Corporate Governance and the Timing of Earnings Announcements

Roni Michaely, Amir Rubin, and Alexander Vedrashko*

May 7, 2011

Abstract:

The conventional wisdom is that some managers tend to announce bad earnings news outside of trading hours to minimize their price impact. Alternatively, we argue that firms may decide to announce their earnings outside of trading hours to allow investors time to absorb the information and to level the playing field amongst investors. Using comprehensive time-stamp-data on earnings announcements we do not find any evidence that firms announce a higher proportion of bad news outside of trading hours, nor is there evidence that reporting bad news after trading hours reduces their negative impact. We find that firms with better corporate governance tend to announce outside of trading hours and that corporate governance regulations and shareholders-managers alignment mechanisms are associated with an increased proportion of earnings announced outside of trading hours. A small survey of corporate managers corroborates these empirical results.

JEL Classification: G11 G14

Keywords: Earning Announcements; Governance; Trading; Timing

---

*Michaely is from Cornell University and IDC (rm34@cornell.edu). Rubin is from Simon Fraser University and IDC (arubin@sfu.ca). Vedrashko is from Simon Fraser University. We thank Sanjeev Bhojraj, Yaniv Grinstein, Kai Li, Mark Nelson, Dan Segal, Geoffrey Tate, Chris Vincent, Avi Wohl and seminar participants at American University in Washington DC, Inter-disciplinary Center, the Securities and Exchange Commission (SEC), and Simon Fraser University for valuable comments.

Conflicts of interests and asymmetric information, and by implication the mechanisms that attempt to reduce the extent of these frictions, affect many corporate decisions. These mechanisms, known as Corporate Governance have been shown to impact a range of corporate decisions by firms such as management compensation (e.g., Grinstein, 2006; Hartzell and Starks, 2003), dividend policy (e,g., Michaely and Roberts, 2009; Pinkowitz et al., 2006), capital structure (e.g., Jensen and Meckling, 1976; La Porta et al., 1997; Graham and Leary, 2010) and more. It has also been shown that corporate governance is associated with several aspects of corporate earnings such as earnings management (e.g., Bedard and Johnstone, 2004; Bergstresser and Philippon, 2006; Cornett et al., 2008), and corporate disclosure (e.g., Bebchuk et al., 2009). In this paper we investigate a potentially related issue--the interaction of the timing of earnings announcements with corporate governance. Using exact time stamps of earnings announcements, we examine how corporate governance is related to, and possibly affects management decisions of whether to announce earnings during trading hours (During-trading) or outside of regular trading hours (Outside-trading).

A priori it is not obvious why the decision to either announce During-trading or Outside-trading should matter to managers and investors. In a rational and efficient market, earnings news is impounded into prices immediately, so the timing of earnings announcements should not matter. If the announcement is made During-trading the change in price will occur during trading hours immediately after its release, and if the announcement is made Outside-trading, the change in price will occur immediately as trading commences on the following trading day. Thus, a plausible null hypothesis is that the timing decision is random. Under such circumstances we would not expect the timing decision to be associated with any systematic variation across firm characteristics, nor should we expect to find systematic variation for a given firm through time.

A related possibility is that the decision is an outcome of some inertia: some firms report within the trading day, some firms report outside the trading day, but there is no systematic difference in either the type of news (i.e., positive or negative earnings surprises) or the type of firm, and there is no systematic difference through time. Either way, there should not be any differential price impact for During-trading and Outside-trading announcements.

An alternative hypothesis argues that announcing outside trading hours gives investors more time to digest and absorb the news contained in the earnings announcements, regardless of whether it is good or bad news. Therefore, announcement timing is related to firms' transparency and corporate governance. According to this hypothesis, firms with more mechanisms to align the incentives of insiders with those of other claimholders would like to maintain better and greater transparency. Such firms will tend to report their earnings news Outside-trading allowing investors more time to absorb the news before the stock trades again. As importantly, During-trading announcements favor institutional day-traders, hedge funds and other investors who follow the market continuously and can trade immediately, at a time when many other investors, who do not follow the market continuously, cannot. Thus, the decision to announce Outside-trading would be consistent with recent legislations, especially with Regulation Fair Disclosure, in their attempt to level the playing field between different types of investors.

Past research made the opposite argument (e.g., Patell and Wolfson, 1982; Damodaran, 1989; Dellavigna and Pollet, 2009) suggesting that attention levels are lower after trading ceases and therefore, some firms would rather report bad news after trading hours, when investors' attention is relatively low. Because of the low attention level, this strategy can reduce the market reaction to the bad news. This hypothesis is commonly referred to as the *opportunism hypothesis* (see for example, Doyle and Magilke (2009)). Evidence from the 1980's showed that after

trading hours announcements (Patell and Wolfson, 1982) and Friday announcements (Damodaran, 1989, Dellavigna and Pollet, 2009) tend to be negative, which would seem to be consistent with the hypothesis if during these times investors' attention is low. However, to show that investors' attention is low during these times, it must be that the market under-reacts to negative earnings news announced after trading hours and on Fridays.

We derive implications to differentiate between the null hypothesis (no difference in firms' characteristics and market reaction), the corporate governance hypothesis, and the opportunism hypothesis. The hypotheses have different implications concerning firms' characteristics between those firms announcing earnings during trading hours and those announcing outside trading hours, the timing and persistence of earnings announcements, and the market reaction to earnings announcements.

The null hypothesis predicts no differences in firms' characteristics, market reaction, or type of event (positive or negative earnings news) between those reporting during trading hours and those reporting outside trading hours. The corporate governance hypothesis implies that good corporate governance firms are more likely to announce outside trading hours regardless of whether the earnings news contains negative or positive surprises.

The corporate governance hypothesis also implies that exogenous changes in corporate governance will affect the timing of earnings releases by some firms. Recent new regulations, namely Regulation Fair Disclosure and the Sarbanes-Oxley Act, provide a natural experiment to test whether there has been a systematic change in the During-trading/Outside-trading distribution between the pre- and post-regulation periods. These regulations, and especially Regulation Fair Disclosure, emphasize the importance of leveling the playing field among investors. If good corporate governance practices are associated with Outside-trading

announcements, we would expect a shift from During-trading towards Outside-trading in the post-regulation period.

The corporate governance hypothesis also provides predictions concerning the market reaction to earnings news. Because the hypothesis argues that 'good' governance firms tend to announce Outside-trading, and not During-trading, a byproduct is the prediction that the market reaction is stronger for positive earnings news announced Outside-trading (compared to During-trading), since these announcements are made by better governance firms whose news is more credible.

According to the opportunism hypothesis the ability to reduce the impact of bad earnings news is the reason for timing earnings announcements when trading ceases. Therefore the main predictions of this hypothesis are that (1) bad earnings-news tend to be announced Outside-trading, and (2) the market under-reacts to negative earnings surprises that are released Outside-trading (compared to During-trading).

To test these and other implications we utilize a newly available data set. On April 2009 I/B/E/S included the exact time stamp of the earnings announcements in its database. The time stamp data goes back to January 1999, effectively allowing us to employ all I/B/E/S earnings announcements made during the years 1999-2009.

Our analysis reveals a number of new and important findings and we highlight several of them here. First, we find that earnings surprises tend to be significantly more positive for Outside-trading announcements compared to During-trading. Further, among the negative announcements, During-trading announcements tend to be those with the more negative surprise. Second, we find that the immediate reaction to earnings surprises on the announcement day is significantly larger for Outside-trading compared to During-trading. For example, when

matching During-trading and Outside-trading announcements based on the earnings surprise, we find that for the most positive earnings surprise portfolio, Outside-trading earnings announcements average abnormal return is 3.39% while for the During-trading announcements it is 1.69%. For the most negative earnings surprise portfolio, Outside-trading earnings announcement average abnormal return is -4.79% and for During-trading it is -2.88%. These differences are highly significant also in a regression specification that controls for size, volatility, changes in regulation and governance. Thus, results are consistent with the corporate governance hypothesis. They are inconsistent with the opportunism hypothesis.

Third, consistent with the corporate governance hypothesis, we find that Outside-trading announcements are associated with firms that have stronger corporate governance--measured by institutional block holdings (Hartzell and Starks, 2003), low GIM index levels (Gompers et al., 2003), and the presence of a blackout period for corporate insiders (Roulstone, 2003).

Fourth, we find a permanent and very significant reduction in the proportion of During-trading announcements occurring after the enactment of Regulation Fair Disclosure and the Sarbanes Oxley Act during the years 2002-2004. Regulation Fair Disclosure explicitly encourages firms to level the playing field, and by implication implicitly encourages firms to report their earnings Outside-trading. Indeed we find that the proportion of During-trading announcements dropped from an average of 50% during the years 1999-2001 to approximately 8% in the years 2005-2009. Moreover, consistent with the corporate governance hypothesis we find that firms with better corporate governance tend to switch more often to report their earnings outside trading hours.

Fifth, we find an incomplete reaction to During-trading announcements: there is an additional market reaction to earnings news on the day following the During-trading

announcement day. We also find that fewer analysts revise their forecast immediately after the earnings news if it is being announced during trading. Combined, this may suggest that for During-trading announcements some investors are not able to react to the announcement immediately upon its release, perhaps in part because they have fewer resources (i.e., few analysts' revisions) that help them to interpret the earnings news; which leads to positive autocorrelation in returns on the following day. Thus, During-trading announcements may benefit hedge funds and day-traders at the expense of less-sophisticated investors, who do not follow the market continuously.

Finally, we conduct a survey amongst corporate executives. Without revealing the purpose for our study, we ask them to provide us with their perspective to the advantages and disadvantages of releasing earnings reports Outside-trading as opposed to During-trading. The answers we received overwhelmingly corroborate our empirical findings. The executives state that Outside-trading announcements allow for better transparency and level the playing field between the different investors. They also affirm that During-trading announcement favor day-traders and hedge-funds at the expense of long-term investors. When asked how the observed shift in reporting (from during the day to outside trading) be explained, they suggested that Reg. FD had a significant impact on reporting practices.

We conducted several additional tests. First, we examine how timing of earnings announcements of ADRs. While pre-earnings announcements are unique to the US, it can be argued that foreign firms with ADRs should be less sensitive to the timing of reporting since a larger portion of their clientele is in a different time zone. Our findings indeed suggest that while ADRs show a shift towards Outside-trading, their timing is less sensitive to Reg FD. Second, we checked whether trading halts and the increased popularity of ETFs who are averse to trading

halts are a cause for the shirt. They are not. Third, after-hours trading is a potentially important factor when the announcement is made Outside-trading. We find that outside trading hours volume constitute less than 3% of trades compared to the volume on the following day trading volume, and thus unlikely to be an important aspect of the decision.

The hypotheses investigated in this paper have similar implications for Friday announcements. For example, the opportunism hypothesis suggests that bad earnings news will be announced after Friday trading ceases. Therefore in the latter part of the paper we analyze Friday announcements. We find that Friday earnings announcements are rare: Only 5.5% of the announcements occur on Friday. Further, more than 85% of Friday announcements are before 4PM, and therefore cannot be categorized as a time when investors pay less attention (according to the opportunism hypothesis).[1] The difference between the portions of Friday evening announcements relative to other days of the week strongly suggests that firms try to avoid earnings announcements during the weekend. Indeed those rare evening announcements on Friday (693 observations) are associated with weak governance firms. These Friday evening announcements are also the only Friday announcements that are associated with a reduced market reaction to negative earnings news (338 out of 89,000 observations). Indeed also survey evidence suggests that corporate executives view unfavorably announcement made on Friday after trading ceases and they associate them with "firms trying to hide the earnings news". Thus, although we cannot reject the hypothesis that these negative Friday-evening announcements are associated with managerial opportunism (relatively higher occurrences of negative news and less

[1] From Monday through Thursday, evening announcements (i.e., between 4 pm and midnight) constitute 47.4% of all earnings announcements during those days. On Friday, evening announcements are only 13.7% of Friday's announcements (which are very few to begin with). Saturday and Sunday announcements are completely negligible representing 0.2% of the sample.

negative reaction to those events) the results suggest that the vast majority of well governed firms, and in fact of most firms, avoid making announcements during these times.

While our investigation of the relation between corporate governance, both internal and external is novel; and we are the first to use earnings announcement exact time stamp in this context, several recent papers have investigated the opportunism hypothesis and are relevant to the analysis performed here. Doyle and Magilke (2009) analyze the opportunism hypothesis in the context of earnings announcements made before trading commences to those made after trading ceases. They do not find differences in opportunism behavior between these two groups. Since our focus is on the impact of corporate governance on the timing of earnings announcements, the more relevant comparison is between During-trading and Outside-trading earnings announcements. As a byproduct, our exact time-stamp data allows us to investigate in more details the Friday announcement effect (Damodaran, 1988; Dellavigna and Pollet, 2009), which has been associated with a smaller reaction compared to other weekdays. Using this newly available data we show that these results are mostly derived from a very small number of announcements that are made on Friday after trading hours.

Overall, our paper provides comprehensive and consistent evidence that the quality of corporate governance affects the timing decision of earnings announcements, and that the decision is not based on opportunistic timing in an attempt to fool investors. Nor is the decision made at random or is simply an outcome of inertia. The market reaction to these announcements suggests that announcing earnings after trading ceases indeed levels the playing field and allows more investors to incorporate the impact of the news. Finally, the time series evidence suggests that external governance mechanisms such as Regulation Fair Disclosure and Sarbanes–Oxley

Act were effective in leveling the playing field among investors, at least along the dimensions investigated here.

The rest of the paper proceeds as follows. In section I, we discuss the corporate governance hypothesis in more detail and its relation to recent legislation. In section II, we provide descriptive statistics of our sample. Section III provides a multivariable analysis of the determinants of the announcement decision and the market reaction to it. Section IV provides survey results conducted amongst corporate executives. Section V provides a robustness analysis that discusses and analyzes ADRs, trading halts and outside regular trading hours trades – all of which may be important factors in the earnings announcement timing decisions. Section VI analyzes Friday announcements. Section VII concludes.

