with management incentives, there is greater elasticity or outcome uncertainty in terms of whether actual earnings will match the guidance with positive than negative news. However, investors holding long positions have directional incentives to favor positive news, and are less likely to discount the positive guidance than those holding short positions. On the other hand, there is less elasticity associated with negative guidance, and correspondingly less scope for directional incentives to operate.

This discussion enables us to make predictions from two perspectives. From the perspective of the guidance form literature, we posit that the effects of guidance form on investors' earnings estimates depend on investment position and news valence. More specifically, in contrast to prior research that predicts no effects of guidance form on earnings estimates (Hirst et al. [1999]), we predict that guidance form matters in that investors holding long (short) positions in a stock accord higher (lower) earnings estimates with a range rather than point guidance. This is particularly so when news are positive. From the perspective of the directional preferences literature, we posit that the effects of directional preferences depend on guidance form and new valence. Effects of directional preferences are more likely for range (rather than point) guidance that contains positive news.

To test our theory, we conduct an experiment using MBA and Master of Finance students as proxies for investors. Consistent with our predictions relating to moderators of the guidance form effect, we find that guidance form effects are apparent for positive but not negative news. For positive news, the effects of guidance form depends on investors' investment position—investors holding long positions have higher earnings estimates for range guidance than for point guidance; the reverse is true for investors holding short positions. Consistent with our predictions relating to moderators of the directional preferences effect, we find directional preferences effect only for the range guidance—investors holding long positions have higher earnings estimates than those holding short positions, with this difference being apparent only for positive but not negative guidance. In contrast, for the point guidance, we find no effects of investment position or news valence.

Our paper contributes to existing literature in several ways. We extend the literature on guidance form. Prior literature shows that investors without directional preferences do not

differentiate between point and range management guidance in terms of their earnings estimates. Our study shows that guidance form matters once directional preferences are taken into account, and that investors' investment positions determine whether range guidance leads to higher (or lower) earnings estimates than point guidance for the same piece of positive news. Understanding the effects of guidance precision in the form of point and range guidance takes on added importance with increasing disclosures of fair value estimates that have varying degrees of precision (Holthausen and Watts [2001]). Our results point to the importance of considering investment position when interpreting less precise management guidance. From a more general perspective, a long or short investment position proxies for the extent that investors personally care about the outcome of accounting information disclosed by management. Given that investors are likely to be personally involved in their investment decisions and care about the stock-market implications of accounting information disclosed, our results — showing that the effects of an investment position (whether long or short) differ from that in the absence of an investment position — suggest the importance of considering the involvement of participants in experiments. We also extend the literature on directional preferences (Hales [2007]) by applying it to the management guidance literature, and identifying two moderators of this effect. We document the directional preferences effect for range guidance but not point guidance. Furthermore, we show that the directional preference effect found for range guidance is more likely to occur for positive news guidance than negative news guidance.

The rest of the paper is structured as follows. Section 2 reviews the relevant literature and develops the hypotheses. We describe the research method in Section 3 and analyze the results in Section 4. Section 5 concludes the paper.

2. Background and Hypotheses Development

2.1 INVESTMENT POSITION AND DIRECTIONAL PREFERENCES

Psychology research indicates that decision makers with preferences for certain desired outcomes or directional incentives are biased in their information processing (Kunda [1990]). They access a biased set of information (e.g., Kunda and Sanitioso [1989]), give higher weight to information which favors their preferred outcome (e.g., Boiney et al. [1997]), or use biased statistical rules in evaluating information (e.g., Ginossar and Trope [1987]).

Hales [2007] is the first study that shows that investors' interpretation of analysts' forecasts about a company's earnings potential is susceptible to the effects of directional preferences induced from having long versus short positions in a stock. In his experiment, participants in the long/short condition are assigned an arbitrary earnings benchmark, and are told that they will gain if the actual EPS is higher/lower than the benchmark. Participants are given 14 analysts' forecasts that vary in the extent of deviation from the arbitrary earnings benchmark. Hales [2007] finds that when the news is preference-inconsistent (i.e., low/high consensus analysts' forecast for long/short investors), effects of investment position are more apparent in that long investors are more optimistic about the company's earnings prospects than short investors.

2.2 INFORMATION ELASTICITY AND GUIDANCE FORM

Psychology literature suggests that motivated reasoning is more likely to occur when there is greater uncertainty and vagueness in the information environment (Gilovich [1983], Omoto and Borgida [1988], Kunda [1990]). In particular, elastic justification theory (Hsee [1995], [1996], Schweitzer and Hsee [2002]) provides a more detailed discussion of the role of information elasticity. This theory posits that decision makers consider the justifiability of their judgments and decisions, and that the effects of directional goals or preferences will be larger when the elasticity of the information accords them better justification opportunities. Schweitzer

and Hsee [2002] define elasticity as comprising two primary dimensions: uncertainty in terms of outcome or probability values, and vagueness in defined values. Elasticity is deemed to be higher with an increase in uncertainty and/or vagueness.

Hales [2007] examines a setting where investors read multiple individual analysts' forecasts in the form of point estimates that vary in their deviations from an arbitrary earnings benchmark. This setting likely involves high information elasticity and outcome uncertainty, as differing views among analysts suggest a range of potential outcomes in the analysts' estimates of the eventual earnings outcome. Such a setting is reasonable in the context of interpretation of analysts' forecasts because it would be highly improbable for every analyst to issue the same forecast.

While analyst forecasts generally come in the form of point estimates, management guidance comes in different forms such as point and range estimates (Baginski et al. [1993], Pownall et al. [1993], Baginski and Hassell [1997], Soffer et al. [2000]). More importantly, in a management guidance setting, different guidance forms naturally entail varying degrees of information elasticity. Range guidance contains more elasticity in that it suggests different possible outcome values, whereas point guidance contains less elasticity in that it suggests only one possible outcome value.[1] Compared to point guidance, range guidance is also associated with greater uncertainty in probability values as it implies that values within the range occur with some unstated probability. Because both point and range guidance constitute a non-trivial proportion of all guidance (30.18% and 43.22%, respectively, based on study by Cotter et al.

