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## AROUND-THE-CLOCK MEDIA COVERAGE AND THE TIMING OF EARNINGS ANNOUNCEMENTS

by

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## **Around-the-Clock Media Coverage and the Timing of Earnings Announcements**

### **ABSTRACT**

We reexamine the descriptive ability of the conventional wisdom that earnings announcements made after trading and on Friday are dominated by bad news in light of the 24/7 media coverage and other technological changes of the 1990s. We find that the change in media coverage has facilitated a significant change in earnings announcement times: only 27% of earnings announcements are now made during trading as opposed to 67% in prior research. However, our finding of continued dominance of bad news in Friday announcements in particular strongly suggests that the conventional wisdom is not solely the result of managers' desire to take advantage of limited media coverage. Instead, managers appear to be taking advantage of other aspects of investors' behavior, such as their anticipating negative Friday announcements earlier in the week, and the relatively quiet (in terms of trading) weekend period to manage stock price responses to their companies' financial news.

Keywords: Strategic timing, bad news, earnings announcements, earnings disclosures

JEL descriptors: G12, G14, M41, M45

## **Introduction.**

Conventional wisdom suggests that bad earnings news is more likely to be released after the close of trading or on Friday. Several explanations have been offered for this phenomenon, all of which focus on managers' attempts to minimize the negative impact of the news on share prices by strategically choosing its release time. For example, prior research suggests that managers might release bad news when investors have limited opportunities to act on it, media coverage is light, or investors are focused on other, nonbusiness matters (Patell and Wolfson 1982, Damodaran 1989, Della Vigna and Pollet 2004, among others). An additional explanation is implied by the recent survey evidence in Graham et al. (2005): Managers delay the release of bad news so that investors anticipate it, thus mitigating the drop in stock price at the announcement itself.

An important component of the traditional explanations for the conventional wisdom is the fact that until recently, newswire broadcasting and trading hours roughly coincided with the traditional 40-hour work week (Armon 2001). In addition, business print media was a major disclosure medium during that period (Armon 2001). By the mid-1990s, however, technological innovations dramatically changed both the news and business environments. First, the major newswires (PR Newswire and Dow Jones News Service) departed from their 8:00 a.m. to 6:30 p.m., Monday-through-Friday broadcasting schedule in 1997 and began to operate around the clock, providing a channel for distributing important news throughout the night and on the weekend. Second, by the mid-1990s, cable television, particularly the 24-hour business news channels such as CNBC, CNNfn and Bloomberg Television, and the Web provided a new, 24-hour, seven-days-a-week electronic alternative to the traditional, Monday-through-Friday business print media that business professionals and investors relied on in the past. Third, by the mid-1990s, earnings estimates and analysts' reports became widely available, and the individual investor's role in financial markets grew. These changes led to the proliferation of Web sites devoted to investing (e.g., Silicon Investor, Yahoo finance), most of which contained message boards that were frequented by individual investors, eager to exchange information and opinions outside of regular business hours. Finally, during the mid to late 1990s, investor access to international capital markets expanded, and "after-hours" trading on the U.S. stock exchanges and electronic commerce networks (ECNs) developed. These changes provided venues for trading on information

outside of regular stock exchange hours in the U.S. and chipped away at what used to be overnight and, to a lesser extent, weekend trading halts.

An important implication of these technological changes is that the ability to “manage” the stock price response to news through the choice of release time may have been curtailed in recent years. In particular, if managers’ decisions about when to release bad earnings news are driven by the availability of media coverage, we are likely to see fewer bad news releases after the markets are closed and on Fridays in recent years since breaking news is now broadcast around the clock. Similarly, if disclosure decisions are influenced by investors having limited opportunities to act, we are likely to see a weakening of the conventional wisdom, particularly in the case of after-hours announcements, since access to global capital markets and after-hours trading has increased in recent years.<sup>1</sup> On the other hand, if after-hours and Friday releases are influenced by managers’ desires to release bad news when investors are not focused on breaking business news even if it is available (i.e., on the weekends and in the evenings), we would expect to see no change in the disclosure pattern of bad news in recent years. Similarly, if managers delay the release of bad earnings news until after hours or Friday to allow for anticipation of the news and slow its assimilation into the company’s stock price (Graham et al. 2005), we are also unlikely to observe a change in disclosure patterns.

To sort out the relative importance of these alternative explanations for the strategic timing of news releases and determine whether investor response to negative earnings news is still a function of its release time, we compare the disclosure day and time (hour and minute) of approximately 49,000 quarterly earnings announcements made between 2000 and 2003 with disclosure patterns in prior research using data from the 1970s and 1980s.<sup>2</sup>

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<sup>1</sup> After-hours trading and greater access to international capital markets have had greatest impact on weekday overnight trading halts. They have had less of an impact on the longer, naturally occurring weekend period of no trading, leaving more time for assimilation (without the ability to trade) of Friday news.

<sup>2</sup> As discussed in detail in the next section, we gather announcement dates and times from the Reuters Forecast Pro database. A key advantage of having announcement times is that we can identify announcements made before, during or after trading—a classification scheme that is particularly helpful in building a more complete understanding of the conventional wisdom and Friday announcements in particular. That is, we can determine whether announcements made before, during and after trading on Friday are different from one another. We also note that by

This comparison indicates that the technological changes of the 1990s, particularly the emergence of 24/7 media coverage, facilitated significant changes in firms' announcement patterns. Earnings announcements now occur 24 hours a day, and significantly more are now made outside of trading hours than in the past, especially in the midweek period. More specifically, during the 1970s, 67% of earnings announcements occurred during trading hours on the major New York stock exchanges (Patell and Wolfson 1982), whereas during our sample period, only 27% do, with the first major wave of announcements beginning at approximately 5:00 a.m. Eastern time. Approximately one-fourth of earnings announcements are now made between the close of trade and 8:30 p.m. Eastern time, and overall, they are not as negative now as they were in the past. Furthermore, midweek announcements elicit a strong investor response regardless of their release time. This suggests that during the midweek period when earnings news flow is at its peak, investors pay attention and react to announcements made inside *and* outside of trading hours—and that the stock price benefit of waiting to release bad news until after the markets are closed during that busy period has declined.

In contrast, Friday earnings announcements continue to be relatively infrequent and dominated by relatively bad news. Furthermore, the news grows more negative as Friday progresses and the weekend draws closer. Analysis of stock price movements during the announcement period indicate that, in contrast to what we observe for after-hours announcements, immediate investor response to Friday announcements of bad news is muted. This is consistent, at first glance, both with investors becoming distracted as the weekend approaches and with the continued limits on trading over the weekend mitigating panic selling on the news. Further analysis, however, provides evidence of price declines in the two days before these negative Friday releases, a finding that is consistent with managers delaying the release of bad earnings news until Friday to allow investors to anticipate it, thus reducing the price impact of the announcement itself (Graham et al. 2005). In addition, we do not observe a differential “catching up” of stock prices in the two trading days following the Friday release of bad

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comparing announcements made during our sample period with those made in the 1970s and 1980s, we avoid the technological change transition period in the 1990s and thus are able to study relatively clean pre- and post-change periods.

news (versus midweek releases of bad news), a finding that suggests that investors anticipate rather than miss the bad earnings news that comes out on Friday.

Our finding of continued strategic timing, especially in Friday announcements, in light of the technological changes of the 1990s, strongly suggests that the conventional wisdom is not solely the result of managers' desire to take advantage of limited media coverage. Instead, managers appear to be taking advantage of other aspects of investors' behavior, such as their anticipating negative Friday announcements earlier in the week, and the relatively quiet (in terms of trading) weekend period to manage stock price responses to their companies' financial news.

This paper contributes to the literature that examines the impact of accounting information on capital markets in several ways. First, as discussed above, the empirical evidence in this paper offers a fresh look at motivations for the managerial behavior underlying the conventional wisdom and provides evidence of the relative importance of media coverage in choice of release time for financial news. Second, our findings have implications for the research design of studies that examine stock return behavior around earnings announcements. More specifically, our finding that investors anticipate bad earnings news released on Friday suggests that identifying the day on which earnings are announced, especially if they contain bad news, is important in ensuring that the complete investor reaction to the news has been captured. In addition, since more announcements now occur outside of trading hours, identification of the announcement day for purposes of measuring stock returns around the release is now more complicated and important than in the past (see Berkman and Truong 2005).

The rest of the paper is organized as follows. In Section 2, we describe how prior research motivates this study. In Section 3, we describe the data and sample. In Section 4, we present our empirical work. In Section 5, we offer concluding remarks.

