

**IS THE FRIDAY EFFECT A FIRM EFFECT? THE CASE OF CASH-FINANCED ACQUISITION ANNOUNCEMENTS OF UNLISTED FIRMS. OUT-OF-SAMPLE EVIDENCE FROM THE SPANISH MARKET♦**

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**Keywords:** investor inattention; Friday effect; selection bias; acquisition announcement; Spanish market

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# **IS THE FRIDAY EFFECT A FIRM EFFECT? THE CASE OF CASH-FINANCED ACQUISITION ANNOUNCEMENTS OF UNLISTED FIRMS. OUT-OF-SAMPLE EVIDENCE FROM THE SPANISH MARKET**

## **Abstract**

Prior research shows that acquirers of unlisted target firms gain positive and significant abnormal returns in cash-financed acquisition announcements regardless of firm and deal characteristics. However, Farinós *et al.* (2021) are the first to show evidence of market underreaction to this sort of acquisition announcements when they are made on Friday, which is consistent with the inattention hypothesis. In this research, we explore whether this result is spurious, as Michaely *et al.* (2016) claim about several corporate events in the U.S. market after addressing selection bias. We employ a final sample of 192 cash-financed acquisition announcements of unlisted target firms made by listed Spanish firms from 1998 to 2018. We show that, after correcting for selection bias, the reduced market response to Friday acquisition announcements remains.

**Keywords:** investor inattention; Friday effect; selection bias; acquisition announcement; Spanish market

**JEL classification:** G11; G14; G34; G41

## 1. Introduction

A large body of research has documented significant positive abnormal announcement returns to acquirers of unlisted targets regardless of firm and deal characteristics [Draper and Paudyal (2006), Petmezas (2009), Martynova and Renneboog (2011), Feito–Ruiz *et al.* (2014), Shams *et al.* (2013) and Farinós *et al.* (2017), among others]. However, Farinós *et al.* (2021) show, for the first time, that this result does not hold any longer when the limited investor attention on Friday is introduced in the analysis. Instead, they find a significant lower market reaction to all-cash acquisition announcements released during market trading hours in terms of both price and trading volume. In addition, they find that the combined analysis of the day and time the announcement is made introduces the notion of attention fluctuations along the trading day.

Previous research suggests the striking behavioural regularity that investors might pay less attention to information released on Friday than to similar information released on other days of the week. This phenomenon is explained by the idea that investors and traders might get distracted by their weekend plans and thus pay less attention to corporate news on Friday, which would result in a market underreaction to the announcement. Research on this issue focused first on earnings announcements [DellaVigna and Pollet (2009) and DeHaan *et al.* (2015)]. Later, research analysed investor inattention around the market response to merger announcements [Louis and Sun (2010), Adra and Barbopoulos (2018), Reyes (2018), Siganos (2019)], and other events such as analyst recommendation changes [Ben-Rephael *et al.* (2017)].

In this framework, Michaely *et al.* (2016) claim that selection bias complicates the interpretation of results showing reduced market reaction to announcements on Fridays. The baseline of Michaely *et al.*'s (2016) argument is that the market underreaction to Friday announcements is not related to the day of the week on which the announcement is made but to the differences between the characteristics of firms that make Friday announcements and those of firms that do not make Friday announcements.

In order to address the potential selection bias, Michaely *et al.* (2016) state that the problem here is that, in addition to observable firm characteristics, there are unknown relevant firm characteristics that prevent techniques such as matching firms, instrumental variables, and the two-step estimation procedure of Heckman (1979) from fully

eliminating this sort of bias. Consequently, they propose to measure the Friday effect using a sample that is relatively homogeneous in terms of both observable and unobservable characteristics associated with selection bias by splitting the full sample into Friday announcer firms (firms that have at least one announcement on a Friday) and non-Friday announcer firms (firms that have never made a Friday announcement). They claim that their approach to the selection bias problem enhances other techniques because the “correct” sample is formed at the *study design* stage, while the other techniques form the sample at the *analysis stage*. Therefore, their approach does not require knowing specific firm characteristics associated with firms’ announcement timing decisions. They find that the U.S. market underreaction to Friday announcements of dividend changes, seasoned equity offerings, share repurchases, earnings, and mergers disappears after correcting for selection bias through their methodology.

