Are Friday announcements special? Overcoming selection bias

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Abstract

We report reduced market response to Friday announcements of dividend changes, seasoned equity offerings, open-market share repurchases, earnings, and mergers, which is seemingly consistent with the notion of investor inattention on Fridays. However, we show that these findings are an outcome of selection bias. Firms that make announcements on Fridays experience reduced market response on any weekday and have common unobserved characteristics across announcement types. After correcting for selection bias, there is no evidence that investors pay less attention to announcements made on Fridays relative to other weekdays. The method introduced here is applicable to other studies in which an exogenous factor influencing firm performance can actually be associated with firm characteristics.

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1. Introduction

There has been continuing debate concerning whether the market efficiently incorporates information in corporate news announcements. There are good reasons to believe that cognitive constraints and limited attention (Kahneman, 1973) influence investors' decisions and even prices in financial markets.[1] The large empirical literature finds that varying investor attention due to firm attributes (e.g., Coval and Moskowitz, 1999; Barber and Odean, 2008; Da, Engelberg, and Gao, 2011) and market-wide phenomena (e.g., Gilbert et al., 2012; Yuan, 2015) affect asset prices, risk premia, volatility, return covariation, liquidity, trading activity, and momentum.

One striking behavioral regularity is investors' inattention on Fridays (DellaVigna and Pollet, 2009; Louis and Sun, 2010). This regularity is explained using the intuition that on Fridays, investors and traders could be preoccupied with the upcoming weekend and, thus, pay less attention to corporate news announcements on that day. This preoccupation should result in a reduced market reaction to announcements that are made on Fridays. Studies investigating this issue report reduced response to earnings announcements (DellaVigna and Pollet, 2009) and merger announcements (Louis and Sun, 2010) on Fridays.

We show that this pattern of investor behavior extends to corporate news events other than earnings and M&A announcements. We find a reduced reaction to announcements of dividend changes, repurchases, and seasoned equity offerings (SEOs) on Fridays. Taken at face value, these combined results present comprehensive and persuasive evidence that investors underreact to events occurring in the market on Fridays, which is consistent with inattention on these days.

The possibility of selection bias considerably complicates the interpretation of results showing reduced market reaction to announcements on Fridays. Such bias may be particularly acute in this instance because of the nature of the selection bias, i.e., firm characteristics influencing the non-random partitioning of the sample into firms that announce on Fridays and

[1] Theoretical models of limited investor attention include Merton (1987), Hong and Stein (1999), Sims (2003), Hirshleifer and Teoh (2003), Peng (2005), Peng and Xiong (2006), Huang and Liu (2007), Mackowiak and Wiederholt (2009), Mondria (2010), Andrei and Hasler (2015).

firms that never do so are unknown. Because the relevant firm characteristics are unknown, techniques such as matching firms, instrumental variables, and Heckman (1976) selection or treatment effect models reduce the extent of the bias but do not fully eliminate it. We show that one can evaluate the severity of the selection problem and then obtain an unbiased measure of the differential reaction to economic variables even without knowing the relevant observed or unobserved firm characteristics. Our method of addressing selection bias borrows from empirical research methodology in the medical and natural sciences (e.g., Chubak et al., 2013; Braga et al., 2012).[2] We employ a two-step procedure that first tests whether the selection bias problem is present. We partition firms into two groups based on whether they have made at least one announcement on a Friday during the sample period (which we call the Friday announcer firms) and then compare the announcement reaction of the Friday announcer firms to that of non-Friday announcer firms on Mondays through Thursdays. This test is analogous to exposing all subjects to a placebo (a Monday-Thursday announcement day) in that market response to Monday-Thursday announcements should not be different between the two firm types, if inattention is associated with Friday rather than firm characteristics.

For all five announcement types, we find that the Friday announcer firms experience a lower market response compared to the non-Friday announcer firms on all weekdays, not only on Fridays. For example, for repurchases, our initial finding that the market reacts 0.5% less to announcements on Fridays seems to indicate Friday inattention; however, the market also reacts 0.6% less to Friday announcer firms' announcements concerning a repurchase program on Mondays through Thursdays. This suggests that Friday announcer firms differ from non-Friday announcer firms and there is nothing special about Friday as an announcement day in terms of its effect on market reaction. The two types of firms (those that have announced on Fridays and those that never announce on Fridays) must have observable and/or unobservable characteristics that make the market react differently to their announcements regardless of the weekday. In

[2] For example, because obesity can be positively associated with both the probability of open appendectomy (vs. minimally invasive appendectomy) and postoperative wound infection rate, it confounds the relation between the surgical approach and wound infection. A selection bias arises if obese patients are overrepresented among the patients of either surgery type. Consequently, in observational studies, a researcher can consider the samples of obese and non-obese patients separately or attempt to statistically control for obesity effects when analyzing the results.

addition, a firm's decision to announce on Fridays is not random and may depend on firm and management characteristics. Thus, a study that overlooks non-random differences between firms will mistakenly attribute a differential response on Fridays to the announcement day rather than to confounding factors—firm characteristics.

We address the selection bias problem by exclusively using the relatively homogeneous sample of the Friday announcer firms.[3] Our tests compare the market response to Friday announcements and non-Friday announcements within the set of Friday announcer firms. This method allows us to avoid the sample selection problem even when the source of the difference between the two groups of firms is unknown. For example, in the full sample, SEO announcements on Fridays elicit a 0.5% less negative market reaction than SEO announcements on other weekdays, which is seemingly consistent with Friday inattention. However, because the Friday announcer firms always induce a smaller announcement reaction, on average, reaction to Friday announcements mechanically appears smaller because it is benchmarked against the sample that unjustifiably includes the non-Friday announcer firms.[4] Based only on the sample of Friday announcer firms, the market reaction to SEO announcements on Fridays is not significantly different from that on other weekdays; thus, with selection bias removed, the market response to Friday SEO announcements does not differ from that to SEO announcements on other weekdays.

An approach that is econometrically equivalent to the homogeneous sample approach is the use of the entire sample and the addition of an indicator (the "Friday Announcer" indicator) of whether the firm is a 'Friday announcer firm' to the model—to proxy for the characteristics that differentiate the Friday announcer and non-Friday announcer firms. In the regression on the full sample of SEOs, for example, the Friday Announcer indicator has a coefficient of -0.6% and is highly significant, and the Friday Announcement indicator is -0.1% and non-significant.

In some cases, the frequency of Friday announcements may better capture the extent of firm heterogeneity in terms of announcement timing and average market response than an

[3] The Friday announcer sample can still have firm heterogeneity in terms of the frequency of announcements on Fridays across firms, which we discuss when we consider earnings announcements.
[4] An analogy is a study of cancer rates caused by the spread of prostate cancer in the body that mistakenly includes both men and women.

indicator variable that differentiates Friday announcers from non-Friday announcers. That is, the Friday announcer group becomes heterogeneous if there are many announcements by each firm—some firms may announce on a Friday only once, while others may make every announcement on Friday. Such heterogeneity is most likely to be found for earnings announcements, as each firm makes many earnings announcements because such announcements are quarterly; thus, some of the Friday announcers made a Friday announcement only once during the sample period, and some made 40 Friday announcements. Indeed, when we use only an indicator of whether a firm is a Friday announcer, we find a reduced response to Friday earnings announcements even within the sample of Friday announcer firms. When we replace the Friday Announcer indicator with the frequency of Friday announcements, however, the evidence for differential reaction to Friday earnings announcements disappears.

We next explore whether firms that make announcements on Fridays have similar characteristics. We initially consider a set of standard observable characteristics but do not find commonality among Friday announcers that is robust across announcement types. In contrast, Friday announcers have common unobserved characteristics—we find that firms are more likely to make announcements on Fridays if they are Friday announcers for other announcement types. Moreover, firms elicit reduced reaction to announcements of a given type on any weekday if they are Friday announcers of one or more of the other announcement types. The prominence of the common unobservable characteristics suggests that it is more practical to test for Friday inattention on a relatively homogeneous sample of Friday announcers rather than to search for observable firm characteristics as controls.

Overall, our most important finding is that the seeming anomaly of a reduced reaction to Friday announcements of earnings, mergers, dividend changes, repurchases, and SEOs is actually unrelated to the day of the week on which the announcement is made. There is no evidence that investors pay less attention to Friday announcements. Rather, we show that the differential reaction is caused by the differences in the characteristics of firms that make Friday announcements and firms that do not make Friday announcements. Furthermore, our study

considers firms that time their announcements across multiple announcement types and proposes a uniform framework to analyze them.

The concept and methodology the paper presents are relevant to other studies. First, the methodological approach and empirical findings illustrate that in studies on announcement timing (e.g., Damodaran, 1989; Bagnoli, Clement, and Watts, 2006; Doyle and Magilke, 2009; deHaan, Shevlin, and Thornock, 2015), Friday or evening announcer firms need to be analyzed as a distinct group, due to their unobserved characteristics, to avoid selection bias. For example, we find that while the frequency of negative dividend and earnings announcements is greater on Fridays, their announcers also have a greater frequency of negative dividend and earnings announcements on other days of the week. Thus, we analyze the Friday announcer firms separately and find that in the bias-free sample, Fridays are not associated with negative news for dividend announcements but tend to contain negative news for earnings announcements.

Second, our method addressing selection bias can also apply to situations other than investor inattention or event studies. The general insight is that a seemingly exogenous variable, such as an announcement attribute, media coverage of the firm, or CEO/director characteristic, whose effect on firm or stock performance is examined, can in fact be a choice made by the firm or simply be linked to firm characteristics. In this case, our method allows for the evaluation and treatment of the potential selection bias. These extensions and possible uses of the methodology are further discussed in Section 6.

The paper proceeds as follows. Section 2 discusses the methodology. Section 3 provides a description of our sample. In Section 4, we conduct tests for announcements of repurchases, SEOs, mergers, dividends, and earnings. Section 5 discusses the robustness of our results. Potential applications of the method are described in Section 6, and Section 7 concludes.

2. Methodology

In testing differential market reaction to announcements on Fridays, we are faced with a problem that is standard in observational studies when firms in the treated and control groups (Friday and non-Friday announcements) differ in observable and unobservable characteristics

that also influence market reaction to corporate announcements, thereby giving rise to a selection bias. When this type of firm heterogeneity is not addressed, one can arrive at the spurious result of a reduced market reaction on Fridays and hypothesize that investor inattention explains this result. To neutralize the effect of selection bias, the common methods used in the literature are the Heckman two-equation method, matching case-control design based on common firm characteristics, and estimation of a regression with various firm characteristics as control variables. These methods only partially resolve the sample heterogeneity concern because they are unable to account for the unobserved confounding characteristics (and, potentially, some observable characteristics for which the data are unavailable) driving the announcement timing decision and differential reaction on Fridays.

To address the potential selection bias problem, we measure the Friday effect using a sample that is relatively homogeneous in terms of both observable and unobservable characteristics associated with selection bias. First, we assess the extent of the sample homogeneity with respect to announcement day by examining whether Friday announcer firms (firms that have at least one announcement on a Friday) induce a weaker market reaction than non-Friday announcer firms (firms that have never made a Friday announcement) on any weekday, not only on Fridays. If we find that the Friday announcer firms differ, we compare the market response to announcements on Fridays and other weekdays made only by the Friday announcer firms; i.e., we work with a sample of firms that is homogeneous in terms of the characteristics determining the decision to announce on Fridays and average market response. The uniqueness of this approach to the selection bias problem is that, here, the "correct" sample is formed at the study *design stage*, while the other techniques (matching, control variables, firm fixed effects) form the sample at the *analysis stage* (Braga et al., 2012; Chubak et al., 2013). Intuitively, non-Friday announcements serve as the matching controls for Friday announcements by the same firm (not organized as matching pairs) based on both observable and, crucially, unobservable characteristics.