## **2. Prior Research and Motivation.**

Long-standing conventional wisdom indicates that news releases made on Friday and after regular business hours tend to be more negative than those made on other days and at other times of the day. While such strategic timing is often discussed in the

context of political news releases, prior accounting and finance research, using data from the 1970s and 1980s, provides evidence consistent with the conventional wisdom in the timing of earnings releases: earnings reports made on Friday and after the stock exchanges are closed for the day tend to be relatively negative (e.g., Patell and Wolfson 1982, Penman 1987 and Damodaran 1989).<sup>3, 4</sup>

There are at least four competing/complementary explanations for the managerial behavior described in the conventional wisdom, all of which focus on managers' desire to minimize the stock price impact of bad news at its announcement.<sup>5</sup> First, as Patell and Wolfson (1982) and Damodaran (1989) suggest, managers might be trying to avoid panic selling on bad earnings news by announcing it when investors have the weekend or overnight period of no (or limited) trading to assimilate the news before trading on it. Said differently, managers might choose disclosure times to avoid negative cascades—price drops that are driven by trading-generated news.<sup>6</sup>

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<sup>3</sup> In addition, anecdotal evidence consistent with the conventional wisdom is reported by the financial press. David Armon, president of PR Newswire Americas, writing about news release times before the late 1990s, states that "...[i]t seemed as though corporations never issued good news on Fridays, and the 4 p.m. closing bell on Wall Street usually triggered one or two particularly negative releases from firms hoping their timing would result in scant coverage." (Armon 2001)

<sup>4</sup> Penman (1987) and Damodaran (1989) examine the role of earnings announcement timing in explaining stock return seasonalities. Other papers that examine this same issue include Peterson (1990) and Schatzberg and Datta (1992). Francis, Pagach and Stephan (1992), Lee, Muckow and Ready (1993), Greene and Watts (1996), Libby et al. (2002) and Zdorovtsov (2003) focus on various aspects of market maker or intraday stock price response to earnings announcements. Other relevant studies, discussed in more detail throughout this paper, include Bagnoli et al. (2004) and Della Vigna and Pollet (2004).

<sup>5</sup> The desire to minimize the price impact of bad news could arise for several reasons, including managers' concern with their reputation and value in the labor market as well as incentive and compensation packages that are linked to their firm's stock price.

<sup>6</sup> In theoretical models of cascades (e.g., Banerjee 1992, Bikhchandani, Hirshleifer and Welch 1992, and Welch 1992), stock markets are efficient (i.e., the stock price always equals the expected terminal value of the firm conditional on all *publicly* available information) but probabilistically, the stock price deviates from the expectation conditional on the union of each agent's private information. These models rely on investors inferring the private information of other investors from stock price and thus provide theoretical underpinnings for the strategic timing of news announcements. Specifically, negative cascades can be probabilistically avoided by releasing bad news outside of trading/business hours or late on Friday, so that the news arrives immediately before or during the natural overnight or weekend halt in trading. Similarly, not missing positive cascades can be probabilistically avoided by releasing good news during trading hours or during the midweek period, thereby increasing the trading time before an extended halt. Genotte and Trueman (1996) contains a related idea that earnings announcements are timed to take advantage of differential liquidity. They interpret their equilibrium as predicting that firms will have a greater tendency to release bad news after hours.



Second, during the time periods studied in prior research, newswire hours roughly coincided with regular business hours (from 8:00 a.m. Eastern time to approximately 6:30 p.m. Eastern time, Monday through Friday). Further, print media generally did not break business news on the weekend (Armon 2001). Thus, news that was disclosed by companies late on Friday, in particular, did not receive heavy coverage by the media. With less media coverage, investors were less likely to notice Friday (and, to a lesser extent, late afternoon) news, providing incentive for managers to release their worst news on Friday and after regular business hours.<sup>7</sup>

A third explanation, which is related to the second but does not require limited media coverage, arises from the “limited attention” models in Hirshleifer and Teoh (2003) and Hirshleifer et al. (2004). In these models, managers choose alternative voluntary disclosure policies or means of presenting information when some investors either miss certain information disclosures entirely or misinterpret them. In the context of earnings release timing, if investors, or a sufficient proportion of them, are simply less attentive to news broadcasts as the weekend approaches (as studied in Della Vigna and Pollet 2004) or at the end of the business day (during the evening), managers may be more likely to release negative news at that time.

A fourth explanation arises from the possibility of investors anticipating bad news whose release is delayed until after the markets are closed or until Friday. More specifically, if a firm is expected to announce earnings in a particular week or on a particular day of the week, then by holding its release for a few hours or days, managers allow investors to anticipate its release and bring the company’s stock price down slowly in advance of the announcement, thereby ensuring a smaller price impact at the announcement itself. Such an idea is consistent with the survey evidence in Graham et al. (2005) that managers attempt to delay or “package” bad earnings news, particularly if their firms are not profitable.

As mentioned earlier, all four of these potential explanations imply that announcement times are, at times, strategically chosen to manage the stock price response to the

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<sup>7</sup> This spirit of this argument is captured in Bowen et al. (1992), who find evidence that some managers changed earnings announcements times to take advantage of the chaos in the market following the stock market crash of 1987—that is, some appear to have rushed to announce bad news during the crash when it was likely to get less media coverage.

unexpected portion of the release. The first two explanations rely on the lack of media coverage and trading opportunities outside of regular business hours; however, the third and fourth do not. Thus, each explanation provides a basis for predicting how firms might alter the strategic release of important financial information in response to changes in investment technology and media coverage. In particular, if strategic timing is the result of managers' desire to take advantage of limited media coverage, then the technological changes of the 1990s that led to 24/7 media coverage should have (nearly) eliminated the incentives for managers to strategically time the announcement of bad news. As a result, if this explanation dominates, we should observe no significant intra- or inter-day differences in the release of bad news. If strategic timing is driven managers' desire to take advantage of limited trading opportunities, however, the increased access to capital markets outside of regular stock exchange hours should have had a greater impact on the *intraday* timing of earnings announcements. (This is because significant limits on trading over the weekend still exist.) Thus, if this explanation dominates, we are likely to observe a weakening of the conventional wisdom where after-hours earnings releases in particular are concerned.

On the other hand, if managers' behavior is driven by their belief that investors are simply inattentive after regular trading day or as the weekend approaches—or if their announcement time decisions are the result of their attempts to “allow” the market to anticipate forthcoming bad news by delaying its release until the end of the week or day to minimize the price impact of the announcement itself (which will be covered by the business media), the conventional wisdom is likely to continue to be descriptive.

### **3. Sample and Data.**

Our sample consists of 49,238 quarterly earnings announcements made by 4,183 firms between 2000 and 2003 and gathered from the Reuters Forecast Pro database. This database was developed by Multex, a company that was recently acquired by Reuters. Contributing analysts and brokerage firms in the Reuters database overlap to a large degree with those in the databases maintained by First Call and I/B/E/S, and thus our sample firms are similar (in terms of size and other characteristics) to firms covered by First Call or I/B/E/S data. From our perspective, an advantage of the Reuters' database is that it includes not only analysts' earnings estimates and actual earnings per share

numbers, but earnings announcement times (hour and minute) as well. Thus, we are able to provide additional insight into the intraday timing of announcements made on different days of the week. To be included in our sample, an announcement must meet the following criteria. First, it must be an announcement for which both an analyst consensus estimate (not more than 60 days old) and an actual earnings per share number are available in the Reuters database. Second, the announcement must have a valid time (hour and minute) and date stamp.<sup>8</sup>

The accuracy of Reuters' time and date stamp is critical in our study. Thus, we randomly selected 350 earnings announcements from our sample and attempted to verify their time and date stamps by searching the Factiva database for the original newswire broadcasts of the announcements. We are unable to locate 19 of these announcements in the Factiva database. However, of the remaining 331 announcements, we are able to verify the Reuters' time and date stamps in 320—or, said differently, we are able to verify 91% of the time and date stamps in the random sample.<sup>9</sup>

Another important issue for our study is Brown and Caylor's (2005) finding that during the 1990s, there was a shift in investors' perception of what constitutes "good" and "bad" earnings news. More specifically, they find that beginning in 1993, the avoidance of bad earnings news measured relative to analysts' forecasts has larger valuation consequences than the avoidance of bad news in the form of an earnings decline or an earnings loss. Thus, in contrast to Patell and Wolfson (1982) and Damadoran (1989) who identify earnings increases (declines) as good (bad) news, we use the sign of the earnings surprise (i.e., the difference between actual earnings per share and the consensus analyst forecast, both from the Reuters database) to classify the earnings news as good or bad.

