Earnings Expectations and the Dispersion Anomaly

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Abstract

Stocks with relatively high dispersion in analyst earnings forecasts are associated with significantly lower future returns. We show that the return predictability of dispersion is concentrated only in quarterly earnings announcement months. Within these months, return predictability is concentrated in the short window around earnings announcement dates. Subsequent tests show that bias in analysts' earnings expectations explains the relation between dispersion and returns and that return predictability is significant even in recent years. Overall, our findings are consistent with an explanation for the return predictability of dispersion based on errors in earnings expectations.

JEL classification: G12, G14, G20

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1. Introduction

In an influential study, Diether, Malloy, and Scherbina (2002) (DMS) show that stocks with relatively high dispersion in analysts' earnings forecasts are associated with significantly lower future returns than stocks with low dispersion. To the extent that forecast dispersion captures differences of opinion among investors, this predictable pattern is surprising in the sense that high disagreement stocks are arguably risky, but they earn relatively low future returns.[1] DMS conclude that their finding is consistent with Miller (1977), suggesting that overpricing increases with the level of disagreement when short-sale constraints keep pessimistic investors from trading. The overpricing then leads to lower future returns when the optimistic valuations are corrected.

Subsequent research has debated the explanation for the return predictability of dispersion. For instance, Johnson (2004) provides a risk-based explanation based on option-pricing theory and argues that dispersion captures unpriced information risk that increases the option value of the firm.[2] Avramov, Chordia, Jostova, and Philipov (2009) focus on default risk. They argue that analyst dispersion is correlated with financial distress and that the return predictability of dispersion is explained by credit rating conditions. Sadka and Scherbina (2007), on the other hand, argue in favor of mispricing as they observe that analyst disagreement coincides with high trading costs and that less liquid stocks tend to be more overpriced.

In this paper, we analyze the role of errors in *earnings* expectations in explaining the return predictability of dispersion. Our motivation is twofold. First, analyst dispersion not only proxies for differences of opinion among investors about equity values, but it is also widely

[1] While DMS present evidence on return predictability for individual stocks, similar results are found for portfolios of stocks in Park (2005) and Yu (2011).

[2] He shows that for a levered firm, higher levels of idiosyncratic asset risk reduce expected returns. Barron, Stanford, and Yu (2009) find evidence in favor of Johnson (2004) as they conclude that variation in dispersion levels mostly reflects variation in idiosyncratic uncertainty.

acknowledged to more specifically capture uncertainty in short-horizon earnings expectations (e.g., Kinney, Burgstahler, and Martin, 2002; Sheng and Thevenot, 2012). Second, recent evidence links earnings uncertainty to the sign of ex-post bias in analysts' earnings forecasts (e.g., Jackson, 2005; McInnis, 2010; Bissessur and Veenman, 2014), which in turn affects the likelihood that a firm beats or misses consensus expectations at subsequent earnings announcements. Given the strong price reactions associated with firms' beating and missing analyst earnings expectations (e.g., Skinner and Sloan, 2002), the link between dispersion (i.e., earnings uncertainty) and analyst forecast bias can lead to predictable return patterns related to dispersion.

In our sample covering the period 1983-2012, we first corroborate the significant hedge returns in DMS of going long in securities with low dispersion in analysts' annual earnings forecasts and taking a short position in securities with high dispersion. Next, we show that monthly hedge returns are more than double the magnitude in months with quarterly earnings announcements (100 basis points) compared to non-announcement months (43 basis points). Results are similar when we focus on *expected* rather than *actual* earnings announcement months (e.g., Frazzini and Lamont, 2007). In multivariate cross-sectional regressions the significant return predictability of dispersion disappears in non-announcement months, while it is statistically and economically significant only in earnings announcement months. That is, we find that dispersion does not predict returns in about two-thirds of security-months in our sample.

Zooming in on the return predictability of dispersion within earnings announcement months, our tests suggest that a large part of dispersion's return predictability arises in the days around the quarterly earnings announcement. Specifically, we find a significant abnormal return differential of 52 basis points between low and high dispersion stocks over a three-day window.

This finding is difficult to reconcile with a risk-based explanation since expected returns should be small over such a short window (Bernard, Thomas, and Wahlen, 1997; La Porta, Lakonishok, Shleifer, and Vishny, 1997; Lewellen, 2011). When we adjust monthly returns for the returns around earnings announcements, dispersion hedge returns weaken substantially.

While these findings are consistent with errors in expectations explaining the return predictability of dispersion, they are not necessarily indicative of errors in *earnings* expectations since earnings announcements generally provide a wealth of information beyond earnings. Given that dispersion is measured based on disagreement among analysts about earnings expectations and recent evidence links dispersion to bias in analysts' forecasts, we next examine the extent to which errors in *analyst* expectations of earnings are a channel through which dispersion predicts returns.

The link between dispersion and bias in analyst forecasts arises in part from analyst incentives to help firms meet or beat expectations by pessimistically biasing their forecasts before earnings announcements (Ke and Yu, 2006; Chan, Karceski, and Lakonishok, 2007; Hilary and Hsu, 2013; Malmendier and Shanthikumar, 2014).[3] Recent work by Bissessur and Veenman (2014) suggests that the likelihood of analyst forecast pessimism is inversely related to earnings uncertainty (measured by dispersion), and analyst forecasts tend to be optimistically biased when earnings uncertainty is high (e.g., Jackson, 2005; McInnis, 2010). Combined, analyst dispersion is associated with the sign of consensus forecast bias revealed at subsequent earnings announcements and hence the likelihood that a firm's earnings will beat or miss

[3] Richardson, Teoh, and Wysocki (2004) show that the average analyst forecast is overly optimistic early in the year, but this optimism is reduced and switches to slight pessimism shortly before the annual or quarterly earnings announcement. Consistent with analysts catering to managers' preference to avoid the negative pricing consequences of missing expectations, Richardson et al. (2004) show that this "walk-down" is strongest when managers have incentives to issue equity or sell shares on personal accounts after earnings announcements. Alternative ways in which firms can ensure to meet or beat analyst earnings expectations is by managing earnings or guiding forecasts downwards to a beatable level (e.g., Matsumoto, 2002; Bhojraj, Hribar, Picconi, and McInnis, 2009).

expectations. Given the price reactions to beating versus missing expectations, this association can lead to the predictable variation in returns around subsequent earnings announcements we document.[4]

We provide evidence on the analyst forecast bias channel in two ways. First, we confirm that low dispersion firms are more likely to beat analyst expectations due to analysts' pessimistic bias in quarterly forecasts, while high dispersion firms are more likely to miss expectations due to analysts' optimistic bias. As expected, returns are strongly negatively correlated with missing consensus expectations (i.e., ex-post optimism in forecasts). Strikingly, we show that the negative relation between dispersion and future returns vanishes once this effect is controlled for. Second, while the above tests rely on ex-post forecast errors and do not capture the information available to investors, we also examine the extent to which return predictability can be explained by prior forecast bias. Using two variables based on (1) recent (ex-post) optimism in consensus earnings forecasts for the same security and (2) recent (ex-post) optimism in all individual forecasts of analysts covering the current security-month, we show that the monthly variation in dispersion predicted by these measures explains the majority of the return predictability of analyst dispersion.

This paper contributes to the literature by presenting evidence on a previously unexplored explanation for the return predictability of analyst forecast dispersion. We demonstrate how bias in earnings expectations provides a viable explanation for the return predictability of analyst dispersion and leads to predictable returns around earnings announcements, and show that our findings are not driven by earlier explanations such as short-sale constraints, credit ratings, information risk, or liquidity. Moreover, in additional tests we show that the return predictability

[4] DMS acknowledge that the dispersion-return relation could potentially be explained by frictions that prevent the revelation of negative opinions, and that analyst incentives provide such a friction. Although they do not focus on testing this explanation, they stress that it "would be interesting to isolate the importance of this effect" (p. 2140).

of dispersion in earnings announcement months is strong even in the most recent part of our sample. This evidence is in contrast to previous conclusions that the return predictability of dispersion has weakened over time. Also, while recent research shows that the return predictability of many factors has declined over time due to reductions in trading frictions (Chordia, Subrahmanyam, and Tong, 2014), dispersion's return predictability remains significant despite this development.

Our paper also contributes to the literature on the market implications of bias in analysts' forecasts (e.g., Dechow, Hutton, and Sloan, 2000; Bradshaw, Richardson, and Sloan, 2006; Scherbina, 2008; Hribar and McInnis, 2012). While prior research has related forecast dispersion to analysts' optimistically versus pessimistically biased forecasts, we show how such bias can lead to predictable returns around subsequent earnings announcements. Lastly, we contribute to the stream of literature that examines the market pricing effects of information uncertainty (e.g., Jiang, Lee, and Zhang, 2005; Zhang, 2006; Donelson and Resutek, 2015) by showing how bias in (analyst) earnings expectations leads to return predictability of information uncertainty around earnings announcements.[5]

The remainder of this paper is organized as follows. Section 2 describes prior studies on bias in analyst forecasts and provides our predictions for the effect of this bias on the return

[5] Our work is also related to Berkman, Dimitrov, Jain, Koch, and Stice (2009), who test the implications of Miller (1977) around earnings announcements. They argue that the combination of differences of opinion and short-sale constraints should lead to price increases prior to earnings announcements when overvaluation occurs and drops in price after earnings announcements when the overvaluation is corrected. Using five proxies (including analyst dispersion) for differences of opinion, they also find return differentials around earnings announcements related to analyst dispersion, but they do not examine the implications of these short-window return differences for the general return predictability of dispersion. More importantly, in contrast to our study, they conclude that their results are not driven by biased analyst expectations, and we argue that analyst forecast dispersion captures more than differences of opinion among investors. In fact, the empirical findings in Berkman et al. (2009) on analyst dispersion are less consistent with their theoretical predictions than results based on their other proxies for differences of opinion. That is, they find no significant interaction effect with short-sale constraints and no significant price run-up before earnings announcements for high dispersion stocks.

predictability of dispersion. We describe our data in Section 3. Section 4 presents our empirical results, and we conclude in Section 5.

