The More We Know about Fundamentals, the Less We Agree on Price?
Evidence from Earnings Announcements

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Abstract

Can an earnings announcement decrease disagreement about fundamentals while simultaneously increasing disagreement about price? Kondor (2012) develops a rational expectations model in which the presence of short-horizon investors can lead to a polarization of higher-order beliefs about price (i.e., beliefs regarding the opinions of other investors), even as a public announcement reduces disagreement about fundamentals. Using analyst forecast dispersion and implied volatility to proxy for differences of opinion about fundamentals and price, respectively, I find a positive association between the presence of speculative traders and both the likelihood and extent of divergence between changes in price and earnings disagreement around earnings announcements characterized by decreasing forecast dispersion. Further, I document that the association is stronger following good news announcements than following bad news announcements consistent with more precise public signals triggering higher-order disagreement. Finally, using abnormal announcement period volume to measure disagreement about price, I continue to document a positive association between speculation and the extent of divergence. Taken together, these findings suggest that higher-order beliefs play an important role in assessing the informativeness of earnings announcements.

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1. Introduction

Intuition tells us that a firm's public disclosures should reduce differences in opinion. Yet, a growing empirical and theoretical literature documents that this is not necessarily the case. Recent theories examine the role of higher-order beliefs, that is, an agent's opinion about the opinions of others, in investor disagreement. These models suggest that higher-order beliefs can affect how changes in expectations on fundamentals translate into prices (e.g., Allen, Morris, and Shin, 2006; Gao, 2008; Kondor, 2012). The implications of these models raise an interesting question: Can announcements that decrease disagreement about future earnings simultaneously increase disagreement about price? This study empirically examines this question by investigating whether the presence of speculative investors increases higher-order disagreement about price following an informative earnings announcement.

From a fundamental trading perspective, the notion that a public announcement can increase uncertainty about price while decreasing uncertainty about earnings seems counterintuitive. Indeed, traditional asset pricing models set price as a function of future cash flows and hence by extension future earnings (e.g., Ohlson, 1995). However, models of higher-order expectations suggest that this result is possible, and perhaps even *expected*, in the presence of short-horizon investors. A speculative investor relies on the notion that he can resell his shares to a more optimistic investor for a profit. As a result, his investment decision may be based less on fundamentals than on his higher-order expectations regarding the intermediate stock price.[1]

[1] In this context, speculation is defined as in Kaldor (1939) as "the purchase (or sale) of goods with a view to resell (re-purchase) at a later date." Accordingly, I classify investors as speculative based on their interest in the resale value of the stock, rather than its fundamental value. The distinction is key in models

Kondor (2012) offers a useful theoretical explanation in a rational expectations framework. In his model, the presence of short-horizon investors with heterogeneous private beliefs causes a divergence in higher-order expectations in response to a public announcement that otherwise decreases uncertainty about fundamentals (i.e., earnings). The intuition is similar to the argument of Keynes (1936), who posits that investors "are concerned, not with what an investment is really worth to a man who buys it 'for keeps,' but with what the market will value it at, …three months or a year hence." Short-horizon investors are primarily concerned with the resale price of the stock. Upon a public announcement, they combine the consensus opinion (i.e., price) with their own private information.[2] The informative public announcement together with this private information leads to a polarization of higher-order beliefs.

Opinion divergence in capital markets has received increasing attention in accounting and finance, especially with regard to its role in asset pricing.[3] Theoretical "difference of opinion" (hereafter, DO) models suggest that opinion divergence can result from heterogeneous prior beliefs, different likelihood functions, or both (Varian, 1989; Kandel and Pearson, 1995; Harris and Raviv, 1993). In these models, investors do not necessarily condition on price, but rather can "agree to disagree" based on their own private beliefs. In rational expectations equilibrium models (hereafter, REE), investors do condition on price, and heterogeneous beliefs come about due to differences in private information or differential information-processing abilities (Kim and Verrecchia, 1991,

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of higher-order expectations where the law of iterated expectations fails in the presence of heterogeneous investment horizons (Allen, Morris, and Shin, 2006).

[2] Kim and Verrecchia (1994) expand the concept of private information to include superior information-processing skills.

[3] For instance, prior research examines the effect of disagreement on the cost of capital (e.g., Garfinkel and Sokobin, 2006; Doukas et al., 2006) and overpricing in the presence of short-sale constraints (e.g., Miller, 1977; Diether et al., 2002; Berkman et al., 2009).

1994, 1997). Empirically, while prior studies show that divergence of opinion occurs around some earnings announcements (e.g., Morse, 1991; Kandel and Pearson, 1995), what causes this disagreement and whether it reflects disagreement with respect to both fundamentals and resale price are less clear. Moreover, while the theoretical implications of higher-order disagreement suggest that it is important in understanding how accounting disclosure shapes investor beliefs, the role of higher-order beliefs has received little attention empirically.[4] The purpose of this paper is to examine whether, in the context of earnings announcements, the presence of speculative investors can exacerbate uncertainty about future stock price as uncertainty about future earnings decreases.

To evaluate changes in differences in opinion around earnings announcements, I measure disagreement about fundamentals and price using analyst forecast dispersion and option-implied volatility, respectively. Analyst forecast dispersion and implied volatility are useful in this context for several reasons. First, both variables can be easily measured before and after an earnings announcement, which allows for a change analysis. Second, both measures are forward-looking, and uncertainty is an ex-ante construct; in contrast, measures of uncertainty using realized values may be confounded by look-ahead bias. Third, both measures are frequently employed in the literature as proxies for uncertainty, and thus the paper's implications can be easily applied to existing literature.[5]

[4] Notable exceptions are Elliot, Krische, and Peecher (2010) who examine higher-order beliefs and reporting transparency in an experimental setting and Balakrishnan, Schrand, and Vashishtha (2012) who test the role of higher order beliefs (measured using the concentration of analyst recommendations) in generating bubbles.

[5] Although I use the terms *disagreement* and *uncertainty* somewhat interchangeably, there are key differences between the two. For instance, analysts can agree on a point estimate while individually being uncertain about their own estimate. Conversely, analysts can disagree on a point estimate while each being certain of their own estimate. I rely on a large macroeconomic literature that investigates the association between forecast disagreement and uncertainty, and finds that while dispersion is, by definition, disagreement, it can serve as a suitable proxy for uncertainty (see Lambros and Zarnowitz, 1987;

In Kondor's (2012) model, short-horizon ownership and heterogeneous private information are necessary for rational speculation (and hence, the generation of higher-order disagreement). I rely on two proxies for the speculative appeal of a stock, each reflecting one of these necessary conditions. The first is the percentage of "transient" institutional investors identified using the Bushee (2001) classification scheme. This measure most closely captures the construct of short investment horizon employed by Kondor (2012).[6] The second proxy is the idiosyncratic volatility of earnings. This measure reflects the ability of investors to obtain or develop heterogeneous private beliefs about future earnings and captures the appeal of speculation around earnings announcements for firms whose earnings contain more firm-specific news.

Utilizing both binary and continuous measures of the extent of divergence between changes in uncertainty about price and fundamentals, I first document that decreasing forecast dispersion (i.e., decreasing uncertainty about future earnings) combined with increasing implied volatility (i.e., increasing uncertainty about future price) occurs for a non-trivial 23% of sample earnings announcements. Next, I test Kondor's (2012) theoretical predictions, which apply to announcements that decrease disagreement about fundamentals, by focusing attention on the subsample of announcements with decreasing forecast dispersion and investigating the relationship between the speculation proxies (i.e., short-horizon ownership and idiosyncratic earnings volatility) and divergence between changes in dispersion and implied volatility. I find that short-horizon ownership and idiosyncratic earnings volatility are positively

Bomberger, 1996, 1999; Giordini and Soderlind, 2003). At the market level, it is reasonable to assume that a high level of disagreement suggests uncertainty about the true parameter value.

[6] Throughout the paper, I use "transient" and "short-horizon" inter-changeable to describe the investing pattern of institutions.

associated with both the likelihood and extent of divergence. Thus, consistent with Kondor (2012), speculation appears to drive an increase in higher-order disagreement as the precision of public information increases. This result highlights the importance of considering higher-order beliefs when assessing the information role of earnings announcements.

It is possible that the nature of the earnings news – that is, "good news" versus "bad news" – affects the association between speculation and higher-order disagreement. On the one hand, prior research demonstrates that bad news announcements can increase implied volatility (e.g., Rogers et al., 2009; Truong et al., 2012). On the other hand, bad news announcements may be less informative about future earnings, suggesting a diminished information role.[7] Additionally, to the extent that bad news leads to more pessimistic opinions, the price will be less revealing since investors with negative outlooks may be hindered by short-sale constraints (e.g., Miller, 1977). When price is less revealing about average valuations, short-horizon investors will condition on it less, leading to a lower divergence of higher-order beliefs. To investigate the role of the nature of the earnings news on the association between speculation and higher-order disagreement, I rerun the main analysis separately for good news announcements and bad news announcements. I find that, consistent with the latter view, the positive association between speculation and divergence of fundamental and price uncertainty exists only for good news announcements.

In additional analysis, I employ abnormal share turnover (i.e., volume) as a proxy for disagreement about price. I find that, consistent with the main results, short-horizon ownership and idiosyncratic earnings volatility are positively associated with the

[7] For instance, bad news tends to be less persistent (e.g., Basu, 1997).

divergence of abnormal volume and changes in forecast dispersion around earnings announcements that reduce fundamental uncertainty.

Finally, I employ absolute announcement period returns as an alternate measure of the precision of the public signal. Gao (2008) suggests that when the public signal is more precise, short-horizon investors condition more on price, resulting in a greater price reaction to earnings announcements. Consistent with this argument, I find that the association between speculation (i.e. short-horizon ownership and idiosyncratic earnings volatility) and disagreement about price (i.e. changes in implied volatility and abnormal turnover) is significantly more positive for announcement characterized by the highest quintile of absolute returns than for announcements in the lowest quintile of absolute returns.

This paper makes several contributions to the accounting and finance literatures. First, the findings shed additional light on the role of disagreement in asset pricing. Prior research provides mixed evidence on whether disagreement combined with short-sale constraints lead to overpricing (e.g., Miller, 1977; Diether, Malloy, and Scherbina, 2002) or whether it is a priced risk factor (e.g., Qu et al., 2003; Anderson et al., 2005, Carlin et al., 2012). In the context of earnings announcements, the negative association between ex-ante disagreement and announcement-period returns (Berkman et al., 2009) is seemingly at odds with the negative association between announcement-period returns and changes in forecast dispersion (e.g., Rees and Thomas, 2010). If, as the current study indicates, speculation can drive an increase in price uncertainty as fundamental uncertainty decreases, this can help explain these apparently contradictory findings. In particular the results suggest that distinguishing between first- and higher-order disagreement can improve our understanding of the asset pricing implications of disagreement.

Second, the finding that, in the presence of speculative investors, an announcement can be informative about earnings while simultaneously increasing uncertainty about price has important implications for studies examining the information content of earnings. Earnings informativeness is often measured using the market's reaction to the announcement (i.e., the earnings response coefficient). Under a Bayesian updating framework, high pre-announcement uncertainty should lead investors to rely more heavily on the earnings announcement, resulting in a greater earnings response coefficient. However, empirical results indicate the opposite is true – higher ex-ante dispersion is associated with a lower earnings response coefficient (e.g., Imhoff and Lobo, 1992; Yeung, 2009). Similarly, evidence from prior research investigating price and volume reactions to announcements suggests that both must be used to accurately assess investor responses (e.g., Bamber and Cheon, 1995; Cready and Hurtt, 2002). If short-horizon ownership can exacerbate differences in opinion about price, then the informativeness of earnings depends on whether and how the announcement differentially affects fundamental and higher-order expectations. Additionally, while firms may disclose accounting earnings with the intention of decreasing uncertainty, the results suggest that a firm's disclosure choices in the presence of speculative investors can have the opposite effect depending on how uncertainty is measured.

The rest of the paper is organized as follows. Section 2 summarizes the related literature and develops the hypotheses. Section 3 outlines the sample selection and discusses the variables used in the analyses. Section 4 describes the research design.

Section 5 presents the results of the main analyses. Section 6 reports additional analyses. Finally, Section 7 concludes.