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<sup>8</sup> Reuters maintains its time and date stamps in terms of Greenwich Mean Time, and so we converted them to (U.S.) Eastern time. 11:00 p.m. and 12:00 midnight time stamps are reserved for announcements whose time is not known (by the department that maintains the database); we exclude those observations from our sample.

<sup>9</sup> Our Factiva search indicates that the earnings announcements of our sample firms are generally broadcast on several newswires (e.g., Dow Jones, PR Newswire, Business Wire)—with broadcast times varying across the wires by (usually) a few minutes. Furthermore, no one newswire was always the first to broadcast the earnings releases that we checked; however, the Reuters' time stamp was generally aligned with the first newswire broadcast time.

Finally, Payne and Thomas (2003) and Baber and Kang (2002) show that using split-adjusted analyst forecast and actual earnings per share data from commercial data providers to calculate earnings surprises is problematic because stock splits subsequent to the announcement date can turn (what were originally) non-zero surprises into zero surprises when estimates and actual numbers are rounded to two decimal places. For example, if a firm reported a positive (or negative) one cent surprise and subsequently split three or more for one, the analyst forecast database would split-adjust the consensus and actual earnings per share and round each to two decimal places, so that a surprise of zero would be computed. In our study, this issue is particularly important since one of our major objectives is to determine whether positive, negative or zero surprises are more likely to occur at different times of the day or on different days of the week. The Reuters database avoids this problem by retaining split-adjusted consensus estimates and actual earnings per share to eight decimal places. This allows us to recover the surprise as originally reported by multiplying by the appropriate split-adjustment factor, also provided by Reuters Research. As a result, all earnings surprises in this paper are calculated as originally reported. All stock price and return data are from CRSP.

#### **4. Empirical Results.**

In this section, we assess whether the conventional wisdom remains descriptive after the changes in the news and business environments in the 1990s. We begin by summarizing the disclosure patterns of the 1970s and 1980s, as documented by prior research. We then compare those patterns to the patterns we observe in our sample of more recent earnings announcements. We next examine how the announcement day and time, as well as the news contained in the announcement, currently affects investor responses to earnings releases. Finally, we examine stock prices movements immediately before and after our sample of earnings announcements to assess the viability of the investor anticipation and inattention explanations for the strategic timing of earnings news.

#### **4.1 Strategic Timing: Evidence from the Distribution of Announcement Days and Times.**

Prior research provides evidence that during the 1970s and 1980s when print media dominated news coverage, earnings tended to be released Tuesday through Thursday, during trading hours on the major U.S. stock exchanges (Patell and Wolfson 1982 and Damodaran 1989). This is consistent with Armon's (2001) observation that during that same period, Fridays were particularly slow news days, and weekend and Monday print editions focused on non-breaking business news. Furthermore, earnings announcement patterns in the 1970s and 1980s are consistent with the conventional wisdom that Friday and late-afternoon announcements are dominated by bad news. More specifically, Patell and Wolfson (1982), using a sample of 561 earnings announcements made by 93 firms in 1976, 1977 and 1979, find that approximately two-thirds of earnings announcements occur during trading hours on the New York and American Stock Exchanges (i.e., between 10:00 a.m. and 4:00 p.m. Eastern time). Fifteen percent occur before the start of trade (i.e., between the start of the Dow Jones Newswire broadcast day at 8:00 a.m. Eastern time and the open of trade at 10:00 a.m.); and 18% occur after the close of trade (i.e., between the close of trade at 4:00 p.m. Eastern time and the end of the Dow Jones Newswire broadcast day at approximately 6:30 p.m.). Using both the stock price change on the announcement day and the deviation from a seasonal random walk earnings expectation model as a measure of the earnings news, Patell and Wolfson find that announcements made after the close of trade are significantly more negative, on average, than those made at other times of the day.

Patell and Wolfson (1982) also find that fewer announcements occur on Friday than on other days of the week: In their sample, 16% occur on Monday, 21% on Tuesday, 28% on Wednesday, 26% on Thursday and 9% on Friday. Damodaran (1989), using a sample of 18,929 quarterly earnings announcements made between 1982 and 1985, observes a similar pattern: 19% of his announcements occur on Monday, 24% on Tuesday, 23% on Wednesday, 20% on Thursday and 14% on Friday.<sup>10</sup> Furthermore, he

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<sup>10</sup> Damodaran's (1989) sample consists of quarterly earnings announcements made by all firms with necessary data available on Compustat and CRSP. Patell and Wolfson's firms were chosen solely on the basis of the availability of intraday stock price data for the 1976-1977 period (p. 512). Unlike Patell and Wolfson, Damodaran does not provide information on the intraday times of his sample of earnings announcements.

finds that announcements made on Friday report significantly more (and more severe) earnings declines than announcements made on other days of the week.

As mentioned above, a number of explanations, all of which differ in their reliance on the historical limits to information dissemination and trading, have been offered for these phenomena. The near elimination of these limits provides a way to distinguish among these explanations. Toward that end, we examine whether the patterns in the type of news released persist into recent years. We begin by presenting the distribution of announcement days and times (on an hour-by-hour basis) for our sample of earnings announcements in Table 1. To aid in our comparisons with prior research, we summarize this information in a histogram, collecting the data by announcement day and time (before, during or after trading or overnight) in Figure 2, and present a similar histogram for Patell and Wolfson's samples in Figure 1.<sup>11</sup>

Patell and Wolfson (1982) determine whether an announcement occurs before or after trading based on Dow Jones newswire broadcast hours (between 8:00 a.m. and approximately 6:30 p.m. Eastern time) and the hours of the New York and American stock exchanges (between 10:00 a.m. and 4:00 p.m. Eastern time) during their sample period. However, because newswires broadcast around the clock during our sample period, the classification into "before trading" and "after trading" categories is not as straightforward for us. As a result, we use the distribution of earnings announcement times in Table 1 to empirically define these categories. Table 1 shows that significant announcement activity now begins approximately four-and-one-half hours before the 9:30 a.m. open of trade on major U.S. stock exchanges and continues for about the same amount of time after the 4:00 p.m. close of trade during our sample period.<sup>12</sup> Thus, we classify announcements in our sample made between 5:00 a.m. and 9:30 a.m. as "before trading"; those made between 9:30 a.m. and 4:00 p.m. as "during trading"; and those made between 4:00 p.m. and 8:30 p.m. as "after trading". We also create a new category, "overnight", for those (4% of our) announcements made between 8:30

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<sup>11</sup> Figure 1 in our paper is a combination of Figures 1 and 2 in Patell and Wolfson's (1982) paper. We constructed our figure using information from the original figures and the text of Patell and Wolfson's paper.

<sup>12</sup> During our sample period, U.S. stock exchanges opened a half hour earlier than they did during Patell and Wolfson's sample period.

p.m. and 5:00 a.m. the next (trading-day) morning.<sup>13</sup> These classifications are reflected in Figure 2, and Patell and Wolfson's classifications ("before trading" as 8:00 to 10:00 a.m. Eastern time; "during trading" as 10:00 a.m. to 4:00 p.m. Eastern time; and "after trading" as 4:00 p.m. to 6:30 p.m. Eastern time) are reflected in Figure 1.

The most striking feature of Table 1 and Figure 2, when compared with Figure 1, is that earnings announcements now occur at all hours of the day and night, a change most certainly facilitated by around-the-clock news coverage. Furthermore, the vast majority (73%) of earnings announcements are now made *outside* of regular trading hours, as opposed to only 33% in Patell and Wolfson's sample. In fact, Table 1 shows that there are now two new peaks in the distribution of earnings announcement times: One between 5:00 a.m. and 9:00 a.m. Eastern time, and another between 3:00 p.m. and 8:00 p.m. Eastern time. The first peak begins approximately three hours before the pre-1997 beginning newswire broadcast time of 8:00 a.m. Eastern time, and the second peak ends approximately one and a half hours after the pre-1997 ending newswire broadcast time of (approximately) 6:30 p.m. Eastern time. Thus, managers are clearly using the availability of continuous newswire broadcasting to spread their announcements out over more of the 24 hours in a day.