2. Dispersion and biased earnings expectations

Sell-side analyst earnings expectations are an important source of information to investors in setting earnings expectations (Givoly and Lakonishok, 1979; Lys and Sohn, 1990). At the same time, however, it is well recognized that the forecasts issued by these analysts exhibit systematic biases because of incentives stemming from brokerage trading commissions, investment banking deals, and access to management (Lin and McNichols, 1998; Lim, 2001; Jackson, 2005; Cowen, Groysberg, and Healy, 2006; Fang and Yasuda, 2009; Malmendier and Shanthikumar, 2014).[6] While early work has generally assumed that analysts face incentives for forecast optimism, recent studies suggest that analysts also benefit from issuing slightly pessimistic forecasts before earnings announcements to help firms meet or beat expectations (Richardson, Teoh, and Wysocki, 2004; Ke and Yu, 2006; Chan, Karceski, and Lakonishok, 2007; Hilary and Hsu, 2013).

One way in which analyst incentives lead to observed optimism bias in forecasts is through self-selection in the coverage of stocks. Analysts that are reluctant to issue bad news earnings forecasts or sell recommendations prefer to stop covering a stock or only cover stocks for which they are optimistic (McNichols and O'Brien, 1997). This self-selection leads to an upward bias in observed forecasts and recommendations. DMS argue that such optimistic bias is higher when disagreement is higher, by showing that the mean forecast is more optimistic when dispersion in

[6] Despite recent regulations such as Regulation Fair Disclosure, which prohibits selective disclosures from managers to analysts, mounting evidence in the literature indicates that access to management is still an important source of information to analysts in the post-Regulation Fair Disclosure era (Mayew, 2008; Green, Jame, Markov, and Subasi, 2014; Soltes, 2014).

forecasts is greater. Therefore, they conjecture that self-selection in analyst coverage is one potential mechanism through which negative opinions are withheld from the market.

Predictable forecast bias is, however, not confined to self-selection in analyst coverage. Predictable bias can exist conditional on the analysts' decision to issue a forecast. For instance, the evidence in Richardson, Teoh, and Wysocki (2004) and Ke and Yu (2006) suggests that individual analysts revise their initial optimistic forecasts downwards as time passes and eventually issue pessimistic forecasts to help firms meet or beat expectations. Thus, conditional on the decision to issue a forecast, variation exists in the magnitude and sign of analysts' forecast bias.

Analyst incentives to pessimistically bias forecasts increase with earnings predictability. Bissessur and Veenman (2014) argue that analysts are better able to slightly low-ball their forecasts and help firms meet or just beat expectations when their information is more precise, and show that quarterly earnings forecasts are substantially more likely to exhibit a small pessimistic bias when analysts' face less earnings uncertainty. In addition, Hilary and Hsu (2013) show that analysts' understatement of forecasts relative to actual earnings is related to their forecast error consistency (i.e., the inverse of the variation in forecast errors). As a result, to the extent that dispersion in analyst forecasts reflects the uncertainty in forecasting earnings (Barron and Stuerke, 1998; Kinney, Burgstahler, and Martin, 2002; Lahiri and Sheng, 2010; Sheng and Thevenot, 2012), low dispersion firms are more likely to report earnings that beat analysts' expectations compared with high analyst dispersion firms.

On the other hand, some studies posit that variation in forecast optimism bias is also related to earnings uncertainty and show that the likelihood and magnitude of optimistic bias in forecasts are greater when earnings are more difficult to predict (Lim, 2001; Jackson, 2005; Scherbina, 2008; McInnis, 2010; Bradshaw, Lee, and Peterson, 2014). These studies suggest that high dispersion, which captures low earnings predictability, can be associated with optimistic bias in analyst forecasts similar to the self-selection mechanism explained in DMS.

When prices do not fully reflect the relation between dispersion and the likelihood of optimistic versus pessimistic bias in analyst forecasts prior to earnings announcements, dispersion can predict returns when the optimistic (pessimistic) bias in forecasts leads to negative (positive) surprises at future earnings announcements. Evidence from the accounting literature strongly supports the link between analyst-based earnings surprises and stock returns around the announcement (see e.g., Collins and Kothari, 1989; Easton and Zmijewski, 1989; Skinner and Sloan, 2002). While in recent years the market has started to discount small positive earnings surprises that are potentially driven by analyst pessimism (Keung, Lin, and Shih, 2010), firms that miss expectations still experience large price drops at earnings announcements which implies that a *lack of* pessimism in forecasts can lead to substantial negative returns.

Overall, the discussion above suggests that analyst forecast biases are a potential channel through which dispersion is related to future returns. If analyst forecast biases explain the dispersion-return relation, then the relation should be concentrated in periods in which analysts' forecast bias is revealed and corrected (i.e., during earnings announcements). In addition, the dispersion-return relation should disappear once variation in the ex-post forecast bias is controlled for. We test these predictions in the following sections.

3. Data

Table 1 presents the sample selection procedure. We initially obtain 2,665,493 security-month observations from the CRSP monthly stock file for the period 1983-2012. We drop observations of stocks not listed on NYSE, AMEX, or NASDAQ, where listing is identified based on CRSP's historical exchange identifier (variable "EXCHCD" equals 1, 2, or 3). Following DMS, observations with stock prices below $5 at the end of the previous month are eliminated to ensure our results are not driven by small and illiquid stocks (Jegadeesh and Titman, 1993). To ensure availability of the data for investors, accounting data are matched with return data at least four months after a firm's fiscal year end and, as in Fama and French (1993), negative book value of equity observations are dropped. Next, security-month observations are merged with the I/B/E/S unadjusted historical summary file.[7] Because our tests rely on monthly forecast dispersion, which is measured by the standard deviation of annual earnings forecasts, the sample is restricted to stocks covered by at least two individual analysts. These filters reduce the sample to 1,029,474 security-month observations.

- INSERT TABLE 1 ABOUT HERE -

The identification of months with and without earnings announcements requires data on quarterly earnings announcement dates. While both COMPUSTAT and I/B/E/S provide these data, the values of the announcement dates sometimes differ across the databases due to different underlying sources. To ensure we pick the most accurate announcement date, we follow the procedure in Dellavigna and Pollet (2009). Specifically, if the COMPUSTAT and I/B/E/S announcement dates differ for a specific fiscal quarter, we take the earlier date of the two. If the COMPUSTAT and I/B/E/S announcement dates are similar, we pick the previous trading day for announcements made before 1990. For announcements made in or after 1990, we pick the exact date on which COMPUSTAT and I/B/E/S agree. The requirement of quarterly earnings

[7] All tests using analysts' forecasts of earnings per share are based on I/B/E/S data that is unadjusted for stock splits. DMS and Payne and Thomas (2003) highlight the problems associated with the standard I/B/E/S files that are split-adjusted and rounded to the nearest cent. In our case, the use of split-adjusted data would downwardly bias estimates of dispersion for some firms and would incorrectly classify some earnings surprises as zero cents which in reality should actually reflect a firm beating (surprise greater than zero) or missing (surprise smaller than zero) expectations.

announcement dates reduces the sample to 1,005,892 security-month observations, of which 32.9 percent are identified as earnings announcement (EA) months.

Prior research suggests that the timing of earnings announcements conveys information and that early (late) announcements are associated with higher (lower) future returns (Chambers and Penman, 1984). To ensure that differences in return predictability are not driven by hindsight bias, we follow prior research (Cohen, Dey, Lys, and Sunder, 2007; Barber, De George, Lehavy, and Trueman, 2013) and compute expected earnings announcement months. Specifically, expected earnings announcement months are based on the announcement date of the same quarter of the prior fiscal year. If the earnings announcement date of the same quarter of the prior fiscal year is unavailable, we extrapolate the earnings announcement date from the previous fiscal quarter (or two- or three-quarters back). The requirement of lagged announcement data reduces the sample with expected announcement months to 1,005,406 security-month observations, of which 32.6 percent are expected announcement months.

Following DMS, we define forecast dispersion as the standard deviation of annual earnings forecasts outstanding in a security-month, scaled by the absolute value of the mean consensus forecast. For observations where the mean consensus forecast is zero, we assign observations the highest sample value of scaled dispersion. Next, we sort monthly stock return observations into quintile portfolios based on the values of scaled forecast dispersion in the previous month. We then examine the average returns of the stocks in these portfolios. In all tests, standard errors are corrected for autocorrelation based on Newey and West (1987) using five lags.[8]

4. Results

[8] Following Greene (2012) we set the number of lags equal to the smallest integer equal to or greater than $T^{1/4}$, where T is the maximum number of time periods. Since T=360 in our setting, we set the number of lags to five ($360^{1/4}$=4.36). Choosing alternative numbers of lags has no material consequences for the inferences drawn.

4.1. Dispersion strategy returns and return predictability around earnings announcements

In Panel A of Table 2, we first examine return differences between low and high dispersion portfolios for our full sample and then replicate the DMS result for their sample period covering February 1983 through December 2000. For our sample period, the strategy of going long in low dispersion stocks and short in high dispersion stocks earns a statistically significant average monthly return of 61 basis points. The average return is slightly higher at 79 basis points for the period covered by DMS. The return pattern across portfolios and the statistical significance are virtually identical to DMS. In the last column, we report alphas obtained from Carhart (1997) four-factor model regressions. Specifically, we regress the 360 average monthly returns for each portfolio on the Fama and French (1993) three factors plus a momentum factor and obtain intercepts for each portfolio. The resulting return of 66 basis points is statistically significant.

- INSERT TABLE 2 ABOUT HERE -

In Panel B, we examine the dispersion strategy returns conditional on earnings announcement timing for both actual and expected earnings announcements. Using actual earnings announcements, dispersion strategy returns increase to 100 basis points per month for earnings announcement months, much larger than the 43 basis points for non-announcement months. Using expected rather than actual announcement dates, results are virtually identical. These findings suggest that the bulk of abnormal returns associated with dispersion is concentrated in the subset (approximately one-third) of months in which earnings are announced.

In the last two columns of Panel B, we examine short-window (raw and size-adjusted) buy-and-hold returns over the three-day window starting on the day of the actual earnings announcement (window [0,+2]).[9] While our results are qualitatively similar when using

[9] Throughout the paper, size-adjusted returns are calculated by subtracting from raw returns the value-weighted average returns to size-matched portfolios based on CRSP NYSE/AMEX/NASDAQ deciles (CRSP file “erdport1”).

alternative short windows around earnings announcement, we choose the window starting at day 0 because (1) our announcement date identification procedure reduces the possibility that earnings are actually announced on day -1 and (2) many earnings announcements occur after market close, rendering day +1 the first day on which a market reaction can be observed (Berkman and Truong, 2009).