I. Changes in Regulation and the Timing of Earnings Announcement

The Securities and Exchange Commission (SEC) regulations require listed companies to file Form 10-Q (quarterly financial report) within a specified time after the end of the quarter. While typically companies file these reports in the last two days of the required filing period (Amir and Livnat, 2005) almost all companies issue preliminary earnings announcements to the market through a press release (jointly with an 8-K filing to the SEC). The timing of these preliminary announcements is prior to the 10-Q filling and hence represents the point of time in which market participants learn for the first time about the earnings news. The decision about the timing of the earnings announcement is made at the highest executive levels. In most companies, the CEO or CFO decide on when to make the earnings announcement, typically with consultation with either the audit committee, the investor relation manager, and/or the counsel general. Most companies also have a conference call (primarily with sell-side security analysts)

after the earnings announcement, typically within a few hours after the earnings announcements or in the following morning (if announcement is made in the later afternoon). The time between the earnings announcements and conference call is typically used by analysts and investors to learn the new earnings news before addressing management with further questions.[2]

According to Regulation Fair Disclosure, also commonly referred to as Reg. FD, publicly traded companies must disclose material information to all investors at the same time and stamp out selective disclosure, in which some investors (often large institutional investors) receive relevant information before others (often smaller, individual investors).[3] In Reg. FD, the SEC spells out specific types of information that it considers to be material enough to be precluded from being selectively disclosed. Specific examples include earnings information, mergers, acquisitions, tender offers, joint ventures or changes in assets, new products or discoveries, changes in control or management, changes in an auditor, defaults on senior securities, bankruptcies and receiverships. Importantly Reg. FD does not impose an affirmative burden on managers to reveal this information, but rather requires firms to broadly disseminate such information if they disseminate it at all. Although earnings-related information is not the only type of information Reg. FD addresses, it is clearly a primary target. Heflin et al. (2003) point out that the regulation lists earnings information first among the types of information addressed and provides specific guidance on how to make a "planned disclosure of material information, such as an earnings release".

While the issue of when during the day earnings should be reported is not discussed explicitly in Reg. FD, since some investors do not follow the market continuously during trading

[2] This information is based on conversation with several CFOs and on responses to the survey questions. (See Appendix A for the survey questions.)
[3] See the U.S. Code of Federal Regulations 17 CFR Part 243.

hours, after trading announcements act to level the playing field and are therefore in the spirit of Reg. FD.

The Sarbanes–Oxley Act (hence, SOX) contains 11 titles that describe specific mandates and requirements for financial reporting. Some of these titles have a direct relation to earnings releases. Title II of SOX establishes standards for external auditor independence, limits conflicts of interest, and addresses new auditor approval requirements. Title III establishes that executives take individual responsibility for the accuracy and completeness of corporate financial reports. It defines the interaction of external auditors and corporate audit committees, and specifies the responsibility of corporate officers for financial reports. According to Bethel (2009), an important aspect of SOX is that it established greater CEO and CFO personal accountability for dissemination of accounting statements. Section 302 of the Act requires CEOs and CFOs to certify the adequacy of internal controls as well as the accuracy of periodic reports. In recent years, the SEC has held several CEOs and CFOs accountable for violations of these laws. With SOX, the SEC sent a clear message that senior managers of firms are responsible for the content and process by which information is disseminated to investors. Thus, an important aspect of SOX is embedded in its ability to provide the regulators with the tools necessary to hold management accountable for violations such as unfairly disseminating earnings news. Thus, while Regulation FD is concerned with leveling of the playing field across investors, SOX is the backbone that allows enforceability that holds management accountable.[4]

II. Data and Descriptive Statistics

A. Data

[4] See Public Law 107 - 204 - Sarbanes-Oxley Act of 2002. Available online at http://www.gpo.gov/fdsys/pkg/PLAW-107publ204/content-detail.html.

We use all available time stamp data of the I/B/E/S US sample during the years 1999-2009. [5] Prices and daily stock returns data from CRSP. We are able to obtain sufficient return data for 89,048 firm-quarter announcements (corresponding to 6,867 different firms). To generate our governance proxies we utilize Thomson Financial and Andrew Metrick's website (the latter is used to generate the Gompers, Ishii, Metrick (2003) (GIM) index). The sample drops to 41,915 firm-quarter announcements (corresponding to 3,274 firms) if the analysis requires Thomson Financial data and it drops to 22,780 firm-quarter observations (1,371 firms) if the analysis requires the existence of the GIM index.

B. Governance Variables

Important in this study is the usage of proxies to measure the degree of governance alignment-mechanisms[6], which we label as the level of corporate governance. We use three different proxies. The broadest measure that we use is the GIM index of governance. A second measure, also commonly used in the literature (e.g., Hartzell and Starks, 2003), is the degree of institutional concentration. Institutional concentration is used to measure the incentives of institutions to monitor management, which in turn should lead firms to give more consideration to their earnings release policy. It is defined as the sum of institutional blockholdings, where an institutional blockholder is defined as an institution having more than 5% of the shares outstanding as reported on 13F Schedule at the end of the quarter prior to the announcement day.

[5] The time stamp data on the I/B/E/S data file goes back to 1998; however, the time stamp data prior to 1999 indicates not the announcement time, but rather the activation time (the time Thomson Reuters recorded the announcement). Page 16 of the detail history manual states: "The date reflected on this file prior to January 1999 is the activation date. After January 1999, the announcement date is used."

[6] By alignment mechanisms we refer to proxies that have been previously associated with the firm acting in a fair and transparent way.

Finally, a third measure that we use is a blackouts dummy indicator (Bettis et al., 2000). This indicator variable equals one if the blackout algorithm (Roulstone, 2003) finds that the firm has a stated blackout period for trades by insiders and zero otherwise. The algorithm that Roulstone (2003) developed is based on Bettis et al. (2000) evidence that insiders-trading in blackout periods is about three times less likely than insiders-trading during allowed trading windows. Thus, one can classify firms whose insiders overwhelmingly execute their trades after earnings announcements as firms that restrict insider trading. The measure is particularly relevant to what we want to capture in this study because one would think that firms that restrict their insiders from trading before earnings announcements would also give consideration to the timing of the earnings release.

Given the high correlation among the governance proxies, we create two governance factors using principal components analysis to reduce the dimensionality of our data to the first principal component of these three variables (a linear combination of these variables). The first governance factor (referred to as Governance 3) is extracted from all three proxies, while the second is extracted from the blackouts indicator and institutional concentration variables (referred to as Governance 2). Throughout the paper we mostly rely on this latter variable because if we require the availability of all three governance proxies (i.e., blackouts, institutional concentration, and GIM), the sample size drops from 89,048 to 22,780 and we would be left with less than 25% of the observations. The interpretation of both governance factors is such that higher levels of the factors are associated with better corporate governance. [7]

C. Other Variables

[7] If we control for each of our corporate governance proxies individually, the results are the same.

Following prior work (e.g., Mendenhall, 2004; Berkman and Truong, 2009), standardized unexpected earnings (SUE) is defined as actual earnings per share from the I/B/E/S file minus the consensus analysts' estimate prior to the announcement divided by the cross-sectional standard deviation of analysts' forecasts. Similar to Doyle et al. (2004), for multiple forecasts in a given quarter, the consensus forecast used is the most recent one prior to the announcement, but is at least one day prior to the announcement day. Because SUE is highly skewed, we winsorize it at the 1% and 99% levels. Size is the market value of the firm's equity at the end of the quarter prior to the announcement quarter. Volatility is the standard deviation of daily stock returns during the quarter prior to the announcement quarter.

D. Univariate Analysis of During-trading versus Outside-trading

Table 1 provides descriptive statistics for the main variables used in the paper. It splits the observations according to whether they correspond to a During-trading announcement or an Outside-trading announcement. It also provides difference of means and medians test. The panel provides a few interesting observations. During-trading announcements are more common for small size firms: while the average During-trading announcement firm has a market value of $3.6 billion, the average Outside-trading announcement firm has a market value of $4.9 billion. This difference is significant. There is not much difference in volatility between firms that announce During-trading or Outside-trading.

The table shows that During-trading announcements tend to have a lower earnings surprise. The median (average) SUE Outside-trading is 0.50 (0.49), while for During-trading it is 0.32 (0.19). Thus, while the median (average) earnings surprise is positive for both During-trading and Outside-trading, it is significantly higher for Outside-trading. Further, the positive

SUE indicator, which equals one if SUE is positive and zero if SUE is negative (not defined if SUE equals zero), is lower for During-trading than for Outside-trading, showing that 64% of Outside-trading announcements are associated with positive earnings compared with 60% for During-trading. This difference is significant. Recall that the opportunism hypothesis suggests that Outside-trading announcements are associated with negative news, so the univariate results are not consistent with this implication.

Finally, all three governance proxies show that Outside-trading is associated with better governance than During-trading: The mean GIM for During-trading is 9.39, while for Outside-trading it is 9.08 (high GIM is associated with weak governance), the institutional concentration is 19.25% for Outside-trading and only 14.99% for During-trading, and the blackouts measure suggests that 29% of the Outside-trading observations are associated with a stated blackout policy, while for During-trading that is true for only 27% of the observations. These differences are statistically significant and are consistent with the notion that Outside-trading announcements occur in firms with good governance practices.

III. Determinants of the During-trading/Outside-trading Earnings Announcement Decision

A. Cross Sectional Determinants of the During-trading/Outside-trading Decision

The opportunism hypothesis suggests that Outside-trading announcements are more likely to be associated with negative news. The corporate governance hypothesis suggests that During-trading announcements are associated with weaker governed firms. We test these predictions using probit regressions, and report the results in Table 2. The dependent variable is During-trading (an indicator variable that equals one if the announcement is made during trading hours, and zero otherwise). The main independent variables are the direction of the earnings

surprise, Positive SUE (an indicator that equals one if SUE is positive and 0 if it is negative), and our measures of the quality of corporate governance variables.[8] The opportunism hypothesis predicts a positive coefficient for the variable Positive SUE (as more negative SUE are announced Outside-trading) and according to the corporate governance hypothesis the coefficients on the governance proxies should be negative. We also control for firm's market cap and stock volatility as well as two-digit SIC and year indicators.[9] Finally since announcement timing may be persistent, we include the lagged dependent variable. We cluster observations at the firm level to mitigate concerns of correlations across observations of the same firm.

In the first part of Table 2 we use five corporate governance measures: whether the firm has a blackout period, its GIM index, institutional investors' concentration and two linear combinations of these proxies. Regardless of the corporate governance proxy we use, the results suggest that the timing decision of earnings announcements is consistent with the corporate governance hypothesis. For example, an increase of one standard deviation in the GIM measure increases the probability of an During-trading announcement by 0.7%. Firms that have a blackout period have a reduced probability of 0.8% of having and During-trading announcement, and an increase of one standard deviation in institutional block-holdings reduces the probability of a During-trading announcement by 0.3%. Thus, earnings announcements made during the trading hours are negatively correlated with strong governance.

The negative and significant coefficient on the earnings surprise indicator (Positive SUE) suggest that when earnings surprises are negative, the earnings announcement is more likely to

[8] When using the variable Positive SUE, we discard SUE=0 observations because they cannot be interpreted as either good nor bad news; however, all results reported throughout the paper when using this variable are robust to the inclusion of these observations to either the positive or negative group.

[9] All the results of the paper are unchanged if we also control with book to market, which is typically insignificant in the regression specifications. We choose not to present these results because it reduces the sample size by 10-20% depending on the specification.

occur during the day and not after trading hours, contrary to the opportunism hypothesis. Not surprisingly, Table 2 also suggests the timing decision is persistent, and regardless of the exact specification, the coefficient of the lagged dependent variable is positive and highly significant.

In specifications (6) and (7) we provide two types of robustness tests for these results. In specification (6) we run Fama and MacBeth (1973) probit regressions (year by year), that mitigate any concerns that may exist about the results being related to a time-trend in the During-trading/Outside-trading distribution that are not captured by the dummy year indicators in specifications (1)-(5). In specification (7) we run the regression only for the negative SUE subsample (i.e., we discard all non-negative observations in this specification). We find a negative correlation between the SUE and During-trading suggesting that the more negative announcements are During-trading, a result which is again contrary to the opportunism hypothesis.

B. Time-Series

B1. Time-Series of During-trading/Outside-trading Distribution

Regulation FD and SOX may have triggered a situation in which firms reconsidered their earnings release policy. These regulations provide incentive to firms to switch to Outside-trading announcements since Outside-trading are a more transparent and fair way to release earnings news, relative to During-trading announcements. Table 3 Panel A provides information on the fraction of During-trading and Outside-trading announcements in the pre Jan. 2004 and post Jan. 2004 periods respectively. We choose this cut-off period because most firms were required to completely implement the SOX regulation by the end of 2003.[10] The panel shows that 35.6% of

[10] By pre Jan. 2004 and post Jan. 2004 we mean announcements before Jan. 1, 2004 and after Jan. 1, 2004, respectively.

announcements were During-trading in the pre Jan. 2004 period, while only 7% of announcements were During-trading in the post Jan. 2004 period. These differences are highly significant and show a major shift over the years in the timing of earnings news release.

Figure 1 shows the proportion of During-trading announcements over the sample period, 1999-2009. The figure clearly shows a downward trend. The average proportion of firms making During-trading announcements is approximately 45% during the years 1999-2002. This is reduced to approximately 5% during the years 2006-2009. Most of the reduction occurred during the years 2002-2004. Thus, though we do not wish to be dogmatic-- as there could be other unobservable factors which caused the structural shift in the timing of announcements, most of the trend does appear to correspond to the period in which firms adapted to the new legislation.