Interestingly, we do not observe a similar expansion of the "announcement week" in our sample; instead, announcements appear to have become *more* concentrated in the midweek period. Only 5% of our announcements are made on Friday compared to 9% of Patell and Wolfson's and 14% of Damodaran's (our sample percentage is statistically different from Patell and Wolfson's and Damodaran's,  $p < 0.01$ ); and only 12% of our announcements are made on Monday, down significantly from the 16% in Patell and Wolfson's study ( $p < 0.05$ ) and 19% in Damodaran's study ( $p < 0.00$ ). The remaining 83% of our announcements occur between Tuesday and Thursday, with more made on Thursday (31%) than on any other day of the week.

To determine whether earnings news released after trading and on Friday continues to be dominated by bad news as suggested by the conventional wisdom, we next turn to the descriptive statistics for the surprises in our sample of earnings announcements

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<sup>13</sup> This means that in this section of the paper, Friday overnight announcements contain the relatively small number of announcements made on Saturday, Sunday and between midnight and 5:00 a.m. on Monday.

(actual earnings per share minus the consensus analyst forecast, winsorized to  $\pm$  \$1.00), presented in Table 2. Panel A contains the mean, median, first and third quartiles (Q1 and Q3) of these surprises, classified by day of the week and announcement-time category (before, during or after trading, or overnight), and Panel B contains the percent of surprises that are negative, zero and positive for the same day-of-the-week and announcement-time classifications. The most striking feature of Table 2 is the continued strength of the conventional wisdom where Friday announcements are concerned, consistent with the conventional wisdom and prior research (Damodaran 1989, Penman 1987, Bagnoli et al. 2004 and Della Vigna and Pollet 2004). The average surprise for the entire group of Friday announcements in our sample (0.0003) is significantly smaller than the average surprise in announcements made on other days of the week (0.0103, 0.0087, 0.0121 and 0.0125 on Monday, Tuesday, Wednesday and Thursday, respectively).<sup>14</sup>

In addition, because we have access to the hour and minute time stamps for our sample announcements, we can separate Friday announcements into those made before, during and after trading to determine whether bad news is more prevalent during particular blocks of time on Friday. Interestingly, Panel A shows that the nature of earnings news announced on Friday changes as the day progresses. In particular, the average surprise in announcements made before the open of trade on Friday is *positive* (0.0051) but significantly smaller than the average surprise in announcements made before trading on any other day of the week. It then turns negative during trading hours (-0.0040) and remains that way after trading (-0.0145). Consistent with this trend, the percentage of negative surprises increases over the course of the day (see Panel B), beginning at 33.9% before trading and increasing to 40.0% during trading and 40.5% after trading. (Each of these percents is significantly greater than its announcement-time counterpart on every other day of the week. Percents of negative surprises range from 24.1% to 27.7% for other before-trading announcements, from 23.6% to 25.0% for other during-trading announcements, and from 26.2% to 28.9% for other after-trading announcements—see Panel B of Table 2.) As just noted, prior research, including Bagnoli et al. (2004) and the extension by Della Vigna and Pollet (2004), also find that Friday earnings announcements, not separated by time of day, are dominated by bad

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<sup>14</sup> Overall means by day of the week are not tabulated. All interday pairwise comparisons with Friday are significant at (at least) the 0.01 level using both two-tailed, two-sample t-tests and Mann Whitney tests.



news in recent years. However, our finding that earnings news released on Friday is, on average, positive before trading and turns negative as the day wears on suggests that all Friday announcements are not equal: The later the announcement, the more negative it tends to be.

While the evidence just discussed is consistent with the conventional wisdom, a stronger test of strategic timing can be performed by focusing on the subset of sample firms that make some of their quarterly earnings announcements on Friday and some on other days of the week. Of the 1,343 firms that announced earnings on Friday in our sample, 1,324 (98.6%) also made announcements (of earnings in other quarters) on other days of the week, a finding that in itself is indicative of strategic timing.<sup>15</sup> Furthermore, for these firms, the surprise announced on Friday is one cent lower, on average, than the surprise announced on other days of the week, a difference that is significant at the 0.01 level and adds support for the conclusion that the decision to announce earnings on Friday is often strategic.

Interestingly, the descriptive nature of the conventional wisdom, while still present, weakens when *intraday* timing is considered (Panel B of Table 2). In particular, the average surprise for all after-trading announcements, aggregated across days of the week (0.0074, not tabulated), is significantly smaller than the average surprise in all announcements made before trading (0.0124) or during trading (0.0102), also aggregated across days of the week. However, the differences are not as large as they are for the Friday versus other days of the week comparisons. Similarly, the percent of negative surprises in all after-trading announcements (28.0%) is significantly greater than the percent in all before-trading announcements (25.8%) and during-trading announcements (24.8%)—but once again, the contrast is not as great as it is when the comparison is made between Friday announcements and those made on other days of the week. Furthermore, when comparisons are made across announcement-time categories on a day-by-day basis, differences are not always statistically significant. For example, average surprises for the after-trading and during-trading announcements are statistically indistinguishable on every day except Tuesday. However, average surprises in the after-trading and before-trading announcements are significantly different from one

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<sup>15</sup> Said differently, announcing earnings on Friday does not appear to be a matter of company policy or routine practice for our sample firms.

another on every day except Wednesday. Comparisons of percentages of negative surprises yield similar results when after-trading and before-trading announcements are considered, but in contrast to what we observe for average surprises, the percentage of negative surprises in after-trading announcements is higher than the percentage in during-trading announcements for every day but Friday.<sup>16</sup>

As was the case with interday strategic timing, a stronger test of intraday strategic timing can be performed by focusing on the subset of sample firms that make some of their quarterly earnings announcements after trading and some at other times of the day. In our sample, 2,004 firms announced both during and after trading. For these firms, the average surprise is nearly half a cent smaller when the announcement is made after as opposed to during trading. (A two-tailed, two-sample t-test is significant at the 0.07 level, and the Wilcoxon Signed Rank test is significant at the 0.06 level.) However, for the 1,558 of the firms in our sample that reported both before and after trading, we detect no statistical difference in the average surprises in announcements made at the two different times. Thus, our data suggest that if managers consistently announce *outside* of trading hours, there is no difference in the news that they release early in the morning or late in the day. In contrast, if they announce both during and after trading hours, we find weak evidence of their releasing worse news when the markets are closed.

The findings in this section, when considered collectively, indicate that the elimination (or near elimination) of news dissemination barriers in the mid-1990s did not put an end to the strategic timing of earnings releases—although it is important to note that we observe a weakening of the conventional wisdom in regard to after-trading announcements. This leads us to conclude that limited media coverage is not the only (or the driving) force behind the conventional wisdom. To continue to sort through the potential explanations for the strategic timing of earnings news, we next turn to an examination of the investor response to earnings announcements made at different times.

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<sup>16</sup> It is interesting that the percent of negative surprises is highest for our relatively small set of overnight announcements (31.3% overall, N=1,930). This percentage is significantly greater than the percentages in any of the other announcement-time categories. However, statistical tests of differences in average surprises between overnight announcements and other groups are not significant, perhaps because, in part, the surprises in these announcements tend to be more variable.

## 4.2 Investor Response to Earnings Announcements Made at Different Times of Day and on Different Days of the Week

An important implication of the remaining explanations for the conventional wisdom is that the stock price response to the announcement of bad news can be dampened (or controlled) if the announcement is made after trading or on Friday. In this section, we use event-study methodology to determine how (abnormal) stock price movements around earnings announcements associate with not only the earnings news but also the day and time of the announcement itself. In addition, we examine stock price movements before and after the announcement to see if investors anticipate the forthcoming bad news and/or learn the news at some point after the initial announcement, thereby helping to distinguish among the rationales proposed for the conventional wisdom. Unfortunately, Friday and Monday announcements are sufficiently infrequent that data limitations prohibit us from separating day-of-the-week effects from time-of-day effects on those days. As a result, we run two regressions—one in which we examine differential market responses to good and bad earnings news announced on Monday, midweek and Friday; and one in which we examine differential market responses to good and bad earnings news announced before, during or after trading, or overnight for midweek announcements only.<sup>17</sup> We present the estimation results for the following two regression models in Tables 3 and 4, respectively:

Model 1 (Monday, Midweek or Friday announcements):

$$RET_{i,q} = \beta_0 + \beta_1 UE_{i,q} + \beta_2 NegUE_{i,q} + \beta_3 Mon_{i,q} + \beta_4 Fri_{i,q} + \beta_5 (NegUE_{i,q} * UE_{i,q}) + \beta_6 (Mon_{i,q} * UE_{i,q}) + \beta_7 (Fri_{i,q} * UE_{i,q}) + \beta_8 (NegUE_{i,q} * Mon_{i,q}) + \beta_9 (NegUE_{i,q} * Fri_{i,q}) + \beta_{10} (NegUE_{i,q} * Mon_{i,q} * UE_{i,q}) + \beta_{11} (NegUE_{i,q} * Fri_{i,q} * UE_{i,q}) + \varepsilon_{i,q}$$

