Managerial Overconfidence in High and Low Valuation Markets and Gains to Acquisitions

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Abstract

In this paper we empirically investigate bidders' performance managed by overconfident and non-overconfident managers in high and low valuation periods. Using a sample of UK acquisitions in the period 1990-2005, we provide evidence that the interaction between market valuation and different behavioral traits of managers is a key determinant of bidders' announcement returns. In particular, we provide evidence that, in contrast to overconfident managers, non-overconfident managers conduct value-creative acquisition deals in all valuation periods. In addition, when we control for acquirer and deal characteristics, we find that bidders with non-overconfident managers gain the most in high valuation periods, while firms are better off without overconfident managers in any type of market conditions.

Keywords: Market Valuation, managerial overconfidence, stock options, short-term wealth effects

JEF Classification: G14, G30, G34

1. INTRODUCTION

A large body of literature has revealed that behavioral elements are important driving forces of acquiring firms' performance in mergers and acquisitions. Shleifer and Vishny's (2003) market valuation theory suggests an irrational investor-rational manager framework where managers are rational, time the market and exploit opportunities that may arise when stock market is in unreasonable highs in the benefit of their shareholders. Further, there has been evidence that more acquisitions take place when stock markets are booming than when they are depressed (Jovanovic and Rousseau, 2001, Rhodes-Kropf, Robinson and Viswanathan, 2005). Bouwman, Fuller and Nain (2009) also argue that acquisitions in high valuation periods, i.e. periods of booming stock markets, are fundamentally different from those in low valuation periods, i.e. periods of depressing stock markets. On the other hand, Roll's (1986) hubris theory posits a rational investor-irrational manager approach where financial markets are efficient and managers engage in acquisitions with an overly optimistic opinion of their ability to create value and potential synergies in a proposed takeover. As a result, they overbid for target firms harmfully to their own shareholders. More recently, Malmendier and Tate (2008) documented that overconfident managers are more likely to engage in acquisitions and obtain worse performance than non-overconfident managers. Finally, Baker, Ruback and Wurgler (2007, p. 48) argued that "the irrational manager and irrational investor stories can certainly coexist". Our paper attempts to reconcile these two stories, providing evidence about the role of managerial overconfidence in high and low market valuation periods and the effect to bidders' shareholders wealth.

Unlike investor overconfidence which has been significantly analyzed in the asset pricing literature, the effect of managerial overconfidence on shareholders' wealth has concentrated the attention of very few studies and in the vast majority in the US (Hayward

and Hambrick, (1997), Heaton, (2002) and Malmendier and Tate, (2008)). The empirical evidence suggests that managers infected by hubris are more likely to destroy shareholders' value. Billett and Qian (2008), among others, posit that overconfident acquirers (managers) tend to attribute their initial success from previous corporate actions to their own ability and as a consequence conduct worst later deals which underperform significantly those initiated by 'rational' acquirers at the merger announcement. However, how the effect of managerial overconfidence varies with the stock market conditions remains an open question.

Periods of high stock prices can affect the types of acquisitions firms conduct. Managers may be infected with the same optimism as investors during hot markets. If this is the case, then they might overestimate the synergies from a merger, leading them to make worse acquisitions during hot markets. Alternatively, managers may make acquisitions in high valuation periods because they know their stock price is overvalued. Once the acquisition is announced, investors realize that the stock price of the bidding company is too high, and unload the stock (Shleifer and Vishny, 2003). On the other hand, when stock markets are declining and overconfident bidders still conduct merger deals, investors are much more cautious about the quality of the deal and therefore they are likely to react unfavourably depreciating bidders' stock price.

Following Bouwman, Fuller and Nain (2009), aggregate stock market activity is classified into high-, neutral- or low- valuation periods based on the P/E ratio of the value-weighted market index. Since we are interested in examining overall market valuations, we use the market index P/E ratio as a proxy for market valuations just like a firm's P/E ratio is used by investors to measure a firm's over- or under- valuation. Quantifying managerial overconfidence is challenging as there is no instrument to directly measure a personality trait.

In this paper, we follow Malmendier and Tate (2008) and use a measure of managerial overconfidence based on stock options, which relies on the propensity of managers of the acquiring firm to hold in-the-money stock options; that is, the timing of option exercises is used to identify managerial overconfidence.

We use a sample of 848 UK mergers and acquisitions between 1990 and 2005 to examine the interaction between market valuations and managerial overconfidence. The country choice was dictated by the fact that U.K. has the most active merger activity after the U.S. and represents more than 65% of merger transactions in Europe. Our short-term results provide evidence of interaction between managerial and aggregate market valuations in shaping acquirers' returns. More specifically, the difference in acquisition performance between the portfolios of acquisitions by non-overconfident managers in high valuation periods and overconfident managers in low valuation periods is a significant 3.05% over the five-day period surrounding the announcement. In addition, bidders with non-overconfident managers appear to gain the most in high valuation periods, while firms are better off without overconfident managers in all types of market conditions. Our results are robust to a multivariate analysis that controls for factors known to affect acquiring firms' returns, like the method of payment, the listing status of the target firm, and the size and book-to-market ratio of the acquiring firms.

The study has several contributions. First, it provides evidence that the interrelation of market valuation periods and managers with different traits of behaviour is important factor in shaping acquiring firm's returns. Second, in contrast to overconfident managers, our results indicate that non-overconfident managers are able to create value to their shareholders through acquisitions in all market valuation periods. Third, it is reported that bidders have on average worse performance when managed by managers with

overconfidence traits in all market conditions. Fourth, it provides evidence that the effect of managerial overconfidence is robust outside the US and not sensitive to the quantitative measure of overconfidence.

The remainder of the paper is organized as follows. Section 2 reviews the literature of market valuation and managerial overconfidence theories and sets the hypotheses. Section 3 analyzes the classification of market valuation periods and measures of overconfidence. Section 4 describes the data and the empirical methodology. Section 5 presents and interprets the empirical results. Section 6 presents the robustness check for using a different measure of managerial overconfidence. Finally, Section 7 concludes the paper.