The difference in average (size-adjusted) returns between the low and high dispersion portfolios of 55 (52) basis points is more than half the return difference using monthly returns. This result suggests that within earnings announcement months, a large part of the return predictability of dispersion is concentrated around the earnings announcement date. Also, it is interesting to note that the return difference around earnings announcement days is explained by both the long and the short side. While high dispersion stocks have negative abnormal returns around earnings announcements (e.g., Berkman, Dimitrov, Jain, Koch, and Tice, 2009), low dispersion stocks have positive abnormal returns around earnings announcements. The latter is potentially explained by low dispersion stocks being associated with pessimistic bias in analyst forecasts and the market reacting to positive earnings surprises. We return to this issue later in the paper.

4.2. Cross-sectional regression results

Next, we examine the dispersion strategy returns in announcement versus non-announcement months after controlling for previously identified determinants of returns and the dispersion effect. We control for leverage, which is important in Johnson (2004), and for illiquidity, which is important in Sadka and Scherbina (2007). We further follow Avramov, Chordia, Jostova, and Philipov (2009) and control for size and book-to-market, return reversal (Jegadeesh, 1990), momentum (Jegadeesh and Titman, 1993), idiosyncratic volatility (Ang, Hodrick, Xing, and Zhang, 2006), and institutional ownership (D'Avolio, 2002; Nagel, 2005).[10] We additionally control for the number of analysts based on which dispersion is calculated, the return predictability associated with asset growth (Cooper, Gulen, and Schill, 2008), and the most recently announced change in quarterly earnings. The latter control might be particularly important in our setting to rule out the possibility that our results are merely capturing the well-known post-earnings announcement drift, which also materializes around subsequent earnings announcements (Bernard and Thomas, 1989; Bernard, Thomas, and Wahlen, 1997).[11] Given the similarity in results, our discussion of results focuses on actual rather than expected earnings announcements in the remainder of tests.

- INSERT TABLE 3 ABOUT HERE -

We estimate monthly cross-sectional Fama and MacBeth (1973) regressions and report average coefficients in Table 3. The dispersion variable is the monthly quintile rank scaled between 0 and 1, such that its coefficient captures the average monthly return difference between high and low dispersion stocks. After controlling for the other factors, dispersion returns are statistically significant and equal to an average of 33 basis points per month. Turning to the majority of observations that are non-announcement months, however, average dispersion returns are not significantly different from zero. Instead, the significant return predictability of dispersion appears to be concentrated solely in announcement months (75 basis points). These

[10] All continuous explanatory variables are winsorized at the 1st and 99th percentiles of their distributions. Following Lewellen (2011) we set the maximum ownership of institutions equal to 100 percent.

[11] We do not control for credit ratings because of the severe sample attrition resulting from requiring credit rating data. We do, however, examine the sensitivity of our results to including credit ratings in Table 9 of the paper. Similarly, while prior research shows that accruals are negatively correlated with subsequent returns (Sloan, 1996; Richardson, Sloan, Soliman, and Tuna, 2005), the requirement of accrual data would restrict the sample to firms with such data available, resulting in non-random sample attrition and making it more difficult to compare our results with the prior literature on the return predictability of dispersion. Nevertheless, in untabulated analyses we find our results to be qualitatively highly similar when including accruals in the regressions.

results are consistent with an interpretation that the return predictability of dispersion is driven by errors in expectations that are corrected at subsequent earnings announcements.

Coefficients on the control variables are consistent with expectations. For example, size and book-to-market are slightly negatively and positively related to returns, respectively (Fama and French, 1992). Consistent with Jegadeesh (1990) and Jegadeesh and Titman (1993), returns are strongly negatively and positively correlated with one-month and one-year past returns, respectively. Asset growth is negatively related to returns (Cooper, Gulen, and Schill (2008) and consistent with the post-earnings announcement drift literature (Bernard and Thomas, 1989), returns are positively related to recent earnings changes. Analyst following is positively related to returns. To the extent that dispersion could be partly mechanically related to the number of analysts used to compute dispersion, this control is important to isolate the effect of the earnings uncertainty construct captured by dispersion.[12]

We also examine return predictability up to three months ahead because for virtually all firms, quarterly earnings should be announced at least once during this time frame. In Table 4, we first test return differentials for two-months ($t+1$) and three-months ($t+2$) ahead after controlling for our set of determinants. The average coefficients from monthly cross-sectional regressions for two- and three-month ahead returns are statistically significant and equal to -0.284 and -0.280, respectively.

- INSERT TABLE 4 ABOUT HERE -

Next, following our previous tests we examine the extent to which return predictability in these months is explained by the timing of earnings announcements in the three-month period. If

[12] In an untabulated analysis, we examine the extent to which our results are sensitive to interacting dispersion with leverage (Johnson, 2004). Similar to Sadka and Scherbina (2007) and Avramov, Chordia, Jostova, and Philipov (2009), we find a negative but statistically insignificant negative coefficient on this interaction term. Results on the main effect of dispersion are unaffected by including this interaction term in the regressions.

errors in expectations explain the return predictability of dispersion and these errors in expectations are corrected at earnings announcements, then dispersion should be associated with returns in *t+1* (*t+2*) only when earnings are announced in month *t+1* (*t+2*). Consistent with this prediction, we find that the significance of the coefficients is concentrated along the diagonal of the matrix. At a significance level of $p<0.05$, statistically significant return differences of 68 (43) basis points are observed in month *t+1* (*t+2*) only when earnings are announced in that month. These results further corroborate our earlier findings that the bulk of return predictability of dispersion is concentrated in earnings announcement months.

4.3. Within-announcement month returns

We next examine the concentration of predictable return differences *within* earnings announcement months. Specifically, for each day in the 21-trading day window centered on quarterly earnings announcements, we examine the difference in average daily size-adjusted returns between high and low dispersion stocks.[13] If return predictability is driven by risk, then differences in daily returns should be spread relatively evenly over the month. If return predictability is driven by errors in expectations, which are corrected at earnings announcements, then return differences should be concentrated around the quarterly earnings announcement. Consistent with the latter, Table 5 indicates significant return differentials only for days 0, +1, +2, and +4 relative to the earnings announcement date. Over days 0 through +4, the cumulative return differential equals -0.637, or about 64 basis points. This estimate, measured over just a five-day window, is large when compared to the full sample and announcement-month sample return differences of 61 and 100 basis points, respectively, as reported in Table 2. Figure 1

[13] We ensure that days in the window before the earnings announcement date do not overlap with the measurement of dispersion by excluding trading day observations that occur in month *t-1*.

provides further graphical evidence of the return differences being concentrated around the earnings announcement date.

- INSERT TABLE 5 AND FIGURE 1 ABOUT HERE -

Following the insights obtained from Table 5, we return to the monthly cross-sectional regressions in Table 6 and replace the dependent variable (return in month *t*) with either the five-day announcement date return or the monthly return adjusted for the five-day announcement date return. In the first column, we find that the five-day announcement date return differential is statistically significant and equal to 44 basis points after controlling for other factors. For comparison purposes, the second column displays the full sample regression results. The 33 basis points for the average return differential between low and high dispersion stocks is substantially smaller than the return differential for the short-window around earnings announcement dates.

- INSERT TABLE 6 ABOUT HERE -

When we adjust monthly returns in announcement months for the announcement date returns, the next column shows that the full sample return predictability of dispersion drops to 20 basis points, marginally significant. This finding suggests that when the predictable short-window returns around earnings announcements are taken out of the analysis, dispersion's ability to predict monthly returns is strongly reduced. The remaining two columns present similar insights for the subset of announcement months, with the return differential dropping from 75 to 29 basis points after taking out the announcement date returns.[14]

[14] Besides these insights, results in Table 6 also highlight an important difference between dispersion and idiosyncratic volatility as return predictor. Both variables are significantly negatively associated with earnings announcement returns. However, in contrast to dispersion, idiosyncratic volatility is not significantly associated with monthly returns in these multivariate cross-sectional regressions. In untabulated tests, we find that idiosyncratic volatility is significantly positively related to returns in the days leading up to earnings announcements, thereby cancelling out the negative announcement-window returns. This finding is consistent with Berkman, Dimitrov, Jain, Koch, and Tice (2009) who interpret excess return volatility as measure of differences of opinion, which in the combination with short-sale constraints should lead to overpricing prior to earnings announcements. As shown in Table 5 and Figure 1, for dispersion we find no such relation prior to earnings announcements.

Overall, we interpret these findings as providing strong support for the errors-in-expectations explanation for the return predictability of dispersion. The concentration of return predictability in the short window around quarterly earnings announcement is difficult to reconcile with a risk-based explanation for the return predictability. Still, while these findings are consistent with errors in expectations, they do not necessarily indicate that errors in *earnings* expectations drive the returns. We turn to this issue next by examining the role of predictable variation in financial analysts' errors in earnings expectations.

4.4. Return predictability and analyst forecast bias

Our conceptual discussion of analyst forecast bias indicated that high dispersion stocks should be associated with optimistic analyst expectations, while low dispersion stocks should be associated with pessimistic analyst expectations. With optimistic and pessimistic expectations, we refer to the analyst consensus forecast being above and below ex-post reported earnings, respectively. In this section, we examine the extent to which ex-post errors in analyst expectations are indeed correlated with dispersion and whether these forecast errors can explain the return predictability of dispersion.

In Table 7, we first verify the prediction that dispersion is associated with the sign of analysts' ex-post forecast errors. We examine forecast errors based on forecasts in month *t-1* of quarterly earnings that will be announced at the upcoming earnings announcement. Panel A displays the median forecast error (actual earnings per share minus the consensus forecast of earnings per share) per dispersion quintile portfolio and the relative frequency of optimistic (negative ex-post forecast error) to pessimistic (positive ex-post forecast error) forecast errors in each of the portfolios. As before, dispersion quintile portfolios are based on the month *t-1* dispersion in forecasts of annual earnings to be consistent with the prior literature on the return predictability of dispersion.