Since the shift from During-trading to Outside-trading announcements has taken place primarily in 2002-2004, it is worthwhile to consider the details of the shift in announcement timing by comparing the distribution of announcement times in the pre Jan. 2004 period to that in the post Jan. 2004 period. Figure 2 (top graph) shows that earnings announcements before 2004 occurred throughout the day, with many announcements in the morning hours (between 8 AM and 12 PM) and a big wave of announcements in the earlier evening hours (between 4 PM and 8 PM). Notably, less than 5% of the announcements occurred in the late night or early morning hours. In the post Jan. 2004 period shown in the bottom part of Figure 2, there were significantly fewer announcements made within trading hours. Morning announcements made before 9 AM have increased from about 15% of all announcements in 1999 to approximately 40% in 2009, and early evening announcements made before 8 PM have increased from around 30% in 1999 to approximately 50% in 2009. Two other observations are evident in Figure 2. First, post Jan. 2004 evening announcements have clustered at the first half-hour after the market

closure at 4 PM. Second, morning announcements have moved earlier, further away from 9:30 AM, in the post Jan. 2004 period. In fact, there are significantly fewer announcements in recent years that are released just before the market opens (i.e., between 9 AM – 9:30 AM); the drop is from approximately 10% to less than 3%. These changes in distribution, especially the clustering of announcements between 4:00-4:30 PM and 7:00-8:30 AM are consistent with the idea that companies try to disseminate the earnings news at specific time intervals in which trade does not take place. [11]

B2. Persistency in Outside-trading/During-trading

The opportunism hypothesis posits that a manager is more likely to make an Outside-trading announcement when the earnings surprise is negative. The time series implication of the corporate governance hypothesis is that firms will not change the timing of an earnings announcement conditional on whether the earnings surprise is good or bad. Rather, the corporate governance hypothesis posits that strong governance firms are more likely to report after trading ceases and weak corporate governance firms are more likely to report during trading hours. In other words, the timing of earnings, and especially the timing of earnings of good governance firms (who presumably report Outside-trading) are predicted to be persistent.

Table 3 Panel B presents the probability of Outside-trading announcements occurring conditional on the timing decisions of previous announcements. The table results clearly show that Outside-trading is highly persistent. Further, Panel B shows that persistency in announcements increased in the post Jan. 2004 period. In the post Jan. 2004 period, when a firm makes announcements Outside-trading there is more than a 95% chance that it will do so again

[11] We do not find any material difference between before-trading and after-trading announcements, consistent with Doyle and Magilke (2009).

next time. The difference in persistency between the two periods is highly significant. In panel C we split the sample of firms between weak and strong corporate governance firms, according to institutional concentration and the blackout period indicator (i.e., the Governance 2 variable). Indeed, better governance firms tend to announce Outside-trading more persistently, though the economic difference is not that large. For example, for above-median corporate governance firms, conditional on the last announcement being outside trading hours, the probability is 92.8% that the current announcement is going to be announced outside of trading hours. It is 90.8% for below-median corporate governance firms. We also find (not tabulated) that During-trading tend to be much less persistent (in the range of 0.6-0.75 in the pre Jan. 2004 period, and in the range of 0.32-0.7 in the post Jan. 2004 period). The fact that During-trading announcements tend to be less persistent is not surprising if one considers the fact that these announcements are associated with weak governance firms that do not have a clear policy of when it is better to make earnings announcements. Overall the timing of earnings announcement is highly persistent, especially for Outside-trading announcements and for announcements made by good governance firms--consistent with the corporate governance hypothesis.

C. The Impact of Legislation

The corporate governance hypothesis implies that better external corporate governance mechanisms should result in a significant reduction in earnings announcements made during trading hours. Indeed, Figure 1 shows a significant and negative association between the frequencies of earnings reporting during trading hours and the introduction of Reg FD and SOX. However, if tighter external corporate governance is the cause for the drop in During-trading earnings announcements, then we should expect a differential influence on firms as a function of

the strength of their internal corporate governance. Since neither Reg FD nor SOX have any explicit reference to the timing of earnings announcements, the decision is at the firms' discretion. As a result, the corporate governance hypothesis implies that better governance firms are more likely to report Outside-trading even before the enactment of Reg FD, and the worse corporate governance firms are the least likely to change their earnings reporting policies in response to Reg FD.

To this end, we first divide the sample to the pre and post new legislation (e.g., Reg. FD and SOX) periods and examine whether Outside-trading announcement are associated with the better governance firms, measured by Governance 2 (institutional concentration and blackout indicator) and Governance 3 (institutional concentration, blackout indicator and GIM). Table 4 Panel A shows regression results where the dependent variable is defined as the percentage of earnings announcements that are During-trading (out of total number of announcement during the period). In this analysis we include only firms that had at least one During-trading announcement in the sample. Because we have only one observation per firm, the independent variables are averaged across announcement events. The results reveal that average firm governance level is unambiguously significantly negatively related to During-trading percentage (specifications 1 through 4). Moreover, as the last two columns of the Panel A suggests, relative to lower governance firms, better governance firms are more likely to switch as a result of the legislation (significant for the Governance 2 measure and insignificant for the Governance 3 measure).

To examine whether firms with the best governance practices did not need the new legislation in order to disseminate the earnings news in a fair and transparent way, In Table 4 Panel B we run a probit regression where the dependent variable equals one if the firm did not

have a During-trading announcement throughout the sample years, and zero otherwise.[12] Here too, the analysis is done at the firm level so we have one observation per firm and average observations across events. We find that in 4 out of the 5 specifications (excluding the blackout indicator in specification (2)), governance is positively associated with zero tolerance policy towards During-trading (note that high GIM is associated with weak governance).

D. Immediate Market Reaction to During-trading/Outside-trading Announcements

While the null hypothesis suggests no differential price reaction between During-trading and Outside-trading announcements, the two alternative hypotheses provide opposite predictions with regard to the market reaction to earnings surprises. The opportunism hypothesis posits that firms are able to effectively mask bad news when choosing to announce Outside-trading. Therefore, the market reacts less negatively to bad earnings news announced after trading hours than to negative earnings news announced during trading hours. Contrary to that, the corporate governance hypothesis posits that firms with good governance practices are more likely to announce Outside-trading to allow investors time to absorb the information and to level the playing field across investors. An implication of this would be that Outside-trading announcements are associated with firms that are more credible (as they have better governance), so the market reaction to good news is larger for Outside-trading than that for During-trading.

To calculate abnormal returns on the announcement day, we estimate the four-factor Fama-French and market model.[13] The three Fama-French factors (Fama and French, 1993), momentum (Carhart, 1997), and the risk-free rate are obtained from Kenneth French's website. The estimation window is 126 trading days (six calendar months), and there is a gap of eight

[12] Note that firms with no During-trading announcements throughout the sample years were excluded in Table 4 Panel A.
[13] The results are unaffected when we use the market model instead.

trading days between the end of the estimation window and the announcement day. The few announcements that were made on Saturday and Sunday are excluded from the sample.[14] Since investors can respond to announcements made during trading hours immediately, we define the announcement day as the same trading day for During-trading announcements. For announcements made after trading hours, market prices can adjust only the day after, so day 'zero' is defined as the following trading day.

For each During-trading announcement we match an Outside-trading announcement that minimizes the absolute difference in SUE between the two announcements. For 95% of the During-trading announcements an exact match is found and typically there would be many such exact-matches for a specific During-trading announcement. When choosing between the appropriate match from the group of exact SUE matches, we look for the Outside-trading announcement that minimizes the absolute percentage difference in market cap compared to the During-trading announcement. Because there are a total of 16,621 During-trading announcements, the procedure produces 16,621 matched pairs. Overall this matched pair procedure leads to almost identical SUE for each pair, and a median difference in market cap of 0.26% between the market caps of a pair, which is statistically insignificant. We then split the pairs into nine portfolios based on the empirical distribution of SUE. We set the SUE cutoff values for inclusion in a specific portfolio in a way that all positive (negative) SUE portfolios will have equal number of observations. Portfolio 1 has the smallest earnings surprise (the most negative SUE), portfolio 5 includes all cases of zero earnings surprise, and portfolio 9 has the

[14] These Saturday and Sunday announcements constitute less than 0.2% of the observations in the sample (less than 200). Results are unaffected if we were to include these observations (as Outside-trading announcements).

highest earnings surprise. Finally, we split the pairs by their During-trading/Outside-trading classification, ending up with 18 portfolios.[15]

Table 5 provides mean SUE and mean abnormal return for each portfolio, and difference of means tests. The results show that Outside-trading announcements experience a significantly more pronounced market reaction than During-trading earnings announcements. For the most negative SUE portfolio, Outside-trading yields -4.79%, while During-trading yields only -2.88%. For the highest ranked portfolio, Outside-trading yields 3.39%, while During-trading yields only 1.69%. Thus, the magnitude of the reaction is on average twice as large for Outside-trading compared to During-trading (except for portfolio 6 and 7 where the difference is insignificant). The table also reveals that a zero earnings surprise is perceived as negative news on average, and a positive surprise which is less than one standard deviation from the analysts' estimates has a minimal effect on prices (portfolio 6). Overall, the table results suggest that firms cannot opportunistically hide by announcing bad news (portfolios 1 and 2) outside trading hours, contrary to the main prediction of the opportunism hypothesis. Rather, the results suggest that Outside-trading announcements are associated with more credible firms, as they are associated with a larger market reaction for good news (portfolios 8 and 9). This is consistent with the corporate governance hypothesis.

The second approach we take to isolate the earnings announcement timing impact involves a regression analysis in which we are able to control for differences in firms' attributes

[15] As robustness to this procedure, we also use an alternative procedure where we generate nine ranked portfolios of all announcements (i.e., 89,048 announcements). In this procedure we set the SUE cutoff values for inclusion in a specific portfolio in a way that all positive (negative) SUE portfolios will have equal number of observations. After this is done, we split each ranked portfolio into During-trading and Outside-trading, ending up with 18 portfolios. The advantage of this procedure is that it includes all announcements, but the disadvantage is that there would be more Outside-trading announcements in a portfolio compared to and During-trading portfolio; and there will be a difference in the distribution of SUE between an During-trading and Outside-trading announcements of the same rank. However, the results of this analysis are very similar and provide similar interpretation. These results are available from authors.

other than SUE and size --which may influence the market reaction to the newly released earnings news. Table 6 provides the results of these regressions. The dependent variable is the abnormal return (of the four-factor model) on the announcement day. We run regressions on the subsamples of positive and negative SUE separately. The positive sub-sample allows us to test the prediction that the reaction to good news is stronger for Outside-trading compared to During-trading, as those that report Outside-trading are the more credible firms that have better governance practice. The negative sub-sample allows us to test the prediction that the reaction to bad news is smaller for Outside-trading compared to During-trading, as managers are able to mask the negative earnings news by releasing them Outside-trading. We include size, volatility and a dummy variable Post Jan. 2004, that equals one if the announcement day is after January 1, 2004 and zero otherwise. This latter variable helps in making sure that our During-trading results are distinct and different from the effect of the new legislations that were implemented in pre Jan. 2004 years. To measure the price impact effect of During-trading, we include an interaction term of SUE with During-trading. We also include an interaction term between SUE and the Post Jan. 2004 dummy (Specifications (2) and (4)), to further verify that our During-trading results are distinct from any effect of the legislation. To address the heteroscedasticity of the error term, we cluster the standard errors at the firm level. Since using the corporate governance measures significantly reduce the size of our sample, we present results without using those measures in Panel A and we incorporate those measures in Panel B.

There are three main findings in Panel A of Table 6. First, consistent with many prior studies that go back as far as Ball and Brown (1968) and Aharony and Swary (1980), the announcement surprise effect is positive and highly significant. For Outside-trading announcements, an increase in SUE that equals one standard deviation of analysts' consensus

forecast is associated with an increased market reaction of 0.41-0.45% if SUE is positive and 0.24-0.26% if SUE is negative. Second, the interaction of SUE with During-trading is negative and strongly significant. That is, holding all other variables constant, During-trading announcements have lower impact on market prices than Outside-trading announcements. Importantly, the During-trading effect has an economic significance: the reaction to During-trading announcements is about 50% (i.e., 0.0019/0.0045) smaller than the reaction to Outside-trading announcements for positive SUE, and about 66% (i.e., 0.0016/0.0024) smaller for negative SUE. Thus, negative SUE announcements tend to have less of a negative effect if made During-trading compared to Outside-trading (since the interaction term is negative). Positive SUE announcements tend to have less of a positive effect if made During-trading compared to Outside-trading. The third result is that the coefficient on Post Jan. 2004 is positive (negative) and significant for positive (negative) SUE, which is consistent with the evidence concerning the effect of recent legislations in curtailing selective disclosure and increasing the informational effect of new information that is no longer made available to equity analysts (e.g., Gintschel and Markov, 2004; Jorion et al., 2005).

In Panel B of Table 6 we add the corporate governance measure. Ceteris paribus, the market reaction of earnings announcements is more pronounced for firms with better governance measured by Governance 2 (i.e., institutional concentration and blackout indicator). In particular, in specification (1) we note that firms with better governance react more positively on positive SUE announcements. Note also that the inclusion of Governance 2 does not reduce the effect of SUE × During-trading, though its significance is reduced slightly (but still much above the 1% significant level). We also find in specification (2) that the Governance 3 is insignificant. Note however, that this specification is associated with a small sample as it requires the existence of

all three governance variables (institutional concentration, blackout indicator, and the GIM index).

The opportunism hypothesis suggests not only a smaller market reaction to Outside-trading announcements but also lower trading volume, since these announcements attract less attention by investors. The governance hypothesis on the other hand, implies that since some investors do not follow the market continuously trading volume will be lower for During-trading announcements. Panel C of Table 4 shows regression results where the dependent variable is Abnormal dollar volume, defined as $\text{Ln}\left(\frac{V_a}{\frac{1}{30}\sum_{t=a-38}^{a-9} V_t}+1\right)$, where V_t is dollar volume (number of shares times price at the end of the trading day) on day *t*, and a is defined as the announcement day. In essence, we compute the ratio of volume level on the announcement day to the average volume level in the period prior to the announcement day. The regular convention applies; hence, V_a is measured on the announcement day for During-trading, while for Outside-trading we use dollar volume on the following trading day. Because volume has no directional interpretation we use absolute value of SUE (i.e., Abs(SUE)) in the specifications of Panel C.