2. RELATED LITERATURE AND HYPOTHESES DEVELOPMENT

(i) *Stock Market Valuation*

Shleifer and Vishny (2003) argue that when stocks are overvalued due to investors' optimism managers are likely to announce acquisitions - especially share deals. The managers are prompted to use their overvalued stocks to acquire valuable economic entities through M&A and hence more acquisitions should take place during stock market booms. Target managers with short horizon would accept the bidding firm's overvalued equity and seek to secure their gains before the value of equity reverts to its fundamental value. In other words, both bidding and target firm's managers attempt to time the market for their own interests.

Rhodes-Kropf and Viswanathan (2004) theorise that although target managers are rational they lack perfect information and overestimate the potential synergies of the deal. Consequently they accept offers from overvalued bidders during bullish markets. Rhodes-Kropf, Robinson and Viswanathan (2005) empirically show that M&A activities peak when

market valuations are high. During the period of high market valuation caused by investor's optimism, the market reaction to a bid announcement should be more favorable than to bids announced at other times (Bouwman, Fuller, and Nain (2009)). Therefore we should expect that *acquirers during high-valuation markets earn substantially higher returns than those conducted in low-valuation periods*.

(ii) Managerial Overconfidence

Managerial overconfidence is defined as overestimation of CEO's own abilities and outcomes relating to actions which are under their control (Langer, 1975). The theoretical foundations of overconfidence theory are based upon an extensive literature in psychology which finds that people are generally overconfident (Frank, 1935; Weinstein, 1980). People tend to overestimate their abilities relative to the average when assessing their relative skills (Larwood and Whittaker, 1977) and underestimate the odds of downside potential. In the same rationale self-attribution is introduced in the literature as a root of overconfidence, which assumes the 'better than average effect' (Svenson, 1981) and 'narrow confidence intervals' implying that people are miscalibrated in the way that their probability distributions or confidence intervals for uncertain events (i.e., outcome of an action) are too tight (Lichtenstein, Fischhoff and Phillips, 1982).

Roll (1986) was the first to study the behavioral element of overconfidence in an M&A context. In this framework overconfidence is displayed in two forms: first, a corporate manager may overestimate the synergy gains of the potential merger. This overvaluation stems from the manager's belief that his leadership skills are better than average or from the underestimation of the downside of the merger due to the illusion of control over its outcome (Malmendier and Tate, 2008). That is, overconfident managers feel that they have

the ability to identify hidden synergies and pick promising targets that others cannot. They overestimate the future returns from 'hand-picked' investment projects or the capitalized value of their future leadership.[1] Consistent with Billett and Qian (2008) we should expect that *overconfident bidders should experience lower returns than non-overconfident bidders in their acquisitions*.

(iii) Interaction of Aggregate Market Valuation and Managerial Overconfidence

Rosen (2006) argues that managers may be infected with the same optimism as investors during bullish periods. If this is the case, then managers might overestimate the potential synergies from the merger, which is likely to influence the quality of the deal during a hot period. If managers are rewarded for increasing stock prices, then they have an incentive to make bad acquisitions in hot markets, since even a bad deal is likely to temporarily increase acquirer's stock price. Given that during high-valuation periods there is potential for value-creation in M&As even for overconfident managers, non-overconfident managers may time the announcement of bids and enhance shareholders' wealth.

On the other hand, when overconfident bidders conduct deals in depressing markets, there is no "cover" to hide the quality of the deal and the possible overpayment. Investors in low valuation markets are substantially more careful in assessing the future prospects of the deal and therefore are likely to react even more unfavourably when realizing that the deal is bad, depreciating bidder's stock price. Given the above, we should expect that *bidders should gain (lose) the most when they are run by non-overconfident (overconfident) managers and the deal takes place in boom (bear) markets.*

[1] Doukas and Petmezas (2007) and Billett and Qian (2008) tested the self-attribution bias as a source of overconfidence. They defined managers infected by self-attribution firms that make many acquisitions in a very short span of time. They provided evidence that self-attribution drives overconfidence showing a monotonic decline in bidders' returns by deal order.

3. CLASSIFICATION OF MARKET VALUATION PERIODS AND MEASURE OF MANAGERIAL OVERCONFIDENCE

(i) Classification of market valuation periods

We follow Bouwman, Fuller and Nain (2009) and classify each calendar month into high-, neutral-, or low-valuation month based on the detrended market price to earnings (P/E) ratio of a broad based value-weighted market index (TOTMKUK). The market P/E ratio is detrended by removing the best straight line fit (OLS) from the P/E ratio of the month in question and the five preceding years.[2] Months are then classified into an above (below) average group if its detrended index P/E ratio is above (below) the past five-year average, and subsequently ranked in descending order of detrended P/E ratios. Months that belong to the top half of the above average group are classified as high-valuation periods, and those that belong to the bottom half of the below average group are classified as low-valuation periods. All remaining months are categorized as neutral-valuation periods. This results in 56 high-valuation, 40 low-valuation and 96 neutral-valuation months. [3]

(ii) Measure of Managerial Overconfidence

To capture overconfidence, we classify managers as overconfident or non-overconfident based on managers' decisions concerning their executive stock options (Malmendier and Tate (2008)). CEOs normally receive huge grants of stock and non-tradable options as part of their compensation plan. Carpenter (1998) and Hall and Murphy (2002), argue that risk averse CEOs should exercise their stock options before expiration if they are

[2] It is essential to remove the trend from the market P/E ratio because P/E ratios trend upwards, and hence would result in a systematic classification of more recent acquisitions as high-valuation acquisitions and older acquisitions as low-valuation acquisitions.

