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Trading Volume Dynamics around Firms' Scheduled and Unscheduled Announcements

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Abstract

This paper reports empirical evidence on the effect of firms' scheduled and unscheduled announcements on investors' trading behaviour. We find that trading volume decreases before scheduled announcements, consistent with models that predict that liquidity traders might postpone their trading until after an anticipated news release. We also find the magnitude of ex ante trading reactions is negatively associated with the level of pre-disclosure information asymmetry, again consistent with models of delayed trading by uninformed traders. We also find that trading volume is boosted before unscheduled announcements, which suggests that there is a significant level of informed trading taking advantage of information asymmetry in pre-event period. The relation between the magnitude of trading reactions before unscheduled announcements and the pre-disclosure information asymmetry is weakly significant or insignificant.

Key words: *trading volume; scheduled and unscheduled announcements; information asymmetry*

Introduction

Changes of trading volume reflect the degree of differing beliefs or divergent interpretations consequent on news (Karpoff, 1986; Kim and Verrecchia, 1991). Trading investors' different responses on the news releases is due to their diverse information set. Generally, traders can be classified into two types in terms of their information sources: informed trading (sources from both public and non-public channels, such as insider trading, or some professional trading with private information); and uninformed trading (sources from only public channels, liquidity trading). Admati and Pfleiderer (1988) – hereafter AP – and Foster and Viswanathan (1990) –hereafter FV – emphasise the importance of liquidity traders in variations in volume. AP and FV indicate that discretionary liquidity traders, who can allocate their trading across different time, may adjust their trading patterns to avoid high trading costs. Thus fluctuations in one component of total trading volume may be explained by systematic changes in liquidity trading. This is in contrast to Kyle's (1985) model where liquidity traders are assumed to be 'random noise traders' whose trades are exogenous and inelastic to price. The purpose of this study is to provide empirical evidence for these different models.

Chae (2005) has provided related empirical evidence through investigating trading volume prior to the scheduled (earnings announcements) and the unscheduled announcements (acquisition, target, and Moody's bond rating announcements). He finds that discretionary liquidity traders will only postpone their trading demands until the announcement is made and information asymmetry is resolved with a necessary condition - the timing of the announcement is publicly known. In this paper, we follow Chae's method but with an out-of-sample period test which starts from 2001 to 2010, where his test period ends by 2000. Apart from using actual (fiscal) earnings announcements as scheduled announcements, we add firms' earnings guidance as an alternative proxy of scheduled announcements. Firms release earnings guidance through conference calls or press before the fiscal earnings announcements. This type of preannouncement disclosure is a voluntary announcement and less regulated compare to the fiscal earnings announcement. Although the frequency of holding conference call is flexible across firms, firms would normally issue the timing of the upcoming conference call at least one week in advance to the public (NIRI 2001[1]). Without any private news about the upcoming release, liquidity traders can still adjust their trading demand accordingly to avoid high adverse selection costs before the asymmetry is levelled. For unscheduled announcements, in which we use acquisition and target announcements as proxies followed Chae (2005). Liquidity traders might not change their trading plan as there is no exact timing information about those announcements.

In the following empirical work, we test four related hypotheses about how trading volume changes around firms' announcements. Hypothesis 1 states that trading volume should decrease before scheduled announcements. This prediction is based on the AP and FV model, which infer discretionary liquidity traders would adjust their trading patterns when the level of pre-disclosure information asymmetry is extremely high. In the meanwhile, there should be no decrease of trading volume before unscheduled announcement as liquidity traders cannot optimize their trading plan when the timing information is unknown according to Chae's empirical results. Our results confirm this prediction with evidence of significant negative abnormal turnover prior to both types of

[1] Survey by National Investor Relations Institute

scheduled announcements during period of (-10, -3). For both types of unscheduled announcements, we find positive abnormal turnover in ex ante period. This boosted trading might due to informed/insider trading as those traders want to gain payoff based on their private information before the public announcements. Hypothesis 2 states that trading volume should increase on/after announcements. George et al (1994) argue there should be a boost in trading volume on/after scheduled announcements by the increased liquidity trading as the information asymmetry is resolved finally. On the other hand, Kim and Verrecchia's (1991) – hereafter KV – indicate that investors who are asymmetrically informed would hold different expectations in pre-disclosure period. When the announcement is released, high trading volume on/after announcements can be a result of differential belief revisions. Just like Chae (2005), we find significant increase of trading volume on/after all types of announcements.

In order to verify those theoretical models we test further two hypotheses. Hypothesis 3 states that trading volume before scheduled announcements is negatively associated with the level of pre-disclosure information asymmetry. Firms' size, dispersion and numbers of analyst forecasts, bid-ask spread are used as proxies of information asymmetry. Hypothesis 3 is a prediction of changes of trading volume from the AP and FV model. Chae's empirical results also suggest that there is a negative relationship between the decreasing of trading volume before scheduled announcements and the level of pre-disclosure information asymmetry. Our empirical tests confirm this negative relationship following Chae's test. However, we find that this negative relationship also exists, but less significant, for unscheduled announcements (weakly significant for acquisition announcements, and insignificant for target announcements), where Chae find no such relation holds for unscheduled announcements. Hypothesis 4 states a positive relationship between changes of ex post trading volume and pre-disclosure information asymmetry. Although KV and George's et al models suggest different explanations of high trading volume on/after announcements, they both refer to pre-disclosure information asymmetry. Our findings support this prediction.

Kothari et al. (2009) argue that firms prefer to share good news early, while analysts are prefer to be warned with bad news early. If firms release announcements with the same intensity, regardless of the direction of the news, the reaction of trading volume on good and bad news would be independent. In order to investigate whether markets may react asymmetrically between positive and negative news, we divide both voluntary and mandatory earnings releases into two sub-samples based on the sign of earnings surprises. In addition, an earnings release which suggests a great surprise could reflect a high level of pre-disclosure information asymmetry. Therefore, we test further sub-samples in terms of the magnitude of the earnings surprises.

The remainder of this paper is organized as follows. Firstly, we will briefly review the related literature and state the four hypotheses in detail. Then we will describe the data sets and describe the methodology of a trading volume event study. Our main empirical results based on event study (testing the first two hypotheses) are followed by a further verification about theoretical models based on regressions (testing the third and fourth hypotheses). Finally, we present a conclusion in last section.

Related Literature

The trading volume can be simply defined as the total number of transactions between buyers and sellers in the trading period. Generally, previous studies about how the trading volume changes can be classified into two main areas: the effects of price changes and the effects of information releases. According to Karpoff (1987), the demonstration of existence of price-volume relation can be traced back to Osborne (1959). Ying (1966) find that "(3) A large increase in volume is usually accompanied by either a large rise in price or a large fall in price." The dynamic relation between changes of trading volume and changes of price is subsequently widely analysed by many empirical studies. For example, Crouch (1970) finds a positive price-volume relation by investigating market indices and individual common stocks. Grammatikos and Saunders (1986) also obtain same positive relation by testing future markets. Lee and Rui (2002) support the existence of positive relationship between trading volume and return volatility by using the daily data of three representative countries: US, UK, and Japan. Ofek and Richardson (2003) report a positive link between changes of share price and volume by analysing the internet bubbles.

Studies about the effects of information on volume show how volume is associated with opinions/belief based on traders' private and public information. Beaver (1968) and Karpoff (1986) point out that the volume reaction around information releases reflects differences among individual traders or different interpretations of the news. Inspired by Glosten and Milgrom (1985) and Kyle (1985), Kim and Verrechia (1991) find that "trading volume is proportional to both the absolute price change and a measure of differential precision across traders." Their theoretical model demonstrates that changes of volume in response to public announcements are positively associated with the level of pre-disclosure information asymmetry, and negatively associated with the level of announced information asymmetry. Atiase and Bamber (1994) provide empirical support for Kim and Verrechia's (1991) model by testing volume reactions before and after annual earnings announcements. Factors such as bid-ask spread and dispersion of analysts' forecasts, are commonly used as proxies of differential precision (information asymmetry) among traders. For example, Coller and Yohn (1997) examine whether management earnings forecast is related to information asymmetry by using bid-ask spread as a measurement. Thomas (2002) employs the errors and dispersion of analysts' forecasts as proxies of information asymmetry to test the relation between firm diversification and asymmetric information.

According to Glosten and Milgrom (1985), participants among markets can be roughly divided into two types: informed and uninformed (liquidity) traders. Informed traders are defined as those who can obtain both public and private information. The private information can be obtained through firms performance or future strategies (normally insiders would know well), independent analysts' analysis/research about firms' historical data (e.g. financial reports), traders own ability of verifying rumours, closed one-to-one meetings with firms board members (this kind of method of releasing information before the public release has been restricted by the Regulation Fair Disclosure since 2000), and other non-public channels. Uninformed traders are defined as those who can only obtain public information. Kyle (1985) suggests that insider trading dominates the increase of total trading volume as insiders try to exploiting profits optimally before the information asymmetry reduced. Kyle's model takes liquidity traders as 'random noise traders' which is exogenous and inelastic to price. Some studies concentrate on the role of informed trading and find supporting evidence. For example, Jayaraman, et al. (2001) and Spyrou et al. (2011) find that there is a

significant level of informed trading before the announcements of a merger or acquisition by testing equity and options markets.

However, Admati and Pfleiderer (1988) and Foster and Viswanathan (1990) argue that liquidity trading drive the total trading volume as liquidity traders will concentrate their trading after the asymmetry is resolved. Based on AP and FV's theoretical model, Chae (2005) provides a very interesting insight into the differences of trading volume between scheduled and unscheduled announcements. The idea is that uninformed traders will participate less when the possibility of informed trading is high (from Milgrom and Stokey, 1982; Black, 1986; and Wang, 1994). Chae (2005) adds timing information as a factor of trading activity. He proposes and confirms that uninformed traders (discretionary liquidity traders) would postpone their trading demand until the news is released only if the timing of the release is publicly known (scheduled, such as firms' mandatory earnings announcements). He also finds that the delayed trading volume is positively associated with the level of information asymmetry. And such a relationship would not hold for unscheduled events (acquisition, target, and Moody's bond rating announcements are referred to as unscheduled news in his study). Uninformed traders would not adjust their trading pattern to avoid adverse selection if they are not waiting for the information flow. The timing factor has also been emphasized for affecting trading behaviours around announcements (e.g. Graham et al., 2006; and Lei and Wang, 2014), but the empirical evidence is still limited.

Hypotheses

In this section, four related hypotheses will be discussed in detail. The first two hypotheses state the prediction of changes of volume around firms' announcements based on theoretical models: predicted variation in volume before announcements following the AP and FV model; predicted variation in volume on/after announcements following the KV and George's et al model. The last two hypotheses state the prediction of the relationship between changes of volume and the level of pre-disclosure information asymmetry with a purpose of testing those theoretical models.

H1: Trading volume should decrease before scheduled announcements.

Our first hypothesis is based on AP and FV theoretical model about trading volume prior to firms' announcements. AP and FV introduce the role of discretionary liquidity traders in intra- and interday variations in volume. The framework of their models is based on that of Kyle (1985), which incorporates many liquidity traders (uninformed traders), many informed traders and one market maker. AP and FV's model assumes there are several market makers. They show that discretionary liquidity traders will adjust their trading demand to avoid high trading costs, especially when there is a high possibility of informed trading, whereas liquidity trading is exogenous and inelastic to price in Kyle's model. Hence, discretionary liquidity traders will postpone their trading demand until earnings releases are made and the information asymmetry is resolved. Total trading volume before earnings releases will decrease. In their model, fluctuations in total trading volume are driven by liquidity traders. Higher trading costs, lower market liquidity which depend on information asymmetry lead to less trading volume. Chae (2005) provides empirical results by using actual earnings announcements as proxy of scheduled announcements, where the release date is publicly known in advance. Voluntary earnings guidance with publicly known pre-disclosure timing information should face similar ex ante trading volume reactions.

H2: Trading volume should increase on/after announcements.

Following the AP and FV model, the delays in trading demand should eventually be fulfilled after releases are issued. Total trading volume on/after earnings releases should increase (i.e. the delayed trading prior to releases caused by great information asymmetry leads to an increase in ex post trading). On the other hand, predictions about changes of trading volume on and after announcements can be found in the KV and George et al.'s model. KV constructs a two-period model, and assumes investors have diverse pre-disclosure beliefs. They state that differential belief revisions across traders in response to announcements, which are reflected in trading volume, are caused by traders' differential pre-disclosure private information (i.e. pre-disclosure information asymmetry). The KV model has been supported by Atiase and Bamber's (1994) empirical evidence from testing changes of trading volume around annual earnings announcements. Although George's et al model shows that trading volume is sensitive to transaction costs, both the KV and George's et al models predict that trading volume on and after announcements should increase as the great asymmetry has been resolved. They also indicate that increase of trading volume on/after announcements should be positively associated with ex ante information asymmetry.

H3: Trading volume before earnings releases is negatively associated with the level of pre-disclosure information asymmetry.

H4: Trading volume after earnings releases is positively associated with the level of pre-disclosure information asymmetry.

The purpose of testing the last two hypotheses is to verify theoretical predictions of the AP and FV and KV and George's et al models in order to provide further evidence on H1 and H2. Following Chae's method which uses size of firm, numbers of analyst forecasts, average bid-ask spread as proxies of information asymmetry, we also add dispersion of analyst forecasts as an alternative proxy. Size is widely used as a proxy of information asymmetry (Bamber, 1987; Tkac, 1999; Llorente et al., 2002; Chae, 2005), and generally larger size reflects less pre-disclosure information asymmetry. The use of analyst forecast factors can be justified by referring Ajinkya et al. (1991), Atiase and Bamber (1994), Hong et al. (2000), etc. The concept is that low analysts forecast dispersion or/and more analysts implies less pre-disclosure information asymmetry where the differences across independent analysts would be low. However, herding among analysts can also lead to a low dispersion but worse off the information environment as fewer independent professional information reach to investors (Arya et al., 2005). Previous researchers (e.g. Krinsky and Lee, 1996; Coller and Yohn, 1997) also use bid-ask spread as a measurement of pre-disclosure information asymmetry arises. Kim and Verrecchia's (1994) model states that specialists widen the bid-ask spread when information asymmetry increases in order to recoup losses from trading with informed traders.

Data and Methodology

This study tests four types of firms' announcements: voluntary earnings guidance, actual (mandatory) earnings announcements, acquisition and target announcements issued by NYSE/NASDAQ/AMEX firms. All these four types of news have significant effects on return and trading volume. We use earnings guidance and actual earnings announcements (annually) as proxies of scheduled announcements, and use acquisition and target announcements as proxies of unscheduled announcements. Earning guidance is firms' management forecasts which indicate firms' pre-disclosure expectations about their further earnings for next or following fiscal financial reports. Observations of sample events of firms' voluntary earnings guidance are collected from Briefing.com[2]. Samples of actual earnings announcements, acquisition and target announcements are collected from Thomson ONE Banker. Our sample period starts from January 2001 to December 2010 with a purpose of providing out-of-sample test following Chae's (2005) tests which end by 2000.

