Earnings Announcement Idiosyncratic Volatility and the Cross-section of Stock Returns

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Abstract

We document a significant positive relation between earnings announcement idiosyncratic volatility and stock returns in the 10-day window before future earnings announcements. The average of risk-adjusted return differences between stocks with the highest earnings announcement idiosyncratic volatility and stocks with the lowest earnings announcement idiosyncratic volatility exceeds 100 basis points in the 10 days leading up to the earnings announcements. The pricing of earnings announcement idiosyncratic volatility is asymmetric where only idiosyncratic volatility based on positive stock returns is priced. This is consistent with the argument that investors have a preference for stocks with large payoffs during earnings announcements.

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1. Introduction

Quarterly earnings announcements introduce significant idiosyncratic volatility to stock returns over a short period of time and repeatedly four times over the year. On the one hand, idiosyncratic volatility around earnings announcements should be irrelevant to investors because idiosyncratic volatility in general is assumed to be diversifiable in a traditional asset pricing framework and hence expected stock returns are only determined by the covariance of stock returns with market returns (Sharpe, 1964; Lintner, 1965; and Mossin, 1966). On the other hand, because earnings announcement dates are predictable and idiosyncratic volatility around earnings announcements may be difficult to diversify, investors demand a risk premium for holding stocks in the period around earnings announcements (Ball and Kothari, 1991; Cohen *et al*., 2007; and Barber *et al*., 2013).

Motivated by the literature on abnormal stock returns surrounding predictable earnings announcements, we examine the role of idiosyncratic volatility around past earnings announcements in the cross-sectional pricing of stock returns from January 1980 through December 2011. We mainly focus on stock returns in the period immediately before earnings announcements because investors face pending significant idiosyncratic volatility that will be triggered by earnings announcements. Specifically, every year, we compute the average 3-day excess stock return volatility from all earnings announcements in the prior calendar year and use this measure as a proxy for earnings announcement idiosyncratic volatility. We then sort stocks into decile portfolios every quarter based on this earnings announcement idiosyncratic volatility measure and examine abnormal stock returns in the ten days leading to earnings announcements. We find that excess stock returns from portfolios with the highest earnings announcement idiosyncratic volatility are on average 112 basis points higher than those from portfolios with the lowest earnings announcement idiosyncratic volatility over the 10-day period leading up to earnings announcements. The strategy of going long the top earnings announcement idiosyncratic volatility portfolios and short the bottom earnings announcement idiosyncratic volatility portfolios generates positive hedge returns in 81 out of 128 quarters over the 32-year sample period.

We note that stocks with high earnings announcement idiosyncratic volatility are not representative of the overall market. They tend to be smaller in size, have higher idiosyncratic volatility, have higher returns in the 6 months leading up to earnings announcements, have a positive earnings surprise from the prior quarter, and tend to be illiquid stocks. We conduct a battery of tests using bivariate portfolio sorts and cross-sectional regression analyses at the firm level with a comprehensive list of control variables to ensure that these firm characteristics do not drive the anomalous return differences between high and low earnings announcement idiosyncratic volatility stocks in the pre-earnings announcement period. We document that the hedge pre-earnings announcement stock returns between high and low earnings announcement idiosyncratic volatility stocks are robust to sorts on size, book-to-market ratio, momentum, beta, idiosyncratic volatility, Amihud illiquidity measure, and prior-quarter standardized unexpected earnings. Results from multivariate regression analyses corroborate this robustness.

We also use expected earnings announcement dates as determined using the procedure in Cohen *et al*. (2007) to compute abnormal stock returns in the period leading to expected earnings announcements. We document the difference in excess returns of the extreme earnings announcement idiosyncratic volatility portfolios to be 101 basis points over the 10-day period leading up to expected earnings announcements. We note that the return differences between extreme earnings announcement idiosyncratic volatility portfolios are not affected by alternative risk-adjustment procedures or alternative portfolio weightings. Finally, to ensure that our results are not sensitive to the period over which earnings announcement idiosyncratic volatility is measured, we calculate earnings announcement idiosyncratic volatility using several multi-quarter periods (from 1 rolling quarter up to 16 rolling quarters in the past). We document that return differences between the two extreme earnings announcement idiosyncratic volatility portfolios range between 69 to 129 basis points in the 10 days leading up to earnings announcements. These return differences are statistically significant at all standard significance levels and robust during the 32-year period in our study.

We document that earnings announcement idiosyncratic volatility from prior earnings announcements strongly predicts idiosyncratic volatility of stock returns surrounding current earnings announcements. Using portfolio sorts, we find that stocks in the top decile of earnings announcement idiosyncratic volatility on average exhibit more than 5% return volatility in the 3-day window surrounding current earnings announcements than stocks in the bottom decile of earnings announcement idiosyncratic volatility. In cross-sectional regressions with several control variables, idiosyncratic volatility from past earnings announcements is the strongest predictor of idiosyncratic volatility in current earnings announcements. We also show that the earnings announcement idiosyncratic volatility premium is strictly a pre-earnings announcement phenomenon as it is not present during the earnings announcement period and reverses slightly in the post-earnings announcement period.

Finally, when we compute earnings announcement idiosyncratic volatility using positive stock returns versus using negative stock returns from past earnings announcements, we find that the pricing of earnings announcement idiosyncratic volatility is highly asymmetric. While there is a robust positive relation between earnings announcement idiosyncratic volatility computed based on past positive stock return responses to earnings and abnormal stocks returns in the 10-day period leading up to future earnings announcements, we do not find such a relation for earnings announcement idiosyncratic volatility computed based on past negative stock return responses to earnings announcements and abnormal stock returns in the pre-earnings announcement period.

We interpret our findings as investors demanding higher returns for stocks that have high earnings announcement idiosyncratic volatility in the period immediately before earnings announcements because earnings announcement idiosyncratic volatility is approaching. This interpretation is consistent with the argument that investors may not be able to diversify a firm's idiosyncratic risk in certain circumstances, here during earnings announcements, and hence demand a premium for holding stocks with pending high idiosyncratic volatility.[1] There is also a slightly different interpretation of our findings that investors exhibit a preference for favourable earnings announcement idiosyncratic volatility in the pre-earnings announcement period because investors only require higher returns for earnings announcement idiosyncratic volatility based on positive stock returns, but not for earnings announcement idiosyncratic volatility based on negative stock returns. Findings in our study significantly contribute to three separate strands of the literature, namely the earnings announcement risk premium, the anomaly of idiosyncratic volatility, and the pricing of assets with lottery-like payoffs.

Several earlier studies have documented a significant risk premium around predictable news announcements such as earnings announcements (Penman, 1984; Kalay and Lowenstein, 1985; Chari, Jagannathan and Ofer, 1988). Controlling for the increase in systematic risk during the earnings announcement window, Ball and Kothari (1991) still document robust higher stock returns during the earnings announcement period than during the non-earnings announcement period.[2] Using expected earnings announcement dates to avoid a selection bias

[1] Several studies such as Odean (1999), Mitton and Vorkink (2007), and Goetzmann and Kumar (2008) show that investors are not well-diversified. Frazzini and Lamont (2007) and Cohen *et al*. (2007) argue that idiosyncratic volatility surrounding earnings announcements is not diversifiable and this may explain why investors demand a premium for earnings announcements.
[2] Barber *et al*. (2013) conduct an international study of the earnings announcement premium and document that this premium is a resilient phenomenon across the globe.

arising from the timing of actual earnings announcement dates, Cohen *et al*. (2007) also report significantly higher stock returns during the earnings announcement period than during the non-earnings announcement period, albeit the magnitude of this premium is lower than that reported in earlier studies which used actual earnings announcement dates.[3] These authors conclude that the increased returns on earnings announcement dates are related to earnings announcement risk and this risk is non-diversifiable.

Findings in this study add three significant contributions to the literature on the earnings announcement premium. First, we document a new earnings announcement risk premium which is only present in the pre-earnings announcement period when idiosyncratic volatility from earnings announcements is approaching. We do not find this earnings announcement idiosyncratic volatility risk premium during the earnings announcement period. This contrasts markedly and is different from the risk premium observed in a short window surrounding earnings announcements as previously documented in the literature. Second, we only find a pre-earnings announcement risk premium for stocks with high earnings announcement idiosyncratic volatility and find no pre-earnings announcement risk premium for stocks with low earnings announcement idiosyncratic volatility. Hence, the pre-earnings announcement premium is not homogenous across stocks but increases in earnings announcement idiosyncratic volatility. The extant literature generally regards earnings announcements as one short period when diversification is difficult, leading to an earnings announcement risk premium. Our study shows that investors can identify high versus low earnings announcement idiosyncratic volatility stocks and so require a corresponding risk premium. Third, we find that

[3] Because firms with good news are more likely to announce early (Chambers and Penman, 1984), the return on the actual earnings announcement dates for early announcing firms reflects both the announcement premium and good news. However, the return on the actual earnings announcement dates for late announcing firms only partially reflects bad news as some of this bad news was anticipated on the expected date when those firms miss announcing. Cohen *et al*. (2007) argue that the combined returns for both early and late announcers based on actual earnings announcement dates upwardly bias the earnings announcement premium.

stock return idiosyncratic volatility from past earnings announcements strongly predicts future earnings announcement idiosyncratic volatility. We conclude that there is an earnings announcement idiosyncratic volatility momentum where high (low) past-earnings announcement idiosyncratic volatility stocks continue to exhibit high (low) future earnings announcement idiosyncratic volatility.