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[1] Arguably, range guidance is also associated with greater information vagueness than point guidance. However, differences in information vagueness is probably more apparent in comparing range guidance with say, a qualitative guidance ("earnings will improve") than with point guidance because both range and point guidance offer non-vague quantitative estimates.

[2006]), it is important to assess whether judgment effects of guidance that varies in elasticity are influenced by directional preferences.

Prior studies indicate mixed findings on the effects of guidance form on investors' judgments. For example, Baginski et al. [1993] find that the specificity of different guidance forms is positively associated with the magnitude of market reaction to management guidance; in contrast, Pownall et al. [1993] find no effects of guidance form. Studies using experiments also document no effects of guidance form on the earnings estimates of investors (Hirst et al. [1999], Han and Tan [2007]) or analysts (Libby et al. [2006]). However, these experimental studies examine a context where investors/analysts do not hold any investment positions (long or short). Following the theory that directional preferences are stronger with information elasticity, we anticipate that the effects of directional preferences induced by investors' investment position are more likely to occur with range guidance (where there is more elasticity) than with point guidance.

2.3 NEWS VALENCE

In Hales' [2007] experiment, participants' payoffs are manipulated by whether they gain or lose in the event that actual EPS falls above or below an arbitrary earnings benchmark. The information that participants react to relates to individual analyst's earnings forecasts that either fall above or below this earnings benchmark. News about the company is held constant, and participants do not receive any direct communication from management. In contrast, earnings guidance is a form of communication from management that varies both in their implications for the company and their credibility. For instance, Clement et al. [2003] document that over 80% of management guidance entails either positive or negative implications for the firm.[2] In general,

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[2] Clement et al. [2003] define "confirming management earnings guidance" as point guidance within ±1% of the most recent consensus analyst forecast, or as range guidance with a mean value within ±1% of the most recent

managers have incentives (e.g., better stock market reaction, better reputation) to issue positive news but not negative news (Lang and Lundholm [2000]), and prior research indicates that negative guidance is more credible than positive guidance (Sansing [1992], Hutton et al. [2003]). Lower credibility is associated with higher information risk in that the information conveyed has a higher probability of being erroneous or incomplete (Barton and Mercer [2005]). Furthermore, Soffer et al. [2000] find that firms with positive total news release only about half of the total news in their guidance, leaving a positive earnings surprise at the earnings announcement date. In contrast, firms with negative total news release almost all the news in their guidance. Together, these findings suggest greater elasticity in terms of outcome uncertainty (with respect to actual earnings) associated with positive guidance relative to negative guidance. For instance, there is the possibility that the positive guidance is overstated because of management's incentives to convey good news (Lang and Lundholm [2000]); yet, there is the possibility that the guidance is biased downwards (Soffer et al. [2000]). In contrast, negative guidance is more credible, with less necessity to second guess what the unbiased guidance is.

In summary, following the reasoning in elastic justification theory that directional preferences are more likely to operate in the presence of higher elasticity (Hsee [1995], [1996]), we predict that the effects of investment position are more likely to occur for positive guidance than negative guidance.

2.4 MODERATORS OF GUIDANCE FORM EFFECTS

We expect a three-way interaction involving investment position, guidance form, and news valence on investors' estimates made in reaction to management guidance. In this section, we

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consensus analyst forecast. Among their sample of 5,995 management earnings guidance (either point or range) issued from 1993 to 1997, 1,138 are "confirming guidance."

address the literature on guidance form, and present the interaction in terms of how the effects of guidance form on investors' earnings estimates are conditional on investment position and news valence.

Prior research on guidance form indicates that investors' or analysts' earnings estimates made after receiving management guidance do not differ between the point guidance and the range guidance (Hirst et al. [1999], Libby et al. [2006], Han and Tan [2007]). However, we predict that guidance form matters once investment position and news valence are taken into consideration. Consider a situation where guidance contains positive news for the company. Research on directional preferences (Kunda [1990], Hales [2007]) predicts that investors holding long positions will forecast higher earnings estimates than investors holding short positions. However, these investors have more leeway to forecast higher or lower earnings estimates with range guidance than point guidance because range guidance offers greater elasticity for earnings to be higher or lower depending on their directional preferences. This implies that investors holding long positions assess higher earnings estimates for range guidance than point guidance, and investors holding short positions assess lower earnings estimates for range guidance than point guidance. We expect these effects to be dampened for management guidance with negative news because it is associated with lower elasticity. We posit the following hypotheses:

H1: For positive guidance, investors' earnings estimates will be higher (lower) with range guidance than point guidance when they hold long (short) positions.

H2: The guidance form by investment position interaction predicted for positive guidance is less likely to occur for negative guidance.

2.5 MODERATORS OF DIRECTIONAL PREFERENCES/ INVESTMENT POSITION
    EFFECTS

We also expect the effects of directional preferences (from one's investment position) documented in prior studies (Hales [2007]) to be moderated by guidance form and news valence. To the extent that motivated reasoning is more likely to operate in the presence of high information elasticity, the effects of investment position are more likely to be present with range guidance than with point guidance, and particularly for positive (versus negative) news. This suggests that the effects of investment position are strongest for positive range guidance. With a range guidance, an investor holding a long (short) position finds enough elasticity in the range guidance to infer a higher (lower) earnings estimate. This elasticity is larger for range guidance with positive news rather than negative news, so the effects of investment position are expected to be larger for positive news than negative news. Finally, point guidance (whether positive or negative) contains little elasticity and offers little or less leeway for directional preferences induced by investment position to operate, compared to range guidance. Our hypotheses are formally stated as follows:

H3: *For range guidance, investors holding long positions make earnings estimates that are significantly higher than those of investors holding short positions, with the difference being larger for guidance that is positive than negative.*

H4: *The investment position and news valence interaction predicted for range guidance is less likely to occur for point guidance.*

3. Method

3.1 DESIGN

We conducted an experiment to test our hypotheses. Our design is a 2 x 2 x 2 + 2 between-subjects design, with the three independent variables being investment position (long versus short), news valence (positive versus negative), and guidance form (point versus range). In addition, we have two neutral investment position conditions, one with point guidance and the other range guidance; both contain negative news. Our dependent variables are investors'

earnings estimates and investment-related judgments. Exhibit 1 summarizes the operationalization of our independent variables and presents the questions used to measure our dependent variables.