[3] To test for the robustness of results to this categorization, the detrended TOTMKUK index level instead of the detrended market P/E ratio was also used and the results obtained are qualitatively similar but are not presented for space purposes.

sufficient in the money since they are exposed to enormous firm-specific risk which cannot be diversified away. Upon exercise, the managers receive shares of company stock which are almost always immediately sold (Ofek and Yermack (2000)). According to Malmendier and Tate (2008), CEOs are classified as overconfident when they maintain their stock options until the expiration date and are exposed to high levels of risk under the belief that their company's stock will perform continuously better as an outcome of their leadership.

We firstly identify the CEOs of our sample firms around the announcement date.[4] After creating a name list of the CEOs, we search for the date the stock option was granted to the managers, the date that they can start exercising the option, the expiration date of the option and the strike price. In most cases, executive options in the U.K. have a life span of ten years with a vesting period of three years (i.e. they are exercisable three years after the period they were granted). Following Malmendier and Tate (2008), if managers hold the option until the last year before the expiration date, they are classified as overconfident.[5]

4. DATA AND METHODOLOGY

(i) The sample

The initial sample consists of 3223 mergers and acquisitions announced by 1281 U.K. unique bidders for the period between 1990 and 2005, collected from the Security Data Corporation (SDC) Mergers and Acquisitions Database. The deals meet the following criteria:

[4] We first search for the name of company's CEO around the announcement date. If there is no such post we identify the managing director (In the UK market, the post for the CEO was defined as managing director before 1995). If the company does not report any of those positions we then use managers with the position of chairman. The percentages of CEOs, managing directors and chairmen in the sample are 83.56%, 11.12%, and 5.32%, respectively.

[5] We also check whether bidder's stock price is higher than the strike price. If a manager holds the options until the expiration because he is unable to exercise the option when the strike price is higher than the stock price, then he is not classified as overconfident but as rational. In our sample this is true in 29 deals.

- The acquirer is a U.K. firm publicly traded on the London Stock Exchange (LSE) and has five days of return data around the acquisition announcement date.
- The target company is either listed or unlisted company and domestic or foreign firm.[6]
- The acquirer owns less than 10% of the target company's stock before the bid announcement and more than 50% after the deal.
- The deal value is £1 million or more.
- The deal value represents at least 1% of the market value of the acquirer.

In addition to these criteria, we require that stock options data for bidding firms' managers are available. Stock options data are obtained through the annual reports of the companies by using Lexis-Nexis database for the period 1990 to 1999-2000 and Northcote Internet for the period 1999-2000 to 2005.[7] If not available on Lexis-Nexis or Northcote Internet, we directly requested companies themselves to provide their annual reports. Our final sample consists of 848 acquisitions, where 601 (70%) deals were conducted by non-overconfident managers and 247 (30%) by overconfident managers.

Looking at the Table 1 we observe an increased merger activity in the late 1990s, when the market was in a booming period, consistent with the literature which provides evidence of high correlation between merger activity and market valuation (Jovanovic and Rousseau, 2001).

[Insert Table 1 About Here]

Table 2 displays the activity of acquisitions among public and private targets, mean and median value of acquirer and the value of deals stratified by the deal value for the different the different market valuation periods and types of investors (i.e. overconfident

[6] We do not include subsidiary firms in the analysis.
[7] Northcote Internet is a free online research tool which links you to listed company information. It provides company information including Financial Reports, Webcasts & Press Releases (www.northcote.co.uk).

versus non-overconfident). The acquirer's market capitalization equals the price per share one-month prior to the bid announcement times the number of common shares outstanding. The target's firm size is measured as the deal value of the bid at the announcement. For the entire sample, the mean (median) size of the acquirer is 638.33 million pounds (154.29 million pounds) for 303 unique acquirers, while for targets the mean (median) size, measured as transaction value, is 59.237 million pounds (8 million pounds). An interesting observation that emerges from the sample is that private firms comprise the vast majority of targets (722 or 85%) in contrast to the small number of publicly traded targets (126 or 15%).[8] The mean value of acquirers in public acquisition is by far larger than the mean value of bidders in private acquisitions (slightly less than five times the market capitalization). In deal value terms, public targets exhibit a disproportional percentage of total deal value (68%) when considering their small contribution to the total number of acquisitions (15%). In fact, public firms are by far larger than private firms (the average transaction value of public firms equals to £274 million versus £21 million for private firms).

Looking at the summary statistics by market valuation periods, 248 acquisitions announced during high-valuation periods, 400 during neutral-valuation periods and 200 during low-valuation periods. Thus, consistent with previous literature, we have more deals in booming markets (29.35%) than in low-valuation periods (23.58%).[9] With respect to the deal value, despite the inflated deal values, the percentage of total deal value in high

[8] In line with our finding for the respective sample period, Conn, Cosh, Guest and Hughes (2005) report based on UK data for the period 1985-1998 that privately held targets account for more than 80% of domestic acquisitions, while Faccio and Masulis (2005) report 90% private target acquisitions for the period 1997-2000 and Doukas and Petmezas (2007) document that 91% of UK deals between 1980 and 2004 were privately held acquisitions.

[9] However, it is worth noticing that we cannot draw strong inferences from the number of acquisitions in high valuation periods and low valuations periods because of the sample selection criteria adopted in this paper. We are not investigating all deals that took place in the 1990-2005, but just a subsample.

valuation months (26.35%) is only slightly higher than that in low valuation months (23.05%).