Second, our study contributes to the strand of literature on the pricing of idiosyncratic volatility in the cross-section of stock returns. Studies by Ang *et al*. (2006, 2009) present an anomalous finding that stocks with high idiosyncratic volatility have lower subsequent stock returns. This poses a serious challenge to the standard asset pricing literature as idiosyncratic volatility is often thought to be diversifiable and hence should not entail a risk-premium. Jiang *et al*. (2009) show that low idiosyncratic volatility stocks tend to have better future operating performance and a positive earnings surprise compared to high idiosyncratic volatility stocks. However, the literature has been silent on providing a fundamental explanation of why low idiosyncratic volatility stocks generate higher future returns. In this study, we show that the negative relation between idiosyncratic volatility and stock returns as suggested in Ang *et al*. (2006, 2009) and Jiang *et al*. (2009) does not hold in the period immediately before earnings announcements. In fact, we document a robust reverse idiosyncratic volatility effect: stocks with high idiosyncratic volatility, especially idiosyncratic volatility measured surrounding past earnings announcements, exhibit higher returns in the pre-earnings announcement period.

In a cross-sectional regression context, both general idiosyncratic volatility and earnings announcement idiosyncratic volatility are positively and significantly related to pre-earnings announcement stock returns. These results indicate that investors demand higher returns for stocks with high idiosyncratic volatility risk in a period when idiosyncratic volatility is most likely eminent and when diversification is difficult. Thus, the idiosyncratic volatility anomaly is not present, but in fact reversed in the period when idiosyncratic volatility risk matters most. In addition, general idiosyncratic volatility and earnings announcement idiosyncratic volatility risk do not subsume each other and demand distinct risk premia on stock returns in the pre-earnings announcement period.

Finally, our study makes a contribution to an emerging literature which shows a preference among investors for assets with lottery-like payoffs, i.e., assets that have some probability of large payoffs. For example, Kumar (2009) shows that certain individual investors exhibit preference for lottery-type stocks that are often defined as low-priced stocks with high idiosyncratic volatility and high idiosyncratic skewness. A recent study by Bali *et al*. (2011) document that investors demand for stocks that have the highest maximum daily return in the prior trading month. These authors suggest investors prefer lottery-type stocks and so are poorly diversified, leading to predictable future returns for this type of stocks. In the context of earnings announcements, we find that investors have a preference for stocks with a probability of large positive payoffs when earnings are released, hence demanding higher returns for these stocks in the period leading up to earnings announcements. This is evidenced by the fact that the earnings announcement idiosyncratic volatility premium is most pronounced when stocks exhibit large upside idiosyncratic volatility surrounding past earnings announcements and less so when stocks exhibit large downside idiosyncratic volatility. Hence, it is possible that the earnings announcement idiosyncratic volatility premium comes about because investors have a preference for favourable earnings announcement idiosyncratic volatility. However, we do not find evidence that stocks with unfavourable earnings volatility are shunned by investors.

The remainder of the study is organized as follows. In section 2, we discuss data and methodology in constructing earnings announcement idiosyncratic volatility and other control variables. In section 3, we present univariate portfolio analysis, bivariate portfolio analysis, and multi-variate regression analysis at the firm level. In section 4, we provide findings from various robustness analyses. Section 5 provides a conclusion and discusses implications for future research.

2. Earnings Announcement Idiosyncratic Volatility

2.1 Data

We use stock return data from CRSP for all stocks over the period from 1980 to 2011. We use Compustat to determine the actual quarterly earnings announcement dates. For each quarter in a calendar year, we compute the absolute value of the 3-day excess stock return around the earnings announcement. Excess stock return is defined as the difference between a stock return and the CRSP value-weighted index return over the same period. Stocks with a high absolute value of the 3-day excess stock return are deemed to have high earnings announcement idiosyncratic volatility. We then average this earnings announcement idiosyncratic volatility across all earnings announcements in calendar year *y*-1 and denote this measure as *EA_IVOL*. We repeat this procedure on a yearly basis. We use a portfolio sort based on *EA_IVOL* to examine stock returns in the period leading up to earnings announcements in year *y*.

We use several variables to control for risk and other patterns in stock returns. We use market value of common stock (*SIZE*) and book-to-market ratio (*BM*) to control for the size effect and book-to-market effect (Fama and French, 1992; Lakonishok *et al*., 1994). *SIZE* and *BM* are computed at the end of year *y*-1. We compute momentum (*MOM*) as the stock return in the 6-month period ending on day *t*-11 before earnings announcements. We also compute stock beta (*BETA*) as the factor loading on the market risk premium from the four-factor model estimated over the 200 trading days ending on day *t*-11 before earnings announcements. We compute idiosyncratic volatility risk (*IVOL*) as the standard deviation of residual returns from the four-factor model that estimates beta. We follow Amihud (2002) to compute the illiquidity measure (*ILLIQ*) as the ratio of daily absolute stock returns to dollar trading volume over the 200 trading days ending on day *t*-11 before earnings announcements. Finally, we compute standardized unexpected earnings from the prior quarter (SUE_{q-1}) as seasonally adjusted quarterly earnings per share divided by the price per share measured at the start of the prior fiscal quarter to control for post-earnings announcement drift (Bernard and Thomas, 1989, 1990).

2.2 Descriptive Statistics

Panel A of Table 1 presents summary statistics for the 487,946 firm-quarters in the overall sample over the period 1980-2011. The mean (median) value for 3-day absolute excess stock return around earnings announcements (*EA_IVOL*) is 5.71% (4.52%). This highlights the phenomenon that stock returns are highly volatile in the short window around earnings announcements. The mean value for *EXRET[-10,-1]* is 0.0054, indicating a positive premium in stock returns in the 10-day period leading up to earnings announcements.[4] The mean (median) market value of firms in the sample is 1.86 billion dollars (180 million dollars). The mean book-to-market ratio is 0.654. In the 6-month period leading up to earnings announcements, the average stock return (*MOM*) is 7.7%. The average beta (*BETA*) is 0.895 and the average idiosyncratic volatility (*IVOL*) is 3.3%. The average Amihud illiquidity measure is 1.37 and the average standardized unexpected earnings from the prior quarter (SUE_{q-1}) is 0.001.

[4] This mean excess return is significant at the 1 percent level, confirming significant abnormal stock return in the period before earnings announcements.

{INSERT TABLE 1 HERE}

Panel B of Table 1 presents mean values for variables stratified by deciles of *EA_IVOL*. There is a striking difference in earnings announcement idiosyncratic volatility between the extreme *EA_IVOL* portfolios. On average, the 3-day idiosyncratic volatility surrounding past earnings announcements based on excess return is 1.11% for the bottom *EA_IVOL* portfolio and 15.6% for the top *EA_IVOL* portfolio, representing a difference of 14.49% in idiosyncratic volatility. The average earnings announcement idiosyncratic volatility of the top decile *EA_IVOL* portfolio is also nearly 3 times the average earnings announcement idiosyncratic volatility of the overall sample as reported in Panel A (5.7%). As *EA_IVOL* increases across decile portfolios, market capitalization decreases. While it may be difficult to interpret the average value for *SIZE* as market capitalization goes up over time for firms, the relative difference between *EA_IVOL* decile 1 and *EA_IVOL* decile 10 indicates that high *EA_IVOL* portfolio tends to contain smaller stocks. There is also evidence that book-to-market ratio is higher in low *EA_IVOL* portfolio and lower in high *EA_IVOL* portfolio. Stocks in high *EA_IVOL* portfolio also appear to have higher price momentum, higher beta, higher general idiosyncratic volatility, and a higher Amihud illiquidity measure. Interestingly, stocks in high *EA_IVOL* portfolio have a more positive earnings surprise from the prior quarter (0.005) than those in low *EA_IVOL* portfolio (0.000).

3. *EA_IVOL* and Pre-Earnings Announcement Excess Stock Returns

3.1 Univariate Portfolio Analysis

Table 2 presents *EXRET[-10,-1]* for decile portfolios that are formed by sorting stocks based on *EA_IVOL* from the prior calendar year. The results are reported based on actual earnings announcement dates from Compustat and pseudo earnings announcement dates over the period 1980-2011. We construct a pseudo earnings announcement date by subtracting a random number from a uniform distribution between 10 and 40 from the actual earnings announcement date.[5] These pseudo earnings announcements represent random periods where earnings are not announced. We compare stock returns relative to actual earnings announcements (experimental group) and pseudo earnings announcements (control group) to determine whether the stock return premium before earnings announcements is exclusively driven by earnings announcements. Portfolio 1 (low *EA_IVOL*) is the portfolio with the lowest earnings announcement idiosyncratic volatility and portfolio 10 (high *EA_IVOL*) is the portfolio with the highest earnings announcement idiosyncratic volatility.

{INSERT TABLE 2 HERE}

In column (1) of Table 2 where *EXRET[-10,-1]* is measured relative to actual earnings announcement dates, the average excess return difference between decile 10 (high *EA_IVOL*) and decile 1 (low *EA_IVOL*) is 1.12% over the 10-day period leading up to earnings announcements and is significant at the 1 percent level. In unreported tests, we find that the hedge returns from going long decile 10 and short decile 1 of *EA_IVOL* in the 10 days leading up to earnings announcements are positive in 81 out of the 128 quarters in our sample period.[6] Strikingly, excess return is increasing monotonically from decile 1 to decile 10. Excess returns for deciles 1 and 2 are 0.11% and 0.13%, respectively, and insignificant. This means that there is no premium in the pre-earnings announcement period for the two portfolios with the lowest earnings announcement idiosyncratic volatility. From decile 3 to decile 10, excess returns are

[5] We follow Lee *et al*. (1994) and Christie *et al*. (2002) and employ a uniform distribution between 10 and 40 days to separate actual earnings announcements from pseudo earnings announcements where no earnings news is announced.

[6] The strategy earns positive return in 63.28% of the quarters in the sample period. The z score of 3.01 from a binomial distribution test rejects the null hypothesis that the proportion of positive hedge returns over the sample period of 128 quarters equals 0.5.

significant at the 1 percent level, indicating significant premia in pre-earnings announcement stock returns across these portfolios.