The results reveal that During-trading announcements volume is significantly lower than trading volume associated with Outside-trading announcements. The coefficient of Abs(SUE) and Abs(SUE) × During-trading are of similar magnitude (but of opposite sign) suggesting that firms that announce During-trading experience a very small (if any) irregular activity on the announcement day. Also interesting is the fact that we find a much larger trading activity in recent years following the new regulation; and we find that all governance proxies are positively associated with trading volume. Hence, it seems that trading activity is larger when the earnings news is more credible.

E. Analysts revision

Another related aspect, especially for less-informed investors, is the information provided by sell-side analysts after the earnings release. Typically, analysts revise their earnings expectations and other valuation aspects of the firm after the firm releases its earnings (Stickel, 1989; Ivkovic and Jegadeesh, 2004). Because earnings announcements are essentially preliminary financial statements summaries, it would seem natural that analysts are best positioned to provide the expertise for interpreting the earnings news for outside investors. Thus, these new forecasts and revision activities are important parts of the information gathering process that help investors form their opinions on the company.

In essence, an Outside-trading announcement provides a non-trading period buffer for analysts to analyze the newly released information and provide a new forecast. This may imply that there would be more analysts activity on day 0 if the announcement is made Outside-trading compared to During-trading.

We measure the degree of analysts' activity in the first trading day (day 0) following the announcements, similar to how we measured market reaction. For each earnings announcement we count forecasts made on the announcement day (day 0). An important variable that affects the degree of analysts' activity is obviously the number of analysts following a particular stock. Therefore we split our announcements to portfolios based on the number of analysts following the firm and by the During-trading/Outside-trading classification.

Table 7 shows that the percentage of analysts who provide a forecast on the day of the announcement monotonically increases with the number of analysts: The more analysts following a company, the larger the percentage of analysts providing a new forecast on day 0. For example, for Outside-trading, a low coverage level of two analysts is associated with 17.8%

of analysts providing a new forecast, while for high coverage of above 20 analysts, more than 33% provide a new forecast. More importantly, we find that analysts' activity is much larger for Outside-trading compared to During-trading regardless of the initial number of analysts following. It is approximately three times larger for Outside-trading compared to During-trading across all analysts groups, and the difference is very significant for all portfolios, whether we look at few analysts or many analysts.[16]

Overall, the lower rate of analysts forecast revisions for During-trading announcements suggests that less sophisticated investors face an additional information disadvantage when earnings announcements are released during the trading hours. The results therefore are consistent with the idea that the no-trade period of Outside-trading helps in leveling of the playing field across investors as it provides for better dissemination of the earnings news.

F. Lingering Effects of Outside and During Trading Announcements

Intuitively, one may expect a more complete immediate reaction for Outside-trading announcements because it provides investors more time to absorb the earning news compared to During-trading announcements. As a first step we use the matched sample of During-trading and Outside-trading announcements and compare the drift in the day following the announcements (day 1). Figure 3 partitions between the Outside-trading portfolios and the During-trading portfolios, ranked by SUE. During-trading announcements are followed by a significantly larger drift in the day after the announcement (day 1), compared to the drift for Outside-trading. For example, for the highest earnings surprise portfolio, the Outside-trading earnings announcement drift is 0.33%, while the During-trading drift is 0.52%. For the lowest earnings surprise portfolio,

[16] The results are unchanged when we control for market capitalization and the governance proxies, using multivariate regression.

the Outside-trading drift is -0.21% while the During-trading drift is -1.03%. These differences are highly significant and they are especially surprising given that the immediate (day 0) reaction is much larger for Outside-trading compared to During-trading and typically one would expect a momentum in returns following earnings news (Chan et al., 1996).[17] One can see from the figure that the dark shaded portion, i.e., the reaction in day 1, is considerably more apparent for During-trading compared to Outside-trading.

While the abnormal return on day 1 continues in the same direction as the return on the announcements day (day 0), the cumulative market reaction over the two days (day 0 and day 1) is still significantly larger for Outside-trading than for During-trading (especially for the large surprise portfolios 1 and 9). Overall, the short-term average market reaction to Outside-trading announcements is much larger, no matter whether we consider only the trading day of the announcement or the two trading days. Note also that the day 0 under-reaction that we observe here (especially for During-trading) is rather surprising because it is commonly agreed that the market reacts to new information contained in earnings within minutes (e.g., Francis et al., 1992).[18]

Table 8 further analyzes the one day drift and total two day abnormal return (day 0 and day 1) in a regression analysis. Several findings are worth highlighting with regard to specifications (1) and (4). First, the announcement surprise (SUE) coefficient is positive only in

[17] If we measure in percentage the $\frac{day\ 1}{day\ 0}$ reaction for During-trading compared to Outside-trading, we find that for During-trading portfolio 9 the reaction is 216% greater than Outside-trading portfolio 9 reaction, i.e., $\frac{0.52/1.69}{0.33/3.39} - 1$; and that for During-trading portfolio 1 the reaction is 68% greater than Outside-trading portfolio 1 reaction, i.e., $\frac{-1.03/-2.88}{-0.21/-4.79} - 1$.

[18] While it is common in event-studies to measure the market reaction by analyzing a two trading day window, it is not because one expects a delayed reaction to the event, but rather because the exact timing of the event is not known (i.e., only the calendar day of the event is typically known to the researcher so if the announcement occurred after 4 PM, the reaction will occur only in the following trading day). By using a two day event window, the researcher is sure to catch the immediate reaction to the event. Since we know the exact timing of the announcement, there is no need for it here.

the positive SUE subsample, and it is insignificant in the negative SUE subsample. Second, the positive and significant coefficient of SUE × During-trading indicates that During-trading announcements experience a larger and more pronounced drift consistent with the univariate analysis. Importantly, even in the positive SUE subsample (specification (1)) the SUE × During-trading coefficient is three times larger than the SUE coefficient, showing that most of the drift occurs for During-trading announcements.[19] Finally, the qualitative interpretation of the results for total return (day 0 + 1) is unchanged compared to what we have seen in the immediate day 0 reaction of Table 6. Thus, overall there is larger reaction to Outside-trading firms, especially those with good corporate governance; however, the drift in return on the second day following a During-trading announcement (day 1) has the sign of the surprise (SUE) and is statistically significant. These findings are consistent with the notion that some investors are unable to act on the news when it is released during trading hours, and they therefore react on the following day.[20]

IV. Management Survey

We augment the archival analysis with some survey evidence. We sent a short survey to 18 Cornell's Johnson School Alumni that work in public corporations at either the executive or financial branch of the company. We received responses from 14 of them so the response rate was high. In an attempt to minimize bias, we asked open-ended questions and thus provide no hints or guidelines to why we are asking these questions. The field study approach is not without potential problems. Surveys and interviews face the objections that market participants do not

[19] We find similar results for dollar volume. Thus, we find that During-trading announcements are associated with increased volume activity on day 1 compared to Outside-trading announcements.

[20] The drift in During-trading allows informed investors (about the timing of the During-trading) to exploit other investors who are not informed (about the timing of the During-trading) and may be trading for liquidity reasons.

have to understand the reason they do what they do for economic models to be predictively successful (The Friedman, 1953, "as if" thesis); the sample is typically small and one can also question the reliability of the answers. Despite these limitations, we believe that augmenting our results with a short survey can provide valuable insights. The complete survey is in Appendix A and a tabulated summary of the responses are provided in Table 9.

All responders (100% of them) said that releasing outside trading hours is a good practice. Responders said that reporting During-trading is not viewed well by analysts and institutions, and gives unfair advantage to day traders and hedge funds. Some responders said that they care about their long-term holders and/or about analysts. For analysts it is better to have the announcement outside trading hours because then they have time to respond. One response was that if the announcement is made during the trading-day "the analyst may miss the announcement by 5 minutes just because they went to the bathroom or had a meeting, so it does not make much sense to release such important information during trading hours". Though only about half of the surveyed individuals responded to the question about who gains from During-trading (Outside-trading) announcements, there was an overall consensus that sophisticated investors such as day-traders and hedge-funds would benefit at the expense of unsophisticated investors if the announcement is made within trading hours. Finally, when presented with Figure 1, there was a general consensus that Reg FD has much to do with the switch to Outside-trading announcements. Thus, the answers we received are consistent with the empirical results of the paper and the corporate governance hypothesis.

V. Robustness

A. Timing of Earnings Announcements for American Depositary Receipts (ADRs)

Shares of many non-US companies trade on US stock exchanges through the use of ADRs. Most ADR stocks are of companies from Europe and Asia (i.e., Canadian companies are not ADRs). During-trading announcements may likely correspond to a time of day in which trading does not take place at the home country of the ADR. For example, for a UK firms, an announcement made at 11 AM EST corresponds to 4 PM in London, after trading ceases on the FTSE. Thus ADR firms are a hybrid – on the one hand they are traded in the US, so US investors hold a portion of the shares of the company; on the other hand, they have an investor base outside the US, so good corporate governance practices do not necessarily mean that these firms should announce Outside-trading hours according to the EST clock. Thus, similar to US firms we would expect a reduction in During-trading announcements over the years (because of the new regulation); however, the reduction may be smaller because of release timing consideration at the home country.

We supplement our data with timing information for non-US firms on the I/B/E/S US file and timing information on the I/B/E/S International file. We are able to get data for 697 ADRs (out of 907 ADRs that appear on CRSP during our sample years), which correspond to 15,276 observations. We conduct a basic analysis to see the distribution of earnings announcement of these non-US firms. We find that prior to 2004, 45% of the announcements were During-trading, while post 2004 only 18% of the announcements are During-trading. Overall, it seems that non-US firms have also switched towards Outside-trading in recent years, though not as dramatically as US firms.

B. Trading Halts

Exchange traded funds have been growing in popularity. During trading hours, these funds are marked to market continuously and may be averse to trading halts that may be associated with earnings releases. It can therefore be argued that the tendency to switch to Outside-trading is simply due to the growing pressure by ETFs to avoid trading halts.

Trading halts can be triggered by the SEC across all exchanges (called a regulatory halt) or by a particular exchange in which the stock is traded on (called a non-regulatory halt). We identify the trading halts using TAQ data for all During-trading announcements (16,621 observations). TAQ has a special code for specifying a trading halt by providing a "bad quote" flag. We find that trading halts are very rare and are associated with only 325 observations (approximately 2% of During-trading observations) and 91% of these halts occurred on New York Stock Exchange. Trading halts are short-lived and do not typically last more than 30 minutes. Of the 325 halts, 207 halts are associated with order imbalance and 118 are due to pending news. Interestingly, only 115 halts (predominantly the pending news ones) occur around (less than 30 minutes before till less than 30 minutes after) the earnings announcement time; while the rest of the halts begins and ends either before the announcement time or after the announcement time (predominantly the order imbalance halts). Finally, announcements that are associated with trading-halts (compared to During-trading with no halts) have a significantly larger earnings surprise and a significantly larger immediate market reaction (on day 0). For positive earnings news, halts are associated with an average SUE of 3.3 and an average market reaction of 3.40% compared to an average SUE of 2.3 and an average market reaction of 0.98% for During-trading that are not associated with halts. For negative earnings news, halts are associated with an average SUE of -4.4 and an average market reaction of -8.67% compared to an average SUE of -3.0 and an average market reaction of -1.44% for During-trading that are not

associated with halts. In a regression specification similar to that of Table 6, we find that the response coefficient is significantly higher for During-trading announcements associated with halts. The results hold similarly whether we include only the halts around the announcement time (triggered predominantly by the news), or whether we include all halts (triggered also by trade imbalance).

Overall, because halts are short-lived and rarely occur they are unlikely to be the dominant trigger for the switch from During trading announcements to Outside trading announced we observe in the data.

C. Outside Trading Hours Trading Activity

After-hours trading may also be relevant to our analysis. If large institutional investors' ability to trade outside regular trading hours is a significant factor, then, Outside-trading announcement may in fact worsen the fairness of the playing field rather than leveling it. In Table 10 we analyze and compare the ratio of outside trading hours volume to within trading hours volume on an Outside-trading announcement day, and we do the same calculation for a regular trading day defined as the average of day -5 and day +5 compared to the Outside-trading announcement day. Trading volume is defined as the number of shares times the price of the trade and total volume is aggregated across either outside trading hours (4 PM – 9:30 AM next day) or within trading hours (9:30 AM – 4 PM), respectively. For example, if an announcement is made at 6 PM on Jan 24, we would include in outside trading activity all trades occurring between 4 PM on Jan 24 (i.e., two hours prior to the announcement time) and 9:30 AM on Jan 25 (the following trading day morning). For within trading hours, we would include trades

occurring between 9:30 AM – 4 PM on Jan 25. For a regular day, we simply measure trading volume outside trading hours compared to within trading hours volume.

There are two major takings from Table 10. First, we find that trading volume outside trading hours on a regular day is very small compared to within trading hours volume. In the pre 2004 period it was 2.6%, while in recent years the average volume is 4.9%.[21] Thus, though outside trading hour activity seems to be increasing, it is still rather small compared to within trading hours volume. Second, counter to what one may expect, we find that ratio of outside trading activity to within trading hours activity is smaller on an announcement day. In the pre 2004 period it was 2.0%, while in recent years it is 3.5%. All differences are statistically significant. When we partition between Outside-trading announcements made in the evening and Outside-trading announcements made in the morning, we still find that ratio is smaller for Outside-trading announcement day compared to a regular day, though, as one may expect, the ratio is higher for evening Outside-trading announcement compared to morning Outside-trading announcement. Overall, these results suggest that announcing earnings news Outside trading does not result in trading by institutional investors that bias the playing field. Most traders trade on the earnings news during trading hours, when markets are open.

D. After the close announcements Vs. before the open announcements

We examine the sensitively of our findings to whether earnings were announced right after the close of the market or early in the morning before it opens. (Recall that an Outside-trading announcement is defined as any announcement made form 4 PM until 9:30 AM the day after). To this end we compare During-trading announcements to announcements made in the morning, and separately compare During-trading announcements to announcements made in the

[21] Using data from 2000 Barclay and Hendershott (2003) find that for relatively large Nasdaq firms outside trading hours volume constitute less than 4% of total volume.

evening. There are no significant differences in term of the market reaction, or to the impact of regulation changes. We also consider classifying announcements based on the time (in hours) till trading commences (During-trading would be classified as zero). We do not observe a meaningful difference between having this variable compared to our During-trading indicator.

