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Article

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BRQ Business Research Quarterly

Provided in Cooperation with:

Asociación Científica de Economía y Dirección de Empresas (ACEDE), Madrid

Suggested Citation: Farinós Viñas, José Emilio; Herrero, Begoña; Latorr, Miguel A. (2020) : Market valuation and acquiring firm performance in the short and long term: Out-of-sample evidence from Spain, BRQ Business Research Quarterly, ISSN 2340-9436, Sage Publishing, London, Vol. 23, Iss. 1, pp. 1-14,
<https://doi.org/10.1177/2340944420901048>

This Version is available at:

<https://hdl.handle.net/10419/261871>

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Market valuation and acquiring firm performance in the short and long term: Out-of-sample evidence from Spain

Business Research Quarterly
Volume 23: 1–14
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sagepub.com/journals-permissions
DOI: 10.1177/2340944420901048
journals.sagepub.com/home/brq

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Abstract

We investigate bidder's short- and long-term performance in periods of high and low valuation market in response to announcements of acquisitions carried out by Spanish listed firms over the period 1991–2016. We find that acquirers of unlisted targets fully react at the announcement date in high valuation periods, meanwhile the underreaction of listed target bidders at the moment of the announcement in low valuation markets is the result of return continuations. In addition, we find that the market reaction do not depend on recent merger history. Therefore, we provide evidence that bidder reaction to acquisitions is not consistent with the predictions of market sentiment (optimism) after controlling for the listing status of the target firm, not supporting, for a thinner market as the Spanish one, the evidence observed in US and UK markets.

JEL CLASSIFICATION G14; G34; L33; D81

Keywords

Firm acquisition, Underreaction, Market sentiment, Managerial overconfidence, Market valuation

Received: 2 March 2018; accepted: 8 January 2019

Introduction

Many recent studies on corporate acquisitions document an abnormal return pattern in the short term that is reversed or continued over the long run and suggest the presence of factors other than the value created by the acquisition (see Kadiyala and Rau, 2004; Moeller et al., 2004; Rosen, 2006; Baker and Wurgler, 2011; Nguyen et al., 2012; Graham et al., 2013; for evidence in the US market and Petmezas, 2009; Croci et al., 2010; for evidence in the UK market). According to the behavioural finance literature these anomalies are the consequence of the behaviour of investors and managers that is less than fully rational (Baker and Wurgler, 2011).

On the one hand, the irrational investors approach assumes that corporate decisions, as mergers and acquisitions, are the response of fully rational managers to securities market mispricing due to a misestimation of the future gains from acquisitions (Loughran and Vijh, 1997; Rau

and Vermaelen, 1998; Zaremba et al., 2018). On the other, the irrational managers' approach assumes that managers have behaviour biases, as hubris and overconfidence or managerial entrenchment, among others (Roll, 1986; Andrade et al., 2001; Moeller et al., 2004).

In line with the irrational investors approach, the investor sentiment theory predicts that the acquisition performance is the result of optimistic beliefs of investors in

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periods of high market valuations (Rosen, 2006; Antoniou et al., 2008; Petmezas, 2009). In high valuation periods, investors are more likely to overestimate potential synergies and under-estimate the risks associated with the merger. Thus, as the overall state of the market is optimistic, bidders would take advantage of the upward trend and the market reaction to corporate events in the short run would be more positive than in low valuation periods. However, if the initial expectations of the acquisitions were not met, reversals in long-term returns would be expected. Alternatively, according to Kadiyala and Rau (2004), behavioural models are consistent with the underreaction of prices to public corporate information as a result of conservatism which lead investors to update their beliefs very slowly in the presence of new information. In any event, it is an ongoing question on which we try to shed some light with this research performed in the Spanish market.

The aim of this study is to investigate whether investor sentiment based on non-rational behaviour is behind the shareholder wealth effect around corporate acquisitions, focusing directly on aspects like market sentiment, the size of the firm and the public or private status of the target firm. To this end, we analyze the short-run reaction to acquisitions announcements and extend our analysis to the long term to observe the evolution of prices according to the risks to which this process is exposed. Besides, we test the presence of investor behaviour biases by examining the market's reaction to post-acquisition quarterly earnings announcements for the sample of acquirers. Finally, we investigate if the observed short- and long-run abnormal returns depend on merger momentum, that is, if the recent merger history of the market and the bidding firm may be affected by investor or manager behaviour biases.

Contrary to the stylized fact of overreaction reported in US studies, our findings are consistent with previous studies for the Spanish market, that found evidence of underreaction (Latorre et al., 2014), and for the US and UK markets by Kadiyala and Rau (2004) and Croci et al. (2010), respectively, who show no reversal long-run returns on corporate acquisitions. Specifically, we find that the Spanish market fully reacts to the acquisition announcement, showing value creation for unlisted targets, except for the smallest bidders of listed targets in low valuation periods for which we observe positive announcement returns in the long run, showing evidence of underreaction of prices to corporate acquisitions. Our study extends the previous evidence of Latorre et al. (2014) and delves more deeply into several aspects, such as the size of the bidder, the presence of merger momentum and some investor behaviour biases. Besides, we do not find significant market reaction to post-acquisition quarterly earnings announcements, leading us to reject the presence of biases in investor behaviour. Finally, we provide evidence of previous overoptimism with firms that buy listed firms. Nevertheless, the fact that we do not observe correlation

between the market reaction to a merger announcement and recent merger activity leads us to reject the presence of merger momentum.

This study makes several contributions to the literature. First, we provide evidence of underreaction in companies that buy listed firms. Second, we report that the post-acquisition stock price performance of acquirers of listed targets is adjusted slowly, especially when the acquirer is a small firm. Third, we observe that the market correctly values the acquisition of unlisted companies, although it shows weak evidence of underreaction. Finally, we do not observe the presence of investor sentiment based on non-rational decisions, although further investigation is needed in order to determine the presence of momentum. Therefore, the evidence found suggests that changes in the value of the shares of bidding firms are not the result of any behavioural biases.

As far as we know, there is no evidence of the phenomenon of optimistic investor sentiment from the perspective of the acquiring firm in an acquisition process from countries other than the USA and the UK. Therefore, out-of-sample studies from other well-developed countries capital market are necessary in order to test the presence of optimistic beliefs on investors around corporate acquisitions. Our study is useful in developing a broader view of what determines acquirers' wealth.

The paper is structured as follows. "Behavioural finance and acquisitions: international evidence" section reviews the international evidence about the value creation by acquisitions in the light of behavioural finance. "Hypotheses to test and research design" section presents hypotheses to test and research design. "Sample and methodology" section describes the sample and the empirical methodology. "Results" section presents and interprets results for the short- and long-term analysis, merger momentum, earnings announcements returns and returns continuations analysis. Finally, "Conclusions" section concludes.