For voluntary earnings guidance, only quantitative earnings guidance which contains numerical future earnings per share (EPS) guidance is included into the sample. Repeated guidance for the same fiscal period are excluded due to a double counting problem of reactions of the same firm from overlapping periods which might bias statistical tests. And generally, subsequent repeated guidance contains less information and shocks than the first warning (e.g., Jackson and Madura, 2007; Pukthuanthong, 2010).

In order to control for the direction of the news, we divide each type of earnings announcements (both voluntary and mandatory) into two groups based on the sign of their earnings surprise: good news (positive earnings surprise) and bad news (negative earnings surprise). The earnings surprise is calculated by EPS guidance (actual EPS announcements) minus the consensus EPS (market expectations) estimated by analysts before the release. We obtain analysts' EPS forecast from I/B/E/S (the International Brokers' Estimate System) data set. Then, the percentage of earnings surprise is measured in equation (1).

$$\text{Earnings Surprise } \% = \frac{(\text{firm's EPS release} - \text{analyst's EPS forecast})}{\text{analyst's EPS forecast}} \times 100\% \quad (1)$$

With the control of the magnitude of surprises (shocks), we test extra sub-sample as additional robustness check: earnings announcements with large earnings surprise (>= 25% absolute earning surprise) and earnings announcements with small earnings surprise (<=10% absolute earning surprise). Larger surprises could reflect higher information asymmetry prior to announcements.

A summary of total number of observation of the sample with all sufficient firm-level data are reported in Table I. The earnings guidance is a voluntary disclosure and less regulated, where the total number of observation is approximately half of the number of actual earnings announcements. However, around 40% of earnings guidance contains large earnings surprise, while much fewer large surprise releases among actual earnings announcements. If firms issued earnings guidance aim to

[2] Briefing.com is a professional online platform which provides up-to-date firms' releases, conference call, analysts' recommendation, and historical data. The EPS guidance on Briefing.com is provided free for public.

reduce information asymmetry, hence, the forecast error (earnings surprise) between firms and analysts would relatively larger prior to those voluntary releases than mandatory releases. Furthermore, researchers (e.g. Skinner, 1997) have found that firms issue voluntary earnings guidance with incentive of reducing litigation costs. Therefore, as shown in Table I, there are more observations of downside warnings than upside guidance, even after excluding two recession periods (Y2001 and Y2008), as bad news may bring more law suit trouble to firms than good news. The total number of observations of unscheduled announcements: acquisition announcements with 18493 observations and target announcements with 5305 observations.

[Insert Table I around here]

The event study on trading volume in this paper is following a widely used method (e.g. Bamber, 1986; Ajinka et al., 1991; Atiase and Bamer, 1994, Tkac, 1999). We use daily turnover as a measure of trading volume. The daily turnover of firm *i* is defined as the percentage of outstanding shares traded on day *t*:

$$V_{it} = (V_{it}^{*} \times 100)/S_{it} \tag{2}$$

where V_{it}^{*} is the total number of shares of firm *i* traded on day *t*, S_{it} is firm *i* 's total number of outstanding shares on day *t*. According to Ajinkya and Jain (1989), they indicate that log-transformation yields trading volume measures which are approximately normally distributed, where the distribution of raw trading volume might be skewed. Thus, we take the natural log of the daily turnover in equation (2) and then apply the log-transformed daily turnover into equation (3) to get the log-transformed abnormal turnover. The log-transformed abnormal turnover is calculated by the log-transformed turnover of firm *i* on day *t* minus the average log-transformed turnover of firm *i* over estimation period:

$$Abnormal\ Turnover_{it} = V_{it} - \overline{V_i} \tag{3}$$

where

$$\overline{V_i} = \frac{1}{T}\sum_{t=t_1}^{t=t_2} V_{it}$$

T is the length of estimation period, and t_1 and t_2 is the first and last day of the estimation period. Specifically, a 65-day estimation period prior to the event window is employed in this paper. For example, suppose day 0 is the event date and the event window is 21 days, a 65-day estimation period would be (-75, -11). We use the average turnover of firm *i* over estimation period as benchmark for each sample firm in order to control for cross-sectional differences in firm-specific.

Another popular benchmark mentioned in Tkac (1999) is using market turnover ratio as expected trading volume. However, some researchers argue that the market-wide trading volume is dominated by the volume of few largest firms (Bessembinder et al., 1996), or highly related to other factors (such as institutional ownership, bid-ask spreads, etc).

For the analysis of abnormal turnover around the announcement day, we employ four alternative methods for robustness check. In first robustness check, we extend the estimation period from 65-day to 130-day. The second robustness check uses raw turnover instead of using log-transformed turnover. Then, we replace the average turnover by using value-weighted market volume index as benchmark for third robustness check. One-factor OLS regression is employed for estimation of coefficient of market turnover during the 65-day estimation period, which is applied to calculate the expected turnover. The abnormal turnover is calculated by the daily turnover of firm *i* on day *t* minus the expected turnover of firm *i* on day *t*. For the fourth robustness check, we divide the whole sample periods into two sub-periods to check the stability over years.

In further tests, the regression model that we employed in this paper is following Chae's (2005):

$$Abnormal\ Turnover = \alpha + \beta InfoAsym_i + \gamma Risk_i + \delta PrcChg_i + \varepsilon_i \quad (4)$$

where the abnormal turnover is the cumulative abnormal turnover between a specific event window; $InfoAsym_i$ is each proxy for information asymmetry of firm *i*; $Risk_i$ and $PrcChg_i$ are control variables of risk and price change. Chae implement Fama and MacBeth (1973) type regressions to control time-series variation. We run pooling OLS regressions with a control of year dummies for our main results and run Fama and MacBeth (1973) type regressions as alternative robustness check.

Firms' size, dispersion and numbers of analysts forecast, and the average bid-ask spread are used as proxies of information asymmetry. Firm-level data are obtained from the Center for Research in Security Prices (CRSP) database. We take the logarithm of the market value of equity as firm size which is calculated by closing price per share multiple with number of outstanding shares. Analysts' forecast historical data are provided by I/B/E/S, including the standard deviation of analyst forecasts and numbers of forecasts. The dispersion of analyst forecasts for each sample event is calculated by the standard deviation of analysts' forecast over the absolute mean of EPS forecast one-month prior to the event release. The average bid-ask spread is calculated as the percentage bid-ask spreads between day -140 and day -76. In the meanwhile, we control for industry by using industry dummies based on the Fama and French 12 industry classification[3]. Stocks are sorted into 12 industry categories based on four-digit Standard Industrial Classification (SIC) codes as provided by CRSP.

Apart from information asymmetry, some theoretical models (e.g. Kim and Verrecchia, 1991; Wang, 1994) suggest that changes of trading volume are also significantly associated with price movements. Therefore, we control for absolute price change by using absolute cumulative abnormal returns (CARs) over the same specific period. The CARs is calculated by using size decile portfolios as benchmark portfolios. Due to some firms may issue announcements after the markets close, there would be a substantial change in value of event firms on release day and one day after (e.g. Bulkley

[3] The Fama-French 12 industry classification is available from French's online data library: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

and Herrerias, 2005). Therefore, all sample events are matched to an appropriate size decile portfolio for the preceding 1st of July, based on their market value after the announcement day (on day *w+2*). The construction of breakpoints of size deciles are based on Frama and French's (1992) method which can be obtained from French's online data library[4]. As mentioned in Chae's paper, level of risk would also affect trading volume as long as market participants have differential risk aversion. In this paper, we choose changes of beta and price volatility as a measurement of systematic and non-systematic risk, respectively. The change of beta is calculated by using the percentage change of beta between pre- (-70, -1) and post-announcements (+1, +70) periods, where the beta is estimated by using one-factor market model. We use standard deviation of monthly stock returns from the previous year of the announcement date as price volatility.

[4] The breakpoints of both size and book-to-market ratio quintiles are available from French's online data library: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

Empirical Results following Event Study

In this section, we discuss the changes of trading volume around announcements based on event study results to test the first two hypotheses.

A. Main results

The cross-sectional average abnormal turnover over the 21-day event window around announcements is reported in Table II. The average trading volume before both types of scheduled announcements decrease significantly in the period from day -10 to day -3. Furthermore, the average cumulative abnormal turnover is even more negative before earnings guidance than actual earnings announcements. According to the AP and FV model, informed traders would trade more intensely to exploit their private information before the information is revealed publicly. Consequently, discretionary liquidity traders would expect high adverse selection costs before the public news when they know the timing of public information and expect high trading demand from informed/insider traders prior to the release. Hence, except for urgently liquidity needs case, uninformed traders can postpone their trading plan accordingly to avoid high trading cost. The negative abnormal turnover before scheduled announcements implies that uninformed traders drive the total trading volume during period (-10, -3). Although voluntary earning guidance is less scheduled than fiscal earnings announcements, our results show that uninformed traders still adjust their trading plan as long as they can receive the public timing information in advance.

On the other hand, for unscheduled announcements, uninformed traders have difficulty in distinguishing between informed and uninformed trading would not delay their trading demand in purpose without any publicly timing information. A limitation of using target announcements as proxy of unscheduled announcement could be that the magnitude of reactions to merge announcements is relatively much greater than those scheduled earnings announcements, which may lead an ambiguous that whether the differences of abnormal turnover between target announcement and earnings announcements is due to the public known timing information or not. Therefore, we use both acquirer and target announcements as proxy of unscheduled announcements as acquirer announcements bring much less reaction than target announcements. A potential significant wealth gain for target shareholder can be one of the possible reasons, where the wealth effects for acquirers are not as positive as for target (e.g. Franks and Harris, 1989; Datta, et al., 1992; Andrade, et al., 2001). Our results in Table II confirm that trading volume do not decrease, but increases during period (-10, -3) before both types of unscheduled announcements. The boosted trading can be driven by informed/insider traders as they may want to offset their private information prior to the announcement when the asymmetry will be resolved. As expected, the positive abnormal turnover before target announcements is much greater than the abnormal turnover before acquisition announcements. Informed/insider traders would be more active if there are more potential profits.

Subsequently, the negative average abnormal turnover before the scheduled announcements over period (-10, -3) reverses to be positive in period (-2, -1). This could due to the boosted informed/insider trading which overweigh delayed trading when the scheduled announcement day is very close. For unscheduled announcement, the increasing trading volume from day-10 to day-3

boost further on day -2 and day -1. Hence, no matter whether the announcement is scheduled or unscheduled, informed/insider trading boosts when the release day is very close. Potential profits with significant price movements to offset their private information can be an incentive of their ex ante boosted trading. Therefore, it will be interesting to investigate whether larger trading volume before announcements followed by greater abnormal returns on/after announcements.

On the day of the announcement, trading volume increases for either scheduled or unscheduled announcements, with evidence of positive abnormal turnover on day 0 for all types of announcements in Table II. These positive average abnormal turnovers remain significant on day +1. This could due to some announcements are issued after markets closure. Therefore, the initial reaction about the news would be observed on the next trading day. After the initial reaction, the average abnormal turnover following both scheduled and unscheduled announcements from day +3 to day +10 keeps being positive. An increasing trading volume following the scheduled announcement might because of liquidity traders finally fulfil their trading demand as the pre-disclosure information asymmetry has resolved. On the other hand, the increasing trading volume implies a different degree of pre-disclosure information across traders. When the announcement (either scheduled or unscheduled) is made, traders will have different level of belief revision as their expectations based on pre-disclosure information vary.

Overall, there is a considerable increase in trading volume on/after the initial announcement, where the direction of changes of trading volume prior to the announcement depends on the availability of timing information.

[Insert Table II around here]

B. Robustness checks

In Table III, we employed four alternative methods as robustness check to verify the above main results. The first robustness check (in Panel A) uses an extended length of estimation period which starts from day -140 to day -11, where initial estimation period is 65-day. The results are as similar as the main results where we find a significant decrease of trading volume before scheduled announcements and an increase of trading volume before unscheduled announcements.

The second robustness check (in Panel B) uses raw turnover instead of log-transformed turnover, with the same estimation window (65-day) as main tests do. Once again, the results are consistent with above main results. The average cumulative raw abnormal turnover is even more negative (positive) before scheduled (unscheduled) announcements.

Considering about the market factor, the total market volume may have systematic effect for individual stocks' daily trading volume. We run our third robustness check (in Panel C) by using a value-weighted market volume index as benchmark turnover. The results are similar, and evidence of delayed trading before both types of scheduled announcements is even stronger than main results. We also find significant increase of trading volume before target announcement, but the abnormal turnover before acquisition announcement is insignificant.

With a purpose of checking the stability across years, we test two sub-periods by dividing the whole sample into two parts based on their announcement dates. The directions of changes of trading volume before scheduled and unscheduled announcements for both sub-periods sample are consistent with the main results of the pooling sample. The average cumulative abnormal turnovers over period (-10, -3) before schedule announcements (both earnings guidance and actual earnings) are negative, and more significant in the second sub-period (2006 to 2010).

[Insert Table III around here]

To control for firms' characteristics, we test four extreme size and book-to-market groups (in Table IV). The results of smallest group (in Panel A.1) show that the decrease of trading turnover before scheduled announcements is significant and stronger than that of the pooled sample. It is interesting to notice that the trading volume before acquisition announcement decreases and the abnormal turnover is insignificant before target announcement, whereas the results with pooling sample show a significant increase in ex ante period of (-10, -3). Although uninformed traders are not able to optimise their trading plan accordingly as there is no public timing information, rumours about the potential MA announcements may give uninformed traders hints about the upcoming information flow. Furthermore, within this decade, the widely used internet becomes a platform for spreading information, including rumours. Therefore, even though the rumour cannot be used as confirmed timing information, liquidity traders may still avoid ex ante trading when the level of information asymmetry is extremely high, like our results show for acquisition announcement in smallest size group. In largest size group (in Panel A.2), we only find evidence of delay trading before earnings guidance, with -13.42% cumulative abnormal turnover in period (-10, -3). For another type of scheduled announcements (actual earnings announcements), we observe an increase ex ante trading volume in period (-10, -3) in this largest size group, which is inconsistent with the results of pooling sample. Large firms with relative low information asymmetry may contribute to less delay trading. For unscheduled announcement, we find increases of trading volume in pre-discourse period which is consistent with the results of pooling sample. Liquidity trader will not postpone their trading demand when the level of information asymmetry is relative low, even though there may be some rumours about the upcoming news.

The comparison between smallest and largest size group is significant across all types of announcements. Small firms face much less trading before the announcement is made, no matter whether the timing information is publicly released. On/after the announcement, there are more trading activities for small firms. The level of pre-disclosure information asymmetry which could be reflected by firm size might be one of the reasons of these differences. We will provide further empirical test by running cross-sectional regressions in following section.