In column (2) of Table 2 where *EXRET[-10, -1]* is measured relative to pseudo earnings announcement dates, the pattern of excess return across deciles of *EA_IVOL* as observed in column (1) completely disappears. The excess return difference between the two extreme *EA_IVOL* portfolios is 0.0006 and insignificant, indicating that there is no earnings announcement idiosyncratic volatility premium in the period where no earnings news is pending. In addition, none of the excess returns across decile portfolios of *EA_IVOL* is significant, indicating that there is no premium in stock returns at all if no earnings news is going to be announced. In columns (3) of Table 2, the differences in excess returns between actual earnings versus pseudo earnings announcement dates confirm that the pre-earnings announcement premium is only specific to the period immediately before a pending earnings announcement and that the pre-earnings announcement premium is increasing in earnings announcement idiosyncratic volatility.

Overall, the univariate portfolio results in Table 2 document two key findings. First, there is a significant premium in the period immediately before earnings announcements. Second, this premium increases in earnings announcement idiosyncratic volatility. However, Panel B of Table 1 shows that high *EA_IVOL* stocks tend to have characteristics that would demand a premium and hence univariate portfolio analysis and excess return calculation may not account for all firm characteristics that may lead to the pre-earnings announcement premium. We control for firm characteristics in the subsequent analyses.

3.2 Bivariate Portfolio Analysis

In this section, we examine the relation between *EA_IVOL* and pre-earnings announcement excess stock returns after controlling for size, book-to-market ratio, momentum, beta, idiosyncratic volatility, illiquidity, and prior quarter standardized unexpected earnings. For example, in controlling for size, we first sort stocks into decile portfolios based on market capitalization. Then, within each size decile, we sort stocks into decile portfolios based on *EA_IVOL*. We average excess returns across the ten size deciles to produce decile portfolios of *EA_IVOL* which contain all sizes of firms. This bivariate portfolio sort creates a set of *EA_IVOL* decile portfolios with similar contributions from all levels of firm size, and hence these *EA_IVOL* decile portfolios control for differences that can be attributed to firm size. We conduct the same procedure to create decile portfolios of *EA_IVOL* that control for other firm characteristics.

Table 3 presents bivariate portfolio results for *EXRET [-10,-1]* relative to actual earnings announcement dates. Column (1) of Table 3 shows that after controlling for firm size, the average excess return difference between the high and low *EA_IVOL* portfolios is 0.82% and significant at the 1 percent level. Because firm size and *EA_IVOL* are positively correlated, variation in *EA_IVOL* returns within size-sorted portfolios should be smaller than the average effect in the broad sample of stocks. However, this smaller variation in *EA_IVOL* returns still generates economically and statistically significant return variation across *EA_IVOL* decile portfolios, demonstrating the significance of the earnings announcement idiosyncratic volatility premium. Thus, market capitalization does not explain the earnings announcement idiosyncratic volatility premium.

{INSERT TABLE 3 HERE}

We control for book-to-market ratio in a similar way in column (2) of Table 3 and the results show that the *EA_IVOL* premium is also preserved. The excess return difference between the high and low *EA_IVOL* portfolios is 1.04% and significant at the 1 percent level. In columns (3) and (4) of Table 3 when we control for momentum and beta, respectively, the excess return difference between the high and low *EA_IVOL* portfolios is 0.74% and 0.98%, respectively, and both are significant at the 1 percent level. These returns are also economically large over a short period of 10 days before earnings announcements. Recall that Panel B of Table 1 shows high *EA_IVOL* stocks tend to have strong momentum and high beta, it is expected that the correlations between *EA_IVOL* and momentum and beta reduce the variation of excess returns across *EA_IVOL* portfolios. However, neither momentum nor beta explains the earnings announcement volatility premium.

Column (5) of Table 3 controls for general stock return idiosyncratic volatility as measured by the four-factor model. Since general idiosyncratic volatility and earnings announcement idiosyncratic volatility are highly correlated, it could be possible that *EA_IVOL* is merely an alternative measure for general idiosyncratic volatility (*IVOL*). However, it is not the case as shown in the excess returns across *EA_IVOL* portfolios in column (5) of Table 3. After controlling for the effect of idiosyncratic volatility, the excess return difference between the high and low *EA_IVOL* portfolios is 0.47% and significant at the 1 percent level. In addition, the excess return increases almost monotonically across portfolios of *EA_IVOL* that control for general idiosyncratic volatility, confirming that earnings announcement idiosyncratic volatility gives rise to a premium in the pre-earnings announcement period that is independent of the effects of general idiosyncratic volatility.

In column (6) of Table 3, we control for liquidity and still document a 1.24% excess return difference between the high and low *EA_IVOL* portfolios, which is also significant at the 1 percent level. Finally, we control for post-earnings announcement drift by forming portfolios based on prior quarter standardized unexpected earnings in column (7) of Table 3.

The excess return difference between the high and low *EA_IVOL* portfolios is 1.04% and also significant at the 1 percent level. Thus, liquidity and post-earnings announcement drift do not explain the positive relation between *EA_IVOL* and excess return in the period leading up to earnings announcements.

The results in Table 3 indicate that several firm characteristics that may be well-known in determining the cross-section of stock returns cannot explain the earnings announcement idiosyncratic volatility premium in the pre-earnings announcement period. The excess return differences between the high and low *EA_IVOL* portfolios range between 47 to 124 basis points across different bivariate portfolio sorts.

3.3 Firm-level Cross-section Regressions

While the bivariate portfolio analyses confirm the resilience of the earnings announcement idiosyncratic volatility premium, double portfolio sort analyses are not able to control for multiple effects simultaneously. In this section, we examine the cross-sectional relation between *EA_IVOL* and excess stock returns in the pre-earnings announcement period at the firm level using cross-sectional regressions. We compute two-way cluster *t*-statistics based on standard errors clustered by firm and quarter.

Table 4 presents the regressions of *EXRET[-10,-1]* based on actual earnings announcement dates on several firm characteristics. In column (1) of Table 4, the coefficient on *EA_IVOL* is 0.1143 with a *t*-statistic of 4.22. This confirms a significant positive relation between earnings announcement idiosyncratic volatility (*EA_IVOL*) and excess stock return at the firm-level analysis. In columns (2), (6), (7), and (8) of Table 4, we also document that excess return in the pre-earnings announcement period is significantly and inversely related to firm size and significantly and positively related to idiosyncratic volatility, Amihud illiquidity, and prior quarter standardized unexpected earnings. The results shown in column (8) of Table 4 in fact confirm a resilient post-earnings announcement drift phenomenon leading up to the next quarterly earnings announcements. We do not find any significant relation between excess stock return in the pre-earnings announcement period and book-to-market ratio, momentum, or beta. The full regression model with all control variables in column (9) of Table 4 shows fairly similar results although the inverse relation between firm size and excess return disappears. In the full regression model, we document that excess return is significantly and positively related to *EA_IVOL*, *IVOL*, and SUE_{q-1}.

{INSERT TABLE 4 HERE}

Overall, the results in Table 4 provide strong corroborating evidence from regression analyses that there is an economically and statistically significant relation between earnings announcement idiosyncratic volatility and excess stock return in the pre-earnings announcement period. This is consistent with the notion that earnings announcement idiosyncratic volatility is priced in the period immediately before earnings announcements.

3.4 Interaction Effects in Firm-level Cross-sectional Regressions

In this section, we examine whether the positive relation between *EA_IVOL* and excess stock return in the pre-earnings announcement period exhibits cross-sectional variation within each firm characteristic. While the inclusion of firm characteristics does not explain the earnings announcement idiosyncratic volatility premium as shown in Table 4, it is possible that the premium is more pronounced among stocks that are most difficult to trade in the period leading up to earnings announcements.

Table 5 presents an interaction regression for *EXRET[-10,-1]* based on actual earnings announcement dates. In column (2) of Table 5, we document a negative interaction coefficient on *EA_IVOL*SIZE* of -0.0139 and a *t*-statistic of -2.34. Thus, there is evidence that the earnings announcement idiosyncratic volatility premium is weaker among larger firms. In columns (3) and (6) of Table 5, we also find some evidence that the earnings announcement idiosyncratic volatility premium is somewhat weaker among firms with high momentum (the coefficient on *EA_IVOL*MOM* is -0.0274 with a *t*-statistic of -2.25) and among firms with a high Amihud illiquidity measure (the coefficient on *EA_IVOL*ILLIQ* is -0.0051 with a *t*-statistic of -1.78). The negative coefficient on *EA_IVOL*ILLIQ* is rather intriguing as we expect the earnings announcement idiosyncratic volatility premium to be more pronounced among illiquid stocks. However, this interaction effect is rather small and only significant at the 10 percent level. In column (8) of Table 5, when all variables and interaction effects are included, we find that the positive relation between *EA_IVOL* and excess return is reduced among larger firms and firms with a high Amihud illiquidity measure. The interaction effect between *EA_IVOL* and *MOM* disappears in the full regression model.

{INSERT TABLE 5 HERE}

The interaction analyses in Table 5 reveal mixed results on the relation between *EA_IVOL* and excess return. We find that the earnings announcement idiosyncratic volatility premium is decreasing in firm size but also decreasing in Amihud illiquidity measure. However, the interaction effects seem to be fairly small compared to the main positive relation between *EA_IVOL* and excess stock return.

4. Robustness Checks

4.1 Expected Earnings Announcement Dates

In this section, we examine the relation between *EA_IVOL* and excess stock return in the period leading up to expected earnings announcement dates instead of actual earnings announcements.[7] We form expected earnings announcement dates for a firm using the approach developed in Cohen *et al*. (2007) which is based on the distributions of the firm's earnings announcement dates in prior quarters. Specifically, we identify a firm's actual earnings announcement date as one of the 63 days in the quarter. We then use the median quarterly earnings announcement date as identified using earnings announcements from the prior rolling 5 years.