There are other techniques with the same objective of controlling for selection bias due to firm heterogeneity, such as a matched sample approach based on a set of firm characteristics and

a two-equation selection model that directly controls for firm characteristics, in which the first step is a discrete choice model for the Friday indicator regressed on firm characteristics. The advantage of our approach is that it does not require a researcher to know specific firm characteristics associated with firms' announcement timing decisions. The firm fixed effects method (whose advantages are emphasized in Gormley and Matsa (2014)) can also be used to control for selection bias when subjects' characteristics are unknown. However, the homogeneous sample approach is the first choice whenever it can be applied. For example, a study would not include human and rat subjects in one sample and use individual fixed effects to control for the differences; rather, it would explicitly distinguish between the two groups by studying them separately. The inclusion of firm fixed effects can also lead to a loss of power if announcements are relatively infrequent for each firm (as in the case of announcements of SEOs, repurchases, dividend changes, and mergers). This problem is exacerbated when firm fixed effects need to be interacted with the explanatory variables, such as the announcement surprise variable (for dividend change and earnings announcements).

We note that both steps of our procedure are possible because most firms in the sample that make a Friday announcement also make announcements on other weekdays. To test for selection bias, one needs in principle only two announcements per firm—one on a Friday and one on another weekday. If a firm announces only on Fridays or only on other weekdays, its announcements cannot be used to measure the differential Friday effect.[5] The percentages of Friday announcer firms that also make announcements on the other weekdays are 98% for earnings, 86% for dividend change, 75% for repurchase, 55% for merger, and 44% for SEO announcements. The firm fixed effects method has a similar implicit requirement that firms make announcements both on a Friday and on another weekday, but it has an additional requirement that the sample has sufficiently more observations than firms because of power considerations.

[5] This situation arises, for example, in the study by Hirshleifer, Lim, and Teoh (2009), who compare market reactions to earnings announcements made on busy and non-busy days, which are defined as the top and bottom deciles of the distribution of the number of announcements per day. Because firms follow a relatively steady earnings announcement calendar, firms that make announcements on the busiest days almost never make an announcement on the least busy days. This feature of the data does not allow for testing, as our first step would allow, whether firms of the most busy day type differ from firms announcing on the least busy days in terms of their reaction to announcements.

3. Data

We collect data on the day of the week of corporate announcements of repurchases, SEOs, mergers, dividend changes, and earnings. Following DellaVigna and Pollet (2009) and Louis and Sun (2010), our measure of market reaction to the announcements is the two-day buy-and-hold abnormal return over the announcement day (day 0) and the next trading day (day 1) for all announcement types except repurchases. For repurchases, we use three-day abnormal returns, days -1 to 1, which is standard in the literature (e.g., Grullon and Michaely, 2004; Babenko, Tserlukevich, and Vedrashko, 2012) because a large portion of announcement reaction is observed on day -1 for repurchase announcements. Daily stock returns are from the Center for Research in Securities Prices (CRSP). The sample period is 1995-2010 for all datasets except mergers, for which the period of 1994-2006 is used, as in Louis and Sun (2010), and earnings, for which the period of January 1995 - June 2006 is used, as in DellaVigna and Pollet (2009). The objective is to make our initial results comparable to and revisit these prior studies in the context of testing for selection bias on the same data. Abnormal returns are calculated using the four-factor Fama-French (Fama and French, 1993) and momentum (Carhart, 1997) models, except for the earnings announcement analyses, where we follow DellaVigna and Pollet, who use the market model. We confirm that all results of the paper are qualitatively the same across both four-factor and market models and for the 1995-2010 period.

The repurchase dataset consists of U.S. firms' announcements concerning open-market share repurchase programs, collected from the Thomson One Banker database. Only repurchase announcements regarding common stock whose share price is above one dollar are included in the sample. The data on SEO announcements are obtained from the Thomson SDC database and consist of common stock offerings by U.S. public firms that include at least some portion of primary shares. Only announcements of SEOs with a filed amount greater than $25 million and stock prices greater than $1 are included in the sample.

We construct the sample of merger announcements following the criteria used in Louis and Sun (2010). We use the Thomson SDC database and include mergers in which the acquirer

is a public firm with a transaction value greater than $5 million and at least 50% of the transaction is financed by stock. We only include firms in the sample if data on total assets, net income, common equity, and common shares outstanding are available on Compustat for each merger announcement. Following Louis and Sun (2010), we distinguish between merger announcements in which the target is a private or public firm because of the different market reactions between them.

We gather all dividend announcement dates from CRSP. A dividend change is calculated as the difference between consecutive dividend amounts per share normalized by the stock price at the end of the month prior to the announcement (Li and Lie, 2006; Benartzi, Michaely, Thaler, 1997). For a dividend change to be included in the analysis, we require (a) three equally spaced dividend announcements prior to the current dividend (between 60 and 120 calendar days for quarterly dividends, between 120 and 240 calendar days for semi-annual dividends, and between 300 and 420 calendar days for annual dividends) and (b) a non-zero dividend change dollar amount. We then use only dividend changes for which we have CRSP data to calculate abnormal returns, whose first digit of the share code is 1 (i.e., common shares) and market capitalization is above $5 million. Dividend announcements are sorted by their dividend change into five equally sized negative and five equally sized positive groups. Groups 1-5 and 6-10 contain announcements with negative and positive dividend changes, respectively, with group 1 containing the most negative dividend changes and group 10 containing the most positive dividend changes.

For earnings announcements, we follow the procedures of DellaVigna and Pollet (2009). Earnings announcement dates for the original DellaVigna and Pollet sample period are computed based on the Institutional Brokers' Estimate System (I/B/E/S) and supplemented by Compustat. Standardized unexpected earnings (SUE), measuring earnings surprise, are the difference between announced earnings-per-share and the median analyst forecast as reported by the I/B/E/S Summary file, normalized by the stock price five trading days prior to the announcement date. Earnings estimates and actual earnings are adjusted for splits using the daily cumulative adjustment factor from CRSP (Glushkov and Robinson, 2006). Following DellaVigna and Pollet,

we sort earnings announcements into eleven groups based on SUE (five equally sized positive SUE groups, one zero SUE group, and five equally sized negative SUE groups) each year.

Table 1 summarizes the numbers of observations and firms for announcements on each weekday. If announcements were uniformly distributed across weekdays, the expected frequency of Friday announcements would be 20%. However, holidays may make the distribution less uniform, so we first calculate the actual distribution of trading days. The fractions of Fridays among trading days are 19.98% during the 1995-2010 period (the SEO, repurchase, and dividend samples), 20.04% during the 1994-2006 period (the mergers sample), and 19.99% during the 1995-2006 period (the earnings sample). We account for this actual distribution in z-tests comparing the proportion of announcements that occurred on a Friday with the proportion of Fridays among trading days. The proportion of Friday announcements regarding repurchases, mergers, and dividends is 13%-15%, which is significantly different from the proportion of Fridays among trading days. There are also much fewer earnings announcements on Fridays, 6.2% of the sample, but significantly more SEO announcements on Fridays, 26.9% of the sample. The table also reports the fraction of firms that are Friday announcers, for example, 27.1% and 41.6% of firms are Friday announcers of repurchases and earnings, respectively. The average number of announcements per firm is approximately 2 for repurchases, SEOs, and mergers, 5 for dividends, and 17 for earnings.

For earnings and dividends, the table reports the distribution of positive and negative news across weekdays, and we test whether Fridays are dominated with negative news relative to other weekdays for announcements of these types (see also Damodaran, 1989). This appears to be the case. We find that the proportion of dividend cuts on Fridays (20.8%) is significantly greater than the proportion of dividend cuts on Monday-Thursday (18.4%), with a z-statistic of 2.78 for the difference. Similarly, the proportion of negative earnings surprises is significantly higher on Fridays (34.4%) than on other weekdays (29.8%), with a z-statistic of 20.11. Importantly, this announcement day pattern may actually be due to announcing firms' characteristics. Consistent with the firm characteristic explanation rather than the event day explanation, Friday dividend announcers have a much higher propensity to announce dividend

cuts than non-Friday dividend announcers on any weekday rather than just on Fridays: the Friday announcers' frequency of dividend decreases on Monday-Thursday is 22.7% vs. 15.3% for the non-Friday announcers, with a z-statistic of 11.16 for the difference. Friday earnings announcers also tend to have a higher proportion of negative news compared to non-Friday announcers on Monday-Thursday (33.1% vs. 29.8%, and a z-statistic of 14.2). Thus, we use the samples of the Friday dividend and earnings announcer firms, which are relatively homogeneous with respect to firm characteristics, and find that the proportions of negative dividend announcements on Fridays and other weekdays are 20.1% and 22.7%, respectively, and the proportions of negative earnings announcements on Fridays and other weekdays are 43.9% and 33.1%, respectively. The corresponding z-tests indicate that dividend cuts are actually announced somewhat less often on Fridays than on other weekdays (a z-statistic of 1.85), while negative earnings news is more common on Fridays than on other weekdays (a z-statistic of 21.8). Comparing our results corrected for selection bias to those of Damodaran (1989), who reports a higher frequency of negative dividend and earnings announcements on Fridays relative to other days of the week, we conclude that only the predominantly negative earnings news on Fridays is a robust economic phenomenon, but the greater proportion of negative dividend news on Fridays is a firm-specific effect rather than an announcement day effect. In the next section, we proceed with testing whether market reaction to these announcements is different on Fridays.

4. Firm heterogeneity and the reduced reaction to corporate announcements on Fridays

In this section, we present our tests of reduced reaction to Friday announcements of repurchases, SEOs, mergers, dividend changes, and earnings. For each announcement type, we first report the initial finding of reduced reaction on Fridays. Next, we conduct our two-step analysis addressing the selection bias problem. In the first step, we examine whether the Friday reduced reaction results are influenced by firm heterogeneity, leading to selection bias. In the second step, we test the presence of reduced reaction on Fridays on the samples of Friday announcer firms, which are relatively homogenous with respect to firm characteristics leading to

the bias. Following an alternative procedure, we use the sample of all firms and include an announcement day (Friday) indicator and firm type (Friday Announcer) indicator variables in the same regression. The section concludes with the analysis of firm characteristics that are common among Friday announcers of different announcement types.

4.1. Stock repurchases

Prior research (e.g., Grullon and Michaely, 2004) shows that announcements of stock repurchases convey information regarding stock price undervaluation and positive news about reduction in agency costs, which lead to a positive announcement reaction, on average. Our regression results for repurchases are presented in columns (1)-(4) in Table 2; the dependent variable is the three-day abnormal return centered on the repurchase announcement date. Consistent with the literature, the average share repurchase announcement return hovers around 2.2%. In column (1), the Friday indicator, which equals one if the announcement is made on a Friday and zero otherwise, is negative and significant. The intercept of the regression reveals that the average reaction to a non-Friday announcement is 2.20%, and it is smaller by 0.50% (by nearly one-quarter) if the announcement is made on a Friday.[6] This result is consistent with the notion of inattention to Friday news announcements.

To examine the extent of sample heterogeneity, we restrict the sample only to announcements made on Mondays through Thursdays. We then run the regression with the Friday Announcer indicator, which equals one if the firm has made at least one Friday repurchase announcement and zero otherwise. The results are reported in column (2). The negative significant coefficient on Friday Announcer indicates that the market reaction to these firms is smaller on all weekdays, which suggests that the result in column (1) is subject to selection bias and that the Friday announcement day itself may not be the cause of the initial result in column (1).