With a control of book-to-market ratio, most of the results among lowest and highest book-to-market groups (in Panel B.1 & B.2) are similar to the main results. However, the comparison of changes of trading volume around announcements between growth firms and value firms is slightly a puzzle. If based on AP and FV's prediction, the more the delay trading happen before announcements, the more boosted trading may take place when the asymmetry is resolved. But, our

results show a contrary direction, value firms face less boosted trading than growth firms on/after the scheduled announcements, though there are more negative abnormal turnover among value firms in pre-announcement period of (-10, -3).

[Insert Table IV around here]

C. Further robustness checks for scheduled announcements

For scheduled announcements, particularly in earnings releases, there are ex ante market expectations about the further earnings (e.g. analysts' forecasts) before firms' public earnings guidance or actual earnings announcements. Firms announce upward earnings releases compared to current market expectations are classified as good news, vice versa. The gaps between firms' earnings announcements and market expectations are so called earnings surprises. In terms of the direction of news (good or bad) and earnings surprises, we divide the whole sample of earnings guidance into two sub-samples: earnings guidance with positive surprises and earnings guidance with negative surprises. Furthermore, we test extra sub-sample in each of these positive/negative surprises groups based on the size of earnings surprises.

From Panel A of Table V, no matter whether it is a good news or bad news, there is significant evidence of delay trading before scheduled announcements, where the average abnormal turnover in period (-10, -3) is negative in all sub-samples. In the meanwhile, there are significant boosted trading 48 hours before announcements, and the increases are especially large for good news. Suppose this boosted trading before announcements is driven by large informed/insider trading with purpose of offset their private information. A potential upward price jump following the good news might be the incentive of informed/insider trading. After the announcement is made, there are dramatic increases of trading volume for both good and bad news. The difference of the magnitude of increases between good and bad news are significant, but the direction of difference is mixed. For example, the earnings guidance with negative surprise (bad news) causes an average 17.28% higher abnormal turnover than the abnormal turnover following the good news during period (0, +2). But the negative surprise within actual earnings announcements causes statistically less changes of volume than the abnormal turnover after the positive news.

Literately, earnings releases with large surprises indicate greater information asymmetry before announcements. Hence, if liquidity traders adjust their trading demand before scheduled announcement based on the level of pre-disclosure information asymmetry, the delay trading would be more significant before large surprise news. Panel B of Table V reports abnormal turnover around scheduled announcements in terms of the size of earnings surprises. The majority of sub-sample results in Panel B are similar to main results (Table II). This indicate that, no matter whether the news contains large surprises or not, trading volume still decreases before a scheduled announcement, and boosts when the announcement is going to be issued within 48 hours. The increases of trading volume also remain significantly following announcements, and particularly significant for large surprises. With a control of outliners, we find similar results after a 90% winsorising and a 10% trimming (in Appendix we (a) and (b)).

[Insert Table V around here]

Testing H3 and H4

In this section, we test the third and the fourth hypotheses to provide further support for the main results and verify the theoretical predictions of cross-sectional relations between changes of trading volume and pre-disclosure information asymmetry.

A. Changes of Trading Volume and Information Asymmetry prior to Announcements

The prediction following AP and FV model indicates that higher level of information asymmetry would lead to less trading before announcements. Chae's (2005) results provide further empirical support, which emphasis on the availability of well-known timing information about the news. He point out that liquidity traders postpone their trading plan significantly associated with the level of pre-disclosure information only for scheduled announcements, where no such relation exist before unscheduled announcements. We run an out-of-sample test with a sample period starts from 2001, where Chae's sample period ends by 2000. Apart from using actual earnings announcements as a proxy of scheduled announcements, we add firms' voluntary earnings guidance as another proxy. Though earnings guidance is relatively less scheduled compare to firms' fiscal financial reports, firms would provide ex ante timing information about the exact date of guidance releases to public. Our findings in last section based on event study confirm that liquidity traders do postpone their trading demands before earnings guidance accordingly as well as their trading behaviours prior to actual earnings announcements. In following, we regress cumulative abnormal turnover in period of (-10, -3) on proxies of information asymmetry and control variables, where we use size, dispersion/numbers of analysts' forecasts, bid-ask spread as proxy of information asymmetry. In other words, if there is a negative relation between trading volume before the scheduled announcements and pre-disclosure information asymmetry, we should observe a positive (negative) relation between firm size/numbers of analysts' forecasts (dispersion of analysts' forecasts/bid-ask spread) and trading volume before the scheduled announcements.

Table VI (a) and (b) presents the results of pooling OLS regression across two types of the scheduled announcements. As expected, the coefficients of information asymmetry proxies are consistent with the third hypothesis. Consistent with Chae (2005), we find that trading volume before scheduled announcements (both earnings guidance and actual earnings announcements) is positively related with firm size (0.130 with a t-statistic of 7.97 and 0.238 with a t-statistic of 16.62, respectively). Small firms which reflect higher information asymmetry are associated with lower trading volume before the scheduled announcements. The negative relation between trading volume before the scheduled announcements and information asymmetry also remain when we use analysts' forecasts factors as alternative proxies. Columns (3) – (6) of Table VI (a) and (b) show that trading volume before the scheduled announcements has a positive relation with numbers of analysts' forecasts, but a negative relation with dispersion of analysts' forecasts. Fewer numbers of analysts provide their forecasts imply uninformed investors have less opportunities/channels to obtain independent analysis or information. And the greater the difference across each independent analyst implies more uncertainty for uninformed investors. These results are consistent with the prediction that lower trading volume before the scheduled announcements are associated with higher level of information asymmetry which is reflected by fewer numbers of analysts' forecasts and/or greater dispersion among analysts' forecasts. The last two columns reports the relation by

using bid-ask spread as proxy of information asymmetry. The coefficient of bid-ask spread is only statistically negative for actual earnings announcements. The wider bid-ask spreads which reflect higher information asymmetry are associated with lower trading volume before the scheduled announcements.

We report the regression results across two types of the unscheduled announcements in Table VI (c) and (d). We find that the coefficients of size are positive for acquirer announcements but insignificant for target announcements, though Chae (2005) finds no such relation for either unscheduled announcements. In other words, a small firm would face lower trading before the acquisition announcement than a large firm. If the total trading volume is dominated by informed trading, this result implies that small firms face less informed trading in pre-event period than large firms. Large firms with more difficulties in corporate governance, such as more employees and complicated corporate structure, may face more information leakage before the public announcement. . A significant change between Chae's paper and ours is that SEC adopts Regulation Fair Disclosure (Reg FD) in 2000, which might eliminate/reduce advantages of obtaining private information before the public announcement (e.g. Jackson and Madura, 2007; Agapova and Madura, 2011). The balance between informed trading and liquidity (uninformed trading) might also have changed since then. Furthermore, the acquisition announcements which have relatively less potential wealth gain compare to the targets, would then become less attractive from informed traders' point of view. If the total trading volume is not dominated by informed trading solely, liquidity trading may also affect the total trading volume. Based on the results in Table IV (in previous section), liquidity traders may still avoid trading accordingly when the level of information asymmetry is extremely high, even though only rumours appear in the markets. This can be another interpretation that small firms have less trading volume before the unscheduled announcements as there is more liquidity trading which would be postponed until the announcement is revealed.

[Insert Table VI (a) – (d) around here]

Although there is a negative relation between information asymmetry and trading volume before the acquisition announcement, the magnitude of the coefficients of information asymmetry factors between scheduled and unscheduled announcements is statistically different in most of the cases. We report results of the Wald test in Table VII followed Chae (2005). For example, the Wald statistic for the coefficient of firm size between earning guidance and acquisition announcement is 11.83, which is significant in 95% significance level. This result confirms the story from Chae (2005) which suggests that the behaviour of trading demand associated with the level of information asymmetry before the scheduled announcements is significantly different than before unscheduled announcements. Although rumours may affect liquidity traders trading decisions, the exact publicly timing information still play an important role for those uninformed traders optimizing their trading.

[Insert Table VII around here]

We also employ the Fama and MacBeth type regressions to test the relation between abnormal trading volume before the announcements and the level of information asymmetry, which have been used by Chae (2005), as an alternative robustness check. The reported coefficients in Appendix II (a) – (d) are time series averages from cross-sectional regressions using annually data. Most of the results following Fama and MacBeth type regressions are consistent with the results following OLS pooling regressions. We also run sub-sample tests for the scheduled announcements as we did in previous event study section in terms of the direction of earnings surprises and the magnitude of surprises. The results of sub-sample tests are provided in Appendix III (a) – (l). The directions of coefficients for information asymmetry factors are similar for both good (positive surprises) and bad news (negative surprises) across two types of scheduled earnings announcements. For example, the coefficient of firm size is 0.293 for downside actual earnings and 0.209 for upside actual earnings. Whether the announcements contain large or small earnings surprises also does not change the direction of the relation between ex ante abnormal trading volume and information asymmetry. Appendix IV (a) – (d) also show similar results where we replace the dependent variable by using abnormal turnover (-10, -1), instead of using abnormal turnover (-10, -3).

Overall, there is a strong negative relation between abnormal trading volume before the scheduled announcements and pre-disclosure information asymmetry, but quite weak or almost insignificant relation for unscheduled announcements. Hence, public timing information can provide a well-known signal for liquidity traders to optimize their trading plan accordingly which is negatively associated with the level of pre-disclosure information asymmetry. However, for unscheduled announcements, the ex ante rumours can only provide hints and may not lead to a very significant trading adjustment among uninformed traders.

B. Changes of Trading Volume and Information Asymmetry on/after Announcements

In this sub-section, we turn to test the relation between trading volume on/after the announcements and the level of pre-disclosure information asymmetry across different types of firms' announcements. The prediction of KV model is that a high level of differences among traders before the announcements leads to a high level of trading on announcements dates, while George's et al model implies that lower adverse selection costs when the announcements is issued leads increasing of trading volume. In other words, both models suggest that changes of trading volume on/after announcements would positively associate with pre-disclosure information asymmetry.

Following the same regression model as in the last sub-section, we replace the dependent variable – cumulative abnormal turnover before the announcements with period of (-10, -3) by using the cumulative abnormal turnover on/after the announcements. The dependent variable in Table VIII and IX is cumulative abnormal turnover on announcements (periods of (-2, -1) and (0, +2), respectively). The dependent variable in Table X is cumulative abnormal turnover after announcements (period of (+3, +10)). According to the results in Table VIII (a) – (b), the abnormal turnover 48 hours before the scheduled announcements is still negatively associated with the level of pre-disclosure information asymmetry. However, the magnitude of coefficients of information asymmetry proxies is mostly reduced from regressions for ex ante period of (-10, -3). We provide the Wald test in Table XI to test the statistically difference. For example, in the sample of earnings guidance, the coefficient for firm size is 0.130 with t-statistic 7.97 when the dependent variable is

abnormal turnover over (-10, -3), while the coefficient for firm size is 0.037 with t-statistic 6.85 when the dependent variable is abnormal turnover over (-2, -1). The Wald-statistic is 38.52, which indicate the coefficients for size is significantly different. Table IX (a) – (b) reports the regression results for the period from day 0 to day +2. Similar as Chae's finding, the coefficients for information asymmetry proxies change sign or at least reduced in magnitude when comparing with regressions of trading volume in period (-10, -3). For example, the coefficient for size changes from 0.130 in Table VI (a) to -0.142 in Table IX (a) for earnings guidance sample, and changes from 0.238 to 0.017 for actual earnings announcements sample. The comparison of coefficients for information asymmetry proxies between regressions of ex post trading volume during (+3, +10) (shown in Table X) and ex ante trading volume during (-10, -3) is also significantly different. Hence, for earnings guidance, the negative relation between information asymmetry and abnormal turnover before the announcements reverses to a positive relation between information asymmetry and abnormal turnover on/after the announcements. For actual earnings guidance, this ex ante negative relation reduced significantly after the announcement is released.

The comparison of ex ante and ex post relation between trading volume and information asymmetry for unscheduled announcements has a similar direction as scheduled announcements. The relative weak negative relation between ex ante trading volume and information asymmetry, for acquisition announcements, also reverses to a positive relation between ex post trading volume and information asymmetry. For example, the coefficient for size changes from 0.055 in Table VI (c) when the dependent variable is abnormal turnover during (-10, -3) to -0.087 in Table X (c) when the dependent variable is abnormal turnover during (+3, +10). For target announcements, we also find that the ex post trading volume is positively associated with the level of pre-disclosure information asymmetry (shown in Table IX (d) and Table X (d)), though there is no significant negative relation between ex ante trading volume and information asymmetry. The Wald statistics in Table XI also verify that the differences between the coefficients of information asymmetry proxies are significant.

[Insert Table VIII (a) – (d) around here]

[Insert Table IX (a) – (d) around here]

[Insert Table X (a) – (d) around here]

[Insert Table XI around here]

Conclusion

This paper provides empirical evidence of dynamic trading behaviour around different types of firms' announcements. Firms' earnings guidance and actual earnings announcements are used as proxies of scheduled announcements and acquisition and target announcements are used as proxies of unscheduled announcements. Following the event study, we find negative abnormal turnover before scheduled announcements within period of (-10, -3) and positive abnormal turnover before unscheduled announcements. Both types of announcements face boost trading within 48 hours before the event, and this positive abnormal turnover is also being observed till ten days after the announcements. Furthermore, we provide robustness check for extreme size and book-to-market groups and run further sub-sample tests for scheduled earnings announcements in terms of the sign and magnitude of earnings surprises.

These results are mostly consistent with Chae's (2005) finding and support that trading volume decreases before scheduled announcements when information asymmetry is high. When the timing information is public known, liquidity traders postpone their trading demands until the asymmetry is resolved, with evidence of negative abnormal turnover before scheduled announcements. There is no such adjustment being observed before the unscheduled announcements, except in extreme small size group. Slightly different than Chae's results, our results suggest that the unscheduled announcement could still be anticipated when the level of information asymmetry is extremely high. For example, rumours may provide a hint of the forthcoming information flow and affect liquidity traders' plan of trading before an unscheduled announcement when the cost of adverse selection is extremely high. A widely using of internet within this decade can speed up the delivering of information, including rumours.

With an attempt of verifying whether the pre-disclosure information asymmetry affect the trading volume differently in terms of the types of announcements, we employ Chae's (2005) regression model. Our regression results confirm the prediction that trading volume before the scheduled earnings announcements is negatively associated with the level of pre-disclosure information asymmetry, and the ex post trading volume is positively or at least less negatively associated with pre-disclosure information asymmetry. There is no such relation being observed for target announcements. Although we find a weak negative relation between information asymmetry and trading volume before acquisition announcement which is inconsistent with Chae's results, the magnitude of coefficients for information asymmetry proxies are significantly different than the coefficients in the regression sample of scheduled announcements. Overall, this study following Chae's tests confirms that the pre-disclosure information asymmetry drive different effects across scheduled and unscheduled announcements, and across ex ante and ex post trading volume.

An open question remain to be investigated: what explain the increase in trading 48 hours before an announcement? Insiders' prediction or expectations of great abnormal return after the announcement is issued might explain this increase in ex ante trading.