Behavioural finance and acquisitions: International evidence

The neoclassical theory assumes that managers act to maximize shareholder value. According to this theory, there is a wide empirical evidence on mergers and corporate acquisitions (M&As) that documents several determinants of acquisitions that increase value creation, such as synergy, increase of market power, response to industry shocks, economies of scale, financial synergies, taxes and the exploitation of asymmetric information between the acquirer and the target firm. On the other hand, there are some factors that reduce value creation, such as agency conflicts, pride and timing, as presented by Nguyen et al. (2012) for the US market. Other authors suggest that M&As are subject to country idiosyncrasies. Thus, Moschieri and Campa (2014) evaluate the characteristics

and the key determinants of the likelihood of completion for all the member states of the European Union and conclude that M&As are affected by residual country factors.

In contrast to this rational perspective, behavioural finance literature defends the notion that the value created by the announcement of an acquisition for the acquiring company is the consequence of the investors' and/or managers' limited rationality (Baker and Wurgler, 2011). In this context, the value created by the acquisition would be an anomaly that extends in time. The behavioural finance framework offers two approaches about the presence of long-run anomalies on corporate acquisitions: one internal, due to agency cost and to a loss of value associated with manager's decisions; and another external, based on the non-rational decisions of analysts and investors (Shefrin, 2001). Besides, Jacobs (2015) shows that the performance of most anomalies is strongly influence by market sentiment implying that many of the abnormal returns would be increased in hot market periods. Additionally, Chuang (2018) claims that the market timing can be a determinant to influence the performance of glamour versus value firms in M&As and finds that bidders are more probably to involve in diversifying acquisitions during hot markets. In this context, small (large) bidding firms are more likely to engage in M&As during the hot (cold) market timing. Chidambaran et al. (2010) provide evidence that acquisitions premium are larger in the hot merger markets.¹

Regarding the behaviour of managers related to acquisitions, Roll (1986) states that managers are influenced by their pride and overconfidence in making their acquisition decisions. Porter and Singh (2010) and Danbolt et al. (2015) find that managers overestimate synergies and under-estimate the costs associated with the acquisition. This excessive optimism and overconfidence of managers will destroy the value of transactions in the future. Graham et al. (2013) show that managers who initiate mergers and acquisitions are more optimistic and more risk tolerant. Other arguments are considered by Zaremba and Grobelny (2017) who suggest that managers are fully rational when the acquisition is paid with overvalued stocks although future price reversals are expected in the long run. In this context, Croci et al. (2010) examine the interaction between market valuation and managerial overconfidence. Their results provide evidence about the greater performance of acquisitions by non-overconfident managers in high valuation periods compared to the acquisitions performed by overconfident managers in low valuation periods. In addition, bidders with non-overconfident managers appear to gain more in high valuation periods, while firms perform better without over-confident managers.

The second behaviour approach refers to the beliefs of irrational investors as a driver for abnormal returns. In fact, the investor sentiment theory defends that the optimistic beliefs of investors in periods of high market valuations causes positive abnormal returns for the acquirers in

the short-run. Rosen (2006) provides evidence that investor reaction to the acquisition announcement can be influenced by their own optimism.

Previous evidence detects the coexistence of both manager and investor behaviour biases. Baker and Wurgler (2011) suggest that investor sentiment coexists with managerial overconfidence. If managers are rewarded for the increase in the stock price, then they have an incentive to make bad acquisitions in hot markets. In this context, if investor sentiment is optimistic, acquirers will enjoy high returns during periods of high valuation that would be reversed in the long-term. Meanwhile, Petmezas (2009) shows results that support investor sentiment, that is, the optimistic behaviour of investors in periods of high market valuation. This author detects that the largest acquisitions are conducted in high valuation periods and that the acquisitions of unlisted companies exceed those of listed companies. His results indicate that the initial positive market reaction during periods of high valuation of the acquirer and the subsequent reversal in the long-term reflects the price correction due to investors gradually learning that many of the acquisitions made in bull periods were reck-less and not carefully evaluated. This author suggests that managers make acquisitions in bull markets because they are influenced by their pride, by the pursuit of private benefits, by the optimistic overestimation of the acquired company and, of course, by the desire to benefit shareholders. Therefore, managers overestimate the synergies of the merger in hot markets, when they are more exposed to bad acquisitions.

Previous evidence shows that there is firm specific characteristic in terms of form of payment (cash, stocks and mix), diversified acquisitions and size that may be determinants to influence to create value on corporate acquisitions. These characteristics have been also analyzed from the perspective of behavioural finance. Kadiyala and Rau (2004) present a behavioural explanation for the investor reaction to the information conveyed by the event itself that includes the information available prior to the event. These authors document that cash-financed acquisitions and repurchases are characterized by return continuations. Their results are most consistent with the underreaction model. In hot markets, acquirer returns are lower for stock financed mergers (Chidambaran et al., 2010). These firms are also more likely to have more access to debt markets and would more likely finance with cash or debt. These researchers propose in the context of behavioural theory that the higher premium is a result of the overvaluation of the stock in comparison with the neo-classical theory where the higher premium comes from the competition from several bidders that have experienced the positive technological shock to the industry. Conversely, Zaremba et al. (2018) suggest that results are independent from the form of payment.² Chuang (2018) suggests that transactions involved in diversifying acquisitions obtain

lower post-announcement returns. In contrast, prior evidence shows that bidders in diversification acquisitions are associated with positive abnormal returns. Regarding the size of acquirers and targets, Lakonishok and Vermaelen (1990) explain that small companies that receive less attention from analysts are more likely to be undervalued. This would imply that large inefficiencies in the stock price would be present in smaller companies. In the case of frontier markets, Zaremba (2016) finds that the value of the anomalies is much stronger within emerging markets than in developed ones.

An issue that has been the subject of analysis regarding the existence of abnormal short-run returns around M&As is whether they are due to merger momentum (Rosen, 2006; Antoniou et al., 2008; Petmezas, 2009). Rosen (2006) defined merger momentum as the correlation between the market reaction to a merger announcement and recent market conditions and explains that it can be originated by three different causes. First, and according to the neoclassical theory, merger momentum may reflect common factors that influence synergies, so mergers concentrated around periods of market optimism should be better than other mergers and a positive correlation between merger activity and the market reaction to a merger announcement should be expected. The second theory is that merger momentum may result from overconfident managers who misevaluate the results of the merger, especially during periods of market optimism, which results in overpayment. If managerial motivations dominate, the correlation could be negative. The last theory is that merger momentum results from investors becoming overoptimistic about acquisitions announced during high valuation periods. Therefore, a positive trend in announcement returns to acquirer firms should be observed during periods of market optimism, resulting in merger momentum, i.e. in positive returns in the short-run. Nevertheless, the long-run prediction differs depending on the type of merger momentum. If mergers are made to exploit synergies, they should add value in the long-run and no long-term price reversals may be expected. Moreover, mergers resulting from irrational managers should harm value and there is no reason for reversing the initial stock price reaction in the long run. However, if mergers are the result of overly optimistic beliefs of investors, price reversals in the long run should be expected when the optimism is replaced by reality.