Insert Exhibit 1 Here

3.2 PARTICIPANTS

Participants were 74 MBA students and 87 Master of Finance students in a major Hong Kong university. Their mean/median working experience was 6.65/5.83 years, and 80.7% had invested in the stock market. On average, they had taken 2.44 (3.85) accounting (finance) courses. The experiment is conducted in six sessions. Results are not affected by session (p = 0.76) or program type (p = 0.37).

3.3 PROCEDURE

Participants read a set of background and financial information based on an actual company in the analytical and control instruments industry.[3] We disguised the name of the company and called it Zetha, Inc. The financial information included a three-year financial summary, quarterly financial data, as well as consensus analysts' forecasts for the coming quarter (third quarter of year 2007; hereafter, Q3), full year 2007, and full year 2008. Consensus forecast was 10.5 cents for Q3.

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[3] The research instrument was reviewed and approved by the human research ethics committee at the university where the experiment was conducted. At the start of the experiment, participants read an informed consent form where we described the purpose, potential risks (if any), and compensation. We asked for their email addresses so that we could contact them for the performance-contingent prize. Participants were assured that participation was voluntary and that their responses would be kept confidential. Participants signed the consent form before they started the experiment.

Participants then read materials contained in two sets of envelopes, labeled A and B. In Set A, participants were informed of the compensation structure, which contained our investment position manipulation. All participants were informed that they were entitled to a flat payment of HK$120 for participating in the study. Investors in the long (short) condition were also told that the higher (lower) the actual earnings of Q3 were relative to the consensus analysts' forecast, the higher their compensation. Specifically, those in the long condition were told that they would receive (lose) an additional $2 in payment for every 0.1 cent that Zetha's actual earnings were higher (lower) than the analysts' consensus forecast. Those in the short condition were told that they would receive (lose) an additional $2 in payment for every 0.1 cent that Zetha's actual earnings were lower (higher) than the analysts' consensus forecast. To assure participants that none of them would end up with a loss, we informed them of a cap of $50 on the additional amount that they could earn or lose. Participants in the neutral investment condition were given a flat payment of HK$120 that did not vary with Zetha's earnings. As an accuracy incentive, we instructed the participants that the participant with his/her earnings estimate closest to Zetha's actual earnings would win a prize of $300. If more than one participant had earnings estimates that were closest to actual earnings, a random draw would determine the winner. Thus, the total compensation could vary from $70 ($120 base payment minus $50) to $470 ($120 base payment plus $50 plus $300 from the draw).[4] We asked participants in the long and short conditions several questions immediately after they received instructions regarding the compensation scheme to test their understanding of the scheme. The questions asked participants whether their compensation was higher or lower than $120 if Zetha's actual EPS for Q3 fell below the

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[4] The actual EPS for Q3 was held constant as 10 cents. Hence, for participants in the long (short) position, they received $120 –/+ $2 x 5 = $110/$130 as the basic payment for participating in the experiment.

consensus analysts' forecast, and to calculate their compensation if actual EPS turned out to be 12 cents and 9 cents, respectively.

Following these compensation instructions, participants read earnings guidance from management. Those in the positive earnings news/point condition received the following guidance:

On August 15, 2007, the management of Zetha issued the following statement:

Because of unexpected movements in product prices, earnings per share for the quarter ending September 30, 2007 are estimated to be approximately 11.5 cents.

Participants in the positive/range condition read the same guidance except that earnings per share were estimated to be "between 8.5 cents and 14.5 cents." Similarly, participants in the negative/point and negative/range conditions read that earnings per share were "approximately 9.5 cents" and "between 6.5 cents and 12.5 cents," respectively. The midpoint of the range guidance is held equal to the point guidance (Hirst et al. [1999], Libby et al. [2006]). In the positive/negative news conditions, the point guidance or midpoint of the range guidance was manipulated to be one cent higher/lower than the analysts' consensus forecast of 10.5 cents.

The point versus range guidance manipulation contained elasticity that varies in the following manner. The point guidance was unambiguously one cent above (below) the analysts' consensus forecast of 10.5 cents for Q3 in the positive (negative) condition. For the range guidance, the midpoint was also one cent above (below) the analysts' consensus forecast in the positive (negative) news condition. However, for the positive news condition, while the upper end of the range (above 10.5 cents to 14.5 cents) was higher than analysts' consensus forecast, the lower end of the range (8.5 cents up to 10.5 cents) was below analysts' consensus forecast of 10.5 cents, implying uncertainty in management's guidance that actual earnings will exceed the consensus forecast. For the negative news condition, the lower end of the range (6.5 cents up to

10.5 cents) was below analysts' consensus forecast and the upper end of the range (above 10.5 cents to 12.5 cents) was above analysts' consensus forecast, again suggesting uncertainty in management's guidance that actual earnings will fall short of the consensus forecast. We designed the larger part of the range to fall above (below) analysts' consensus forecast in the positive (negative) news condition so that participants will still perceive the range guidance as largely positive (negative).[5]

After viewing the management guidance, participants were asked to provide their estimates of earnings for Q3, full year 2007, and full year 2008. They also provided confidence ratings for their earnings estimates. They then made several investment-related judgments, and responded to questions concerning their perceptions of Zetha's management. After completing Set A, participants were asked several demographic questions. They then proceeded to open the envelope marked B, and responded to manipulation check questions and within-subjects test questions.

4. Results

4.1 MANIPULATION CHECKS

We asked participants two questions following the instructions on their compensation schemes to assess whether they understood the long versus short manipulations. We considered investors in the long (short) condition to have passed the manipulation check if: (a) they correctly indicated that their compensation would be lower (higher) if the actual Q3 EPS is lower than the corresponding consensus analysts' forecast, and (b) they correctly pointed out that their compensation was higher (lower) if actual EPS turned out to be 12 cents as compared to 9 cents.

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[5] The midpoint is also above (below) analysts' consensus forecast in the positive (negative) news condition. Note that it would have been impossible to create a situation where exactly half the range falls above and below the consensus forecast in the positive/negative news conditions—by design, the midpoint of the range has to be higher or lower than the consensus forecast by a cent.