VI. Friday Announcements

It is argued that releasing bad news on Friday is similar in spirit to releasing bad news after trading. Indeed, most of this literature (Bagnoli et al., 2005; Damodaran, 1989; DellaVigna and Pollet, 2009) finds that bad news tends to be released on Fridays. These results would be consistent with the opportunism hypothesis if on Fridays investor attention is relatively low. However, it is not clear why attention level should be low on Friday. It is also not clear why we should treat all Friday announcements similarly, as we have just shown that During-trading announcements are rather different than Outside-trading announcements. Further, in the case of Friday announcements, there is reason to suspect that morning announcements (before 9:30 AM) may be different from evening announcements (after 4:00 PM), because the weekend serves as a long-halt buffer till the commencement of trade on Monday. In this section we therefore separate the Friday morning earnings announcements from the Friday During-trading earnings announcements, from the Friday evening after-trade earnings announcements.

Table 10 Panel A provides the distribution of Friday announcements in our sample. Friday announcements constitute only about 5.6% of the announcements made (5.9% in the pre Jan. 2004 period and 5.5% in the post Jan. 2004 period), much less than the unconditional expectation of 20% per weekday. Also apparent from the panel is that Friday During-trading announcements are down from 43.2% to 14.9% (of Friday announcements) between the pre Jan.

2004 and post Jan. 2004 periods, similar to the overall trend of During-trading announcements. The most interesting finding, however, is probably that Friday evening announcements are less than 15% of Friday announcements and in total there are only 693 such announcements in the sample (less than 0.8% of the observations).[22] While the percentage of Friday announcements stayed more or less constant over time (at around 5.7%), the shift towards Friday morning announcements is particularly interesting. Morning announcements increased from an average of 42% of Friday announcements to 72.1% of Friday announcements and the shift is statistically very significant. Contrary to that, Friday evening announcements have decreased somewhat, although this result is marginally significant. Thus, there is a clear trend that if a company decides to make a Friday announcement, it makes the announcement in the morning and avoids doing so in other times of the day.[23]

Panel B of Table 10 provides difference of means tests for comparing different types of Friday announcements (all, morning, trading hours, and evening) to other weekday announcements. A few results are apparent from the panel. First, as the literature points out (Bagnoli et al., 2005; Damodaran, 1989), Friday announcements are indeed more negative compared to other days of the week. This is especially true for evening announcements, where only 46% of the announcements are positive if made on Friday evening, while 64% are positive if made on the evening of other weekdays. Second, SUE is on average lower for Friday compared to other days of the week. Again, the result is especially significant for evening announcements. A third result is most revealing. We find that according to our Governance 2 measure (Institutional concentration, blackout) Friday announcements that occur after trading

[22] Analyzing the 693 announcements that are made on Friday after closing shows that Friday after-trade announcements are done by 514 firms. Thus, most of these announcements are a one-time event for a company, and there are only 4 companies with more than 5 Friday afternoon announcements.

[23] These results are qualitatively similar if we were to include the less than 200 observations of Saturday and Sunday announcements as Friday afternoon announcements.

commences are associated with significantly weaker governance firms compared to similar announcements on other weekdays. Contrary to that, Friday morning (before trade) announcers have marginally better governance than other weekday morning announcers. Thus, it seems that not all Friday announcers are the same and that well governed firms are especially cautious of making announcements close to the end of the trading week.

Finally, in Table 11 we report the market reaction to Friday announcements, both on day 0 and day 1, compared to the market reaction of similar announcements on other days of the week. We match all Friday announcements with a respective Monday-Thursday announcement occurring at the same period of the day (morning, trading hours, or evening). Similar to the analysis of Table 5, matching is based first on having the same SUE, and then on minimizing the absolute difference between the market value of the firms making the Friday and weekday announcement, respectively. Matched pairs are partitioned into four portfolios: two positive SUE portfolios and two negative SUE portfolios based on the empirical distribution of these SUE matched pairs. The table provides the mean abnormal return for the more positive SUE portfolio (out of the two positive SUE portfolios) and the more negative SUE portfolio (out of the two negative SUE portfolios).

Only Friday evening announcements that are negative are associated with a reduced reaction compared to other evening announcements. Although the difference is significant only at the 5% level, in economic terms the difference is large. The negative SUE portfolio of Friday evening announcements on day 1 yields -2.53%, while the same SUE portfolio announced on other weekdays yields -4.64%. Over the 2 day period (day 0 and day 1), the combined effect is -2.65% for Friday compared to -4.83% for other weekdays. The result for the positive SUE portfolio of Friday evening is also economically significant (a yield of 1.91% versus a yield of

2.89% on day 0, and a yield of 1.99% versus 3.08% over the two days), however it is not statistically significant because the variance in returns for these announcements is high. Thus, it seems that there is a significantly reduced reaction to negative SUE announcements made on Friday after trade has ceased. Note however that Friday morning and Friday trade (During-trading) yield similar reactions to what these time-of-day announcements yield on other weekdays. Further, it is important to note that the significant result for the Friday evening announcements is based on 169 announcements (less than 0.2% of the observations).

Coming back to our survey results in Table 9, one of the questions was earnings announcement outside after Friday close. There was a consensus amongst respondents that releasing earnings news on Friday after 4 PM means an attempt to hide bad news because media coverage is low and analysts are not around. Hence, our empirical results seem to substantiate this notion amongst corporate executives.

To summarize, earnings announcements that are made during and after trading on Friday are rare. These announcements are done by firms with lower quality of corporate governance mechanisms in place; especially if these announcements occur in the after-trading hours. But for most parts, this does not enable firms to potentially hide negative news. Only negative SUE Friday after trade announcements are associated with a statistically and economically reduced market reaction when compared to other days of the week.

VII. Conclusion

For both fairness and efficiency reasons, one of the prime objectives of good governance is to create a level playing field. Using the timing of earnings release as the variable of interest, this paper shows that better corporate governance firms indeed tend to announce their earnings in

a manner that put less sophisticated and less informed investors in a less disadvantageous position than do firms with lower quality governance. Better corporate governance firms are more likely to announce their earnings after trading ceases allowing all investors time to absorb and digest the news before trading commences.

Moreover, the paper shows that SOX and especially Reg FD, whose objectives were to create a level playing field, were successful in creating such an environment, at least along the lines investigated here. We show that there has been a strong shift towards making announcements outside of trading hours in recent years. In 1999, approximately 45% of earnings announcements were made during trading hours, but in the years 2006-2009 less than 5% of earnings announcements were made during trading hours.

We find no support to the existing conventional wisdom that firms tend to announce bad news in the aftermarket so that they can reduce the effect of the negative earnings news. First, bad earnings are more likely to be announced during trading rather than outside trading hours. Moreover, the market reaction to bad news announced outside trading hours is more severe than for bad earrings news announced during trading hours--making the management opportunism explanation implausible. Interestingly we find that those earnings news announced during trading hours are not only done by worse governance firms but that the market reaction to the announcement is incomplete: we find a significant price drift in the same direction of the initial market reaction in the day after the announcement. We also find that fewer analysts revise their forecast immediately after the earnings news if it is being announced during trading. Taken together, this suggests that some investors are slow to react to earnings releases, perhaps in part because they have fewer resources (i.e., few analysts' revisions) that help them to interpret the earnings news. These findings may not be too surprising when considering the possibility that

earnings announcement released during trading hours do not allow for fair and transparent dissemination of the earnings news.

When asking financial managers they overwhelmly suggest that the reporting outside trading hours is a good practice because it allows market and analysts to absorb the news, and level the playing field. They also suggest that the shift towards Outside trading announcements is in large part a consequence of Reg FD.

The analysis of the Friday announcements adds another dimension to our investigation. Related literature suggests that Friday earnings announcements are more negative and some firms use this timing as a way to shield bad earrings news from public scrutiny. Using the exact time stamp we show that the vast majority of Friday announcements occur before trading ceases for the weekend, and in fact over the last 11 years there were only about 700 announcements on Fridays after trading. At the same time, Friday earnings announcements are associated with worse governance firms, and especially for those who announce after the end of trading. We also find that the market reaction to the subsample of negative announcements on Friday after trading is significantly less negative than for 'regular' days after trading. Given the very small number of negative Friday after-noon announcements (338 such announcements), this is not likely to be an overly important phenomenon.

References

Aharony. J., and I. Swary, 1980, Quarterly dividend and earnings announcements and stockholders' returns: An empirical analysis, Journal of Finance 35, 1-12.

Amir, E., and J. Livnat, 2005, The economic consequences of (not) issuing preliminary earnings announcement, New York University working paper.

Bagnoli, M., Clement, M., and Watts, S., 2005, Around the clock media coverage and the timing of earnings announcements, University of Austin working paper.

Ball, R., and P. Brown, 1968, An empirical evaluation of accounting income numbers, Journal of Accounting Research 6, 159-178.

Barclay, T, and T. Hendershott, 2003, Price discovery and trading after hours, Reivew of Financial Studies 16, 1041-1073.

Bebchuk, L., Y. Grinstein, Y., and Peyer, U., 2009, Lucky CEOs and lucky directors, Journal of Finance, Forthcoming.

Bedard, J., and K. Johnstone, 2004, Earnings manipulation risk, corporate governance, and auditors' planning and pricing decision, The Accounting Review 79, 277-304.

Bergstresser, Daniel, and Thomas Philippon, 2006, CEO incentives and earnings management, Journal of Financial Economics 80, 511-529.

Berkman, H, and Cameron Truong, 2009, Event-day 0? After hours earnings announcements, Journal of Accounting Research 47, 71-103.

Bethel, J. E., 2009, Recent changes in disclosure regulation: Description and evidence, Journal of Corporate Finance 13, 335-342.

Bettis, C., Coles, J., and Lemmon, M., 2000, Corporate policies restricting trading by insiders, Journal of Financial Economics 57, 191–220.

Carhart, M., 1997. On persistence in mutual fund performance. Journal of Finance 52, 57–82.

Chan, Louis K. C., Jegadeesh, Narasimhan and Josef Lakonishok, 1996, Momentum strategies, The Journal of Finance 51, 1681-1713.

Cornett, Marcia Millon, Marcus, Alan J., and Hassan Tehranian, 2008, Corporate governance and pay-for-performance: The impact of earnings management, Journal of Financial Economics 87, 357-373.

Damodaran, Aswath, 1989, The weekend effect in information: A study of earnings and dividend announcements, Review of Financial Studies, Vol. 2, 607-623.

DellaVigna, Stafano and J.M. Pollet, 2009, Investor inattention and Friday earnings announcements, Journal of Finance, Vol. 74, 709-749.

Dittmar, Amy, and Jan Mahrt-Smith, 2007, Corporate governance and the value of cash holdings, Journal of Financial Economics 83, 599-634.

Doyle, J., and M. Magilke, 2009, The timing of earnings announcements: An examination of the strategic disclosure hypothesis, The Accounting Review 84, 157-182.

Doyle, J., Russell, J., and M. Soliman, 2004, The extreme future stock returns following I/B/E/S earnings surprises, Journal of Accounting Research 44, 849-887.

Easterwood, J.C., and S. Nutt, 1999, Inefficiency in analysts' earnings forecasts: systematic misreaction or systematic optimism? Journal of Finance 54, 1777-1779.

Elton, E., Gruber, M., and M. Gultekin, 1984, Professional expectations: accuracy and diagnosis of errors, Journal of Financial and Quantitative Analysis 19, 351-363.

Fama, E. F., and K. French, 1993. Common risk factors in the returns on stocks and bonds. Journal of Financial Economics 33, 3–56.

Fama, E., and J. MacBeth, 1973, Risk, return, and equilibrium: Empirical tests, Journal of Political Economy, 81, 607-636.

Francis, J., Pagach, D., and J. Stephan, 1992, The stock market response to earnings announcements released during trading versus nontrading periods, Journal of Accounting Research 30, 165-184.

Friedman, M., 1953. The methodology of positive economics. In: Essays in Positive Economics. University of Chicago Press.

Gintschel, A., and S. Markov, 2004, The effectiveness of Regulation FD, Journal of Accounting and Economics, Vol. 37, 293-314.

Gompers, P., Ishii, J., and Metrick, A., 2003. Corporate governance and equity prices, Quarterly Journal of Economics 118, 107–155.

Grinstein, Yaniv, 2006, The disciplinary role of debt and equity contracts: Theory and tests, Journal of Financial Intermediation 15, 419-443.

Hartzell, Jay, and Laura Starks, 2003, Institutional investors and executive compensation, Journal of Finance 58, 2351-2374.

Heflin, Frank, Subramanyam, K. R., and Yuan Zhang, 2003, Regulation FD and the financial information environment: Early evidence, Accounting Review 78, 1-37.

Ivković, Zoran, and Narasimhan Jegadeesh, 2004. The timing and value of forecast and recommendation revisions, Journal of Financial Economics 73, 433-463.

La Porta, Rafael, Lopez-de-Silanes, Florencio, Shleifer, Andrei and Robert W. Vishny, 1997, Legal determinants of external Finance, Journal of Finance 52, 1131-50.

Jensen, M. C., and W. H. Meckling, 1976, Theory of the firm: Managerial behavior, agency costs, and ownership structure, Journal of Financial Economics 3, 305-360.

Jorion, P, Liu, Z., and C. Shi, 2005, Informational effects of Regulation FD: Evidence from rating agencies, Journal of Financial Economics, Vol. 76, 309-330.

Karpoff, J., 1986, A theory of trading volume, Journal of Finance 41, 1069-1087.

Mendenhall, R., 2004, Arbitrage risk and post-earnings-announcement drift, Journal of Business 77, 87-894.

Michaely, Roni, and Michael R. Roberts, 2009, Corporate dividend policies: Lessons from private firms, Wharton, University of Pennsylvania working paper.

O'Brien, P., 1988, Analysts' forecasts and earnings expectations, Journal of Accounting and Economics 10, 53-83.