Table 6 presents the results of this analysis. Panel A of Table 6 presents excess returns across *EA_IVOL* decile portfolios where *EXRET[-10,-1]* is measured relative to expected earnings announcement dates. The results are almost similar to those reported in Table 2. Excess returns are only significant at the 10 percent level for decile portfolios 1 and 2 but significant at the 1 percent level from decile portfolios 3 to 10. The excess return difference between the two extreme portfolios of earnings announcement idiosyncratic volatility is 101 basis points in the 10 days leading to expected earnings announcements.

{INSERT TABLE 6 HERE}

Panel B of Table 6 presents bivariate portfolio results based on *EXRET[-10,-1]* relative to expected earnings announcement dates. After controlling for size, book-to-market ratio, momentum, beta, idiosyncratic volatility, illiquidity, and prior quarter standardized unexpected earnings, the excess return differences between the high and low *EA_IVOL* portfolios are

[7] Implementing a trading strategy based on earnings announcement idiosyncratic volatility requires knowing the actual earnings announcement dates. It may be more practical to investigate this strategy using expected earnings announcement dates. If late announcing firms are more likely to disclose bad news and the market anticipates this bad news on the expected announcement dates when these firms did not announce, computing stock returns in the period leading up to actual earnings announcement dates may introduce a downward bias to the earnings announcement idiosyncratic volatility premium because expected announcement dates will likely fall in the period immediately before actual earnings announcement dates for late announcers.

0.90%, 1.06%, 0.74%, 0.89%, 0.55%, 0.87%, and 1.10%, respectively, in the 10-day period leading up to an expected earnings announcement date. These excess returns are both economically significant and statistically significant at the 1 percent level.

Table 6 confirms that the earnings announcement idiosyncratic volatility premium is still present when we measure excess stock return in the pre-earnings announcement period relative to expected earnings announcement dates instead of actual earnings announcement dates.

4.2 Alternative Portfolio Weightings and Risk-Adjustments

In this section, we examine whether the results of our main analyses are robust to different methods of portfolio weightings and different risk-adjustment techniques. Panel A of Table 7 provides results of the earnings announcement idiosyncratic volatility premium using alternative portfolio weighting methods. Panel B of Table 7 provides results of the earnings announcement idiosyncratic volatility premium using alternative risk-adjustment techniques.

{INSERT TABLE 7 HERE}

Column (1) of Panel A shows that the excess return difference between the high and low *EA_IVOL* value-weighted portfolios is 0.66%. This value-weighted portfolio excess return difference is smaller than the equal-weighted portfolio difference presented in Table 2. However, this difference is significant at the 1 percent level and is also economically large over a short period of 10 days. In column (2) of Panel A, the excess return difference between the high and low *EA_IVOL* share volume-weighted portfolios is 0.97%. In column (3) of Panel A, the excess return difference between the high and low *EA_IVOL* dollar volume-weighted portfolios is 0.86%. Overall, the existence of an earnings announcement idiosyncratic volatility premium in the pre-earnings announcement period does not disappear across various portfolio weighting methods.

Column (1) of Panel B presents size-adjusted returns across *EA_IVOL* portfolios. Size-adjusted returns are defined as the difference between stock return and portfolio return of the size decile that the stock belongs to. We find that size-adjusted return difference between the high and low *EA_IVOL* portfolios is 1.14%. Column (2) of Panel B presents CAPM alphas across *EA_IVOL* portfolios where the CAPM model is calibrated using a period of 200 trading days ending on day *t*-11 before earnings announcements. The CAPM alpha difference between the high and low *EA_IVOL* portfolios is 1.11%. Column (3) of Panel B presents four-factor alphas across *EA_IVOL* portfolios where the four factor model factor loadings are also estimated using a period of 200 trading days ending on day *t*-11 before earnings announcements. The four-factor alpha difference between the high and low *EA_IVOL* portfolios is 1.10%. Hence, various risk-adjustments in Panel B of Table 7 also confirm the existence of the earnings announcement idiosyncratic volatility premium in the pre-earnings announcement period.

4.3 EA_IVOL Measured over Different Multi-Quarter Periods

While our *EA_IVOL* measure estimated from all earnings announcements in the prior calendar year is a simple and intuitive measure of stock return idiosyncratic volatility that is specific to earnings announcements, the choice of the period over which *EA_IVOL* is measured is somewhat arbitrary. Hence, alternatively, we can measure earnings announcement idiosyncratic volatility over the past N rolling quarters where N takes the value of 1, 2, …, and up to 16 quarters. Table 8 presents the results of this analysis. As before, we present the equal-weighted excess returns across decile portfolios of *EA_IVOL*.

{INSERT TABLE 8 HERE}

Results in Table 8 show that the earnings announcement idiosyncratic volatility premium is robust to several alternative measures of *EA_IVOL*. The excess return difference between the high and low *EA_IVOL* portfolios when *EA_IVOL* is measured over only one prior earnings announcement (N=1) is 0.69% and significant at the 1 percent level. This excess return difference is 1.08% for N=2, 1.19% for N=4, 1.29% for N=8, and 1.24% for N=16. It appears that the earnings announcement idiosyncratic volatility premium reaches its peak when *EA_IVOL* is measured over the past 8 quarters and adding extra past quarters to the estimation does not help achieve a higher premium.

Since the earnings announcement idiosyncratic volatility premium is robust to *EA_IVOL* measured over different multi-quarter periods, it is likely that earnings announcement idiosyncratic volatility is highly persistent over time. Our subsequent analysis investigates this.

4.4 EA_IVOL and the Predictability of Future Earnings Announcement Idiosyncratic Volatility

So far we have documented a striking phenomenon that stocks with high earnings announcement idiosyncratic volatility as measured from stock returns surrounding past earnings announcements exhibit high excess returns in the period immediately before earnings announcements. This is consistent with the idea that investors demand a premium for holding stocks with high earnings announcement idiosyncratic volatility risk in the period when this risk is most eminent. It is also based on the assumption that investors interpret stocks with high past earnings announcement idiosyncratic volatility as likely to exhibit high earnings announcement idiosyncratic volatility in the future. In this section, we examine the persistence of earnings announcement idiosyncratic volatility which serves as a basis for how investors may perceive high versus low idiosyncratic volatility risk stocks when it comes to the earnings announcement period. Table 9 presents the results of this analysis.

{INSERT TABLE 9 HERE}

Panel A of Table 9 presents the average 3-day excess stock return volatility based on portfolios sorted by *EA_IVOL*. A clear picture emerges showing that earnings announcement idiosyncratic volatility is extremely persistent over time. On average, stocks in the lowest *EA_IVOL* portfolio post 4.7% excess return volatility in the 3-day window surrounding future earnings announcements while stocks in the highest *EA_IVOL* portfolio post 10.41% excess return volatility in the 3-day window surrounding future earnings announcements. The difference of 5.68% in excess return volatility between the high and the low *EA_IVOL* portfolios is economically large as it is nearly the average earnings announcement idiosyncratic volatility across the sample of 5.71 as reported in Panel A of Table 1. More remarkably, the 3-day excess return volatility from future earnings announcements is increasing in a strictly monotonic fashion from low *EA_IVOL* portfolios to high *EA_IVOL* portfolios.[8]

Panel B of Table 9 presents the analyses of earnings announcement idiosyncratic volatility persistence from a cross-sectional regression framework. In column (1) of Panel B, the relation between future earnings announcement idiosyncratic volatility and *EA_IVOL* is 0.3778 with a *t*-statistic of 23.82. Between columns (2) to (8) of Panel B, we also find that earnings announcement idiosyncratic volatility is negatively related to firm size, book-to-market ratio, while positively related to beta, idiosyncratic volatility, Amihud illiquidity, and prior quarter standardized unexpected earnings. In the full model in column (9) of Panel B, we find that the coefficient on *EA_IVOL* remains very large and significant. We also notice that

[8] An alternative way to assess earnings announcement idiosyncratic volatility persistence is to examine the average probability that a stock in decile *i* in year *y*-1 will be in decile *j* in year *y*. If earnings announcement idiosyncratic volatility is purely random, the probability would be 10% as earnings announcement idiosyncratic volatility in year *y*-1 is not informative about earnings announcement idiosyncratic volatility in year *y*. In an unreported test, we find that stocks in decile 10 of *EA_IVOL* have a 22% probability of being in decile 10 again in year *y* and stocks in decile 1 of *EA_IVOL* have a 16% probability of being in decile 1 again in year *y*. In addition, stocks in decile 10 of *EA_IVOL* have a 48% probability of being in deciles 8-10 again in year *y*. These probabilities indicate high persistence in earnings announcement idiosyncratic volatility over time.

idiosyncratic volatility is strongly predictive of future earnings announcement idiosyncratic volatility. The adjusted *R*-square of the full model is 11.1% which indicates substantial cross-sectional explanatory power for future earnings announcement idiosyncratic volatility.

Overall, the results in Table 9 show that earnings announcement idiosyncratic volatility is highly persistent over time and investors can conveniently identify stocks with high versus low future earnings announcement idiosyncratic volatility risk from observing how the stock returns behave surrounding past earnings announcements. Stocks with extreme earnings announcement idiosyncratic volatility in the past are likely to exhibit this feature in the future.

4.5 Signed Earnings Announcement Idiosyncratic Volatility

Recent developments in the literature on the pricing of idiosyncratic volatility examine the pricing of extreme stock returns as an alternative to stock return idiosyncratic volatility. While extreme stock returns and idiosyncratic volatility are highly correlated when measured over the same time period, Bali *et al*. (2011) show that only extreme positive returns are priced while the effect of idiosyncratic volatility either disappears or reverses in asset pricing tests. They interpret their findings as stocks with extreme positive stock returns exhibiting a lottery-like payoff characteristic which is preferred by investors.