In any case, post-announcement long-term abnormal returns may be explained from two perspectives. On the one hand, long-term abnormal returns would be caused by the slow adjustment of prices that occurs when investors slowly adjust their expectations about the post-merger performance of the acquiring firm as public information is incorporated into prices. In this context, previous results on the US market are inconclusive. Some authors find a negative stock price reaction to post-acquisition earnings announcements (Rangan, 1998; Denis and Sharin, 2001)

while Shivakumar (2000) and Brous et al. (2001) do not find significant abnormal returns. On the other hand, post-announcement long-term abnormal returns may merely be a manifestation of return continuations.³

Hypotheses to test and research design

Considering previous theoretical arguments and empirical evidence from “Behavioural finance and acquisitions: international evidence” section, we state the following first hypothesis:

H1. According to neoclassical theory a full reaction of prices to acquisition announcements is expected both in high and in low valuation markets.

In order to test H1, we compute short-run abnormal returns around the acquisition announcement date and long-term abnormal returns after the acquisition. In this analysis, we take into account two factors that previous literature shows as determinants of value creation: the listing status of the target firm (for evidence from the Spanish market see Farinós et al., 2011, 2017; Latorre et al., 2014) and the valuation status (“high” or “low”) of the market (market sentiment) when the announcement takes place (Petmezas, 2009). Taking a look to this combination of short- and long-term returns it is possible to find out if there is (or not) a full reaction of the market prices to the acquisition announcement regardless of what the “sentiment” of the market is.

Two main results arise from the above experiment: (a) short-run positive and significant abnormal returns combined with zero long-term abnormal returns for acquirers of unlisted firms in high valuation periods; and (b) zero short-run abnormal returns combined with long-term positive and significant abnormal returns for acquirers of listed firms in low valuation periods. This evidence leads us to face the question of the rationality (or non-rationality) response of investors to acquisition announcements. Specifically, (i) we wonder whether result (a) truly implies the market reaction to value creation or it is a mere manifestation of investors’ overoptimism (H2); and (ii) we explore whether result (b) is a manifestation of a slow adjustment of prices after the acquisition event that would reflect that part of the net present value of the merger to the acquirer that is not captured by the announcement period return (H3a) or it is the consequence of the return continuation phenomenon, which is unrelated to the event itself (H3b).

Therefore, we state the following hypotheses:

H2. If investors are overoptimistic especially in periods of high market valuation, a positive correlation between merger activity and merger reaction to the announcement is expected.

Table 1. Sample selection process.

| | Observations |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Initial sample | 387 |
| Less: | |
| – Overlapping acquisition announcements that take place by the same firm either 12 months prior to or 24 months following an acquisition announcement day (t_0) | (149) |
| – Contaminating events in the window ($t_0 - 5$, $t_0 + 5$) that may affect the target firm price | (14) |
| – Stock market data not available for purchasing firms 12 months prior to or 24 months following an acquisition announcement day (t_0) | (74) |
| – Unknown listing status of the acquired company | (4) |
| Final sample | 146 |

H3a. If investors are affected by behaviour biases, specifically conservatism, then investors will update their beliefs slowly in the presence of new information.

H3b. If prior to the acquisition investors are optimistic about the future prospects of the firm, we should observe return continuations that are unrelated to the acquisition announcement.

We test H2 through the analysis of merger momentum. As discussed in “Behavioural finance and acquisitions: international evidence” section overoptimistic investors about acquisitions announced during high valuation periods will result in positive abnormal returns in the short-run if a positive trend in announcement returns to acquirer firms is observed resulting in merger momentum.

Regarding H3a, we test the presence of investor behaviour biases by examining the market reaction to post-acquisition quarterly earnings announcements for the sample of acquirers. If, prior to the acquisition, investors are cautious about the future prospects of the firm, when the quarterly earnings announcements of the firm after the acquisition convey positive information, we should observe positive abnormal returns around the announcement date. This test design relies on the premise that earnings announcements convey information that it is considered by investors to adjust their expectations of the performance of the acquiring firm.

Finally, we test H3b by estimating long-term abnormal performance previously to the acquisition announcement either for listed and unlisted target firms or high and low market valuation periods.

Sample and methodology

Data and sample selection

Information on acquisitions (announcement date, identity of bidders and targets, payment method, etc.) driven by Spanish listed firms is obtained from the web page of the Spanish Security Exchange Commission (*Comisión Nacional del Mercado de Valores* – CNMV). Once the official date was identified for each acquisition, we searched the financial press in the Factiva dataset for any previous rumour or leak in order to price the market information

arrival. Given the Spanish *Equity Market Law*, the CNMV orders a firm trading halt when it considers that a relevant piece of information could affect a firm’s market price.⁴ Thus, we only consider a rumour about an acquisition if the CNMV halts trading. Consequently, the event-day (t_0) will coincide with either the halt date because a rumour appeared in the press or the official acquisition communication date to the CNMV. The necessary information for this research comes from *Sociedad de Bolsas S.A.* and SABI, Amadeus, Thomson ONE and Datastream databases.

As do Chang (1998) and others, for an acquisition to be included in the sample, we require that it be a “completed control acquisition”. We define a completed control acquisition as one in which the buyer increased its ownership position to greater than 50%, regardless of the amount of the target firm’s stake previously owned by the buyer. Therefore, our initial sample consists of all acquisitions conducted by listed firms in the Spanish market (*Sistema de Interconexión Bursátil Español*, hereafter SIBE) over the period 1991–2016, that is, 387 purchases. For an acquisition announcement to remain in the final sample, it needs to meet the criteria shown in Table 1.

The application of these criteria yielded a sample of 146 acquisitions where 45 of the targets were listed and 101 were unlisted companies.

Given the aim of this research, we identify high and low market valuation periods. For each calendar month from 1991 to 2016, we compute the market-to-book ratio (MTB ratio hereafter) for every listed firm in the Spanish stock market (SIBE) and we obtain their median value in cross-section.⁵ Then, we compute the grand median for the whole period. Finally, a bidding announcement is classified to take place in “low market” (“high market”) if the MTB of the calendar month when it happens is above (under) the grand median.

Fig. 1 exhibits the time profile for the acquisitions from 1991 to 2016 and the classification of each year as a low or high valuation one. Note that the number of acquisitions is low during the initial bear market years and how it increases during the bull market period from 1998 to 2007. Then, during the early years of the global financial crisis (2008 and 2009) the number of acquisitions falls, but then recovers in 2010 and 2015.