[Insert Table 2 About Here]

(ii) Methodology

To examine acquiring firms' performance we employ a standard event study and calculate the cumulative abnormal returns (CARs) for the five-day period (-2, +2) around the announcement date. Since many acquiring firms in our sample engage in frequent acquisitions within 200 days, previous acquisition announcement returns will be included in the estimation period if we use the standard market model approach, contaminating market parameter estimations. Thus, following Fuller et al. (2002), we estimate the abnormal returns using a modified market model:

$$(1) \quad AR_{it} = \sum_{t=-2}^{2} R_{it} - R_{mt}$$

Where $AR_{i,t}$ is the excess return of bidder i on day t; R_{it} is the return of bidder i on day t; R_{mt} is the value-weighted market index return.[10]

5. EMPIRICAL RESULTS

(i) ***Announcement returns of Acquirers***

Table 3, Panel A, reports the announcement returns (5-day CARs) for the full sample and for sub-samples based on market valuation periods (high, neutral, low). The empirical evidence reveals that on average acquirer's shareholders gain a significantly positive return

[10] However, we do also calculate CARs following Brown and Warner's (1985) standard event study methodology which yields qualitatively similar results that we do not report for brevity.

(0.94%) at the bid announcement. The market valuation theory suggests that high-valuation acquirers outperform low-valuation acquirers in the short-run. Consistent with Bouwman, Fuller, and Nain (2009), the market reaction to acquisition deals undertaken during bullish periods is significantly positive (1.21%) and outperforms low-valuation deals (0.34%) by an economically (but not statistically) significant margin (0.87%).

Panel B of Table 3 compares the abnormal returns earned by overconfident bidders to the returns generated by non-overconfident bidders. The overconfidence bias suggests that managerial overconfidence should be associated with lower wealth effects than those generated by non-overconfident acquirers. Table 3 confirms that the market reaction to acquisition deals made by overconfident and non-overconfident managers is considerably different. For non-overconfident acquirers the mean acquirer abnormal return is 1.26%, significantly different from zero. For overconfident acquirers we find that the mean acquirer abnormal return over the five-day window surrounding the acquisition announcement date is 0.16% and statistically insignificant. The mean difference in abnormal returns between non-overconfident and overconfident is 1.10% and statistically significant at the 5% level. This suggests that overconfident acquirers fail to outperform non-overconfident acquirers. This evidence supports the theoretical prediction of Malmendier and Tate (2008) who posit that overconfident managers overestimate their ability to generate superior returns.

Finally, we interact market valuation and managerial overconfidence. In fact, so far we have established that high valuation acquirers outperform on average low-valuation acquirers and acquisitions by non-overconfident managers exhibit significantly better performance than those by overconfident managers. An important point is to understand whether managerial overconfidence interacts with market conditions in determining bidders' announcement returns. Panel C of Table 3 shows that acquisitions by non-

overconfident managers gain the most irrespective of aggregate market conditions. Bids announced during high stock market valuation by non-overconfident managers gain a statistically significant excess return of 1.36%, while acquisitions by overconfident managers generate insignificant abnormal returns. Their mean difference is also insignificant. The pattern is similar in periods of neutral valuations: higher returns are obtained for non-overconfident bidders relative to overconfident bidders, but their mean difference (0.64%) is not statistically significant. However, in periods of low stock market valuation, overconfident and non-overconfident managers exhibit a sharply different pattern. While non-overconfident managers are still able to generate a positive CAR (1.13%), the abnormal return for overconfident acquirers is on average negative (-1.69%). The difference in the short-term acquisition performance in low valuation period (2.82%) is statistically significant. This indicates that the impact of overconfidence is particularly relevant in low stock market valuation periods. While boom markets may hide managers' mistakes and/or overpayments, this veil falls when the overall stock market declines.

It is also important to notice that the performance of non-overconfident acquirers is not sensitive to the overall stock market conditions. The return difference between the performance in high valuation periods and the performance in low valuation periods is a negligible 24 basis points. The acquisition performance of overconfident managers seems to be correlated with the stock market cycle. In fact, the difference between high and low periods is a statistically significant 2.51% over the 5-day period surrounding the announcement. When we compare acquisition performance of the two extreme portfolios, i.e., non-overconfident managers in high-valuation periods and overconfident managers in low-valuation periods, we interestingly obtain a significant return differential of 3.05%. This

result shows that the interaction of overconfidence biases by managers and overall stock market valuation is an important driver of acquiring firm's announcement returns.

[Insert Table 3 About Here]

ii) Multivariate Analysis

The M&A literature has documented a number of different factors that affect the performance of bidding firms surrounding the event, such as book-to-market (Rau and Vermaelen, 1998), size (Moeller, Schlingemann, and Stulz, 2004) relative size (Fuller et al., (2002) and industry diversification (Doukas and Kan, 2004).

The results generated so far by employing a univariate type of analysis signify that overconfident bidders realize considerably lower announcement returns than non-overconfident acquirers, especially during low stock market valuation period. To better examine whether differences in acquirer and deal characteristics explain the abnormal return differentials we adopt a multivariate regression framework where announcement period returns to bidders are regressed against a set of explanatory variables that have been proved in the literature to affect bidders' performance.

In all regressions we include the following control variables: a dummy that takes the value of one if the target is private and zero otherwise; a dummy that takes the value of one if the acquisition is stock- (cash-) financed and zero otherwise. To control for the bidder's size effect, we introduce the log of the bidder's stock market capitalization a month before the deal's announcement. Other variables included in the regression are the following: the bidder's book-to-market value, which is measured by the bidder's net book value of assets divided by its market value a month before the announcement of the deal; the deal's relative size, which is measured as the ratio of the deal value over the bidder's value; a dummy variable for diversifying deals which takes the value of 1 when the acquirer's two-

digit SIC code is different from that of the target, and zero otherwise. A merger activity dummy variable which takes the value of 1 if the deal is announced during a high activity M&A period, and zero otherwise. This categorization is based on aggregate quarterly M&A statistics from the UK National Statistics Office. Each quarter is categorized as an active period if the number of deals is more than the median and passive otherwise. Finally, other explanatory variables include: the acquirer's lagged excess return for 180 days prior to the bid's announcement; and the market portfolio return (FT-All Share) for the same 180-day period prior to the announcement.