[6] Because our method addresses selection bias at the sample design stage, the regressions do not include control variables, which would represent the analysis stage approach to correcting for selection bias. Both observed and unobserved firm characteristics are analyzed in section 4.6. In the untabulated results, we verify that the conclusions for both steps of our analysis in Table 2 and Tables 3-5 for the other announcement types are unaffected by the inclusion of firm characteristics in the regressions.

Therefore, we use a relatively homogeneous sample of Friday announcer firms only and compare the announcement reaction of these firms when they announce on Fridays to the market reaction to when they announce on other days of the week. As reported in column (3), the Friday indicator is not significant; thus, there is no evidence of reduced reaction to repurchase announcements on Friday.

Finally, we use an alternative procedure. Column (4) reports the results when using the entire sample (both the firms that announced on Friday and those that did not) and including both the Friday indicator and the Friday Announcer indicator. In essence, the latter procedure combines the analysis reported in columns (2) and (3). The intercept of 2.3% is the average reaction to repurchase announcements made by the non-Friday announcer firms, the coefficient on Friday Announcer is the marginal effect on returns by the Friday announcer firms on Mondays-Thursdays (the same as in column (2)), and the coefficient on Friday is the marginal effect of the Friday announcer firms on returns on Fridays (the same as in column (3)). The results of the full sample analysis show that the Friday indicator is not significant when the Friday Announcer indicator is included. That is, when accounting for selection bias, there is no evidence to support the notion that investors pay less attention to repurchase announcements made on Fridays.[7]

4.2. Seasoned equity offerings

Announcements of primary SEOs can be a signal of the firm's stock overvaluation (Myers and Majluf, 1984). Therefore, in contrast to repurchases, SEOs are associated with negative announcement returns (Asquith and Mullins, 1986; Denis, 1994; Jung and Stulz, 1996; Walker and Yost, 2008). Table 2, column (5), shows that the Friday indicator is positive and significant, suggesting a reduced negative reaction on Fridays compared to other weekdays for the full sample. The intercept reveals that the average reaction to non-Friday announcements

[7] We also consider announcements of fixed-price tender offers, Dutch auction, and privately negotiated repurchases. In these categories, which comprise less than 9% of all repurchase announcements, we do not find the initial result of reduced market reaction on Fridays. Extending the sample back to 1985, to capture the period when open-market repurchases were less dominant, does not alter this conclusion. The only statistically significant finding is that Friday announcers of tender offer repurchases have a reduced reaction on Mondays through Thursdays.

is -2.2%, and it is 0.4% less negative for announcements made on Fridays. This result can be interpreted as reduced reaction and investor inattention to SEO announcements on Fridays. However, as shown in column (6), when we restrict our sample to non-Friday announcements, we obtain a coefficient of 0.006 on the Friday Announcer indicator. This result means that market reaction to announcements by the Friday announcer firms is smaller both on Fridays and other weekdays, suggesting that there is selection bias in the base regression (column (5)).

Therefore, in column (7), we account for selection bias by using the relatively homogeneous sample of only the Friday announcer firms and find that the Friday indicator is not significant. We conclude that there is no evidence of reduced reaction to Friday SEO announcements when we use a sample corrected for selection bias. The analysis on the sample of all firms in column (8) accounts for selection bias by including the Friday Announcer indicator and shows a non-significant Friday indicator and a significant Friday Announcer indicator, thereby reiterating the conclusion that there is no differential reaction to SEO announcements on Fridays and, thus, no evidence of investor inattention.

4.3. Mergers

Past studies show that acquisitions involving stock swaps are associated with a negative reaction for the acquirer when the target is a public firm and a positive reaction when the target is a private firm (e.g., Louis, 2005; Moeller, Schlingemann, and Stulz, 2005). Furthermore, Louis and Sun (2010) suggest that whether the target firm is private or public is the single most important determinant of the acquirer's abnormal return on the announcement day. If investors pay less attention to Friday merger announcements, one should expect a less negative reaction to stock swap mergers involving public targets and a less positive reaction to stock swap mergers involving private targets.

In Table 3, columns (1) and (2), we begin by replicating the results of Louis and Sun (2010). Consistent with Louis and Sun, our results show a smaller market response on Friday for public and private target swap acquisitions. For instance, the regression in column (1) shows that the average non-Friday reaction (the intercept) is -2.5% for acquisitions involving public firms,

and it is 1.1% less negative (an approximately 45% smaller reaction) for announcements on Fridays. As with the repurchase and SEO analyses, in columns (3) and (4), we examine the differential price response to non-Friday merger announcements by Friday announcer firms compared to non-Friday announcer firms using the Friday Announcer indicator. We find a reduced reaction to merger announcements by the Friday announcer firms on these weekdays, implying that these firms differ from firms that have never announced on a Friday. This evidence of selection bias raises doubts about the interpretation of the results in columns (1) and (2). Thus, in columns (5) and (6), we estimate the model in columns (1) and (2) on the relatively homogeneous sample consisting of only Friday announcer firms, which corrects for selection bias at the sample design stage, and find that the Friday indicator is not significant.

As shown in columns (7) and (8), in the sample of all announcements, selection bias is accounted for by including the Friday Announcer indicator. Friday announcer firms have a 0.9% less negative and 0.7% less positive response for mergers with public and private targets, respectively, while the Friday indicator is not significant. We conclude that there is no evidence of the original finding of reduced reaction and investor inattention to merger announcements on Fridays after correcting for selection bias.

4.4. Dividend changes

We proceed by analyzing the reaction to dividend change announcements. Market response to a dividend change announcement is expected to be associated with the magnitude of the dividend change. We therefore partition the sample of announcements into ten groups sorted by the magnitude of dividend change, five groups for negative changes and five for positive changes, as described in the Data section. We begin with a regression based on the sample of only the top two and bottom two groups, representing the largest positive and negative dividend changes, respectively, for which the differential market reaction should be the greatest. Then, we repeat this estimation for the full sample including all dividend change groups.

The model we estimate is analogous to the models in DellaVigna and Pollet (2009) and Hirshleifer, Lim, and Teoh (2009),

$$R_{t,k} = \beta_0 + \beta^F I^F_{t,k} + \beta^{gr} d^{gr}_{t,k} + \beta^{gr,F} d^{gr}_{t,k} \times I^F_{t,k} + \varepsilon_{t,k} \quad (1)$$

where $R_{t,k}$ is the abnormal announcement return for company k in quarter t, $I^F_{t,k}$ is an indicator that equals one if the announcement is made on a Friday and zero otherwise, and $d^{gr}_{t,k}$ is the dividend change group (i.e., an integer between 1 and 10). Note that the Friday indicator enters the regression twice: as a standalone indicator that captures differences in average returns between Friday and non-Friday announcements without taking into account the magnitude of the dividend change signal in these announcements and as an interaction with the dividend change group, capturing the sensitivity of the market response to the magnitude of the dividend change on Fridays versus other weekdays. This interaction is the variable of interest in testing for a differential reaction to dividend changes on Fridays because it allows for a comparison of market reactions across weekdays for the same magnitude of dividend changes. The coefficient $\beta^{gr,F}$ on the interaction term will be negative if there is a reduced reaction to Friday announcements compared to announcements on other weekdays. For the regression on the top two and bottom two groups of dividend changes, the dividend change group variable ($d^{gr}_{t,k}$) is replaced with an indicator variable that equals one if the dividend change is in the top two groups and zero if it is in the bottom two groups.

The negative coefficients on the Friday-Dividend Change Group cross-terms in Table 4, columns (1) and (2), indicate that the average reaction to announcements of similar-sized dividend changes is smaller on Fridays than other weekdays, although the coefficient is only marginally significant in column (1). In columns (3) and (4), we test for selection bias using the Friday Announcer indicator in the regression for dividend change announcements made on Mondays through Thursdays. The coefficients on the Friday Announcer interaction variables are -0.007 and -0.001 in the top two groups and all dividend change group regressions, respectively. These coefficients are remarkably similar to those obtained for the Friday interaction variables in columns (1) and (2). This result implies that firms that announce dividend changes on Fridays

have different characteristics than firms announcing them on other weekdays, which suggests selection bias in the results in columns (1) and (2).

Next, as done for the previous three announcement types, we estimate the model only on the homogeneous sample of Friday announcer firms in columns (5) and (6) of Table 4. In contrast to the model estimated on the heterogeneous sample in columns (1) and (2), the interaction terms with Friday are now not significant, leading to the conclusion that there is no evidence of reduced reaction and market inattention to dividend changes announced on Fridays. Columns (7) and (8) report the estimation results on the sample of all announcements and include indicators and cross-terms for both Friday and Friday Announcer. Because this model combines the analysis in columns (3)-(4) and (5)-(6), the cross-term estimates in columns (7) and (8) are the same as the corresponding cross-term estimates in the previous four columns, i.e., they follow the same pattern as in Table 3 for mergers.[8]

Finally, since market reaction is not necessarily linear across different magnitudes of dividend changes, particularly, between dividend increases and dividend cuts, we use two additional specifications for the dividend change variable in untabulated results. First, we replace Dividend Change Group with two dummies—for dividend increases and decreases—while these firms' declarations with zero changes are added to the sample as the baseline category. Based on the joint F-tests of these two dummies with the Friday and Friday Announcer cross-terms, we initially find reduced reaction on Fridays. However, because Friday announcers also exhibit a reduced reaction on Monday-Thursday in the model with the positive and negative dividend change dummies, the initial reduced reaction disappears after controlling for Friday Announcer. Second, we replace Dividend Change Group with ten indicator variables for the ten dividend groups. The F-test results for the joint significance of these indicators' cross-terms with Friday or Friday Announcer are also very similar to the results with Dividend Change Group in Table 4.

4.5.Earnings

[8] We also extend the sample period back to 1963. There is no evidence of reduced reaction on Fridays in the earlier period.

Finally, we consider earnings announcements and conduct an analysis of announcement returns, which DellaVigna and Pollet (2009) find are reduced on Fridays and attribute to investors' inattention. Figure 1 reproduces DellaVigna and Pollet's result (shown in their Figure 1a) using the same sample time period of January 1995 to June 2006. The figure shows that the slope of the reaction line across SUE groups is flatter for announcements on Fridays than those on other weekdays. Columns (1) and (2) in Table 5, Panel A, replicate the key regression results of DellaVigna and Pollet for the top two and bottom two SUE groups and for all SUE groups, respectively. The model's structure is identical to that of our model for dividend changes set forth in equation (1) and that of the model in DellaVigna and Pollet. The coefficients on the Friday interaction term are negative and significant at 1%, which indicates a reduced reaction to Friday announcements.

Columns (3) and (4) of Panel A provide regression results for our selection bias test, in which we compare market reactions to Monday through Thursday announcements by Friday announcer firms and non-Friday announcer firms. As for the other four announcement types, the reduced reaction to announcements by the Friday announcer firms is present on all weekdays, not only Friday, as indicated by the highly significant negative coefficients -0.005 and -0.001 on the Friday cross-terms in columns (3) and (4). This difference in market reaction to Friday announcer firms indicates the original finding of reduced response on Friday is at least partially due to selection bias rather than the day of the week on which the announcement is made.

The second step of our approach is to estimate the original model based on the sample of Friday announcer firms. The reasoning behind this procedure is that this sample should be homogeneous with respect to firm characteristics that cause selection bias in the original estimation. The sample of Friday announcer firms exhibits a large cross-sectional variation in the number of Friday announcements per firm, ranging from one to 44 announcements per firm. This variation is likely to be correlated with firm characteristics, which further complicates the nature of the selection bias. A firm that made only one announcement on a Friday may be different than a firm that made 44 Friday announcements. Merely relying on the Friday announcer firm sample (or the Friday Announcer indicator in the alternative full-sample model) does not preclude the

possibility that there is a systematic relationship between a firm's number of announcements on Friday and average announcement reaction on any weekday, which can lead to selection bias even within the Friday announcer firm sample.