- INSERT TABLE 7 ABOUT HERE -

Consistent with expectations and prior research, dispersion is strongly related to the sign of ex-post forecast errors (earnings surprises). Low dispersion stocks are more likely associated with positive (pessimistic) earnings surprises, while high dispersion stocks are more likely associated with negative (optimistic) earnings surprises. In fact, the ratio of optimistic to pessimistic quarterly earnings surprises for the low dispersion portfolio equals 0.528, suggesting positive forecast errors are almost twice as frequent as are negative forecast errors in this group. Negative quarterly earnings surprises are more frequent in the high dispersion portfolio.[15]

Panel A also provides descriptive insights on the market implications of forecast biases and the resulting earnings surprises. Consistent with expectations and the prior literature, beating expectations is associated with positive market reactions and missing expectations is associated with negative market reactions (Collins and Kothari, 1989; Easton and Zmijewski, 1989; Skinner and Sloan, 2002). Therefore, the relation between dispersion and the average sign of quarterly earnings surprises documented earlier in Panel A can have important implications for returns around earnings announcements when it is not fully reflected in prices before the announcement. The negative average returns to zero earnings surprises and the asymmetry in returns to +1¢ (+0.29 percent) and –1¢ (–1.11 percent) surprises is consistent with recent literature which shows that in recent years the market anticipates pessimism in forecasts and treats earnings that exactly meet or only slightly beat expectations as bad news (Keung, Lin, and Shih, 2010). The

[15] Note that although the dispersion ranking may partly capture variation in forecast horizon, because earnings uncertainty tends to reduce as the earnings announcement approaches, forecast horizon does not affect the earnings surprises since all surprises are measured based on consensus expectations measured in the month before the earnings announcement.

implication of the market anticipating the average firm to beat rather than miss expectations is that a portfolio of firms such as Q4 in Panel A can have negative average announcement returns even though the median surprise is 0¢ and the ratio of negative to positive surprises is below 1.

In Panel B of Table 7, we examine the effect of controlling for the ex-post bias in forecasts on the relation between dispersion and returns. Because of the market partly anticipating pessimism in forecasts for the average firm and the strong negative price reactions associated with missing expectations, we focus on the effect controlling for ex-post optimism (or lack of pessimism) in consensus forecasts. Consistent with earnings surprises (forecast errors) moving prices, an indicator variable capturing ex-post optimism in quarterly forecasts is strongly negatively related to returns in announcement month *t*. Most importantly, after controlling for this effect, the significant negative relation between dispersion and returns disappears and even becomes positive and significant. Results are similar when we focus on announcement returns.[16]

Combined, the evidence provided by these tests points to ex-post bias in analyst forecasts as a correlated omitted variable in the relation between dispersion and returns. Dispersion is correlated with the sign of ex-post forecast errors, while ex-post forecast errors are strongly related to returns. These findings further support our prediction that errors in expectations of earnings are a feasible explanation for the return predictability of dispersion.

While the above tests were possible only with the benefit of hindsight (i.e., unlike the market, we know the ex-post errors in earnings expectations), we also examine the extent to which variation in prior analyst forecast errors can be used to explain the return predictability of dispersion. For this purpose, we introduce two variables capturing past forecast bias. First, $Opt\_consensus_{t-1}$ captures the fraction of the most recently announced eight quarterly earnings

[16] The positive relation turns to insignificantly different from zero when we also include an indicator variable for zero surprises and hence draw no conclusions from the coefficient switching from negative to positive.

for a firm for which the consensus forecast was optimistic ex-post.[17] Second, $Opt\_individual_{t-1}$ is a variable capturing the recent optimism bias of individual analysts in the consensus. Specifically, for each individual analyst we compute the frequency of ex-post optimism of all forecasts for all companies covered by the analyst over the past year. Then $Opt\_individual_{t-1}$ reflects the average of these individual analyst optimism frequencies among the analysts contributing to the current consensus. Both variables are constructed such that they reflect only information available prior to the measurement of dispersion in month *t-1*.

- INSERT TABLE 8 ABOUT HERE -

In Table 8, we first estimate monthly cross-sectional regressions of the natural logarithm of dispersion on the two variables capturing prior forecast optimism. Consistent with the predicted relation between forecast optimism (versus pessimism) and dispersion, as well as our results in Table 7, both variables are strongly positively and incrementally related to dispersion. Next, based on these estimations, we construct fitted and residual values of dispersion for each security-month observation in order to examine the extent to which the dispersion-return relation can be explained by prior analyst forecast optimism. These fitted and residual values of dispersion are transformed into monthly quintile ranks scaled between 0 and 1.

The second and third regression outcomes presented in Table 8 provide coefficients estimated without including control variables. For these estimations, we find that for both the full sample and the announcement month sample the relation between dispersion and returns runs through the prior forecast optimism variables. Specifically, the coefficients on residual dispersion are not or only marginally statistically significant, while the coefficients on fitted

[17] In these tests, we use the most recent consensus forecast measured before a quarterly earnings announcement based on analysts' latest forecasts to determine ex-post optimism in forecasts. This is in contrast to our earlier tests where the consensus forecast was measured in the same month as was forecast dispersion.

dispersion are highly significant and equal to 42 and 82 basis points for the full sample and announcement month sample, respectively.

Results are similar when we add control variables, with the only difference being that the coefficient on residual dispersion becomes statistically significant for the announcement month estimation. The bulk of return predictability, however, remains in the portion of dispersion that is explained by our prior forecast optimism variables. In the final column, we replace monthly returns with earnings announcement returns as dependent variable and find similar inferences. The return differential associated with fitted dispersion (-0.517) is more than double the return differential associated with residual dispersion (-0.211) and the difference in coefficients is significant at p=0.0153. Overall, we believe these results provide further evidence on the role of errors in earnings expectations in explaining the return predictability of dispersion. Furthermore, they provide evidence on analyst forecast bias as a channel through which these errors in earnings expectations enter the market.

4.5. Controlling for credit ratings

Our next set of tests is designed to contrast our work with Avramov, Chordia, Jostova, and Philipov (2009), who show that analyst dispersion is correlated with financial distress and that the return predictability of dispersion is explained by credit ratings. One major difference with our research is that we focus on the largest possible cross-section of firms, while their tests are necessarily confined to the subset of firms that have Standard and Poor's (S&P) credit ratings (hereafter, "rated firms"). In Table 9, we test whether the return predictability of dispersion in earnings announcement months extends to the subset of rated firms and whether they are robust to controlling for credit ratings and credit rating downgrades, which Avramov, Chordia, Jostova, and Philipov (2009) subsume the return predictability of dispersion in their sample, *unconditional* on earnings announcement timing.

- INSERT TABLE 9 ABOUT HERE -

We first estimate the coefficient on dispersion in earnings announcement months for the subset of rated firms and find a significant return differential of 89 basis points per month. To examine the robustness of this result to including variables capturing credit ratings and downgrades, we incrementally add a numerical variable for the credit rating in month *t-1* (CR_{t-1}) and an indicator variable capturing credit rating downgrades in month *t* ($Downgrade_t$).[18] When adding CR_{t-1} and both CR_{t-1} and $Downgrade_t$ to the regressions, respectively, return predictability remains strong and significant at 85 and 77 basis points. Similar inferences are drawn when monthly returns are replaced by earnings announcement returns as dependent variable.

Overall, while our tests and results support the findings of Avramov, Chordia, Jostova, and Philipov (2009) on the return predictability of credit ratings and the effect of controlling for credit ratings *unconditional* on earnings announcement timing, we conclude that our research captures a different and incremental effect.

4.6. Return predictability in sub-periods and alternative dispersion measures

In this section we test the sensitivity of our results on the return predictability of dispersion to using alternative measurements, as well as examine the persistence of this return predictability across different time periods. The latter might be particularly important in light of the finding in DMS that return predictability is much weaker in the second part of their sample period (1992-2000) and evidence in the recent literature suggesting that reductions in trading frictions have eliminated the return predictability of a wide range of factors (Chordia, Subrahmanyam, and

[18] CR_{t-1} is ranked from 1 to 22, where 1 reflects the best rating ("AAA") and 22 reflects the worst rating ("D") (Avramov, Chordia, Jostova, and Philipov, 2009).

Tong, 2014). Therefore, we split our 30-year sample period into three sub-periods of ten years each and examine the return predictability of dispersion in earnings announcement months in each of these periods. In Table 10, we separately examine predictability of monthly returns (Panel A) and announcement window returns (Panel B).

- INSERT TABLE 10 ABOUT HERE -

Results of the sub-period analyses suggest that the return predictability of dispersion is still visible in the most recent part of our sample (2003-2012). Monthly hedge returns of about 66 basis points are statistically significant and remain material even in the current era of relatively low trading costs. Similarly, the earnings announcement window return differential of 58 basis points is highly significant in the most recent part of our sample. In fact, comparing the three sub-periods, predictability of announcement returns based on dispersion is strongest in the latest period.

While we follow DMS and measure dispersion based on analysts' forecasts of annual earnings, our tests focus on the extent to which the information in subsequent quarterly earnings announcement returns is predictable. To better align the measurement with our tests, we alternatively compute dispersion based on the monthly standard deviation of forecasts of quarterly earnings. Results in Table 10 suggest that dispersion based on quarterly forecasts does not predict returns in the earlier years of our sample, but has strong predictive ability in the latest period. Hedge returns are about 89 (73) basis points based on monthly returns (announcement returns).

A concern with the use of dispersion based on earnings forecasts is that bias in forecasts may itself affect the observed standard deviation of analysts' forecasts. Therefore, we also examine the return predictability of dispersion based on the monthly standard deviation of analysts' annual sales forecasts. The advantage of this measurement is that it is based on the same forecast horizon as the earnings forecasts, suggesting a similar level of information available to analysts, and sales forecasts are less likely biased as a result of analysts' catering to management incentives to meet expectations. The disadvantage of using sales forecasts is that it is not widely available prior to 1998. Results in Table 10 indicate that results based on sales dispersion are similar to those based on earnings forecasts and are, in fact, slightly stronger than the baseline results.