In this study, we address the question of whether the Friday underreaction to cash-financed acquisition announcements of privately held firms in the Spanish market is a firm effect and is, therefore, not associated with investor’s inattention. Unlike Michaely *et al.* (2016), we explore market response to Friday announcements not only in terms of abnormal returns but also in terms of abnormal trading volume activity. To perform our analyses, we employ a final sample of 192 cash-financed acquisition announcements of unlisted target firms released by listed Spanish firms from 1998 to 2018.

Our results regarding the market response to the acquisition announcements in terms of returns, trading volume, and differential observable firm characteristics reject the notion that the Friday effect found by Farinós *et al.* (2021) is related to a firm effect. Instead, we find that the differential market response for Friday acquisition announcements is robust after controlling for selection bias. Similarly, abnormal trading volume behaviour does not experience changes. Consistent with these results, we do not find that Friday announcer firms have significant differences with non-Friday announcer firms in any observable firm characteristics from neither a univariate nor a multivariate perspective. This research shows that out-of-sample evidence from developed country capital markets is relevant in order to test the generalization of U.S. market results.

The remainder of the paper is organized as follows. Section 2 discusses the hypotheses that will be tested. Section 3 describes our sample. In Section 4 we present the methodology used to explore whether the selection bias problem explains the Friday

effect found for announcements of cash-financed acquisitions of unlisted firms. Section 5 shows our results and Section 6 presents the main conclusions.

## **2. Study design and hypothesis to test**

Given the evidence from Farinós *et al.* (2021) for the Spanish market, we expect to find that investors underreact to all-cash acquisition announcements of unlisted targets occurring in the market on Fridays. According to Michaely *et al.* (2016), this differential market reaction to announcements on Fridays is a spurious result because of the heterogeneity that arises from ignoring the observable and unobservable differences in the characteristics of the firms in the treated and control groups (Friday and non-Friday announcements) that also influence market reaction to corporate announcements. Consequently, the selection bias problem is present.

In this framework, this study tests the following hypotheses. First, we address the potential selection bias problem by working with a sample of firms that is homogeneous in terms of (unknown) characteristics determining the decision to announce on Fridays. Thus, we split our sample into Friday announcer firms (firms that have at least one announcement on a Friday) and non-Friday announcer firms (firms that have never made a Friday announcement). Therefore, the first hypothesis is:

*Hypothesis 1 (H1): If the Friday effect is a firm effect then we should find that Friday announcer firms induce a weaker market reaction than non-Friday announcer firms on any weekday (not only on Fridays).*

Although Michaely *et al.* (2016) do not address this issue, the lower market response on Friday that supports the inattention hypothesis does not only refer to differential abnormal returns but also to smaller abnormal trading volume for firms that announce on Friday, as Louis and Sun (2010) and Farinós *et al.* (2021) find. Thus, our second hypothesis is:

*Hypothesis 2 (H2): If the Friday effect is a firm effect then we should find that Friday announcer firms induce a smaller abnormal trading volume activity than non-Friday announcer firms on any weekday (not only on Fridays).*

Next, we explore if the Friday differential behaviour is due to differences in firms' observable characteristics between Friday and non-Friday announcers after controlling

for unobservable characteristics that may determine the decision of making an acquisition announcement on Friday. Therefore, the third hypothesis is:

*Hypothesis 3 (H3): Firms classified as Friday announcers are significantly different in some observable characteristics from firms that are classified as non-Friday announcers.*

### **3. Sample**

Information on acquisitions (announcement date, identity of bidders and targets, payment method, etc.) performed by Spanish listed firms was manually collected from the Spanish Security Exchange Commission (*Comisión Nacional del Mercado de Valores*, hereafter CNMV) web page.

Given that an acquisition announcement may occur when the market is already closed, we needed to define the day of the acquisition announcement and the event day ( $t_0$ ). The announcement day is the calendar day on which the CNMV publishes the official acquisition communication, regardless of the time of the day at which it is released. The event day ( $t_0$ ) is the trading day when the first closing price is available after the official acquisition communication to the CNMV.

The necessary economic and financial information for this research came from the *Banco de España* (Spanish Central Bank) web page and the SABI, Amadeus and Orbis databases. Following Chang (1998) and others, the sample comprised *completed control acquisitions* exclusively. We defined a completed control acquisition as one in which the buyer has increased its ownership position to over 50%, regardless of the amount of the target firm's stake previously owned by the buyer. Therefore, our initial sample consisted of all acquisitions conducted by listed firms in the Spanish market (*Sistema de Interconexión Bursátil Español*, hereafter SIBE) over the period 1998–2018, that is, 378 acquisitions announcements. For an acquisition announcement to remain in the final sample, it needs to meet the criteria showed in Table 1.