Panel B of Table 5 implements the homogeneous sample approach accounting for selection bias by first using only the Friday Announcer indicator (columns (1)-(4)) and then using the frequency of Friday announcements (columns (5)-(6), illustrated in Figure 2). We find a reduced reaction to Friday announcements according to the Friday-SUE cross-term coefficients in the sample of the Friday announcer firms in columns (1) and (2) and after including the Friday Announcer indicator in the sample of all firms in columns (3) and (4). We note that defining the homogeneous sample based on the Friday Announcer indicator mitigates the selection bias problem and results in non-significant coefficients on the Friday cross-terms. For example, Friday × Top Two SUE Groups has a coefficient of -0.007 and a t-statistic of -2.94 in Panel A, column 1, which becomes -0.005 with a marginally significant t-statistic of -1.82 in Panel B, column 1.

Next, we refine the correction for selection bias following the conjecture that the frequency of announcements on Fridays can capture the unknown firm characteristics associated with the likelihood of announcing on a Friday and associated announcement reaction. We define this frequency as the number of announcements on Fridays divided by the total number of announcements during the sample period. In Figure 2, we observe that firms with relatively frequent announcements on Fridays experience smaller market responses on any weekday. The frequent (infrequent) announcers on Fridays are defined as firms in the top (bottom) quartile of the distribution of the Friday announcement frequency (the top quartile corresponds to a greater than 9.1% frequency of announcements by a firm on Fridays, and the bottom quartile corresponds to zero announcements on Fridays in the full sample of firms). This figure is built for the full sample, and the same result is obtained in figures for the Monday-Thursday subsample and the Friday announcer subsample. The smaller market reaction for frequent Friday announcers is also reported in the regressions in columns (5) and (6) of Panel B in Table 5, which use the sample of all firms and replace the Friday Announcer indicator (in the same model

in columns (3) and (4)) with the Friday Announcement Frequency variable. The coefficients on the cross-terms with the Friday Announcement Frequency are -0.036 and -0.005 for the top/bottom two SUE groups and all SUE groups, respectively. These findings indicate heterogeneity among Friday announcer firms and that using the frequency of Friday announcements is necessary to resolve the selection bias problem, which remains in columns (1)-(4) of Panel B. Therefore, the key finding in columns (5) and (6) that include Friday Announcement Frequency is that the coefficients on the cross-terms with Friday are not significant. This indicates that earnings announcements on Fridays do not yield a reduced market reaction. The same finding is obtained if the regressions in the two columns are estimated on the sample of the Friday announcer firms (untabulated).[9]

In Panel C of Table 5, we strengthen the conclusions of Panel B with two other methods. Columns (1) and (2) show that there is no reduced reaction on Friday in the sample of all announcements after controlling for industry fixed effects and the control variables used in DellaVigna and Pollet; the same lack of evidence of reduced response is reported in regressions with firm fixed effects (columns (3) and (4)).[10] In contrast to the first two columns of Panel A, representing the same sample, the cross-terms capturing the Friday effect in Panel C are all insignificant. Similar results are obtained with these controls and firm fixed effects in the Friday announcer firm subsample (untabulated). The results strongly suggest that firm characteristics are associated with firms' propensity to make announcements on Friday that drive the finding of reduced reaction on Friday rather than the day of the week effect. We conclude that the hypothesis of investor inattention to Friday earnings announcements does not have empirical support when accounting for selection bias.[11]

[9] The distribution of the frequency of Friday announcements is immaterial for the other announcement types, which have, on average, few announcements (except dividend change announcements) per firm according to Table 1. In the model for dividend changes that includes all firms and the frequency of dividend announcements variable, we obtain the same result as that found with the Friday dividend announcer variable, i.e., the cross-terms with Friday are non-significant.

[10] The controls are the deciles of market capitalization and year and month indicators. Each of the controls enters the regression twice, once as a standalone variable and once interacted with the SUE group $d_{t,k}^{gr}$, as in DellaVigna and Pollet. This interaction controls for the possibility that the control variable, besides Friday as an announcement day, is associated with the reduced reaction to the earnings surprise.

4.6. The commonality among Friday announcers across announcement types

Our finding of a reduced market reaction for Friday announcer firms for each announcement type considered separately leads naturally to a hypothesis that Friday announcers of all announcement types can have common observed and unobserved characteristics. The testable implications of this hypothesis are that, first, a firm that is a Friday announcer in one announcement type is likely to be a Friday announcer in other announcement types and, second, that such a firm can induce a reduced market reaction in those announcement types.

Table 6 provides summary statistics for observed characteristics such as firm size, book-to-market, institutional ownership, number of analyst earnings forecasts, and leverage (subsets of which are used as control variables in Louis and Sun (2010), DellaVigna and Pollet (2009), and Hirshleifer, Lim, and Teoh (2009)). For each announcement type, the table compares the average characteristics of Friday announcer and non-Friday announcer firms. The firm-level observations over which means and medians are calculated are obtained by averaging the characteristics over time for each firm. In addition to the analysis of firm-level observations in Table 6, we repeat this analysis based on announcement-level observations, i.e., without aggregating them by firm. The test results are very similar to those presented in Table 6.

Overall, no regular pattern of differences between the two firm types emerges across all five announcement types. We note that differences in characteristics across announcement types are much larger than differences in characteristics between Friday and non-Friday announcers within a type. For example, the dividend change sample includes much larger firms compared to the SEO sample. For several announcement types, Friday announcers have less institutional ownership, fewer analysts' earnings forecasts, and higher leverage. The first two regularities imply that firms making Friday announcements can be described as less visible, but this cannot be generalized across all announcement types.

In addition to considering observed characteristics, we test whether Friday announcer firms have common unobserved characteristics. For instance, the Friday announcer firms can differ in unobserved characteristics such as a lack of glamour (Barber and Odean, 2007) or CEO preferences. The hypothesis that Friday announcers have common characteristics implies that a

Friday announcer of one announcement type is likely to make Friday announcements (i.e., be a Friday announcer) of other announcement types. In Table 7, we conduct a probit analysis of whether Friday announcements for a given announcement category are more likely if a firm is a Friday announcer for at least one of the four categories other than the category under consideration. The indicator variable for being a Friday announcer for the other types is defined separately for observations of each announcement type: for example, for repurchase announcements in column (1), it is equal to one if the firm has made Friday announcements in one or more of the other four announcement types; thus, the variable name is *Friday Announcer Not Repurchases*. In the full sample in column (6), the *Friday Announcer of Other Types* indicator is specific to the observation's announcement type in that it is equal to one if the firm is a Friday announcer of announcement types other than the announcement type of this observation.

To study commonalities across multiple announcement types (Tables 7 and 8), the sample naturally comprises only firms that make announcements of more than one announcement type. This constitutes 80% of firms in the initial sample combining the five announcement types. Specifically, firms that make announcements of two, three, four, and five announcement types represent 29%, 30%, 17%, and 4% of all firms, respectively.

In Table 7, we find that Friday announcer firms have common unobserved characteristics—firms are more likely to announce on Fridays if they also make Friday announcements regarding the other categories. This relationship is found for each announcement type except mergers and in the full sample consisting of all announcement types in column (6). Among the observable firm characteristics, the number of analyst forecasts, institutional ownership, book-to-market, and leverage are significant predictors for earnings announcements, in contrast to the other announcement types, where none or only one of these variables is significant. The fact that these firm characteristics appear to be good predictors of the announcement day only for earnings may be due to the much bigger sample size of earnings announcements. For example, if we estimate the model in column (5) on 10,000 randomly drawn earnings announcements and repeat this procedure 100 times, the five firm characteristics are non-significant in all draws, but the indicator for the unobserved common characteristics always

remains significant. Similarly, if we run the model on the combined sample of columns (1)-(4), only the number of analysts and leverage are weakly significant, but the indicator for the unobserved common characteristics has a very high statistical significance. Together, these results suggest that it is insufficient to describe these five observed characteristics as common among Friday announcers. Because the indicators for the common characteristics that are unobserved or not included in the model are significant in all specifications and for all announcement types, we conclude that firms that make different types of announcements on Fridays tend to have common characteristics, most of which are unobservable. This result highlights an advantage of the method we use to correct for selection bias in that it does not require a researcher to determine all relevant observable firm characteristics in the analysis.

The second testable implication of the hypothesis that Friday announcer firms have common characteristics across announcement types is that these characteristics can be expected to lead to a relatively smaller market reaction to announcements of all types by these firms. In Table 8, Panel A, we regress the immediate market reaction to all five announcement types on the *Friday Announcer of Other Types* indicator variable used in Table 7 and the observable firm characteristics. Because the model for dividends and earnings must include the surprise variable and its cross-terms with firm characteristics, the model for these announcement types has to be estimated separately from repurchases, SEOs, and mergers. The model for repurchases, SEOs, and mergers is

$$|R_{t,k}| = \beta_0 + \beta^{FA} I_{t,k}^{FA} + \beta^{FAO} I_{t,k}^{FAO} + \sum_{i=1}^{5} \beta_i X_{t,k}^{i} + \varepsilon_{t,k} \qquad (2)$$

where $|R_{t,k}|$ is the absolute value of the abnormal announcement return for company k in quarter t, $I_{t,k}^{FA}$ is the *Friday Announcer* indicator that equals one if the firm is a Friday announcer in the announcement type of this observation and zero otherwise, $I_{t,k}^{FAO}$ is the *Friday Announcer of Other Types* indicator that equals one if the firm is a Friday announcer of announcement types other than the announcement type of this observation, and $X_{t,k}^{i}$ are the control variables (firm size, number of analysts, institutional ownership, book-to-market, and leverage). These three announcement types can be estimated together because we use the absolute value of market reaction, so that a reduced market reaction would be determined by a negative coefficient on a

firm characteristic regardless of the announcement type (recall that without taking the absolute value of the dependent variable, a reduced reaction was reflected by positive coefficients for SEO and public target mergers in Tables 2 and 3). Here, β^{FAO} is the coefficient of interest. The model for dividends and earnings adds the cross-terms with surprise groups:

$$R_{t,k} = \beta_0 + \beta^{FA} I_{t,k}^{FA} + \beta^{FAO} I_{t,k}^{FAO} + \beta^{gr,FA} d_{t,k}^{gr} \times I_{t,k}^{FA} + \beta^{gr,FAO} d_{t,k}^{gr} \times I_{t,k}^{FAO} + \sum_{i=1}^{5} \beta_i X_{t,k}^{i} + \sum_{i=6}^{10} \beta_i d_{t,k}^{gr} \times X_{t,k}^{i} + \varepsilon_{t,k} \quad (3)$$

where $d_{t,k}^{gr}$ is the *Surprise Group*, which is the *Dividend Change Group* for dividend change announcements and *SUE Group* for earnings announcements, and the other variables are the same as in equation (2). The coefficient of interest here is $\beta^{gr,FAO}$.

The coefficients on the *Friday Announcer of Other Types* indicator in columns (1) and (2) and its cross-terms with Surprise Group in columns (3) and (4) of Table 8, Panel A, are negative and significant, implying that Friday announcer firms differ from non-Friday announcer firms in that they induce a lower market reaction regardless of the announcement type. Importantly, this effect is found in addition to the effect of the Friday announcer indicator in the same regressions. These results reinforce the conclusions of the first step of our approach controlling for selection bias for individual announcement types in Tables 2-5. Note that to maintain the analogy with the first step of our method, the results in Table 8 are for Monday-Thursday announcements. The statistical significance of the coefficients of interest is increased if Friday announcements are included in the sample.