Model 2 (Before, during or after trading, or overnight announcements made midweek):

$$RET_{i,q} = \gamma_0 + \gamma_1 UE_{i,q} + \gamma_2 NegUE_{i,q} + \gamma_3 During_{i,q} + \gamma_4 After_{i,q} + \gamma_5 Overnight_{i,q} + \gamma_6 (NegUE_{i,q} * UE_{i,q}) + \gamma_7 (During_{i,q} * UE_{i,q}) + \gamma_8 (After_{i,q} * UE_{i,q}) + \gamma_9 (Overnight_{i,q} * UE_{i,q}) + \gamma_{10} (During_{i,q} * NegUE_{i,q}) + \gamma_{11} (After_{i,q} * NegUE_{i,q}) + \gamma_{12} (Overnight_{i,q} * NegUE_{i,q}) + \gamma_{13} (NegUE_{i,q} * During_{i,q} * UE_{i,q}) + \gamma_{14} (NegUE_{i,q} * After_{i,q} * UE_{i,q}) + \gamma_{15} (NegUE_{i,q} * Overnight_{i,q} * UE_{i,q}) + \varepsilon_{i,q}$$

<sup>17</sup> We do not include Monday announcements as part of midweek announcements because earnings news flow is slower on Monday than on midweek days and also because there is some evidence that earnings surprises announced on Monday are different than those announced midweek (Bagnoli et al. 2004).

where  $RET_{i,q}$  is the announcement return for firm  $i$  in quarter  $q$ , adjusted for the return on the S&P 500 index on the same day;  $UE_{i,q}$  is the earnings surprise for firm  $i$  in quarter  $q$ , calculated as described earlier and scaled by stock price at the end of quarter  $q$ ;  $NegUE_{i,q}$  is a dummy variable that equals one if the earnings surprise for firm  $i$  in quarter  $q$  is negative;  $Mon_{i,q}$  and  $Fri_{i,q}$  are dummy variables that equal 1 if firm  $i$  announced on Monday or Friday, respectively, in quarter  $q$ ; and  $During_{i,q}$ ,  $After_{i,q}$  and  $Overnight_{i,q}$  are dummy variables that equal 1 if firm  $i$  announced during trading, after trading or overnight, respectively in quarter  $q$ .<sup>18</sup> To mitigate the effect of outliers that might have been created by our scaling by stock price, we delete the top and bottom one-half percent of the scaled earnings surprise observations.

Our measure of announcement returns is constructed to take advantage of the fact that we know both the day and time of our sample announcements. Thus, we can identify the first daily return that contains the market response to an earnings announcement. (See Berkman and Truong 2005 for further discussion of the importance of determining the correct earnings announcement event date.) For announcements made before the open of trading, this is the return on the calendar day of the announcement, but for announcements made after the close of trading, this is the return accruing over the next trading day. For announcements made between 9:30 a.m. and 3:00 p.m. Eastern time, we use the return on the calendar day of the announcement. For announcements made between 3:00 p.m. and 4:00 p.m. Eastern time, less than one hour of trading remains before the markets close, and so we sum the returns on the announcement day and the following trading day to ensure that we capture the market response to the announcement.<sup>19</sup>

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<sup>18</sup> To avoid confusion in the first regression, we use a "strict" definition of Friday announcements (i.e., we do not include announcements made after 5:00 a.m. on Saturday and on Sunday as part of the set of Friday announcements). This means that the Friday dummy variable is one if the announcement appears before, during or after trading on Friday until 5:00 a.m. the next (Saturday) morning.

<sup>19</sup> We choose 3:00 p.m. Eastern time as the cut-off for this return calculation for two reasons. First, the earlier the cut-off, the more likely it is that including the subsequent day's return introduces noise and diminishes the value of knowing the hour and minute of the initial press release. Second, as the data in Table 1 indicate, a significant proportion of during-trading announcements are made between 3:00 p.m. and 4:00 p.m., and relatively few are made between 1:00 p.m. and 3:00 p.m. However, our results do not qualitatively change if we use 2:00 p.m. or 1:00 p.m. as the cut-off.

The estimation results for Model 1 in Table 3 indicate that there is some immediate benefit to releasing bad news on Friday during our sample period, consistent with results reported in Bagnoli et al. (2004) and Della Vigna and Pollet (2004). The ERC for bad news, which we define as a negative surprise, is significantly smaller when it is announced on Friday instead of midweek ( $\beta_{11}$  is significant and negative).<sup>20</sup> This muted response to bad earnings news released on Friday is consistent with both the limited investor attention and negative cascade avoidance explanations for the conventional wisdom, as well as with managers delaying the release of bad news so that investors anticipate it and lower price before the announcement, as suggested by Graham et al. (2005).

To help sort through these competing explanations, we next ask whether price movements on the two trading days *following* the earnings announcement are systematically related to the earnings surprise and announcement day. If investors who weren't paying attention at the initial release on Friday discover the news at the start of the next work week, we should observe larger post-announcement price movements for a given negative Friday surprise compared to the same negative surprise announced on other days. In contrast, if investor anticipation of Friday bad news or managers' attempt to avoid negative cascades drives the smaller initial market response, we should not observe differential "catching up" after the announcement for Friday releases. Furthermore, if the anticipation explanation is descriptive, we should see significant returns accruing for the firm's stock in the few days before the Friday release. To examine these possibilities, we first re-estimate Model 1 using market-adjusted returns over the two trading days *following* the announcement (not tabulated). We observe statistically significant price adjustments over these days for all announcements; however, we do not find evidence of a *differential* effect based on the day of the announcement (the slope coefficient for bad news is 0.08, regardless of the day of the release). Thus, we not observe the "catching up" predicted by the limited investor attention explanation for the conventional wisdom. However, when we re-estimate Model 1 using market-adjusted returns over the three trading days *preceding* the announcement (not tabulated), we do find evidence of significant investor anticipation of

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<sup>20</sup> In the footnotes to Tables 3 and 4, we include formulas for calculating the intercept terms and ERCs for announcements made at different times of the week and day. When these formulas are used, the ERC for bad news announced on Friday is 0.20396, and the ERC for bad news announced midweek is 0.61006.

negative Friday earnings news (the slope coefficient for Friday bad news is 0.36), but not of negative news announced on other days (the slope coefficient for these releases is statistically indistinguishable from zero). Thus, our data provide strongest support for investor anticipation of Friday bad news and managers' attempts to avoid cascades by releasing bad news immediately before the weekend as explanations for strategically timing the release of earnings news on an interday basis.

The estimation results for Model 2 in Table 4 indicate that, in contrast to what we observe for Friday bad news announcements and what might be expected given the conventional wisdom, after-trading announcements of bad earnings news elicit a relatively *strong* response from investors. Specifically, when only bad news is considered, after-trading announcements have significantly larger ERCs than before- and during-trading announcements—that is,  $(\gamma_1 + \gamma_6 + \gamma_8 + \gamma_{14})$  is greater than  $(\gamma_1 + \gamma_6 + \gamma_7 + \gamma_{13})$  and  $(\gamma_1 + \gamma_6)$ , and overnight ERCs are marginally greater than before- and during-trading ERCs. When we re-estimate the regression using market-adjusted returns over the two trading days following the announcement (not tabulated), we find significant continued price adjustment for all announcements as we did in the day-of-the-week regression discussed above. Interestingly, even though the after-trading announcements of bad news have larger ERCs, they also experience the strongest adjustment in the following two trading days. Finally, re-estimation of the regression using market-adjusted returns over the three days preceding the announcement yields no evidence of investor anticipation of the negative midweek announcements, consistent with our finding of no anticipation for negative midweek announcements in the analogous day-of-the-week regression. The overall, strong price response to negative after-trading earnings news, when considered with the increasing frequency of after-trading announcements and the weakening of their negative nature in recent years, provides strong indication that the net benefit to releasing bad news late in the day, especially between Tuesday and Thursday when earnings news flow is at its peak, is dissipating.