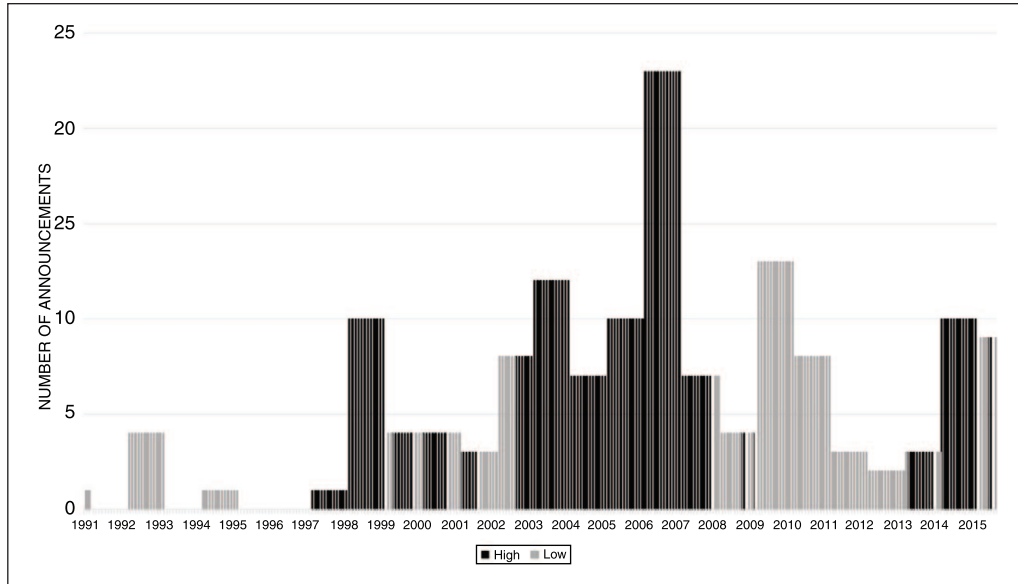


Figure 1. Time profile for acquisitions during high and low valuation periods.

Descriptive characteristics of the sample

Table 2 shows some characteristics of the firms in the sample according to the valuation periods. One common feature is that cash is the prevalent method of payment and the acquisition of unlisted firms largely exceeds that for listed companies regardless of whether the acquisition took place in a high valuation market (Panel B) or in a low valuation market (Panel C). Moreover, the size of the target and the acquirer (measured by total assets at the end of the year prior to the date of the acquisition announcement) are larger in the case of acquisitions of listed firms than for acquisitions of unlisted firms. As a result, the target firm's relative size (computed as the target's total assets divided by the acquirer's total assets) is higher on both average and median for publicly held companies. However, some distinctive characteristics arise when comparing acquisitions in hot markets and low markets. On the one hand, the number of acquisitions is greater during high valuation markets, representing about 67% of the total number of acquisitions (see Panel A and B). On the other hand, on average acquirers are larger and target firms are smaller during low valuation market periods than during high valuation markets. This is consistent with more severe financial restrictions during periods of economic slowdown.

Estimation of short-run abnormal returns

We employ conventional event study methodology in order to compute abnormal returns (AR) and cumulative abnormal returns (CAR) in the short-run. The event window is defined to be an eleven-day window centred on the day of the announcement ($t_0 - 5, t_0 + 5$), and the estimation window ('uncontaminated' interval) is defined to be a 100-day window ($t_0 - 26, t_0 - 125$).

In order to ensure the robustness of our results to model specification, we estimate 'uncontaminated' risk factors from the Capital Asset Pricing Model (CAPM) and the three-factor model developed by Fama and French (1993) that we show in expressions (1) and (2), respectively.

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

$$R_{it} - R_{ft} = \alpha_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it} \quad (2)$$

where R_{it} is the simple daily return of the acquirer firm i on day t , R_{ft} is the daily return on *Letras del Tesoro* (Spanish Treasury Bill), R_{mt} is the return on a value-weighted market index (specifically the Madrid Stock Exchange Index – IGBM), SMB_t is the difference in the returns of value-weighted portfolios of small stocks and big stocks, and HML_t is the difference in the returns of value-weighted portfolios of high market-to-book stocks and low market-to-book stocks.⁶

Given the size of our samples, we employ parametric and nonparametric tests in order to test the significance of average abnormal returns. Specifically, the parametric test used for equally-weighted abnormal return is the standard statistic t -Student. For value-weighted abnormal returns, we follow Eckbo and Norli (2005) and calculate the statistic t named U as in equation (3):

$$U = \frac{W'X}{(\sigma\sqrt{W'W})}, \quad (3)$$

where W is the vector of value-weights and X is the corresponding vector of cumulative abnormal returns. As non-parametric test, we employ the bootstrap methodology

Table 2. Summary statistics for acquirer and target companies by listing status of the target firm and valuation market periods. Panels A, B and C exhibit acquisitions during the whole time horizon of study (1991–2016), high valuation and low valuation periods, respectively. Acquirer and target's total assets are the value of total assets at the end of the year prior to the announcement date. Target firm's relative size is computed as target's total assets divided by acquirer's total assets.

| | Full sample | Listed targets | Unlisted targets |
|-----------------------------------------------|-------------|----------------|------------------|
| Panel A: Whole time horizon of study | | | |
| <i>Number of acquisition announcements</i> | | | |
| • Total | 146 | 45 | 101 |
| • By method of payment | | | |
| Cash | 127 | 35 | 92 |
| Stock + Mixed | 19 | 10 | 9 |
| <i>Acquirer total assets (in million €)</i> | | | |
| Mean | 28,168.63 | 68,980.50 | 10,563.50 |
| Median | 1471.24 | 4,860.61 | 895.37 |
| <i>Target total assets (in million €)</i> | | | |
| Mean | 2813.90 | 9,100.14 | 202.69 |
| Median | 32.23 | 404.20 | 18.74 |
| <i>Relative size</i> | | | |
| Mean | 0.10 | 0.13 | 0.02 |
| Median | 0.02 | 0.08 | 0.02 |
| Panel B: High valuation market periods | | | |
| <i>Number of acquisition announcements</i> | | | |
| • Total | 98 | 30 | 68 |
| • By method of payment | | | |
| Cash | 83 | 23 | 60 |
| Stock + Mixed | 15 | 7 | 8 |
| <i>Acquirer total assets (in million €)</i> | | | |
| Mean | 18,648.96 | 55,186.44 | 3292.63 |
| Median | 1236.71 | 3578.27 | 761.81 |
| <i>Target total assets (in million €)</i> | | | |
| Mean | 3355.51 | 10,480.61 | 188.80 |
| Median | 37.76 | 234.95 | 25.37 |
| <i>Relative size</i> | | | |
| Mean | 0.18 | 0.19 | 0.06 |
| Median | 0.03 | 0.07 | 0.03 |
| Panel C: Low valuation market periods | | | |
| <i>Number of acquisition announcements</i> | | | |
| • Total | 48 | 15 | 33 |
| • By method of payment | | | |
| Cash | 44 | 12 | 32 |
| Stock + Mixed | 4 | 3 | 1 |
| <i>Acquirer total assets (in million €)</i> | | | |
| Mean | 47,604.60 | 95,649.02 | 25,766.23 |
| Median | 2154.68 | 6322.65 | 1441.04 |
| <i>Target total assets (in million €)</i> | | | |
| Mean | 1510.02 | 5155.92 | 233.95 |
| Median | 24.37 | 563.08 | 16.24 |
| <i>Relative size</i> | | | |
| Mean | 0.03 | 0.05 | 0.01 |
| Median | 0.01 | 0.09 | 0.01 |

(Efron, 1982), relaxing the hypotheses of normality, stationarity and temporal independence of the observations.⁷

Estimation of long-term abnormal returns

In order to measure long-term abnormal returns, we use the calendar-time portfolio procedure. Fama (1998) and Mitchell and Stafford (2000) vehemently advocate the use

of calendar-time portfolio methods as they eliminate the problem of cross-correlation among sample firms and yields more robust test statistics in non-random samples.