2. Related Literature and Hypothesis Development

2.1 Literature Review

2.1.1 Theoretical Models with Higher-Order Beliefs

In his seminal work *The General Theory of Employment, Interest and Money*, Keynes (1936) compares professional investors to participants in a fictional newspaper contest in which entrants are asked to choose the six "most beautiful" women from a set of 100 photographs. Those who choose the most popular pictures are eligible for a prize. Keynes argues that a "sophisticated" participant will make a selection based on his knowledge of public perceptions, so that his selection is not based on whom he believes to be the most beautiful woman, but on his beliefs about whom everyone else will view as the most beautiful. At an extreme level, then, he must also anticipate what other participants will think the average assessment will be (and so on into third-, fourth-, fifth-order expectations and beyond).

More recently, models incorporating higher-order expectations have received increasing attention, particularly as a rational explanation for the observation of asset bubbles.[8] For instance, Allen, Morris, and Shin (2006) argue that bubbles occur when investors place too much weight on public signals, an outcome resulting from investors

[8] There is a growing theoretical literature incorporating higher-order beliefs in analyzing how investors learn from prices. This short review is meant as an introduction to these theoretical concepts in the context of this paper's research question, and is by no means exhaustive. In particular, a large theoretical literature focuses on difference of opinion models, rather than the rational expectation model that motivates my research question. For a more detailed explanation of the distinction between these classes of models, see Banerjee (2011).

forming expectations about the average opinion of other investors.[9] This can cause prices to depart from fundamental value (especially) after a public information event.

Gao (2008) motivates his model by highlighting the potential implications of accounting disclosure for market efficiency in the context of a Keynesian beauty contest. In Gao's (2008) model, disclosures play a dual role - the announcement plays an "information role" by conveying information about the fundamental value of the firm and a "commonality role" by increasing the level of information common to all participants. Gao (2008) argues that the extent to which traders rely on public information is decreasing in the noise of the public signal, thus when signals are more precise, short-horizon investors over-rely on the public signal due to its aforementioned dual-role. These theories suggest a potentially troubling consequence of informative financial reporting – more informative announcements can lead to decreased price efficiency.

Kondor (2012) develops a framework in which a public announcement can reduce disagreement about fundamentals while increasing higher-order disagreement about price. He postulates that this result can occur if investors have heterogeneous trading horizons. More specifically, short-horizon investors will focus on intermediate price, rather than fundamentals. An informative earnings announcement more clearly reveals the consensus belief about firm value; short-horizon investors combine this public signal with their own private information to speculate on the intermediate stock price. Because the announcement increases the precision of the public signal, higher-order beliefs of short-horizon agents become more polarized.

[9] Balakrishnan et al. (2012) empirically investigate this notion and find evidence consistent with analyst recommendation concentration reflecting or driving higher-order beliefs during the tech bubble.

Although this study focuses on a rational expectation framework, difference-of-opinion models also offer theoretical predictions for how investors use price to update their beliefs. In the extreme, a DO model can suggest that investors rely *only* on their private beliefs and do not condition on price at all to form their private valuations. In general, these models rely on the notion that traders may agree to disagree because they consider their own beliefs to be more precise than the beliefs of others. An important distinction between these two classes of models (REE and DO) is that, as Banerjee (2011) summarizes, the REE (DO) channel implies a greater (lesser) sensitivity of stock price to shocks in fundamentals.[10]

2.1.2 Earnings Announcements and Disagreement

In addition to the large theoretical literature examining how public announcements affect disagreement, empirical studies have both documented that disagreement can occur after public announcements and examined the potential consequences of opinion divergence. For example, Kandel and Pearson (1995) find that earnings announcements can generate trading volume in the absence of a price change and additionally document increasing forecast dispersion around some earnings announcements. More recently, Rees and Thomas (2010) document increasing dispersion for 37.9% of earnings announcements in their sample over the period 1993-2006. On average, however, earnings announcements are associated with a reduction in uncertainty. Patell and Wolfson (1979, 1981) were the first to suggest a predictable pattern of implied volatility around earnings announcements. They describe the behavior

[10] Banerjee (2011) conducts additional empirical tests and finds evidence consistent with disagreement being positively associated with return volatility (i.e. greater conditioning on price) suggestive of agents updating beliefs as in an REE framework. Similarly, Carlin et al. (2012) examine the implications of disagreement about mortgage prepayment spreads on asset pricing and also find evidence of a positive disagreement risk premium consistent with an REE vs. DO explanation.

of implied volatility assuming that instantaneous volatility is constant except for the disclosure date. Therefor, they develop a framework in which the expected average volatility (i.e. implied volatility) is the highest just before the announcement; once the disclosure is made the implied volatility drops sharply under the assumption that there are no further anticipated information events remaining in the life of the option.[11]

The pattern of implied volatility around earnings announcements is indicative of the option market's expectation that the earnings announcement will be informative.[12] The relation between uncertainty about the earnings signal and implied volatility is explored by Ajinkya and Gift (1985), who document a positive association between ex-ante levels of forecast dispersion and implied volatility for a small 10-month sample, and Daley et al. (1988) who find a positive associated between forecast dispersion and implied volatility using 100 annual earnings announcements. Ajinkya and Gift (1985) propose that because stock price is a function of earnings expectations, the ex-ante estimate of earnings variance should be related to expected returns variance.[13] What happens to the correlation between these measures upon a public disclosure, however, is ultimately an empirical question.

[11] More recently, Dubinsky and Johannes (2006) model implied volatility incorporating a jump at the time of the earnings announcement and empirically document a similar pattern of implied volatility around earnings announcements for the twenty firms with the most actively traded options over the period 1996-2003.

[12] Ederington and Lee (1996) document an increase in implied volatility of Eurodollar, T-Bond, and Deutschemark options following unscheduled macroeconomic releases underscoring the importance of anticipation of announcements in generating the predictable pattern. Rogers et al. (2009) also document increasing implied volatility following sporadic management earnings guidance.

[13] The use of forecast dispersion as a measure of uncertainty has been debated in the literature. For instance, both Abarbanell et al. (1995) and Barron et al. (1998) conclude that dispersion does not fully capture uncertainty while Zhang (2006) and Yeung (2009) offer empirical evidence consistent with dispersion capturing uncertainty. Similarly a large literature in economics finds conflicting regarding the association between uncertainty and dispersion (e.g. Zarnowitz and Lambros, 1987; Lahiri and Sheng, 2010). While dispersion may not perfectly capture uncertainty, its positive association with forecast errors and revisions suggest its suitability as a proxy, and it continues to be employed in the literature.

There is also a growing literature examining the role of disagreement in asset pricing. On the one hand, Miller (1977) argues that differences of opinion lead to overpricing in the presence of short-sale constraints. Diether, Malloy, and Scherbina (2002) document a negative association between levels of forecast dispersion and future returns, consistent with the notion of overpricing and a subsequent reversal. In a more direct test of the reversal implications of the Miller (1977) hypothesis, Berkman et al. (2009) find a negative association between ex-ante forecast dispersion and earnings-announcement period returns. However, investigating the relationship between the change in dispersion and earnings-announcement returns, both Berkman et al. (2009) and Rees and Thomas (2010) document a negative association – inconsistent with the expected reversal upon the revelation of fundamentals. Interestingly, Berkman et al. (2009) do find the expected positive association when they measure disagreement using abnormal turnover, indicating the results are sensitive to the measurement of disagreement. A better understanding of when changes in fundamental uncertainty are negatively associated with changes in price uncertainty can perhaps address this apparent inconsistency.[14]

On the other hand, a large theoretical literature argues that there is a positive risk premium for disagreement (i.e., Varian, 1989; David, 2008). Empirically, several studies document a positive association between dispersion and future returns (e.g., Qu et al., 2003; Anderson et al., 2005) and recently, Carlin, Longstaff, and Matoba (2012) provide

[14] Banerjee (2011) attempts to disentangle the DO and REE explanations and documents similar inconsistencies in the association between returns and disagreement proxied for by volume versus forecast dispersion. He concludes that while the evidence is consistent with a rational expectations framework, the conclusion depends on the disagreement proxy; he does not distinguish between price and earnings disagreement.

evidence that disagreement is priced - absent trading frictions - using disagreement about the prepayment speeds of mortgage backed securities.

2.1.3 Investor Horizon

Kondor (2012) demonstrates the theoretical implications of heterogeneous investor horizon for higher-order disagreement. Empirically, proxies for investor horizon rely on the detailed trading information required by 13F institutional investors.[15] Perhaps unsurprisingly, prior literature finds transient institutions have a short-term focus; for example, they overweight near-term expected earnings and under-weight long-term expected earnings (Bushee, 2001) and do not serve the same monitoring role as long-horizon institutions (Chen et al., 2007). While, in general, institutional trading is associated with more efficient pricing (e.g., Bartov et al., 2000; Collins et al., 2003; Boehmer and Kelley, 2009), studies investigating the pricing implications of short-horizon ownership suggest that these transient investors may exacerbate mispricing by overweighing public and/or private information (e.g., Daniel et al., 1998, 2001). Cremers, Pareek, and Sautner (2012) find that the presence of short-horizon institutional investors is related to the speculative component of stock price, measured as deviations from fundamentals, while Cella, Ellul, and Giannetti (2013) find that short-horizon ownership exacerbates overpricing during downturns.

Bushee and Noe (2000) find that short-horizon investors are attracted to firms with better disclosure practices. They argue that short-horizon investors are attracted to firms with better disclosure because these firms tend to have higher liquidity - enabling

[15] Empirical evidence is consistent with transient investors having different investment strategies than dedicated investors. For instance, transient investors exploit breaks in consecutive quarters of earnings increases (Ke and Petroni, 2004) and trade to exploit the post-earnings announcement drift (Ke and Ramalingegowda, 2005).

transient investors to take positions in the stock without impacting price and sacrificing trading gains. However, that short-horizon investors are attracted to more transparent disclosures while attempting to exploit mispricing is also consistent with a higher-order expectations argument in which the precision of the public signal makes short-horizon investors more confident in their own predictions.

Elliott, Krische, and Peecher (2010) consider the joint effects of short-horizon ownership and accounting transparency in an experimental setting. The authors ask a group of sixty-seven analysts to estimate the price and fundamental value of a stock while manipulating both the level of transparency of the financial statements (by varying the available-for-sale securities disclosure location) and the investor base (varying the classification of the "most important" investors between transient and dedicated). Their findings are consistent with more transparent disclosure inducing a greater deviation of price from fundamentals when the most important investors are transient. They reason that analysts expect short-horizon investors to take actions that exacerbate mispricing perpetrated by unsophisticated investors when transparency is highest because transparency triggers overconfidence in unsophisticated investors. However, these findings can also be explained through a rational expectations lens. As suggested by Sapra (2010), if transparency makes the accounting signal more precise, transient investors may overweight this signal (as in Allen et al., 2006) when predicting average beliefs.

2.2 Hypothesis Development

As described above, Kondor's (2012) rational expectations framework models higher-order disagreement as a consequence of agents' heterogeneous investment horizons. In particular, short-horizon investors are interested in the intermediate price and hence, their primary concern is how other investors will value the asset in the short term. An announcement that increases the precision of the public signal by reducing disagreement about fundamentals will polarize the beliefs of these short-horizon investors by making them more confident in their private valuations.

In the "beauty contest" setting, the more precise the public signal the more investors will overweigh it (Allen, et al., 2006). Thus, in forming higher-order expectations, precise earnings signals become even more useful for predicting investors' average beliefs. As the number of short-horizon investors increases, the effect will become more pronounced and higher-order beliefs about price will become even more polarized (Kondor, 2012).

Hence, an important first step in investigating how higher-order beliefs affect the relationship between price and fundamentals is to first establish empirically that the precision of the public signal can, in fact, increase disagreement about future price in the presence of short-horizon investors. My first hypothesis is therefore:

H1a: Short-horizon ownership is positively associated with the both the likelihood and extent of divergence between changes in disagreement about fundamentals and price.

A key assumption in Kondor's (2012) model is that short horizon investors are endowed with heterogeneous private information. When the correlation of private information across short-horizon investors is low, more precise public information leads to a polarization of higher-order beliefs. This private information can result from differential information processing skills or else the announcement may render prior private information more useful (Kim and Verrecchia, 1997).

A firm with low idiosyncratic earnings volatility is characterized by earnings that commove closely with the earnings of firms in the same industry, or with earnings at the market level. Hence, higher idiosyncratic earnings volatility reflects the ability of investors to obtain or develop heterogeneous private beliefs about future earnings and captures the appeal of speculation around earnings announcements for firms whose earnings contain more firm-specific news.[16] Therefore, my next hypothesis is a follows:

H1b: Idiosyncratic earnings volatility is positively associated with the both the likelihood and extent of divergence between changes in disagreement about fundamentals and price.