Overall, 81.6% participants passed the manipulation check. The lower passing rate in the short condition (87.9%/75.4% for long/short investors; $\chi^2 = 3.42$; p = 0.07) suggests that participants were less familiar with a short-sell scenario.[6]

As a check on the news valence manipulation, we asked participants to rate, on a scale that varies from -5 (extremely negatively) to +5 (extremely positively), the extent to which the stock market in general will positively or negatively view the management earnings guidance. Participants in the positive guidance condition (mean = 1.15) rated the guidance to be significantly more positive than those in the negative guidance condition (mean = -0.59; F = 23.70, p = 0.00).

As a check on the elasticity of range versus point guidance, we asked participants to assess the amount of ambiguity in the earnings guidance (-5: extremely low ambiguity; +5: extremely high ambiguity).[7] Participants in the range condition rated the earnings guidance (mean = 1.48) to be more ambiguous than those in the point condition (mean = 0.95; F = 1.93, one-tailed p = 0.09).[8]

Our theory also suggests that positive news has greater elasticity than negative news, implying that participants likely view positive news to have greater ambiguity than negative news. We find that ambiguity does not vary by news valence (F = 0.19, p = 0.67 for main effect and smallest p = 0.25 for interaction effects). However, when we regress the ambiguity measure on participants' perceptions of whether the market views the guidance positively or negatively (i.e., the manipulation check for news valence), we find a positive association (beta

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[6] All reported p-values are two-tailed unless otherwise stated.
[7] We use the term "ambiguity" rather than "elasticity" in our manipulation check because participants are unlikely to understand the technical meaning of the latter.
[8] Including those participants who failed the manipulation checks does not change the results.

coefficient = 0.22; t = 2.50, p = 0.01). Consistent with our theory, as participants' perceptions of the news valence become more positive, their assessment of the ambiguity in the news increases.

4.2 TESTS OF HYPOTHESES

We manipulated participants' long versus short position through their compensation, which was determined by the extent that actual EPS for Q3 was higher or lower than the consensus analysts' forecast for that quarter. Hence, we anticipate that the effects of motivated reasoning, if any, are likely to be manifested in participants' earnings estimates for Q3 that they made after receiving management's earnings guidance, and we use their Q3 earnings estimates as our main dependent variable.[9] Table 1 shows the descriptive statistics.

Insert Table 1 Here

Our hypotheses together suggest a three-way interaction effect involving investment position (long, short), guidance form (point, range), and news valence (positive, negative). The three-way interaction effect is marginally significant (F = 2.70, p = 0.10; Table 2, Panel A). H1 hypothesizes that for positive guidance, earnings estimates will be higher (lower) for range guidance than point guidance for investors with a long (short) investment position. The ANOVA test for positive management guidance (Table 2, Panel B) shows a significant main effect of investment position. Investors in the long condition have mean earnings estimates (12.59) that are significantly higher than those of investors in the short condition (10.57; F = 3.98, p = 0.05). There is also a marginally significant two-way interaction effect of investment position and guidance form (F = 3.46, p = 0.07). For investors in the long condition, mean earnings estimates

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[10] With full-year 2007 earnings estimates as the dependent variable, we find a significant main effect of news valence (F = 8.21, p = 0.01), and no other significant main or interaction effect (smallest p = 0.28). None of the main and interaction effects is statistically significant (smallest p = 0.22) with full-year 2008 earnings estimates as the dependent variable.

in the range condition (13.96) are marginally higher than those in the point condition (11.22; one-tailed p = 0.08), while for investors in the short condition, mean earnings estimates in the range condition (10.06) are marginally lower than those in the point condition (11.08; one-tailed p = 0.09). H1 is supported.

H2 posits that the motivated reasoning effect is less likely to occur for negative guidance. The ANOVA tests (Table 2, Panel C) in the negative management guidance condition show an insignificant main effect of investment position (F = 0.21; p = 0.65), indicating that there is no evidence of motivated reasoning with negative news. The two-way interaction effect of investment position and guidance form is also insignificant (F = 0.25, p = 0.62). H2 is supported.

Insert Table 2 Here

H3 predicts that for the range guidance, investors in the long condition have significantly higher earnings estimates than investors in the short condition, with the difference being larger for positive guidance than for negative guidance. We conducted a 2 x 2 (Investment Position by News Valence) ANOVA within the range condition, and results are reported in Table 3, Panel A. We find a statistically significant main effect of investment position in that the mean earnings estimates for investors in the long condition (11.58) are significantly higher than those for investors in the short condition (9.63; F = 3.97, p = 0.05). We also find a statistically significant effect of news valence in that investors' earnings estimates are significantly higher for positive guidance (mean = 12.01) than for negative guidance (mean = 9.21; F = 8.19, p = 0.01). Consistent with the prediction of H3, we find a statistically significant two-way interaction effect of investment position and news valence (F = 3.92, p = 0.05). In the positive news condition, investors in the long condition have significantly higher earnings estimates (mean = 13.96) than

those in the short condition (mean = 10.06; one-tailed p = 0.03). In contrast, in the negative news condition, investors in the long and short conditions do not differ in their earnings estimates (mean = 9.21/9.20 respectively, p = 0.98).[10]

H4 posits that the investment position by news valence interaction predicted for the range guidance is less likely to occur for the point guidance. We conduct a 2 x 2 (Investment Position x New Valence) ANOVA for the point condition. Results are consistent with H4 (Table 3, Panel B) in that the two-way interaction effect of investment position and news valence is statistically insignificant (F = 0.36, p = 0.55). The main effect of investment position is also statistically insignificant (F = 0.03, p = 0.86). The only significant effect is a main effect of news valence (F = 17.38, p = 0.00) wherein investors have higher earnings estimates for the positive guidance (mean = 11.15) than for the negative guidance (mean = 9.81).[11,12]

Insert Table 3 Here

4.3 ECONOMIC SIGNIFICANCE OF FINDINGS

We discuss the economic significance of the effects of a long versus short position. As our theory and results indicate, the effects of investment position arise primarily in the positive news/range guidance condition, analogous to a context where disclosures are of lower credibility