In this research, the post-acquisition event period of interest is two years. Therefore, for each calendar month, we calculate the return on a portfolio composed of firms that had an acquisition announcement within the last two years of the calendar month. The performance in calendar time of the

event portfolio is tracked relative to an explicit asset-pricing model, testing whether the portfolio average monthly abnormal return is significantly different from zero. Analogous to “Estimation of short-run abnormal returns” section, we use the CAPM and the Fama–French three-factor model to estimate abnormal returns. Thus, in the latter case, long-term abnormal returns are estimated running regression (4):

$$R_{pt} - R_{ft} = \alpha_p + \beta_p (R_{mt} - R_{ft}) + s_p SMB_t + h_p HML_t + \varepsilon_{pt}, \quad (4)$$

where R_{pt} is the simple monthly return on the event calendar-time portfolio equally weighted, R_{ft} is the monthly return on *Letras del Tesoro*, R_{mt} is the monthly return on the IGBM, SMB_t is the difference in the monthly returns of value-weighted portfolios of small stocks and big stocks, and HML_t is the difference in the monthly returns of value-weighted portfolios of high market-to-book stocks and low market-to-book stocks. Heteroskedasticity has been corrected using White’s methodology.

Given the model, the estimation of the intercept (α_p) allows for the testing of the null hypothesis that the average monthly abnormal return of the event portfolio is zero, indicating the absence of abnormal performance.

Merger momentum analysis

We analyze whether short-run abnormal returns show price reaction to value creation or are caused by merger momentum by conducting cross-sectional regression analysis. Following Rosen (2006) and Antoniou et al. (2008), the dependent variable in the model is the market reaction to a merger in the short-run and the independent variables are merger momentum, market momentum and bidder-specific stock momentum and some control variables.

The dependent variable in the model, the market reaction to a merger in the short-run, is the two-day window CAR ($t_0 - 1, t_0$) for the bidding firm estimated either through the CAPM or the Fama–French three-factor model. Since the reaction to a merger announcement may depend on recent merger activity, we include two measures of past merger activity, one to capture waves, defined as the number of mergers during the 12-month pre-announcement period divided by 1000, and another to capture recent merger activity or merger momentum, defined as the average two-day CAR on merger announcements made in the 12 months prior to an announcement. The market momentum variable is proxied by the average 12-month pre-event return of the IGBM. This variable is an alternative way to measure whether market valuations affect acquisition performance. Bidder-specific stock momentum is measured using the average 12-month pre-event return. As a control variable we include the acquirer’s size measured as the log of the acquirer’s market value of common stock in the most recent December or June prior to the acquisition announcement

date. In order to obtain consistent estimations, we also use bootstrap to consider small samples. Heteroskedasticity has been corrected using White’s methodology.

Results

In this section we present the results of the estimation of short-run abnormal returns for acquirers around the day of the announcement date and the analysis of long-term abnormal returns in an horizon of 24 months following the announcement (Table 3); the analysis of momentum (Table 4); the earnings announcements abnormal returns (Table 5) and the pre-announcement performance of the acquirers during 12 months prior to the acquisition announcement (Table 6).

Acquirer announcement return and long-term performance

Table 3 presents two-day CARs and the regression results of the 24-month long-term performance analysis employing the Fama–French three-factor model for the full sample of acquisitions and considering the status of the target (listed or unlisted) and the valuation period.⁸

Regarding the short-run analysis, and consistent with previous evidence, the overall sample amounts to a significant positive equally-weighted CAR of 1.23%. However, when the sample is split by valuation periods, we only find significant gains for high valuation periods (1.22%) and insignificant returns for low valuations periods. This result suggests that acquirers gain in periods of bullish markets. This evidence is similar to Andrade et al. (2001), Bouwman et al. (2009), Petmezas (2009) and Croci et al. (2010), among others. The statistically insignificant returns observed when abnormal returns are computed value-weighted indicate that it is the smallest acquirers who gain in high valuation periods.

The analysis by target status shows a striking difference between listed and unlisted targets.⁹ Only the smallest bidders of unlisted targets obtain significant gains in the short-run (1.50% for the overall period). These results are similar to Chang (1998) and Draper and Paudyal (2006). Since only acquisitions in high valuation periods generate significant gains (1.54%) we might affirm that the market sentiment is behind this result. During hot markets, when optimism increases the market reaction should be more positive than at other times since, as Rosen (2006) states, investors may be overly optimistic in hot markets. Our findings are also consistent with biddings motivated by managerial opportunism. When optimism prevails, and the firm has more external resources to finance a merger, managers would be willing to buy large and prestigious firms and to pay a high premium for them, which in turn would have an insignificant effect on the acquirer’s stock price. It should be the case of listed firms which are usually larger and better known than privately held companies.

Table 3. Acquirer's short- and long-term abnormal performance by listing status of the target firm and market valuation. Short-run abnormal returns are two-day window CARs ($t_0 - 1, t_0$) estimated employing in the estimation of the 'uncontaminated' risk factors the Fama-French three-factor model. Significance for means is based on t-test and bootstrap methodology. Long-term abnormal performance is the average monthly abnormal return by estimating the intercept of the Fama-French three factor model of a calendar-time portfolio composed of firms that had an acquisition announcement within the last two years of the calendar month. Heteroskedasticity has been corrected using White's methodology. An acquisition announcement is classified to take place during a high (low) market valuation period if the Market-to-Book (MTB) of the calendar month when it happens is above (under) the MTB median of the whole horizon studied (1991–2016). Abnormal returns have been computed equally-weighted and value-weighted. Either abnormal returns or adjusted R-squared are expressed in percentage.

| | Acquirer's two-day CARs | | | Long-term AR of acquirers during 24 months following the acquisition | | |
|---------------------------------------------------|-------------------------|----------------|----------------------|----------------------------------------------------------------------|-------------------|-------------------|
| | Full sample | Listed targets | Unlisted targets | Full sample | Listed targets | Unlisted targets |
| Panel A: Equally-weighted abnormal returns | | | | | | |
| <i>Panel A.1: Whole time horizon</i> | | | | | | |
| Abnormal return | ***1.23 ^a | 0.62 | ***1.50 ^a | 0.18 | 0.33 | −0.12 |
| Adj. R-squared | | | | 59.02 | 55.16 | 33.40 |
| <i>Panel A.2: High valuation market periods</i> | | | | | | |
| Abnormal return | ***1.22 ^b | 0.50 | ***1.54 ^b | 0.12 | 0.21 | −0.28 |
| Adj. R-squared | | | | 63.44 | 66.13 | 27.69 |
| <i>Panel A.3: Low valuation market periods</i> | | | | | | |
| Abnormal return | **1.24 | 0.85 | *1.41 | 0.97 ^a | 1.18 ^c | 0.26 |
| Adj. R-squared | | | | 34.10 | 32.53 | 31.14 |
| Panel B: Value-weighted abnormal returns | | | | | | |
| <i>Panel B.1: Whole time horizon</i> | | | | | | |
| Abnormal return | **0.71 ^c | 0.54 | *1.00 ^c | 0.00 | 0.00 | 0.53 ^b |
| Adj. R-squared | | | | 64.11 | 59.76 | 43.28 |
| <i>Panel B.2: High valuation market periods</i> | | | | | | |
| Abnormal return | *0.63 | 0.54 | 0.80 | −0.19 | 0.40 | 0.55 |
| Adj. R-squared | | | | 63.84 | 63.48 | 30.31 |
| <i>Panel B.3: Low valuation market periods</i> | | | | | | |
| Abnormal return | *0.86 | 0.54 | 1.31 | 0.60 | 0.84 ^c | 0.50 |
| Adj. R-squared | | | | 34.29 | 43.48 | 31.47 |

*Significantly different from zero at the 10% level, using bootstrap.