Patell, J., and M. Wolfson, 1982, Good news, bad news and the intraday timing of corporate disclosures, The Accounting Review 57, 509-527.

Pinkowitz, Lee, Stulz, Rene, and Rohan Williamson, 2006, Does the contribution of corporate cash holdings and dividends to firm value depend on governance? A cross-country analysis, Journal of Finance 61, 2725-2751.

Roulstone, Darren, 2003, The relation between insider-trading restrictions and executive compensation, Journal of Accounting Research 41, 525-551.

Stickel, Scott E., 1989. The timing of and incentives for annual earnings forecasts near interim earnings announcements, Journal of Accounting and Economics 11, 275-292.

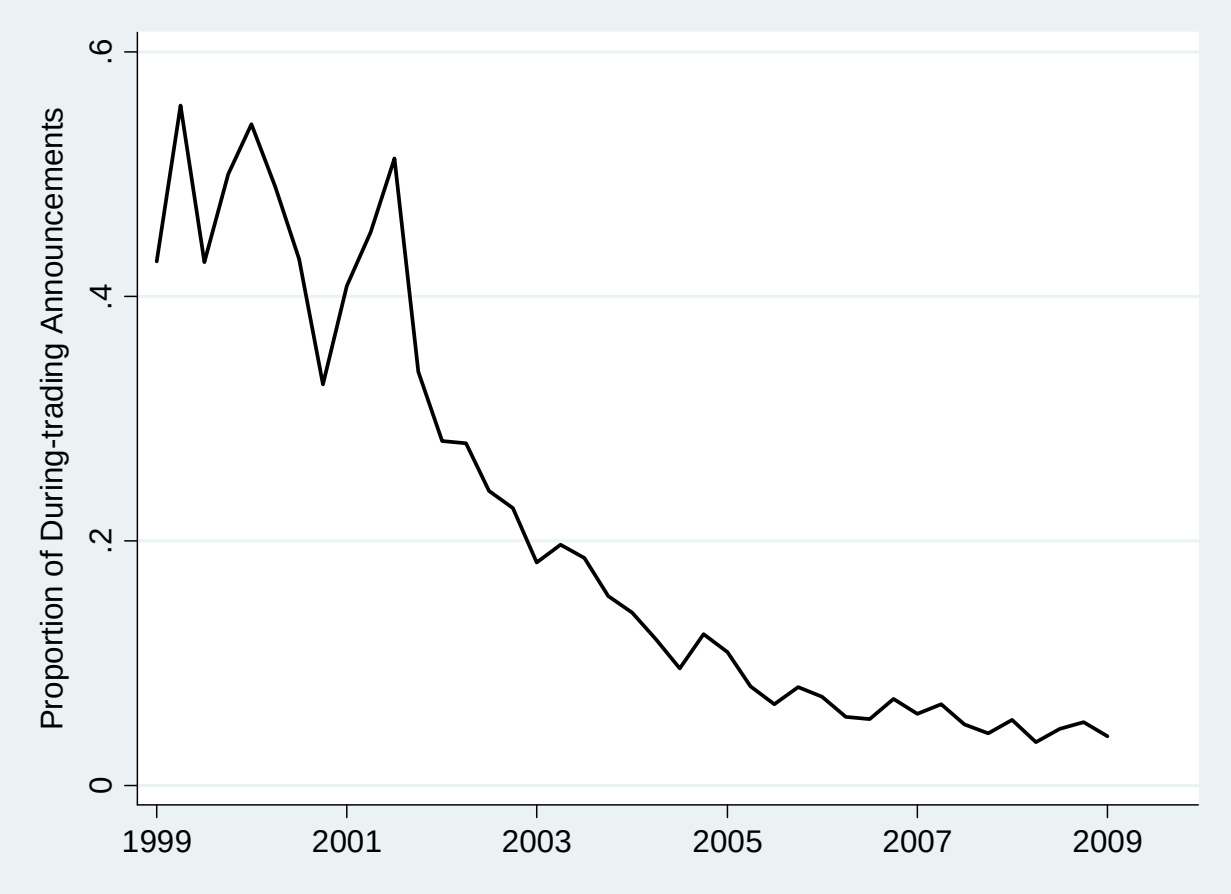
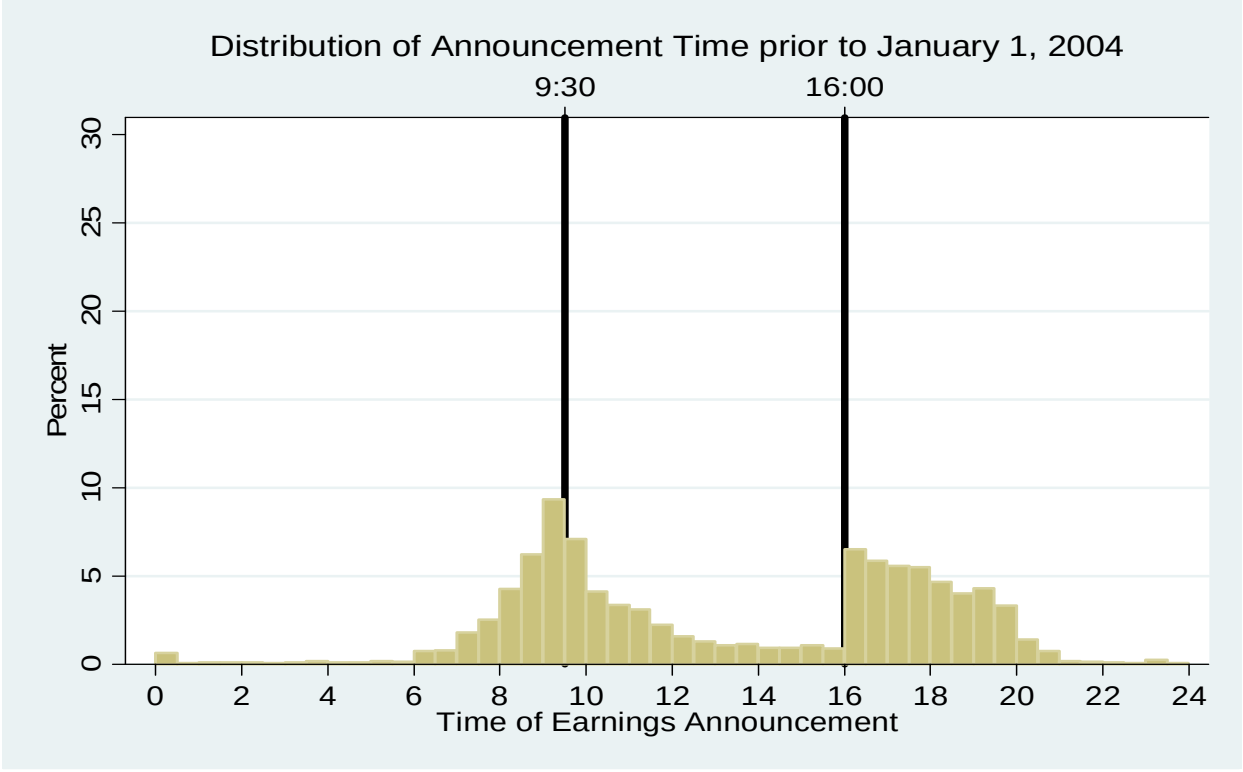


Figure 1. This figure reports the proportion of quarterly earnings announcements made During-trading (within trading hours, 9:30 AM - 4 PM EST) based on the sample of all US firms on the I/B/E/S summary file.



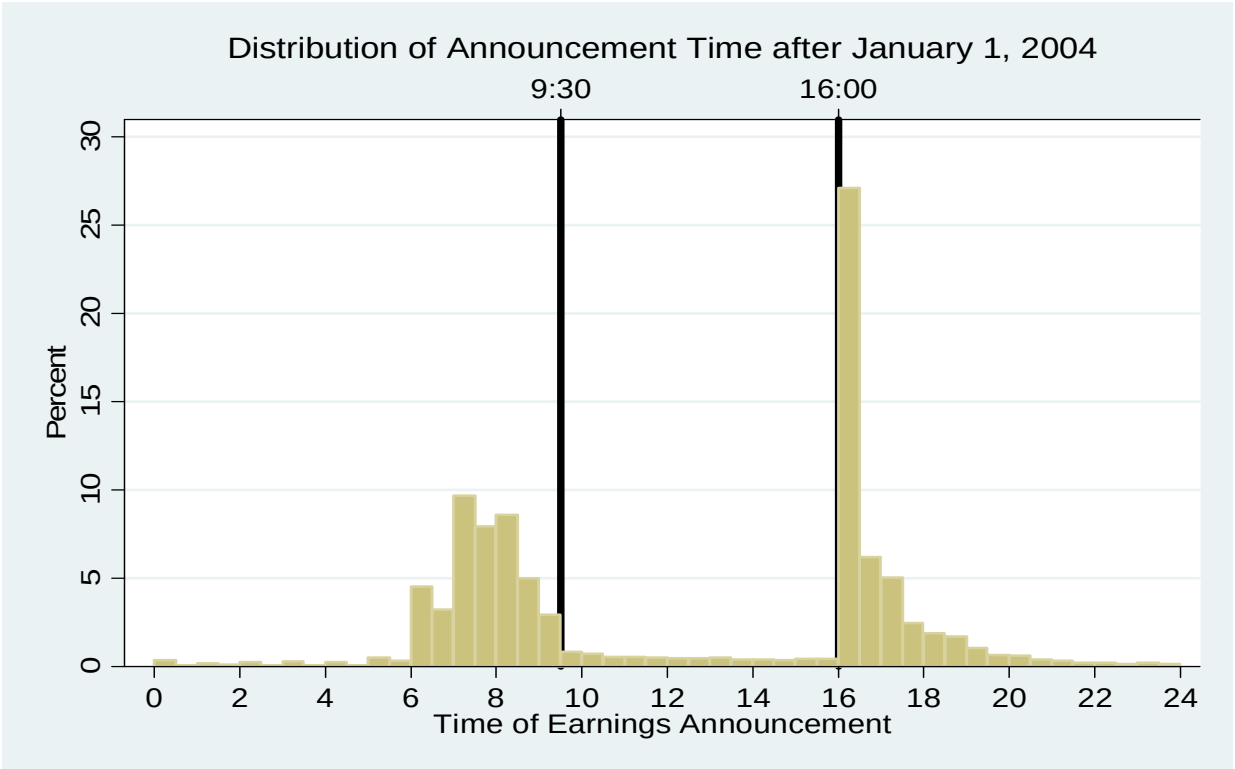


Figure 2. The top (bottom) graph shows the distribution of earnings announcement timing during the years 1999-2003 (2004-2009). Trading hours are 9:30 AM -4 PM EST.

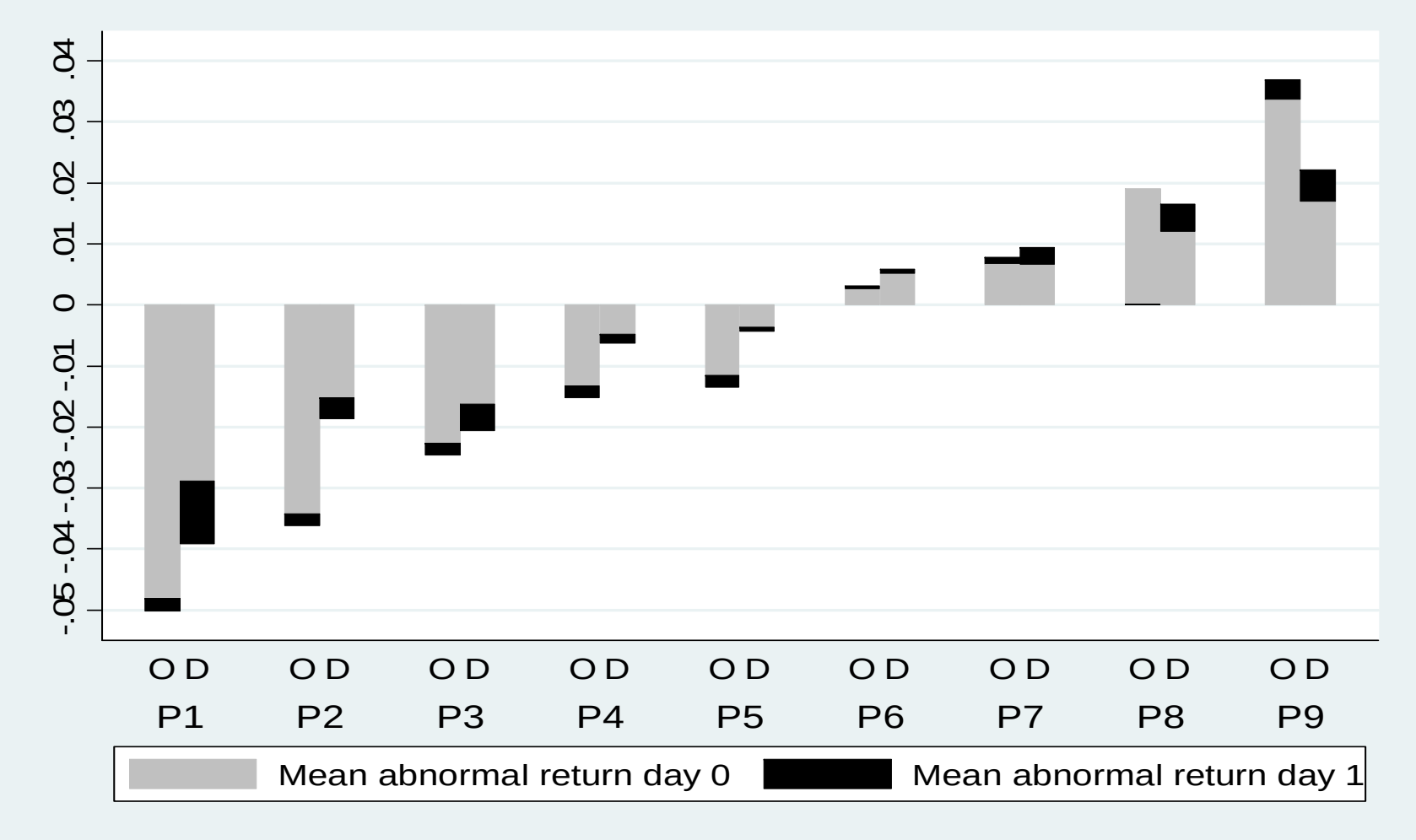


Figure 3. The chart shows the mean abnormal return (day 0 and day 1) for nine portfolios (labelled P1-P9) ranked by SUE, for Outside-trading (labelled O) and for During-trading (labelled D) earnings announcements respectively.