In Panel B of Table 8, we replace *Friday Announcer of Other Types* in equations (2) and (3) with two alternative specifications of a variable that can capture the unobserved characteristics that are common among all Friday announcer firms. *Universal Friday Announcer* represents the number of announcement types in which a firm is a Friday announcer; this variable takes values between 0 and 5. The second variable we use for unobserved common characteristics of Friday announcers is the frequency of Friday announcements of all types made by the firm, defined as a ratio of the number of announcements on Fridays to the total number of announcements by this firm. The coefficients on these variables and their cross-terms with SUE are negative and significant. The explanatory power of these two variables is so high that the

cross-terms of the Friday Announcer indicator with SUE become insignificant in columns (3) and (4).

In the untabulated results, we test several other definitions of the variables capturing unobserved common characteristics of Friday announcers in Panel B. We consider four definitions of the Universal Friday Announcer indicator, equal to one if a firm is a Friday announcer of at least two, three, four, and five announcement types. The statistical significance of these indicators in all columns increases in the degree of a firm's association with announcing on Fridays. We also use the ratio of the number of announcement types for which the firm is a Friday announcer to the number of announcement types the firm makes. Finally, we note that the frequency of Friday announcements variable is mostly driven by the frequency of Friday earnings announcements (the most common announcement type). From this perspective, an advantage of the Universal Friday Announcer indicators is that, unlike the frequency of Friday announcements, they do not depend on the relative sample sizes of different announcement types. To verify that the frequency of all (not just earnings) Friday announcements captures the unobserved common characteristics, we split Frequency of Friday Announcements into Frequency of Friday Earnings Announcements and Friday Announcer Not Earnings, which was used in Table 7. The results for these definitions are very similar to those in Panel B in that the coefficients on all of these variables are negative and highly significant.

5. Robustness: An alternative definition of a Friday announcer

In our study, a firm is considered a Friday announcer firm (i.e., Friday Announcer equals one) for all its announcements if it makes at least one announcement on a Friday at *any time* during the sample period. This definition may be perceived as forward-looking in that one can argue that a firm is not a Friday announcer until it has made a Friday announcement; consequently, a possible alternative definition can be to classify announcements made before the firm's first Friday announcement as those made by a non-Friday announcer firm. We believe the former definition, which we have used in the paper thus far, is most appropriate for the following three reasons. First, the fact that a firm made one or more announcements on past Fridays is not

what affects investors' reaction to the firm's future announcements—firm characteristics affect this reaction. Second, firm characteristics are likely to be unaffected by the first Friday announcement itself.[12] Third, until the first Friday announcement occurs, the alternative, non-forward-looking Friday announcer measure mis-categorizes some Friday announcer firms as non-Friday announcers due to a lack of information about the Friday announcement history of the firms. Fourth, from a practical perspective, the non-forward-looking definition greatly reduces the number of announcements in the Friday announcer firm sample, as the announcements prior to the first announcement on a Friday are excluded, thereby making it difficult to compare market reaction on different weekdays in this relatively homogeneous sample of firms.

Notwithstanding these arguments, we conduct a robustness check and use the alternative definition of a Friday announcer firm—the Friday Announcer indicator equals one starting from the date of the firm's first announcement on a Friday during the sample period—in Tables 2, 3, and 4 for repurchases, SEOs, mergers, and dividend changes, respectively. These untabulated results are qualitatively similar to those presented in Tables 2, 3, and 4. For example, for repurchase announcements, the coefficient on the non-forward-looking Friday Announcer indicator remains -0.006, as in column 2 of Table 2, while its t-statistic declines to -2.82. In the second step of our method, the coefficient on Friday in the non-forward-looking Friday announcer sample is also virtually unchanged from that in column 3 of Table 2 and remains non-significant.

Similar considerations are pertinent to the frequency of earnings announcements on Friday. An alternative frequency measure is a dynamic, non-forward-looking measure—for each announcement, one can count the number of the firm's announcements on Fridays prior to this announcement's date. The dynamic frequency measure built in this manner suffers from the absence of the Friday announcement history before the beginning of the sample period—it misleadingly starts from zero for Friday announcers. Building this history with announcement

[12] In general, if firm characteristics associated with the decision to announce on Fridays and announcement reaction change over time, the effectiveness of a constant Friday Announcer indicator in controlling for firm characteristics is reduced, as is the effectiveness of firm fixed effects. The dynamic frequency of Friday announcements introduced later in this subsection accommodates for changing firm characteristics.

dates prior to the beginning of our sample in 1995 is not feasible because the data on earnings announcement dates prior to 1995 are not sufficiently accurate (DellaVigna and Pollet, 2009). Therefore, we re-estimate the specifications in Table 5, Panel B, starting from 2000 to use the 1995-1999 period as the history of announcement days for the dynamic frequency of the Friday announcements measure. In these untabulated results, the coefficient on the Friday×SUE Group cross-term is -0.0006 and not significant, and the coefficient on the dynamic Frequency×SUE Group cross-term is -0.009 with t-statistic -4.02, consistent with column 6 in Table 5, Panel B. Similarly, the results for cross-terms with Top Two SUE Groups in column 5 are almost unchanged when dynamic frequency is used. We also note that the significance of the dynamic Frequency cross-term persists and that of the Friday cross-term diminishes as the length of the pre-estimation history window increases, thereby making the dynamic frequency variable more correctly specified.

6. Other potential uses of the methodology

The large literature on investor inattention finds evidence of limited attention among professional investors (Corwin and Coughenour, 2005; Chakrabarty and Moulton, 2012; Andrade and Le Bihan, 2013; Fang, Peress, and Zheng, 2014) and individual investors, whose attention levels vary depending on the media coverage of firms (Huberman and Regev, 2001; Chan, 2003; Fang and Peress, 2009; Solomon, 2012; Lou, 2014; Peress, 2014) or the stock market (Yuan, 2015) and who experience inattention to announcements of earnings news (Hirshleifer, Lim, and Teoh, 2009; Bailey, Kumar, and Ng, 2011; Chakrabarty and Moulton, 2012; Pantzalis and Ucar, 2014), interim financial reports by partner firms (Cohen and Frazzini, 2008), macroeconomic news (Bailey, Kumar, and Ng, 2011; Gilbert et al., 2012), and analysts' stock recommendations (Loh, 2010). The level of investor attention is also affected by shocks in the trading activity of a stock (Gervais, Kaniel, and Mingelgrin, 2001), different features of earnings reporting (Hirshleifer, Lim, and Teoh, 2011), stock-level liquidity shocks (Bali et al., 2014), information that arrives continuously in small amounts (Da, Gurun, and Warachka, 2014), information contained in industry returns (Hong, Torous, and Valkanov, 2007), and distractions,

such as FIFA World Cup matches (Ehrmann and Jansen, 2012). Our paper does not attempt to question and, in fact, does not contradict the inattention literature in general. The work presented here examines one aspect of the literature, namely, whether there is evidence that investors pay less attention to corporate news coming out on Fridays.

More generally, the method can be applied to many causal economic variables that appear to be external to the firm and whose effects on firm or stock performance are tested. However, the effects of such variables may be the outcomes of firms' decisions or be related to firm characteristics, which gives rise to selection bias. In this section, we first provide examples of how the method can be applied to studies of investor attention, continue with examples of event studies of corporate event characteristics, and finally, offer examples in which the method is not limited to event studies but can be applied to general studies of the effects of manager characteristics on firm policy and performance.

The manner in which information is released, such as the length, language, location, and dissemination method of the news releases, may have important pricing implications if investor attention is affected by how information is presented (Hirshleifer and Teoh, 2003). For example, consider a study that initially finds that the market reacts less to earnings announcements reported in few news outlets than those reported by many newswires and news providers. A potential selection bias is that the (possibly unobserved) characteristics of a firm whose announcements are presented in few outlets differ from those of a firm whose announcements tend to be picked up by many news outlets. These characteristics cause the market to react relatively less to all of the former firm's announcements, including occasional quarters when its announcements also appear in major news outlets. For brevity, we could label the former firm "unpopular", and the first step of our method would be to test whether market reaction to announcements appearing in many newswires is smaller for the "unpopular" firms than for the other firms that always appear in many news outlets. If the test result is positive, the initial finding about the effect of the number of news outlets on the announcement reaction is influenced by selection bias. Our second step in comparing market reaction to announcements in

few versus many news outlets is to base the analysis on the bias-free sample of the "unpopular" firms.

In addition to event studies of investor inattention, our method can apply to event studies in which CEO and director attributes (tenure, age, gender, education, power, and "star" status) are considered exogenous to the firm and affect the firm's outcomes. For example, in the studies of market reaction to appointments or departures of CEOs and directors with certain attributes, suppose one finds a more negative market reaction to appointments of busy directors compared to appointments of non-busy directors.[13] However, CEO and director characteristics are not necessarily exogenous to firm characteristics. The differential market reaction to appointments of busy directors could appear because firms that appoint busy directors have different characteristics that can influence market reaction. Our method suggests that we define two types of firms based on whether they have ever appointed a busy director. In this case, firms with (at least one) busy director, the "busy director firms", are analogous to Friday announcers in our paper. The first step of our method is to test whether the busy director firms exhibit a more negative market reaction to director appointments than the non-busy director firms based on the sample of non-busy director appointments. If the test result is affirmative, one should analyze market reaction to busy and non-busy director appointments only based on the sample of the busy director firms or, in the full sample of firms, include the firm type as a control in the model. An identical procedure would apply to studies comparing market reactions to the appointments of, for instance, "star" or high-status CEOs versus non-star CEOs.[14]

The importance of making a clear distinction between CEO or director characteristics and firm characteristics extends beyond event studies. For example, CEO age or personal characteristics, such as CEO power or overconfidence, can affect firms' decisions and

[13] The literature finds that as the number of directorships held by outside directors increases, there is an increased probability of the board failing on its mandate to monitor adequately (Beasley, 1996; Core, Holthausen, and Larcker, 1999; Weisbach, 1988; Fich and Shivdasani, 2006).

[14] Appointments of star CEOs are found to be associated with a positive market reaction (Conyon, He, and Zhou, 2015).

performance.[15] A selection bias problem could arise if firms that tend to appoint CEOs with certain attributes also tend to have characteristics associated with high-risk or negative policy attributes. Studies typically acknowledge this possibility and address it at the analysis stage (e.g., additional control variables or instrumental variables). One advantage of the method we use is that it allows for quantifying the severity of a potential selection bias. The method also allows for eliminating the bias at the study design stage. To test for selection bias, one should test whether "young CEO firms" (firms that employ young CEOs at least at one point in time) are associated with riskier policies compared to "old CEO firms" (firms that have never hired young CEOs) during the periods when "young CEO firms" are run by old CEOs. That is, the periods when "young CEO firms" are run by old CEOs are analogous to Monday-Thursday announcements by the Friday announcer firms. If the results of the first step of our method indicate that selection bias is present, a direct way to address it would be to exclude firms that have never hired a young CEO from the analysis, thereby analyzing only firms that have both types of CEOs during the sample period. This avoids the overlap between CEO characteristics and firm characteristics, controls for unobserved firm characteristics influencing firm policies, and allows for testing the CEO effect based on a sample of relatively homogenous firms. The full-sample approach alternative would be to include the "young CEO firm" indicator in the model or account for the years a young CEO appears in the sample for each firm (analogous to the frequency of Friday earnings announcements).