Last, we examine measures of dispersion that are more likely to capture differences of opinion about equity value rather than short-term earnings expectations. If the return predictability of dispersion is driven by differences of opinion among investors about equity values rather than uncertainty about short-term earnings, it should be visible also for alternative measures of dispersion that are more closely linked to perceptions of equity values. For instance, differences of opinion about equity values could be measured more directly by the cross-analyst variation in long-term growth forecasts, stock recommendations, or target price estimates. Results in Table 10 for both the monthly returns (Panel A) and the announcement returns (Panel B) indicate that the return predictability of dispersion does not extend to these alternative measures of dispersion that are more closely linked to disagreement about equity values. Dispersion in long-term growth forecasts has a negative and significant coefficient for the 1993-2002 sub-period, but the coefficient switches to positive and significant for the 2003-2012 sub-period.

Overall, we conclude from these sensitivity analyses that the return predictability of dispersion in earnings announcement months is still statistically and economically significant even in the current era of relatively low trading frictions and it is visible only for measures of dispersion that are based on short-horizon (i.e., one year or less) forecasts of earnings or sales, rather than long-horizon forecasts that more closely reflect perceptions of total equity values.[19]

4.7. Partitioning by institutional ownership as proxy for short-sale constraints

Diether, Malloy and Scherbina (2002) attribute the return predictability of dispersion to market frictions that prevent pessimistic valuations to be reflected in price. Consistent with Miller (1977), they argue that the interaction of short-sale constraints and disagreement leads to overpricing and negative future returns when the overpricing is corrected.[20] Thus far, our findings are not inconsistent with Miller (1977) and in this section we therefore explore the role of short-sale constraints in explaining the return predictability of dispersion in earnings announcement months. Following prior literature, we measure short-sale constraints with the fraction of shares held by institutional investors (Nagel, 2005; Berkman, Dimitrov, Jain, Koch, and Tice, 2009; Hirshleifer, Teoh, and Yu, 2011) and interact institutional ownership (IO) with dispersion in our cross-sectional regressions.[21] To the extent that low (high) IO captures high (low) short-sale constraints, the Miller (1977) theory predicts that dispersion should be more (less) negatively related to future returns when IO is low (high).

We first split our sample into low and high raw IO by computing the median IO in each sample month. A security-month has low (high) IO if the fraction of shares held by institutional investors is below (above) the sample month median. Next, because of the strong correlation

[19] We also find no evidence suggesting that results are driven by the fact that the dispersion measure is deflated by the absolute value of the mean consensus forecast. Results are qualitatively similar when we use unscaled dispersion of earnings forecasts per share or when we include the (monthly quintile rank of the) inverse of the deflator in the cross-sectional regressions.
[20] The relevance of short-sale constraints in the context of Miller (1977) is also examined in Chen, Hong, and Stein (2002), Jones and Lamont (2002), Nagel (2005), Boehme, Danielsen, and Sorescu (2006), and Berkman, Dimitrov, Jain, Koch, and Tice (2009).
[21] Studies by D'Avolio (2002), Asquith, Pathak, and Ritter (2005), and Beneish, Lee, and Nichols (2014) validate the use of IO to capture short-sale constraints by showing that greater IO is associated with a greater supply of shares to borrow for short-selling.

between IO and firm size, we follow the procedure in Nagel (2005) and orthogonalize IO with respect to firm size. Specifically, for each sample month we run the following cross-sectional regression and designate the regression residuals as residual IO (see also Hirshleifer, Teoh, and Yu, 2011):

$$\ln\left(\frac{Inst_{it}}{1-Inst_{it}}\right) = \alpha + \beta_1 Size_{it} + \beta_2 Size_{it}^2 + \varepsilon_{it} \quad (1)$$

Security-months with negative (positive) residuals are categorized as low (high) residual IO. This procedure allows us to examine the effect of short-sale constraints as proxied for by IO, while keeping firm size fixed. Table 11 presents dispersion coefficients obtained from multivariate cross-sectional regressions where the sample is split into low and high IO. In Panel A, we use the raw level of IO, while in Panel B we refine the partitioning using residual IO following the procedure set out above. The analyses are run both for the full sample of data, as well as the three ten-year sub-periods used in the previous section. Differences in coefficients and significance levels are obtained from cross-sectional regressions where all right-hand-side variables are interacted with an indicator variable capturing high (residual) IO.

- INSERT TABLE 11 ABOUT HERE -

In contrast to the Miller (1977) interpretation of dispersion's return predictability, results in Table 11 suggest that the dispersion coefficient for the full sample (1983-2012) is not more negative in the presence of low IO (greater short-sale constraints). Rather, the coefficient on dispersion is more negative for the high IO split in Panel A and the difference becomes even stronger when focusing on residual IO in Panel B.

The sub-sample analyses provide different pictures. Consistent with Miller (1977), the dispersion coefficient is more negative for the low IO and residual IO splits for the early part of our sample (1983-1992) and for residual IO the difference in coefficients is significant (*p*-value:

0.026). This finding is consistent with Diether, Malloy and Scherbina (2002) and the interpretation that short-sale constraints lead to return predictability because stock prices reflect the valuations of optimistic investors. However, for the second and third sub-periods, we find the opposite patterns with dispersion predicting significant negative returns *only* in the high IO and residual IO splits. For the 1993-2002 (2003-2012) sub-period, the difference in coefficients between high and low residual IO reflects a large difference in hedge returns of 106 (101) basis points per month.

Overall, these results suggest that the return predictability of dispersion in earnings announcement months is not inconsistent with the Miller (1977) interpretation of DMS for the earlier part of our sample. For the largest part of our sample period, however, results on return predictability are not consistent with short-sale constraints leading to greater return predictability. In fact, for the later part of our sample, return predictability of dispersion is concentrated only in high residual IO firms. An explanation for the persistence of dispersion as return predictor in recent periods is that the pessimistic bias in analysts' forecasts is a phenomenon that initiated in the mid-1990s and still leads to the majority of U.S. firms beating rather than missing quarterly earnings expectations in recent years.[22] An explanation for why return predictability is stronger in firms with high residual IO is that analyst pessimism is more prominent in these firms. For instance, Matsumoto (2002) shows that managerial incentives to beat expectations are stronger in firms with greater (transient) IO.

[22] In our sample, we find the same asymmetry in the frequency distribution of quarterly earnings surprises as documented in prior research (e.g., Degeorge, Patel, and Zeckhauser, 1999; Brown and Caylor, 2005; Chan, Karceski, and Lakonishok, 2007). Excluding zero cent earnings surprises, 56.6 (43.4) percent of security-month observations are matched with a quarter in which earnings beat (miss) analyst expectations, suggesting systematic ex-post pessimism in consensus forecasts. During the 1983-1992 period this rate is 42.3 (57.7) percent, suggesting optimism in forecasts. During the 1993-2002 period the rate switches to 57.8 (42.2) percent, suggesting pessimism in forecasts, and during the 2003-2012 period the rate changes to 63.0 (37.0) percent. In each of the years after 1993, the rate of firms beating expectations exceeds the rate of firms missing expectations in our sample.

5. Conclusion

In this paper, we examine why stocks with high analyst dispersion tend to underperform, as documented by Diether, Malloy, and Scherbina (2002). Because analyst dispersion is known to capture uncertainty in earnings expectations, we focus on testing whether errors in earnings expectations are important for explaining the return predictability of dispersion. We show that the relation between dispersion and the extent of optimism versus pessimism in analyst earnings expectations explains the general return predictability of dispersion and causes the return predictability to be concentrated in months in which firms announce their quarterly earnings. Ex-post bias in analyst forecasts is strongly related to returns and return predictability disappears after controlling for this relation, suggesting that the ex-post bias in analyst forecasts has been an omitted variable in the relation between dispersion and returns.

Our findings add to the literature on potential explanations for the return predictability of dispersion and support the prediction that errors in expectations of earnings are an important determinant of the puzzling relation between dispersion and returns. Interestingly, we show that the return predictability of dispersion is concentrated in short windows around quarterly earnings announcements. This finding is in line with explanations for the return predictability of dispersion that are based on corrections to mispricing, but is harder to reconcile with explanations based on risk-return relations. Our findings are robust to controlling for earlier explanations such as short-sale constraints, credit ratings, information risk, and liquidity. Moreover, additional tests reveal that the return predictability of dispersion in earnings announcement months remains strong and significant even in recent years.

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Table 1. Sample selection

Security-month observations are obtained from the CRSP monthly stock file. Listing on NYSE, AMEX, or NASDAQ is identified by CRSP's historical exchange identifier (variable "EXCHCD" equals 1, 2, or 3). Security-month observations are merged with the I/B/E/S unadjusted historical summary file based on CUSIP. If a security changes CUSIP over time, CRSP's historical CUSIP code ("NCUSIP") is used as opposed to the header CUSIP. Earnings announcement (EA) months are months in which the firm announces quarterly earnings, identified based on COMPUSTAT and I/B/E/S using the procedure outlined in Dellavigna and Pollet (2009).

Panel A: Sample selection details

Description	Months	Securities
Security-month observations in CRSP 1983-2012	2,665,493	25,201
- Not listed on NYSE, AMEX, or NASDAQ	-105,680	-752
- Stock price below $5	-688,125	-2,589
- No analyst dispersion data on I/B/E/S	-842,214	-8,550
Full sample of security-month observations	1,029,474	13,310
Sample with earnings announcement data available	1,005,892	12,901
- Of which earnings announcement (EA) months:	331,167	[32.9%]
- Of which non-EA months:	674,725	[67.1%]

Table 2. Dispersion strategy returns

Dispersion is the monthly standard deviation of analysts' one-year-ahead EPS forecasts. Dispersion quintiles are formed monthly based on previous month dispersion observations. Returns are denoted in percent. Alphas are the intercepts obtained from calendar time portfolio regressions using the Fama and French (1993) three-factor model augmented with a momentum factor (Carhart 1997). Expected earnings announcement months are based on the actual earnings announcement date of the same quarter of the prior fiscal year. If the earnings announcement date of the same quarter of the prior fiscal year is unavailable, we extrapolate the earnings announcement date from the previous fiscal quarter. *BHR* (*BHAR*) is the buy-and-hold (size-adjusted) return around the quarterly earnings announcement date. Standard errors are corrected for autocorrelation based on Newey-West. ***, **, and * reflect statistical significance at the level of 0.01, 0.05, and 0.10, respectively.