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[10] Participants were asked to rate their confidence in their earnings estimates on an 11-point scale with 0 indicating "extremely low confidence" and 1 indicating "extremely high confidence." The ANOVA analysis on confidence ratings shows no significant main or interaction effect (smallest p = 0.40).
[11] We also conduct *a priori* contrast tests to assess the hypotheses (Rosnow and Rosenthal [1995]). For H1, the contrast coefficients are: long/range (2), short/range (-2), long/point (1), and short/point (-1). The contrast test is marginally significant (t = 1.69, p = 0.10). For H3, the contrast coefficients are: long/positive (2), short/positive (-2), long/negative (1), and short/negative (-1). The contrast test is statistically significant (t = 2.16, p = 0.03). Finally, for H2 and H4, the contrast coefficients are: long/range/positive (5), short/range/positive (3), long/point/positive (2), short/point/positive (0), long/range/negative (-3), short/range/negative (-4), long/point/negative (-1), and short/point/negative (-2). The contrast test is statistically significant (t = 3.76, p = 0.00).
[12] We report the corresponding regression results in Tables 2 and 3.

and contain more ambiguity. As Table 1 shows, in that condition, mean EPS estimates are 10.06 cents in the short condition and 13.96 cents in the long position, a difference of 3.96 cents or 28.4% (when expressed as a percentage of the estimate of 13.96 cents in the long position).[13] Furthermore, prior research predicts that with range guidance, investors will use the midpoint of 11.5 cents in the range guidance (range varying between 8.5 cents and 14.5 cents) as a best estimate. Instead, we note that a long position induces investors to deviate by 21.4% [(13.96-11.5)/11.5] from the midpoint, while a short position induces a corresponding deviation of 12.5% [(10.06-11.5)/11.5]. A caveat to our analysis is that experiments are not designed for making parameter estimates (see Libby et al. [2002]), so our discussion should be viewed as pertaining to an overall directional pattern of how investors react rather than a prediction of differences in magnitude of EPS estimates arising from different investment position.

4.4 NEUTRAL INVESTMENT POSITION

As an additional control for our tests of H3 and H4, we collected data for two conditions that are identical to the Negative News/Range and Negative News/Point conditions, except that participants do not have an investment position (i.e., a neutral investment position), similar to those used in prior studies that find no effect of guidance form on investors' earnings estimates (Hirst et al. [1999], Libby et al. [2006], Han and Tan [2007]). We use a negative news setting (rather than a positive news setting) to be comparable with recent guidance form studies that

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[13] This analysis is identical to running a regression analysis in the range condition, with dummy variables representing Investment Position (0 = short; 1 = long) and New Valence (0 = negative, 1 = positive). As shown in equation 4 in Table 3, panel A, we obtain the following model: Q3 EPS Estimates = 9.20 + 0.01 Investment Position + 0.86 News Valence + 3.88 Investment Position x News Valence. Using this equation, we assess the predicted Q3 EPS estimates when investment position changes from 0 to 1 (i.e., short to long position) with News Valence held constant at 1 (i.e., positive news). Similar to our analysis using ANOVA, predicted EPS = 10.06 and 13.96 when investment position equals 0 and 1, respectively. This is equivalent to assessing the effects of investment position changes while holding constant News Valence = 1 and Form = 1 in equation 1 of Table 2, panel A.

focus on negative news (Libby et al. [2006], Han and Tan [2007]).[14] The descriptive statistics of participants in the neutral condition are reported in Table 1.

Using earnings estimates for Q3 as the dependent variable, we find no difference in the earnings estimates of investors in the point guidance condition (mean = 9.67) and the range guidance condition (mean = 9.13; F = 1.78, p = 0.19). Hence, our results replicate prior results in that guidance form has no effect on investors' earnings estimates in the absence of an investment position. We also conduct two-way Investment Position (long, short, neutral) by Guidance Form (point, range) ANOVA tests within the negative news condition. Results indicate that the main effect of investment position remains insignificant (F = 1.14; p = 0.33), and the interaction effect of investment position and guidance form is also insignificant (F = 0.20; p = 0.82).[15]

4.5 PARTICIPANTS' INVESTMENT DECISIONS

We ask participants to make three investment-related judgments: (a) assess the potential that Company Zetha's stock price will appreciate in the near future, using an 11-point scale (-5: extremely low potential for price appreciation, 5: extremely high potential for price appreciation); (b) indicate the P/E that Zetha's stock should trade at, given that other firms in Zetha's industry trade at P/E ratios of between 15 and 25; and (c) indicate their preferred investment position regarding Zetha's shares, using an 11-point scale (-5: definitely short-sell, 5: definitely buy).

Reliability analysis suggests that the stock price appreciation question and the preferred investment position question load on the same factor (Cronbach alpha = 0.66), whereas the P/E ratio question does not. Hence in the following analysis, we combine the stock price appreciation

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[14] Hirst et al. [1999] use a positive news setting.
[15] We also analyze the effect of investment position (long, neutral, and short) and guidance form (point versus range) on investors' confidence. The ANOVA analysis shows no significant main or interaction effects (smallest p = 0.48). For the neutral investors, consistent with prior literature (Hirst et al. [1999], Libby et al. [2006], Han and Tan [2007]), confidence in point guidance (mean = 0.58) is marginally higher than confidence in range guidance (mean = 0.49; F = 1.80, one-tailed p = 0.10).

question and the preferred investment position questions, and label the measure "investment potential."

We conduct ANOVA analyses with investment potential and P/E ratio as separate dependent variables, and investment position, news valence, and guidance form as independent variables. Unlike our findings with Q3 EPS estimates, the three-way interaction is not statistically significant (smallest $p = 0.19$), and only the main effect of news valence is statistically significant (largest $p = 0.01$). Thus, the joint effect of the three independent variables does not directly influence investment judgments.