Finally, the method may apply not only to selection bias in firms, but also in studies concerning other subjects. For example, mutual funds that tend to buy stocks with high media coverage are found to exhibit poor performance (Fang, Peress, and Zheng, 2014). A natural extension of this finding can be to investigate the causes of the mutual funds' underperformance using the time-series dimension of the funds' trading and performance data. The underperformance of "high coverage" mutual funds (funds that have a record of having a strong propensity to buy stocks with high media coverage during any period) can arise because stocks

[15] Younger CEOs are more likely to engage in acquisitions and riskier policies (Yim, 2013; Serfling, 2014), overconfident CEOs are responsible for investment distortions and overpaying for targets in mergers (Malmendier and Tate, 2005, 2008), and more powerful CEOs are associated with higher stock return variability (Adams, Almeida, and Ferreira, 2005).

with high media coverage tend to have poor future returns (Fang and Peress, 2009). Alternatively, the poor performance of "high coverage" mutual funds can be because these funds' managers are simply poor stock pickers irrespective of media coverage of the stocks they buy. Here, the periods of a strong propensity to buy stocks with high media coverage are analogous to announcements on Fridays. Thus, the first step would be to test whether the "high coverage" mutual funds have worse performance than the "low coverage" mutual funds (those that have never had a strong propensity to buy stocks with high media coverage) even when they buy stocks with low media coverage. If so, this suggests selection bias in that the "high coverage" funds are different and underperform regardless of whether they buy stocks with high or low media coverage. The analysis of the role of stocks' media coverage could be conducted based on mutual funds that have periods of both high and low propensity to buy stocks heavily covered by the media or an indicator for the "high coverage" fund type could be added as a control in the full sample of mutual funds.

7. Conclusion

We examine a wide set of corporate events (SEOs, mergers, repurchases, dividend changes, and earnings) and find prima facie evidence that when those events are announced on Fridays, the market underreacts to them relative to when they are announced on other weekdays. This result seems to be consistent with investors' inattention to events that occur on Fridays. We proceed by comparing the market response on Mondays through Thursdays for firms that made at least one Friday announcement and firms that made no Friday announcements. We find that those firms that made at least one Friday announcement exhibit a reduced reaction to their non-Friday announcements as well, indicating selection bias in the original finding of reduced response to Friday announcements. We then test the differential reaction on Fridays using the same firms in the treated sample (Friday announcements) and control sample (non-Friday announcements) and find that the market reaction on Friday does not differ from that on other weekdays for all announcement types. We conclude that inattention is not the reason for the reduced reaction to Friday announcements: rather, the market reacts differently to the type of

firms that make their announcements on Fridays. While various examples of cognitive constraints are reported in the literature, reduced investor reaction to Friday news is not a manifestation of this phenomenon.

The type of selection bias we confront here can arise whenever there are firm characteristics that both influence the firm's decision-making and affect the market's or insiders' responses to this decision. Event characteristics that may be confused with firm characteristics can be, for example, the degree of news dissemination (few or many, major or minor news outlets), the type of language used in a corporate announcement (positive versus negative words), how an information item is reported (as part of earnings or in a footnote), the length of the announcement, the auditor of the reports, etc. Studies recognizing that these seemingly exogenous event characteristics are actually firms' choices that reflect possibly unobservable firm characteristics can avoid selection bias and spurious results.

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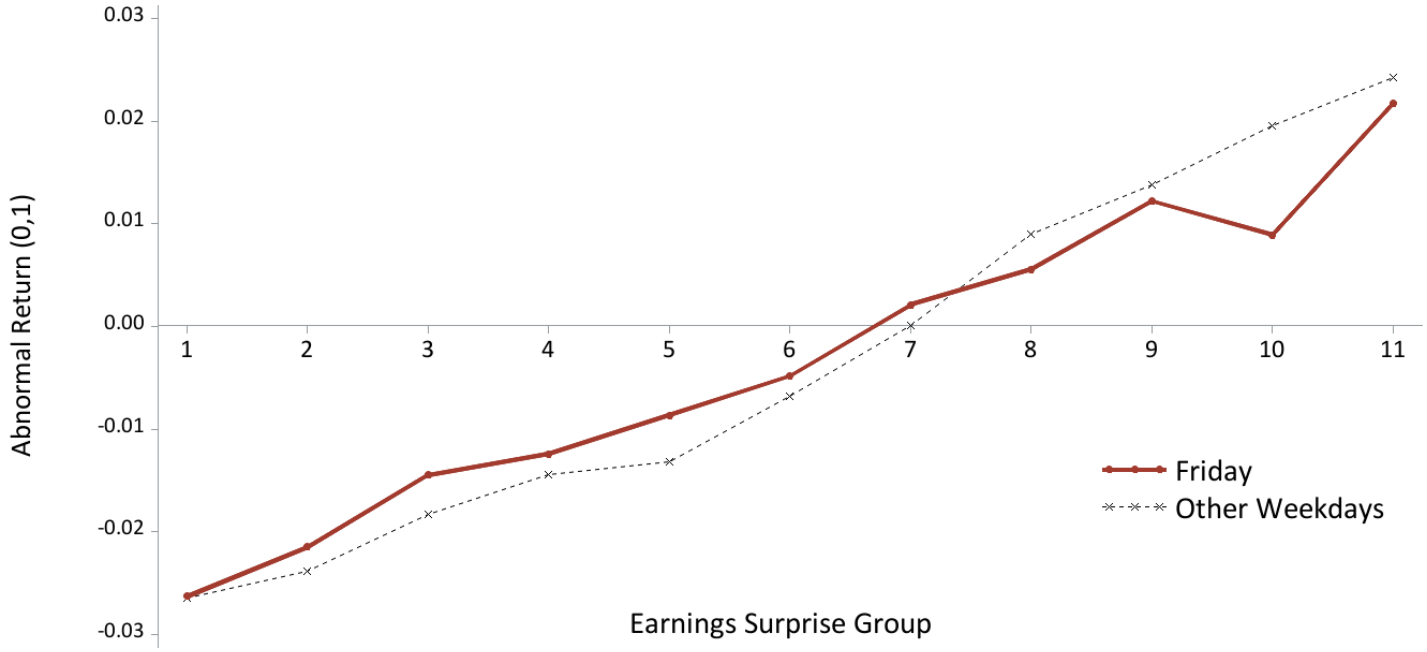

Fig. 1. Market response to earnings announcements on Fridays and other weekdays.

The figure shows two-day buy-and-hold abnormal returns on the earnings announcement day and the next trading day. The announcements are sorted into eleven groups based on earnings surprise each year. Groups 1-5 (7-11) are for negative (positive) surprises, and group 6 corresponds to a zero surprise; buy-and-hold returns are averaged within each earnings surprise group. Earnings surprise and abnormal announcement returns are defined in Table 5.

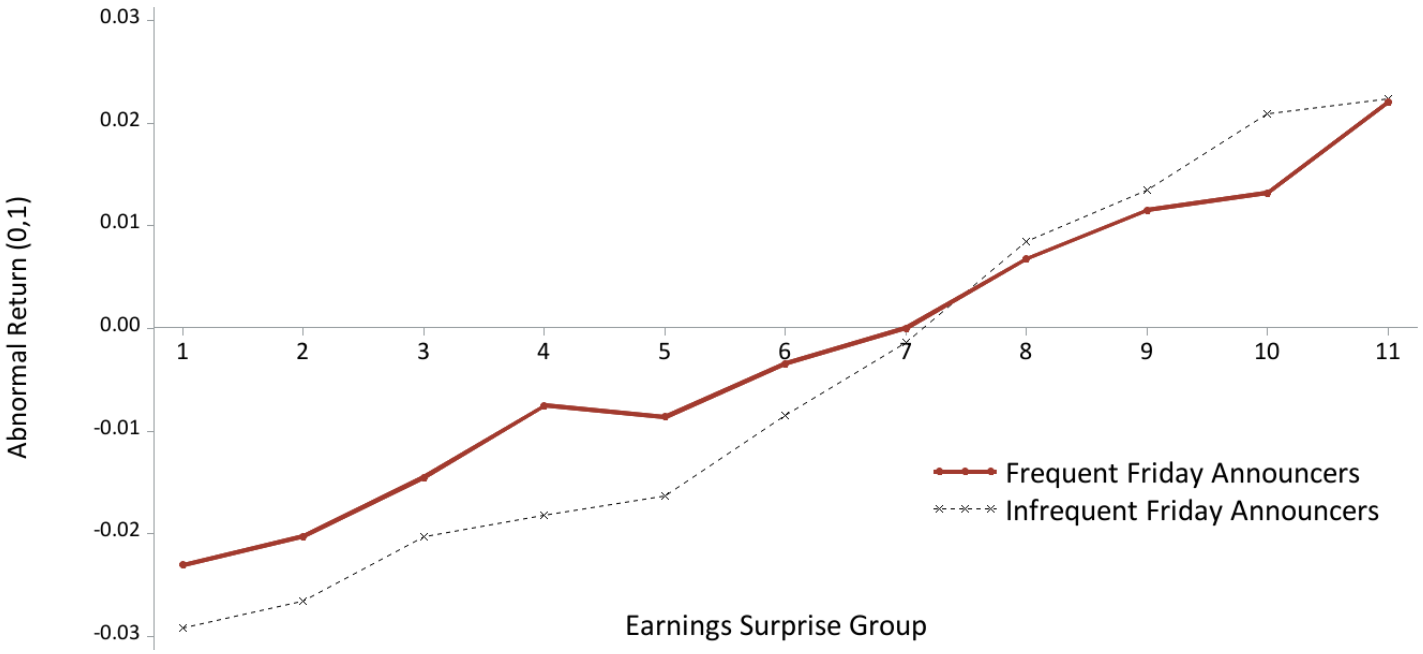

Fig. 2. Market response to earnings announcements for the frequent and infrequent Friday announcer firms.

The figure shows two-day buy-and-hold abnormal returns on the earnings announcement day and the next trading day. Frequent (infrequent) Friday announcers are Friday announcer firms that are at the top (bottom) quartile of the frequency of earnings announcements on Fridays for all firms during the sample period. The announcements are sorted into eleven groups based on earnings surprise each year. Groups 1-5 (7-11) are for negative (positive) surprises, and group 6 corresponds to a zero surprise; buy-and-hold returns are averaged within each earnings surprise group. Earnings surprise and abnormal announcement returns are defined in Table 5.