Although, on average, uncertainty decreases around earnings announcements, evidence suggests that the nature of the earnings news affects its informativeness. Isakov and Perignon (2000) distinguish between the effects of good news and bad news on the behavior of implied volatility using a framework similar to that of Patell and Wolfson (1981). In their model, the combined leverage and volatility feedback effects exacerbate the decrease in implied volatility for good news announcements while mitigating the decrease for bad news announcements allowing for the possibility that public announcements can, to some extent, *increase* uncertainty.[17] Consistent with this model, Truong, Corrado, and Chen (2012) find that the predicted decrease in implied volatility following earnings announcement is mitigated for announcements characterized by a negative earnings surprise. Examining the behavior of implied volatility following

[16] For instance, Gong et al. (2013) find that managers are more likely to issue management forecasts when earnings synchronicity is low. They posit that managers provide these forecasts in an effort to mitigate information asymmetry.

[17] The volatility feedback effect refers to the tendency of a high volatility day to be followed by another high volatility day while the leverage effect suggests that volatility increases more after a negative shock as the debt to equity ratio rises (Black, 1976).

management guidance, Rogers, Skinner, and Van Buskirk (2009) document that uncertainty increases following bad news forecasts, particularly when the firm releases forecasts sporadically. However, it is unclear what role, if any, higher-order disagreement plays in exacerbating or mitigating increased uncertainty.

Kondor (2012) and Allen et al. (2006) both suggest that the precision of the public signal is important in generating higher-order disagreement. Similarly, Gao (2008) describes the dual role of accounting disclosure in the context of a Keynesian beauty contest as being both a source of information about the fundamental value of the firm as well as revealing the common component of investors' information sets. The qualities of "bad" news may render it less useful in its information role even if the announcement does decrease uncertainty about future earnings. For instance, bad news tends to be less persistent than good news (i.e., Basu, 1997). On the other hand, Kondor (2012) argues that the precision role of the announcement dominates the news role – in other words, there does not need to be a change in the consensus to improve the precision of the signal and induce higher-order disagreement. Still, short-sale constraints may render the price a less useful indicator of average valuation in the case of bad news. Therefore, I state my final hypothesis in the null form:

H2: The association between speculation (measured as short-horizon ownership and idiosyncratic earnings volatility) and the extent of divergence between changes in disagreement about fundamentals and price is not significantly different between "good news" and "bad news" earnings announcements.

3. Sample Selection and Variable Measurement

3.1 Sample Selection

Table 1, Panel A outlines the sample selection criteria. The initial sample includes all quarterly earnings announcements from the intersection of Compustat and CRSP with available forecast data from the I/B/E/S Details file for the period 1996-2010.[18] For each firm-announcement observation, I require at least three qualifying forecasts from IBES for the current- and next- quarter's earnings, where a qualifying forecast is made no more than ninety days in advance of the earnings announcement. Requiring three forecasts ensures less measurement error in the calculation of dispersion, and will reduce noise in classifying announcements as good- or bad- news.

Next, I merge the I/B/E/S sample with OptionMetrics' Standardized Option dataset, requiring non-missing implied volatilities for option durations of 122 days. I eliminate announcement dates with missing announcement period returns from the CRSP daily stock file, or where the next announcement date occurs more than 120 days from the current earnings announcement date. Finally, following prior literature, I eliminate extreme forecast observations where the scaled change in forecast dispersion or the scaled forecast error are in the top or bottom 1% of observations (Rees and Thomas, 2010). This results in a sample of 56,313 firm-quarters.

Finally, I screen the sample based on the availability of data to calculate the control variables. Requiring book value, market value of equity, and debt data from Compustat eliminates 1,241 observations, while 5,858 additional firm quarters are missing the requisite data to calculate the earnings persistence and unpredictability parameters. This leaves 49,211 firm-quarters for the multivariate regression analysis of

[18] OptionMetrics data availability begins in 1996

Hypothesis 1a. Requiring available idiosyncratic earnings volatility data reduces the sample to 42,017 firm-quarters for tests of Hypothesis 1b. The yearly breakdown of observations is presented in Table 1, Panel B.

3.2 Variable Definitions

3.2.1 Measuring Uncertainty about Fundamentals

The primary analysis employs analyst forecast dispersion to proxy for uncertainty about fundamentals.[19] Decreasing (increasing) forecast dispersion around earnings reflects converging (diverging) beliefs about future earnings consistent with increasing (decreasing) precision of public information.

Analyst forecast dispersion for quarter t (*DISP)* is measured as the standard deviation of forecasts made within 90 days of the earnings announcement date (EAD). If an analyst makes more than one forecast during that period, only the most recent forecast is used. Dispersion is scaled by the stock price at the end of the current quarter. Analyst forecast dispersion for next quarter ($DISP_{t+1}$) is measured three days before and after the earnings announcement date for the current quarter. In the "pre" period, I again limit forecasts to those made within 90 days of the quarter t announcement date. In the "post" period, I include forecasts for quarter t+1 made in the 30 days following the quarter t announcement date. If an analyst does not revise her forecast during the "post" period, I maintain the "pre" period forecast. I follow Rees and Thomas (2010) and measure the

[19] Aside from forecast dispersion, there are several additional analyst-based constructs for uncertainty suggested in the literature. Barron et al. (1998) develop the BLKS measure by decomposing forecast dispersion into uncertainty and information asymmetry components. However, this measure utilizes realized forecast errors and hence suffers from look-ahead bias. Sheng and Thevenot (2012) implement a GARCH model to estimate the variance of mean forecast errors, however this measure requires a long time series without missing observations. As noted by Sheng and Thevenot (2012), although analyst dispersion understates uncertainty relative to theirs and the BLKS measures, it can still serve as a useful cross-sectional indicator of relative uncertainty.

change in dispersion (*ΔDISP*) as the post-EAD dispersion less the pre-EAD dispersion for quarter t+1 earnings, scaled by stock price at the end of quarter t. [20]

3.2.2 Measuring Uncertainty about Price

The use of implied volatility (hereafter, IV) to measure changes in disagreement about price is appropriate in this context for several reasons. First, implied volatility is a forward looking measure and therefore better reflects uncertainty about future stock price than do historical realizations such as stock price volatility. Second, the daily availability of implied volatility facilitates the measurement of short-window changes. Additionally, IV can be measured for options of various maturities enabling comparison between the horizon of the earnings forecasts (i.e. next quarter's earnings) and the horizon of disagreement about price. Finally, measures based on stock market realizations may not fully capture disagreement stemming from private beliefs. For instance, using realized trading volume captures only the trades that actually occur (i.e., two parties agree on price). If an order is not executed, it is not measured (Garfinkel, 2009). In the options market, investors can speculate on future price without having to execute a trade in the underlying security. Additionally, option markets are not subject to the same short sale constraints that can cause distortions in stock prices when pessimistic investors are shut out of the market (i.e., Miller, 1977).

Following Rogers et al. (2009) I obtain implied volatilities from the OptionMetrics Standardized Options dataset. This dataset provides daily put and call implied volatilities for at-the-money options with constant durations of 30 – 730 days. OptionMetrics calculates the interpolated implied volatilities using options with various

[20] Results are robust to using unscaled forecast dispersion, scaling by mean forecast (for those firm-quarters with non-zero mean forecasts), or calculating the percentage change (for firm-quarters with non-zero pre-announcement dispersion)

strikes and maturities, and only calculates implied volatility if there exists enough underlying option price data to accurately calculate an interpolated value. An advantage of the Standardized Option dataset is that it eliminates the necessity to make a potentially arbitrary decision on which strike price and maturity to use in assigning implied volatility values to an earnings announcement observation. Additionally, the use of standardized options with fixed durations avoids the mechanical changes in implied volatility occurring as options draw closer to expiration (Patell and Wolfson, 1981). I calculate implied volatility three days before and after the earnings announcement date by averaging the implied volatility of put and call options with durations of 122 days (*IV122*).[21] Changes in *IV122* are calculated as:

$$\Delta IV122 = log\left(\frac{IV122_{t+3}}{IV122_{t-3}}\right)$$

I choose 122-day options for the change analysis in order to better align the horizon of the option contract with that of the earnings forecast. Using 122-day options ensures that the implied volatility after the earnings announcement date is at least partially capturing uncertainty about the next earnings announcement.[22]

3.2.3 Measuring Divergence

I create two variables that reflect whether and to what extent the change in dispersion and the change in implied volatility diverge around the announcement. *DIFF_IND* is an indicator variable equal to 1 if a decrease (increase) in dispersion is

[21] Results are robust to averaging IV over the three day window (-5,-3) and (3,5)

[22] A potential concern is that earnings announcement dates are not known with certainty a quarter in advance, so even with dropping firm-quarters in which the next announcement date is more than 120 days away, ex ante it isn't clear that investors know the next announcement will be within 120 days. In the sample, the average number of days until the next announcement is 92, and 90% of the next announcement dates are within 105 days suggesting investors likely expect the next EAD to be in less than 120 days

accompanied by an increase (decrease) in implied volatility.[23] In addition to this dichotomous measure, I construct a continuous measure that reflects the extent of divergence.

First, I decile-rank *ΔDISP* and *ΔIV122* each quarter and then measure *DIFF* as follows:

$$DIFF_{i,t} = \Delta IV122\_Decile_{i,t} - \Delta DISP\_Decile_{i,t}$$

DIFF takes a value from -9 to +9; a *DIFF* value of -9 (9) reflects the greatest increase (decrease) in dispersion coupled with the greatest decrease (increase) in implied volatility. The empirical analysis employs an absolute value of *DIFF* to capture the magnitude of divergence and aid in the interpretation of the results.

3.2.4 Measuring Speculation

Short-horizon institutional ownership (*SHORT_HORIZON)* is measured using the percentage ownership of institutions categorized as transient under Bushee's (2001) classification scheme. Bushee (2001) categorizes institutions as "transient," "quasi-indexers," or "dedicated" based on portfolio turnover and diversification.[24] I merge this classification data with Thomson Reuter's 13F data. The SEC requires that all investment managers with equity security holdings over $100 million file quarterly reports. These ownership filings occur at the end of each calendar quarter and therefore it is not possible to perfectly match ownership characteristics to the date of the earnings announcement. Because it is important to capture ownership as of the announcement date as closely as possible, institutional ownership is matched to the earnings announcement date based on

[23] For the 1,175 firm-quarters for which the change in dispersion is zero, the change is classified with the decreasing sample.
[24] Brian Bushee's classification data, as well as a description of the methodology, can be found at: http://acct.wharton.upenn.edu/faculty/bushee/IIclass.html

the filing of the most recent calendar quarter end prior to the announcement. I merge this ownership data with CRSP and calculate *SHORT_HORIZON* as the shares held by transient institutions as a percentage of total shares outstanding as of the report date (i.e. calendar-quarter end). Total institutional ownership is similarly calculated as total shares held by institutions as a percentage of total shares outstanding. Consistent with prior research, missing values of institutional ownership are assigned a value of zero.[25]

Idiosyncratic earnings volatility (*IDIO_EARN)* is the standard deviation of the residuals from a regression of a firm's quarterly earnings on industry and market earnings. Specifically, following Brown and Kimbrough (2011), I estimate the following firm specific regression over the twenty quarters prior to the earnings announcement (requiring a minimum of 12 quarters of observations):

$$ROA_t = \alpha + \beta_1 MKTROA_t + \beta_2 INDROA_t + \varepsilon_t$$

where ROA_t is earnings before extraordinary items for firm *i* in quarter t scaled by total assets at the beginning of quarter t. $INDROA_t$ is weighted-average ROA for quarter t, measured as the sum of earnings before extraordinary items in quarter t scaled by the sum of lagged total assets, excluding firm *i*, for all Compustat firms in the same industry as firm *i*, with industry defined using the Fama-French 49-industry classifications. $MKTROA_t$ is the weighted-average ROA for quarter t for all Compustat firms excluding those in the same industry as firm *i*. *IDIO_EARN* is equal to the standard deviation of the error term of these firm specific regressions.

3.2.5 Classifying Earnings News

[25] Because of the data requirements (minimum of three analyst forecasts and exchange traded options) the number of firm-quarters with no institutional ownership is unsurprisingly very small (115 firm-quarters). Institutional ownership is capped at 100%.

I classify earnings news as “good” or “bad” based on analyst forecast error for quarter t. Forecast Error (*FE)* is defined as actual EPS value reported by IBES less mean consensus forecast prior to the earnings announcement date, scaled by stock price at the end of quarter t, utilizing the same forecasts used in the measurement of *DISP* in section 3.2.1. An announcement is classified as *BAD_NEWS* if forecast error is negative.

3.3 Control Variables

I control for factors that the extant literature has associated with forecast dispersion and implied volatility in order to better isolate the effect of speculation on divergence between the two.