References

Admati, Anat R, and Paul Pfleiderer, 1988, A theory of intraday patterns: Volume and price variability, *Review of Financial Studies* 1, 3-40.

Agapova, Anna, and Jeff Madura, 2011, Information leakage prior to company issued guidance, *Financial Management* 40, 623-646.

Ajinkya, Bipin B, Rowland K Atiase, and Michael J Gift, 1991, Volume of trading and the dispersion in financial analysts' earnings forecasts, *Accounting Review* 389-401.

Ajinkya, Bipin B, and Prem C Jain, 1989, The behavior of daily stock market trading volume, *Journal of accounting and economics* 11, 331-359.

Andrade, Gregor, Mark Mitchell, and Erik Stafford, 2001, New evidence and perspectives on mergers, *Journal of economic perspectives* 103-120.

Arya, Anil, Jonathan Glover, Brian Mittendorf, and Ganapathi Narayanamoorthy, 2005, Unintended consequences of regulating disclosures: The case of regulation fair disclosure, *Journal of Accounting and Public Policy* 24, 243-252.

Atiase, Rowland K, and Linda Smith Bamber, 1994, Trading volume reactions to annual accounting earnings announcements: The incremental role of predisclosure information asymmetry, *Journal of accounting and economics* 17, 309-329.

Bamber, Linda Smith, 1986, The information content of annual earnings releases: A trading volume approach, *Journal of Accounting Research* 40-56.

Bamber, Linda Smith, 1987, Unexpected earnings, firm size, and trading volume around quarterly earnings announcements, *Accounting Review* 510-532.

Beaver, William H, 1968, The information content of annual earnings announcements, *Journal of accounting research* 67-92.

Bessembinder, Hendrik, Kalok Chan, and Paul J Seguin, 1996, An empirical examination of information, differences of opinion, and trading activity, *Journal of Financial Economics* 40, 105-134.

Black, Fischer, 1986, Noise, *The journal of finance* 41, 529-543.

Bulkley, George, and Renata Herrerias, 2005, Does the precision of news affect market underreaction? Evidence from returns following two classes of profit warnings, *European Financial Management* 11, 603-624.

Chae, Joon, 2005, Trading volume, information asymmetry, and timing information, *The Journal of Finance* 60, 413-442.

Coller, Maribeth, and Teri Lombardi Yohn, 1997, Management forecasts and information asymmetry: An examination of bid-ask spreads, *Journal of Accounting Research* 35.

Crouch, Robert L, 1970, The volume of transactions and price changes on the new york stock exchange, *Financial Analysts Journal* 104-109.

Datta, Deepak K, George E Pinches, and VK Narayanan, 1992, Factors influencing wealth creation from mergers and acquisitions: A meta‐analysis, *Strategic management journal* 13, 67-84.

Fama, Eugene F, and Kenneth R French, 1992, The cross‐section of expected stock returns, *The Journal of Finance* 47, 427-465.

Fama, Eugene F, and James D MacBeth, 1973, Risk, return, and equilibrium: Empirical tests, *The Journal of Political Economy* 607-636.

Foster, F Douglas, and Sean Viswanathan, 1990, A theory of the interday variations in volume, variance, and trading costs in securities markets, *Review of Financial Studies* 3, 593-624.

Franks, Julian R, and Robert S Harris, 1989, Shareholder wealth effects of corporate takeovers: The uk experience 1955–1985, *Journal of financial Economics* 23, 225-249.

George, Thomas J, Gautam Kaul, and Mahendrarajah Nimalendran, 1994, Trading volume and transaction costs in specialist markets, *The Journal of Finance* 49, 1489-1505.

Glosten, Lawrence R, and Paul R Milgrom, 1985, Bid, ask and transaction prices in a specialist market with heterogeneously informed traders, *Journal of financial economics* 14, 71-100.

Graham, John R, Jennifer L Koski, and Uri Loewenstein, 2006, Information flow and liquidity around anticipated and unanticipated dividend announcements*, *The Journal of Business* 79, 2301-2336.

Grammatikos, Theoharry, and Anthony Saunders, 1986, Futures price variability: A test of maturity and volume effects, *Journal of Business* 319-330.

Hong, Harrison, Terence Lim, and Jeremy C Stein, 2000, Bad news travels slowly: Size, analyst coverage, and the profitability of momentum strategies, *The Journal of Finance* 55, 265-295.

Jackson, Dave, and Jeff Madura, 2007, Impact of regulation fair disclosure on the information flow associated with profit warnings, *Journal of Economics and Finance* 31, 59-74.

Jayaraman, Narayanan, Melissa B Frye, and Sanjiv Sabherwal, 2001, Informed trading around merger announcements: An empirical test using transaction volume and open interest in options market, *Financial Review* 36, 45-74.

Karpoff, Jonathan M, 1986, A theory of trading volume, *The Journal of Finance* 41, 1069-1087.

Karpoff, Jonathan M, 1987, The relation between price changes and trading volume: A survey, *Journal of Financial and quantitative Analysis* 22, 109-126.

Kim, Oliver, and Robert E Verrecchia, 1991, Trading volume and price reactions to public announcements, *Journal of accounting research* 29, 302-321.

Kim, Oliver, and Robert E Verrecchia, 1994, Market liquidity and volume around earnings announcements, *Journal of Accounting and Economics* 17, 41-67.

Kothari, Sabino P, Susan Shu, and Peter D Wysocki, 2009, Do managers withhold bad news?, *Journal of Accounting Research* 47, 241-276.

Krinsky, Itzhak, and Jason Lee, 1996, Earnings announcements and the components of the bid‐ask spread, *The Journal of Finance* 51, 1523-1535.

Kyle, Albert S, 1985, Continuous auctions and insider trading, *Econometrica: Journal of the Econometric Society* 1315-1335.

Lee, Bong-Soo, and Oliver M Rui, 2002, The dynamic relationship between stock returns and trading volume: Domestic and cross-country evidence, *Journal of Banking & Finance* 26, 51-78.

Lei, Qin, and Xuewu Wang, 2014, Time‐varying liquidity trading, private information and insider trading, *European Financial Management* 20, 321-351.

Llorente, Guillermo, Roni Michaely, Gideon Saar, and Jiang Wang, 2002, Dynamic volume‐return relation of individual stocks, *Review of Financial studies* 15, 1005-1047.

Milgrom, Paul, and Nancy Stokey, 1982, Information, trade and common knowledge, *Journal of Economic Theory* 26, 17-27.

Ofek, Eli, and Matthew Richardson, 2003, Dotcom mania: The rise and fall of internet stock prices, *The Journal of Finance* 58, 1113-1138.

Osborne, Maury FM, 1959, Brownian motion in the stock market, *Operations research* 7, 145-173.

Pukthuanthong, Kuntara, 2010, Why should we like firms that voluntarily disclose? Evidence from profit warning firms, *The Journal of Investing* 19, 66-83.

Skinner, Douglas J, 1997, Earnings disclosures and stockholder lawsuits, *Journal of Accounting and Economics* 23, 249-282.

Spyrou, Spyros, Andrianos Tsekrekos, and Georgia Siougle, 2011, Informed trading around merger and acquisition announcements: Evidence from the uk equity and options markets, *Journal of Futures Markets* 31, 703-726.

Thomas, Shawn, 2002, Firm diversification and asymmetric information: Evidence from analysts' forecasts and earnings announcements, *Journal of Financial Economics* 64, 373-396.

Tkac, Paula A, 1999, A trading volume benchmark: Theory and evidence, *Journal of Financial and Quantitative Analysis* 34, 89-114.

Wang, Jiang, 1994, A model of competitive stock trading volume, *Journal of political Economy* 127-168.

Ying, Charles C, 1966, Stock market prices and volumes of sales, *Econometrica: Journal of the Econometric Society* 676-685.

Tables

Table I Summary of Total Numbers of Observations across Different Announcements

This table reports the total number of observations for four different types of announcements from January 2001 to December 2010. Panel A presents the whole sample. Panel B present subsamples of scheduled earnings announcements based on the sign/magnitude of earnings surprises. An earnings announcement with negative earnings surprise is classified as downside guidance or actual earnings, vice versa. The percentage of observations of large surprise news is reported in parentheses. An earnings announcement with more than 25% earnings surprise is classified as large surprise news.

Panel A: Whole Sample			
Earnings Guidance	Actual Earnings	Acquirer	Target
13398	22149	18493	5305
Panel B: Scheduled Earnings Announcements Sample			
Earnings Guidance		Actual Earnings	
Downside Guidance	Upside Guidance	Downside Actual Earnings	Upside Actual Earnings
7469	5929	8923	13226
(37.35%)	(44.48%)	(23.76%)	(10.25%)

Table II Abnormal Turnover around Different Announcements

This table contains the daily (Panel A) and cumulative (Panel B) abnormal turnover around four types of firms' announcements from 2001 to 2010. The abnormal turnover is measured as the difference between the log-transformed turnover and the average log-transformed turnover estimated from a 65-day estimation period before the event window. The percentage of outstanding shares trades on day t is used as the turnover on day t. Conventional t-statistics are applied with significance levels of 10%, 5% and 1%, which are represented by *, **, and ***, respectively.

Panel A: Daily Mean Abnormal Turnover								
Day	Earnings Guidance		Actual Earnings		Acquirer		Target	
-10	-4.08%	***	-2.09%	***	1.06%	**	4.92%	***
-9	-3.92%	***	-2.88%	***	1.75%	***	4.69%	***
-8	-6.43%	***	-4.33%	***	1.41%	***	5.42%	***
-7	-7.63%	***	-4.79%	***	1.13%	**	4.33%	***
-6	-5.95%	***	-4.21%	***	0.21%		5.00%	***
-5	-2.92%	***	-2.42%	***	0.46%		7.00%	***
-4	-2.27%	***	-2.58%	***	1.13%	**	9.69%	***
-3	-2.29%	***	-3.43%	***	0.97%	**	10.69%	***
-2	0.71%		-0.29%		1.69%	***	12.06%	***
-1	11.41%	***	9.24%	***	3.62%	***	16.45%	***
0	74.28%	***	52.48%	***	19.06%	***	80.56%	***
+1	93.25%	***	71.72%	***	23.20%	***	80.55%	***
+2	44.82%	***	38.38%	***	13.44%	***	51.71%	***
+3	29.03%	***	25.92%	***	8.42%	***	40.15%	***
+4	20.88%	***	19.59%	***	7.17%	***	33.21%	***
+5	16.62%	***	15.31%	***	5.23%	***	28.56%	***
+6	12.89%	***	11.33%	***	4.69%	***	25.49%	***
+7	10.34%	***	9.47%	***	4.12%	***	22.03%	***
+8	8.82%	***	7.51%	***	4.03%	***	19.95%	***
+9	7.42%	***	6.64%	***	3.59%	***	17.60%	***
+10	7.73%	***	5.08%	***	3.53%	***	16.41%	***
Panel B: Cumulative Mean Abnormal Turnover								
(-10, -3)	-35.49%	***	-26.72%	***	8.12%	***	51.75%	***
(-2,-1)	12.11%	***	8.95%	***	5.30%	***	28.51%	***
(0, +2)	212.34%	***	162.58%	***	55.70%	***	212.83%	***
(+3, +10)	113.74%	***	100.86%	***	40.77%	***	203.41%	***

Table III Robustness Check

This table reports alternative measurements of abnormal turnover for robustness check. Panel A uses an extended estimation window of 130 days before the event window; Panel B applies raw turnover; Panel C employs market model by using market volume index as benchmark; and Panel D present sub-period results. Conventional t-statistics are applied with significance levels of 10%, 5% and 1%, which are represented by *, **, and ***, respectively.

Panel A: Using 130-day as Estimation Length (t=-140 to -11)

Day	Earnings Guidance		Actual Earnings		Acquirer		Target	
(-10, -3)	-31.53%	***	-26.96%	***	15.92%	***	61.53%	***
(-2,-1)	13.10%	***	8.89%	***	7.26%	***	30.94%	***
(0, +2)	213.83%	***	162.49%	***	58.63%	***	216.47%	***
(+3, +10)	117.69%	***	100.64%	***	48.57%	***	213.14%	***

Panel B: Using Raw Turnover

Day	Earnings Guidance		Actual Earnings		Acquirer		Target	
(-10, -3)	-55.79%	***	-31.37%	***	13.53%	***	88.69%	***
(-2,-1)	11.51%	***	6.69%	***	6.71%	***	52.19%	***
(0, +2)	473.84%	***	263.70%	***	82.72%	***	658.58%	***
(+3, +10)	93.56%	***	68.42%	***	28.27%	***	225.96%	***

Panel C: Using Market Volume Index

Day	Earnings Guidance		Actual Earnings		Acquirer		Target	
(-10, -3)	-62.80%	***	-82.84%	***	-3.29%		25.55%	***
(-2,-1)	3.64%	***	-3.86%	***	1.28%	*	20.03%	***
(0, +2)	194.06%	***	140.13%	***	47.71%	***	200.19%	***
(+3, +10)	85.58%	***	62.91%	***	31.67%	***	189.35%	***

Panel D: Using Subperiod

Day	Earnings Guidance				Actual Earnings			
	2001-2005		2006-2010		2001-2005		2006-2010	
(-10, -3)	-27.87%	***	-41.52%	***	-21.03%	***	-31.12%	***
(-2,-1)	8.55%	***	14.93%	***	2.94%	**	13.60%	***
(0, +2)	214.62%	***	210.54%	***	147.79%	***	174.02%	***
(+3, +10)	103.89%	***	121.52%	***	70.72%	***	124.21%	***
Day	Acquirer				Target			
	2001-2005		2006-2010		2001-2005		2006-2010	
(-10, -3)	2.59%		12.64%	***	44.14%	***	56.07%	***
(-2,-1)	2.88%	**	7.28%	***	29.57%	***	27.91%	***
(0, +2)	54.25%	***	56.89%	***	205.06%	***	217.24%	***
(+3, +10)	37.17%	***	43.71%	***	188.69%	***	211.77%	***

Table IV Further Robustness Check in terms of Firms Characteristics

This table shows sub-sample results across four extreme size/book-to-market groups. The construction of breakpoints of each size/book-to-market decile is following Fama and French's method (1992). Conventional t-statistics are applied with significance levels of 10%, 5% and 1%, which are represented by *, **, and ***, respectively.