Table 1. Distribution of announcements and firms by weekday

The table reports the number of announcements, firms, average number of announcements per firm, and the frequency of repurchase, seasoned equity offering, merger, dividend, and earnings announcements by weekday. To calculate the percentage of firms that announced on a given weekday, the number of firms that made at least one announcement on a given weekday is divided by the total number of firms that make announcements of that type. The z-test statistics is for the null hypothesis that the proportion of announcements on Fridays is equal to the proportion of Fridays among trading days after accounting for statutory holidays. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Announcement type	Monday	Tuesday	Wednesday	Thursday	Friday	z-statistics % Friday ann. = % Friday trading days
Repurchases 12,158 ann., 5,146 firms, 2.4 ann./firm						
% of observations	17.9	21.8	21.7	23.8	14.7	-14.59***
% of firms	32.6	37.0	37.3	40.3	27.1	
SEOs 4,492 ann., 2,945 firms, 1.5 ann./firm						
% of observations	16.2	18.7	18.8	19.4	26.9	11.55***
% of firms	29.6	33.8	34.0	34.8	44.9	
Mergers (with public targets) 2,076 ann., 1,312 firms, 1.6 ann./firm						
% of observations	29.4	20.5	18.2	18.5	13.4	-7.53***
% of firms	37.5	27.3	24.7	25.3	18.4	
Mergers (with private targets) 1,995 ann., 1,275 firms, 1.6 ann./firm						
% of observations	23.5	22.8	19.6	19.9	14.2	-6.44***
% of firms	31.5	30.5	26.0	27.0	19.2	
Dividend changes 16,440 ann., 3,103 firms, 5.3 ann./firm						
% of observations	12.6	23.5	23.4	26.4	14.1	-18.95***
% of observations (positive change)	12.1	23.5	23.5	26.8	13.7	-18.13***
% of observations (negative change)	14.7	23.6	21.1	25.0	15.7	-6.02***
% of firms	32.0	46.1	50.1	52.1	35.2	
Earnings 168,593 ann., 9,925 firms, 17 ann./firm						
% of observation	14.2	25.3	25.2	29.1	6.2	-140.00***
% of observations (positive surprise)	14.2	25.6	25.8	29.3	5.1	-110.00***
% of observations (negative surprise)	14.6	23.7	24.3	29.0	8.4	-67.61***
% of firms	66.3	78.3	78.7	78.9	41.6	

Table 2. Market response to stock repurchase and SEO announcements

The table reports regression results for market reaction to announcements of stock repurchases and seasoned equity offerings. The dependent variable is the buy-and-hold abnormal announcement return estimated on the four Fama-French and Carhart factors. The buy-and-hold return is calculated over the three days centered at the announcements date for repurchases and over the announcement day and the next trading day for SEOs. Friday Announcer is an indicator equal to one for firms that made at least one announcement on a Friday during the sample period and is zero otherwise. Columns (1)-(4) are repurchase announcements, and columns (5)-(8) are SEO announcements. Columns (1), (4), (5), and (8) use the full sample of announcements and firms, columns (2) and (6) are announcements by all firms on Monday through Thursday, and columns (3) and (7) are all announcements by the Friday announcer firms. Robust standard errors are clustered by firm. *t*-statistics are provided in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Repurchases				SEOs			
	Full Sample	Monday-Thursday	Friday Announcer Firms	Full Sample	Full Sample	Monday-Thursday	Friday Announcer Firms	Full Sample
Independent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Friday	-0.005***		-0.001	-0.001	0.004**		-0.001	-0.001
	(-2.79)		(-0.28)	(-0.28)	(2.09)		(-0.47)	(-0.47)
Friday Announcer		-0.006***		-0.006***		0.006***		0.006***
		(-4.14)		(-4.14)		(2.98)		(2.98)
Intercept	0.022***	0.023***	0.017***	0.023***	-0.022***	-0.023***	-0.017***	-0.023***
	(30.59)	(26.54)	(15.39)	(26.54)	(-21.84)	(-19.92)	(-9.22)	(-19.92)
Observations	12,158	10,370	4,759	12,158	4,492	3,284	2,017	4,492
Adjusted R^2	0.001	0.001	-0.0001	0.002	0.001	0.002	-0.0001	0.002

Table 3. Market response to merger announcements

The table reports regression results for merger announcements on different weekdays. The dependent variable is the two-day buy-and-hold abnormal announcement return of the acquiring firm estimated on the four Fama-French and Carhart factors on the merger announcement day and the next trading day. Friday Announcer is an indicator equal to one for firms that made at least one merger announcement on a Friday during the sample period and is zero otherwise. Columns (1), (3), and (5) are the sample of public target firms, and the remaining three columns are the sample of private target firms. Columns (1), (2), (7), and (8) use the full sample of announcements and firms. Columns (3) and (4) are announcements by all firms on Mondays through Thursdays. Columns (5) and (6) are all announcements by the Friday announcer firms. Robust standard errors are clustered by firm. *t*-statistics are provided in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Public Target	Private Target	Public Target	Private Target	Public Target	Private Target	Public Target	Private Target
	Full Sample		Monday-Thursday		Friday Announcer Firms		Full Sample	
Independent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Friday	0.011**	-0.010**			0.004	-0.005	0.004	-0.005
	(2.48)	(-2.27)			(0.93)	(-1.07)	(0.93)	(-1.07)
Friday Announcer			0.009***	-0.007*			0.009***	-0.007*
			(2.79)	(-1.93)			(2.79)	(-1.93)
Intercept	-0.025***	0.012***	-0.027***	0.014***	-0.018***	0.007***	-0.027***	0.014***
	(-15.20)	(6.79)	(-13.41)	(6.30)	(-7.90)	(2.63)	(-13.41)	(6.30)
Observations	2,076	1,995	1,798	1,711	754	707	2,076	1,995
Adjusted R^2	0.002	0.002	0.003	0.001	0.0002	0.0001	0.005	0.003

Table 4. Market response to dividend change announcements

The dependent variable is a two-day buy-and-hold abnormal return on the dividend change announcement day and the next trading day. Abnormal returns are calculated based on the four Fama-French and Carhart factors. Dividend change is the change in the dividend per share divided by the share price at the end of the month prior to the announcement. Announcements are sorted into 10 groups (dividend change groups) by the dividend yield change, where groups 1-5 and 6-10 make announcements regarding negative and positive dividend changes, respectively. Friday is an indicator equal to one for announcements on Fridays and zero for other weekdays. Friday Announcer is equal to one for firms that announced at least one dividend change on a Friday and zero otherwise. Top Two Groups is an indicator equal to one if the announcement of dividend change is in the top two groups and zero if it is in the bottom two groups. The sample in columns (1), (3), (5), and (7) consists only of announcements in the top two and bottom two groups. Columns (1), (2), (7), and (8) use the full sample of announcement days and firms. Columns (3) and (4) are announcements by all firms on Mondays through Thursdays. Columns (5) and (6) are all announcements by the Friday announcer firms. Robust standard errors are clustered by firm. *t*-statistics are provided in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

	Full Sample		Monday-Thursday		Friday Announcer Firms		Full Sample	
Independent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Top Two Dividend Change Groups	0.019***		0.022***		0.015***		0.022***	
	(9.85)		(8.42)		(5.36)		(8.42)	
Friday × Top Two Dividend Change Groups	-0.007*				-0.003		-0.003	
	(-1.69)				(-0.70)		(-0.70)	
Dividend Change Group		0.002***		0.002***		0.001***		0.002***
		(10.76)		(9.66)		(5.49)		(9.66)
Friday × Dividend Change Group		-0.001**				-0.0004		-0.000
		(-2.20)				(-1.00)		(-1.00)
Friday Announcer × Top Two Dividend Change Groups			-0.007*				-0.007*	
			(-1.82)				(-1.82)	
Friday Announcer × Dividend Change Group				-0.001**				-0.001**
				(-2.45)				(-2.45)
Friday	0.005	0.005*			0.001	0.001	0.001	0.001
	(1.28)	(1.68)			(0.28)	(0.34)	(0.28)	(0.34)
Friday Announcer			0.007*	0.007***			0.007*	0.007***
			(1.93)	(2.87)			(1.93)	(2.87)
Intercept	-0.010***	-0.009***	-0.013***	-0.012***	-0.006**	-0.005**	-0.013***	-0.012***
	(-5.48)	(-6.65)	(-5.20)	(-6.78)	(-2.35)	(-2.52)	(-5.20)	(-6.78)
Observations	6,574	16,440	5,620	14,124	3,145	8,146	6,574	16,440
Adjusted R^2	0.030	0.014	0.034	0.016	0.022	0.009	0.031	0.015

Table 5. The differential effect of Friday on earnings announcement returns

The dependent variable is the two day buy-and-hold abnormal return calculated based on the market model on the announcement day and the next trading day. Friday is equal to one for announcements on Fridays and zero for other weekdays. Friday Announcer is equal to one for firms that made at least one earnings announcement on a Friday during the sample period and is zero otherwise. SUE is the earnings surprise for quarterly announcements equal to the difference between actual earnings per share and median analyst forecast for that quarter divided by the stock price five trading days before the announcement. Announcements are sorted into eleven groups (SUE groups) by earnings surprise each year, where SUE groups 1-5 and 7-11 made announcements regarding negative and positive SUE, respectively. Top Two SUE Groups is an indicator equal to one if the announcement's earnings surprise is in the top two groups and zero if it is in the bottom two groups. The sample in columns (1) and (3) of Panels A and C and (1), (3), and (5) of Panel B consists only of announcements in the top two and bottom two groups. In Panel A, columns (1) and (2) use the full sample of announcement days and firms, and columns (3) and (4) are announcements by all firms on Mondays through Thursdays. In Panel B, the sample consists of all announcement days by the Friday announcer firms in columns (1) and (2) and all firms in the remaining columns. Friday Announcement Frequency is the ratio of the number of announcements on Fridays to the total number of announcements by the firm. Industry fixed effects are based on 2-digit SIC codes. Panel C uses the full sample of announcements and firms. DellaVigna and Pollet Controls are the control variables in DellaVigna and Pollet (2009): the decile of firm market capitalization and year and month indicators. All controls and fixed effects are entered both as standalones and in interaction with Top Two SUE Groups or SUE Group. Robust standard errors are clustered by firm. *t*-statistics are provided in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Firm heterogeneity and market reaction to earnings announcements

	Full Sample		Monday-Thursday	
Independent Variable	(1)	(2)	(3)	(4)
Top Two SUE Groups	0.047***		0.049***	
	(59.20)		(42.45)	
Friday × Top Two SUE Groups	-0.007***			
	(-2.94)			
Friday Announcer × Top Two SUE Groups			-0.005***	
			(-3.30)	
SUE Group		0.005***		0.006***
		(71.05)		(50.85)
Friday × SUE Group		-0.001***		
		(-4.01)		
Friday Announcer × SUE Group				-0.001***
				(-3.95)
Friday	0.001	0.006***		
	(0.60)	(3.50)		
Friday Announcer			0.006***	0.007***
			(4.52)	(6.43)
Intercept	-0.025***	-0.036***	-0.028***	-0.039***
	(-40.47)	(-67.30)	(-30.89)	(-49.83)
Observations	56,789	168,593	52,654	158,213
Adjusted R^2	0.076	0.049	0.077	0.049

Panel B: Selection bias and the frequency of earnings announcements on Fridays

	Friday Announcer Firms		Full Sample			
Independent Variable	(1)	(2)	(3)	(4)	(5)	(6)
Top Two SUE Groups	0.044***		0.050***		0.049***	
	(41.50)		(42.45)		(54.14)	
Friday × Top Two SUE Groups	-0.005*		-0.005*		0.000	
	(-1.82)		(-1.82)		(0.03)	
Friday Announcer × Top Two SUE Groups			-0.005***			
			(-3.30)			
Friday Announcement Frequency × Top Two SUE Groups					-0.036***	
					(-5.70)	
SUE Group		0.005***		0.006***		0.006***
		(50.05)		(50.85)		(65.20)
Friday × SUE Group		-0.001***		-0.001***		0.000
		(-2.70)		(-2.70)		(0.20)
Friday Announcer × SUE Group				-0.001***		
				(-3.95)		
Friday Announcement Frequency × SUE Group						-0.005***
						(-7.96)
Friday	-0.002	0.002	-0.002	0.002	-0.003	-0.002
	(-0.89)	(1.40)	(-0.89)	(1.40)	(-1.24)	(-0.97)
Friday Announcer			0.006***	0.007***		
			(4.52)	(6.43)		
Friday Announcement Frequency					0.018***	0.038***
					(3.78)	(8.59)
Intercept	-0.022***	-0.033***	-0.028***	-0.039***	-0.026***	-0.038***
	(-26.30)	(-45.56)	(-30.88)	(-49.83)	(-37.22)	(-62.27)
Observations	29,928	88,150	56,789	168,593	56,789	168,593
Adjusted R^2	0.078	0.052	0.077	0.050	0.077	0.050

Panel C: Controlling for industry and firm fixed effects in the full sample of earnings announcements