Table 4 presents the results. In regression (1), we include dummies for acquisitions in low and high valuation periods. Confirming our initial hypothesis, once we control for factors affecting returns, the coefficient of the high market valuation dummy is positive and significant. Regression (1) also shows that the acquirer's lagged excess return exhibits a positive relationship with bidder's announcement returns. On the other hand, stock deals, and bidder's size negatively impact the acquiring firm's abnormal returns, consistent with prior literature.

In the next regression (2), we regress the acquisition CARs on the dummy for overconfident managers and the set of control variables. As expected from the univariate analysis, the coefficient is negative and significant, documenting that overconfident managers do worse acquisitions than non-overconfident ones. For the control variables, results are similar to regression (1) with the exception of the positive coefficient for the private acquisitions dummy, which turns to be significant.

Finally in regressions (3) and (4), we include interaction variables between overconfidence and stock market valuation. In regression (3), the vector of explanatory variables includes dummy variables to capture for bids announced by bidders with non-

overconfident (overconfident) managers at the time of high (low) market valuation to allow for interaction between managerial overconfidence and aggregate market performance. The dummy for high valuation/non-overconfident managers is positive and significant, which indicates that non-overconfident managers are able to exploit favorable market conditions to close out deals that, at least in the short-term, improve the firm's stock price. On the other hand, the dummy variable for deals made by overconfident managers in low acquisition periods does not have a negative relationship with the announcement returns in regressions (3) and (4), as expected from the univariate analysis. While negative, the coefficient is not significant. Results for controlling variables are identical to previous regressions, apart from the market return variable that is no longer significant in the last two regressions.

Overall, the evidence reaffirms that bidder's announcement period gains depend jointly on aggregate stock market valuation conditions and managerial overconfidence. This finding does not alter even after controlling for the possible implications of other bid's features, such as target status, methods of payment, bidder's growth opportunities, corporate focus and M&A activity. Evidence from both univariate and multivariate analyses provides support that bidders infected by managerial overconfidence experience lower announcement period's returns. Consistent to the univariate results, multivariate analysis confirms that non-overconfident managers may time the market and engage in merger deals during high-valuation periods increasing shareholders' wealth considerably.

[Insert Table 4 About Here]

iii) Private Acquisitions

We have mentioned earlier that our sample is mainly composed of acquisitions of non-publicly listed firms (approximately 85% of the total sample). In this section, we analyze

separately the sample of private acquisitions to investigate whether our results are robust to the listing status of the target company.

Table 5 reports the univariate results for the sample of 722 acquisitions of private firms. Overall bidders gain a positive and significant CAR (1.37%). This result is consistent with previous literature. Chang (1998), Fuller, Netter and Stegemoller (2002) and Draper and Paudyal (2006), among others, show that bidders enjoy positive and significant abnormal returns (especially with stock-swaps) around the announcement of acquisitions of private companies, which is explained by the limited competition,[11] the monitoring[12] and the information[13] hypotheses, respectively. However, there is a significant difference between the acquisition performance in high valuation (1.66%) and low valuation (0.84%). The difference (0.82%) is statistically significant at 1% level.

Panel B examines acquisition performance of firms with overconfident managers and non-overconfident managers. Consistent to the full sample results, overconfident managers exhibit inferior performance (0.72%) relative to to their less overconfident counterparts (1.61%). The difference is statistically significant.

Panel C also confirms the interaction results presented in Table 3. While overconfidence does not have a significant impact in high- and neutral-valuation periods, in low-valuation periods, overconfident managers do not obtain the same performance as non-overconfident managers. In particular, non-overconfident managers enjoy a profit of

[11] The limited competition hypothesis suggests that the bidding competition among private targets is likely to be less intense and the higher likelihood of underpayment can lead to larger returns for the bidder (Chang (1998)).

[12] The monitoring hypothesis implies that through stock offers the small number of owners of the private firm will become blockholders of the new combined firm. The effect is close monitoring of the managerial performance by this group of stockholders leading to an increase in firm value (Draper and Paudyal (2006), Chang (1998)).

[13] According to the information hypothesis, the owners of the private firms have high incentives to assess properly the value of the stock of the bidding firm since they will end up having large amounts of shares in a stock offer. This fact conveys favourable news to the market and a rise in the stock price of the bidders surrounding the announcement date (Chang (1998), Draper and Paudyal (2006))

1.41% over the 5-day event period, while overconfident bidders generate an insignificant -0.78% over the same period. Their mean difference equals to 2.19% and is statistically significant.

Panel D presents the multivariate regression analysis for the private firms' subsample. Results are remarkably similar to those presented in Table 4 in the first two regressions. Managerial overconfidence remains negatively related to the short-run performance of bidders acquiring a private company, even after we control for factors known to affect acquisition returns (regression 2). However, regressions (3) and (4) confirm the event studies' tests that overconfidence leads to worse acquisitions in low valuation periods when we restrict the sample to acquisitions of private companies. More specifically, the low valuation-overconfident variable carries a negative sign and is statistically significant at the 5% level, which signifies that is in period of depressed stock market prices that managerial overconfidence is more detrimental to firm's shareholders.

In unreported analysis, we repeat the analysis for acquisition of public firms, for which we have a rather limited sample (122 observations). Acquirers of listed targets suffer a loss (-1.51%) in line with previous evidence (Andrade et al., 2001 in the US, and Sudarsanam, Holl and Salami (1996) and Higson and Elliott (1998) in the UK). The abnormal returns are worse in low market valuation periods (-3.02%) than in high market valuation periods (-0.97%). However, the economically large difference (2.05%) is not statistically significant, probably because of the limited size of the sample. The market reaction to the announcement of the acquisition of a publicly listed firm is larger when the manager is overconfident, but the difference (1.14%) is not statistically significant. As in the previous subsamples, the worst acquisitions are those made by overconfident managers when the stock market is depressed (-5.40%). However, the very small sample size does not permit to

draw meaningful conclusions from a statistical point of view. Finally, in the multivariate analysis for publicly listed firms, the interaction dummies of non-overconfident bidders with high and low valuation periods respectively are both positive and statistically significant.