Panel A.1: Smallest								
Day	Earnings Guidance		Actual Earnings		Acquirer		Target	
(-10, -3)	-88.37%	***	-98.79%	***	-30.29%	***	23.20%	
(-2,-1)	-3.71%		-7.44%	***	1.77%		23.22%	***
(0, +2)	223.84%	***	146.17%	***	81.39%	***	276.24%	***
(+3, +10)	104.01%	***	58.47%	***	62.74%	***	293.41%	***
Panel A.2: Largest								
Day	Earnings Guidance		Actual Earnings		Acquirer		Target	
(-10, -3)	-13.42%	**	39.18%	***	10.61%	***	61.79%	***
(-2,-1)	15.87%	***	24.29%	***	7.63%	***	32.94%	***
(0, +2)	151.91%	***	136.16%	***	25.84%	***	107.40%	***
(+3, +10)	56.01%	***	76.63%	***	17.60%	***	82.80%	***
Panel A.3: Difference between Extreme Size Groups								
Day	Earnings Guidance		Actual Earnings		Acquirer		Target	
(-10, -3)	-74.95%	***	-137.97%	***	-40.90%	***	-38.58%	*
(-2,-1)	-19.57%	***	-31.73%	***	-5.86%		-9.73%	
(0, +2)	71.93%	***	10.01%	**	55.55%	***	168.83%	***
(+3, +10)	48.01%	***	-18.16%	*	45.13%	***	210.61%	***
Panel B.1: Growth (Lowest BM)								
Day	Earnings Guidance		Actual Earnings		Acquirer		Target	
(-10, -3)	-25.93%	***	-9.16%		4.82%		48.07%	***
(-2,-1)	17.76%	***	19.78%	***	4.29%	***	28.77%	***
(0, +2)	225.11%	***	182.06%	***	55.39%	***	237.78%	***
(+3, +10)	117.45%	***	103.64%	***	31.22%	***	215.18%	***
Panel B.2: Value (Highest BM)								
Day	Earnings Guidance		Actual Earnings		Acquirer		Target	
(-10, -3)	-49.06%	***	-86.17%	***	1.00%		32.84%	
(-2,-1)	8.60%	**	-5.47%		8.35%	*	28.00%	***
(0, +2)	189.02%	***	136.90%	***	73.87%	***	196.57%	***
(+3, +10)	104.99%	***	69.44%	***	73.77%	***	180.42%	***
Panel B.3.: Difference between Extreme Book-to-market ratio Groups								
Day	Earnings Guidance		Actual Earnings		Acquirer		Target	
(-10, -3)	23.13%	*	77.01%	***	3.82%		15.23%	
(-2,-1)	9.16%	**	25.24%	***	-4.06%		0.77%	
(0, +2)	36.09%	***	45.16%	***	-18.49%	**	41.21%	**
(+3, +10)	12.46%		34.20%	**	-42.55%	***	34.76%	

Table V Further Robustness Check for Scheduled Earnings Announcements

This table present sub-sample results for scheduled earnings announcements based on the sign/magnitude of earnings surprises. Panel A reports sub-sample results among downside and upside surprise groups. Panel B and C report further sub-sample results among large and small earnings surprise in each downside/upside surprise group. An earnings announcement with negative earnings surprise is classified as downside guidance or actual earnings, vice versa. An earnings announcement with more than 25% (less than 10%) earnings surprise is classified as large (small) surprise news. Conventional t-statistics are applied with significance levels of 10%, 5% and 1%, which are represented by *, **, and ***, respectively.

Panel A: Using Earnings Announcements Sample with Positive/Negative Earnings Surprises

Day	Earnings Guidance			Actual Earnings		
	Downside	Upside	Difference	Downside	Upside	Difference
(-10, -3)	-34.64% ***	-36.57% ***	1.93%	-27.09% ***	-26.47% ***	-0.62%
(-2,-1)	10.61% ***	14.01% ***	-3.41% **	6.68% ***	10.47% ***	-3.79% **
(0, +2)	219.99% ***	202.71% ***	17.28% ***	152.99% ***	169.04% ***	-16.05% ***
(+3, +10)	114.02% ***	113.38% ***	0.64%	92.56% ***	106.46% ***	-13.91% **

Panel B: Using Earnings Guidance Sample with Large/Small Earnings Surprises

Day	Downside Guidance			Upside Guidance		
	Large Surprise	Small Surprise	Difference	Large Surprise	Small Surprise	Difference
(-10, -3)	-45.35% ***	-28.63% ***	-16.73% *	-27.22% ***	-26.83% ***	-0.38%
(-2,-1)	3.90% *	16.01% ***	-12.11% ***	14.13% ***	19.67% ***	-5.54% *
(0, +2)	223.23% ***	194.63% ***	28.60% ***	216.09% ***	171.77% ***	44.32% ***
(+3, +10)	97.66% ***	97.89% ***	-0.23%	136.30% ***	74.06% ***	62.24% ***

Panel C: Using Actual Earnings Sample with Large/Small Earnings Surprises

Day	Downside Actual Earnings			Upside Actual Earnings		
	Large Surprise	Small Surprise	Difference	Large Surprise	Small Surprise	Difference
(-10, -3)	-62.82% ***	-6.34%	-56.48% ***	-40.44% ***	-21.95% ***	-18.48%
(-2,-1)	-1.67%	13.81% ***	-15.48% ***	6.95% *	12.26% ***	-5.32%
(0, +2)	140.81% ***	158.50% ***	-17.69% ***	188.85% ***	161.13% ***	27.73% ***
(+3, +10)	49.01% ***	117.49% ***	-68.48% ***	134.79% ***	99.88% ***	34.91% **

Table VI Regression Results for Abnormal Turnover during (-10, -3)

The following four tables (a) – (d) reports the results of regressing abnormal turnover during period (-10, -3) on information asymmetry proxies and other control variables across four different types of announcements, respectively. All results are from OLS pooling regressions. *LogSize* represents the firm's size which is measured by the logarithm of the market value of equity. *Dispersion* represents the dispersion of analyst forecasts which is calculated by the standard deviation of analysts' forecast over the absolute mean of EPS forecast one-month prior to the event release. *Nbs* represents the number of analysts' forecasts following the firm one-month prior to the event release. *Spread* represents the average bid-ask spread which is calculated as the percentage bid-ask spreads between day -140 and day -76. *Volatility* represents the volatility of share price by using standard deviation of monthly stock returns from the previous year of the announcement date. *Beta* represents the change of beta which is calculated by using the percentage change of beta between pre- (-70, -1) and post-announcements (+1, +70) periods, where the beta is estimated by using one-factor market model. *AbsCAR(-10, -3)* represents the change of share price by using the absolute CARs in period (-10, -3). Conventional t-statistics reported in brackets are applied with significance levels of 10%, 5% and 1%, which are represented by *, **, and ***, respectively.

(a) Earnings Guidance [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.130***	0.235***						
	[7.97]	[14.62]						
Dispersion			-0.010	-0.023**				
			[-0.87]	[-2.02]				
Nbs					0.016***	0.024***		
					[3.87]	[6.00]		
Spread							9.702	-5.993
							[1.42]	[-0.90]
Volatility		-0.011		-0.017		-0.014		-0.017
		[-1.04]		[-1.54]		[-1.30]		[-1.51]
Beta		0.054***		0.046***		0.049***		0.047***
		[4.71]		[3.97]		[4.20]		[4.04]
AbsCAR(-10,-3)		14.441***		13.217***		13.343***		13.209***
		[32.41]		[29.97]		[30.26]		[29.91]
Intercept	-2.130***	-4.403***	-0.201	-0.853***	-0.391*	-1.153***	-0.269	-0.837***
	[-6.38]	[-13.39]	[-0.87]	[-3.79]	[-1.66]	[-5.03]	[-1.14]	[-3.67]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	13398	13398	13398	13398	13398	13398	13398	13398
Adjusted R^2	0.017	0.090	0.013	0.076	0.014	0.078	0.013	0.076

(b) Actual Earnings Announcements [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.238***	0.349***						
	[16.62]	[24.63]						
Dispersion			-0.042***	-0.053***				
			[-4.13]	[-5.26]				
Nbs					0.048***	0.059***		
					[11.92]	[15.23]		
Spread							-17.416***	-30.231***
							[-5.58]	[-9.84]
Volatility		-0.032***		-0.038***		-0.032***		-0.036***
		[-3.47]		[-4.07]		[-3.51]		[-3.95]
Beta		0.007		-0.014*		-0.008		-0.005
		[0.93]		[-1.74]		[-0.98]		[-0.64]
AbsCAR(-10,-3)		14.562***		12.972***		13.359***		13.313***
		[41.29]		[36.97]		[38.13]		[37.77]
Intercept	-3.396***	-5.616***	-0.077	-0.671***	-0.468***	-1.179***	0.077	-0.421**
	[-12.70]	[-21.23]	[-0.43]	[-3.84]	[-2.58]	[-6.66]	[0.42]	[-2.39]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	22149	22149	22149	22149	22149	22149	22149	22149
Adjusted R^2	0.028	0.097	0.016	0.074	0.022	0.082	0.017	0.077

(c) Acquirer [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.055***	0.161***						
	[4.30]	[12.93]						
Dispersion			-0.021	-0.037***				
			[-1.43]	[-2.62]				
Nbs					0.007**	0.021***		
					[2.23]	[7.03]		
Spread							-0.061	-0.309***
							[-0.80]	[-4.24]
Volatility		0.000		-0.005		-0.002		-0.003
		[0.03]		[-0.51]		[-0.21]		[-0.38]
Beta		0.010		-0.005		0.000		0.001
		[0.79]		[-0.37]		[-0.01]		[0.06]
AbsCAR(-10,-3)		18.839***		17.801***		18.100***		17.914***
		[43.84]		[42.02]		[42.53]		[42.18]
Intercept	-0.424	-3.361***	0.376*	-0.933***	0.308	-1.157***	0.406**	-0.768***
	[-1.57]	[-12.59]	[1.90]	[-4.88]	[1.55]	[-5.98]	[2.00]	[-3.93]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	18493	18493	18493	18493	18493	18493	18493	18493
Adjusted R^2	0.007	0.101	0.006	0.093	0.006	0.095	0.006	0.093

(d) Target [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.047	0.183***						
	[1.59]	[6.38]						
Dispersion			-0.019	-0.025				
			[-0.85]	[-1.17]				
Nbs					0.011	0.026***		
					[1.43]	[3.59]		
Spread							0.423***	0.120
							[3.23]	[0.95]
Volatility		0.002		-0.005		0.000		-0.005
		[0.08]		[-0.20]		[-0.02]		[-0.23]
Beta		-0.018		-0.032		-0.027		-0.034*
		[-0.89]		[-1.55]		[-1.33]		[-1.66]
AbsCAR(-10,-3)		15.317***		14.513***		14.710***		14.439***
		[24.03]		[23.15]		[23.39]		[22.89]
Intercept	-0.240	-3.083***	0.426	-0.414	0.349	-0.614	0.155	-0.093
	[-0.40]	[-5.27]	[0.99]	[-1.01]	[0.81]	[-1.48]	[0.37]	[-0.23]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	5305	5305	5305	5305	5305	5305	5305	5305
Adjusted R^2	0.003	0.101	0.002	0.094	0.003	0.096	0.004	0.094

Table VII Comparison of Coefficients between Scheduled and Unscheduled Announcements

This table reports the Wald statistic for the comparison of coefficients for information asymmetry proxies between scheduled and unscheduled announcements. The critical value of 95% in the Chi-square distribution with degree of freedom = 1 is 3.84.

LogSize	Dispersion	Nbs	Spread
Panel A: Guidance Vs Acquirer			
11.83	0.26	3.31	0.86
Panel B: Guidance Vs Target			
5.22	0.15	0.37	0.77
Panel C: Actual Vs Acquirer			
68.82	1.86	77.00	8.29
Panel D: Actual Vs Target			
27.34	1.87	22.59	8.76

Table VIII Regression Results for Abnormal Turnover during (-2, -1)

The following four tables (a) – (d) reports the results of regressing abnormal turnover during period (-2, -1) on information asymmetry proxies and other control variables across four different types of announcements, respectively. All results are from OLS pooling regressions. *LogSize* represents the firm's size which is measured by the logarithm of the market value of equity. *Dispersion* represents the dispersion of analyst forecasts which is calculated by the standard deviation of analysts' forecast over the absolute mean of EPS forecast one-month prior to the event release. *Nbs* represents the number of analysts' forecasts following the firm one-month prior to the event release. *Spread* represents the average bid-ask spread which is calculated as the percentage bid-ask spreads between day -140 and day -76. *Volatility* represents the volatility of share price by using standard deviation of monthly stock returns from the previous year of the announcement date. *Beta* represents the change of beta which is calculated by using the percentage change of beta between pre- (-70, -1) and post-announcements (+1, +70) periods, where the beta is estimated by using one-factor market model. *AbsCAR(-2, -1)* represents the change of share price by using the absolute CARs in period (-2, -1). Conventional t-statistics reported in brackets are applied with significance levels of 10%, 5% and 1%, which are represented by *, **, and ***, respectively.

(a) Earnings Guidance [-2, -1]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.037***	0.070***						
	[6.85]	[13.49]						
Dispersion			-0.004	-0.006*				
			[-0.99]	[-1.69]				
Nbs					0.007***	0.010***		
					[5.51]	[7.52]		
Spread							-0.322	-4.742**
							[-0.14]	[-2.19]
Volatility		0.001		-0.001		0.000		-0.001
		[0.17]		[-0.35]		[-0.05]		[-0.28]
Beta		0.008**		0.006		0.007*		0.006*
		[2.14]		[1.49]		[1.78]		[1.69]
AbsCAR (-2,-1)		9.070***		8.502***		8.582***		8.522***
		[36.50]		[34.49]		[34.85]		[34.54]
Intercept	-0.595***	-1.292***	-0.049	-0.235***	-0.137*	-0.354***	-0.050	-0.213***
	[-5.42]	[-12.14]	[-0.64]	[-3.22]	[-1.77]	[-4.76]	[-0.65]	[-2.88]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	13398	13398	13398	13398	13398	13398	13398	13398
Adjusted R^2	0.007	0.098	0.004	0.086	0.006	0.089	0.004	0.086

(b) Actual Earnings Announcements [-2, -1]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.064***	0.099***						
	[13.36]	[20.79]						
Dispersion			-0.015***	-0.018***				
			[-4.26]	[-5.42]				
Nbs					0.014***	0.018***		
					[10.93]	[14.10]		
Spread							-4.384***	-8.334***
							[-4.24]	[-8.14]
Volatility		-0.014***		-0.016***		-0.014***		-0.016***
		[-4.64]		[-5.14]		[-4.63]		[-5.06]
Beta		-0.002		-0.008***		-0.006**		-0.005**
		[-0.73]		[-2.95]		[-2.27]		[-2.06]
AbsCAR (-2,-1)		8.626***		7.692***		7.947***		7.876***
		[37.39]		[33.73]		[34.85]		[34.33]
Intercept	-0.775***	-1.465***	0.111*	-0.065	-0.008	-0.222***	0.150**	0.004
	[-8.73]	[-16.54]	[1.88]	[-1.12]	[-0.13]	[-3.77]	[2.49]	[0.06]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	22149	22149	22149	22149	22149	22149	22149	22149
Adjusted R^2	0.018	0.077	0.011	0.061	0.016	0.068	0.011	0.062