Table 1: Descriptive statistics. Earnings announcements during trading hours (During-trading) and earnings announcements after trading hours (Outside-trading)

The sample includes 89,048 firm-quarter observations. The table provides mean (median) firm characteristics for During-trading and Outside-trading announcements. Size is the market value of equity at the end of the quarter prior to the announcement day. Volatility is the standard deviation of returns during the quarter prior to the announcement day. SUE is the actual reported quarterly earnings per share (EPS) minus the median consensus estimate (closest but at least one day prior to announcement day) divided by the standard deviation of analysts' estimates. Positive SUE is an indicator that equals one if SUE is positive, and zero if SUE is negative (not defined if SUE equals zero). GIM is the Gompers, Ishii, Metrick (2003) index for governance. Inst. concentration is the sum of institutional blockholdings, where an institutional blockholder is defined as an institution having more than 5% of the shares outstanding as reported on 13F Schedule at the end of the quarter prior to the announcement day. Blackout is a dummy variable that equals one if the blackout algorithm (Roulstone, 2003) finds that the firm has a stated blackout period for trades by insiders and zero otherwise. Difference of means *t*-statistics and Wilcoxon rank sum (median) test *z*-statistics are provided.

Firm characteristics		During-trading	Outside-trading	Difference of means (median) test
Size ($M)	Mean Median (# obs.)	3594 648 (16621)	4943 800 (72427)	-8.57 (-16.26)
Volatility (%)	Mean Median (# obs.)	3.31 2.27 (16621)	3.32 2.44 (72427)	-0.25 (3.90)
SUE	Mean Median (# obs.)	0.19 0.32 (16621)	0.49 0.50 (72427)	-9.22 (-10.54)
Positive SUE	Mean (# obs.)	0.60 (14617)	0.64 (63689)	-8.31
GIM	Mean Median (# obs.)	9.39 9.00 (8119)	9.08 9.00 (36556)	9.97 (9.72)
Blackouts	Mean (# obs.)	0.27 (12853)	0.29 (63745)	-5.33
Inst. concentration (%)	Mean Median (# obs.)	14.99 11.90 (11141)	19.25 16.86 (48012)	-26.00 (-27.87)

Table 2: Time of day of earnings announcements, earnings surprise and corporate governance

The dependent variable is the During-trading indicator variable that equals one if the announcement is made during trading hours (9:30 AM – 4 PM EST) and zero otherwise. Governance 2 is the predicted principal component variable derived from a linear combination of Inst. concentration and Blackout (higher values are associated with better governance). Governance 3 is the predicted principal component variable derived from a linear combination of Inst. concentration , Blackout and GIM (higher values are associated with better governance). All other variables are defined in Table 1. All regressions include two-digit SIC industry indicators, and all regressions (except (6)) include year indicators. Standard errors are clustered at the firm level in all specifications except (6); *z*-statistics are provided in parentheses; *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Dependent: During-trading indicator						
	(1)	(2)	(3)	(4)	(5)	(6) Fama-McBeth	(7) SUE<0
Lag dependent	0.992***	0.983***	1.006***	1.009***	1.023***	0.307***	1.008***
	(40.95)	(36.99)	(30.88)	(33.95)	(23.36)	(22.64)	(25.03)
SUE<0							-0.013***
							(-2.99)
Positive SUE	-0.060***	-0.069***	-0.066***	-0.065***	-0.080***	-0.011***	
	(-3.97)	(-4.03)	(-3.39)	(-3.46)	(-3.08)	(-2.76)	
Inst. concentration		-0.001*					
		(-1.85)					
Blackout	-0.054***						
	(-2.95)						
GIM			0.016***				
			(3.08)				
Governance 2				-0.029***		-0.005**	-0.066***
				(-2.70)		(-2.41)	(-4.24)
Governance 3					-0.057***		
					(-3.30)		
Ln (Size)	-0.043***	-0.039***	-0.053***	-0.040***	-0.058***	-0.008***	-0.015
	(-6.76)	(-5.66)	(-5.91)	(-5.16)	(-4.76)	(-3.83)	(-1.41)
Ln(Volatility)	-0.148***	-0.165***	-0.154***	-0.141***	-0.129***	-0.034***	-0.107***
	(-7.29)	(-7.51)	(-5.91)	(-5.67)	(-3.51)	(-4.40)	(-3.04)
Number of obs.	63262	47867	37491	41915	22780	41662	14889
(firms)	(4859)	(4145)	(2397)	(3274)	(1371)		(2913)
Pseudo R-squared	0.274	0.280	0.293	0.282	0.303	0.207	0.279

Table 3: Distribution and conditional probability of Outside-trading

Panel A provides the distribution of During-trading/Outside-trading for the pre Jan. 2004 and post Jan. 2004 periods, respectively. Panels B and C provide the probability of earnings announcements occurring Outside-trading conditional on having Outside-trading in the previous *n* (where *n* is the last one through four) earnings announcements, conditional on the announcement being held in the pre Jan. 2004 or post Jan. 2004 (Panel B) periods, and conditional on the firm having a governance 2 measure below or above the median (Panel C). Governance 2 is defined in Table 2.

Panel A: During-trading/Outside-trading distribution before and after Jan. 2004

		Prior to 1.1.2004	After 1.1.2004	Difference of means *t*-statistic
During-trading	Percentage (# obs.)	0.356 (12920)	0.070 (3701)	115.42
Outside-trading	Percentage (# obs.)	0.644 (23353)	0.925 (49074)	

Panel B: Persistence in earnings announcement timing and regulation

Past Earnings Announcement timing	Pre Jan. 2004: Probability of next Earnings being Outside-trading	Post Jan. 2004: Probability of next Earnings being Outside-trading	Difference of means *t*-statistic
Last time Outside-trading	0.807	0.953	-61.67
Last two times Outside-trading	0.866	0.958	-38.77
Last three times Outside-trading	0.893	0.963	-27.74
Last four times Outside-trading	0.908	0.966	-21.81

Panel C: Persistence in earnings announcement timing and governance

Past Earnings Announcement timing	Probability of next Earnings being Outside-trading conditional on below median governance	Probability of next Earnings being Outside-trading conditional on above median governance	Difference of means *t*-statistic
Last time Outside-trading	0.908	0.928	-6.99
Last two times Outside-trading	0.936	0.947	-4.05
Last three times Outside-trading	0.949	0.955	-2.33
Last four times Outside-trading	0.957	0.960	-1.20

Table 4: Governance and different types of earnings release policy

In panel A the dependent variable is associated with a firm and defined as the percentage of earnings announcements that are; During-trading in the pre Jan. 2004 period (specifications (1) and (2)), During-trading in the post Jan. 2004 (specifications (3) and (4)), and the change in During-trading percentage, i.e., ((percentage post 2004 - percentage pre 2004)/percentage pre 2004) in specifications (5) and (6). Panel B is a probit regression where the dependent variable equals one if the firm did not have a During-trading announcement throughout the sample years and zero otherwise. Governance 2 and 3 are defined in Table 2. All other variables are defined in Table 1. All regressions include two-digit SIC industry indicators. *t*-statistics (*z*-statistics in panel B) are provided in parentheses; *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: During-trading percentage (and changes in During-trading percentage) and firm governance

	Pre Jan. 2004		Post Jan. 2004		Difference between periods	
Dependent	Percentage of earnings announcements that are During-trading				$\frac{(\%\ Post\ 2004 - \%\ Pre\ 2004)}{\%\ Pre\ 2004}$	
	(1)	(2)	(3)	(4)	(5)	(6)
Average Governance 2	-0.0189* (-1.75)		-0.0327*** (-6.34)		-0.0458*** (-2.80)	
Average Governance 3		-0.0360*** (-3.01)		-0.0224*** (-3.24)		-0.0071 (-0.53)
Average Ln (Size)	-0.0318*** (-5.01)	-0.0454*** (-5.20)	-0.0174*** (-5.04)	-0.0207*** (-3.99)	-0.0246** (-2.34)	-0.0106 (-0.97)
Average Ln(Volatility)	-0.0855*** (-2.98)	-0.0729* (-1.73)	-0.0208 (-1.32)	0.0050 (0.17)	0.2083*** (4.38)	0.1283** (2.07)
Number of firms	1639	998	2930	1213	1471	900
R-squared	0.129	0.161	0.099	0.104	0.129	0.077

Panel B: Firms that have never had During-trading compared to other firms

	(1)	(2)	(3)	(4)	(5)
Average Inst. Concentration	0.0040*** (2.66)				
Average Blackout		-0.0842 (-1.54)			
Average GIM			-0.0383*** (-3.10)		
Average Governance 2				0.0558* (1.93)	
Average Governance 3					0.0850* (1.78)
Average Ln (Size)	-0.0134 (-0.93)	-0.0295** (-2.00)	0.0214 (0.86)	-0.0252 (-1.39)	0.0861** (2.44)
Average Ln(Volatility)	0.4121*** (7.29)	0.4664*** (8.17)	0.2891*** (2.88)	0.4590*** (6.35)	0.4186*** (2.64)
Number of firms	4635	5113	2459	3425	1336
R-squared	0.059	0.063	0.076	0.061	0.079

Table 5: Immediate market reaction for SUE-matched announcements and ranked portfolios

All During-trading announcements are matched with a respective Outside-trading announcement. Matching is based first on having the same (or almost same) SUE, and then on minimizing the absolute difference between the market values of the firms making the During-trading and Outside-trading announcements. Announcements are then partitioned to nine portfolios based on the empirical distribution of SUE (9: highest SUE; 1: lowest SUE; 5: SUE=0) and the During-trading/Outside-trading classification. The table provides a mean abnormal return for each portfolio and difference of mean tests (During-trading minus Outside-trading). Day 0 is the same trading day for During-trading announcements and the following trading day for Outside-trading announcements.

Portfolio #	Number of matched pairs in portfolio	Mean SUE		Day 0 abnormal return		Dif. means test for abnormal return
		During-trading	Outside-trading	During-trading (%)	Outside-trading (%)	
1 (most negative SUE)	1457	-8.1856	-8.1853	-2.88	-4.79	5.54
2	1457	-2.3222	-2.3222	-1.52	-3.42	6.78
3	1457	-1.0931	-1.0931	-1.62	-2.24	2.35
4	1457	-0.4233	-0.4233	-0.48	-1.32	3.58
5 (zero SUE)	2004	0	0	-0.37	-1.14	3.80
6	2197	0.4980	0.4980	0.52	0.27	1.27
7	2198	1.1224	1.1224	0.67	0.68	-0.06
8	2197	2.1845	2.1845	1.21	1.93	-3.41
9 (most positive SUE)	2197	5.6420	5.6419	1.69	3.39	-7.65

Table 6: Immediate market reaction to earnings announcements

In Panels A and B, the dependent variable is the one-day abnormal return on the announcement day. In Panel C, the dependent variable is the abnormal volume on the announcement day (relative to the average on the previous 30 days). Post Jan. 2004 is an indicator that equals one if an announcement occurs after January 1, 2004, and zero otherwise. Governance 2 and 3 are defined in Table 2. All other variables are defined in Table 1, and the Abs notation (Panel C) stands for absolute value. All regressions include an intercept, and standard errors are clustered at the firm level; *t*-statistics are provided in parentheses; *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

Panel A: Abnormal returns

	Positive SUE		Negative SUE	
	(1)	(2)	(3)	(4)
SUE	0.0045***	0.0041***	0.0024***	0.0026***
	(26.02)	(13.49)	(12.13)	(7.14)
SUE × During-trading	-0.0019***	-0.0018***	-0.0016***	-0.0016***
	(-7.27)	(-6.36)	(-4.82)	(-4.64)
Post Jan. 2004	0.0051***	0.004***	-0.0110***	-0.0113***
	(6.89)	(4.14)	(-10.25)	(-8.89)
SUE × (Post Jan. 2004)		0.001		-0.0001
		(1.48)		(-0.33)
Ln (Size)	0.0003	0.0003	0.0023***	0.0023***
	(1.39)	(1.39)	(7.18)	(7.19)
Ln(Volatility)	0.0019***	0.0019***	-0.0135***	-0.0135***
	(2.55)	(2.59)	(-14.10)	(-14.11)
Number of obs.	49379	49379	28832	28832
(firms)	(6099)	(6099)	(5829)	(5829)
R-squared	0.023	0.023	0.035	0.035

Panel B: Abnormal returns and governance

	Positive SUE		Negative SUE	
	(1)	(2)	(3)	(4)
SUE	0.0047***	0.0048***	0.0021***	0.0017***
	(20.02)	(16.82)	(7.87)	(4.11)
SUE × During-trading	-0.0020***	-0.002***	-0.0015***	-0.0003
	(-5.52)	(-4.47)	(-3.46)	(-0.50)
Post Jan. 2004	0.0041***	0.0028**	-0.0116***	-0.0154***
	(4.07)	(2.36)	(-7.95)	(-8.22)
Ln (Size)	0.0003	-0.0016***	0.0021***	0.0037***
	(1.00)	(-4.45)	(4.92)	(5.68)
Ln(Volatility)	0.0025**	0.0036***	-0.0141***	-0.0107***
	(2.48)	(2.76)	(-10.74)	(-5.57)
Governance 2	0.0015***		-0.0026**	
	(3.21)		(-3.90)	
Governance 3		-0.0003		0.0004
		(-0.55)		(0.45)
Number of obs.	28270	15990	15672	7425
(firms)	(3159)	(1399)	(3050)	(1268)
R-squared	0.025	0.034	0.034	0.045

Panel C: Abnormal volume

	Positive SUE		Negative SUE	
	(1)	(2)	(3)	(4)
Abs(SUE)	0.0411***	0.0384***	0.0144***	0.0149***
	(21.47)	(16.08)	(8.99)	(6.85)
Abs(SUE) × During-trading	-0.0367***	-0.0336***	-0.0188***	-0.0208***
	(-11.19)	(-8.85)	(-6.59)	(-5.33)
Post Jan. 2004	0.1505***	0.0102***	0.1404***	0.1644***
	(16.94)	(15.29)	(13.14)	(11.76)
Ln (Size)	0.0185***	-0.0159***	0.0230***	0.0028***
	(5.74)	(-3.62)	(6.30)	(0.54)
Ln(Volatility)	0.0335***	0.0179*	-0.0370***	-0.0661***
	(4.11)	(1.68)	(-3.87)	(-4.95)
Governance 2	0.0422***		0.0538***	
	(8.62)		(9.29)	
Governance 3		0.0236***		0.0408***
		(3.44)		(4.62)
Number of obs.	28384	15839	15700	7351
(firms)	(3154)	(1348)	(3054)	(1261)
R-squared	0.068	0.079	0.047	0.058

Table 7: Analysts' forecast activity after earnings announcements

The table provides difference of means tests for analysts' forecast activity between During-trading and Outside-trading announcements that are associated with the same analysts' coverage. Number of analysts is based on the census estimate closest to the next quarterly earnings. Analysts' forecast activity is defined as the number of analysts providing a new forecast (or a revision to a forecast) on the announcement day (day 0) divided by the number of analysts that provided forecasts based on the census estimate closest to the next quarterly earnings.