[Insert Table 5 About Here]

6. ROBUSTNESS CHECK: MULTIPLE ACQUIRER PROXY

While the overconfidence measure based on stock option is the most commonly accepted proxy of managerial overconfidence, it has a drawback in our sample. In particular, we are not able to classify a large fraction of managers because of data limitations. To address the concern that there is no a sample selection bias, we check for the robustness of our results using another commonly used proxy of managerial overconfident: multiple acquisitions.

Fuller et al. (2002) define multiple acquirers as firms that make five or more acquisitions within a 3-year period. Doukas and Petmezas (2007) use the same definition to define multiple acquirers and argue that they are infected by overconfidence which is rooted from self-attribution bias and which in turn leads to lower wealth effects than those generated by rational bidders. In this study, we adopt a similar approach with one very important, however, differentiation: to classify firms as multiple or single bidders, we do not refer to companies but to managers themselves. Therefore, managers who perform multiple acquisitions (5 or more) in a small period of time (3 years) are defined as overconfident. Since we focus on managerial overconfidence, it would be more reliable to adopt this proxy from the perspective of the CEO him/herself. A company may have contacted 5 or more acquisitions in a 3-year period of time, but in the meantime different individuals (CEOs) might have taken the decisions for those projects. In total, we obtained

data for 3099 deals,[14] a much larger sample to 848 deals with stock options data. We find that 2256 (72%) acquisitions were conducted by non-overconfident managers and 843 (27%) by overconfident managers. Despite being larger, the average deal value in this sample is 66.29 million, remarkably similar to the 59.24 million documented in Table 1 for the stock-options sample. In sum, the summary statistics for overconfident and non-overconfident bidders are qualitatively similar for both proxies, a fact that enhances the representativeness and robustness of the sub-samples used in the empirical analysis for the 2 different measures of overconfidence.[15]

Tables 6 and 7 present the univariate and multivariate results respectively when using the multiple acquirer proxy. The univariate tests in Table 6 confirm the results obtained with stock options proxy that overconfident managers generate significant lower announcement returns (0.88%) than non-overconfident bidders (1.65%). Their mean difference in the event window (-2, +2) is a positive CAR of 0.77% and statistically significant at the 1% level. Similarly to the stock option based proxy, non-overconfident bidders earn larger returns both in high and low valuation markets, but the difference is statistically significant only in high valuation markets (0.94%). Finally, the mean difference between the two extreme portfolios of deals undertaken by non-overconfident managers in high-valuation markets and those conducted by overconfident managers in low-valuation markets is 1.97% and significant at the 1% level. Finally, Table 7 reports the cross-sectional results, which are akin to those reported in Table 4 for the stock-option sample. This indicates that the relationship between bidder returns and overconfident managers in high and low markets is robust even after using a larger sample and different proxy of managerial overconfidence.

[14] In total, we obtained data for 3099 deals (96 % of the initial sample) given that for 124 deals the names of bidders' managers were not provided by the database.

[15] We omit the descriptive table of the larger sample. The table is available from the authors upon request.

[Insert Tables 6 & 7 About Here]

7. CONCLUSION

In this study we empirically investigate the interaction between stock market valuation and managerial overconfidence and the effect on bidder returns. In particular, we examine the performance of acquirers in different stock market valuation periods (high neutral and low) for deals undertaken by overconfident and non-overconfident managers. Our results provide evidence that the interaction between managerial overconfidence and market valuation is an important factor in explaining bidder announcement returns. The main finding indicates that non-overconfident managers are able to enhance shareholders' wealth through value-creative acquisitions in all types of market conditions. After controlling for several deal and acquirer characteristics, we also find that non-overconfident managers realize their largest returns in high valuation periods while firms are better off in all market periods without overconfident managers when engage in merger deals.

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Table 1. Summary Statistics of Acquisitions by Year

The table presents the number of acquisitions by year and the percentage of total number of acquisitions by bidder type (non-overconfident versus overconfident) and market valuation periods (high, neutral, low). The summary statistics are provided on the basis of a sample of 848 acquisitions from 1990 to 2005 undertaken by 303 unique bidders. Acquirers are publicly traded firms listed on the London Stock Exchange (LSE). Using monthly data, each month is classified through this period as a high-(low-) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average. Targets include both domestic and foreign public and private firms. Overconfident and non-overconfident managers are classified based on a stock option measure: Managers who hold stock options until the year before the expiration date are classified as overconfident. All others are classified as non-overconfident.

		Bidders Type		Valuation Periods		
Year	**All**	**Non-Overconfident**	**Overconfident**	**High**	**Neutral**	**Low**
1990	18	8	10	0	18	0
1991	20	14	6	19	1	0
1992	23	14	9	13	10	0
1993	29	19	10	6	23	0
1994	52	35	17	0	24	28
1995	47	31	16	0	25	22
1996	56	41	15	0	56	0
1997	76	49	27	49	27	0
1998	77	58	19	61	16	0
1999	88	64	24	76	12	0
2000	98	64	34	0	71	27
2001	73	50	23	0	0	73
2002	60	51	9	0	22	38
2003	43	31	12	3	28	12
2004	52	44	8	18	34	0
2005	36	28	8	3	33	0
TOTAL	848	601	247	248	400	200

Table 2. Summary Statistics of Acquisitions by the Stock Options Proxy for High- and Low-Valuation Periods

The table presents the number of acquisitions, the mean and median market value of acquirers and the mean and median values of targets. The last three columns list the total deal value and the percentage of total value of transaction and number of acquisitions, respectively. The summary statistics are provided on the basis of a sample of 3223 acquisitions from 1990 to 2005 undertaken by 303 unique bidders. Acquirers are publicly traded firms listed on the London Stock Exchange (LSE). Targets include both domestic and foreign public and private firms. Using monthly data, each month is classified through this period as a high- (low-) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average. Overconfident and non-overconfident managers are classified based on a stock option measure: Managers who hold stock options until the year before the expiration date are classified as overconfident. All others are classified as non-overconfident. The acquirer's market capitalization equals the price per share one-month prior to the bid announcement times the number of common shares outstanding. The target's firm size is measured as the deal value of the bid.