In the context of earnings announcements, it is conceivable that investors may prefer stocks with large upside idiosyncratic volatility and hence demand a premium for these stocks in the period leading up to earnings announcements. To investigate this hypothesis, we revisit the earnings announcement idiosyncratic volatility premium by using two different signed measures of earnings announcement idiosyncratic volatility. First, we compute the maximum and minimum 3-day excess returns around earnings announcements in the past calendar year (denoted as *EA_MAX* and *EA_MIN*) and re-examine the relation of these extreme return measures with pre-earnings announcement excess returns. Stocks with high *EA_MAX* are deemed to have lottery-like payoffs during earnings announcements.[9] Second, we decompose *EA_IVOL* by the sign of excess stock returns. Specifically, we compute *EA_IVOL* from past positive excess returns around earnings announcements and denote this earnings announcement idiosyncratic volatility as *EA_IVOL(+ve)*. Similarly, we compute *EA_IVOL* from past negative excess returns around earnings announcements and denote this earnings announcement idiosyncratic volatility as *EA_IVOL(-ve)*. In cases where all excess returns around past earnings announcements are negative (positive), *EA_IVOL (+ve)* [*EA_IVOL(-ve)*] is set to be 0. Stocks with high *EA_IVOL(+ve)* are deemed to have more favourable earnings announcement idiosyncratic volatility while stocks with high *EA_IVOL(-ve)* are deemed to have more unfavourable earnings announcement idiosyncratic volatility.[10]

Table 10 presents the results of signed earnings announcement idiosyncratic volatility and *EXRET[-10,-1]*. In column (1) of Table 10, the coefficient on *EA_MAX* is 0.0176 with a *t*-statistic of 4.09, indicating a significant positive relation between the maximum excess stock returns around past earnings announcements and excess stock returns in the period leading up to future earnings announcements. Interestingly, in column (2) of Table 10, the coefficient on *EA_MIN* is not significant, suggesting no relation between minimum excess stock returns around past earnings announcements and excess stock returns in the period leading up to future earnings announcements. In column (3) of Table 10 where both *EA_MAX* and *EA_MIN* are included in the full regression model, we observe the same findings that *EA_MAX* is positively related to excess return but there is an insignificant relation between *EA_MIN* and excess return.

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[9] The probability of stocks in decile 10 of *EA_MAX* to be in decile 10 again in year y is 17%. Moreover, stocks in decile 10 of *EA_MAX* have a 36% probability of being in deciles 8-10 of *EA_MAX* again in year *y*. This indicates that lottery pay-offs surrounding earnings announcements are not random but persist over time.

[10] The probability of stocks in decile 10 of *EA_IVOL(+ve)* to be in decile 10 again in year *y* is 20%. This indicates that favourable earnings announcement idiosyncratic volatility is also very persistent over time.

Thus, the results in columns (1) to (3) of Table 9 suggest that investors demand a premium for stocks with large positive payoffs surrounding past earnings announcements but are indifferent to stocks with large negative payoffs surrounding past earnings announcements.

When we decompose earnings announcement idiosyncratic volatility into earnings announcement idiosyncratic volatility from positive excess stock returns, *EA_IVOL(+ve)*, and earnings announcement idiosyncratic volatility from negative excess stock returns, *EA_IVOL(-ve)*, we document patterns similar to extreme stock returns. In columns (4) and (5) of Table 10, the coefficient on *EA_IVOL(+ve)* is 0.0300 with a *t*-statistic of 4.46 while the coefficient on *EA_IVOL(-ve)* is positive but insignificant. In column (6) of Table 10 where both *EA_IVOL(+ve)* and *EA_IVOL(-ve)* are included in the full regression model, we still document a significant positive relation between *EA_IVOL(+ve)* and excess return and an insignificant relation between *EA_IVOL(-ve)* and excess return. Here, the results show that the earnings announcement idiosyncratic volatility premium is highly skewed as only favourable earnings announcement idiosyncratic volatility is priced in the cross-section of pre-earnings announcement stock returns while unfavourable earnings announcement idiosyncratic volatility is not.

{INSERT TABLE 10 HERE}

The results in Table 10 give rise to two significant insights. First, we find that earnings announcement idiosyncratic volatility is priced differently depending on whether the idiosyncratic volatility is based on positive or negative excess stock returns. This finding is in line with the literature that shows investors may exhibit a preference for stocks with large positive payoffs while being indifferent to stocks with large negative payoffs (Thaler and Ziemba, 1988; Kumar, 2009; Bali *et al*., 2011). Second, this asymmetric pricing of earnings announcement volatility is intriguing when one argues that the lack of diversification leads to the premium demanded for high earnings announcement idiosyncratic volatility stocks in the pre-earnings announcement period. There is no obvious reason why it is more difficult to diversify stocks with large positive payoffs or favourable earnings announcement idiosyncratic volatility while being easier to diversify stocks with large negative payoffs or unfavourable earnings announcement idiosyncratic volatility. In fact, one may even argue that investors should demand a higher premium for stocks with large negative payoffs or unfavourable earnings announcement idiosyncratic volatility if a diversification constraint is binding.

4.6 Earnings Announcement Stock Returns, Post-Earnings Announcement Stock Returns and EA_IVOL

So as to conduct a complete investigation of the role of *EA_IVOL* surrounding the earnings announcement period, in this section we examine the relation between *EA_IVOL* and excess return in the earnings announcement period and in the post-earnings announcement period. Most importantly, the prior literature on abnormal stock returns around earnings announcements shows that the earnings announcement premium is most pronounced in a short window surrounding earnings announcements. We aim to show that the earnings announcement idiosyncratic volatility premium reported in this study is distinctly different from the previously documented earnings announcement premium in that it is only present in the pre-earnings announcement period and it is conditional on earnings announcement idiosyncratic volatility. Table 11 presents the results for this analysis. In the regression models, we replace SUE_{q-1} by SUE_q (standardized unexpected earnings from the current quarter) to control for the relation between earnings announcement stock returns, post-earnings announcement stock returns and contemporaneous earnings surprises.

Columns (1) and (2) of Table 11 present regression results for *EXRET[0,+1]*. In column (1), the coefficient on *EA_IVOL* is -0.0102 and insignificant. In column (2) where the full regression model is estimated, the coefficient on *EA_IVOL* is -0.0037 and also insignificant. Thus, during the earnings announcement period, we document no earnings announcement idiosyncratic volatility premium. It is interesting to note that the coefficient on the intercept is 0.0012 and significant at the 1 percent level in column (1) (*t*-statistic of 4.48) and 0.0068 and significant at the 5 percent level in column (2) (*t*-statistic of 2.04). These positive and significant intercepts indicate that there is a significant excess stock return during the 2-day window surrounding earnings announcements. This refers to the type of earnings announcement premium previously reported in the literature.

Columns (3) and (4) of Table 11 report regression results for *EXRET[+2,+10]*. Here, we find that the earnings announcement idiosyncratic volatility premium reverses slightly. The coefficient on *EA_IVOL* is -0.0122 (*t*-statistic of -2.37) in column (3) and -0.0102 (*t*-statistic of -2.26) in column (4). Thus, excess returns in the post-earnings announcement period appear to be smaller for high earnings announcement idiosyncratic volatility stocks than for low earnings announcement idiosyncratic volatility stocks. However, this reversal is much smaller than the effect that *EA_IVOL* places on excess returns in the pre-earnings announcement period. This is also further evidenced by regression results for *EXRET[-10,+10]* in columns (5) and (6) of Table 11. The coefficient on *EA_IVOL* is 0.0781 (*t*-statistic of 3.22) in column (5) of the univariate regression and 0.0416 (*t*-statistic of 3.16) in column (6) of the multivariate regression. Hence, over the 21-day window surrounding earnings announcements, we still document a significant positive relation between *EA_IVOL* and excess stock returns. This relation is primarily driven by the positive relation between *EA_IVOL* and excess stock returns in the 10-day window before earnings announcements.

Overall, the results in Table 11 confirm that the earnings announcement idiosyncratic volatility premium is exclusively a pre-earnings announcement phenomenon as it does not manifest itself during the earnings announcement period and even reverses slightly in the post-earnings announcement period.

{INSERT TABLE 11 HERE}

5. Conclusion

We find a statistically and economically significant relation between earnings announcement idiosyncratic volatility from past earnings announcements and excess stock returns in the period leading up to current earnings announcements. The results are robust to controls for numerous other factors that might provide plausible explanations for the patterns of stock returns surrounding earnings announcements. The results are also robust regardless of whether we use the actual earnings announcement date or the expected earnings announcement date to identify pre-earnings announcement excess returns. We also show that the earnings announcement idiosyncratic volatility premium is only present in the pre-earnings announcement period and hence is different from the usual earnings announcement premium surrounding earnings announcements as previously documented in the literature.

We interpret our findings as investors requiring a premium for stocks with high earnings announcement idiosyncratic volatility risk in the period immediately before earnings announcements. We also show that there is a significant asymmetry in the pricing of this earnings announcement idiosyncratic volatility in that only favourable earnings announcement idiosyncratic volatility is priced. Hence, it is also possible that investors demand a premium for stocks with earnings announcement lottery-like payoffs. Our research also leads to several interesting implications for future research on the idiosyncratic volatility of stock returns. For example, researchers can decompose the general idiosyncratic volatility of stock returns into favourable idiosyncratic volatility and unfavourable idiosyncratic volatility and study the pricing of these types of idiosyncratic volatility in the cross-section of expected stock returns.