The results in this study, when taken together, suggest that the technological changes of the mid-1990s facilitated changes in firms' disclosure patterns, leading to a significant lengthening of the announcement day and a dramatic increase in the percentage of

announcements made outside of trading hours. Furthermore, the conventional wisdom has weakened where after-trading announcements are concerned, and we find no evidence of a muted initial stock price response to bad news released after trading during the midweek period. In spite of this, the conventional wisdom continues to be strongly descriptive when day-of-the-week disclosure patterns are considered. In addition, changes in stock price around our sample announcements suggest that delaying the announcement of bad news until late in the week to soften its price impact and attempts to avoid negative cascades by releasing news close to the beginning of the weekend are particularly viable explanations for the relatively negative nature of Friday earnings news in recent years.

## **5. Concluding Remarks.**

Prior research using data from the 1970s and 1980s provides evidence that managers strategically time the release of financial information. Using a seasonal random walk model of earnings expectations and/or the market's reaction to earnings announcements, Patell and Wolfson (1982), Penman (1987), Damodaran (1989) and others have shown that announcements made after the close of trading and on Friday tend to contain more bad news than announcements made at other times. Since this research was published, there have been significant changes in the economic environment—in particular, technological changes that allow for virtually continuous information distribution and expanded the opportunities for trading outside of regular exchange hours. These changes may have altered management's incentives to strategically time the release of information either by increasing the benefits from or increasing the costs to releasing news at different times of the day or on different days of the week, calling into question various rationales for the conventional wisdom that after-hours and Friday announcements tend to be negative.

Our analysis of approximately 49,000 quarterly earnings announcements made between 2000 and 2003 indicates that the removal of media coverage and information dissemination barriers in the mid-1990s has not completely ended the strategic timing of earnings releases. In particular, Friday earnings news continues to be relatively negative, especially once trading begins. Furthermore, investor reaction to Friday bad news is muted and it appears to be at least partly anticipated by investors. However,

managers now announce the vast majority of earnings news outside of trading hours, and news announced after the markets are closed is not as negative as it was in the past. Furthermore, investors respond strongly to bad news announced after trading during the midweek period. Further analysis of the stock price movements immediately before and after the announcement are consistent with managers finding benefit in delaying the announcement bad news until Friday to allow for its anticipation or with their attempts to avoid a negative price cascade by releasing it just before the weekend begins. Thus, our results support both the original explanation offered by Patell and Wolfson (1982) and Damodaran (1989) and the most recent offered by Graham et al. (2005).

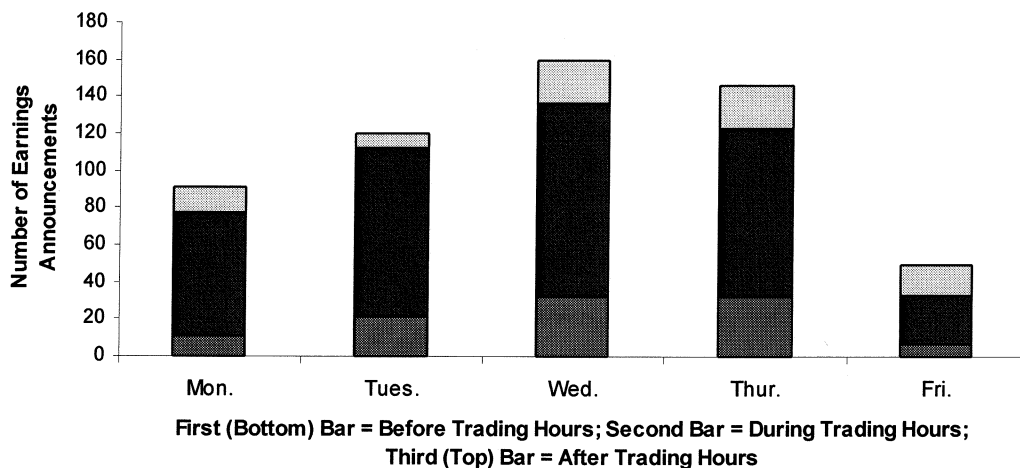


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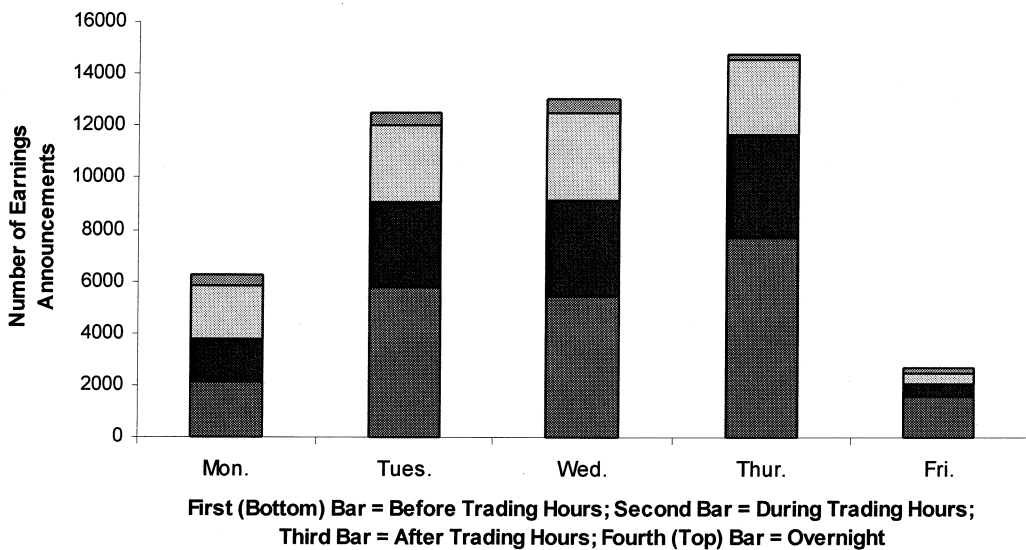
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**Figure 1**  
**Distribution of Earnings Announcements**  
**from Patell and Wolfson (1982)**



**Figure 2**  
**Distribution of Earnings Announcements**  
**Reuters' Database 2000 - 2003**



Footnote on following page.

**Footnote for Figures 1 and 2:**

Figure 1 is constructed from Figures 1 and 2 in and the text of Patell and Wolfson's (1982) paper. Patell and Wolfson's sample consists of 561 quarterly earnings announcements made in 1976, 1977 and 1979 by 93 firms with intraday stock price data available from the Chicago Board Options Exchange. For Patell and Wolfson's sample, "Before Trading Hours" is defined as 8:00 a.m. to 10:00 a.m. Eastern time; "During Trading Hours" is defined as 10:00 a.m. to 4:00 p.m. Eastern time; and "After Trading Hours" is defined as 4:00 p.m. to 6:30 p.m. Eastern time.

Figure 2 is constructed from the information in Table 1 for our sample of 49,238 quarterly earnings announcements made between 2000 and 2003 by 4,183 firms with earnings-related data available in the Reuters Forecast Pro database. For our sample, "Before Trading Hours" is defined as 5:00 a.m. to 9:29 a.m. Eastern time; "During Trading Hours" is defined as 9:30 a.m. to 3:59 p.m. Eastern time; "After Trading Hours" is defined as 4:00 p.m. to 8:29 p.m. Eastern time; and "Overnight" is defined as 8:30 p.m. to 4:59 a.m. the next morning Eastern time. Friday "overnight" announcements include announcements made on Saturday and Sunday until 4:59 a.m. on Monday morning.