Panel A: Dispersion strategy returns

Dispersion quintile	Mean raw return (Jan1983-Dec2012)	Mean raw return (Feb1983-Dec2000)	Mean raw return (Diether et al. 2002)	Mean *alpha* (Jan1983-Dec2012)
Q1 (low)	1.23	1.47	1.48	0.22
Q2	1.16	1.35	1.36	0.13
Q3	1.07	1.23	1.23	0.05
Q4	0.97	1.12	1.12	-0.07
Q5 (high)	0.62	0.67	0.69	-0.45
Q1-Q5	0.61	0.79	0.79	0.66
t-statistic	[2.85]***	[2.90]***	[2.88]***	[4.24]***

Panel B: The role of earnings announcements in explaining dispersion strategy payoffs

	EA months		Non-EA months		EA months	
Dispersion quintile	Actual EA $Return_t$	Exp. EA $Return_t$	Actual EA $Return_t$	Exp. EA $Return_t$	Actual EA $BHR_t[0,2]$	Actual EA $BHAR_t[0,2]$
Q1 (low)	1.68	1.64	0.93	0.99	0.41	0.28
Q2	1.66	1.55	0.86	0.93	0.34	0.24
Q3	1.28	1.34	0.86	0.88	0.15	0.03
Q4	1.19	1.11	0.77	0.82	0.06	-0.02
Q5 (high)	0.68	0.65	0.49	0.54	-0.15	-0.24
Q1-Q5	1.00	0.99	0.43	0.45	0.55	0.52
t-statistic	[4.04]***	[4.18]***	[1.99]**	[2.06]**	[6.64]***	[6.24]***

Table 3. Cross-sectional regressions

Results are obtained from Fama and MacBeth (1973) monthly cross-sectional regressions. $Return_t$ is the raw monthly stock return in month *t* obtained from CRSP in percent. $Dispersion_{t-1}$ is the monthly quintile rank based on dispersion in the previous month, scaled between 0 and 1. $Size_{t-1}$ is the natural logarithm of market capitalization in the previous month. $Book\text{-}to\text{-}market_{t-1}$ is the natural logarithm of the book-to-market ratio based on book value of equity ("CEQ") from the most recent fiscal year and market capitalization as of the previous month. $Return_{t-1}$ is the return in month *t-1*. $Return_{t-12,t-2}$ is the return for the company over the 11-month period prior to the previous month. $Leverage_{t-1}$ is calculated as the ratio of long-term debt to total assets. $Idiosyncratic\ volatility_{t-1}$ is the natural logarithm of the standard deviation of market model residuals over the past 60 months (minimum of 12 months required). $Illiquidity_{t-1}$ is the natural logarithm of the Amihud illiquidity measure in month *t-1*. $Institutional\ ownership_{t-1}$ equals the fraction of shares held by institutions at the end of the previous month. $Analyst\ following_{t-1}$ is the natural logarithm of the number of analysts contributing to the consensus forecast in month *t-1*. $Asset\ growth_{t-1}$ is the most recently available annual growth rate in total assets. All continuous variables (except $Return_t$) are winsorized to the 1st and 99th percentiles of their distributions. $\Delta QEARN_{t-1}$ is the most recently announced quarterly earnings minus quarterly earnings of the same quarter one year prior, scaled by lagged assets. Regression intercepts are included but not tabulated. Standard errors are corrected for autocorrelation based on Newey-West, t-statistics are presented in parentheses. ***, **, and * reflect statistical significance at the level of 0.01, 0.05, and 0.10, respectively.

Dependent variable:	$Return_t$	$Return_t$	$Return_t$	$Return_t$	$Return_t$
Sample:	All	Non-EA months Actual EA	EA months Actual EA	Non-EA months Expected EA	EA months Expected EA
$Dispersion_{t-1}$	-0.334	-0.172	-0.753	-0.177	-0.785
	(-2.91)***	(-1.45)	(-4.56)***	(-1.44)	(-4.89)***
$Size_{t-1}$	-0.120	-0.084	-0.260	-0.097	-0.185
	(-1.84)*	(-1.51)	(-2.19)**	(-1.69)*	(-1.61)
$Book\text{-}to\text{-}market_{t-1}$	0.110	0.077	0.222	0.084	0.188
	(1.71)*	(1.20)	(2.81)***	-1.240	(2.46)**
$Return_{t-1}$	-3.092	-2.820	-3.992	-3.005	-3.419
	(-6.57)***	(-6.26)***	(-5.46)***	(-6.76)***	(-5.12)***
$Return_{t-12,t-2}$	0.661	0.546	0.723	0.570	0.739
	(2.98)***	(2.61)***	(2.77)***	(2.73)***	(2.89)***
$Leverage_{t-1}$	-0.351	-0.494	-0.256	-0.468	-0.156
	(-1.49)	(-2.05)**	(-0.81)	(-1.93)*	(-0.54)
$Idiosyncratic\ volatility_{t-1}$	-0.222	-0.390	-0.242	-0.366	-0.143
	(-0.91)	(-1.62)	(-0.83)	(-1.50)	(-0.51)
$Illiquidity_{t-1}$	-0.026	-0.000	-0.116	-0.002	-0.054
	(-0.59)	(-0.00)	(-1.81)*	(-0.06)	(-0.83)
$Institutional\ ownership_{t-1}$	-0.645	-0.766	-0.452	-0.757	-0.397
	(-3.30)***	(-4.05)***	(-1.70)*	(-3.89)***	(-1.53)
$Analyst\ following_{t-1}$	0.170	0.111	0.391	0.129	0.392
	(3.10)***	(2.07)**	(3.21)***	(2.35)**	(3.34)***
$Asset\ growth_{t-1}$	-0.626	-0.553	-0.680	-0.517	-0.772
	(-7.57)***	(-6.19)***	(-5.21)***	(-5.50)***	(-6.00)***
$\Delta QEARN_{t-1}$	6.569	9.300	5.043	8.682	4.996
	(5.26)***	(7.26)***	(2.19)**	(6.63)***	(2.15)**
n (firm-months)	838,830	562,154	276,676	560,864	277,427
n (months)	360	360	360	360	360
Average adj. R^2	0.072	0.078	0.068	0.077	0.070

Table 4. Cross-sectional regressions for one-month, two-month, and three-month ahead returns conditional on earnings announcement timing

The table presents the coefficient on $Dispersion_{t-1}$ obtained from monthly cross-sectional regressions (as in Table 2) for sub-samples based on earnings announcement timing and for one-month (t), two-month ($t+1$), and three-month ($t+2$) ahead monthly return as the dependent variable. The coefficient on $Dispersion_{t-1}$ provides an estimate of the difference in average monthly returns between the highest and lowest dispersion quintile portfolios. Standard errors are corrected for autocorrelation based on Newey-West, t-statistics are presented in parentheses. ***, **, and * reflect statistical significance at the level of 0.01, 0.05, and 0.10, respectively.

Dependent variable:	$Return_t$	$Return_{t+1}$	$Return_{t+2}$
All	-0.334	-0.284	-0.280
	(-2.91)***	(-2.44)**	(-2.60)***
Earnings announcement in month t	-0.753	-0.234	-0.172
	(-4.56)***	(-1.69)*	(-1.21)
Earnings announcement in month $t+1$	-0.192	-0.680	-0.202
	(-1.45)	(-4.43)***	(-1.46)
Earnings announcement in month $t+2$	-0.261	-0.172	-0.432
	(-1.83)*	(-1.23)	(-3.20)***

Table 5. Daily return differentials around earnings announcements for high and low dispersion stocks

The table presents the average monthly difference in size-adjusted daily returns ("Return diff.") between securities with high dispersion in month *t-1* (quintile 5) and securities with low dispersion in month *t-1* (quintile 1) for the 21-trading day window around the quarterly earnings announcement date in earnings announcement months. Specifically, return differences reflect the returns of taking a long position in securities with high dispersion and taking a short position in securities with low dispersion. Standard errors are corrected for autocorrelation based on Newey-West, t-statistics are presented in parentheses. ***, **, and * reflect statistical significance at the level of 0.01, 0.05, and 0.10, respectively.

	Trading day relative to earnings announcement date						
	-10	**-9**	**-8**	**-7**	**-6**	**-5**	**-4**
Return diff.	-0.036	-0.033	0.006	-0.002	-0.015	-0.046	0.026
t-statistic	(-1.05)	(-0.79)	(0.16)	(-0.05)	(-0.52)	(-1.56)	(0.84)
	-3	**-2**	**-1**	**0**	**+1**	**+2**	**+3**
Return diff.	-0.032	-0.022	-0.056	-0.160	-0.255	-0.109	-0.054
t-statistic	(-1.05)	(-0.67)	(-1.81)*	(-3.81)***	(-4.33)***	(-3.17)***	(-1.81)*
	+4	**+5**	**+6**	**+7**	**+8**	**+9**	**+10**
Return diff.	-0.059	-0.015	0.005	-0.001	-0.016	0.011	-0.055
t-statistic	(-2.64)***	(-0.63)	(0.24)	(-0.05)	(-0.64)	(0.47)	(-1.90)*

Table 6. Adjusting monthly returns for the earnings announcement effect

All variables are defined as in Table 2 except: $EAReturn_t$ is the buy-and-hold return for the window [0,4] around the quarterly earnings announcement date in earnings announcement months; $AdjReturn_t$ is the monthly stock return ($Return_t$) adjusted for the earnings announcement return. Standard errors are corrected for autocorrelation based on Newey-West, t-statistics are presented in parentheses. ***, **, and * reflect statistical significance at the level of 0.01, 0.05, and 0.10, respectively.