REVISION is the forecast revision for next quarter’s earnings around the announcement of current quarter earnings measured as the post-announcement mean forecast less the pre- announcement mean forecasts, scaled by price at the end of quarter t. Revisions should capture the informativeness of current earnings for future earnings (e.g., Yeung, 2009), hence, I expect *REVISION* to be negatively associated with the change in forecast dispersion. To the extent that revisions are associated with an increase in precision of public information, I expect it to be positively association with |*DIFF*|.

The firm-specific earnings persistence parameter (*PERSISTENCE*) is calculated as the AR(1) coefficient in a regression using seasonally differenced quarterly ROA, estimated over the twenty quarters prior to quarter t. I require firms to have data for 12 of the 20 previous quarters. The standard deviation of the residuals of this same regression scaled by beginning of quarter price (*UNPREDICT*) measures the unpredictability of earnings. I control for earnings persistence because more persistent earnings should be more informative for future earnings; prior literature finds that earnings persistence is positively associated with the earnings-response coefficient (e.g., Kormendi and Lipe, 1987; Easton and Zmijewski, 1989). I expect that firms with greater earnings persistence (unpredictability) have more (less) precise public information. On the other hand, to the extent that unpredictable earnings are associated with more gathering of private information, *UNPREDICT* may be positively associated with |*DIFF*| for earnings announcements that reduce uncertainty.

Size (*SIZE*) is measured as the market value of equity, where market value is measured as price multiplied by common shares outstanding as of the previous quarter end. Size can be a proxy for the information environment of the firm, thus larger firms should have lower uncertainty and less volatile returns. *BM* is the book value of common equity scaled by the market value of common equity at the beginning of quarter t and is another fundamental risk factor. I expect BM is negatively associated with uncertainty about price.

LOSS is an indicator variable equal to 1 if earnings per share reported by IBES is negative. Prior literature has found that loss firms are difficult to forecast (Clement and Tse, 2005) and that earnings-response coefficients are lower for losses (Hayn, 1995). If this is the case, the decrease in implied volatility may be mitigated following losses.

DEBT is measured as the book value of debt scaled by the market value of equity plus the book value of debt at the beginning of quarter t. I control for leverage because Johnson (2004) suggests that, for levered firms, the option value of equity is increasing in the uncertainty about future cash flows. Due to the leverage effect, high debt firms should have an attenuated decrease in implied volatility following earnings announcements.

4. Research Design

In order to test the association between speculation and the likelihood and extent of divergence between changes in disagreement about price and fundamentals, I employ logistic and linear regression specifications utilizing the following equations:

$$DIFF\_IND_{i,t} = \alpha_0 + \alpha_1 SPECULATE_{i,t} + \alpha_2 INST\_OWN_{i,t} + \alpha_3 DISP_{i,t} + \alpha_4 IV122_{i,t} + \alpha_5 BAD\_NEWS_{i,t} + \alpha_6 LOSS_{i,t} + \alpha_7 REVISION + \alpha_8 |FE|_{i,t} + \alpha_9 NUM_{i,t} + \alpha_{10} UNPREDICT_{i,t} + \alpha_{11} PERSIST_{i,t} + \alpha_{12} DEBT_{i,t} + \alpha_{13} BM_{i,t} + \alpha_{14} SIZE_{i,t} + \varepsilon_{i,t} + \quad (1)$$

$$|DIFF|_{i,t} = \alpha_0 + \alpha_1 SPECULATE_{i,t} + \alpha_2 INST\_OWN_{i,t} + \alpha_3 DISP_{i,t} + \alpha_4 IV122_{i,t} + \alpha_5 BAD\_NEWS_{i,t} + \alpha_6 LOSS_{i,t} + \alpha_7 REVISION_{i,t} + \alpha_8 |FE|_{i,t} + \alpha_9 NUM_{i,t} + \alpha_{10} UNPREDICT_{i,t} + \alpha_{11} PERSIST_{i,t} + \alpha_{12} DEBT_{i,t} + \alpha_{13} BM_{i,t} + \alpha_{14} SIZE_{i,t} + \varepsilon_{i,t} + \quad (2)$$

Equation 1 (2) is a logistic (linear) regression model where *SPECULATE* is either *SHORT_HORIZON* or *IDIO_EARN* or both together. The control variables are as defined in the previous section and are ranked into deciles each quarter for ease of interpretation. In each specification, standard errors are clustered by firm and earnings announcement month.[26]

To test Kondor's (2012) theoretical predictions, which rely on decreasing disagreement about fundamentals, tests of Hypotheses 1a and 1b estimate Equations 1 and 2 on the subsample characterized by decreasing forecast dispersion. For tests of Hypothesis 2, I partition by whether the announcement contains good- or bad- news, conditional on decreasing forecast dispersion.

[26] Results are qualitatively similar if group (firm or industry) and time (month or quarter) fixed effects are included.

5. Empirical Results

5.1 Descriptive Statistics

Table 2, Panel A reports summary statistics for variables used in the main analysis. As expected, forecast dispersion and implied volatility both decrease on average. The high standard deviation of *ΔDISP* (.144) relative to its mean (-0.012) is indicative of substantial variation in changes in fundamental uncertainty across the sample. *ΔIV* displays similarly high variation with a mean and standard deviation of -0.013 and 0.088, respectively. Mean forecast error is positive, consistent with firms most often meeting or beating analyst estimates (e.g., Bartov et al., 2002); firms miss analyst expectations in 29.8% of firm-quarters while approximately 12% of earnings announcements are losses. Requiring a minimum of three analyst forecasts and option market data skews the sample towards large, well-covered firms – average analyst following is 8.6. *DIFF* is normally distributed with a mean of 0, consistent with the expectation that changes in fundamental and price uncertainty should most often move together; this provides validation of the *DIFF* measure and suggests that deviation from a *DIFF* of 0 is meaningful.

Table 2, Panel B reports the number of observations per "quadrant" based on whether forecast dispersion and implied volatility increase or decrease for the firm-quarter observation. Unsurprisingly, the most frequent outcome is a decrease in both forecast dispersion and implied volatility. An increase in implied volatility coupled with a decrease in forecast dispersion – the specific outcome described in Kondor's (2012) theory – occurs in 22.7% of firm-quarters.

Table 3 presents Pearson and Spearman correlations between variables used in the main analysis. The relatively high correlation between *SHORT_HORIZON* and *IDIO_EARN* (.29) is consistent with both capturing characteristics of speculation. Consistent with prior literature, pre-announcement levels of dispersion and implied volatility are significantly positively correlated (.36). The positive correlation between absolutely forecast error and ex-ante forecast dispersion suggests that dispersion is an appropriate measure of uncertainty about earnings.

5.2 Multivariate Analysis

5.2.1 Full Sample

An important assumption of Kondor's (2012) model is that public announcements decrease disagreement about fundamentals. Hence, direct tests of Hypotheses 1a and 1b are estimated using the decreasing dispersion subsample. However, for completeness, I first estimate Equations 1 and 2 utilizing the full sample. Table 4, Panel A presents results from Equation 1, which regresses the indicator variable for divergent changes in forecast dispersion and implied volatility (*DIFF_IND*) on short-horizon ownership or idiosyncratic earnings volatility as well as control variables described in Section 3. In models 1 and 3 (2), idiosyncratic earnings volatility (short-horizon ownership) is positively and significantly (marginally insignificantly) associated with the likelihood of disagreement, consistent with predictions. While the dichotomous variable captures whether implied volatility increases (decreases) in the presence of decreasing (increasing) forecast dispersion, results using this binary measure cannot reveal how the *extent* of the divergence varies with speculation.

Therefore, Panel B reports results using the continuous measure $|DIFF|$ as the dependent variable.[27] In this analysis, idiosyncratic earnings volatility is positively and significantly associated with $|DIFF|$ in models 1 and 3, although the coefficient on short-horizon ownership is insignificant.

5.2.2 Tests of Hypotheses 1a and 1b

In order to test Hypotheses 1a and 1b, in my main analyses I estimate Equations 1 and 2 on the decreasing forecast dispersion subsample. Table 5 reports descriptive statistics for the sample partitioned by increasing or decreasing dispersion. Unsurprisingly, the instance of negative forecast errors is greater for the increasing dispersion subsample consistent with bad news announcements containing less information about future earnings. Mean *PERSISTENCE* is higher for firm-quarters with decreasing dispersion suggestive of dispersion decreasing in response to announcements that are informative about future earnings. The significantly higher number of analysts in the decreasing dispersion sample is indicative of better information environments leading to greater reduction in uncertainty around earnings announcements.

Table 6, Panel A presents results of Equation 1 for the decreasing dispersion subsample. Consistent with predictions, coefficients on *SHORT_HORIZON* and *IDIO_EARN* are positive and significant in models 2 and 3, with values of .558 and 4.740, respectively. When both proxies are included in model 1, they each remain significant suggesting that both short horizon ownership and heterogeneous private information are incrementally important in generating higher-order disagreement.

[27] Employing the absolute value of DIFF aids in the interpretation of results. Using raw values of DIFF, -9 (+9) represents maximum divergence in the case of increasing (decreasing) dispersion and decreasing (increasing) implied volatility. As such, a positive coefficient can actually reflect less divergence is occurring in the case of moving from -5 to -4 (for instance) making interpretation potentially difficult. Nevertheless, results using a signed measure of DIFF are qualitatively similar to the absolute value.

Panel B of Table 6 reports results of this analysis employing the continuous measure,$|DIFF|$. Here, as in Panel A, short-horizon ownership and idiosyncratic earnings volatility are positively and significantly associated with the extent of divergence with coefficients of .354 and 3.774, respectively. Again, both remain significant in the joint specification (model 1). The results of this analysis are consistent with Hypotheses 1a and 1b and offer empirical support for the assertion that short-horizon ownership and idiosyncratic earnings volatility exacerbate disagreement about price as disagreement about fundamentals decreases, consistent with speculation driving higher-order disagreement as in Kondor (2012).

Turning to the control variables, both *PERSISTENCE* and *UNPREDICT* are poisitively and significantly associated with |*DIFF*| in all models. The results are indicative of the earnings announcements of high-persistence firms containing more information about future earnings. At the same time, less predictable earnings engender more disperse beliefs about price, even after an informative earnings announcement. The positive coefficient on *DEBT* is consistent with the post-announcement volatility crush being attenuated for high debt firms due to the leverage effect. *SIZE* and *ANALYSTS*, which both proxy for the information environment of the firm, are negatively associated with |*DIFF*| suggestive of better information environments reducing private information and uncertainty about future price. *BAD_NEWS* is positively and significantly associated with |*DIFF*| in all specifications, in line with Truong et al.'s (2012) finding that the decrease in implied volatility is attenuated for bad news announcements. In the next section, I investigate whether the association between speculation and divergence is affected by the nature of the earnings announcement.

5.2.3 Good News and Bad News Subsamples

Next, I partition the sample further and estimate regressions separately on good news and bad news announcement subsamples, conditional on decreasing forecast dispersion. Results in Panel A for specifications using *DIFF_IND* as the dependent variable reveal that, consistent with predictions, the coefficients on *SHORT_HORIZON* and *IDIO_EARN* in models 3 and 5 (good news announcements) are positive and significant with values of .775 and 5.461; the coefficients are insignificant in the bad news subsample. Chi-squared tests reveal that the coefficients on *SHORT_HORIZON* are significantly greater for good news announcements than bad news announcements. Additionally, when *SHORT_HORIZON* and *IDIO_EARN* are both included, they each remain significantly positively associated with *DIFF_IND* in the good news subsample. Results are similar in Panel B which reports results using |*DIFF*|; the coefficient on *SHORT_HORIZON* and *IDIO_EARN* are positive and significant in both models 3 and 5 when they enter the equation alone (.487 and 5.095, respectively), and in the joint model. Chi-squared tests reveal that the coefficients on *IDIO_EARN* in the good-news sample are significantly more positive than in the bad news sample, while for *SHORT_HORIZON* the coefficient is significantly more positive in model 3 (good news) than model 4 (bad news). There are several potential explanations for this result. First, bad news earnings may be less informative about future earnings resulting in less learning about fundamental value. Second, if bad news engenders pessimistic opinions, short sale constraints may keep these investors from trading. In this case, price is a biased estimate of the consensus belief and this lower precision signal does not induce as much higher-order disagreement.