(c) Acquirer [-2, -1]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.010**	0.045***						
	[2.42]	[10.89]						
Dispersion			0.003	-0.007				
			[0.57]	[-1.46]				
Nbs					0.002*	0.006***		
					[1.80]	[6.39]		
Spread							-0.028	-0.137***
							[-1.11]	[-5.62]
Volatility		0.002		0.001		0.002		0.001
		[0.76]		[0.29]		[0.57]		[0.46]
Beta		0.012***		0.008*		0.009**		0.010**
		[2.78]		[1.78]		[2.12]		[2.38]
AbsCAR (-2,-1)		11.968***		11.499***		11.636***		11.613***
		[46.60]		[45.28]		[45.71]		[45.62]
Intercept	-0.173*	-1.092***	-0.023	-0.416***	-0.039	-0.480***	-0.005	-0.340***
	[-1.90]	[-12.31]	[-0.35]	[-6.53]	[-0.58]	[-7.46]	[-0.08]	[-5.22]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	18493	18493	18493	18493	18493	18493	18493	18493
Adjusted R^2	0.005	0.110	0.004	0.104	0.005	0.106	0.004	0.105

(d) Target [-2, -1]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	-0.001	0.048***						
	[-0.05]	[4.83]						
Dispersion			0.010	0.002				
			[1.25]	[0.22]				
Nbs					0.000	0.006**		
					[0.09]	[2.54]		
Spread							0.117**	-0.049
							[2.54]	[-1.11]
Volatility		-0.001		-0.003		-0.002		-0.003
		[-0.17]		[-0.40]		[-0.26]		[-0.37]
Beta		0.015**		0.011		0.012*		0.012*
		[2.05]		[1.56]		[1.72]		[1.67]
AbsCAR (-2,-1)		10.277***		9.975***		10.056***		10.031***
		[27.57]		[27.05]		[27.22]		[27.00]
Intercept	0.420**	-0.620***	0.411***	0.074	0.410***	0.025	0.266*	0.153
	[1.98]	[-3.07]	[2.71]	[0.52]	[2.69]	[0.18]	[1.78]	[1.09]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	5305	5305	5305	5305	5305	5305	5305	5305
Adjusted R^2	0.000	0.127	0.001	0.123	0.000	0.124	0.002	0.123

Table IX Regression Results for Abnormal Turnover during (0, +2)

The following four tables (a) – (d) reports the results of regressing abnormal turnover during period (0, +2) on information asymmetry proxies and other control variables across four different types of announcements, respectively. All results are from OLS pooling regressions. *LogSize* represents the firm's size which is measured by the logarithm of the market value of equity. *Dispersion* represents the dispersion of analyst forecasts which is calculated by the standard deviation of analysts' forecast over the absolute mean of EPS forecast one-month prior to the event release. *Nbs* represents the number of analysts' forecasts following the firm one-month prior to the event release. *Spread* represents the average bid-ask spread which is calculated as the percentage bid-ask spreads between day -140 and day -76. *Volatility* represents the volatility of share price by using standard deviation of monthly stock returns from the previous year of the announcement date. *Beta* represents the change of beta which is calculated by using the percentage change of beta between pre- (-70, -1) and post-announcements (+1, +70) periods, where the beta is estimated by using one-factor market model. *AbsCAR(0, +2)* represents the change of share price by using the absolute CARs in period (0, +2). Conventional t-statistics reported in brackets are applied with significance levels of 10%, 5% and 1%, which are represented by *, **, and ***, respectively.

(a) Earnings Guidance [0, +2]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	-0.142***	-0.013						
	[-15.97]	[-1.61]						
Dispersion			-0.004	-0.016***				
			[-0.65]	[-2.90]				
Nbs					-0.020***	-0.007***		
					[-8.84]	[-3.53]		
Spread							6.314*	-5.011
							[1.68]	[-1.54]
Volatility		-0.005		-0.004		-0.005		-0.004
		[-0.84]		[-0.80]		[-0.92]		[-0.74]
Beta		0.017***		0.017***		0.016***		0.018***
		[2.95]		[3.04]		[2.90]		[3.17]
AbsCAR (0,+2)		9.756***		9.829***		9.766***		9.826***
		[65.02]		[67.55]		[66.85]		[67.48]
Intercept	3.678***	1.175***	1.585***	0.994***	1.807***	1.062***	1.544***	1.009***
	[20.24]	[7.19]	[12.48]	[9.03]	[14.01]	[9.45]	[11.98]	[9.04]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	13398	13398	13398	13398	13398	13398	13398	13398
Adjusted R^2	0.054	0.282	0.036	0.282	0.042	0.282	0.037	0.282

(b) Actual Earnings Announcements [0, +2]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.017**	0.087***						
	[2.40]	[12.78]						
Dispersion			-0.018***	-0.028***				
			[-3.59]	[-5.82]				
Nbs					0.008***	0.015***		
					[3.81]	[8.19]		
Spread							-8.617***	-13.671***
							[-5.51]	[-9.33]
Volatility		-0.011***		-0.013***		-0.012***		-0.012***
		[-2.58]		[-2.85]		[-2.61]		[-2.74]
Beta		0.007*		0.002		0.004		0.006
		[1.92]		[0.63]		[0.97]		[1.64]
AbsCAR (0,+2)		9.345***		9.047***		9.103***		9.092***
		[60.35]		[59.03]		[59.34]		[59.35]
Intercept	0.997***	-0.430***	1.240***	0.804***	1.176***	0.673***	1.317***	0.922***
	[7.40]	[-3.37]	[13.82]	[9.60]	[12.90]	[7.91]	[14.50]	[10.89]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	22149	22149	22149	22149	22149	22149	22149	22149
Adjusted R^2	0.048	0.183	0.048	0.178	0.048	0.179	0.049	0.180

(c) Acquirer [0, +2]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	-0.093***	-0.007						
	[-13.79]	[-1.12]						
Dispersion			0.004	-0.013*				
			[0.48]	[-1.77]				
Nbs					-0.016***	-0.003**		
					[-9.90]	[-2.08]		
Spread							0.249***	0.014
							[6.23]	[0.39]
Volatility		-0.001		-0.001		-0.001		-0.001
		[-0.18]		[-0.13]		[-0.22]		[-0.14]
Beta		0.017**		0.018***		0.017**		0.017***
		[2.55]		[2.70]		[2.54]		[2.61]
AbsCAR (0,+2)		14.363***		14.436***		14.354***		14.412***
		[60.58]		[62.37]		[61.47]		[62.01]
Intercept	1.794***	-0.065	0.450***	-0.168*	0.595***	-0.140	0.299***	-0.179*
	[12.60]	[-0.48]	[4.31]	[-1.75]	[5.65]	[-1.44]	[2.79]	[-1.83]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	18493	18493	18493	18493	18493	18493	18493	18493
Adjusted R^2	0.014	0.178	0.004	0.178	0.009	0.178	0.006	0.178

(d) Target [0, +2]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	-0.343***	-0.160***						
	[-15.36]	[-8.17]						
Dispersion			-0.003	-0.022				
			[-0.19]	[-1.51]				
Nbs					-0.072***	-0.039***		
					[-12.36]	[-7.79]		
Spread							1.200***	0.369***
							[11.98]	[4.21]
Volatility		-0.014		-0.009		-0.015		-0.010
		[-0.91]		[-0.56]		[-0.96]		[-0.67]
Beta		-0.047***		-0.039***		-0.044***		-0.044***
		[-3.27]		[-2.73]		[-3.03]		[-3.04]
AbsCAR (0,+2)		10.045***		10.427***		10.176***		10.227***
		[43.59]		[45.87]		[44.60]		[44.19]
Intercept	6.115***	2.838***	1.236***	0.525*	1.735***	0.817***	1.280***	1.086***
	[13.44]	[7.13]	[3.71]	[1.87]	[5.24]	[2.90]	[3.94]	[3.92]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	5305	5305	5305	5305	5305	5305	5305	5305
Adjusted R^2	0.064	0.315	0.022	0.307	0.050	0.314	0.048	0.309

Table X Regression Results for Abnormal Turnover during (+3, +10)

The following four tables (a) – (d) reports the results of regressing abnormal turnover during period (+3, +10) on information asymmetry proxies and other control variables across four different types of announcements, respectively. All results are from OLS pooling regressions. *LogSize* represents the firm's size which is measured by the logarithm of the market value of equity. *Dispersion* represents the dispersion of analyst forecasts which is calculated by the standard deviation of analysts' forecast over the absolute mean of EPS forecast one-month prior to the event release. *Nbs* represents the number of analysts' forecasts following the firm one-month prior to the event release. *Spread* represents the average bid-ask spread which is calculated as the percentage bid-ask spreads between day -140 and day -76. *Volatility* represents the volatility of share price by using standard deviation of monthly stock returns from the previous year of the announcement date. *Beta* represents the change of beta which is calculated by using the percentage change of beta between pre- (-70, -1) and post-announcements (+1, +70) periods, where the beta is estimated by using one-factor market model. *AbsCAR(+3, +10)* represents the change of share price by using the absolute CARs in period (+3, +10). Conventional t-statistics reported in brackets are applied with significance levels of 10%, 5% and 1%, which are represented by *, **, and ***, respectively.

(a) Earnings Guidance [+3, +10]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	-0.101***	-0.001						
	[-5.45]	[-0.06]						
Dispersion			-0.011	-0.022				
			[-0.81]	[-1.64]				
Nbs					-0.037***	-0.028***		
					[-8.01]	[-6.10]		
Spread							35.902***	19.617**
							[4.64]	[2.56]
Volatility		-0.008		-0.008		-0.011		-0.009
		[-0.62]		[-0.62]		[-0.87]		[-0.70]
Beta		0.031**		0.032**		0.028**		0.028**
		[2.37]		[2.37]		[2.14]		[2.12]
AbsCAR (+3,+10)		12.399***		12.436***		12.129***		12.292***
		[22.71]		[23.40]		[22.78]		[23.07]
Intercept	1.902***	-0.053	0.422	-0.051	0.835***	0.261	0.195	-0.182
	[5.03]	[-0.14]	[1.61]	[-0.20]	[3.13]	[0.99]	[0.73]	[-0.70]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	13398	13398	13398	13398	13398	13398	13398	13398
Adjusted R^2	0.026	0.062	0.024	0.063	0.029	0.065	0.025	0.063

(b) Actual Earnings Announcements [+3, +10]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.040**	0.148***						
	[2.54]	[9.14]						
Dispersion			-0.040***	-0.050***				
			[-3.50]	[-4.49]				
Nbs					-0.013***	0.000		
					[-2.93]	[0.10]		
Spread							-11.193***	-22.736***
							[-3.25]	[-6.62]
Volatility		-0.031***		-0.033***		-0.034***		-0.032***
		[-3.01]		[-3.19]		[-3.28]		[-3.12]
Beta		0.024***		0.016*		0.015*		0.022**
		[2.71]		[1.81]		[1.72]		[2.50]
AbsCAR (+3,+10)		11.520***		10.739***		10.682***		10.971***
		[28.24]		[26.97]		[26.66]		[27.41]
Intercept	-0.110	-2.147***	0.456**	-0.047	0.556***	-0.054	0.553***	0.141
	[-0.37]	[-7.13]	[2.31]	[-0.24]	[2.77]	[-0.27]	[2.76]	[0.71]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	22149	22149	22149	22149	22149	22149	22149	22149
Adjusted R^2	0.027	0.062	0.028	0.059	0.027	0.058	0.027	0.060

(c) Acquirer [+3, +10]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	-0.087***	0.009						
	[-6.19]	[0.62]						
Dispersion			-0.011	-0.044***				
			[-0.65]	[-2.79]				
Nbs					-0.025***	-0.011***		
					[-7.19]	[-3.15]		
Spread							0.615***	0.347***
							[7.42]	[4.25]
Volatility		-0.003		-0.003		-0.005		-0.005
		[-0.29]		[-0.32]		[-0.46]		[-0.45]
Beta		0.054***		0.054***		0.051***		0.047***
		[3.75]		[3.76]		[3.52]		[3.20]
AbsCAR (+3,+10)		16.414***		16.436***		16.164***		16.168***
		[32.78]		[33.43]		[32.70]		[32.83]
Intercept	1.766***	-0.750**	0.514**	-0.612***	0.728***	-0.512**	0.134	-0.814***
	[5.96]	[-2.51]	[2.37]	[-2.87]	[3.33]	[-2.37]	[0.60]	[-3.74]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	18493	18493	18493	18493	18493	18493	18493	18493
Adjusted R^2	0.010	0.065	0.008	0.066	0.011	0.066	0.011	0.066

(d) Target [+3, +10]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	-0.436***	-0.387***						
	[-11.14]	[-9.70]						
Dispersion			-0.006	-0.015				
			[-0.22]	[-0.51]				
Nbs					-0.111***	-0.103***		
					[-10.94]	[-10.13]		
Spread							1.831***	1.652***
							[10.50]	[9.41]
Volatility		-0.044		-0.030		-0.047		-0.039
		[-1.39]		[-0.94]		[-1.48]		[-1.23]
Beta		0.146***		0.175***		0.156***		0.144***
		[5.08]		[6.09]		[5.47]		[5.00]
AbsCAR (+3,+10)		4.291***		6.058***		5.080***		5.218***
		[4.17]		[5.92]		[4.99]		[5.12]
Intercept	7.463***	6.425***	1.259**	0.787	2.028***	1.580***	1.064*	0.917
	[9.35]	[7.87]	[2.18]	[1.36]	[3.52]	[2.73]	[1.88]	[1.63]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	5305	5305	5305	5305	5305	5305	5305	5305
Adjusted R^2	0.035	0.043	0.012	0.026	0.034	0.044	0.032	0.042

Table XI Comparison of Coefficients between ex ante and ex post Abnormal Turnover

This table reports the Wald statistic for the comparison of coefficients for information asymmetry proxies between regressions for ex ante turnover and ex post abnormal turnover. The critical value of 95% in the Chi-square distribution with degree of freedom = 1 is 3.84.

Earnings Guidance				Actual Earnings				Acquirer				Target			
LogSize	Dispersion	Nbs	Spread	LogSize	Dispersion	Nbs	Spread	LogSize	Dispersion	Nbs	Spread	LogSize	Dispersion	Nbs	Spread
Panel A: (-10,-3) Vs (-2,-1)															
38.52	0.17	6.31	1.20	127.06	9.37	109.58	5.43	12.94	4.93	3.82	0.06	2.71	5.88	3.10	2.99
Panel B: (-10,-3) Vs (0,+2)															
273.54	0.09	89.11	0.11	178.94	8.14	139.54	2.27	126.22	3.60	71.43	4.54	121.41	1.09	115.93	9.41
Panel C: (-10,-3) Vs (+3,+10)															
125.50	0.00	134.36	4.93	92.82	0.05	219.44	0.74	76.87	0.44	83.58	14.38	127.13	0.28	161.12	19.55

Appendix I

(a) Further Robustness Check for Scheduled Earnings Announcements after Winsorising

This table presents sub-sample results after a 90% winsorising for scheduled earnings announcements based on the sign/magnitude of earnings surprises following Table V. Conventional t-statistics are applied with significance levels of 20%, 10%, 5% and 1%, which are represented by $, *, **, and ***, respectively.