We also assess whether investors' earnings estimates mediate the effect of the three independent variables on investors' investment judgments. As outlined in Kenny et al. [1998: 260], two steps are needed to establish mediation: (1) the independent variables are related to the mediator, and (2) the mediator is related to the dependent variable, while controlling for the independent variables. In our main analyses, we established the first step in the mediation analysis in that we find that investors' Q3 EPS estimates are influenced by the joint effect of investment position, news valence, and guidance form. To establish step 2, we conducted separate ANCOVA analyses for investment potential and P/E ratio, respectively, with investment position, news valence, and guidance form as independent variables and Q3 EPS estimates as a covariate. We find that Q3 EPS estimates are related to both investment judgments ($p = 0.08$ and 0.01 for investment potential and P/E ratio, respectively), which satisfies step 2 of Kenny et al.'s [1998] test of mediation.[16] These results indicate that investors' Q3 earnings estimates mediate

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[16] We find a main effect of news valence for each of the investment judgments (highest $p = 0.06$), and none of the other main or interaction effects is statistically significant (smallest $p = 0.14$), with the exception of a two-way interaction of guidance form and news valence ($F = 2.77$, $p = 0.10$) for the investment potential measure. For the investment potential measure, we find that with positive guidance, investment potential does not differ between point and range guidance (mean = 0.91/1.02 for point/range condition respectively, $p = 0.83$). For negative guidance, investment potential is significantly higher for point guidance (mean = 0.88) than for range guidance (mean = -0.47; $p = 0.02$).

the effect of the three primary independent variables on their investment judgments — that is, the independent variables jointly influence investors' Q3 earnings estimates, which in turn influence their investment judgments.[17]

4.6 WITHIN-SUBJECTS TEST

At the end of the experiment, we ask participants to complete a within-subjects test involving the following setting:

Suppose Investor B has just bought shares in Company ZZ, while Investor S has just short-sold shares in Company ZZ. Consensus EPS forecast for the next quarter is $0.49.

Participants then read the following four scenarios (descriptors in italics are not presented):

Scenario A: Company ZZ makes an announcement that it expects EPS for the next quarter to be $0.50 *(positive, point);*
Scenario B: Company ZZ makes an announcement that it expects earnings for the next quarter to be between $0.47 and $0.53 *(positive, range);*
Scenario C: Company ZZ makes an announcement that it expects EPS for the next quarter to be $0.48 *(negative, point);*
Scenario D: Company ZZ makes an announcement that it expects earnings for the next quarter to be between $0.45 and $0.51*(negative, range).*

For each scenario, participants are asked to indicate the relative degree of skepticism of Investor B relative to Investor S (if any) towards the credibility of the guidance. The measurement scales are 11-point scales ranging from -5 ("investor S is more skeptical") to +5 ("investor B is more skeptical").

With respect to positive news presented as point estimates, participants believe that short investors are more skeptical than long investors (mean = -0.37 for scenario A; one-sample t =

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[17] We assess whether our independent variables influence participants' perceptions of management in terms of the truthfulness and the credibility of their financial disclosures, and their competence. We find that participants' perceptions of management competence and financial disclosure credibility do not vary across experimental conditions (smallest $p = 0.18$). For the management truthfulness measure, we find no main or interaction effect of investment position ($F = 0.43$, $p = 0.52$ for main effect and smallest $p = 0.23$ for interaction effects), and only a marginally significant two-way interaction effect of news valence and guidance form ($F = 3.22$, $p = 0.08$). Analyses of the simple main effects of news valence show that for point guidance, there is no effect of news valence ($F = 0.31$, $p = 0.58$). For range guidance, consistent with our theory, the mean management truthfulness assessments are higher for negative guidance than positive guidance ($F = 4.53$, $p = 0.04$).

-2.06, p = 0.04). For positive news in range form, there is no effect of investment position (mean = -0.04 for scenario B; one-sample t = -0.30 and p = 0.76). For negative news, participants perceive that long investors are more skeptical than short investors, whether the guidance is in point or range form (mean = 0.43/0.46 for scenario C/D respectively; one-sample t = 2.50/2.58 and p = 0.01/0.01 respectively). These results are striking in that the positive news/ range condition (analogous to Scenario B) is the one where we find the largest investment position effect in our main tests of hypotheses.[18] Yet, in a within-subjects test where participants are fully aware of the investment position of the long and short investors, they perceive no difference in the skepticism of long and short investors in the positive news/ range scenario. Similarly, participants perceive that there will be effects of investment position with negative news (in contrast to the between-subjects test). These results suggest a disconnect between participants' perceptions and their earnings-related judgments.

5. Conclusion

In this study, we investigate the joint effects of investment position, guidance form, and news valence on investors' earnings- and investment-related judgments made after receiving management guidance. Prior research indicates that guidance form (point versus range) has no effect on investors' earnings estimates made in reaction to management guidance (Hirst et al. [1999]). We extend this stream of research by demonstrating that guidance form affects investors' earnings estimates when they have directional preferences, conditional on news valence. With positive news, investors holding long positions assess higher earnings estimates with range guidance than point guidance, while the reverse pattern is true for investors holding

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[18] In fact, paired-sample t-tests also indicate that the absolute magnitude of participants' perceived relative skepticism is larger for point than range guidance when news is positive (scenario A versus B: means = 0.37/0.04, t = 1.82, p = 0.07). There is no difference for negative news (scenario C versus D: means = 0.43/0.46, t = -0.14, p = 0.89).

short positions. There is no effect with negative news. Similarly, prior research (Hales [2007]) indicates that investors who hold long positions in a stock are more optimistic and investors who hold short positions are more pessimistic about the company's prospects after receiving the same set of analysts' forecasts. We document that this effect of investment position is more likely for management guidance containing positive news than guidance containing negative news. Furthermore, this effect is more likely for range guidance than point guidance. Thus, we contribute to prior literature on the effects of investment position (Hales [2007]) and guidance form (Hirst et al. [1999]) by delineating boundary conditions for each of these effects.

Our findings have methodological implications. Like Hirst et al. [1999], we find no guidance form effect for uninvolved (i.e., no investment position) investors. However, by linking participants' compensation with the company's financial results, we induce participants to be highly involved (financially and emotionally) in the decision process, and find systematic guidance form effects. Our results suggest that participant involvement can differentially influence decision makers' judgments and their information processing (e.g., see Chaiken [1980]; Petty et al. [1983]). Real-world users (e.g., creditors, investors, preparers) of accounting information likely have some financial or emotional involvement in the company reporting the accounting information, and may not always have the type of neutrality associated with uninvolved participants in experimental settings. Hence, it may be important for experimentalists to consider circumstances where it is important to induce some form of involvement among participants in an experiment.