6. Additional Analysis

6.1 Measuring Precision using Returns

If forecast dispersion does not sufficiently capture the change in disagreement about fundamentals (i.e. the precision of the public signal), this can bias the results. Gao (2008) suggests that when the public signal is more precise, short-horizon investors will rely on it more heavily resulting in an exaggerated earnings response. Therefore, I conduct additional analysis using absolute announcement period returns (|*RET*|) to proxy for the precision of public information. I measure |*RET*| as cumulative three day returns for days (-1, +1) around the earnings announcement adjusted for returns to the value-weighted CRSP index for the same period. I rank |RET| into quintiles by quarter and regress the *CH_IV122* on *SHORT_HORIZON* or *IDIO_EARN* and control variables. I expect that the association between *CH_IV122* and *SHORT_HORIZON* or *IDIO_EARN* will be stronger for announcements characterized by greater absolute returns.

Table 8 reports results from these regressions. Consistent with predictions, the coefficients on *SHORT_HORIZON* and *IDIO_EARN* are significantly more positive for the sub-sample in the highest quintile of absolute announcement period returns than in the lowest quintile. For example, the coefficient on *SHORT_HORIZON* (*IDIO_EARN*) increases from .011 to .041 (.008 to .179) and the difference is statistically significant at the 1% (5%) level.[28] These results demonstrate that in the presence of more precise public signals, short horizon ownership and heterogeneous private beliefs (i.e. idiosyncratic earnings volatility) are more positively associated with disagreement about future price.

[28] The magnitude of the coefficients increases monotonically from quintile 1 to quintile 5.

6.2 Measuring Disagreement with Abnormal Turnover

While the main analysis employs implied volatility as to measure disagreement about price, in this section, I introduce abnormal trading volume as an alternate proxy of higher-order disagreement.

Beginning with Beaver (1968), a large literature has used trading volume as a measure of individual investor expectations, and by extension, disagreement.[29] A particularly noteworthy finding by Kandel and Pearson (1995) is that abnormal trading volume can exist without price fluctuations – a result consistent with volume reflecting opinion divergence. Since then, there have been a series of studies empirically linking disagreement to volume (i.e., Bamber and Cheon, 1995; Bamber et al., 1997; Garfinkel, 2009).

In order to measure abnormal volume, I begin by calculating daily turnover (TO) as volume reported by CRSP divided by shares outstanding.[30] Following prior literature, I adjust this value by subtracting the market turnover.[31] *MATO* is the market-adjusted turnover averaged over the three days centered on the earnings announcement date:

$$MATO = \left\{ \sum_{t=-1}^{t=1} \left[\left(\frac{Vol_{i,t}}{Shares_{i,t}} \right)_{firm} - \left(\frac{Vol_t}{Shares_t} \right)_{mkt} \right] \right\} \Big/ 3$$

Where $vol_{i,t}$ and $shares_{i,t}$ are daily volume and shares outstanding reported by CRSP, respectively, and vol_t and $shares_t$ are daily values aggregated over the entire market.

While this measure can capture disagreement at the time of the earnings announcement, it does not reflect whether the earnings announcement increases or

[29] For a comprehensive review of this literature, see Bamber, Barron, and Stevens (2011).
[30] NASDAQ volume reported in CRSP is adjusted following Gao and Ritter (2010): divide reporting volume by 2 prior to February 1, 2001; by 1.8 between February 1 and December 31, 2001; and by 1.6 during 2002 and 2003.
[31] Market volume is calculated separately for NASDAQ and AMEX/NYSE stocks markets

decreases disagreement. Firms with high announcement period volume may simple have relatively high turnover. In other words, while *MATO* may be abnormal when compared to other firms, it may not represent an abnormal level of volume for the specific firm. In order to better capture whether the earnings announcement exacerbates disagreement, I follow Garfinkel and Sokobin (2006) and adjust the announcement period turnover by subtracting average turnover over a non-announcement period. Specifically, I construct *ΔMATO* as follows:

$$\Delta MATO = \frac{\left\{\sum_{t=-1}^{t=1}\left[\left(\frac{vol_{i,t}}{Shares_{i,t}}\right)_{firm} - \left(\frac{Vol_t}{Shares_t}\right)_{mkt}\right]\right\}}{3} - \frac{\left\{\sum_{t=-54}^{t=-5}\left[\left(\frac{Vol_{i,t}}{Shares_{i,t}}\right)_{firm} - \left(\frac{Vol_t}{Shares_t}\right)_{mkt}\right]\right\}}{50}$$

Where the first term is *MATO*, and the second term is daily firm turnover adjusted by market turnover averaged over the fifty days ending five days before the earnings announcement.

Next, I create two variables, |*DIFF_MATO*| and |*DIFF_ΔMATO*| which are equal to the absolute value of the difference between the decile rank of *MATO* or *ΔMATO,* respectively, and the decile rank of *ΔDISP*. The predictions remain the same as the main analysis; specifically, I expect *SHORT_HORIZON* and *IDIO_EARN* to be positively associated with |*DIFF_MATO*| and |*DIFF_ Δ MATO*| in the decreasing dispersion subsample, consistent with short horizon ownership and heterogeneous private beliefs leading to divergence.

Table 9, Panel A (B) reports results of regressions of |*DIFF_MATO*| and |*DIFF_ Δ MATO*| on short-horizon ownership and idiosyncratic earnings volatility estimated over the decreasing dispersion subsample. The results are consistent with the main analysis. In the joint model (1), the coefficients on *SHORT_HORIZON* and on *IDIO_EARN* are both positive and significant (5.330 and 6.367, respectively).

Coefficients on *SHORT_HORIZON* and *IDIO_EARN* are positive and significant in models 2 and 3 (5.623 and 10.228, respectively).

Next, I conduct the same analysis using |*DIFF_ΔMATO*| which should better capture changing higher-order beliefs about price than does the level of abnormal volume. The results of regressions utilizing |*DIFF_ΔMATO*| in Panel B continue to be consistent with my hypotheses. For example, the coefficient on *SHORT_HORIZON* (*IDIO_EARN*) in model 2 (3) is 3.946 (5.919) and is significant at the 1% level.

Table 10, Panels A and B use absolute announcement period returns as an alternative proxy for the precision of public information. As in Table 8, I partition the sample into quintiles of absolute announcement period returns (|*RET*|) and for each quintile, estimate regressions of *MATO* (Panel A) or Δ*MATO* (Panel B) on *SHORT_HORIZON* or *IDIO_EARN* and control variables. Again, the coefficients on *SHORT_HORIZON* and *IDIO_EARN* are significantly more positive for the top quintile of absolute returns than the bottom quintile – further evidence that the association between speculation and disagreement about price is stronger when the public signal is more precise.

6.3 Robustness Tests

6.3.1 Implied volatility horizon

The choice of using 122-day standardized options is intended to better align the horizon of earnings uncertainty with price uncertainty. If higher-order beliefs about price are related to private information about future earnings, then the realization of these predictions can be expected to occur at the next announcement. Nevertheless, I repeat the main analysis using 30- 60- and 90- day standardized options in calculating |*DIFF*|. In untabulated results, I find evidence largely consistent with the main analysis. While the coefficient on *SHORT_HORIZON* remains positive and significant in the decreasing dispersion sample over all IV horizons, for the 30-day horizon, *IDIO_EARN* remains positive but is insignificant. This may result if investors with private information about earnings do not expect the revelation of their private information to occur so soon after an earnings announcement.

7. Conclusion

This paper takes a first step to empirically examine the role of higher-order beliefs in explaining disagreement around earnings announcements and provides evidence consistent with the presence of speculative investors exacerbating disagreement about future price in reaction to informative earnings announcements. This finding adds to the literature investigating the effect of opinion divergence on the capital market and offers a potential channel through which informative events can generate disagreement about price.

Specifically, using forecast dispersion and implied volatility to proxy for disagreement about fundamentals and price, respectively, I document that short-horizon ownership and idiosyncratic earnings volatility are significantly positively associated with the likelihood and extent of divergence between changes in disagreement about price and fundamentals around informative earnings announcements (i.e., those characterized by decreasing forecast dispersion). This result is consistent with the theoretical predictions of Kondor (2012) and demonstrates empirically that speculation can drive higher-order disagreement around public announcements. Further, I find that this effect is more pronounced for announcements that convey “good” news, suggesting the importance of the precision of the public signal in shaping higher-order beliefs. Employing trading volume as an alternative measure of disagreement about price yields results consistent with the main analysis.

Opinion divergence in capital markets has received increasing attention in accounting and finance, particularly with regard to its role in asset pricing. The finding that speculation can result in an increase in disagreement about price while disagreement about fundamentals decreases underscores the importance of distinguishing between first- and higher-order disagreement in our understanding of the asset pricing consequences of opinion divergence.

Finally, the results have important implications for how the information content of earnings is measured and understood. The findings suggest that even if firms disclose information with the intention of decreasing uncertainty, speculation resulting from heterogeneous investor horizons can increase uncertainty about price following an otherwise informative disclosure. Therefore, any effort to understand how disagreement changes around earnings announcements must take into consideration both the first- and higher-order disagreement implications of the news.

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Appendix A: Variable Definitions

Variable		Definition
Δ DISP	Change in Dispersion	The change in the standard deviation of analyst individual forecasts of next quarters earnings around the announcement of current quarter earnings. Pre-announcement dispersion includes forecasts of quarter t+1 earnings made within 90 days of the announcement date of quarter t earnings. If multiple forecasts are made by a single analyst, only the most recent is used. The post announcement dispersion is measured using forecasts made in the 30 days following the earnings announcement date. If an analyst has a qualifying pre-announcement forecast and does not revise it, it is carried forward to the post-period. The change is scaled by price at the end of quarter t.
DISP	Dispersion	The standard deviation of analyst individual forecasts of current quarter earnings. Qualifying forecasts are made within 90 days of the earnings announcement. If an analyst makes more than one forecast during the 90 day period, only the most recent forecast is used. Dispersion is scaled by price at the end of the current quarter.
Δ IV	Change in Implied Volatility	The change in average implied volatility of 122- day expiration put and call options +/- 3 days from the earnings announcement date, from the Option Metrics Standardized Option dataset. Measured as log(post-IV/pre-IV)
IV	Implied Volatility	Average implied volatility of 122- day expiration put and call options from the Option Metrics Standardized Option dataset.
DIFF_IND	Diff Indicator	An indicator variable equal to 1 if an increasing (decrease) in dispersion is accompanied by a decrease (increase) in implied volatility. If Δ DISP is equal to zero, the observation is included with the decreasing dispersion sample.
|DIFF|	Absolute Difference	The absolute value of the difference between the decile of Δ IV and the decile of Δ DISP. ΔDISP and Δ IV are ranked into deciles by quarter.
SHORT HORIZON	Short Horizon Ownership	The percentage of shares held by transient institutions as of the most recent calendar quarter ending before the earnings announcement date, where transient institutions are identified using the classification of Bushee (2001).
IDIO_EARN	Idiosyncratic Earnings Volatility	The standard deviation of the error term of the regression of ROA (earnings before extraordinary items scaled by lagged total assets) on value-weighted market ROA (not including members of firm i's industry based on Fama French 48 industries) and industry value-weighted ROA (not including firm i) estimated over 20 quarters up to and including quarter t, with a minimum of 12 quarters required.