Type of Acquisition	Number of Acquisitions	Mean Market Equity (£ mil)	Median Market Equity (£ mil)	Mean Transaction Value (£ mil)	Median Transaction Value (£ mil)	Total Deal Value (£ mil)	% of Total Deal Value	% of Total Number of acquisitions
All Deals	848	638.333	154.29	59.237	8.32	50232.569	100.00%	100.00%
Non-overconfident	601	617.915	161.47	62.349	8.28	37471.761	74.60%	70.87%
Overconfident	247	688.014	137.85	51.663	8.4	12760.808	25.40%	29.13%
High	248	535.494	150.58	53.365	10.95	13234.612	26.35%	29.25%
Low	200	724.116	211.78	57.806	9.53	11561.319	23.02%	23.58%
All Private Deals	722	409.887	147.13	21.677	6.16	15651.123	31.16%	85.14%
Non-overconfident	522	386.482	154.69	22.415	6.5	11700.672	74.76%	61.56%
Overconfident	200	470.974	111.73	19.752	5.70	3950.451	25.24%	23.58%
High	205	385.178	137.85	24.015	6.16	4923.098	31.46%	24.17%
Low	174	510.154	193.07	22.061	8.16	3838.611	24.53%	20.52%
All Public Deals	126	1947.363	362.99	274.456	81.12	34581.446	68.84%	14.86%
Non-overconfident	79	2147.128	362.92	326.216	79	25771.089	74.52%	9.32%
Overconfident	47	1611.588	363.06	187.454	87.11	8810.357	25.48%	5.54%
High	43	1252.120	362.92	193.291	77.13	8311.514	24.03%	5.07%
Low	26	2156.019	626.25	297.027	117.93	7722.708	22.33%	3.07%

Table 3. Cumulative Abnormal Returns by Market Valuation, Managerial Overconfidence and Interaction of Both with Stock Options Proxy

This table presents the Cumulative Abnormal Returns (CARs) during five days (-2, +2) surrounding the announcement by stock market valuation conditions, managerial overconfidence, and their interaction. Abnormal returns are calculated using a modified market-adjusted model:

$$AR_{it} = R_{it} - R_{mt}$$

where R_{it} is the return on firm i at time t and R_{mt} is the value-weighted Market Index Return (FT-All Share). All acquirers are publicly traded firms listed on the London Stock Exchange (LSE). In panel A, using monthly data, each month is classified through this period as a high- (low-) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average. The number of bids for each category is reported below the mean return. In Panel B managers who hold stock options until the year before the expiration date are classified as overconfident. All others are classified as non-overconfident. Panel C reports the CARs for the interaction of market valuation and managerial overconfidence. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively. The (1)-(3) and (4)-(5) represent the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of high- minus low-valuation bidders and non-overconfident minus overconfident bidders respectively. The result in right bottom corner is the mean CAR for the five days (-2, +2) around the acquisition announcement of high- non-overconfident bidders minus low- overconfident bidders. P-values are reported in brackets.

Panel A: Market valuation

	All Bidders	High	Neutral	Low	Differential
CARs (-2,+2)	0.94[a]	1.21[a]	1.07[a]	0.34	0.87
N	848	248	400	200	[0.161]

Panel B: Managerial Overconfidence

	All Bidders	Non-Overconfident	Overconfident	Differential
CARs (-2,+2)	0.94[a]	1.26[a]	0.16	1.10[b]
N	848	601	247	[0.031]

Panel C: Interaction

	Managerial Overconfidence		
Market Valuation	**(4) Non-Overconfident**	**(5) Overconfident**	**(4)-(5) [p-value]**
(1) High	1.36[a]	0.83	0.54
N	175	73	[0.537]
(2) Neutral	1.26[a]	0.62	0.64
N	282	118	[0.317]
(3) Low	1.13[a]	-1.69	2.81[b]
N	144	56	[0.045]
(1)-(3)	0.24	2.51[c]	3.05[b]
[p-value]	[0.703]	[0.098]	[0.031]

Table 4. Cross-Sectional analysis with Stock Options Proxy

This table presents regression estimates of the acquirer's five-day cumulative abnormal return (-2, +2) surrounding the announcement controlling for market valuation and managerial overconfidence effects and other deal and acquirer characteristics. The vector of explanatory variables includes dummies representing bids announced by firms with rational (overconfident) managers during high (low) market valuation periods, high-valuation period deals and low-valuation period deals. Using monthly data, each month is classified through this period as a high- (low-) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average. Overconfidence deals dummy is a binary variable that takes the value of 1 if the manager holds the options until the year before the expiration date and 0 otherwise. Private variable is a dummy that takes the value of one if the target is private and zero otherwise; cash deals is an indicator variable taking the value of 1 for acquisitions financed with 100% cash and 0 otherwise. Common-stock deals is an indicator variable taking the value of 1 for acquisitions financed with 100% stock and 0 otherwise. The size of acquirers is measured by the log of the market value a month before the deal's announcement. Bidder's book-to-market is measured by the bidder's net book value of assets divided by its market value a month before the announcement of the deal; a deal's relative size is the ratio between the deal value and the market value of the bidder firm; a dummy variable for diversifying deals take the value of 1 when the acquirer's two-digit SIC code is different from that of the target, and 0 otherwise. Merger activity dummy variable takes the value of 1 if the deal is announced during a high activity M&A period, and zero otherwise. This categorization is based on aggregate quarterly M&A statistics from the UK National Statistics Office. Each quarter is categorized as an active period if the number of deals is more than the median and passive otherwise. Finally, other explanatory variables include: the acquirer's lagged excess return for 180 days prior to the bid's announcement; and the market portfolio return (FT-All Share) for the same 180-day period prior to the announcement. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively. Robust standard errors are reported in brackets.