**Significantly different from zero at the 5% level, using bootstrap.

***Significantly different from zero at the 1% level, using bootstrap.

^aSignificantly different from zero at the 1% level, using the t-test.

^bSignificantly different from zero at the 5% level, using the t-test.

^cSignificantly different from zero at the 10% level, using the t-test.

An interesting finding that emerges from the analysis in the long-term is that only the intercepts corresponding to listed targets in low valuation periods are statistically significant when abnormal returns are computed both equally- (1.18%) and value-weighted (0.84%), indicating a slow price adjustment.¹⁰ This result suggests that investors underestimate the operational efficiencies and synergy gains of smaller bidders when the target is listed in low valuation periods. It should also indicate the fear of overpayment in a context of managerial optimism with managers that feel they have the ability to identify synergies and select good targets. Regarding the acquisition of unlisted companies, the results support the notion that the market values the acquisition correctly in the short-run.

The overall results suggest that, firstly, the market correctly values the announcement of the acquisition of unlisted companies in high valuation periods. Secondly,

investors underestimate the value of the transaction when made by the acquirers of listed firms at the time of the acquisition announcement in low valuation periods, erroneously extrapolating zero value creation. As a consequence, the stock price of the latter is corrected in the long-term as the benefits from the transaction arise. Therefore, results from Table 3 lead us to accept Hypothesis 1 but only for the acquisition of unlisted companies. A more in-depth analysis is necessary to rule out behavioural biases that could explain the performance found for bidders of listed firms.

In this sense, our evidence is consistent with some behavioural models that predict an underreaction pattern where long-term returns continuations are expected (Kadiyala and Rau, 2004; Croci et al., 2010). However, our findings are not coincident with Petmezas (2009), Porter and Singh (2010), Danbolt et al. (2015), Zaremba and Grobelny (2017) and Chuang (2018) who find

Table 4. Merger momentum analysis through ordinary least squares regression of short-run cumulative abnormal at the acquisition announcement date. This table presents regression estimates of the acquirer's two-day cumulative abnormal return CAR ($t_0 - 1, t_0$) on acquisitions for the full period and for high-valuation periods. The dependent variable is estimated by the Fama–French three-factor model. The independent variables are: the number of mergers during the 12-month pre-announcement period divided by a scale of 1000; merger momentum, defined as the average two-day CAR on merger announcements made in the 12 months prior to an announcement; market momentum defined as the average 12-month pre-event return of the IGBM. Firm momentum is measured using the average 12-month pre-event return. Acquirer's size is the log of the acquirer's market value of common stock in the most recent December or June prior to the acquisition announcement date. Heteroskedasticity has been corrected using White's methodology.

| | Full sample | Listed targets | Unlisted targets |
|-----------------------------------------------|------------------------|-----------------------|------------------------|
| <i>Panel A: Whole time horizon</i> | | | |
| Intercept | 0.050 | 0.066 | *0.065 |
| Number of mergers | 0.085 | *-0.727 | 0.362 |
| Merger momentum | 0.109 | 0.052 | -0.040 |
| Market momentum | -0.252 | ***0.895 ^b | *-0.745 ^c |
| Firm momentum | ** -0.337 ^b | -0.494 | ** -0.29 ^c |
| Acquirer's size | -0.004 | -0.004 | *-0.006 |
| R-Squared | 0.04 | 0.19 | 0.08 |
| F-Statistic | 1.34 | 1.05 | 2.43 |
| Prob (F-statistic) | 0.250 | 0.402 | 0.040 |
| <i>Panel B: High valuation market periods</i> | | | |
| Intercept | **0.098 ^b | 0.042 | **0.107 ^b |
| Number of mergers | -0.313 | *-0.781 | -0.034 |
| Merger momentum | -0.177 | 0.429 | ** -1.208 ^c |
| Market momentum | **0.586 ^c | **0.993 ^c | 0.361 |
| Firm momentum | ***-0.423 ^b | *-0.886 | ***-0.382 ^b |
| Acquirer's size | ** -0.009 ^c | -0.002 | *-0.009 |
| R-Squared | 0.11 | 0.31 | 0.10 |
| F-Statistic | 2.33 | 1.80 | 3.25 |
| Prob (F-statistic) | 0.049 | 0.151 | 0.012 |
| <i>Panel C: Low valuation market periods</i> | | | |
| Intercept | -0.052 | 0.149 | -0.016 |
| Number of mergers | **2.574 ^b | 4.733 ^a | 1.589 |
| Merger momentum | -0.125 | -0.172 | 0.462 |
| Market momentum | ** -0.835 ^c | 0.590 | ** -1.484 ^b |
| Firm momentum | -0.083 | 0.727 ^c | -0.460 |
| Acquirer's size | 0.002 | -0.020 ^b | -0.001 |
| R-Squared | 0.16 | 0.69 | 0.24 |
| F-Statistic | 2.08 | 8.84 | 2.84 |
| Prob (F-statistic) | 0.088 | 0.006 | 0.036 |

*Significantly different from zero at the 10% level, using bootstrap.

**Significantly different from zero at the 5% level, using bootstrap.

***Significantly different from zero at the 1% level, using bootstrap.

^aSignificantly different from zero at the 1% level, using the t-test.

^bSignificantly different from zero at the 5% level, using the t-test.

^cSignificantly different from zero at the 10% level, using the t-test.

overreaction, that is, bidder reactions are consistent with the predictions of investor sentiment (optimism) generating short-run significantly large abnormal returns followed by long-term reversals during bullish markets.

Merger momentum

Table 4 shows that there is no evidence of merger momentum indicating that recent history on mergers has no effect on acquirer's wealth around the announcement of an acquisition.