Dependent variable:	$EAReturn_t$	$Return_t$	$AdjReturn_t$	$Return_t$	$AdjReturn_t$
Sample:	EA months	All	All	EA months	EA months
$Dispersion_{t-1}$	-0.438	-0.334	-0.202	-0.753	-0.294
	(-4.52)***	(-2.91)***	(-1.85)*	(-4.56)***	(-2.11)**
$Size_{t-1}$	-0.061	-0.120	-0.124	-0.260	-0.226
	(-0.94)	(-1.84)*	(-2.22)**	(-2.19)**	(-2.78)***
$Book\text{-}to\text{-}market_{t-1}$	0.146	0.110	0.068	0.222	0.063
	(3.45)***	(1.71)*	(1.18)	(2.81)***	(1.03)
$Return_{t-1}$	-0.874	-3.092	-2.841	-3.992	-3.328
	(-2.22)**	(-6.57)***	(-6.61)***	(-5.46)***	(-6.21)***
$Return_{t-12,t-2}$	0.158	0.661	0.656	0.723	0.544
	(1.52)	(2.98)***	(3.39)***	(2.77)***	(2.63)***
$Leverage_{t-1}$	-0.107	-0.351	-0.309	-0.256	-0.093
	(-0.57)	(-1.49)	(-1.48)	(-0.81)	(-0.40)
Idiosyncratic volatility$_{t-1}$	-0.582	-0.222	-0.062	-0.242	0.421
	(-4.85)***	(-0.91)	(-0.28)	(-0.83)	(1.81)*
$Illiquidity_{t-1}$	0.047	-0.026	-0.051	-0.116	-0.183
	(1.11)	(-0.59)	(-1.27)	(-1.81)*	(-3.75)***
Institutional ownership$_{t-1}$	0.088	-0.645	-0.688	-0.452	-0.537
	(0.57)	(-3.30)***	(-3.80)***	(-1.70)*	(-2.52)**
Analyst following$_{t-1}$	0.222	0.170	0.119	0.391	0.161
	(3.58)***	(3.10)***	(2.56)**	(3.21)***	(1.92)*
Asset growth$_{t-1}$	-0.220	-0.626	-0.498	-0.680	-0.447
	(-2.17)**	(-7.57)***	(-6.31)***	(-5.21)***	(-3.37)***
$\Delta QEARN_{t-1}$	-2.121	6.569	7.277	5.043	7.264
	(-1.35)	(5.26)***	(6.46)***	(2.19)**	(4.55)***
n (firm-months)	276,676	838,830	838,830	276,676	276,676
n (months)	360	360	360	360	360
Average adj. R^2	0.020	0.072	0.069	0.068	0.062

Table 7. Controlling for ex-post analyst forecast bias

In Panel A, ex-post quarterly earnings surprises (i.e., consensus analyst forecast errors) are determined by subtracting the consensus (mean) forecast outstanding in the security-month from the actual EPS reported. A negative (positive) earnings surprise indicates the consensus analyst forecast was too optimistic (pessimistic). In Panel B, all variables are defined as in Table 2 except: *Quarterly EPS optimism*$_t$ is an indicator variable set equal to 1 if the quarterly consensus EPS forecast in month *t-1* turns out to be optimistic ex-post, 0 otherwise. The sample starts in 1985 because of limited data availability for quarterly earnings surprises prior to 1985. Standard errors are corrected for autocorrelation based on Newey-West, t-statistics are presented in parentheses. ***, **, and * reflect statistical significance at the level of 0.01, 0.05, and 0.10, respectively.

Panel A: Ex-post earnings surprises and analyst optimism by dispersion quintile

Dispersion quintile	Median earnings surprise in $¢ per share	Ratio of negative (opt.) to positive (pess.) earnings surprise frequency	Earnings surprise	Mean $BHR_t[0,2]$
Q1 (low)	1.00	0.528	≤ –2¢	-1.83
Q2	1.00	0.621	–1¢	-1.11
Q3	1.00	0.732	0¢	-0.59
Q4	0.00	0.900	+1¢	0.29
Q5 (high)	-1.00	1.211	≥ +2¢	2.19

Panel B: Cross-sectional regressions controlling for ex-post forecast bias

Dependent variable:	$Return_t$	$BHR_t[0,2]$
Sample:	EA months	EA months
$Dispersion_{t-1}$	0.388	0.303
	(2.24)**	(3.30)***
Quarterly EPS optimism$_t$	-5.875	-3.560
	(-30.87)***	(-17.03)***
$Size_{t-1}$	-0.397	-0.060
	(-3.31)***	(-1.07)
Book-to-market$_{t-1}$	0.328	0.128
	(3.57)***	(2.86)***
$Return_{t-1}$	-6.976	-2.234
	(-9.71)***	(-6.50)***
$Return_{t-12,t-2}$	-0.089	-0.173
	(-0.30)	(-1.72)*
$Leverage_{t-1}$	-0.028	0.075
	(-0.08)	(0.44)
Idiosyncratic volatility$_{t-1}$	-0.324	-0.547
	(-0.98)	(-4.80)***
$Illiquidity_{t-1}$	-0.245	0.037
	(-3.76)***	(0.92)
Institutional ownership$_{t-1}$	-0.977	-0.195
	(-3.51)***	(-1.50)
Analyst following$_{t-1}$	0.134	0.045
	(1.00)	(0.72)
Asset growth$_{t-1}$	-0.569	-0.188
	(-4.48)***	(-1.94)*
$\Delta QEARN_{t-1}$	-0.237	-3.520
	(-0.10)	(-2.51)**
n (firm-months)	0.117	0.063
n (months)	336	336
Average adj. R^2	0.117	0.063

Table 8. Dispersion and prior forecast bias

All variables are defined as in Table 2 except: $Opt\_consensus_{t-1}$ is the fraction of the most recent eight quarterly earnings for which the consensus analyst forecast was optimistic (negative ex-post forecast error); $Opt\_individual_{t-1}$ is the security-month average of past forecast optimism measured by individual analyst, where past forecast optimism for an analyst is measured as the fraction of all forecasts made by the analyst (including all forecasts for other securities) over the preceding year that were optimistic (negative ex-post forecast error); *Fitted dispersion* $rank_{t-1}$ (*Residual dispersion* $rank_{t-1}$) is the monthly quintile rank scaled between 0 and 1 of the fitted value (residual) obtained from the first-stage regression of the natural log of $Dispersion_{t-1}$ on $Opt\_consensus_{t-1}$ and $Opt\_individual_{t-1}$. Analyses are based on the time period 1986-2012 because of limited earnings announcement and actual EPS data in the early 1980s. Standard errors are corrected for autocorrelation based on Newey-West, t-statistics are presented in parentheses. ***, **, and * reflect statistical significance at the level of 0.01, 0.05, and 0.10, respectively.

Dependent variable:	ln($Disp_{t-1}$)	$Return_t$	$Return_t$	$Return_t$	$Return_t$	BHR_t[0,2]
Sample:			EA months		EA months	EA months
$Opt\_consensus_{t-1}$	1.457					
	(40.56)***					
$Opt\_individual_{t-1}$	1.257					
	(11.98)***					
Fitted dispersion $rank_{t-1}$		-0.418	-0.818	-0.331	-0.769	-0.517
		(-3.75)***	(-5.41)***	(-3.28)***	(-5.45)***	(-5.91)***
Residual dispersion $rank_{t-1}$		-0.235	-0.416	-0.169	-0.486	-0.211
		(-1.05)	(-1.77)*	(-1.70)*	(-3.36)***	(-2.35)**
$Size_{t-1}$				-0.161	-0.345	-0.046
				(-2.22)**	(-2.61)***	(-0.74)
$Book\text{-}to\text{-}market_{t-1}$				0.110	0.256	0.093
				(1.42)	(2.65)***	(1.91)*
$Return_{t-1}$				-2.766	-3.691	-0.433
				(-5.75)***	(-4.77)***	(-1.16)
$Return_{t-12,t-2}$				0.638	0.692	0.309
				(2.64)***	(2.38)**	(3.04)***
$Leverage_{t-1}$				-0.302	-0.221	-0.054
				(-1.17)	(-0.63)	(-0.31)
Idiosyncratic $volatility_{t-1}$				-0.180	-0.225	-0.490
				(-0.68)	(-0.68)	(-3.91)***
$Illiquidity_{t-1}$				-0.058	-0.173	0.060
				(-1.23)	(-2.43)**	(1.33)
Institutional $ownership_{t-1}$				-0.763	-0.713	0.044
				(-3.88)***	(-2.54)**	(0.30)
Analyst $following_{t-1}$				0.200	0.404	0.190
				(3.39)***	(2.87)***	(2.95)***
Asset $growth_{t-1}$				-0.575	-0.583	-0.233
				(-6.84)***	(-4.33)***	(-2.18)**
$\Delta QEARN_{t-1}$				4.870	1.262	-2.721
				(4.09)***	(0.54)	(-1.86)*
n (firm-months)	725,895	240,652	725,895	725,895	240,652	725,895
n (months)	324	324	324	324	324	324
Average adj. R^2	0.074	0.068	0.097	0.012	0.012	0.074

Table 9. Controlling for credit ratings

Analyses are based on the time period 1986-2012 for which credit rating data are available in Compustat (S&P domestic long-term issuer credit rating "SPLTICRM"). CR_{t-1} is credit rating scaled between 1 and 22, where lower values indicate more favorable ratings. $Downgrade_t$ is an indicator variable equal to 1 if security-month t is associated with a credit rating downgrade ($CR_t > CR_{t-1}$), 0 otherwise. All other variables are defined as in Table 2. Standard errors are corrected for autocorrelation based on Newey-West, t-statistics are presented in parentheses. ***, **, and * reflect statistical significance at the level of 0.01, 0.05, and 0.10, respectively.