After the application of the former criteria, we obtained a sample that comprised 192 all-cash acquisition announcements of unlisted firms from 1998 to 2018.

**Table 1.** Sample selection process.

		<b>Observations</b>
<b>Initial Sample</b>		378
<b>Less:</b>		
(i)	The method of payment is non all-cash	(45)
(ii)	The target firm is public	(89)
(iii)	The exact time of the official acquisition announcement on the CNMV website day is unknown	(1)
(iv)	No other contaminating event must exist in the five days prior to and after the event day ( $t_0$ ) that may affect the target firm's price, such as dividend payments, profit announcements or stock splits	(12)
(v)	No other overlapping acquisition announcement must exist by the same firm during the 120 trading days prior to the event day ( $t_0$ )	(38)
(vi)	The abnormal return of the event day ( $t_0$ ) must not be an outlier	(1)
<b>Final Sample</b>		<b>192</b>

Table 2 shows the daily distribution of the acquisition announcements.<sup>1</sup> It seems that the number of announcements peaks on Tuesday and then declines steadily during the rest of the week, with 24.48% of the announcements being made on Tuesdays and 17.71% on Fridays. However, the  $\chi^2$  test shows that the observed daily distribution of the acquisition announcements does not significantly depart from the 20% that would be expected if the announcements were uniformly distributed across the weekdays.

**Table 2.** Daily distribution of the acquisition announcement sample.

<b>Total</b>	<b>Expected</b>	<b>Observed</b>					$\chi^2$ <i>p</i> -value
		<b>Mon.</b>	<b>Tues.</b>	<b>Wed.</b>	<b>Thu.</b>	<b>Fri.</b>	
192	38.4	35	47	41	35	34	0.524
	20%	18.23%	24.48%	21.35%	18.23%	17.71%	

*Note:* *Expected* is the daily number of acquisition announcements expected if they were released uniformly across the weekdays.

## 4. Methodology

### 4.1. Abnormal return estimation

In order to compute the abnormal returns on the event day ( $t_0$ ), we employed conventional event study methodology. The event window was defined as an 11-day window centred on the day of the announcement ( $t_0-5$ ,  $t_0+5$ ), and the estimation window (“uncontaminated” interval) was defined as a 115-day window ( $t_0-6$ ,  $t_0-120$ ). We estimated “uncontaminated” risk factors from the empirical version of the Capital Asset Pricing Model (CAPM) as we show in equation [1].

<sup>1</sup> We reclassified one announcement released on Sunday as a Friday announcement.

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{mt} - R_{ft}) + \varepsilon_{it}, \quad [1]$$

where  $R_{it}$  is the simple daily return of the acquiring firm  $i$  on day  $t$ ,  $R_{ft}$  is the daily return on *Letras del Tesoro* (Spanish Treasury Bill) and  $R_{mt}$  is the return on a value-weighted market index (specifically, the Madrid Stock Exchange Index–IGBM). We identified one extreme abnormal return (outlier) that exceeded three times the standard deviation of the abnormal returns.

#### 4.2. Abnormal trading activity estimation

We employ the abnormal trading volume to analyze the market's reaction to acquisition announcements conditional on the day of the week and time of the day.<sup>2</sup> To measure abnormal trading volume, we follow DellaVigna and Pollet (2009), Hirshleifer *et al.* (2009) and Louis and Sun (2010). Thus, we log transform the market value of the shares traded ( $\log\_V$ ). Then, we estimate the abnormal trading volume as the difference between  $\log\_V$  at the acquisition announcement and  $\log\_V$  over the premerger announcement period. In order to remove the effect of normal trading-volume variations across the days of the week and capture the effect of the acquisition announcements on the trading volume, we match the event day ( $t_0$ ) with the same day of the week over the previous four weeks. Specifically, for each acquisition announcement, we compute the acquirer's abnormal trading volume for day  $t_0$  as the difference between the  $\log\_V$  for day  $t_0$  and the average  $\log\_V$  for days  $-7$ ,  $-14$ ,  $-21$ , and  $-28$  relative to  $t_0$ .