Some caution should be exercised in trying to generalize our results to the setting used in Hales [2007]. Hales' [2007] study investigates the effects of implicitly-derived distributional properties of individually observed analyst-provided forecasts, while our study investigates the

effects of explicitly-provided distributional properties of management-provided forecasts. It should be recognized that there may be differences in accuracy and perceived credibility of forecasts provided by management as opposed to analysts (e.g., Hassell and Jennings [1986]). Management may be viewed to have lower incentives to be accurate in their forecasts than analysts, although analysts' incentives to maintain good relationship with management may bias their forecasts (e.g., Ke and Yu [2006]; Libby et al. [2008]). Furthermore, there may be differences in the effects of implicitly-derived versus explicitly-provided distributional on investors' judgments, as suggested by prior research on implicit and explicit benchmark effects (Han and Tan [2007]). That we are able to replicate Hales' [2007] results (in our positive news/ range condition) suggest that these differences in context may have offsetting effects or are immaterial. Another point to note is that analysts' forecasts are generally issued as point estimates rather than range estimates, but the variations in analysts' forecasts also have properties of range estimates (in that the analysts' forecasts suggest a range of possible earnings estimates). We believe that at a general level, our results on the effects of point versus range guidance form imply corresponding effects for small versus large variance in analysts' forecasts. Contexts where there is very strong consensus (and little variation) among analysts may correspond to the effects we find for point estimates in our study. Future research can investigate whether and how these institutional differences matter.

In interpreting our results, it is also important to note that investors' reliance on management guidance may be influenced by their prior experiences with management's disclosures. For instance, to the extent that management has a history of being accurate (Hirst et al. [1999]) or a history of consistent guidance bias (Tan et al. [2010]), effects of directional preferences may be dampened since there is little ambiguity that the guidance is (or is not) biased.

Overall, our findings provide further insights on the effects of investment position and guidance form, and suggest avenues for further work on this area of research.

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Exhibit 1

Experimental Manipulations

Panel A: Operationalization of Independent Variables

Investment Position

Long	*Neutral*	*Short*
HK$120 fixed compensation + additional $2 for every 0.1 cent that actual earnings are *higher* than the analysts' consensus forecast[1]	HK$120 fixed compensation	HK$120 fixed compensation + additional $2 for every 0.1 cent that actual earnings are *lower* than the analysts' consensus forecast

Management Guidance

News Valence

		Positive	*Negative*
Guidance	*Point*	11.5 cents	9.5 cents
Form	*Range*	[8.5 cents, 14.5 cents]	[6.5 cents, 12.5 cents]
		Consensus analysts' forecast (prior to management earnings guidance) = 10.5 cents for all conditions	

Panel B: Dependent Variables

Investors' Earnings Estimates	Given the company's August 15, 2007 earnings guidance, what is your EPS forecast for the three-months ending September 30, 2007?
Investment-Related Judgments	Please assess the potential that Company Zetha's stock price will appreciate in the near future. (measured on 11-point scale)
	Other firms in Zetha's industry trade at P/E ratios (i.e., price-earnings multiples) of between 15 and 25. What is the P/E ratio that Zetha's stock should trade at?
	Please indicate your preferred investment position regarding Zetha's shares, given Zetha's disclosures. (measured on 11-point scale)

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[1]The maximum cap on additional payment is $50. As an accuracy incentive, participants were instructed that the person with earnings estimate closest to Zetha's actual earnings would win a prize of $300. If more than one participant had earnings estimates that were closest to actual earnings, a random draw would determine the winner.

TABLE 1

Mean Investor EPS Estimates (Standard Deviation in Parentheses)

The experiment is a 2*2*2 + 2 between-subjects experiment. The three variables are: investment position (long versus short), news valence (positive versus negative), and guidance form (point versus range). In addition, we have two neutral investment position conditions (neutral, point, negative; and neutral, range, negative) that serve as control conditions. Participants in the long/short conditions are told that their compensation will be higher/lower if the actual earnings are higher/lower than the consensus analysts' forecast. Participants in the neutral condition receive a fixed compensation regardless of the relation between the actual earnings and the consensus analysts' forecast. For the point management guidance, the management guidance is 1 cent higher/lower than the consensus analysts' forecast (held constant as 10.5 cents) for the positive/negative condition. For the range management guidance, the consensus analysts' forecast falls within the guidance range, with the range midpoint being 1 cent higher/lower than the consensus analysts' forecast for the positive/negative condition. Participants are asked to estimate EPS for quarter three of year 2007 after reading the management earnings guidance.

Investment Position	Positive News		Negative News	
	Point guidance (11.5 cents)	Range guidance [8.5 cents, 14.5 cents]	Point guidance (9.5 cents)	Range guidance [6.5 cents, 12.5 cents]
Long	11.22 (0.76) N = 16	13.96 (0.72) N = 18	9.69 (0.79) N = 15	9.21 (0.74) N = 17
Short	11.08 (0.74) N = 17	10.06 (0.76) N = 16	9.93 (0.79) N = 15	9.20 (0.74) N = 17
Neutral			9.39 (1.02) N = 16	8.96 (1.10) N = 14

TABLE 2

Between-Subjects ANOVA Tests and Regression Results (H1 & H2)

The experiment is a 2*2*2 + 2 between-subjects experiment. The three variables are: investment position (long versus short), news valence (positive versus negative), and guidance form (point versus range). In addition, we have two neutral investment position conditions (neutral, point, negative; and neutral, range, negative) that serve as control conditions. Participants in the long/short conditions are told that their compensation will be higher/lower if the actual earnings are higher/lower than the consensus analysts' forecast. Participants in the neutral condition receive a fixed compensation regardless of the relation between the actual earnings and the consensus analysts' forecast. For the point management guidance, the management guidance is 1 cent higher/lower than the consensus analysts' forecast for the positive/negative condition. For the range management guidance, the consensus analysts' forecast falls within the guidance range, with the range midpoint being 1 cent higher/lower than the consensus analysts' forecast for the positive/negative condition. Participants are asked to estimate EPS for quarter three of year 2007 after reading the management earnings guidance.

This table reports the ANOVA tests results excluding the two neutral investment position conditions. Panel A reports the three-way ANOVA results for all conditions. Panel B/C reports the two-way ANOVA test for positive/ negative guidance.