Number of analysts range	Mean number of analysts		Percent of analysts providing new forecast in day 0			
	Outside-trading	During-trading	# of obs.	Outside-trading Percent of analysts providing new forecast	During-trading Percent of analysts providing new forecast	Dif. Means *t*-value
2 Analysts	2	2	11646	17.76	5.94	17.62
3 Analysts	3	3	11684	19.58	7.06	19.53
4 Analysts	4	4	9766	22.06	7.02	20.41
5 Analysts	5	5	8459	22.43	7.39	19.66
6 Analysts	6	6	7209	23.78	7.94	18.65
7-10 Analysts	8.28	8.25	18513	25.57	7.67	33.34
11-15 Analysts	12.70	12.68	11541	25.59	8.27	25.15
16-20 Analysts	17.70	17.62	5672	26.19	9.11	16.07
More than 20 Analysts	25.50	25.28	3006	33.07	12.05	11.78

Table 8: Delayed and total market reaction to earnings announcements

The dependent variable is the one-day abnormal return on the day following the announcement day (day 1) in specifications (1) and (4), and the compounded abnormal return on the two days immediately following the announcement (day 0 and day 1) in specifications (2), (3), (5) and (6). Post Jan. 2004 is an indicator that equals one if the announcement occurs after January 1, 2004, and zero otherwise. Governance 2 is defined in Table 2. All other variables are defined in Table 1. All regressions include an intercept, and standard errors are clustered at the firm level; *t*-statistics are provided in parentheses; *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Positive SUE			Negative SUE		
	Abnormal day 1 (1)	Abnormal day 0+1 (2)	Abnormal day 0+1 (3)	Abnormal day 1 (4)	Abnormal day 0+1 (5)	Abnormal day 0+1 (6)
SUE	0.0002***	0.0047***	0.0051***	9.08E-6	0.0024***	0.0022***
	(3.29)	(24.21)	(19.09)	(0.09)	(11.07)	(7.34)
SUE × During-trading	0.0006***	-0.0013***	-0.0015***	0.0006***	-0.0009**	-0.0006
	(3.60)	(-3.99)	(-3.47)	(2.73)	(-2.21)	(-1.14)
Post Jan. 2004		0.0050***	0.0036***		-0.0135***	-0.146***
		(5.59)	(3.02)		(-10.92)	(-8.83)
Governance 2			0.0020***			-0.0030***
			(3.76)			(-3.91)
Ln (Size)	-0.0001	0.0002	0.0002	0.0002	0.0025***	0.0022***
	(-0.95)	(0.60)	(0.44)	(0.99)	(6.53)	(4.37)
Ln(Volatility)	-0.0021***	0.0001	0.0009	-0.0030***	-0.0166***	-0.0175***
	(-4.94)	(0.16)	(0.80)	(-5.23)	(-14.86)	(-11.65)
Number of obs.	49379	49379	28270	28832	28832	15672
(firms)	(6099)	(6099)	(3159)	(5829)	(5829)	(3050)
R-squared	0.002	0.019	0.021	0.003	0.033	0.034

Table 9: Questions and answers from financial personnel of traded firms

The following five questions were answered by 14 Cornell Alumni that work in public corporations at either the executive or financial branch of the company. The table provides the open-ended question and summarizes the different answers and number of responses associated with a particular answer. Note that some questions were not addressed by some of the responders, while other respondents provided multiple answers to the same question, so that the number of answers for each question can be either below or above 14.

Can you speculate on what are the advantages and disadvantages of releasing the preliminary earnings reports outside trading hours as opposed to during trading hours?

The reasons why outside trading hours is better:	
Allows market to better absorb material changes	3
Gives time for management to address questions	6
Preferred by NYSE; eliminates need for possible trading halts	5
Gives time for analysts to analyze earnings news	5
Preferred by institutions and long term investors	2

Can you speculate who benefits from the release of earnings news during trading hours? Who benefits from the release of earnings news outside trading hours?

Who benefits from during trading hours announcements?	
Day-traders	4
Hedge funds	2
Sophisticated investors	3

Who benefits from outside trading hours announcements?	
Analysts	3
Company	3
Unsophisticated investors	4

What, if anything, may make the decision maker suddenly change the timing of the earnings release?

If material may speed up earnings release, but only date, not time of day	1
Unusual circumstances, if suggested by counsel general	2
Happened once due to tax reasons	1

Do you think releasing earnings news on Friday after trading hours is a good idea, why or why not?

Bad idea – no press coverage	4
Bad idea – analysts are not around	4
Bad idea – means company is trying to hide bad news	6
Bad idea – not sure what the point is	1
Bad idea – annoys the street	4

Please look at the enclosed figure. What do you think is the reason for the shift over the last decade form reporting during the day to reporting outside trading hours?

It is because of Reg FD	8
Lawyers	1
While not mandated, releasing earnings news outside trading hours has become good practice over the years	1

Table 10: Outside trading hours volume activity

The table provides the mean (median) percentage ratios of dollar trading volume during outside trading hours to that within trading hours. The ratios are calculated for all Outside-trading announcements events and for regular trading days. For the announcement day analysis, the outside trading volume corresponds to the Outside-trading time; hence, it is defined as the trading volume on the evening and the following morning. Within trading hours volume is the trading volume during the trading hours on the trading day following the announcement. For the regular day ratio analysis, the volume is the average of the volume on the fifth trading day prior to and the fifth trading day after the announcement day. *t*-test statistic for the difference in means, assuming unequal sample variances, is in parentheses in the corresponding row and column.

	Announcement day	Regular day	Difference in means
Pre Jan. 2004	2.0% (0.3%)	2.6% (1%)	-0.6% (-7.17)
Post Jan. 2004	3.5% (1.7%)	4.9% (3.4%)	-1.4% (-34.35)
Difference in means	-1.5% (-19.6)	-2.3% (-35.31)	

Table 11: Friday earnings announcements – distribution, earnings surprise and governance

Panel A provides the distribution and difference of means tests for Friday announcements made in the pre Jan. 2004 and post Jan. 2004 periods. Panel B provides difference of means tests for comparing all Friday announcements and separately for Friday morning (before trade), Friday During-trading hours, and Friday evening (after trade) announcements, compared to their respective weekday announcements. Panels C and D provide distributions and means tests, respectively, to compare firms that had only one Friday evening announcement to those firms that had more than one Friday evening announcement. Governance 2 is defined in Table 2. All other variables are defined in Table 1.

Panel A: Percentage (number of observations) of different types of Friday announcements

	Prior to January 1, 2004	After January 1, 2004	Difference of means *t*-statistic
Friday Announcements in the full sample	5.9% (2138)	5.5% (2907)	2.45
Friday morning (before trade)	42.0% (898 of 2138)	72.1% (2097 of 2907)	-22.59
Friday during trade	43.2% (923 of 2138)	14.9% (434 of 2907)	23.54
Friday evening (after trade)	14.8% (317 of 2138)	12.9% (376 of 2907)	1.93

Panel B: Friday compared to other days of the week—governance and earnings surprise

Variable compared	All Friday			Friday morning (before trade)		
	Friday	Other weekdays	Dif. *t*-statistic	Friday morning	Other weekdays morning	Dif. *t*-statistic
Positive SUE (%)	54.5	63.6	-12.31	57.2	64.00	-7.13
SUE	-0.07	0.47	-10.00	0.17	0.49	-4.71
Governance 2	-0.06	0.01	-3.11	0.08	0.02	2.47
	Friday During-trading hours			Friday evening (after trade)		
	Friday trade	Other weekdays trade	Dif. *t*-statistic	Friday evening	Other weekdays evening	Dif. *t*-statistic
Positive SUE (%)	52.9	60.8	-5.40	46.6	64.0	-9.03
SUE	-0.35	0.24	-5.57	-0.56	0.49	-7.32
Governance 2	-0.29	-0.20	-2.43	-0.27	0.05	-5.93

Table 12: Market reaction for time of day and SUE-matched announcements

All Friday announcements are matched with a respective Monday-Thursday announcement occurring at the same period of the day (morning, during-trading hours, or evening). Matching is based first on having the same SUE and then on minimizing the absolute difference between the market values of the firms making the Friday and weekday announcement. Matched pairs are partitioned into four portfolios, two positive SUE portfolios and two negative SUE portfolios, based on the empirical distribution of these SUE matched pairs. The table provides mean abnormal returns for the more positive SUE and more negative SUE portfolios. Day 0 is the same trading day for morning and During-trading announcements and the following trading day for evening announcements, Day 1 is the first trading day following Day 0. *t*-statistics are provided; *, **, and *** indicate significance at the 10%, 5%, and 1% level, respectively.

	Portfolio	# of matched pairs	Mean SUE		Day 0 abnormal return (%)			Day 1 abnormal return (%)			Total (Days 0+1) abnormal return (%)		
			Friday	Mon-Thurs	Friday	Mon-Thurs	Dif. *t*-statistic	Friday	Mon-Thurs	Dif. *t*-statistic	Friday	Mon-Thurs	Dif. *t*-statistic
Before trade	negative SUE	762	-5.3788	-5.3790	-3.59	-3.72	0.27	-0.64	-0.46	-0.70	-4.23	-4.16	-0.13
	positive SUE	961	4.2059	4.2058	2.06	1.98	0.26	0.17	0.24	-0.42	2.24	2.25	-0.01
During-trading	negative SUE	289	-5.9774	-5.9782	-2.33	-2.51	0.25	-1.14	-0.65	-1.06	-3.49	-3.06	-0.49
	positive SUE	326	3.8895	3.8902	1.36	0.86	1.00	0.06	0.42	-1.08	1.43	1.38	0.08
After trade	negative SUE	169	-6.3151	-6.3147	-2.53	-4.74	**2.31****	-0.13	-0.08	-0.09	-2.65	-4.83	**-2.03****
	positive SUE	147	4.8306	4.8308	1.91	2.89	-1.37	0.01	0.17	-0.31	1.99	3.08	-1.10

Appendix A: The Survey form that was emailed to 18 Cornell's Alums

Greeting everyone:

I need your help on a research project I am currently conducting. I am working on paper the deals with management's decision concerning the timing of the preliminary earnings release (mainly with the timing during the day) and I want to make sure I understand the process. To this end, I would very much appreciate if can answer some questions about the decision process surrounding earnings releases. The last question is about the results I get. I want to hear your opinion about it (before I 'contaminate' your answer with what I think is going on)
If you are not the right person, I would very much appreciate if you could direct these questions to the right person in your firm and still get back to me.
I very much appreciate you help and I hope to hear from you soon. Please let me know if you are interested in seeing the completed version of this research. I will be happy to send it your way when it is done (hopefully within two months).

The purpose of the following questions is to help us understand how firms decide on the preliminary earnings report release timing. We are in particular interested in knowing why some companies release outside trading hours (after trading hours, i.e. from 4pm until 9:30am) and some release during trading hours (i.e., 9:30 AM – 4:00 PM EDT).

How do firms decide about the exact timing of the preliminary earnings reports (8-K)?

1. **Who decides on the date** (or day of week) in which the earnings announcement is made? CEO? CFO? Board? Lower level? Nobody (chosen randomly by secretary)?
2. **Who decides** on whether to make the announcement **during trading hours or outside trading hours**? CEO? CFO? Board? Lower level? Nobody (chosen randomly by secretary)?
3. Is it common that the **decision** to announce during trading hours or outside trading hours **changes** from quarter to quarter because of some reason (or because it is not important)?
4. Can you speculate on what are the **advantages and disadvantages of releasing the preliminary earnings reports outside trading hours** as opposed to during trading hours?
5. Can you speculate **who benefits from the release of earnings news during trading hours? Who benefits from the release of earnings news outside trading hours?**
6. How are your answers to (4) and (5) related to the decision on whether to announce earnings news during trading hours or outside trading hours?
7. Is the timing related to the time of the conference call? If there is a conference call, when does it usually occur compared to the preliminary announcements? At what time of the day (before trade, during trade)?

8. What, if any, may make the decision maker suddenly change the timing of the earnings release? (e.g. very bad earnings news) At what level is such a change made (CEO, CFO, Board, lower level?)
9. Do you think a firm that releasing earnings news on Friday after trading hours is a good idea, why or why not?
10. Finally please look at the enclosed figure. What do you think is the reason for the shift over the last decade form reporting during the day to reporting outside trading hours? *(we presented figure 1 to survey participants)*