#### 4.3. Overcoming selection bias: Friday announcer selection sample

As discussed above, Michaely *et al.* (2016) state that the investor underreaction to acquisition announcements on Friday may be the consequence of observable and/or unobservable firm characteristics that make the market react differently to their announcements regardless of the day of the week they were released. Actually, they claim that, as relevant firm characteristics are usually unknown, techniques such as matching firms, instrumental variables or the two-step estimation procedure of Heckman (1979) do not fully eliminate selection bias. Consequently, they argue that, as Friday announcers

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<sup>2</sup> Padungsaksawasdi *et al.* (2019) show evidence that reinforces prior literature that used trading volume as a proxy of investor attention.

have common unobserved characteristics, the selection bias problem can be addressed by exclusively using the relatively homogeneous sample of the Friday announcer firms.

As Michaely *et al.* (2016) did, we define a *Friday announcer* as a firm that has made at least one acquisition announcement on a Friday. Although our interest focuses on the acquisition announcement of unlisted firms, we employ the initial sample of 378 acquisition announcements in order to classify the firms in the final sample as a Friday announcer or as a non-Friday announcer (that is, a firm that has never made a Friday announcement). In this way, we assure that the sample of Friday announcers is more homogeneous in terms of both observable and unobservable characteristics associated with selection bias and it is free from any induced bias caused by our sample selection criteria in Section 3.

Table 3 summarizes the number of observations for announcements on each weekday in the case of the 42 Friday announcer firms (Panel A) and 45 non-Friday announcer firms (Panel B). If announcements were uniformly distributed across weekdays, the expected frequency of daily announcements would be 20% in the case of Friday announcer firms and 25% for non-Friday announcer firms. As shown in Table 3, while the observed daily distribution of the non-Friday announcer firms' acquisition announcements does not significantly depart from the expected distribution (Panel B), Friday announcer firms concentrate their acquisition announcements on Friday (Panel A), with 30.63% of the announcements being made on Fridays. Thus, the  $\chi^2$  test rejects the null hypothesis that the observed distribution fits the expected one.

**Table 3.** Daily distribution of acquisition announcements by Friday and non-Friday announcers.

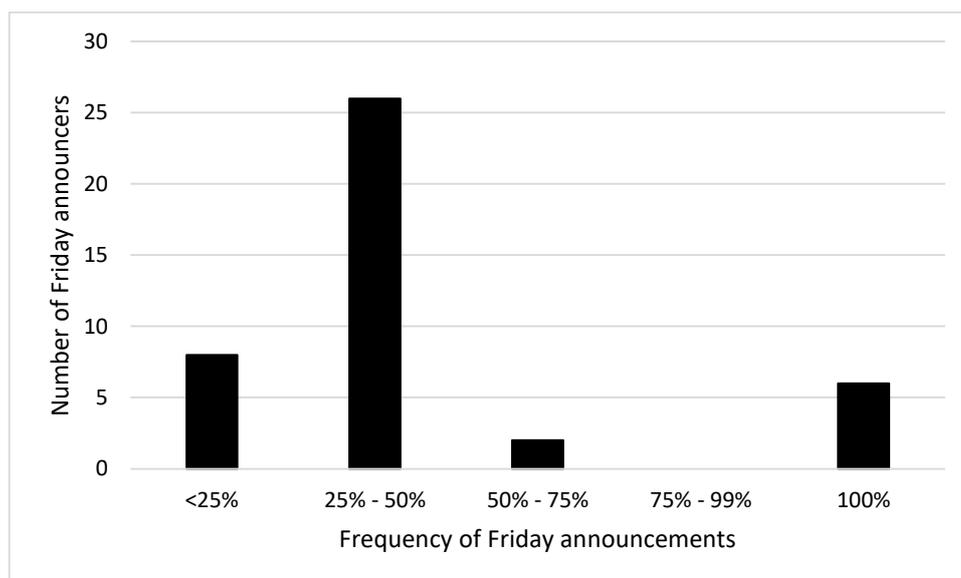
Total	Expected	Observed					$\chi^2$ p-value
		Mon.	Tues.	Wed.	Thu.	Fri.	
<b>Panel A: Friday announcer firms (N=42)</b>							
111	22.20	19	25	16	17	34	0.040
	20%	17.12%	22.52%	14.41%	15.32%	30.63%	
<b>Panel B: non-Friday announcer firms (N=45)</b>							
81	20.25	16	22	25	18	–	0.492
	25%	19.75%	27.16%	30.86%	22.22%	–	

*Note:* *Friday announcer* is a firm in the final sample that has made at least one acquisition announcement on a Friday. *Non-Friday announcer* is a firm in the final sample that has never made a Friday announcement. *Expected* is the daily number of acquisition announcements expected if they were released uniformly across the weekdays.