Appendix A, Continued

Variable		Definition
MATO	Market-Adjusted Turnover	Daily turnover measured as volume from CRSP as a percentage of total shares outstanding, adjusted by the daily turnover for the entire market and averaged over the three days centered on the earnings announcement date
ΔMATO	Change in Market Adjusted Turnover	MATO adjusted by the average market adjusted turnover for the 50 days ended 5 days before the earnings announcement date.
|DIFF_MATO|	Difference using MATO	Absolute value of the decile rank of MATO less the decile rank of Δ DISP. MATO3 and Δ DISP are ranked into deciles by quarter.
|DIFF_ΔMATO|	Difference using ΔMATO	Absolute value of the decile rank of ΔMATO less the decile rank of Δ DISP. ΔMATO and Δ DISP are ranked into deciles by quarter.
FE	Forecast Error	Actual earnings reported by IBES less the mean of qualifying individual analyst forecasts for the current quarter. Forecast error is scaled by price at the end of the current quarter.
REVISION	Forecast Revision	The change in the mean of qualifying individual forecasts for next quarter around the announcement of current quarter earnings, scaled by stock price at the end of quarter t.
ANALYSTS	Number of Analysts	Measured as the natural log of the number of analysts making qualifying forecasts of current quarter earnings
BAD_NEWS	Bad News	An indicator variable equal to one if forecast error is negative
LOSS	Loss	An indicator variable equal to one if actual EPS reported by IBES is negative
BM	Book to Market	Book value of common equity scaled by the market value of common equity at the end of the current quarter
SIZE	Size	The natural log of Market value of equity measured as price multiplied by common shares outstanding at the beginning of qtr t
DEBT	Debt	Measured as long term debt plus the debt in current liabilities scaled by the market value of equity plus the book value of debt at the beginning of quarter t
PERSIST	Earnings Persistence	The AR(1) coefficient from a regression of seasonally differenced ROA estimated over the twenty quarters prior to quarter t. Firms are required to have 12 quarters of data in order the estimate the persistence parameter.
UNPREDICT	Earnings Unpredictability	The standard deviation of the residuals from the persistence regression defined above, deflated by price at the beginning of quarter t.
RET	Return	3-day value-weighted market-adjusted return around the earnings announcement date (day -1 to +1)

Table 1
Sample Selection

Panel A: Sample Selection Criteria

	Number of firm-quarter observations
All Earnings Announcements Dates available from the intersection of CRSP and Compustat from January 1, 1996 - December 31, 2010	370,188
Earnings Announcement Dates with IBES details data available	214,210
Screening Criteria	
1) Number of analysts issuing qualifying forecasts of quartet t or quarter t+1 earnings is less than 3[a]	(123,124)
2) Non-availability of option data from Option Metrics +/- three days around EAD	(24,719)
3) Missing Implied Volatility for 122 day duration	(6,172)
4) Missing return data around EAD	(252)
5) Next Announcement date greater than 120 days away	(1,481)
6) Extreme forecast observations[b]	(2149)
Final Sample	**56,313**
Multivariate Sample Restrictions	
1) Missing Market Value or Book Value	(655)
2) Missing Debt	(589)
3) Missing Persistence	(5,858)
Final Full Multivariate Sample (Horizon)[c]	**49,211**

Panel B: Sample by Year

Year	Number of firm-quarter announcement observations
1996	1,511
1997	2,163
1998	2,360
1999	2,356
2000	1,763
2001	2,502
2002	3,066
2003	2,984
2004	3,564
2005	3,887
2006	3,999
2007	4,356
2008	4,478
2009	4,927
2010	5,295

[a] See Appendix A for variable definitions [b] Extreme forecast observations defined as current scaled forecast error or scaled change in dispersion in the top or bottom 1% of observations [c] For Idiosyncratic Earnings Volatility, full multivariate sample is 42,017 firm-quarters

Table 2
Descriptive Statistics

Panel A: Descriptive Statistics, Full Sample

	N	Mean	Std	Q1	Median	Q3
Δ DISP * 100	56,313	-0.012	0.144	-0.038	-0.004	0.016
Δ IV	56,313	-0.013	0.088	-0.055	-0.014	0.023
DISP * 100	56,313	0.168	0.368	0.028	0.069	0.170
IV	56,313	0.456	0.209	0.307	0.412	0.558
SHORT_HORIZON	56,313	0.188	0.117	0.103	0.167	0.251
IDIO_EARN	43,390	0.015	0.018	0.005	0.009	0.019
DIFF_IND	56,313	0.465	0.499	0.000	0.000	1.000
DIFF	56,313	-0.004	3.988	-3.000	0.000	3.000
MATO	56,130	0.011	0.026	-0.001	0.004	0.015
Δ MATO	56,130	0.005	0.018	-0.001	0.001	0.006
DIFF_MATO	56,130	-0.002	4.102	-3.000	0	3.000
DIFF_ΔMATO	56,130	0.005	4.034	-3.000	0	3.000
FE *100	56,313	0.047	0.473	-0.015	0.035	0.150
REV * 100	56,313	-0.072	0.382	-0.097	-0.007	0.028
ANALYSTS	56,313	8.638	5.270	5.000	7.000	11.000
BAD_NEWS	56,313	0.298	0.457	0.000	0.000	1.000
LOSS	56,313	0.124	0.330	0.000	0.000	0.000
BM	55,658	0.458	0.360	0.234	0.389	0.605
SIZE	55,879	8158	18989	788.7	2027	6129
DEBT	55,455	0.203	0.209	0.020	0.143	0.320
PERSISTENCE	50,101	0.288	0.308	0.054	0.273	0.518
UNPREDICT	50,095	0.142	0.350	0.013	0.039	0.125

See Appendix A for variable definitions. Descriptive statistics using standardized options with a duration of 122 days.

Panel B: Observations by Quadrant

		Δ IV Decrease	Δ IV Increase
Δ DISP	Decrease	20,773 (36.9%)	12,780 (22.7%)
	Increase	13,398 (23.8%)	9,362 (16.6%)

Table 3
Correlations

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	ΔDISP	1.00	**0.04**	**-0.04**	**-0.07**	**0.18**	**-0.02**	**-0.31**	**-0.07**	**-0.02**	**-0.01**	0.00	**-0.03**	**0.05**	**-0.06**	**-0.05**	**0.06**	**0.01**	**-0.06**	**-0.10**
2	ΔIV122	**0.03**	1.00	**-0.03**	-0.01	**0.15**	**-0.01**	**-0.01**	**-0.13**	**-0.01**	**-0.03**	**0.01**	**-0.04**	**0.10**	**0.03**	**-0.01**	**-0.02**	**0.04**	**-0.01**	-0.01
3	SHORT HORIZON	**-0.02**	**-0.02**	1.00	**0.29**	**-0.01**	0.01	**0.04**	**0.27**	**0.56**	**0.06**	**0.07**	**-0.03**	**-0.09**	**0.02**	**-0.12**	**-0.22**	**-0.18**	**0.04**	**0.22**
4	IDIO EARN	**-0.04**	0.00	**0.22**	1.00	-0.01	**0.06**	**0.24**	**0.48**	**0.07**	**0.18**	**0.20**	**-0.13**	**0.02**	**0.29**	**-0.23**	**-0.43**	**-0.42**	**-0.05**	**0.81**
5	DIFF_IND	**0.10**	**0.10**	**-0.01**	**0.01**	1.00	**0.62**	**-0.03**	**-0.03**	**-0.01**	**0.02**	**0.02**	**-0.02**	**0.02**	**0.02**	0.00	0.00	0.01	-0.01	-0.01
6	|DIFF|	**-0.04**	**-0.01**	0.00	**0.07**	**0.62**	1.00	**0.13**	**0.07**	**-0.02**	**0.10**	**0.13**	**-0.04**	**0.03**	**0.08**	**0.06**	**-0.07**	**0.04**	**0.01**	**0.08**
7	DISP	**-0.29**	0.01	**0.01**	**0.15**	**-0.02**	**0.13**	1.00	**0.37**	**-0.06**	**0.60**	**0.64**	**0.03**	**0.18**	**0.36**	**0.41**	**-0.34**	**0.21**	**0.08**	**0.43**
8	IV122	**-0.05**	**-0.13**	**0.21**	**0.43**	**-0.02**	**0.09**	**0.36**	1.00	**0.06**	**0.26**	**0.33**	**-0.11**	**0.06**	**0.32**	**0.04**	**-0.52**	**-0.19**	**0.10**	**0.51**
9	INST OWN	0.00	**-0.01**	**0.55**	**-0.02**	**-0.01**	**-0.02**	**-0.06**	0.01	1.00	**-0.06**	**-0.02**	**0.04**	**-0.06**	**-0.08**	**-0.04**	**-0.06**	**-0.06**	**0.03**	0.01
10	|FE|	**0.02**	0.01	**0.01**	**0.13**	**0.02**	**0.11**	**0.48**	**0.28**	**-0.07**	1.00	**0.52**	**-0.06**	**0.05**	**0.27**	**0.31**	**-0.28**	**0.16**	**0.04**	**0.32**
11	REVISION	**0.04**	**0.04**	**0.02**	**0.12**	**0.01**	**0.11**	**0.56**	**0.31**	**-0.03**	**0.45**	1.00	**-0.03**	**0.19**	**0.26**	**0.31**	**-0.29**	**0.12**	**0.09**	**0.33**
12	ANALYSTS	**-0.01**	**-0.03**	**-0.05**	**-0.11**	**-0.02**	**-0.05**	0.00	**-0.08**	**0.02**	**-0.06**	**-0.03**	1.00	**-0.02**	**-0.06**	**-0.02**	**0.44**	**0.04**	**0.02**	**-0.13**
13	BAD NEWS	**0.05**	**0.09**	**-0.08**	**0.02**	**0.02**	**0.04**	**0.14**	**0.07**	**-0.06**	**0.12**	**0.16**	**-0.02**	1.00	**0.12**	**0.08**	**-0.09**	**0.06**	**0.01**	**0.04**
14	LOSS	**-0.07**	**0.03**	**0.02**	**0.34**	**0.02**	**0.09**	**0.38**	**0.35**	**-0.08**	**0.32**	**0.27**	**-0.05**	**0.12**	1.00	**0.02**	**-0.28**	**-0.02**	**0.04**	**0.34**
15	BM	**-0.03**	**-0.01**	**-0.12**	**-0.18**	**-0.01**	**0.07**	**0.32**	**0.13**	**-0.05**	**0.30**	**0.28**	**-0.02**	**0.08**	**0.07**	1.00	**-0.23**	**0.38**	**0.04**	**-0.02**
16	LOG SIZE	**0.05**	**-0.02**	**-0.22**	**-0.37**	0.00	**-0.09**	**-0.25**	**-0.46**	**-0.07**	**-0.24**	**-0.23**	**0.46**	**-0.09**	**-0.28**	**-0.23**	1.00	**0.13**	**-0.09**	**-0.50**
17	DEBT	0.01	**0.02**	**-0.16**	**-0.31**	**0.01**	**0.06**	**0.23**	**-0.09**	**-0.09**	**0.19**	**0.13**	**-0.01**	**0.07**	**0.02**	**0.36**	**0.05**	1.00	**-0.11**	**-0.24**
18	PERSIST	**-0.04**	**-0.01**	**0.02**	**-0.06**	**-0.01**	**0.02**	**0.05**	**0.08**	**0.03**	**0.02**	**0.06**	**0.03**	**0.01**	**0.04**	**0.04**	**-0.09**	**-0.09**	1.00	**-0.10**
19	UNPREDICT	**-0.06**	0.00	**0.05**	**0.47**	0.01	**0.07**	**0.24**	**0.31**	**-0.14**	**0.21**	**0.18**	**-0.09**	**0.02**	**0.29**	0.01	**-0.30**	**-0.04**	**-0.05**	1.00

See Appendix A for variable descriptions. Pearson (Spearman) correlations below (above) diagonal. Bold coefficients indicate significance at the 10% level or better.

Table 4
Relationship between Speculation and Divergence

Panel A: Relationship between Speculation and *DIFF_IND*

	DEPENDENT VARIABLE = *DIFF_IND*		
VARIABLES	(1)	(2)	(3)
SHORT HORIZON	0.144	0.169	
	(0.236)	(0.127)	
IDIO EARN	2.861***		2.935***
	(0.001)		(0.001)
INST OWN	-0.008*	-0.010**	-0.005
	(0.066)	(0.014)	(0.160)
DISP	-0.038	-0.026	-0.040
	(0.427)	(0.569)	(0.398)
IV	-0.244***	-0.263***	-0.231***
	(0.000)	(0.000)	(0.000)
BAD NEWS	0.061**	0.051**	0.059**
	(0.024)	(0.040)	(0.027)
LOSS	0.107***	0.119***	0.104***
	(0.003)	(0.000)	(0.004)
UNPREDICT	-0.098*	-0.010	-0.099*
	(0.055)	(0.826)	(0.051)
PERSISTENCE	-0.014	-0.009	-0.015
	(0.624)	(0.739)	(0.597)
DEBT	0.058	0.030	0.058
	(0.145)	(0.383)	(0.143)
BM	-0.022	-0.043	-0.028
	(0.536)	(0.214)	(0.437)
SIZE	-0.017	-0.070	-0.021
	(0.731)	(0.139)	(0.663)
ANALYSTS	-0.123***	-0.101***	-0.123***
	(0.001)	(0.005)	(0.001)
REVISION	-0.022	-0.044	-0.020
	(0.552)	(0.213)	(0.595)
|FE|	0.170***	0.163***	0.171***
	(0.002)	(0.001)	(0.002)
Intercept	-0.035	0.022	-0.025
	(0.582)	(0.702)	(0.689)
Observations	42,017	49,211	42,017
Pseudo R^2	0.0238	0.0238	0.0238