**Table 1  
Distribution of Quarterly Earnings Announcements by Eastern Time and Day of Week, 2000-2003**

Time (Eastern)	Sunday		Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Totals	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
12:00 AM	0	0%	11	0%	23	0%	27	0%	43	0%	12	0%	1	5%	117	0%
1:00 AM	0	0%	27	0%	72	1%	82	1%	93	1%	48	2%	2	10%	324	1%
2:00 AM	1	3%	30	0%	84	1%	70	1%	96	1%	34	1%	0	0%	315	1%
3:00 AM	0	0%	31	1%	41	0%	53	0%	75	0%	16	1%	1	5%	217	0%
4:00 AM	1	3%	41	1%	115	1%	112	1%	124	1%	34	1%	0	0%	427	1%
5:00 AM	1	3%	223	4%	454	4%	519	4%	728	5%	148	6%	1	5%	2074	4%
6:00 AM	0	0%	550	9%	1519	12%	1425	11%	2162	14%	391	15%	1	5%	6048	12%
7:00 AM	0	0%	758	13%	2162	17%	2015	16%	2812	19%	558	21%	1	5%	8306	17%
8:00 AM	1	3%	510	8%	1324	11%	1201	9%	1641	11%	365	14%	0	0%	5042	10%
9:00 AM	4	12%	188	3%	443	4%	456	4%	474	3%	131	5%	3	15%	1699	3%
10:00 AM	0	0%	102	2%	269	2%	251	2%	267	2%	79	3%	0	0%	968	2%
11:00 AM	1	3%	104	2%	198	2%	275	2%	243	2%	78	3%	0	0%	899	2%
12:00 PM	1	3%	91	2%	184	1%	215	2%	219	1%	85	3%	1	5%	796	2%
1:00 PM	0	0%	76	1%	142	1%	152	1%	175	1%	53	2%	1	5%	599	1%
2:00 PM	0	0%	60	1%	116	1%	122	1%	195	1%	43	2%	1	5%	537	1%
3:00 PM	2	6%	1145	19%	2279	18%	2494	19%	2761	18%	127	5%	1	5%	8809	18%
4:00 PM	5	15%	955	16%	1695	14%	1949	15%	1940	13%	160	6%	2	10%	6706	14%
5:00 PM	6	18%	483	8%	639	5%	715	6%	478	3%	115	4%	3	15%	2439	5%
6:00 PM	2	6%	339	6%	362	3%	396	3%	255	2%	66	3%	1	5%	1421	3%
7:00 PM	2	6%	169	3%	185	1%	208	2%	157	1%	34	1%	0	0%	755	2%
8:00 PM	2	6%	89	1%	92	1%	126	1%	81	1%	14	1%	0	0%	404	1%
9:00 PM	2	6%	45	1%	45	0%	73	1%	34	0%	7	0%	0	0%	206	0%
10:00 PM	2	6%	12	0%	17	0%	21	0%	20	0%	4	0%	0	0%	76	0%
11:00 PM	0	0%	12	0%	13	0%	15	0%	12	0%	2	0%	0	0%	54	0%
<b>Total</b>	<b>33</b>	<b>100%</b>	<b>6051</b>	<b>100%</b>	<b>12473</b>	<b>100%</b>	<b>12972</b>	<b>100%</b>	<b>15085</b>	<b>100%</b>	<b>2604</b>	<b>100%</b>	<b>20</b>	<b>100%</b>	<b>49238</b>	<b>100%</b>
<b>% by Day</b>	<b>0%</b>		<b>12%</b>		<b>25%</b>		<b>26%</b>		<b>31%</b>		<b>5%</b>		<b>0%</b>		<b>100%</b>	

**Footnote for Table 1:**

The sample consists of 49,238 quarterly earnings announcements made between 2000 and 2003 by 4,183 firms with earnings-related data available in the Reuters Forecast Pro database.

**Table 2**  
**Quarterly Earnings News Categorized by Announcement Time, 2000-2003**

<b>Panel A: Earnings Surprises (Actual EPS-Consensus Forecast), Winsorized to <math>\pm</math> \$1.00</b>						
<b>Day</b>	<b>Time</b>	<b>N</b>	<b>Mean</b>	<b>Q1</b>	<b>Median</b>	<b>Q3</b>
	Before	2163	0.0140	-0.01	0.01	0.04
<b>Monday</b>	During	1644	0.0095	-0.01	0.01	0.03
	After	2002	0.0072	-0.01	0.01	0.04
	Overnight	437	0.0091	-0.02	0.01	0.03
	Before	5759	0.0096	0.00	0.01	0.03
<b>Tuesday</b>	During	3331	0.0108	0.00	0.01	0.03
	After	2939	0.0052	-0.01	0.01	0.03
	Overnight	453	0.0052	-0.01	0.01	0.03
	Before	5456	0.0128	-0.01	0.01	0.03
<b>Wednesday</b>	During	3669	0.0122	0.00	0.01	0.03
	After	3343	0.0109	-0.01	0.01	0.03
	Overnight	591	0.0110	-0.01	0.01	0.04
	Before	7666	0.0151	-0.01	0.01	0.03
<b>Thursday</b>	During	4011	0.0099	0.00	0.01	0.03
	After	2882	0.0087	-0.01	0.01	0.03
	Overnight	239	0.0167	-0.01	0.01	0.05
	Before	1551	0.0051	-0.02	0.01	0.03
<b>Friday</b>	During	507	-0.0040	-0.04	0.00	0.03
	After	385	-0.0145	-0.03	0.00	0.03
	Overnight	210	0.0028	-0.01	0.01	0.03

<b>Panel B: Percent Positive, Zero and Negative Earnings Surprises (Actual EPS-Consensus Forecast)</b>					
<b>Day</b>	<b>Time</b>	<b>N</b>	<b>% Positive</b>	<b>% Zero</b>	<b>% Negative</b>
	Before	2163	57.2%	15.1%	27.7%
<b>Monday</b>	During	1644	57.7%	17.3%	25.0%
	After	2002	55.1%	16.0%	28.9%
	Overnight	437	51.5%	15.6%	33.0%
	Before	5759	57.4%	18.4%	24.1%
<b>Tuesday</b>	During	3331	58.2%	18.2%	23.6%
	After	2939	56.1%	16.0%	27.9%
	Overnight	453	55.2%	13.5%	31.3%
	Before	5456	58.2%	16.6%	25.3%
<b>Wednesday</b>	During	3669	59.0%	16.8%	24.2%
	After	3343	57.7%	16.1%	26.2%
	Overnight	591	56.2%	12.7%	31.1%
	Before	7666	58.2%	16.5%	25.3%
<b>Thursday</b>	During	4011	58.4%	17.3%	24.3%
	After	2882	56.7%	15.4%	27.9%
	Overnight	239	54.4%	13.8%	31.8%
	Before	1551	51.6%	14.4%	33.9%
<b>Friday</b>	During	507	48.5%	11.4%	40.0%
	After	385	47.8%	11.7%	40.5%
	Overnight	210	52.9%	19.0%	28.1%

**Footnote for Table 2:**

The sample consists of 49,238 quarterly earnings announcements made between 2000 and 2003 by 4,183 firms with earnings-related data available in the Reuters Forecast Pro database. "Before Trading" is 5:00 a.m. to 9:30 a.m. Eastern time; "During Trading" is 9:30 a.m. to 4:00 p.m. Eastern time; "After Trading" is 4:00 p.m. to 8:30 p.m. Eastern time; and "Overnight" is 8:30 p.m. to 5:00 a.m. the next morning Eastern time. Friday "overnight" announcements in this table include announcements made on Saturday and Sunday until 5:00 a.m. on Monday morning.

Earnings surprises are calculated as the difference between the actual earnings per share and the analyst consensus forecast (not more than 60 days old), both from the Reuters Forecast Pro database. Reuters retains split-adjusted actual earnings per share and consensus forecast data to eight decimal places. We adjust this data with split-adjustment factors provided by Reuters to recreate the original actual earnings per share and consensus forecast numbers.



**Table 3**  
**Announcement Stock Returns, Earnings Surprises and Day of the Week**

**Model 1 (Announcement Made on Monday, Midweek or Friday):**

$$RET_{i,q} = \beta_0 + \beta_1 UE_{i,q} + \beta_2 NegUE_{i,q} + \beta_3 Mon_{i,q} + \beta_4 Fri_{i,q} + \beta_5 (NegUE_{i,q} * UE_{i,q}) + \beta_6 (Mon_{i,q} * UE_{i,q}) + \beta_7 (Fri_{i,q} * UE_{i,q}) + \beta_8 (NegUE_{i,q} * Mon_{i,q}) + \beta_9 (NegUE_{i,q} * Fri_{i,q}) + \beta_{10} (NegUE_{i,q} * Mon_{i,q} * UE_{i,q}) + \beta_{11} (NegUE_{i,q} * Fri_{i,q} * UE_{i,q}) + \varepsilon_{i,q}$$

Variable	Coefficient	Coefficient Value	t-statistic	p-value
Constant term	$\beta_0$	0.00650	12.01	0.000
UE (Surprise scaled by share price)	$\beta_1$	1.68636	17.41	0.000
NegUE (=1 if surprise is negative)	$\beta_2$	-0.02131	-21.26	0.000
Mon (= 1 if Monday release)	$\beta_3$	-0.00184	-1.22	0.222
Friday (= 1 if Friday release)	$\beta_4$	-0.00239	-0.96	0.336
NegUE, UE interaction	$\beta_5$	-1.07630	-8.36	0.000
Monday, UE interaction	$\beta_6$	0.68020	2.59	0.010
Friday, UE interaction	$\beta_7$	0.76610	1.93	0.053
NegUE, Monday interaction	$\beta_8$	-0.00321	-1.18	0.237
NegUE, Friday interaction	$\beta_9$	0.00368	0.90	0.368
NegUE, Monday, UE interaction	$\beta_{10}$	-0.98720	-2.89	0.004
NegUE, Friday, UE interaction	$\beta_{11}$	-1.17220	-2.45	0.014
Adjusted R <sup>2</sup> : 3.9%; N = 45,772				