Dependent variable:	$Return_t$	$Return_t$	$Return_t$	$BHR_t[0,2]$
Sample:	Rated EA months	Rated EA months	Rated EA months	Rated EA months
$Dispersion_{t-1}$	-0.894	-0.852	-0.777	-0.380
	(-3.71)***	(-3.70)***	(-3.32)***	(-2.92)***
CR_{t-1}		-0.119	-0.121	-0.049
		(-3.05)***	(-3.06)***	(-2.05)**
$Downgrade_t$			-4.529	-2.713
			(-7.06)***	(-6.94)***
$Size_{t-1}$	-0.297	-0.406	-0.414	-0.096
	(-1.71)*	(-2.26)**	(-2.26)**	(-0.97)
$Book\text{-}to\text{-}market_{t-1}$	-0.023	-0.092	-0.049	-0.045
	(-0.26)	(-0.91)	(-0.49)	(-0.79)
$Return_{t-1}$	-2.450	-2.330	-2.546	-0.780
	(-2.18)**	(-2.09)**	(-2.28)**	(-1.37)
$Return_{t-12,t-2}$	0.366	0.385	0.224	0.092
	(0.92)	(0.99)	(0.58)	(0.55)
$Leverage_{t-1}$	0.055	0.267	0.385	-0.068
	(0.12)	(0.56)	(0.81)	(-0.20)
$Idiosyncratic\ volatility_{t-1}$	0.133	0.603	0.659	-0.173
	(0.31)	(1.42)	(1.54)	(-0.85)
$Illiquidity_{t-1}$	-0.108	-0.097	-0.118	0.034
	(-0.92)	(-0.83)	(-0.98)	(0.47)
$Institutional\ ownership_{t-1}$	0.233	0.296	0.382	0.416
	(0.57)	(0.72)	(0.92)	(2.01)**
$Analyst\ following_{t-1}$	0.235	0.226	0.211	0.106
	(1.33)	(1.31)	(1.18)	(1.03)
$Asset\ growth_{t-1}$	-0.552	-0.463	-0.448	-0.110
	(-1.74)*	(-1.45)	(-1.39)	(-0.48)
$\Delta QEARN_{t-1}$	1.753	2.204	2.490	-4.817
	(0.36)	(0.43)	(0.49)	(-1.68)*
n (firm-months)	103,597	103,597	103,597	102,891
n (months)	324	324	324	324
Average adj. R^2	0.095	0.096	0.107	0.040

Table 10. Return predictability for sub-periods and alternative dispersion measures

The table presents the coefficient on $Dispersion_{t-1}$ obtained from monthly cross-sectional regressions (as in Table 2) for earnings announcement months in three sub-periods of ten years each, where $Dispersion_{t-1}$ is measured in different ways. In Panel A, the dependent variable is the monthly stock return in earnings announcement months. In Panel B, the dependent variable is the short-window earnings announcement return. "Annual EPS dispersion" is the dispersion measure as used in previous tests. "Quarterly EPS dispersion" is the monthly I/B/E/S consensus standard deviation of quarterly earnings per share forecasts (I/B/E/S fiscal period indicator "6") from the I/B/E/S unadjusted historical summary file, scaled by the absolute value of the mean forecast and available as of 1985. "Annual sales forecast dispersion" is the monthly I/B/E/S consensus standard deviation of sales forecasts, scaled by the mean forecast and available as of 1998. "Long-term growth rate dispersion" is the monthly I/B/E/S consensus standard deviation of analysts' long-term percentage earnings growth forecasts (I/B/E/S fiscal period indicator "0"), scaled by the mean forecast. "Recommendation dispersion" is the monthly I/B/E/S consensus standard deviation of stock recommendations outstanding, available as of 1994. "Target price dispersion" is the monthly I/B/E/S consensus standard deviation of target price estimates, scaled by the mean target price estimate and available as of 2003. Standard errors are corrected for autocorrelation based on Newey-West, t-statistics are presented in parentheses. ***, **, and * reflect statistical significance at the level of 0.01, 0.05, and 0.10, respectively.

Panel A: Dispersion coefficients from cross-sectional regressions of monthly stock returns

Sub-period:	1983-1992	1993-2002	2003-2012
Short-horizon dispersion			
Annual EPS dispersion	-0.974	-0.628	-0.658
	(-3.55)***	(-2.12)**	(-2.51)**
Quarterly EPS dispersion	-0.435	-0.549	-0.889
	(-1.41)	(-1.86)*	(-3.71)***
Annual sales forecast dispersion	N/A	-0.793	-0.734
	N/A	(-1.51)	(-2.70)***
Long-horizon and price dispersion			
Long-term growth rate dispersion	0.068	-0.759	0.437
	(0.31)	(-2.33)**	(2.28)**
Recommendation dispersion	N/A	0.019	0.075
	N/A	(0.08)	(0.46)
Target price dispersion	N/A	N/A	-0.132
	N/A	N/A	(-0.55)

Panel B: Dispersion coefficients from cross-sectional regressions of earnings announcement returns

Sub-period:	1983-1992	1993-2002	2003-2012
Short-horizon dispersion			
Annual EPS dispersion	-0.093	-0.365	-0.582
	(-0.97)	(-2.62)***	(-3.26)***
Quarterly EPS dispersion	-0.145	-0.134	-0.727
	(-1.09)	(-0.99)	(-4.45)***
Annual sales forecast dispersion	N/A	-0.726	-0.619
	N/A	(-2.42)**	(-3.99)***
Long-horizon and price dispersion			
Long-term growth rate dispersion	0.059	-0.157	-0.137
	(0.41)	(-0.76)	(-0.88)
Recommendation dispersion	N/A	0.011	-0.139
	N/A	(0.08)	(-1.13)
Target price dispersion	N/A	N/A	-0.152
	N/A	N/A	(-1.02)

Table 11. Conditioning on institutional ownership levels

The table presents the coefficient on $Dispersion_{t-1}$ obtained from monthly cross-sectional regressions (as in Table 2) for earnings announcement months split by low and high institutional ownership. Results are presented for the full sample as well as for three sub-periods of ten years each. In Panel A, low and high institutional ownership (IO) are determined by whether the institutional ownership in the security-month is below and above the monthly sample median level of IO, respectively. In Panel B, we follow Nagel (2005) and orthogonalize IO with respect to firm size by running monthly regressions of $\ln((Inst_{t-1})/(1-Inst_{t-1}))$ on $Size_{t-1}$ and $Size_{t-1}$ squared. Positive (negative) residuals indicate high (low) residual IO. Standard errors are corrected for autocorrelation based on Newey-West, t-statistics are presented in parentheses. ***, **, and * reflect statistical significance at the level of 0.01, 0.05, and 0.10, respectively.

Panel A: Dispersion coefficients for low versus high institutional ownership stocks

Sub-period:	1983-2012	1983-1992	1993-2002	2003-2012
Low IO	-0.685	-1.120	-0.385	-0.550
	(-3.11)***	(-3.60)***	(-0.83)	(-1.64)
High IO	-0.840	-0.733	-1.111	-0.677
	(-4.07)***	(-2.23)**	(-2.94)***	(-1.91)*
Difference	-0.156	0.387	-0.727	-0.127
	(-0.61)	(1.39)	(-1.36)	(-0.28)

Panel B: Dispersion coefficients for low versus high residual institutional ownership stocks

Sub-period:	1983-2012	1983-1992	1993-2002	2003-2012
Low residual IO	-0.501	-1.315	-0.023	-0.163
	(-2.22)**	(-4.08)***	(-0.05)	(-0.51)
High residual IO	-0.961	-0.630	-1.078	-1.175
	(-4.83)***	(-2.03)**	(-2.72)***	(-3.83)***
Difference	-0.461	0.685	-1.055	-1.012
	(-1.73)*	(2.26)**	(-1.81)*	(-3.17)***

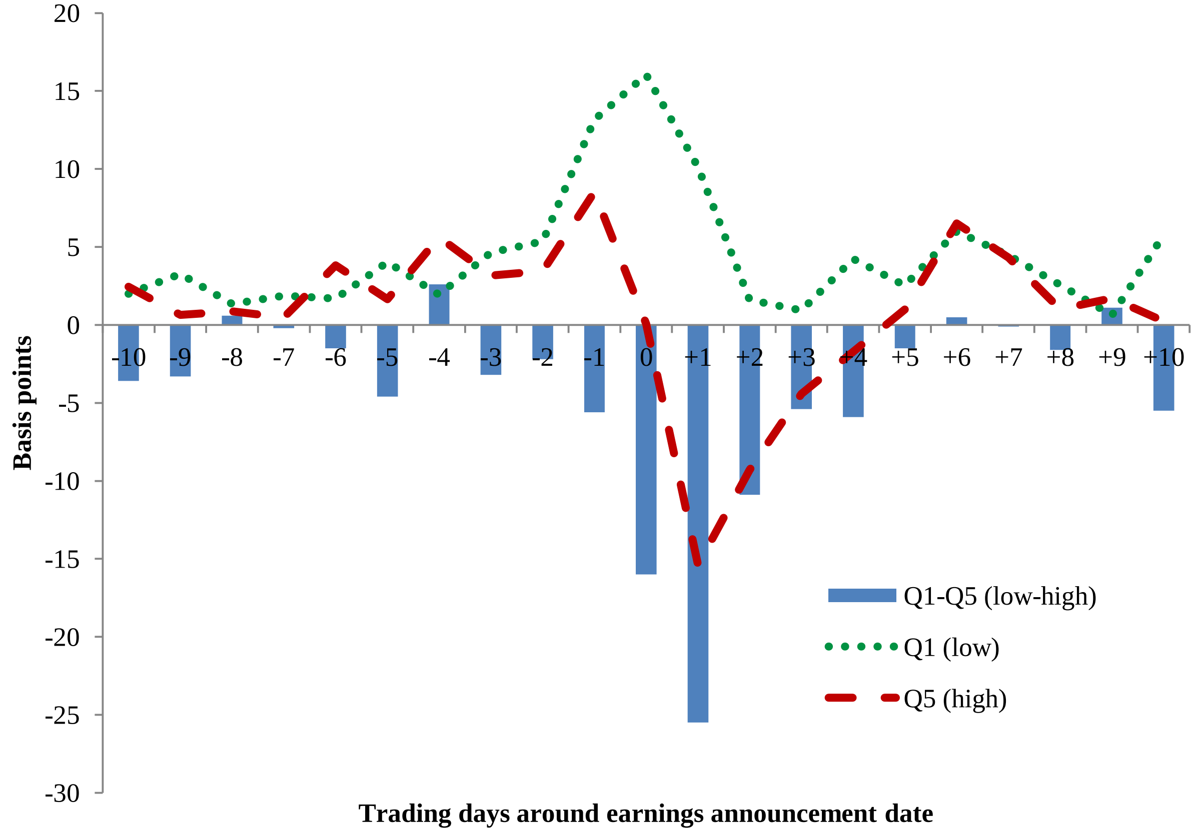

Figure 1. Daily return differentials around earnings announcements for high and low dispersion stocks. The figure presents differences in average size-adjusted daily returns between securities with high dispersion in month *t-1* (Q5) and securities with low dispersion in month *t-1* (Q1) for the 21-trading day window around the quarterly earnings announcement date in earnings announcement months. See Table 5 for statistical significance of the difference in daily returns between low and high dispersion stocks (Q1-Q5).