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Table 1. Descriptive Statistics, 1980-2011

Panel A: Sample Characteristics

	Mean	STD	P25	Median	P75
EA_IVOL	0.0571	0.0461	0.0267	0.0452	0.0738
EXRET[-10,-1]	0.0054	0.1165	-0.0453	-0.0020	0.0443
SIZE	1.859	10.33	0.049	0.180	0.758
BM	0.654	1.244	0.376	0.6000	0.920
MOM	0.077	0.477	-0.151	0.032	0.224
BETA	0.895	1.389	0.228	0.614	1.149
IVOL	0.033	0.023	0.017	0.026	0.041
ILLIQ$(\times 10^5)$	1.378	3.352	0.008	0.186	0.695
SUE_{q-1}	0.001	0.844	-0.006	0.000	0.007

Panel B: Sample Characteristics Across Earnings Announcement Idiosyncratic Volatility Deciles

	1 (Low *EA_IVOL*)	2	3	4	5	6	7	8	9	10 (High *EA_IVOL*)
EA_IVOL	0.0110	0.0198	0.0271	0.0343	0.0420	0.0509	0.0616	0.0757	0.0970	0.156
SIZE	2.541	3.062	3.161	2.665	2.297	1.967	1.507	1.049	0.821	0.493
BM	0.682	0.647	0.625	0.611	0.577	0.538	0.515	0.522	0.497	0.564
MOM	0.071	0.070	0.074	0.069	0.073	0.075	0.076	0.080	0.085	0.106
BETA	0.638	0.756	0.835	0.867	0.910	0.955	0.977	1.003	1.040	1.029
IVOL	0.021	0.022	0.025	0.027	0.030	0.033	0.036	0.040	0.044	0.053
ILLIQ($\times 10^5$)	1.082	0.867	0.964	1.037	1.139	1.256	1.419	1.662	1.425	1.772
SUE_{q-1}	0.0000	-0.0008	-0.0006	-0.0018	-0.0009	-0.0006	-0.0005	0.001	0.001	0.005

Panel A presents descriptive statistics of the main variables for the overall sample. The sample consists of 487,946 quarterly earnings announcements over the period 1980-2011. Panel B presents the mean values of the main variables for the deciles of earnings announcement idiosyncratic volatility. *EA_IVOL* is the average of the absolute value of the 3-day excess return around earnings announcements (from day -1 to day +1) from four earnings announcements in year *y*-1. *EXRET[-10,-1]* is the excess return in the 10 days leading up to earnings announcements. Excess return is measured as the difference between stock return and *CRSP* value-weighted return over the same period. *SIZE* and *BM* denote market capitalization and the book-to-market ratio at the end of year *y*-1. *MOM* is the firm's return over the six-month period ending on day *t*-11 before the earnings announcement. *BETA* and *IVOL* are stock beta and standard deviation of residual returns from the 4-factor model estimated over the 200 day period ending on day *t*-11 before the earnings announcement. *ILLIQ* is the Amihud illiquidity ratio measured over the six month period ending on day *t*-11 before the earnings announcement. SUE_{q-1} is standardized unexpected earnings from the prior quarter using the random walk model.

Table 2. *EXRET[-10,-1]* from Portfolios Sorted by Earnings Announcement Idiosyncratic Volatility

	Actual Announcement Date	Pseudo Announcement Date	Difference
	(1)	(2)	(3)
1 (Low *EA_IVOL*)	0.0011	0.0006	0.0005
2	0.0013	0.0008	0.0005
3	0.0024***	0.0008	0.0016*
4	0.0025***	0.0001	0.0024***
5	0.0034***	0.0003	0.0031***
6	0.0053***	0.0002	0.0051***
7	0.0050***	0.0002	0.0048***
8	0.0065***	0.0016	0.0049***
9	0.0084***	-0.0004	0.0088***
10 (High *EA_IVOL*)	0.0123***	0.0012	0.0111***
10-1	0.0112***	0.0006	0.0106***

Decile portfolios are formed every quarter from 1980 to 2011 by sorting stocks based on *EA_IVOL* measured from year *y*-1. Portfolio 1 (10) is the portfolio with the lowest (highest) stock return volatility around earnings announcements in the previous year. *EA_IVOL* is the average of the absolute value of the 3-day excess return around earnings announcements (from day -1 to day +1) from four earnings announcements in year *y*-1. *EXRET[-10,-1]* is the excess return in the 10 days leading to earnings announcements. Excess return is measured as the difference between stock return and *CRSP* value-weighted return over the same period. Actual earnings announcements are based on earnings announcement dates from Compustat. Pseudo earnings announcements are estimated by subtracting a randomly generated number (uniformly distributed between 10 to 40 trading days) from the actual earnings announcement dates. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 3. *EXRET[-10,-1]* from Portfolios Sorted by Earnings Announcement Idiosyncratic Volatility after Controlling for *SIZE*, *BM*, *MOM*, *BETA*, *IVOL*, *ILLIQ*, and SUE_{q-1}

	SIZE (1)	*BM* (2)	*MOM* (3)	*BETA* (4)	*IVOL* (5)	*ILLIQ* (6)	SUE_{q-1} (7)
1 (Low *EA_IVOL*)	0.0016*	0.0012	0.0024***	0.0014*	0.0026***	0.0005	0.0009
2	0.0023***	0.0016**	0.0026***	0.0017**	0.0046***	0.0004	0.0019**
3	0.0025**	0.0021***	0.0030***	0.0025***	0.0031***	0.0017*	0.0026***
4	0.0034***	0.0029**	0.0032***	0.0031***	0.0039***	0.0016*	0.0025***
5	0.0047***	0.0035***	0.0040***	0.0035***	0.0036***	0.0032***	0.0031***
6	0.0053***	0.0044***	0.0038***	0.0042***	0.0050***	0.0041***	0.0053***
7	0.0052***	0.0058***	0.0050***	0.0051***	0.0045***	0.0058***	0.0046***
8	0.0053***	0.0070***	0.0065***	0.0063***	0.0061***	0.0072***	0.0065***
9	0.0074***	0.0072***	0.0072***	0.0080***	0.0067***	0.0096***	0.0086***
10 (High E*A_IVOL*)	0.0098***	0.0116***	0.0098***	0.0112***	0.0073***	0.0129***	0.0113***
10-1	0.0082***	0.0104***	0.0074***	0.0098***	0.0047***	0.0124***	0.0104***

Double-sorted decile portfolios are formed every quarter from 1980 to 2011 by sorting stocks based on *EA_IVOL* measured from year *y*-1 after controlling for size, book-to-market, momentum, beta, idiosyncratic volatility, Amihud illiquidity, and standardized unexpected earnings. *EA_IVOL* is the average of the absolute value of the 3-day excess return around earnings announcements (from day -1 to day +1) from four earnings announcements in year *y*-1. *EXRET[-10,-1]* is the excess return in the 10 days leading to earnings announcements. Excess return is measured as the difference between stock return and *CRSP* value-weighted return over the same period. In each case, stocks are first sorted into deciles using the control variable. Then within each decile, stocks are sorted into deciles based on *EA_IVOL*. This table presents the average *EXRET[-10,-1]* across the ten control deciles to produce decile portfolios with dispersion in *EA_IVOL* but with similar composition of the control variable. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 4. Multivariate Analyses of *EXRET[-10,-1]*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Intercept	-0.0009	0.0322***	0.0045***	0.0054***	0.0054***	-0.0056***	0.0039***	0.0248***	0.0088
	(-0.81)	(4.94)	(3.35)	(3.64)	(4.10)	(-2.93)	(2.84)	(3.91)	(1.11)
EA_IVOL	0.1143***								0.0616***
	(4.22)								(4.10)
SIZE		-0.0022***							-0.0003
		(-5.01)							(-0.69)
BM			0.0005						0.0005
			(1.52)						(1.86)*
MOM				-0.0001					-0.0012
				(-0.02)					(-0.43)
BETA					0.0001				-0.0003
					(0.12)				(-0.42)
IVOL						0.3318***			0.2873***
						(4.68)			(3.43)
ILLIQ							0.0011***		0.0001
							(3.70)		(0.68)
SUE_{q-1}								0.0195***	0.0119
								(3.44)	(2.47)**
Adj R-square	0.003	0.001	0.000	0.000	0.000	0.003	0.001	0.001	0.006

This table presents regression results of *EXRET[-10,-1]* relative to earnings announcement dates from Compustat. *EA_IVOL* is the average of the absolute value of the 3-day excess return around earnings announcements (from day -1 to day +1) from four earnings announcements in year *y*-1. *EXRET[-10,-1]* is the excess return in the 10 days leading up to earnings announcements. Excess return is measured as the difference between stock return and *CRSP* value-weighted return over the same period. *SIZE* and *BM* denote market capitalization and the book-to-market ratio at the end of year *y*-1. *MOM* is the firm's return over the six-month period ending on day *t*-11 before the earnings announcement. *BETA* and *IVOL* are stock beta and standard deviation of residual returns from the 4-factor model estimated over the 200 day period ending on day *t*-11 before the earnings announcement. *ILLIQ* is the Amihud illiquidity ratio measured over the six month period ending on day *t*-11 before the earnings announcement. SUE_{q-1} is standardized unexpected earnings from the prior quarter using the random walk model. *t*-statistics in parentheses are based on two-way clustered robust standard errors, clustered by firm and quarter. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 5. Interaction Effects in *EXRET[-10,-1]*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intercept	0.0135**	-0.0017	-0.0012	-0.0006	-0.0073***	-0.0025	0.0153***	-0.0107
	(2.39)	(-1.17)	(-1.13)	(-0.57)	(-3.59)	(-1.82)	(2.94)	(-1.44)
EA_IVOL	0.2608***	0.1182***	0.1196***	0.1086***	0.0831***	0.1183***	0.1357***	0.3783***
	(3.70)	(3.35)	(4.19)	(5.93)	(3.62)	(3.37)	(3.83)	(3.51)
*EA_IVOL*SIZE*	-0.0139**							-0.0228***
	(-2.34)							(-3.26)
*EA_IVOL*BM*		-0.0038						-0.0045
		(-0.40)						(-0.64)
*EA_IVOL*MOM*			-0.0274**					-0.0163
			(-2.25)					(-1.41)
*EA_IVOL*BETA*				0.0059				0.0134
				(0.48)				(1.27)
*EA_IVOL*IVOL*					-0.1044			-0.1344
					(-0.36)			(-0.40)
*EA_IVOL*ILLIQ*						-0.0051*		-0.0068***
						(-1.78)		(-2.60)
*EA_IVOL*SUE*$_{q-1}$							0.0261	0.0481
							(0.78)	(1.51)
SIZE	-0.011**							0.0009
	(-2.45)							(1.11)
BM		0.0008**						0.0007**
		(2.09)						(1.99)
MOM			0.0017					0.0008
			(0.73)					(0.37)
BETA				-0.0004				-0.0005
				(-0.91)				(-1.10)
IVOL					0.3058***			0.2882***
					(4.80)			(3.50)
ILLIQ						0.0013***		0.0005**