Independent Variable	(1)	(2)	(3)	(4)
Friday	-0.0018	0.0001	-0.0017	0.001
	(-0.95)	(0.08)	(-0.79)	(0.53)
Top Two SUE Groups	0.044***		0.0701***	
	(3.32)		(5.29)	
Friday × Top Two SUE Groups	-0.0021		-0.0028	
	(-0.83)		(-0.99)	
SUE Group		0.0027**		0.0065***
		(2.02)		(40.04)
Friday × SUE Group		-0.0002		-0.0004
		(-0.82)		(-1.41)
Intercept	-0.01485*	-0.0115	-0.053***	0.0433***
	(-1.68)	(-1.35)	(-24.10)	(40.16)
Industry Fixed Effects	yes	yes		
DellaVigna and Pollet Controls	yes	yes		
Firm Fixed Effects			yes	yes
Observations	56,579	168,092	56,789	168,593
Adjusted R^2	0.091	0.060	0.111	0.089

Table 6. Firm characteristics across announcement types

The table summarizes the characteristics of firms that make repurchase, SEO, merger, dividend, and earnings announcements. The mean and medians of firm characteristics are calculated separately for announcements made by Friday announcer firms (F) and the other firms (NF). Friday announcer firms are firms that made at least one announcement of the indicated type on a Friday. Size is the market value of the firm's equity (in billions) five days before the announcement day. Analysts is the number of analysts who made earnings forecasts this quarter for earnings announcements and the most recent quarter before the announcement in the other announcement types, obtained from the I/B/E/S Summary file. Institutional is the fraction of common shares outstanding owned by institutional investors at the most recent report date before the announcement and obtained from the Thomson-Reuters Institutional Holdings (13F) Database. Book-to-market ratio is stockholders' equity minus preferred stock plus deferred taxes (if available) divided by the market value of equity. If stockholders' equity is not available, we use common equity plus the book value of preferred stock. Leverage is the ratio of long-term book debt plus debt in current liabilities divided by total book assets. The table provides t-statistics and z-statistics for the tests of differences in means and medians for each announcement type. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Firm Characteristic		Repurchases			SEOs			Mergers			Dividends			Earnings		
		F	NF	Test Stat.	F	NF	Test Stat.	F	NF	Test Stat.	F	NF	Test Stat.	F	NF	Test Stat.
Size	Mean	3.71	2.16	3.24***	1.45	1.88	-1.81*	4.61	3.58	1.03	3.97	3.82	0.26	1.77	1.49	1.57
	Median	0.28	0.25	1.74*	0.50	0.45	1.72*	0.49	0.38	1.91*	0.43	0.44	-0.21	0.24	0.25	-0.34
Analysts	Mean	6.32	6.09	1.21	4.90	5.19	-1.72*	5.85	5.61	-0.21	5.80	6.52	-2.96***	3.99	4.15	-2.02**
	Median	4.50	4.14	0.41	4.00	4.00	-1.07	4.58	5.00	-0.49	3.67	4.00	-2.16**	2.56	2.82	-2.68***
Institutional	Mean	0.41	0.42	-2.19**	0.41	0.40	0.51	0.32	0.36	-3.04***	0.36	0.39	-3.35***	0.37	0.36	1.54
	Median	0.39	0.40	-1.99**	0.39	0.36	1.14	0.27	0.33	-2.54**	0.34	0.36	-2.92***	0.35	0.35	-0.87
Book-to-market	Mean	0.73	0.74	-0.65	0.43	0.40	0.73	0.40	0.44	-1.54	0.74	0.71	0.68	1.12	1.27	-0.70
	Median	0.64	0.61	1.85*	0.29	0.27	1.89*	0.37	0.34	-0.76	0.64	0.62	1.86*	0.56	0.49	9.83***
Leverage	Mean	0.19	0.19	0.07	0.29	0.25	4.56***	0.17	0.18	-0.68	0.22	0.21	1.67*	0.24	0.21	6.66***
	Median	0.15	0.14	2.09**	0.25	0.19	5.13***	0.11	0.13	-0.32	0.19	0.17	1.72*	0.21	0.14	10.92***

Table 7. Likelihood of announcements on Fridays

The table reports probit regressions for whether an announcement is on a Friday. The sample is subdivided into columns by the announcement category, as indicated, and consists of firms that made announcements in two or more announcement categories. Friday Announcer Not Repurchases, Friday Announcer Not SEOs, Friday Announcer Not Mergers, Friday Announcer Not Dividends, and Friday Announcer Not Earnings are indicators equal to one if a firm made a Friday announcement of at least one of the four announcement types other than repurchases, SEOs, mergers, dividends, earnings, respectively, and zero otherwise. Friday Announcer of Other Types is an indicator equal to one if a firm made a Friday announcement of at least one of the four announcement types other than the observation's announcement type and zero otherwise. The other variables are defined in Table 6. Standard errors are clustered by firm. z-statistics are provided in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Independent Variable	Repurchases (1)	SEOs (2)	Mergers (3)	Dividends (4)	Earnings (5)	All (6)
Friday Announcer Not Repurchases	0.154*** (3.59)					
Friday Announcer Not SEOs		0.121** (2.42)				
Friday Announcer Not Mergers			0.067 (1.05)			
Friday Announcer Not Dividends				0.241*** (4.07)		
Friday Announcer Not Earnings					0.154*** (6.60)	
Friday Announcer of Other Types						0.207*** (10.26)
Log Size	0.018 (1.09)	-0.033 (-1.38)	0.005 (0.21)	0.033 (1.41)	0.012 (1.11)	0.023*** (2.71)
Analysts	-0.005 (-1.16)	-0.005 (-0.70)	-0.007 (-0.91)	-0.014*** (-2.64)	-0.023*** (-6.81)	-0.018*** (-7.66)
Institutional	-0.136* (-1.78)	-0.119 (-1.20)	-0.130 (-1.02)	-0.026 (-0.26)	-0.361*** (-7.92)	-0.293*** (-8.31)
Book-to-market	0.012 (0.40)	0.004 (0.07)	-0.003 (-0.11)	0.022 (0.74)	0.050*** (4.43)	0.041*** (4.41)
Leverage	0.023 (0.23)	0.204** (2.05)	-0.018 (-0.09)	0.086 (0.70)	0.219*** (5.03)	0.193*** (5.43)
Intercept	-1.099*** (-16.43)	-0.692*** (-9.16)	-1.079*** (-12.61)	-1.220*** (-14.39)	-1.436*** (-39.75)	-1.391*** (-49.06)
Observations	8,636	3,186	2,904	10,460	137,928	163,114
Pseudo R^2	0.004	0.005	0.004	0.007	0.019	0.015

Table 8. Differential market reaction to Friday announcers of different announcement types

The sample in columns (1) and (2) of Panels A and B consists of all repurchase, SEO, and merger announcements made on Mondays through Thursdays. The dividend change and earnings announcements are in the other columns. The dependent variable is a buy-and-hold abnormal announcement return estimated on the three Fama-French and Carhart factors in columns (3) and (4) and the absolute value of the abnormal return in columns (1) and (2). The buy-and-hold return is calculated over the three trading days centered at the announcements date for repurchases and over the announcement day and the next trading day for the other announcement types. Friday Announcer is an indicator equal to one if a firm made a Friday announcement in the observation's announcement type and zero otherwise. Friday Announcer of Other Types is an indicator equal to one if a firm made a Friday announcement of at least one of the four announcement types other than the observation's announcement type and zero otherwise. Universal Friday Announcer is the number of types of announcements for which the firm is a Friday announcer. Frequency of Friday Announcements is a firm's number of Friday announcements divided by the total number of its announcements. Surprise Group is the Dividend Change Group number for dividend change announcements and SUE Group number for earnings announcements, which are obtained by sorting dividend (earnings) announcements into ten (eleven) groups by the dividend change (SUE), so that the first five groups correspond to negative news, and the last five groups correspond to positive news. Dividend change is the change in the dividend per share divided by the share price at the end of the month prior to the announcement. SUE is the earnings surprise for quarterly announcements equal to the difference between actual earnings per share and median analyst forecast for that quarter divided by the stock price five trading days before the announcement. The other variables are defined in Table 6. Robust standard errors are clustered by firm. *t*-statistics are provided in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A: The effect of being a Friday announcer of other announcement types

	Repurchases, SEOs, Mergers		Dividends, Earnings	
Independent Variable	(1)	(2)	(3)	(4)
Friday Announcer	-0.010***	-0.007***	0.006***	0.004***
	(-10.64)	(-6.18)	(4.99)	(3.72)
Friday Announcer of Other Types	-0.006***	-0.006***	0.003***	0.004***
	(-6.42)	(-5.59)	(2.59)	(2.97)
Friday Announcer × Surprise Group			-0.0005***	-0.0003*
			(-3.04)	(-1.86)
Friday Announcer of Other Types × Surprise Group			-0.0004**	-0.0004***
			(-2.55)	(-2.61)
Surprise Group			0.006***	0.004***
			(40.09)	(15.79)
Log Size		-0.008***		0.001***
		(-17.32)		(2.58)
Analysts		0.001***		-0.0001***
		(8.31)		(-2.99)
Institutional		0.004**		-0.027***
		(2.38)		(-10.36)
Book-to-market		0.001		0.006***
		(1.09)		(4.97)
Leverage		-0.014***		0.023***
		(-5.91)		(8.25)
Log Size × Surprise Group				-0.000***
				(-4.57)
Analysts × Surprise Group				0.0001***
				(4.12)
Institutional × Surprise Group				0.004***
				(11.33)
Book-to-market × Surprise Group				-0.001***
				(-4.47)
Leverage × Surprise Group				-0.003***

				(-7.88)
Intercept	0.054***	0.045***	-0.039***	-0.034***
	(65.39)	(27.52)	(-38.04)	(-16.95)
Observations	16,328	12,327	143,668	138,821
Adjusted R^2	0.013	0.059	0.048	0.052

Panel B: Additional specifications of common unobserved characteristics of Friday announcers

	Repurchases, SEOs, Mergers		Dividends, Earnings	
Independent Variable	(1)	(2)	(3)	(4)
Friday Announcer	-0.002*	-0.006***	0.001	0.001
	(-1.94)	(-5.13)	(0.49)	(0.92)
Universal Friday Announcer	-0.004***		0.004***	
	(-6.98)		(4.53)	
Frequency of Friday Announcements		-0.029***		0.040***
		(-5.21)		(5.53)
Friday Announcer × Surprise			0.0001	0.0002
			(0.78)	(1.23)
Universal Friday Announcer × Surprise			-0.0004***	
			(-4.11)	
Frequency of Friday Announcements × Surprise				-0.007***
				(-6.85)
Surprise			0.004***	0.004***
			(16.25)	(16.62)
Log Size	-0.007***	-0.008***	0.001**	0.001***
	(-16.88)	(-17.59)	(2.24)	(2.67)
Analysts	0.001***	0.001***	-0.0001***	-0.0001**
	(8.26)	(8.34)	(-2.90)	(-2.52)
Institutional	0.004**	0.004**	-0.026***	-0.026***
	(2.10)	(2.36)	(-10.34)	(-10.11)
Book-to-market	0.001	0.001	0.006***	0.006***
	(1.21)	(1.11)	(4.95)	(4.89)
Leverage	-0.014***	-0.014***	0.023***	0.023***
	(-5.85)	(-5.99)	(8.24)	(8.16)
Log Size × Surprise			-0.000***	-0.000***
			(-4.23)	(-4.54)
Analysts × Surprise			0.0001***	0.0001***
			(4.03)	(3.56)
Institutional × Surprise			0.004***	0.004***
			(11.31)	(11.00)
Book-to-market × Surprise			-0.001***	-0.001***
			(-4.44)	(-4.32)
Leverage × Surprise			-0.003***	-0.003***
			(-7.88)	(-7.77)
Intercept	0.045***	0.043***	-0.034***	-0.034***
	(28.26)	(28.01)	(-17.39)	(-17.53)
Observations	12,327	12,327	138,821	138,821
Adjusted R^2	0.060	0.058	0.053	0.052