Table 4, continued

Panel B: Relationship between Speculation and |*DIFF*|

	DEPENDENT VARIABLE = |*DIFF*|		
VARIABLES	(1)	(2)	(3)
SHORT HORIZON	-0.081	-0.101	
	(0.587)	(0.460)	
IDIO EARN	1.888*		1.844*
	(0.059)		(0.063)
INST OWN	-0.004	-0.003	-0.006
	(0.457)	(0.486)	(0.219)
DISP	0.693***	0.638***	0.694***
	(0.000)	(0.000)	(0.000)
IV	0.381***	0.401***	0.373***
	(0.000)	(0.000)	(0.000)
BAD NEWS	0.008	-0.000	0.008
	(0.783)	(0.999)	(0.762)
LOSS	0.163***	0.187***	0.164***
	(0.001)	(0.000)	(0.001)
UNPREDICT	0.079	0.104*	0.080
	(0.228)	(0.069)	(0.224)
PERSISTENCE	0.059	0.069**	0.060
	(0.128)	(0.047)	(0.122)
DEBT	0.208***	0.185***	0.208***
	(0.000)	(0.000)	(0.000)
BM	0.127***	0.112***	0.130***
	(0.003)	(0.006)	(0.002)
SIZE	0.104	0.063	0.107
	(0.117)	(0.304)	(0.108)
ANALYSTS	-0.299***	-0.263***	-0.299***
	(0.000)	(0.000)	(0.000)
REVISION	-0.164***	-0.185***	-0.165***
	(0.000)	(0.000)	(0.000)
|FE|	0.337***	0.336***	0.336***
	(0.000)	(0.000)	(0.000)
Intercept	2.419***	2.495***	2.414***
	(0.000)	(0.000)	(0.000)
Observations	42,017	49,211	42,017
Adjusted R^2	0.036	0.034	0.036

See Appendix A for variable descriptions. Panel A (B) is a logistic (linear) regression. Control variables are decile ranked by quarter. P-values in parentheses are based on standard errors clustered by firm and announcement month. ***,**,* reflects statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 5
Subsample Descriptive Statistics

	INCREASING DISPERSION			*DECREASING DISPERSION*			
	N	Mean	Median	*N*	Mean	Median	t-statistic (mean)
Δ DISP * 100	23,935	0.072	0.024	32,378	-0.074	-0.029	136.9***
Δ IV	23,935	-0.010	-0.011	32,378	-0.016	-0.016	7.400***
DISP * 100	23,935	0.168	0.069	32,378	0.168	0.07	-0.1196
IV	23,935	0.458	0.410	32,378	0.455	0.412	1.94*
SHORT_HORIZON	23,935	0.183	0.163	32,378	0.188	0.169	-4.66***
IDIO_EARN	18,108	0.015	0.009	24,657	0.016	0.009	-0.128
DIFF_IND	23,935	0.581	1	32,378	0.379	0	48.70***
|DIFF|	23,935	3.311	3	32,378	3.141	3	8.45***
FE *100	23,935	0.027	0.032	32,378	0.063	0.037	-8.90***
REV * 100	23,935	-0.089	-0.009	32,378	-0.060	-0.006	-8.76***
ANALYST	23,935	7.355	6	32,378	8.054	7	-16.99***
BAD_NEWS	23,935	0.327	0	32,378	0.276	0	13.17***
LOSS	23,935	0.122	0	32,378	0.126	0	-1.6
BM	23,621	0.457	0.389	32,037	0.454	0.388	1.09
LOG_SIZE	23,726	7.735	7.581	32,153	7.794	7.64	-4.62***
DEBT	23,562	0.211	0.150	31,893	0.197	0.138	8.09***
PERSISTENCE	21,049	0.274	0.254	29,052	0.298	0.287	-8.75***
UNPREDICT	21,044	0.001	0	29,051	0.001	0	-1.76*

See Appendix A for variable definitions. Sample is partitioned by whether forecast dispersion is increasing or decreasing around the earnings announcement, if there is no change, the observation is included in the decreasing sample. ***, **, * reflects statistical significance at the 1%, 5%, and 10% level, respectively.

Table 6
Relationship between Speculation and Divergence for Decreasing Dispersion Subsample

Panel A: Relationship between Speculation and *DIFF_IND*

	DEPENDENT VARIABLE = *DIFF_IND*		
VARIABLES	(1)	(2)	(3)
SHORT HORIZON	0.516**	0.558**	
	(0.038)	(0.012)	
IDIO EARN	4.452***		4.740***
	(0.005)		(0.002)
INST OWN	-0.008	-0.012*	0.002
	(0.300)	(0.085)	(0.739)
DISP	0.277***	0.263***	0.269***
	(0.000)	(0.000)	(0.000)
IV	-1.281***	-1.336***	-1.233***
	(0.000)	(0.000)	(0.000)
BAD NEWS	0.227***	0.221***	0.224***
	(0.000)	(0.000)	(0.000)
LOSS	0.317***	0.341***	0.306***
	(0.000)	(0.000)	(0.000)
UNPREDICT	0.156*	0.314***	0.151*
	(0.082)	(0.000)	(0.088)
PERSISTENCE	0.127***	0.150***	0.123***
	(0.003)	(0.000)	(0.004)
DEBT	0.084	0.073	0.087
	(0.189)	(0.179)	(0.169)
BM	-0.090	-0.148**	-0.110*
	(0.158)	(0.018)	(0.075)
SIZE	-0.407***	-0.504***	-0.422***
	(0.000)	(0.000)	(0.000)
ANALYSTS	-0.175***	-0.141***	-0.177***
	(0.001)	(0.002)	(0.001)
REVISION	-0.370***	-0.421***	-0.362***
	(0.000)	(0.000)	(0.000)
|FE|	-0.094	-0.112**	-0.091
	(0.108)	(0.036)	(0.117)
Intercept	0.131	0.254***	0.163
	(0.222)	(0.010)	(0.134)
Observations	24,251	28,564	24,251
Pseudo R^2	0.0215	0.0234	0.0212

Table 6, continued

Panel B: Relationship between Speculation and |*DIFF*|

	DEPENDENT VARIABLE = |*DIFF*|		
VARIABLES	(1)	(2)	(3)
SHORT HORIZON	0.480**	0.354*	
	(0.019)	(0.059)	
IDIO EARN	3.458**		3.744**
	(0.027)		(0.016)
INST OWN	-0.012*	-0.011*	-0.003
	(0.099)	(0.097)	(0.659)
DISP	0.967***	0.873***	0.960***
	(0.000)	(0.000)	(0.000)
IV	-0.798***	-0.763***	-0.752***
	(0.000)	(0.000)	(0.000)
BAD NEWS	0.237***	0.235***	0.234***
	(0.000)	(0.000)	(0.000)
LOSS	0.454***	0.473***	0.444***
	(0.000)	(0.000)	(0.000)
UNPREDICT	0.343***	0.445***	0.338***
	(0.000)	(0.000)	(0.001)
PERSISTENCE	0.168***	0.181***	0.164***
	(0.001)	(0.000)	(0.001)
DEBT	0.241***	0.216***	0.244***
	(0.000)	(0.000)	(0.000)
BM	0.035	-0.016	0.016
	(0.565)	(0.789)	(0.797)
SIZE	-0.410***	-0.463***	-0.423***
	(0.000)	(0.000)	(0.000)
ANALYSTS	-0.293***	-0.255***	-0.295***
	(0.000)	(0.000)	(0.000)
REVISION	-0.637***	-0.674***	-0.630***
	(0.000)	(0.000)	(0.000)
|FE|	0.180***	0.170***	0.183***
	(0.007)	(0.005)	(0.006)
Intercept	3.022***	3.147***	3.052***
	(0.000)	(0.000)	(0.000)
Observations	24,251	28,564	24,251
Adjusted R^2	0.071	0.068	0.070

See Appendix A for variable descriptions. Panel A (B) reports results of logistic (linear) regressions estimated for firm-quarters characterized by decreasing dispersion. Control variables are decile ranked by quarter. P-values in parentheses are based on standard errors clustered by firm and announcement month. ***,**,* reflects statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7
Relationship between Speculation and Divergence for Good News and Bad News Subsamples

Panel A: Relationship between Speculation and *DIFF_IND*

	DEPENDENT VARIABLE = *DIFF_IND*					
	(1)	(2)	(3)	(4)	(5)	(6)
	GOOD	BAD	GOOD	BAD	GOOD	BAD
VARIABLES	NEWS	NEWS	NEWS	NEWS	NEWS	NEWS
SHORT HORIZON	0.712***	0.064	0.775***	0.043		
	(0.007)	(0.868)	(0.001)	(0.904)		
IDIO EARN	5.053***	2.987			5.461***	3.021
	(0.005)	(0.196)			(0.002)	(0.178)
INST OWN	-0.006	-0.010	-0.010	-0.015	0.008	-0.009
	(0.531)	(0.382)	(0.230)	(0.200)	(0.301)	(0.324)
DISP	0.528***	-0.374***	0.489***	-0.345***	0.517***	-0.375***
	(0.000)	(0.003)	(0.000)	(0.003)	(0.000)	(0.003)
IV	-1.229***	-1.410***	-1.301***	-1.423***	-1.158***	-1.405***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LOSS	0.290***	0.359***	0.316***	0.376***	0.270***	0.358***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
UNPREDICT	0.143	0.221	0.318***	0.340***	0.133	0.221
	(0.151)	(0.113)	(0.000)	(0.002)	(0.179)	(0.114)
PERSISTENCE	0.126**	0.133*	0.163***	0.123*	0.121**	0.133*
	(0.018)	(0.063)	(0.001)	(0.072)	(0.024)	(0.063)
DEBT	0.070	0.121	0.045	0.151	0.071	0.122
	(0.332)	(0.242)	(0.471)	(0.105)	(0.327)	(0.233)
BM	-0.046	-0.177*	-0.096	-0.251***	-0.075	-0.179*
	(0.542)	(0.068)	(0.179)	(0.006)	(0.319)	(0.059)
SIZE	-0.269**	-0.719***	-0.399***	-0.744***	-0.290***	-0.720***
	(0.013)	(0.000)	(0.000)	(0.000)	(0.007)	(0.000)
ANALYSTS	-0.228***	-0.028	-0.173***	-0.038	-0.230***	-0.028
	(0.001)	(0.745)	(0.005)	(0.644)	(0.001)	(0.744)
REVISION	-0.328***	-0.353***	-0.382***	-0.407***	-0.321***	-0.351***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
|FE|	-0.308***	0.416***	-0.327***	0.405***	-0.303***	0.417***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Intercept	-0.043	0.737***	0.101	0.803***	0.005	0.740***
	(0.725)	(0.000)	(0.370)	(0.000)	(0.969)	(0.000)
Observations	17,441	6,810	20,666	7,898	17,441	6,810
Pseudo R^2	0.017	0.023	0.019	.0254	0.017	0.023
χ^2 HOR GOOD=BAD	2.38*		4.07**			
χ^2 IDIO GOOD=BAD	.42				.94	

Table 7, continued

Panel B: Relationship between Speculation and |*DIFF*|

	DEPENDENT VARIABLE = |*DIFF*|					
	(1)	(2)	(3)	(4)	(5)	(6)
	GOOD	BAD	GOOD	BAD	GOOD	BAD
VARIABLES	NEWS	NEWS	NEWS	NEWS	NEWS	NEWS
SHORT HORIZON	0.607***	0.082	0.487**	-0.079		
	(0.004)	(0.822)	(0.011)	(0.817)		
IDIO EARN	4.716***	0.426			5.095***	0.470
	(0.004)	(0.877)			(0.002)	(0.862)
INST OWN	-0.010	-0.014	-0.009	-0.014	0.002	-0.012
	(0.223)	(0.285)	(0.243)	(0.234)	(0.761)	(0.258)
DISP	1.044***	0.809***	0.946***	0.707***	1.034***	0.807***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
IV	-0.679***	-1.138***	-0.656***	-1.061***	-0.618***	-1.132***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LOSS	0.388***	0.552***	0.412***	0.550***	0.371***	0.551***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
UNPREDICT	0.336***	0.412***	0.473***	0.434***	0.326***	0.413***
	(0.001)	(0.005)	(0.000)	(0.001)	(0.001)	(0.005)
PERSISTENCE	0.228***	0.013	0.239***	0.027	0.223***	0.013
	(0.000)	(0.889)	(0.000)	(0.763)	(0.000)	(0.893)
DEBT	0.296***	0.125	0.250***	0.166	0.296***	0.127
	(0.000)	(0.250)	(0.000)	(0.114)	(0.000)	(0.247)
BM	0.051	0.010	-0.005	-0.021	0.026	0.007
	(0.467)	(0.938)	(0.942)	(0.859)	(0.705)	(0.958)
SIZE	-0.332***	-0.600***	-0.387***	-0.648***	-0.349***	-0.602***
	(0.004)	(0.000)	(0.000)	(0.000)	(0.003)	(0.000)
ANALYSTS	-0.303***	-0.243**	-0.254***	-0.242***	-0.306***	-0.243**
	(0.000)	(0.016)	(0.000)	(0.009)	(0.000)	(0.016)
REVISION	-0.513***	-0.796***	-0.560***	-0.808***	-0.507***	-0.794***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
|FE|	-0.078	0.678***	-0.090	0.681***	-0.074	0.678***
	(0.281)	(0.000)	(0.178)	(0.000)	(0.305)	(0.000)
Intercept	2.837***	3.639***	2.979***	3.711***	2.877***	3.643***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	17,441	6,810	20,666	7,898	17,441	6,810
Adjusted R^2	0.053	0.079	0.048	0.080	0.052	0.079
χ^2 HOR GOOD=BAD	2.17		3.21*			
χ^2 IDIO GOOD=BAD	2.56*				3.06*	