Panel A: Using Earnings Announcements Sample with Positive/Negative Earnings Surprises												
Day	Earnings Guidance						Actual Earnings					
	Downside		Upside		Difference		Downside		Upside		Difference	
(-10, -3)	-38.68%	***	-41.58%	***	2.90%		-27.77%	***	-31.31%	***	3.54%	
(-2,-1)	9.89%	***	11.88%	***	-2.00%		7.30%	***	9.95%	***	-2.65%	**
(0, +2)	215.71%	***	202.47%	***	13.24%	***	155.00%	***	166.52%	***	-11.52%	***
(+3, +10)	112.44%	***	104.14%	***	8.31%	*	97.89%	***	100.03%	***	-2.14%	
Panel B: Using Earnings Guidance Sample with Large/Small Earnings Surprises												
Day	Downside Guidance						Upside Guidance					
	Large Surprise		Small Surprise		Difference		Large Surprise		Small Surprise		Difference	
(-10, -3)	-47.40%	***	-33.56%	***	-13.84%	**	-34.75%	***	-31.36%	***	-3.40%	
(-2,-1)	4.35%	***	14.05%	***	-9.70%	***	11.93%	***	16.21%	***	-4.29%	*
(0, +2)	218.52%	***	195.85%	***	22.67%	***	213.11%	***	175.03%	***	38.08%	***
(+3, +10)	102.97%	***	99.16%	***	3.81%		119.51%	***	73.71%	***	45.80%	***
Panel C: Using Actual Earnings Sample with Large/Small Earnings Surprises												
Day	Downside Actual Earnings						Upside Actual Earnings					
	Large Surprise		Small Surprise		Difference		Large Surprise		Small Surprise		Difference	
(-10, -3)	-54.41%	***	-10.23%	***	-44.18%	***	-45.48%	***	-26.57%	***	-18.91%	**
(-2,-1)	0.89%		12.76%	***	-11.86%	***	9.44%	***	11.31%	***	-1.86%	
(0, +2)	147.87%	***	159.14%	***	-11.27%	***	180.25%	***	160.66%	***	19.59%	***
(+3, +10)	68.24%	***	115.07%	***	-46.84%	***	118.27%	***	95.48%	***	22.78%	***

(b) Further Robustness Check for Scheduled Earnings Announcements after Trimming

This table presents sub-sample results after a 10% trimming for scheduled earnings announcements based on the sign/magnitude of earnings surprises following Table V. Conventional t-statistics are applied with significance levels of 20%, 10%, 5% and 1%, which are represented by $, *, **, and ***, respectively.

Panel A: Using Earnings Announcements Sample with Positive/Negative Earnings Surprises

Day	Earnings Guidance			Actual Earnings		
	Downside	Upside	Difference	Downside	Upside	Difference
(-10, -3)	-41.44% ***	-44.78% ***	3.34%	-28.94% ***	-34.22% ***	5.28% *
(-2,-1)	9.88% ***	9.98% ***	-0.10%	8.05% ***	8.78% ***	-0.73%
(0, +2)	209.32% ***	204.07% ***	5.25% ***	156.71% ***	163.03% ***	-6.32% ***
(+3, +10)	107.84% ***	99.36% ***	8.48% **	98.00% ***	95.81% ***	2.19%

Panel B: Using Earnings Guidance Sample with Large/Small Earnings Surprises

Day	Downside Guidance			Upside Guidance		
	Large Surprise	Small Surprise	Difference	Large Surprise	Small Surprise	Difference
(-10, -3)	-43.72% ***	-37.94% ***	-5.78%	-41.99% ***	-33.18% ***	-8.81%
(-2,-1)	6.67% ***	12.07% ***	-5.40% ***	10.13% ***	14.09% ***	-3.96% *
(0, +2)	213.16% ***	198.76% ***	14.40% ***	210.81% ***	184.67% ***	26.14% ***
(+3, +10)	108.34% ***	98.66% ***	9.68%	103.30% ***	80.69% ***	22.61% ***

Panel C: Using Actual Earnings Sample with Large/Small Earnings Surprises

Day	Downside Actual Earnings			Upside Actual Earnings		
	Large Surprise	Small Surprise	Difference	Large Surprise	Small Surprise	Difference
(-10, -3)	-42.87% ***	-16.87% ***	-26.00% ***	-51.90% ***	-29.79% ***	-22.11% ***
(-2,-1)	3.31% *	10.53% ***	-7.22% ***	10.63% ***	9.85% ***	0.78%
(0, +2)	155.59% ***	157.96% ***	-2.37%	167.14% ***	160.28% ***	6.85% *
(+3, +10)	80.18% ***	106.87% ***	-26.69% ***	104.70% ***	93.07% ***	11.63%

Appendix II

Results of Fama/MacBeth Type Regressions for Abnormal Turnover during (-10, -3)

The following four tables (a) – (d) reports the results of regressing abnormal turnover during period (-10, -3) on information asymmetry proxies and other control variables across four different types of announcements, respectively. All results are from Fama/MacBeth type regressions. The coefficients are the time-series averages of the coefficients from cross-sectional regressions from each annual data. *LogSize* represents the firm's size which is measured by the logarithm of the market value of equity. *Dispersion* represents the dispersion of analyst forecasts which is calculated by the standard deviation of analysts' forecast over the absolute mean of EPS forecast one-month prior to the event release. *Nbs* represents the number of analysts' forecasts following the firm one-month prior to the event release. *Spread* represents the average bid-ask spread which is calculated as the percentage bid-ask spreads between day -140 and day -76. *Volatility* represents the volatility of share price by using standard deviation of monthly stock returns from the previous year of the announcement date. *Beta* represents the change of beta which is calculated by using the percentage change of beta between pre- (-70, -1) and post-announcements (+1, +70) periods, where the beta is estimated by using one-factor market model. *AbsCAR(-10, -3)* represents the change of share price by using the absolute CARs in period (-10, -3). Conventional t-statistics reported in brackets are applied with significance levels of 10%, 5% and 1%, which are represented by *, **, and ***, respectively.

(a) Earnings Guidance [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.119***	0.243***						
	[3.39]	[9.31]						
Dispersion			-0.026	-0.051**				
			[-1.59]	[-2.38]				
Nbs					0.017**	0.027***		
					[2.41]	[4.95]		
Spread							5.292	-59.233**
							[0.29]	[-2.42]
Volatility		-0.040*		-0.048**		-0.045*		-0.045*
		[-1.73]		[-2.05]		[-1.89]		[-1.88]
Beta		0.025		-0.016		-0.008		-0.011
		[0.38]		[-0.22]		[-0.11]		[-0.15]
AbsCAR(-10,-3)		19.036***		17.666***		17.806***		17.810***
		[7.78]		[7.25]		[7.24]		[7.08]
Intercept	-2.57***	-5.249***	-0.833***	-1.591***	-1.012***	-1.920***	-0.810***	-1.447***
	[-4.51]	[-13.04]	[-3.13]	[-7.14]	[-3.64]	[-8.69]	[-3.01]	[-6.27]
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	13398	13398	13398	13398	13398	13398	13398	13398
Adjusted R^2	0.010	0.106	0.004	0.090	0.005	0.092	0.005	0.091

(b) Actual Earnings Announcements [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.230***	0.352***						
	[3.97]	[6.86]						
Dispersion			-0.034***	-0.044***				
			[-2.84]	[-3.19]				
Nbs					0.049***	0.063***		
					[4.22]	[5.87]		
Spread							-30.956*	-54.456***
							[-1.91]	[-3.20]
Volatility		-0.034***		-0.041***		-0.035***		-0.035***
		[-4.35]		[-5.20]		[-4.41]		[-4.45]
Beta		0.022		-0.013		0.000		0.010
		[1.62]		[-1.07]		[0.02]		[0.81]
AbsCAR(-10,-3)		18.600***		16.888***		17.372***		17.330***
		[9.38]		[8.36]		[8.47]		[8.62]
Intercept	-3.506***	-6.010***	-0.385	-1.100***	-0.723**	-1.574***	-0.257	-0.920***
	[-3.88]	[-7.46]	[-1.39]	[-4.43]	[-2.31]	[-5.68]	[-1.10]	[-4.32]
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	22149	22149	22149	22149	22149	22149	22149	22149
Adjusted R^2	0.028	0.112	0.012	0.083	0.020	0.095	0.017	0.091

(c) Acquirer [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.049**	0.156***						
	[1.99]	[6.99]						
Dispersion			0.010	-0.017				
			[0.26]	[-0.82]				
Nbs					0.006	0.020***		
					[0.92]	[3.91]		
Spread							-0.057	-0.577*
							[-0.15]	[-1.74]
Volatility		-0.180		-0.311		-0.232		-0.196
		[-0.96]		[-1.00]		[-0.99]		[-0.99]
Beta		-0.016		-0.041		-0.033		-0.006
		[-0.28]		[-0.72]		[-0.58]		[-0.23]
AbsCAR(-10,-3)		21.994***		20.945***		21.223***		21.076***
		[9.53]		[9.15]		[9.23]		[9.18]
Intercept	-0.520	-2.875***	0.169	-0.521***	0.130	-0.720***	0.172	-0.487***
	[-1.48]	[-10.44]	[1.06]	[-4.56]	[0.82]	[-6.51]	[1.01]	[-3.47]
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	18493	18493	18493	18493	18493	18493	18493	18493
Adjusted R^2	0.001	0.120	0.000	0.101	0.001	0.104	0.004	0.104

(d) Target [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.041	0.186***						
	[1.57]	[4.98]						
Dispersion			-0.011	-0.154*				
			[-0.14]	[-1.71]				
Nbs					0.009	0.025***		
					[1.11]	[2.69]		
Spread							0.458	0.073
							[1.23]	[0.22]
Volatility		-0.973		-1.365*		-1.214		-1.644*
		[-1.11]		[-1.70]		[-1.50]		[-1.78]
Beta		-0.016		-0.082		-0.055		-0.109
		[-0.26]		[-1.20]		[-0.77]		[-1.32]
AbsCAR(-10,-3)		20.511***		19.780***		19.863***		19.592***
		[8.64]		[8.60]		[8.62]		[8.48]
Intercept	-0.338	-3.234***	0.276	-0.467	0.067	-0.690**	0.167	-0.493
	[-0.68]	[-6.08]	[0.59]	[-1.32]	[0.16]	[-2.04]	[0.35]	[-1.43]
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	5305	5305	5305	5305	5305	5305	5305	5305
Adjusted R^2	-0.005	0.114	-0.005	0.107	-0.005	0.110	0.000	0.110

Appendix III

Sub-sample Regression Results for Abnormal Turnover during (-10, -3)

The following four tables (a) – (d) reports the sub-sample results of regressing abnormal turnover during period (-10, -3) on information asymmetry proxies and other control variables across downside and upside earnings guidance/fiscal announcements, respectively. All results are from OLS pooling regressions. Conventional t-statistics reported in brackets are applied with significance levels of 10%, 5% and 1%, which are represented by *, **, and ***, respectively. The next eight tables from (e) to (l) reports regression results of further sub-samples based on the magnitude of earnings surprises.

(a) Downside Guidance [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.170***	0.263***						
	[7.78]	[12.17]						
Dispersion			-0.004	-0.010				
			[-0.30]	[-0.72]				
Nbs					0.028***	0.034***		
					[4.87]	[6.01]		
Spread							-7.101	-13.739
							[-0.80]	[-1.56]
Volatility		0.007		0.001		0.005		0.002
		[0.47]		[0.08]		[0.33]		[0.14]
Beta		0.025		-0.029		-0.012		-0.019
		[0.64]		[-0.73]		[-0.29]		[-0.47]
AbsCAR(-10,-3)		12.956***		11.726***		11.865***		11.745***
		[22.91]		[20.86]		[21.15]		[20.90]
Intercept	-2.705***	-4.658***	-0.185	-0.681**	-0.513	-1.091***	-0.141	-0.603*
	[-5.78]	[-10.06]	[-0.54]	[-2.05]	[-1.48]	[-3.23]	[-0.41]	[-1.80]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	7469	7469	7469	7469	7469	7469	7469	7469
Adjusted R^2	0.024	0.088	0.016	0.070	0.019	0.074	0.016	0.070

(b) Upside Guidance [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.074***	0.193***						
	[2.93]	[7.79]						
Dispersion			-0.024	-0.070***				
			[-0.92]	[-2.75]				
Nbs					0.003	0.013**		
					[0.46]	[2.28]		
Spread							32.710***	1.811
							[3.05]	[0.17]
Volatility		-0.030**		-0.036**		-0.034**		-0.036**
		[-2.02]		[-2.39]		[-2.29]		[-2.38]
Beta		0.058***		0.054***		0.055***		0.054***
		[4.95]		[4.63]		[4.70]		[4.59]
AbsCAR(-10,-3)		17.287***		16.330***		16.296***		16.158***
		[23.66]		[22.62]		[22.58]		[22.29]
Intercept	-2.452***	-4.779***	-1.389***	-1.984***	-1.423***	-2.130***	-1.580***	-2.009***
	[-4.69]	[-9.39]	[-3.66]	[-5.45]	[-3.71]	[-5.78]	[-4.12]	[-5.45]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	5929	5929	5929	5929	5929	5929	5929	5929
Adjusted R^2	0.014	0.102	0.013	0.094	0.013	0.094	0.014	0.093

(c) Downside Actual Earnings [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.293***	0.409***						
	[12.09]	[17.10]						
Dispersion			-0.047***	-0.057***				
			[-3.31]	[-4.12]				
Nbs					0.064***	0.074***		
					[8.75]	[10.33]		
Spread							-16.077***	-26.436***
							[-3.64]	[-6.09]
Volatility		-0.026*		-0.033**		-0.029*		-0.032**
		[-1.72]		[-2.15]		[-1.86]		[-2.10]
Beta		-0.001		-0.021**		-0.016		-0.016
		[-0.13]		[-1.97]		[-1.49]		[-1.46]
AbsCAR(-10,-3)		13.975***		12.389***		12.642***		12.658***
		[26.70]		[23.71]		[24.29]		[24.13]
Intercept	-4.807***	-7.710***	-0.911***	-2.103***	-1.343***	-2.630***	-0.693**	-1.766***
	[-11.02]	[-17.66]	[-3.05]	[-7.15]	[-4.46]	[-8.87]	[-2.27]	[-5.90]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	8923	8923	8923	8923	8923	8923	8923	8923
Adjusted R^2	0.039	0.110	0.024	0.082	0.031	0.091	0.024	0.084