Due that the purpose of this section is to analyze the positive abnormal returns obtained in the short-run from the acquisition of unlisted targets in periods of high valuation, we only comment in detail this result. The merger momentum indicates that results of previous acquisitions are negative and significantly related to the abnormal returns obtained on the current merger announcement leading us to reject Hypothesis 2. If investors would have been overoptimistic, a positive correlation with the results of previous mergers would be expected (Rosen, 2006). The firm momentum indicates that bidder's trailing 12-month

Table 5. Average CAR for a two-day window centred on the day of the quarterly earnings announcement over the year prior to and the two years following the acquisition announcement. The table exhibits average CARs on the two-day window ($t_0 - 1, t_0$), where t_0 is the date of the quarterly earnings announcement, over quarters -4 through +8 relative to the date of the acquisition, where quarter 0 is the fiscal quarter in which the acquisition is performed. A year is classified to be a low (high) market valuation year if the MTB ratio median of all the companies listed that year is on the bottom (top) 50% of the whole horizon studied (1991–2016). Abnormal returns are estimated employing the Fama–French three-factor model. Significance is based on *t*-test and bootstrap methodology. Abnormal returns are expressed in percentage.

| Quarter relative to acquisition | Full sample of targets | | | Listed targets | | | Unlisted targets | | |
|---------------------------------|------------------------|----------------------|---------------------|--------------------|----------------------|--------------------|--------------------|-------------------|---------------|
| | Whole time horizon | High valuation | Low valuation | Whole time horizon | High valuation | Low valuation | Whole time horizon | High valuation | Low valuation |
| -4 | -0.25 | -0.20 | -0.37 | -0.39 | -0.36 | -0.49 | -0.02 | 0.42 | -0.31 |
| -3 | 0.07 | 0.09 | 0.03 | -0.04 | 0.75 | -2.12 | 0.20 | -0.22 | 0.92 |
| -2 | -0.07 | -0.22 | 0.23 | -0.44 | -0.29 | -0.02 | -0.20 | -0.43 | 0.34 |
| -1 | -0.25 | 0.27 | -1.27 | -0.97 | 0.41 | -3.97 | 0.05 | -0.19 | -0.16 |
| 1 | -0.13 | -0.34 | 0.30 | -0.32 | -0.72 | 0.27 | 0.01 | 0.38 | 0.32 |
| 2 | 0.07 | 0.28 | -0.38 | 0.46 | 1.11 | 0.06 | -0.28 | 0.05 | -0.58 |
| 3 | 0.35 | 0.35 | 0.29 | 0.23 | 0.77 | -0.95 | 0.41 | 0.47 | 0.88 |
| 4 | 0.35 | -0.15 | *1.54 ^a | 0.61 | 0.18 | *2.33 ^b | -0.07 | -0.48 | ***1.14 |
| 5 | 0.41 | 0.11 | *1.38 ^c | 0.43 | -0.01 | 0.96 | 0.33 | 0.89 ^c | **1.63 |
| 6 | 0.05 | 0.38 | *-1.24 ^b | 0.17 | 0.26 | 0.52 | -0.11 | -0.10 | ** -2.18 |
| 7 | ***0.55 ^c | ***0.66 ^c | 0.02 | 0.68 | 0.91 | 1.46 | 0.29 | 0.67 | -0.70 |
| 8 | 0.44 | 0.61 | -0.55 | 0.70 | ***1.28 ^c | *-2.71 | 0.41 | 0.74 | 0.65 |

*Significantly different from zero at the 10% level, using bootstrap.

**Significantly different from zero at the 5% level, using bootstrap.

***Significantly different from zero at the 1% level, using bootstrap.

^aSignificantly different from zero at the 1% level, using the *t*-test.

^bSignificantly different from zero at the 5% level, using the *t*-test.

^cSignificantly different from zero at the 10% level, using the *t*-test.

Table 6. Long-term abnormal performance of acquirers during 12 months prior to the acquisition by listing status of the target firm and market valuation. The table shows equally-weighted and value-weighted monthly abnormal returns of a calendar-time portfolio composed of firms that will have an acquisition announcement within the next 12 calendar months. The abnormal performance of this portfolio is measured by estimating the constant of the Fama and French (1993) three factor model. Heteroskedasticity has been corrected using White's methodology. An acquisition announcement is classified to take place during a high (low) market valuation period if the Market-to-Book (MTB) of the calendar month when it happens is above (under) the MTB median of the whole horizon studied (1991–2016). Abnormal returns and adjusted *R*-squared are expressed in percentage.

| | Full sample | Listed targets | Unlisted targets |
|---------------------------------------------------|-------------------|-------------------|-------------------|
| Panel A: Equally-weighted abnormal returns | | | |
| <i>Panel A.1: Whole time horizon</i> | | | |
| Constant | ^c 0.84 | ^a 1.16 | 0.58 |
| Adjusted <i>R</i> -squared | 47.92 | 47.29 | 37.34 |
| <i>Panel A.2: High valuation market periods</i> | | | |
| Constant | 0.72 | ^a 1.20 | 0.28 |
| Adjusted <i>R</i> -squared | 42.75 | 50.14 | 17.01 |
| <i>Panel A.3: Low valuation market periods</i> | | | |
| Constant | ^b 1.30 | ^c 0.92 | 1.10 |
| Adjusted <i>R</i> -squared | 36.47 | 31.53 | 34.69 |
| Panel B: Value-weighted abnormal returns | | | |
| <i>Panel B.1: Whole time horizon</i> | | | |
| Constant | ^a 1.22 | ^a 1.52 | 0.68 |
| Adjusted <i>R</i> -squared | 45.47 | 48.21 | 34.48 |
| <i>Panel B.2: High valuation market periods</i> | | | |
| Constant | ^a 1.74 | ^a 2.22 | 0.45 |
| Adjusted <i>R</i> -squared | 28.55 | 26.06 | 32.07 |
| <i>Panel B.3: Low valuation market periods</i> | | | |
| Constant | ^a 1.84 | ^b 1.41 | ^b 1.42 |
| Adjusted <i>R</i> -squared | 35.58 | 31.21 | 69.61 |

^aSignificantly different from zero at the 1% level, using the *t*-test.

^bSignificantly different from zero at the 5% level, using the *t*-test.

^cSignificantly different from zero at the 10% level, using the *t*-test.

returns are negatively related to its CAR on the current merger announcement showing that the market views firms that experienced a price decline more advantageous.

The overall weak results indicate that the number of previous mergers, or their returns, does not seem to drive results. Therefore, we reject the presence of merger momentum around the announcement of acquisitions, which is contrary to previous results obtained by Rosen (2006) and Antoniou et al. (2008) but we coincide with Petmezas (2009). Besides, results suggest that the recent merger history of the over-all market does not affect the value creation of a merger.

Market reaction to post-issue quarterly earnings announcements

Next, we explore whether the long-run underperformance in stock returns observed for mergers of listed targets in low valuation periods is caused by biases in the behaviour of investors that lead them to slowly correct their expectations. With this aim in mind, we examine the market's reaction to post-issue quarterly earnings announcements for the sample of acquisitions. As we discussed in "Hypotheses to test and research design" section, this test design relies on the premise that earnings announcements convey a significant amount of the information that is used by investors to adjust their future expectations of firm performance. Thus, initial mispricing would correct slowly as public information confirms the positive effects of the acquisition for the acquiring firm.