Though the classification into Friday announcer and non-Friday announcer may produce more homogenous samples in terms of unobservable characteristics, Michaely *et al.* (2016) agree that the Friday announcer group becomes heterogeneous if some firms have announced on a Friday only once, while others may make every announcement on Friday. To deal with this issue, they propose not only the use of an indicator of whether a firm is a Friday announcer (binary value), but also the inclusion of the frequency of Friday announcements, since it may better capture the extent of firm heterogeneity in terms of announcement timing and average market response. As before, we employ the initial sample of 378 acquisition announcements in computing the *frequency of Friday announcements* across firms.

Figure 1 shows the frequency of Friday announcements of the Friday announcers in our sample.<sup>3</sup> Friday announcements represent between 25% and 50% of their total number of acquisition announcements for most of the Friday announcers (26 out of 45 firms, that is, 58% of the Friday announcer firms). However, the sample may be considered heterogeneous to some extent, as the number of Friday announcers that make less than 25% of their acquisition announcements on Friday is 8 out of 45 firms (18% of the Friday announcer firms) and Friday announcers that make every acquisition announcement on Friday are 6 out of 45 firms (13%).

**Figure 1.** Frequency of Friday announcements of Friday announcers



<sup>3</sup> Yes, it sounds like a tongue twister for us, too!

#### 4.4. Friday and non-Friday announcer differences in firms' observable characteristics

In order to explore whether Friday announcers have differential firm characteristics compared to those firms classified as non-Friday announcers, we consider a set of standard observable firm characteristics. Panel A from Table 4 shows a variety of observable acquirer characteristics that has been documented to be related to bidder returns (Capron and Shen (2007), Martynova and Renneboog (2008), Farinós *et al.* (2017), and others). Subsets of these characteristics have been used as control variables in DellaVigna and Pollet (2009), Louis and Sun (2010) and Farinós *et al.* (2021) when studying the Friday inattention phenomenon.

**Table 4.** Acquirer firm characteristics.

<b>Characteristic</b>	<b>Definition</b>
Market value	Market value of the acquirer's common stock 20 trading days prior to the acquisition announcement date (in millions of euros).
Standardized market value	Market value of the acquirer's common stock 20 trading days prior to the acquisition announcement date (in millions of euros) divided by the level of the IGBM market index at each point in time. This is to avoid the obvious problems with unstandardized values when using a wide sample horizon [Mitchell and Stafford (2000)].
Market-to-book ratio (MTB)	Market value of the acquirer's common stock 20 trading days prior to the acquisition announcement date divided by the book value of the acquirer's common stock at the end of the year prior to the acquisition announcement date.
Return on Assets Ratio (ROA)	Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA) divided by the acquiring firm's book total assets at the end of the year prior to the acquisition announcement date.
Leverage	Total book debt to total book financing of the firm.
Analysts	Number of analysts following the acquirer at the date of the announcement (data available since 2005).

We employ the conventional *t*-test for the mean differences between Friday announcer and non-Friday announcer firms assuming unequal variances in the univariate analysis. In order to apply a multivariate perspective to the analysis of the observable firm

characteristics that may predict an acquirer to be a Friday announcer firm we employ both probit and tobit regressions. In the probit regression, the dependent variable is the Friday announcer firm indicator that takes value one if the acquisition announcement is made by a Friday announcer firm and zero otherwise. In the tobit regression, we replace the dependent variable with the frequency of Friday announcements of the acquirers in the full sample.

## 5. Results

### 5.1. Market response to acquisition announcements

Table 5 shows average abnormal returns on Friday and non-Friday cash-financed acquisition announcements of privately held firms for the full sample and Friday and non-Friday announcers. As in Farinós *et al.* (2021), the average abnormal return is statistically significant for all the business days (1.3%) except for Fridays (column 1). When we split the sample into Friday and non-Friday announcers, we obtain a similar result for Friday announcers in column 2. This evidence is against the notion suggested by Michaely *et al.* (2016) that, if the Friday effect is a firm effect, a similar behaviour of Friday announcer firms should be expected on any weekday, not only on Fridays.

**Table 5.** Acquirers' average abnormal returns on Friday vs. non-Friday all-cash acquisition announcements of unlisted firms.