						(3.12)		(2.14)
SUE_{q-1}							0.0162***	0.0081*
							(2.99)	(1.77)
Adj R-square	0.003	0.003	0.003	0.003	0.005	0.003	0.003	0.006

This table presents regression results of *EXRET[-10,-1]* relative to earnings announcement dates from Compustat and interaction effects. *EA_IVOL* is the average of the absolute value of the 3-day excess return around earnings announcements (from day -1 to day +1) from four earnings announcements in year *y*-1. *EXRET[-10,-1]* is the excess return in the 10 days leading up to earnings announcements. Excess return is measured as the difference between stock return and *CRSP* value-weighted return over the same period. *SIZE* and *BM* denote market capitalization and the book-to-market ratio at the end of year *y*-1. *MOM* is the firm's return over the six-month period ending on day *t*-11 before the earnings announcement. *BETA* and *IVOL* are stock beta and standard deviation of residual returns from the 4-factor model estimated over the 200 day period ending on day *t*-11 before the earnings announcement. *ILLIQ* is the Amihud illiquidity ratio measured over the six month period ending on day *t*-11 before the earnings announcement. *SUE_{q-1}* is standardized unexpected earnings from the prior quarter using the random walk model. *t*-statistics in parentheses are based on two-way clustered robust standard errors, clustered by firm and quarter. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 6. ***EXRET[-10,-1]*** **relative to Expected Announcement Dates**

Panel A: ***EXRET[-10,-1]*** **relative to Expected Announcement Dates from Portfolios Sorted by Earnings Announcement Idiosyncratic Volatility**

1 (Low *EA_IVOL*)	0.0014*
2	0.0015*
3	0.0022***
4	0.0023***
5	0.0028**
6	0.0050***
7	0.0049***
8	0.0060***
9	0.0081***
10 (High *EA_IVOL*)	0.0115***
10-1	0.0101***

Panel B: ***EXRET[-10,-1]*** **relative to Expected Announcement Dates from Portfolios Sorted by Earnings Announcement Idiosyncratic Volatility after Controlling for** ***SIZE, BM, MOM, BETA, IVOL, ILLIQ,*** **and** SUE_{q-1}

	SIZE (1)	*BM* (2)	*MOM* (3)	*BETA* (4)	*IVOL* (5)	*ILLIQ* (6)	SUE_{q-1} (7)
1 (Low *EA_IVOL*)	0.0016	0.0011	0.0024***	0.0018**	0.0025**	0.0013	0.0009
2	0.0024**	0.0018*	0.0023**	0.0020**	0.0038***	0.0020**	0.0022**
3	0.0022**	0.0012	0.0027***	0.0016	0.0031***	0.0031***	0.0019*
4	0.0036***	0.0023**	0.0023**	0.0028**	0.0028**	0.0026**	0.0020**
5	0.0032**	0.0030**	0.0047***	0.0023**	0.0040***	0.0028**	0.0026**
6	0.0046***	0.0040***	0.0037***	0.0033**	0.0042***	0.0046***	0.0044***
7	0.0043***	0.0054***	0.0035***	0.0047***	0.0044***	0.0041***	0.0037**
8	0.0057***	0.0056***	0.0054***	0.0066***	0.0058***	0.0060***	0.0066***
9	0.0067***	0.0084***	0.0084***	0.0090***	0.0060***	0.0078***	0.0086***
10 (High *EA_IVOL*)	0.0106***	0.0117***	0.0098***	0.0107***	0.0080***	0.0100***	0.0119***
10-1	0.0090***	0.0106***	0.0074***	0.0089***	0.0055***	0.0087***	0.0110***

Pane A presents decile portfolios formed every quarter from 1980 to 2011 by sorting stocks based on *EA_IVOL* measured from year *y*-1. Panel B presents double-sorted decile portfolios formed every quarter from 1980 to 2011 by sorting stocks based on *EA_IVOL* measured from year *y*-1 after controlling for size, book-to-market, momentum, beta, idiosyncratic volatility, Amihud illiquidity, and standardized unexpected earnings. Portfolio 1 (10) is the portfolio with the lowest (highest) stock return volatility around earnings announcements in the previous year. *EA_IVOL* is the average of the absolute value of the 3-day excess return around earnings announcements (from day -1 to day +1) from four earnings announcements in year *y*-1. *EXRET[-10,-1]* is the excess return in the 10 days leading up to expected earnings announcements. Excess return is measured as the difference between stock return and *CRSP* value-weighted return over the same period. Expected earnings announcements are estimated using the approach from Cohen *et al*. (2007) where the expected earnings announcement dates are based on the distributions of firms' earnings announcement dates from the prior 5 years. For each firm quarter, an earnings announcement date is identified as one of the 63 days in the quarter (day 1 to day 63 in the quarter). The median earnings announcement date from the previous rolling 5 years (20 quarters) is the expected earnings announcement date. In Panel B, stocks are first sorted into deciles using the control variable. Then within each decile, stocks are sorted into deciles based on *EA_IVOL*. Panel B presents the average *EXRET[-10,-1]* across the ten control deciles to produce decile portfolios with dispersion in *EA_IVOL* but with similar composition of the control variable. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 7. Portfolios Sorted by Earnings Announcement Idiosyncratic Volatility Using Alternative Portfolio Weightings and Risk Adjustments

Pane A: Alternative Portfolio Weightings

	Value-Weighted	Volume-Weighted	Dollar Volume-Weighted
	(1)	(2)	(3)
1 (Low *EA_IVOL*)	-0.0002	0.0056***	0.0019*
2	-0.0003	0.0052***	0.0009
3	0.0009	0.0062***	0.0040**
4	0.0001	0.0051***	0.0017
5	0.0002	0.0081***	0.0055***
6	0.0024**	0.0114***	0.0039***
7	0.0022*	0.0072***	0.0059***
8	0.0034***	0.0119***	0.0090***
9	0.0045***	0.0127***	0.0101***
10 (High *EA_IVOL*)	0.0064***	0.0153***	0.0105***
10-1	0.0066***	0.0097***	0.0086***

Pane B: Alternative Risk Adjustments

	Size-Adjusted Return	CAPM Alpha	Four-Factor Alpha
	(1)	(2)	(3)
1 (Low *EA_IVOL*)	0.0011	0.0012	0.0011
2	0.0012	0.0014	0.0012
3	0.0028**	0.0022**	0.0020**
4	0.0025**	0.0021**	0.0021**
5	0.0037**	0.0035**	0.0036**
6	0.0054***	0.0046***	0.0046***
7	0.0052***	0.0041***	0.0044***
8	0.0072***	0.0064***	0.0069***
9	0.0086***	0.0088***	0.0089***
10 (High *EA_IVOL*)	0.0125***	0.0123***	0.0121***
10-1	0.0114***	0.0111***	0.0110***

Panel A presents *EXRET[-10,-1]* portfolio returns weighted by market capitalization, share volume, and dollar volume where *EXRET[-10,-1]* is the excess return measured as the difference between stock return in the 10 days leading up to earnings announcements and *CRSP* value-weighted return over the same period. Panel B presents equal-weighted portfolio returns adjusted for size risk, CAPM, and four-factor model. Size-adjusted return is the difference between stock return in the 10 days leading up to earnings announcements less the portfolio return of the size decile that the stock belongs to over the same period. For each day, CAPM and four-factor adjusted returns are calculated as follows:

$$\alpha_{i,t,CAPM} = r_{i,t} - [r_{f,t} + \beta_1(r_{m,t} - r_{f,t})]$$

$$\alpha_{i,t,4F} = r_{i,t} - [r_{f,t} + \beta_1(r_{m,t} - r_{f,t}) + \beta_2 HML_t + \beta_3 SMB_t + \beta_4 UMD_t]$$

where $r_{i,t}$ is the return of firm i on day t, $r_{f,t}$ is the risk-free rate, $r_{m,t}$ is the market return, and HML_t, SMB_t, and UMD_t are daily factors on the high-minus-low book-to-market strategy, small-minus-big size strategy, and high-minus-low momentum strategy, respectively. Factors are from Ken French's website. CAPM alpha and four-factor alpha are cumulative of daily alphas in the 10 days leading up to earnings announcements (from 10 to -1). Decile portfolios are formed every quarter from 1980 to 2011 by sorting stocks based on *EA_IVOL*. Portfolio 1 (10) is the portfolio with the lowest (highest) stock return idiosyncratic volatility around earnings announcements in the previous year. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 8. Portfolio Sorted by *EA_IVOL* Measured over Different Multi-Quarter Periods

	N=1	N=2	N=3	N=4	N=8	N=16
	(1)	(2)	(3)	(4)	(5)	(6)
1 (Low *EA_IVOL*)	0.0041***	0.0020**	0.0012	0.0009	0.0009	0.0005
2	0.0023***	0.0016**	0.0016**	0.0011	0.0006	0.0004
3	0.0023***	0.0028***	0.0024***	0.0021**	0.0013	0.0017*
4	0.0028***	0.0021**	0.0025***	0.0023**	0.0024**	0.0016*
5	0.0031***	0.0032***	0.0035***	0.0029***	0.0034***	0.0032***
6	0.0043***	0.0043***	0.0036***	0.0047***	0.0029**	0.0041***
7	0.0045***	0.0049***	0.0048***	0.0048***	0.0058***	0.0058***
8	0.0054***	0.0062***	0.0062***	0.0066***	0.0070***	0.0072***
9	0.0071***	0.0069***	0.0080***	0.0088***	0.0086***	0.0096***
10 (High *EA_IVOL*)	0.0110***	0.0128***	0.0131***	0.0125***	0.0138***	0.0129***
10-1	0.0069***	0.0108***	0.0119***	0.0116***	0.0129***	0.0124***