The sample consists of quarterly earnings announcements made between 2000 and 2003 with earnings-related data available in the Reuters Forecast Pro database and stock price and return data available from CRSP. Observations from firms with share price < \$1.00 are deleted. The variables in the regressions above are defined as follows.  $RET_{i,q}$  is the announcement return for firm  $i$  in quarter  $q$ , adjusted for the return on the S&P 500 index over the same period;  $UE_{i,q}$  is the earnings surprise for firm  $i$  in quarter  $q$ , calculated as described earlier and scaled by stock price at the end of quarter  $q$ ;  $NegUE_{i,q}$  is a dummy variable that equals one if the earnings surprise for firm  $i$  in quarter  $q$  is negative; and  $Mon_{i,q}$  and  $Fri_{i,q}$  are dummy variables that equal 1 if firm  $i$  announced on Monday or Friday, respectively, in quarter  $q$ . Friday announcements for purposes of the regression in this table do not include those made after 5:00 a.m. on Saturday and on Sunday. For announcements made before trading and during trading until 3:00 p.m. Eastern time, we define  $RET_{i,q}$  as the return accruing from the close of trade on day -1 to the close of trade on day 0, the calendar day of the announcement. For announcements made after the close of trade, we define  $RET_{i,q}$  as the return accruing from the close of trade on day 0 to the close of trade on day +1. For announcements made between 3:00 p.m. to 4:00 p.m. Eastern time, we define  $RET_{i,q}$  as the return accruing from the close of trade on day -1 to the close of trade on day +1. We extend the measurement period for this last return to ensure that we capture the effect of the announcement since there is less than one hour of trading remaining on day 0. To mitigate the effect of outliers that might have been created by our scaling by stock price, we delete the top and bottom one-half percent of the scaled earnings surprise observations.

**Regression intercept and ERC calculations on the following page.**

**Regression intercepts and ERCs:**

Good news intercepts: Monday  $\beta_0 + \beta_3$ , Midweek  $\beta_0$  and Friday  $\beta_0 + \beta_4$ ;

Good news ERCs: Monday  $\beta_1 + \beta_6$ , Midweek  $\beta_1$  and Friday  $\beta_1 + \beta_7$ ;

Bad news intercepts: Monday  $\beta_0 + \beta_2 + \beta_3 + \beta_8$ , Midweek  $\beta_0 + \beta_2$ , Friday  $\beta_0 + \beta_2 + \beta_4 + \beta_9$ ;

Bad news ERCs: Monday  $\beta_1 + \beta_5 + \beta_6 + \beta_{10}$ , Midweek  $\beta_1 + \beta_5$ , Friday  $\beta_1 + \beta_5 + \beta_7 + \beta_{11}$ .



**Table 4**  
**Announcement Stock Returns, Earnings Surprises and Time of Day**

**Model 2 (Announcement Made Before, During or After Trading or Overnight; Midweek Announcements Only):**

$$\begin{aligned}
 RET_{i,q} = & \gamma_0 + \gamma_1 UE_{i,q} + \gamma_2 NegUE_{i,q} + \gamma_3 During_{i,q} + \gamma_4 After_{i,q} + \gamma_5 Overnight_{i,q} + \gamma_6 (NegUE_{i,q} * UE_{i,q}) \\
 & + \gamma_7 (During_{i,q} * UE_{i,q}) + \gamma_8 (After_{i,q} * UE_{i,q}) + \gamma_9 (Overnight_{i,q} * UE_{i,q}) + \gamma_{10} (During_{i,q} * NegUE_{i,q}) \\
 & + \gamma_{11} (After_{i,q} * NegUE_{i,q}) + \gamma_{12} (Overnight_{i,q} * NegUE_{i,q}) + \gamma_{13} (NegUE_{i,q} * During_{i,q} * UE_{i,q}) \\
 & + \gamma_{14} (NegUE_{i,q} * After_{i,q} * UE_{i,q}) + \gamma_{15} (NegUE_{i,q} * Overnight_{i,q} * UE_{i,q}) + \varepsilon_{i,q}
 \end{aligned}$$

Variable	Coefficient	Coefficient Value	t-statistic	p-value
Constant term	$\gamma_0$	0.00659	8.42	0.000
UE (Surprise scaled by share price)	$\gamma_1$	1.73480	11.98	0.000
NegUE (=1 if surprise is negative)	$\gamma_2$	-0.02000	-13.84	0.000
During (= 1 if released during trading hours)	$\gamma_3$	0.00156	1.19	0.233
After (=1 if released after trading hours)	$\gamma_4$	-0.00238	-1.70	0.089
Overnight (= 1 if released overnight)	$\gamma_5$	0.00082	0.25	0.805
NegUE, UE interaction	$\gamma_6$	-1.36200	-7.22	0.000
During, UE interaction	$\gamma_7$	0.39270	1.63	0.104
After, UE interaction	$\gamma_8$	-0.53590	-2.24	0.025
Overnight, UE interaction	$\gamma_9$	-0.91070	-1.60	0.109
During, NegUE interaction	$\gamma_{10}$	-0.00433	-1.76	0.079
After, NegUE interaction	$\gamma_{11}$	-0.00152	-0.59	0.552
Overnight, NegUE interaction	$\gamma_{12}$	-0.00284	-0.49	0.623
NegUE, During, UE interaction	$\gamma_{13}$	-0.24040	-0.73	0.465
NegUE, After, UE interaction	$\gamma_{14}$	0.90410	2.83	0.005
Neg UE, Overnight, UE interaction	$\gamma_{15}$	1.23620	1.71	0.088
Adjusted R <sup>2</sup> : 3.6%; N = 37,797				

The sample consists of quarterly earnings announcements made on Tuesday, Wednesday or Thursday between 2000 and 2003 by firms with earnings-related data available in the Reuters Forecast Pro database and stock price and return data available from CRSP. Observations from firms with share price < \$1.00 are deleted. The variables in the regressions above are defined as follows.  $RET_{i,q}$  is the announcement return for firm  $i$  in quarter  $q$ , adjusted for the return on the S&P 500 index on the same day;  $UE_{i,q}$  is the earnings surprise for firm  $i$  in quarter  $q$ , calculated as described earlier and scaled by stock price at the end of quarter  $q$ ;  $NegUE_{i,q}$  is a dummy variable that equals one if the earnings surprise for firm  $i$  in quarter  $q$  is negative; and  $During_{i,q}$ ,  $After_{i,q}$  and  $Over_{i,q}$  are dummy variables that equal 1 if firm  $i$  announced during trading, after trading or overnight, respectively in quarter  $q$ . Announcement returns are measured as described in the footnote to Table 3. To mitigate the effect of outliers that might have been created by our scaling by stock price, we delete the top and bottom one-half percent of the scaled earnings surprise observations.

**Regression intercept and ERC calculations on the following page.**

**Regression intercepts and ERCs:**

Regression intercepts and ERCs:

Good news intercepts: Before  $\gamma_0$ , During  $\gamma_0 + \gamma_3$ , After  $\gamma_0 + \gamma_4$ , and Overnight  $\gamma_0 + \gamma_5$ ;

Good news ERCs: Before  $\gamma_1$ , During  $\gamma_1 + \gamma_7$ , After  $\gamma_1 + \gamma_8$ , and Overnight  $\gamma_1 + \gamma_9$ ;

Bad news intercepts: Before  $\gamma_0 + \gamma_2$ , During  $\gamma_0 + \gamma_2 + \gamma_3 + \gamma_{10}$ , After  $\gamma_0 + \gamma_2 + \gamma_4 + \gamma_{11}$ , and  
Overnight  $\gamma_0 + \gamma_2 + \gamma_5 + \gamma_{12}$ ;

Bad news ERCs: Before  $\gamma_1 + \gamma_6$ , During  $\gamma_1 + \gamma_6 + \gamma_7 + \gamma_{13}$ , After  $\gamma_1 + \gamma_6 + \gamma_8 + \gamma_{14}$ , and  
Overnight  $\gamma_1 + \gamma_6 + \gamma_9 + \gamma_{15}$ .