Given the evidence regarding the existence of long-run abnormal returns after the acquisition date (Table 3), we expect to find a significant positive abnormal stock price reaction during the eight quarterly earnings announcements (24 months) following the issue, mainly for the group of acquirers of listed firms and in low valuation periods.

Table 5 reports average abnormal returns on the two-day window ($t_0 - 1, t_0$) around the day of the quarterly earnings announcement over quarters -4 through $+8$ relative to the date of acquisition, where quarter 0 is the fiscal quarter in which the acquisition is carried out.¹¹ Significance is measured using the t -statistic and bootstrap to consider small samples.

The results from Table 5 indicate that, for the full sample, the market reaction to quarterly earnings announcement is insignificantly different from zero in all quarters except for quarter $+7$ relative to the acquisition, in which the market appears to be positively surprised by earnings revelations. This effect appears both in high and in low valuation periods when we observe significant positive reactions in quarter $+7$ and in quarters $+4$ to $+6$, respectively. The positive abnormal reaction implies that firms have experienced a better operating performance than the market expected before the issues and, therefore, the information conveyed through the earnings announcements becomes a pleasant surprise to investors.

The results hold for listed firms both in high and in low valuation periods with significant positive reactions in quarter $+8$ and $+4$, respectively. For unlisted firms we only observe significant positive reactions to earnings announcements in high periods in quarter $+5$. These results may be related to investors of listed targets acting cautiously in periods of low valuation, which results in an earlier and a greater impact of the information released in the earnings announcement.

When we compare the reaction in high and in low valuation periods, we observe that the impact of the earnings announcements is greater in low periods and occurs earlier than in high periods. A possible explanation might be that there is less information incorporated into prices in periods of low activity so when the earnings information is released its impact is greater. This finding contrasts with those obtained by Korajczyk et al. (1991) and Bayless and Chaplinsky (1996), who observe that the degree of misvaluation is greater in hot markets.

In summary, the low significance of the results leads us to reject the Hypothesis 3 and to conclude that the pattern in short- and long-term performance is not due to biases in investor behaviour.

Returns continuations

Given the evidence of return continuations around some corporate events (see footnote 3), it could be argued that our finding of abnormal returns in the long-term for listed firm acquisitions in low markets may reflect return continuations that are not caused by the acquisition itself.

In order to explore this possibility, we calculate the calendar time abnormal returns for the 12 months preceding the acquisition announcement for equally- and value-weighted portfolios of acquirers. Table 6 shows that there is previous overoptimism with firms that buy listed companies.¹² Specifically, the market is more overoptimistic with larger companies that buy listed firms with more public information available to investors. Regarding the acquisitions of unlisted firms, we do not observe an outcome of overoptimism. It could be the case that acquirers of listed firms that experienced positive returns for some months prior to the acquisition are subject to a period of persistence resulting in return continuations at the firm level.

The observed results lead us to accept Hypothesis 3b, that is, the observed long-term abnormal returns in the acquisitions of listed firms in low valuation periods are not the result of the cautious behaviour of investors in acquisitions but the consequence of return continuations.

Conclusions

This paper examines whether the interaction between stock market valuation and shareholders reaction to acquisition announcements can be affected by investor sentiment (optimism) in the Spanish market, a thinner market

than the US and UK markets. Taking into account the fact that theories of traditional corporate finance do not consider the presence of long-term anomalies and that investors appear to underreact to the information conveyed by corporate acquisitions, we propose to study these anomalies under the light of behavioural finance.

Specifically, we focus on different stock market valuation periods, high valuation (bull markets) and low valuation (bear markets) and on the listing status of the target firm (listed vs. unlisted), and address the question of whether investor sentiment is behind the reaction to new information.

Putting together our short- and long-term results, the evidence suggests that acquirers of unlisted targets fully react at the announcement date in high valuation periods. Regarding the acquisition of listed targets, we observe an underreaction on prices at the moment of the announcement in low valuation markets that is the result of return continuations. In addition, we find that the market reaction do not depend on recent merger history.

Therefore, our evidence supports the notion that acquisitions add value to bidder firms and are not the result of the overly optimistic beliefs of investors. Nor have we found evidence of behaviour biases of investors in the long-term performance in stock returns that could be a response to the overestimation of the potential synergistic benefits from the acquisition of listed companies.

This research complements the general evidence obtained in the US and UK markets for the case of a thinner market than the aforementioned ones. So, our evidence does not support for the Spanish market the irrational investor behaviour observed in other international markets. An important implication of our results is that the prospects of the acquisition are not misvalued in overoptimistic periods and the returns observed in the long-term are the result of return continuations. Besides, our study reveals the importance of considering different aspects, such as the status of the target and the stock market valuation periods when determining the value creation of an acquisition for the acquirer.

Finally, although our results suggest the absence of managers and investors behaviour biases regarding acquisitions in the Spanish market, further research about wealth creation of acquisitions is assured given the limitations within this study is made. The most obvious restriction comes from sample size which is, in turn, an intrinsic characteristic of a thin market as the Spanish one. We have dealt with this limitation employing both parametric and non-parametric approaches, though it imposes a tough restriction when splitting the sample. Future research may include a variety of firm and transaction characteristics are likely to affect investors and managers behaviour, such as the form of payment or the diversification of the deal.

Declaration of Conflicting Interest

The authors declare that there is no conflict of interest.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Notes

1. The classification of the sentiment of the market is different between authors. In this case, Rosen (2006) characterizes a market as hot if the acquirer returns are high during the recent trailing period prior to the acquisition. On the other hand, Chidambaran et al. (2010) suggest that a market is hot when there are more acquisitions in the recent period.
2. Zaremba et al. (2018) claim that frontier markets are typically less recognized by investors, less liquid, less efficient, and have worse corporate governance (higher agency cost) than mature markets.
3. Events characterized by long-term post-event abnormal returns of the same sign as long-term pre-event returns include dividend initiations and omissions (Michaeli et al., 1995), stock splits (Ikenberry et al., 1996; Desai and Jain, 1997) and spinoffs (Cusatis et al., 1993).
4. For instance, the CNMV always orders the trading halt of firms involved when a takeover is officially announced (article 33 of the Spanish *Equity Market Law*).
5. In computing the MTB ratio, we exclude firms with negative book values.
6. See Fama and French (1992, 1993) for details on the construction of the *SMB* and *HML* factors.
7. Specifically, we follow Wehrens et al. (2000).
8. For the sake of brevity, we only show results for the Fama-French three-factor model estimations as we obtain qualitatively similar results for both CAPM and Fama-French models. Results from CAPM estimations are available upon request.
9. However, none of the differences between high/low period and listed/unlisted target of abnormal returns are significantly different.
10. For listed targets the differences between high/low period of abnormal returns are significantly different.
11. With the goal of preserving space, we only show average abnormal returns obtained using Fama-French three-factor model to estimate expected returns. Evidence from the windows $(t_0 - 1, t_0 + 1)$ and $(t_0, t_0 + 1)$ remains unchanged, so we do not show these results. Complete results are available under request.
12. The differences between high and low abnormal returns are statistically significant.

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