This table also reports results for the corresponding regression equations. In each equation, EPSQ3 denotes participants' earnings estimates for Q3. INVP is a dummy variable for investment position (long = 1, short = 0), Form is a dummy variable for guidance form (range= 1, point = 0), and News is a dummy variable for news valence (positive = 1, negative = 0).We denote the unstandardized coefficients below each equation. ***, **, and * indicate the corresponding coefficient is significant at 0.01, 0.05, and 0.10, respectively. All significance levels are two-tailed.

Panel A: ANOVA Results for All Conditions				
Source	Sum of Squares	df	F	Sig
Intercept	14509.92	1	1567.97	.00
Investment Position	29.36	1	3.17	.08
Guidance Form	0.53	1	0.06	.81
News Valence	140.06	1	15.14	.00
Investment Position * Guidance Form	32.88	1	3.55	.06
Investment Position * News Valence	37.08	1	4.01	.05
Guidance Form * News Valence	17.45	1	1.89	.17
Investment Position * Guidance Form * News Valence	24.96	1	2.70	.10
Error	1138.24	123		

Regression Equation:

$$\text{EPSQ3} = \alpha_0 + \alpha_1 \text{INVP} + \alpha_2 \text{Form} + \alpha_3 \text{News} + \alpha_4 \text{INVP} * \text{FORM} +$$

$$9.93*** \quad -0.25 \quad\quad -0.73 \quad\quad 1.15 \quad\quad 0.26$$

$$\alpha_5 \text{INVP} * \text{News} + \alpha_6 \text{Form} * \text{News} + \alpha_7 \text{INVP} * \text{Form} * \text{News} + \varepsilon_1 \qquad (1)$$

$$0.38 \quad\quad\quad -0.29 \quad\quad\quad 3.50*$$

$R^2 = 0.21$ Adjusted $R^2 = 0.17$

Panel B: ANOVA Results for Positive Management Guidance

Source	Sum of Squares	df	F	Sig
Intercept	8962.62	1	525.58	.00
Investment Position	67.83	1	3.98	.05
Guidance Form	12.32	1	0.72	.40
Investment Position * Guidance Form	58.96	1	3.46	.07
Error	1074.33	63		

Regression Equation:

$$\text{EPSQ3} = \beta_0 + \beta_1 \text{INVP} + \beta_2 \text{Form} + \beta_3 \text{INVP} * \text{Form} + \varepsilon_2 \qquad (2)$$

$$11.08*** \quad 0.14 \quad\quad -1.02 \quad\quad 3.76*$$

$R^2 = 0.12$ Adjusted $R^2 = 0.08$

Panel C: ANOVA Results for Negative Management Guidance

Source	Sum of Squares	df	F	Sig
Intercept	5763.06	1	5410.62	.00
Investment Position	.22	1	.21	.65
Guidance Form	5.82	1	5.46	.02
Investment Position * Guidance Form	.27	1	.25	.62
Error	63.91	60		

Regression Equation:

$$\text{EPSQ3} = \beta'_0 + \beta'_1 \text{INVP} + \beta'_2 \text{Form} + \beta'_3 \text{INVP} * \text{Form} + \varepsilon'_2 \qquad (3)$$

$$9.93*** \quad -0.25 \quad\quad -0.73** \quad\quad 0.26$$

$R^2 = 0.09$ Adjusted $R^2 = 0.04$

TABLE 3

Between-Subjects ANOVA Tests and Regression Results (H3 & H4)

The experiment is a 2*2*2 + 2 between-subjects experiment. The three variables are: investment position (long versus short), news valence (positive versus negative), and guidance form (point versus range). In addition, we have two neutral investment position conditions (neutral, point, negative; and neutral, range, negative) that serve as control conditions. Participants in the long/short conditions are told that their compensation will be higher/lower if the actual earnings are higher/lower than the consensus analysts' forecast. Participants in the neutral condition receive a fixed compensation regardless of the relation between the actual earnings and the consensus analysts' forecast. For the point management guidance, the management guidance is 1 cent higher/lower than the consensus analysts' forecast for the positive/negative condition. For the range management guidance, the consensus analysts' forecast falls within the guidance range, with the range midpoint being 1 cent higher/lower than the consensus analysts' forecast for the positive/negative condition. Participants are asked to estimate EPS for quarter three of year 2007 after reading the management earnings guidance.

This table reports the ANOVA tests results excluding the two neutral investment position conditions. Panel A/B reports the two-way ANOVA test for range/ point guidance.

This table also reports results for the corresponding regression equations. In each equation, EPSQ3 denotes participants' earnings estimates for Q3. INVP is a dummy variable for investment position (long = 1, short = 0), Form is a dummy variable for guidance form (range= 1, point = 0), and News is a dummy variable for news valence (positive = 1, negative = 0). We denote the unstandardized coefficients below each equation. ***, **, and * indicate the corresponding coefficient is significant at 0.01, 0.05, and 0.10, respectively. All significance levels are two-tailed.

Panel A: ANOVA Results for Range Management Guidance

Source	Sum of Squares	df	F	Sig
Intercept	7637.97	1	468.94	.00
Investment Position	64.69	1	3.97	.05
News Valence	133.35	1	8.19	.01
Investment Position * News Valence	63.91	1	3.92	.05
Error	1042.42	64		

Regression Equation:

$$EPSQ3 = \gamma_0 + \gamma_1 \, INVP + \gamma_2 \, News + \gamma_3 \, INVP * News + \varepsilon_3 \qquad (4)$$

9.20***   0.01   0.86   3.88**

$R^2 = 0.21$ Adjusted $R^2 = 0.17$

Panel B: ANOVA Results for Point Management Guidance

Source	Sum of Squares	df	F	Sig
Intercept	6900.97	1	4249.20	.00
Investment Position	0.05	1	0.03	.86
News Valence	28.23	1	17.38	.00

Investment Position * News Valence	0.58	1	0.36	.55
Error	95.82	59		

Regression Equation:

$$EPSQ3 = \gamma'_0 + \gamma'_1\,INVP + \gamma'_2\,News + \gamma'_3\,INVP * News + \varepsilon'_3 \qquad (5)$$

$$9.93*** \quad -0.25 \quad\quad 1.15*** \quad\quad 0.38$$

$R^2 = 0.23$ Adjusted $R^2 = 0.19$