See Appendix A for variable descriptions. Panel A (B) reports results of logistic (linear) regression model estimated for firm-quarters characterized by decreasing dispersion. Control variables are decile ranked by quarter. P-values in parentheses are based on standard errors clustered by firm and announcement month. ***,**,* reflects statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 8

Relationship between Speculation and Divergence Using an Alternative Measure of Precision

	DEPENDENT VARIABLE = Δ*IV122*			
	(1)	(2)	(3)	(4)
	|RET|	|RET|	|RET|	|RET|
VARIABLES	QUINTILE 1	QUINTILE 5	QUINTILE 1	QUINTILE 5
SHORT HORIZON	0.011*	0.041***		
	(0.081)	(0.000)		
IDIO EARN			0.008	0.179**
			(0.863)	(0.012)
INST OWN	-0.000	-0.001*	-0.000	-0.000
	(0.310)	(0.052)	(0.857)	(0.890)
IV 122	-0.027***	-0.059***	-0.024***	-0.042***
	(0.000)	(0.000)	(0.000)	(0.000)
BAD NEWS	0.002*	0.016***	0.002*	0.005***
	(0.061)	(0.000)	(0.077)	(0.003)
LOSS	0.004**	0.012***	0.004*	0.011***
	(0.033)	(0.001)	(0.090)	(0.005)
UNPREDICT	0.004**	0.010***	0.003	0.004
	(0.020)	(0.004)	(0.122)	(0.320)
PERSIST	-0.001	0.005**	-0.001	0.006***
	(0.470)	(0.031)	(0.525)	(0.004)
DEBT	0.001	0.002	0.001	0.008**
	(0.545)	(0.534)	(0.673)	(0.017)
BM	-0.000	-0.008**	-0.000	-0.006**
	(0.855)	(0.029)	(0.907)	(0.013)
SIZE	-0.009***	-0.015***	-0.007***	-0.022***
	(0.000)	(0.002)	(0.002)	(0.000)
ANALYSTS	0.001	-0.002	0.000	0.004
	(0.256)	(0.527)	(0.999)	(0.127)
REVISION	-0.001	-0.033***	-0.001	-0.007***
	(0.602)	(0.000)	(0.664)	(0.000)
|FE|	0.001	0.000	0.002	-0.003
	(0.505)	(0.918)	(0.164)	(0.127)
Intercept	0.006*	0.038***	0.005	0.017***
	(0.054)	(0.000)	(0.116)	(0.000)
Observations	10,094	9,322	8,713	8,271
Adjusted R^2	0.032	0.079	0.026	0.030
χ^2 HOR Q1=Q5	15.40 ***			
χ^2 IDIO Q1=Q5			4.34 **	

See Appendix A for variable descriptions. Sample is partitioned into 5 quintiles per quarter based on absolute announcement period return adjusted by cumulative CRSP value-weighted return for the same period. Control variables are decile ranked by quarter. P-values in parentheses are based on standard errors clustered by firm and announcement month. ***,**,* reflects statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 9
Relationship between Speculation and Divergence Using Abnormal Turnover

Panel A: Relationship between Speculation and |*DIFF_MATO*|

	DEPENDENT VARIABLE = |*DIFF_MATO*|		
VARIABLES	(1)	(2)	(3)
SHORT HORIZON	5.330***	5.623***	
	(0.000)	(0.000)	
IDIO EARN	6.367***		10.228***
	(0.002)		(0.000)
INST OWN	0.015	0.013	0.122***
	(0.273)	(0.305)	(0.000)
DISP	0.705***	0.726***	0.668***
	(0.000)	(0.000)	(0.000)
BAD NEWS	0.038	0.015	0.000
	(0.254)	(0.630)	(0.995)
LOSS	-0.038	0.071	-0.104
	(0.706)	(0.394)	(0.310)
UNPREDICT	0.578***	0.772***	0.668***
	(0.000)	(0.000)	(0.000)
PERSISTENCE	0.610***	0.594***	0.630***
	(0.000)	(0.000)	(0.000)
DEBT	0.094	-0.007	0.081
	(0.390)	(0.949)	(0.485)
BM	-0.105	-0.125	-0.355***
	(0.301)	(0.176)	(0.001)
SIZE	-0.019	-0.088	-0.345**
	(0.900)	(0.532)	(0.027)
ANALYSTS	0.679***	0.698***	0.712***
	(0.000)	(0.000)	(0.000)
REVISION	-0.337***	-0.385***	-0.271***
	(0.000)	(0.000)	(0.000)
|FE|	0.750***	0.775***	0.798***
	(0.000)	(0.000)	(0.000)
Intercept	0.563**	0.661***	1.088***
	(0.025)	(0.006)	(0.000)
Observations	24,196	28,487	24,196
Adjusted R^2	0.149	0.158	0.113

Table 9, continued

Panel B: Relationship between Speculation and |*DIFF_ΔMATO*|

	DEPENDENT VARIABLE = |*DIFF_ΔMATO*|		
VARIABLES	(1)	(2)	(3)
SHORT HORIZON	3.835***	3.946***	
	(0.000)	(0.000)	
IDIO EARN	3.141*		5.919***
	(0.097)		(0.002)
INST OWN	0.036***	0.036***	0.113***
	(0.000)	(0.000)	(0.000)
DISP	0.374***	0.402***	0.348***
	(0.000)	(0.000)	(0.000)
BAD NEWS	0.018	0.015	-0.009
	(0.628)	(0.659)	(0.805)
LOSS	-0.303***	-0.238***	-0.351***
	(0.001)	(0.003)	(0.000)
UNPREDICT	0.759***	0.881***	0.823***
	(0.000)	(0.000)	(0.000)
PERSISTENCE	0.542***	0.533***	0.556***
	(0.000)	(0.000)	(0.000)
DEBT	-0.119	-0.177**	-0.128
	(0.178)	(0.036)	(0.166)
BM	-0.089	-0.077	-0.269***
	(0.336)	(0.371)	(0.004)
SIZE	-0.359***	-0.384***	-0.594***
	(0.002)	(0.001)	(0.000)
ANALYSTS	0.266***	0.284***	0.290***
	(0.000)	(0.000)	(0.000)
REVISION	-0.163***	-0.186***	-0.115**
	(0.003)	(0.000)	(0.035)
|FE|	0.810***	0.875***	0.844***
	(0.000)	(0.000)	(0.000)
Intercept	1.107***	1.133***	1.485***
	(0.000)	(0.000)	(0.000)
Observations	24,196	28,487	24,196
Adjusted R^2	0.119	0.126	0.099

See Appendix A for variable descriptions. Panel A and B report results of linear regressions estimated for firm-quarters characterized by decreasing dispersion. Control variables are decile ranked by quarter. P-values in parentheses are based on standard errors clustered by firm and announcement month. ***,**,* reflects statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 10
Relationship between Speculation and Divergence Using Volume and An Alternative Measure of Precision

Panel A: Relationship between Speculation and *MATO* by |*RET*| Quintile

	DEPENDENT VARIABLE = MATO			
	(1)	(2)	(3)	(4)
	|RET|	|RET|	|RET|	|RET|
VARIABLES	QUINTILE 1	QUINTILE 5	QUINTILE 1	QUINTILE 5
SHORT HORIZON	0.039***	0.103***		
	(0.000)	(0.000)		
IDIO EARN			0.092***	0.295***
			(0.000)	(0.000)
INST OWN	0.000***	-0.000	0.001***	0.002***
	(0.001)	(0.618)	(0.000)	(0.000)
BAD NEWS	0.000	0.002**	-0.000	0.001
	(0.534)	(0.033)	(0.558)	(0.436)
LOSS	-0.001	-0.003*	-0.001	-0.005***
	(0.353)	(0.085)	(0.102)	(0.006)
UNPREDICT	0.004***	0.005***	0.002***	-0.003
	(0.000)	(0.008)	(0.006)	(0.208)
PERSISTENCE	0.003***	0.007***	0.003***	0.007***
	(0.000)	(0.000)	(0.000)	(0.000)
DEBT	-0.002***	-0.005***	-0.001*	-0.004**
	(0.001)	(0.002)	(0.074)	(0.046)
BM	-0.002***	-0.011***	-0.002***	-0.014***
	(0.003)	(0.000)	(0.000)	(0.000)
SIZE	-0.000	-0.003	-0.002**	-0.006*
	(0.800)	(0.284)	(0.015)	(0.057)
ANALYST	0.005***	0.014***	0.005***	0.014***
	(0.000)	(0.000)	(0.000)	(0.000)
REVISION	-0.001	-0.009***	0.000	-0.009***
	(0.227)	(0.000)	(0.980)	(0.000)
|FE|	0.004***	0.005***	0.004***	0.004**
	(0.000)	(0.005)	(0.000)	(0.034)
Intercept	-0.009***	0.001	-0.006***	0.012***
	(0.000)	(0.701)	(0.000)	(0.004)
Observations	10,056	9,302	8,682	7,845
Adjusted R-squared	0.235	0.145	0.169	0.094
χ^2 HOR Q1=Q5	124.85***			
χ^2 IDIO Q1=Q5			29.41***	

Table 10, continued

Panel B: Relationship between Speculation and Δ*MATO* by |*RET*| Quintile

	DEPENDENT VARIABLE = Δ*MATO*			
VARIABLES	(1) |RET| QUINTILE 1	(2) |RET| QUINTILE 5	(3) |RET| QUINTILE 1	(4) |RET| QUINTILE 5
SHORT HORIZON	0.014***	0.067***		
	(0.000)	(0.000)		
IDIO EARN			0.008	0.162***
			(0.472)	(0.000)
INST OWN	0.000**	0.000	0.000***	0.002***
	(0.028)	(0.659)	(0.000)	(0.000)
BAD NEWS	-0.000	0.002***	-0.000**	0.002*
	(0.276)	(0.006)	(0.036)	(0.096)
LOSS	-0.002***	-0.004***	-0.002***	-0.005***
	(0.000)	(0.002)	(0.000)	(0.000)
UNPREDICT	0.000	0.002	0.000	-0.003
	(0.165)	(0.294)	(0.264)	(0.136)
PERSISTENCE	0.001**	0.004***	0.001**	0.004***
	(0.018)	(0.002)	(0.017)	(0.003)
DEBT	-0.002***	-0.004***	-0.002***	-0.004***
	(0.000)	(0.000)	(0.000)	(0.004)
BM	-0.001***	-0.009***	-0.002***	-0.012***
	(0.000)	(0.000)	(0.000)	(0.000)
SIZE	-0.000	-0.005***	-0.002***	-0.007***
	(0.315)	(0.005)	(0.001)	(0.001)
ANALYST	0.002***	0.008***	0.002***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)
REVISION	0.000	-0.007***	0.000	-0.007***
	(0.652)	(0.000)	(0.236)	(0.000)
|FE|	0.002***	0.004***	0.002***	0.003**
	(0.000)	(0.003)	(0.000)	(0.035)
Intercept	-0.000	0.009***	0.001	0.016***
	(0.576)	(0.001)	(0.184)	(0.000)
Observations	10,056	9,302	8,682	7,845
Adjusted R-squared	0.087	0.105	0.063	0.070
χ^2 HOR Q1=Q5	113.06***			
χ^2 IDIO Q1=Q5			23.20***	

See Appendix A for variable descriptions. Sample is partitioned into 5 quintiles per quarter based on absolute announcement period return adjusted by cumulative CRSP value-weighted return for the same period. Control variables are decile ranked by quarter. P-values in parentheses are based on standard errors clustered by firm and announcement month. ***,**,* reflects statistical significance at the 1%, 5%, and 10% levels, respectively.