<b>Day of the acquisition announcement</b>	<b>Full sample (1)</b>	<b>Friday announcers (2)</b>	<b>Non-Friday announcers (3)</b>
Monday-Thursday	0.0103	0.0090	0.01157
<i>p</i> -value	0.000	0.001	0.000
N	158	77	81
Friday	0.0020	0.0020	
<i>p</i> -value	0.442	0.442	
N	34	34	

*Notes:* The table reports regression results for cash-financed acquisition announcements of unlisted firms in 1998–2018. Column 1 uses the full sample of announcements and firms. Column 2 includes all announcements by the Friday announcer firms. Column 3 includes all announcements by the non-Friday announcer firms. Robust standard errors are clustered by firm.

Next, we explore the differential market response to acquisition announcements. Table 6 is similar to Table 3 from Michaely *et al.* (2016). In column 1 of Table 6, we replicate the results in Farinós *et al.* (2021). Consistently, our results show a smaller market response to cash-financed acquisitions of unlisted firms on Friday. Specifically, the regression in column 1 shows that the average abnormal return is  $-0.84\%$  significantly less positive for

announcements on Fridays than for non-Friday ones.<sup>4</sup> In column 2, we examine the differential price response to non-Friday acquisition announcements by Friday announcer firms compared to non-Friday announcer firms using the Friday announcer indicator. We find a reduced reaction to acquisition announcements by the Friday announcer firms on these weekdays. However, and unlike Michaely *et al.* (2016), this reaction is not statistically significant. This evidence questions that the Friday effect detected in column 1 is due to a firm effect. In order to dig into this issue, in column 3, we estimate the model in column 1 on the relatively homogeneous sample consisting of only Friday announcer firms, which should correct for selection bias at the sample design stage. As in column 1, we find that the Friday indicator is negative and statistically significant, meaning that Friday announcer firms also underreact when acquisition announcements are made on Friday. As shown in column 4, in the sample of all announcements, Friday announcer firms have a non-significant 0.26% less positive response, being the Friday indicator of a significant  $-0.70\%$ .

**Table 6.** Market response to cash-financed acquisition announcements of unlisted firms.

	<b>Full sample (1)</b>	<b>Monday- Thursday (2)</b>	<b>Friday announcer (3)</b>	<b>Full sample (4)</b>	<b>Monday- Thursday (5)</b>	<b>Full sample (6)</b>
Friday	-0.0084 (0.014)		-0.0070 (0.087)	-0.0070 (0.082)		-0.0095 (0.022)
Friday announcer (binary)		-0.0026 (0.451)		-0.0026 (0.451)		
Friday announcer (frequency)					-0.0005 (0.960)	0.0037 (0.606)
Intercept	0.0103 (0.000)	0.0116 (0.000)	0.0090 (0.000)	0.0116 (0.000)	0.0104 (0.000)	0.0098 (0.000)
Observations	192	158	111	192	158	192
Adjusted R <sup>2</sup>	0.011	-0.009	0.004	0.003	-0.013	0.001

*Notes:* The table reports regression results for cash-financed acquisition announcements of unlisted firms in 1998–2018. The dependent variable is the abnormal announcement return of the acquiring firm estimated on the CAPM on the merger announcement day. *Friday* is an indicator equal to one for announcements on Fridays and to zero otherwise. *Friday announcer (binary)* is an indicator equal to one for firms that made at least one merger announcement on a Friday during the sample period and to zero otherwise. *Friday announcer (frequency)* is the frequency of Friday announcements of the Friday announcers. All the columns use the full sample of announcements and firms except column 3. Columns 2 and 5 are announcements by all firms on Mondays through Thursdays. Column 3 refers to all the announcements by the Friday announcer firms. Robust standard errors are clustered by firm, and the *p*-values are provided in parentheses.

<sup>4</sup> Obviously, the value of the intercept in Table 6 is the same as the average abnormal return for non-Friday announcements in column 1 of Table 5.

In order to account for heterogeneity in the sample of Friday announcer firms, we replicate columns 2 and 4 by replacing the binary indicator of Friday announcer with the frequency of Friday announcements by the Friday announcers (columns 5 and 6, respectively). Again, our results show non-significant values for this variable.

Overall, results from Table 5 and Table 6 do not evidence that selection bias may distort the original finding of reduced reaction and investor inattention to cash-financed acquisition announcements of privately held firms on Fridays. Therefore, the results do not support *Hypothesis 1*.