Decile portfolios are formed every quarter from 1980 to 2011 by sorting stocks based on *EA_IVOL* measured from the past rolling N quarter(s) where N= 1, …, 16. Portfolio 1 (10) is the portfolio with the lowest (highest) stock return idiosyncratic volatility around earnings announcements over the previous past rolling N quarter(s). Stock return idiosyncratic volatility around earnings announcements is the absolute value of the 3-day excess return around earnings announcements (from day -1 to day +1). *EXRET[-10,-1]* is the excess return in the 10 days leading up to earnings announcements. Excess return is measured as the difference between stock return and *CRSP* value-weighted return over the same period. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 9. Predictability of Absolute Value of *EXRET[-1,+1]*

Panel A: *ABS{EXRET[-1,+1]}* Portfolios Sorted by Earnings Announcement Idiosyncratic Volatility

	ABS{EXRET[-1,+1]}
1 (Low *EA_IVOL*)	0.0473
2	0.0504
3	0.0544
4	0.0599
5	0.0645
6	0.0714
7	0.0752
8	0.0817
9	0.0900
10 (High *EA_IVOL*)	0.1041
10-1	0.0568

Panel B: Cross-sectional Predictability of *ABS{EXRET[-1,+1]}*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Intercept	0.0365***	0.1199***	0.0590***	0.0584***	0.0554***	0.0253***	0.0548***	0.0783***	0.0208***
	(19.93)	(22.57)	(24.22)	(25.11)	(25.41)	(11.72)	(21.95)	(22.14)	(3.15)
EA_IVOL	0.3778***								0.1905***
	(23.82)								(11.54)
SIZE		-0.0051***							-0.0002
		(-12.54)							(-0.53)
BM			-0.0012***						-0.0008***
			(-2.17)						(-3.55)
MOM				-0.0059					-0.0076***
				(-1.33)					(-2.68)
BETA					0.0029***				0.0020***
					(4.81)				(5.93)
IVOL						0.9850***			0.0856***

						(23.24)			(14.69)
ILLIQ							0.0023***		0.0007***
							(10.02)		(4.18)
SUE_{q-1}								0.0206***	-0.0010
								(7.37)	(-0.37)
Adj R-square	0.058	0.017	0.000	0.003	0.000	0.094	0.014	0.001	0.111

ABS{EXRET[-1,+1]} is the absolute value of excess return in the 3-day window surrounding earnings announcements. *EA_IVOL* is the average of the absolute value of the 3-day excess return around earnings announcements (from day -1 to day +1) from four earnings announcements in year *y*-1. Excess return is measured as the difference between stock return and *CRSP* value-weighted return over the same period. *SIZE* and *BM* denote market capitalization and book-to-market ratio at the end of year *y*-1. *MOM* is the firm's return over the six-month period ending on day *t*-11 before the earnings announcement. *BETA* and *IVOL* are stock beta and standard deviation of residual returns from the 4-factor model estimated over the 200 day period ending on day *t*-11 before the earnings announcement. *ILLIQ* is the Amihud illiquidity ratio measured over the six month period ending on day *t*-11 before the earnings announcement. SUE_{q-1} is standardized unexpected earnings from the prior quarter using the random walk model. *t*-statistics in parentheses are based on two-way clustered robust standard errors, clustered by firm and quarter. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 10. ***Signed Earnings Announcement Idiosyncratic Volatility and EXRET[-10,-1]***

	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.0094	0.0090	0.0090	0.0091	0.0089	0.0089
	(1.16)	(1.12)	(1.13)	(1.08)	(1.05)	(1.06)
EA_MAX	0.0176***		0.0178***			
	(4.09)		(4.13)			
EA_MIN		-0.0080	-0.0091			
		(-1.12)	(-1.27)			
EA_IVOL(+)				0.0300***		0.0291***
				(4.46)		(4.59)
EA_IVOL(-)					0.0148	0.0092
					(1.28)	(0.82)
SIZE	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003	-0.0003
	(-0.84)	(-0.69)	(-0.84)	(-0.81)	(-0.68)	(-0.81)
BM	0.0004	0.0005	0.0004	0.0004	0.0005	0.0005
	(1.41)	(1.53)	(1.45)	(1.38)	(1.51)	(1.40)
MOM	-0.0013	-0.0011	-0.0012	-0.0007	-0.0005	-0.0006
	(-0.47)	(-0.38)	(-0.45)	(-0.23)	(-0.16)	(-0.22)
BETA	0.0003	0.0004	0.0003	0.0003	0.0003	0.0003
	(1.05)	(1.18)	(1.00)	(0.98)	(1.14)	(0.97)
IDIO	0.3087***	0.3193***	0.2975***	0.3232***	0.3366***	0.3162***
	(3.37)	(3.55)	(3.35)	(3.73)	(3.98)	(3.81)
ILLIQ	-0.0001	-0.0000	-0.0000	-0.0001	-0.0001	-0.0001
	(-0.15)	(-0.02)	(-0.10)	(-0.36)	(-0.23)	(-0.33)
SUE_{q-1}	0.0120**	0.0119**	0.0119**	0.0125**	0.0124**	0.0124**
	(2.50)	(2.49)	(2.49)	(2.35)	(2.33)	(2.34)
Adj R-square	0.006	0.005	0.006	0.006	0.005	0.006

This table presents regression results of *EXRET[-10.-1]* and signed earnings announcement idiosyncratic volatility. *EA_MAX (EA_MIN)* is the maximum (minimum) of the 3-day stock price response to earnings announcements (from day -1 to day +1) from four earnings announcements in year *y*-1. *EA_IVOL(+)* is the average of the absolute value of the 3-day excess return around earnings announcements (from day -1 to day +1) from four earnings announcements in year *y*-1 where the 3-day stock price response is positive. *EA_IVOL(-)* is the average of the absolute value of the 3-day excess return around earnings announcements (from day -1 to day +1) from four earnings announcements in year *y*-1 where the 3-day stock price response is negative. *EA_IVOL(+)* and [*EA_IVOL(-)*] is set to be 0 if all the 3-day excess returns around earnings announcements in year *y*-1 are negative [positive]. *EXRET[-10,-1]* is the excess return measured as the difference between stock return in the 10 days leading up to earnings announcements and *CRSP* value-weighted return over the same period. *SIZE* and *BM* denote market capitalization and the book-to-market ratio at the end of year *y*-1. *MOM* is the firm's return over the size month period ending on day *t*-11 before the earnings announcement. *BETA* and *IVOL* are stock beta and standard deviation of residual returns from the 4-factor model estimated over the 200 day period ending on day *t*-11 before the earnings announcement. *ILLIQ* is the Amihud illiquidity ratio measured over the six month period ending on day *t*-11 before the earnings announcement. SUE_{q-1} is standardized unexpected earnings from the prior quarter using the random walk model. *t*-statistics in parentheses are based on two-way clustered robust standard errors, clustered by firm and quarter. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Table 11. Multivariate Analyses of *EXRET[0,+1]*, *EXRET[+2,+10]*, and *EXRET[-10,+10]*

	EXRET[0,+1]		*EXRET[+2,+10]*		*EXRET[-10,+10]*	
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.0012	0.0068	0.0006	0.0008	0.0001	-0.0045
	(4.48)	(2.04)	(0.52)	(0.46)	(0.07)	(-0.46)
EA_IVOL	-0.0102	-0.0037	-0.0122**	-0.0102**	0.0781***	0.0416***
	(-1.40)	(-1.19)	(-2.37)	(-2.26)	(3.22)	(3.16)
SIZE		0.0005		-0.0001		0.0001
		(3.19)		(0.16)		(0.26)
BM		0.0003		0.0002		0.0011**
		(1.94)		(1.98)		(2.31)
MOM		0.0057		-0.0023		-0.0018
		(1.51)		(-3.46)		(-0.54)
BETA		-0.0002		-0.0003		-0.0004
		(-0.32)		(-2.55)		(-1.25)
IVOL		-0.0943		-0.1009		0.0957
		(-2.73)		(-0.47)		(0.76)
ILLIQ		0.0015		0.0004		0.0019***
		(7.12)		(1.18)		(4.46)
SUE_q		0.0107***		0.0091***		0.0538***
		(5.17)		(3.37)		(6.42)
Adj R-square	0.001	0.003	0.001	0.003	0.001	0.004

This table presents regression results of *EXRET[0,+1]*, *EXRET[+2,+10]*, and *EXRET[-10,+10]* relative to earnings announcement dates from Compustat. *EA_IVOL* is the average of the absolute value of the 3-day excess return around earnings announcements (from day -1 to day +1) from four earnings announcements in year *y*-1. *EXRET[-10,-1]* is the excess return in the 10 days leading to earnings announcements. Excess return is measured as the difference between stock return and *CRSP* value-weighted return over the same period. *SIZE* and *BM* denote market capitalization and book-to-market ratio at the end of year *y*-1. *MOM* is the firm's return over the six-month period ending on day *t*-11 before the earnings announcement. *BETA* and *IVOL* are stock beta and standard deviation of residual returns from the 4-factor model estimated over the 200 day period ending on day *t*-11 before the earnings announcement. *ILLIQ* is the Amihud illiquidity ratio measured over the six month period ending on day *t*-11 before the earnings announcement. SUE_q is standardized unexpected earnings from the current quarter using the random walk model. *t*-statistics in parentheses are based on two-way clustered robust standard errors, clustered by firm and quarter. ***, **, * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.