(d) Upside Actual Earnings [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.209***	0.311***						
	[11.54]	[17.38]						
Dispersion			-0.035**	-0.042***				
			[-2.31]	[-2.86]				
Nbs					0.039***	0.051***		
					[8.19]	[10.94]		
Spread							-18.576***	-33.070***
							[-4.06]	[-7.34]
Volatility		-0.036***		-0.042***		-0.036***		-0.040***
		[-3.20]		[-3.65]		[-3.17]		[-3.55]
Beta		0.022*		-0.001		0.006		0.012
		[1.77]		[-0.11]		[0.47]		[0.93]
AbsCAR(-10,-3)		15.138***		13.672***		14.115***		14.025***
		[31.31]		[28.41]		[29.34]		[29.03]
Intercept	-3.141***	-5.250***	-0.188	-0.784***	-0.511**	-1.228***	-0.038	-0.538**
	[-9.26]	[-15.64]	[-0.84]	[-3.59]	[-2.25]	[-5.54]	[-0.17]	[-2.44]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	13226	13226	13226	13226	13226	13226	13226	13226
Adjusted R^2	0.023	0.091	0.014	0.071	0.018	0.079	0.015	0.074

(e) Downside Guidance with Large Surprise [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.207***	0.311***						
	[4.65]	[7.06]						
Dispersion			0.001	0.000				
			[0.09]	[0.01]				
Nbs					0.025**	0.027**		
					[2.16]	[2.46]		
Spread							14.203	10.321
							[1.13]	[0.83]
Volatility		0.064**		0.056*		0.059**		0.055*
		[2.22]		[1.94]		[2.05]		[1.89]
Beta		0.125*		0.049		0.065		0.039
		[1.90]		[0.75]		[1.00]		[0.59]
AbsCAR(-10,-3)		10.787***		10.026***		10.018***		10.029***
		[13.55]		[12.60]		[12.61]		[12.61]
Intercept	-2.730***	-4.461***	0.362	0.233	0.159	-0.001	0.333	0.218
	[-2.84]	[-4.72]	[0.52]	[0.34]	[0.23]	[-0.00]	[0.48]	[0.32]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2790	2790	2790	2790	2790	2790	2790	2790
Adjusted R^2	0.016	0.081	0.008	0.064	0.010	0.066	0.009	0.065

(f) Downside Guidance with Small Surprise [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.120***	0.191***						
	[3.07]	[4.96]						
Dispersion			-0.045	-0.060				
			[-0.86]	[-1.19]				
Nbs					0.015	0.019**		
					[1.49]	[2.05]		
Spread							24.128	23.389
							[0.99]	[0.97]
Volatility		-0.051		-0.062*		-0.058		-0.064*
		[-1.41]		[-1.71]		[-1.60]		[-1.77]
Beta		-0.124		-0.154*		-0.150*		-0.167*
		[-1.38]		[-1.71]		[-1.66]		[-1.84]
AbsCAR(-10,-3)		17.160***		15.866***		16.001***		15.753***
		[11.36]		[10.60]		[10.68]		[10.52]
Intercept	-1.840*	-3.880***	-0.008	-0.884	-0.130	-1.056	-0.216	-1.075
	[-1.77]	[-3.79]	[-0.01]	[-1.07]	[-0.15]	[-1.27]	[-0.25]	[-1.26]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1709	1709	1709	1709	1709	1709	1709	1709
Adjusted R^2	0.038	0.107	0.033	0.095	0.034	0.097	0.033	0.095

(g) Upside Guidance with Large Surprise [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.110**	0.241***						
	[2.53]	[5.65]						
Dispersion			-0.028	-0.065**				
			[-1.02]	[-2.43]				
Nbs					-0.005	0.004		
					[-0.48]	[0.42]		
Spread							28.380**	-8.660
							[2.04]	[-0.63]
Volatility		-0.040		-0.052**		-0.051**		-0.051**
		[-1.54]		[-1.98]		[-1.97]		[-1.97]
Beta		0.066***		0.061***		0.061***		0.062***
		[4.47]		[4.13]		[4.14]		[4.16]
AbsCAR(-10,-3)		15.446***		14.529***		14.313***		14.402***
		[14.93]		[14.19]		[14.00]		[13.90]
Intercept	-1.960**	-4.438***	0.271	-0.516	0.303	-0.539	0.177	-0.487
	[-2.47]	[-5.70]	[0.60]	[-1.17]	[0.66]	[-1.21]	[0.39]	[-1.10]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2637	2637	2637	2637	2637	2637	2637	2637
Adjusted R^2	0.015	0.098	0.013	0.089	0.013	0.087	0.014	0.087

(h) Upside Guidance with Small Surprise [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.092*	0.183***						
	[1.75]	[3.54]						
Dispersion			-0.192	-1.104				
			[-0.23]	[-1.39]				
Nbs					0.004	0.014		
					[0.36]	[1.17]		
Spread							69.696**	81.531**
							[1.96]	[2.34]
Volatility		-0.014		-0.020		-0.017		-0.022
		[-0.45]		[-0.63]		[-0.54]		[-0.71]
Beta		-0.003		-0.001		-0.001		-0.024
		[-0.07]		[-0.01]		[-0.03]		[-0.49]
AbsCAR(-10,-3)		15.611***		14.791***		14.660***		14.528***
		[9.15]		[8.70]		[8.66]		[8.64]
Intercept	1.098	-2.983	2.475	0.014	2.365	-0.398	1.701	-0.937
	[0.55]	[-1.52]	[1.34]	[0.01]	[1.28]	[-0.22]	[0.91]	[-0.51]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	960	960	960	960	960	960	960	960
Adjusted R^2	0.037	0.114	0.033	0.104	0.034	0.103	0.037	0.107

(i) Downside Actual Earnings with Large Surprise [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.297***	0.414***						
	[4.71]	[6.71]						
Dispersion			-0.041**	-0.042**				
			[-2.17]	[-2.34]				
Nbs					0.063***	0.059***		
					[2.71]	[2.63]		
Spread							-4.025	-12.129
							[-0.50]	[-1.57]
Volatility		-0.056		-0.061*		-0.057		-0.060*
		[-1.58]		[-1.70]		[-1.60]		[-1.68]
Beta		0.001		-0.009		-0.008		-0.009
		[0.05]		[-0.63]		[-0.55]		[-0.59]
AbsCAR(-10,-3)		12.961***		12.061***		12.027***		12.175***
		[13.54]		[12.61]		[12.58]		[12.67]
Intercept	-3.263***	-5.444***	0.960	0.460	0.569	0.090	0.927	0.435
	[-2.67]	[-4.57]	[1.14]	[0.56]	[0.67]	[0.11]	[1.10]	[0.53]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	2120	2120	2120	2120	2120	2120	2120	2120
Adjusted R^2	0.041	0.118	0.033	0.101	0.034	0.102	0.031	0.100

(j) Downside Actual Earnings with Small Surprise [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.285***	0.376***						
	[8.74]	[11.71]						
Dispersion			-0.020	-0.028				
			[-0.54]	[-0.76]				
Nbs					0.057***	0.065***		
					[6.47]	[7.53]		
Spread							-32.571***	-44.743***
							[-3.83]	[-5.32]
Volatility		-0.029		-0.035*		-0.031		-0.030
		[-1.51]		[-1.70]		[-1.55]		[-1.51]
Beta		0.054*		0.012		0.028		0.034
		[1.88]		[0.41]		[0.96]		[1.18]
AbsCAR(-10,-3)		15.611***		13.915***		14.283***		14.321***
		[16.68]		[14.79]		[15.28]		[15.23]
Intercept	-4.559***	-7.256***	-0.570	-1.811***	-1.040***	-2.387***	-0.212	-1.367***
	[-7.66]	[-12.10]	[-1.48]	[-4.70]	[-2.66]	[-6.12]	[-0.53]	[-3.48]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	3900	3900	3900	3900	3900	3900	3900	3900
Adjusted R^2	0.038	0.103	0.019	0.072	0.030	0.085	0.023	0.078

(k) Upside Actual Earnings with Large Surprise [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.301***	0.376***						
	[3.81]	[4.91]						
Dispersion			-0.023	-0.023				
			[-0.81]	[-0.86]				
Nbs					0.041*	0.045**		
					[1.83]	[2.06]		
Spread							-19.610	-22.077
							[-1.35]	[-1.57]
Volatility		-0.053**		-0.051**		-0.049*		-0.051**
		[-2.07]		[-1.96]		[-1.90]		[-1.99]
Beta		-0.137**		-0.184***		-0.170**		-0.169**
		[-2.02]		[-2.72]		[-2.52]		[-2.48]
AbsCAR(-10,-3)		15.686***		14.933***		15.050***		15.029***
		[11.21]		[10.65]		[10.74]		[10.71]
Intercept	-2.462*	-3.855***	1.630*	1.288	1.469	1.104	1.703*	1.363
	[-1.72]	[-2.78]	[1.70]	[1.40]	[1.53]	[1.20]	[1.78]	[1.48]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	1356	1356	1356	1356	1356	1356	1356	1356
Adjusted R^2	0.019	0.106	0.009	0.091	0.011	0.093	0.010	0.092

(l) Upside Actual Earnings with Small Surprise [-10, -3]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.221***	0.301***						
	[10.43]	[14.21]						
Dispersion			0.002	-0.004				
			[0.08]	[-0.14]				
Nbs					0.036***	0.044***		
					[6.65]	[8.26]		
Spread							-5.326	-19.143***
							[-0.80]	[-2.88]
Volatility		-0.025		-0.033**		-0.027*		-0.031**
		[-1.64]		[-2.14]		[-1.77]		[-2.03]
Beta		0.014		-0.005		0.001		0.001
		[0.96]		[-0.34]		[0.04]		[0.06]
AbsCAR(-10,-3)		14.027***		12.055***		12.585***		12.315***
		[19.52]		[16.87]		[17.62]		[17.11]
Intercept	-4.468***	-6.593***	-1.250***	-2.063***	-1.715***	-2.676***	-1.227***	-2.006***
	[-10.77]	[-15.66]	[-4.47]	[-7.40]	[-5.97]	[-9.32]	[-4.37]	[-7.19]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	7721	7721	7721	7721	7721	7721	7721	7721
Adjusted R^2	0.037	0.082	0.023	0.058	0.029	0.066	0.023	0.059

Appendix IV

Regression Results for Abnormal Turnover during (-10, -1)

The following four tables (a) – (d) reports the results of regressing abnormal turnover during period (-10, -1) on information asymmetry proxies and other control variables across downside and upside earnings guidance/fiscal announcements, respectively. All results are from OLS pooling regressions. Conventional t-statistics reported in brackets are applied with significance levels of 10%, 5% and 1%, which are represented by *, **, and ***, respectively.

(a) Earnings Guidance [-10, -1]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.167***	0.293***						
	[8.53]	[15.20]						
Disp			-0.014	-0.030**				
			[-1.00]	[-2.17]				
Nbs					0.023***	0.032***		
					[4.74]	[6.85]		
Bid-ask Spread							9.381	-6.964
							[1.14]	[-0.87]
Volatility		-0.005		-0.012		-0.008		-0.012
		[-0.34]		[-0.91]		[-0.64]		[-0.88]
Beta		0.060***		0.050***		0.054***		0.051***
		[4.35]		[3.62]		[3.88]		[3.68]
AbsCAR(-10,-3)		14.706***		13.317***		13.472***		13.301***
		[31.38]		[28.75]		[29.09]		[28.68]
Intercept	-2.725***	-5.433***	-0.25	-0.993***	-0.528*	-1.403***	-0.319	-0.977***
	[-6.82]	[-13.75]	[-0.90]	[-3.67]	[-1.87]	[-5.09]	[-1.13]	[-3.56]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	13398	13398	13398	13398	13398	13398	13398	13398
Adjusted R-sq	0.016	0.085	0.011	0.069	0.012	0.072	0.011	0.069

(b) Actual Earnings [-10, -1]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.302***	0.432***						
	[17.59]	[25.33]						
Disp			-0.057***	-0.069***				
			[-4.63]	[-5.76]				
Nbs					0.062***	0.076***		
					[12.99]	[16.21]		
Bid-ask Spread							-21.801***	-34.287***
							[-5.83]	[-9.30]
Volatility		-0.043***		-0.050***		-0.044***		-0.049***
		[-3.92]		[-4.56]		[-3.96]		[-4.45]
Beta		0.007		-0.020**		-0.012		-0.01
		[0.69]		[-2.05]		[-1.25]		[-1.02]
AbsCAR(-10,-3)		14.971***		13.126***		13.601***		13.419***
		[38.98]		[34.37]		[35.67]		[35.01]
Intercept	-4.171***	-6.774***	0.034	-0.651***	-0.476**	-1.303***	0.226	-0.366*
	[-13.04]	[-21.28]	[0.16]	[-3.10]	[-2.19]	[-6.12]	[1.04]	[-1.73]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	22149	22149	22149	22149	22149	22149	22149	22149
Adjusted R-sq	0.029	0.091	0.016	0.067	0.023	0.076	0.017	0.069

(c) Acquirer [-10, -1]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.065***	0.192***						
	[4.26]	[12.81]						
Disp			-0.018	-0.038**				
			[-1.03]	[-2.25]				
Nbs					0.009**	0.026***		
					[2.36]	[7.12]		
Bid-ask Spread							-0.089	-0.391***
							[-0.98]	[-4.45]
Volatility		0.006		0.000		0.003		0.001
		[0.53]		[-0.01]		[0.29]		[0.12]
Beta		0.024		0.006		0.012		0.013
		[1.56]		[0.39]		[0.76]		[0.85]
AbsCAR(-10,-3)		19.436***		18.285***		18.625***		18.423***
		[41.83]		[39.96]		[40.51]		[40.16]
Intercept	-0.597*	-3.980***	0.352	-1.083***	0.269	-1.354***	0.401*	-0.872***
	[-1.84]	[-12.38]	[1.49]	[-4.71]	[1.12]	[-5.82]	[1.65]	[-3.71]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	18493	18493	18493	18493	18493	18493	18493	18493
Adjusted R-sq	0.008	0.094	0.007	0.086	0.007	0.088	0.007	0.087

(d) Target [-10, -1]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LogSize	0.046	0.208***						
	[1.30]	[6.01]						
Disp			-0.009	-0.016				
			[-0.34]	[-0.64]				
Nbs					0.011	0.030***		
					[1.21]	[3.39]		
Bid-ask Spread							0.540***	0.181
							[3.41]	[1.18]
Volatility		0.002		-0.005		0.000		-0.006
		[0.09]		[-0.19]		[-0.01]		[-0.23]
Beta		0.000		-0.015		-0.01		-0.019
		[0.01]		[-0.61]		[-0.40]		[-0.75]
AbsCAR(-10,-3)		16.594***		15.794***		15.998***		15.705***
		[23.92]		[23.13]		[23.36]		[22.88]
Intercept	0.18	-3.349***	0.837	-0.31	0.759	-0.54	0.421	0.03
	[0.25]	[-4.73]	[1.61]	[-0.62]	[1.45]	[-1.08]	[0.82]	[0.06]
Year Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	5305	5305	5305	5305	5305	5305	5305	5305
Adjusted R-sq	0.002	0.099	0.002	0.093	0.002	0.095	0.004	0.093