Table 7 and Table 8 replicate Table 5 and Table 6, respectively, but now in terms of abnormal trading volume of acquirers at the announcement date. As in Farinós *et al.* (2021), column 1 shows that announcers experience a significantly higher average trading volume on the day of the acquisition announcement except for acquisition announcements made on Friday, which, in turn, is consistent with the inattention hypothesis. As in Table 5, when the sample is split into Friday and non-Friday announcers, we obtain a similar result for Friday announcers in column 2.

**Table 7.** Acquirers’ average abnormal trading volume on Friday vs. non-Friday all-cash acquisition announcements of unlisted firms.

<b>Day of the acquisition announcement</b>	<b>Full sample (1)</b>	<b>Friday announcers (2)</b>	<b>Non-Friday announcers (3)</b>
Monday-Thursday	0.1479	0.1331	0.1634
<i>p</i> -value	0.000	0.004	0.003
N	141	72	69
Friday	0.0682	0.0682	
<i>p</i> -value	0.170	0.170	
N	28	28	

*Notes:* The table reports regression results for cash-financed acquisition announcements of unlisted firms in 1998–2018. Column 1 includes the full sample of announcements and firms. Column 2 refers to all the announcements made by the Friday announcer firms. Column 3 refers to all the announcements made by the non-Friday announcer firms. Robust standard errors are clustered by firm.

Table 8 presents results for the differential abnormal trading volume activity in response to acquisition announcements. As in Farinós *et al.* (2021), though the abnormal trading volume for the Friday announcements is smaller than that of the non-Friday announcements, it is not significantly different (column 1). In column 2, we examine the differential trading volume response to non-Friday acquisition announcements by Friday announcer firms compared to non-Friday announcer firms using the Friday announcer

indicator. Consistent with Table 7, we find a reduction in abnormal trading volume, but, then again, non-significant. When we estimate the model in column 1 on the relatively homogeneous sample consisting of only Friday announcer firms (column 3), we find that the Friday indicator is negative and statistically non-significant, which means that Friday announcer firms do not underreact when acquisition announcements are made on Friday either. Therefore, results from column 1 to 3 suggest a similar behaviour of the announcer firms and, thus, an absence of selection bias. The evidence from the remainder of columns points to this very conclusion when the sample of all announcements is employed with the Friday indicator (column 4) and even when we replace the binary indicator of Friday announcer with the frequency of Friday announcements by the Friday announcers (columns 5 and 6). Again, our results show non-significant values for this variable. As discussed above, evidence from Table 7 and 8 leads us to reject *Hypothesis 2*.

**Table 8.** Acquirer’s abnormal trading volume on cash-financed acquisition announcements of unlisted firms.

	Full sample (1)	Monday- Thursday (2)	Friday announcer (3)	Full sample (4)	Monday- Thursday (5)	Full sample (6)
Friday	-0.0797 (0.113)		-0.0649 (0.193)	-0.0649 (0.185)		-0.0671 (0.146)
Friday announcer (binary)		-0.0302 (0.646)		-0.0302 (0.646)		
Friday announcer (frequency)					-0.0228 (0.892)	-0.0443 (0.741)
Intercept	0.1479 (0.000)	0.1634 (0.002)	0.1331 (0.004)	0.1634 (0.002)	0.1515 (0.001)	0.1549 (0.000)
Observations	169	141	100	169	141	169
Adjusted R <sup>2</sup>	-0.007	-0.014	-0.020	-0.020	-0.016	-0.021

*Notes:* The table reports regression results for cash-financed acquisition announcements of unlisted firms in 1998–2018. The dependent variable is the abnormal announcement trading volume of the acquiring firm estimated as the difference between the log transformation of the trading volume for day  $t_0$  and the average of the log transformation of the trading volume for days  $-7$ ,  $-14$ ,  $-21$ , and  $-28$  relative to  $t_0$ . *Friday* is an indicator equal to one for announcements that are made on Fridays and to zero otherwise. *Friday announcer (binary)* is an indicator equal to one for firms that made at least one merger announcement on a Friday during the sample period and to zero otherwise. *Friday announcer (frequency)* is the frequency of Friday announcements by the Friday announcers. All the columns except column 3 use the full sample of announcements and firms. Columns 2 and 5 are announcements by all firms made Mondays through Thursdays. Column 3 includes all the announcements by the Friday announcer firms. Robust standard errors are clustered by firm, and the  $p$ -values are provided in parentheses.

## 5.2. Friday and non-Friday announcer differences in observable firm characteristics

Table 9 compares the average characteristics of Friday announcer and non-Friday announcer firms. In this univariate analysis, we do not find significant differences between these two groups for none of the firm characteristics.

**Table 9.** Firm characteristics for Friday announcer firms (F) and non-Friday announcer firms (NF).

	<b>Friday announcer</b>	<b>Non-Friday announcer</b>	<b>F – NF</b>
Market value	4830.72 [111]	4457.57 [81]	373.14 (0.784)
Stand. market value	4.97 [111]	4.41 [81]	0.56 (0.682)
MTB	2.90 [108]	3.08 [74]	-0.19 (0.711)
ROA	5.27 [108]	5.31 [76]	-0.04 (0.960)
Leverage	0.44 [110]	0.48 [79]	-0.05 (0.138)
Analysts	7.78 [85]	9.11 [64]	-1.33 (0.379)

*Notes:* The table reports the average of firm characteristics for announcements made by Friday announcer (F) and non-Friday announcer (NF) firms. The number of observations is presented in brackets. The  $p$ -values are presented in parentheses. The  $t$ -tests for the mean differences assume unequal variances.

In Table 10 we identify, from a multivariate perspective, the observable firm characteristics that appear to be predictors of an acquirer being a Friday announcer firm.<sup>5</sup> None of the observable characteristics is significant, either in the probit regression or the tobit regression. Therefore, *Hypothesis 3* is rejected.

In brief, the results from Table 9 and 10 reinforce the intuition from previous sections that the market underreaction to Friday announcements of all-cash acquisitions of unlisted firms in the Spanish market is not determined by a firm effect.

<sup>5</sup> We rerun both regressions excluding the variable *analysts* (for which data is available since 2005) so the number of observations increased 28% until 177. The results are analogous to those presented in Table 10.

**Table 10.** Likelihood of being a Friday announcer firm.

	Dependent variable	
	Friday announcer indicator (1)	Frequency of Friday announcements (2)
Stand. market value	0.0050 (0.807)	0.0021 (0.709)
MTB	0.0171 (0.626)	0.0127 (0.245)
ROA	-0.0116 (0.740)	0.0027 (0.802)
Leverage	-0.2680 (0.704)	0.0692 (0.723)
Analysts	-0.0146 (0.511)	-0.0082 (0.204)
Intercept	0.4955 (0.236)	0.0955 (0.335)
Observations	138	138
Pseudo R <sup>2</sup>	0.011	0.0440

*Notes:* Column 1 shows the results for the probit regression, where the dependent variable is the Friday announcer firm indicator that takes value one if the acquisition announcement is made by a Friday announcer firm and zero otherwise. Results from the tobit regression appear in column 2, where the dependent variable is the frequency of Friday announcements by the acquirers in the full sample. Robust standard errors are clustered by firm, and the *p*-values are provided in parentheses.

## 6. Conclusions

Although prior research has found that acquirers of unlisted target firms gain positive and significant abnormal returns in cash-financed acquisition announcements regardless of firm and deal characteristics, Farinós *et al.* (2021) show, for the first time, market underreaction to acquisition announcements on Friday. This Friday effect is consistent with the inattention hypothesis.

In this research, we have explored whether this evidence is spurious, as Michaely *et al.* (2016) suggest for several corporate events in the U.S. market. Specifically, these authors claim that the market underreaction to Friday announcements is not related to the day of the week on which the announcement is made; instead, they claim that it is caused by the differences between the characteristics of the firms that make Friday announcements and those of firms that do not make Friday announcements. That is, it is a consequence of selection bias.

Unlike Michaely *et al.* (2016), we extend our analysis of the abnormal return market response to Friday acquisition announcements to market response in terms of abnormal

trading volume. We employ a final sample of 192 all-cash acquisition announcements of unlisted target firms released by listed Spanish firms from 1998 to 2018.

Overall, our results for both abnormal return and abnormal trading activity do not evidence that selection bias may distort the original finding of reduced reaction and investor inattention to cash-financed acquisition announcements of privately held firms on Fridays. As expected from these results, we do not find significant differences between Friday announcer firms' observable firm characteristics and those of non-Friday announcer firms from neither a univariate nor a multivariate perspective. Therefore, we conclude that the market does not react differently to the type of firms that make their announcements on Fridays. Instead, inattention remains a reasonable explanation.

The evidence presented here does not put an end to the research in the field. Future research should address, for example, the relation between the Friday market underreaction and changes in the balance between liquidity (retail) traders and sophisticated (institutional) traders. In any case, this research shows that out-of-sample evidence from developed country capital markets is relevant in order to test the generalization of U.S. market results.

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