Table 4. Cross-Sectional analysis (Cont.)

	(1)	(2)	(3)	(4)
Intercept	0.023 (0.014)	0.031[b] (0.014)	0.025[c] (0.014)	0.028[b] (0.014)
High valuation period deals	0.008[c] (0.005)			
Low valuation period deals	-0.002 (0.007)			
Overconfident deals		-0.011[b] (0.005)		
High Valuation-Non-Overconfident Deals			0.011[b] (0.005)	
High Valuation- Overconfident Deals			0.000 (0.007)	
Low Valuation-Non-Overconfident Deals			0.005 (0.007)	
Low Valuation- Overconfident Deals			-0.014 (0.012)	-0.018 (0.011)
Private target deals	0.012 (0.008)	0.011[a] (0.008)	0.011 (0.008)	0.011 (0.008)
Cash deals	-0.002 (0.004)	-0.002 (0.004)	-0.003 (0.004)	-0.002 (0.004)
Common stock deals	-0.021[b] (0.008)	-0.021[a] (0.008)	-0.021[a] (0.008)	-0.022[a] (0.008)
Diversifying deals	0.003 (0.004)	0.003 (0.004)	0.003 (0.004)	0.003 (0.004)
B/M	0.008 (0.002)	0.001 (0.002)	0.001 (0.002)	0.001 (0.002)
Relative size	-0.009 (0.014)	-0.010 (0.014)	-0.009 (0.014)	-0.009 (0.014)
Log (MV)	-0.011[a] (0.003)	-0.012[a] (0.003)	-0.011[a] (0.003)	-0.011[a] (0.003)
$FTALLSH_{(-180,-3)}$	0.012 (0.024)	0.031[c] (0.017)	0.017 (0.024)	0.020 (0.018)
$Ri\text{-}Rm_{(-180,-3)}$	0.018[b] (0.008)	0.016[c] (0.008)	0.017[b] (0.008)	0.016[c] (0.008)
High Merger Activity	-0.001 (0.004)	-0.002 (0.004)	-0.001 (0.004)	-0.001 (0.004)
N	822	822	822	822
Adj. R^2	5.38%	5.79%	6.11%	5.56%

Table 5. Acquisitions of Private Firms

Panels A to C present the Cumulative Abnormal Returns (CARs) during five days (-2, +2) surrounding the announcement of private firms' acquisitions by stock market valuation conditions, managerial overconfidence, and their interaction. Abnormal returns are calculated using a modified market-adjusted model ($AR_{it} = R_{it} - R_{mt}$) where R_{it} is the return on firm i at time t and R_{mt} is the value-weighted Market Index Return (FT-All Share). All acquirers are publicly traded firms listed on the London Stock Exchange (LSE). In panel A, using monthly data, each month is classified through this period as a high- (low-) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average. The number of bids for each category is reported below the mean return. In Panel B managers who hold stock options until the year before the expiration date are classified as overconfident. All others are classified as non-overconfident. Panel C reports the CARs for the interaction of market valuation and managerial overconfidence. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively. The (1)-(3) and (4)-(5) represent the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of high- minus low-valuation bidders and non-overconfident minus overconfident bidders respectively. The result in right bottom corner is the mean CAR for the five days (-2, +2) around the acquisition announcement of high- non-overconfident bidders minus low- overconfident bidders. P-values are reported in brackets. Panel D presents regression estimates of the acquirer's five-day cumulative abnormal return (-2, +2) surrounding the announcement controlling for market valuation and managerial overconfidence effects and other deal and acquirer characteristics. The vector of explanatory variables includes dummies representing bids announced by firms with rational (overconfident) managers during high (low) market valuation periods, high-valuation period deals and low-valuation period deals. Using monthly data, each month is classified through this period as a high- (low-) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average. Overconfidence deals dummy is a binary variable that takes the value of 1 if the manager holds the options until the year before the expiration date and 0 otherwise. Cash deals is an indicator variable taking the value of 1 for acquisitions financed with 100% cash and 0 otherwise. Common-stock deals is an indicator variable taking the value of 1 for acquisitions financed with 100% stock and 0 otherwise. The size of acquirers is measured by the log of the market value a month before the deal's announcement. Bidder's book-to-market is measured by the bidder's net book value of assets divided by its market value a month before the announcement of the deal; a deal's relative size is the ratio between the deal value and the market value of the bidder firm; a dummy variable for diversifying deals take the value of 1 when the acquirer's two-digit SIC code is different from that of the target, and 0 otherwise. Merger activity dummy variable takes the value of 1 if the deal is announced during a high activity M&A period, and zero otherwise. This categorization is based on aggregate quarterly M&A statistics from the UK National Statistics Office. Each quarter is categorized as an active period if the number of deals is more than the median and passive otherwise. Finally, other explanatory variables include: the acquirer's lagged excess return for 180 days prior to the bid's announcement; and the market portfolio return (FT-All Share) for the same 180-day period prior to the announcement. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively. Robust standard errors are reported in brackets.

Table 5. Acquisitions of Private Firms (Cont.)

Panel A: Market valuation

	All Bidders	High	Neutral	Low	Differential
CARs (-2,+2)	1.37[a]	1.66[a]	1.45[a]	0.84[c]	0.82[a]
N	722	205	343	174	[0.170]

Panel B: Managerial Overconfidence

	All Bidders	Non-Overconfident	Overconfident	Differential
CARs (-2,+2)	1.37[a]	1.61[a]	0.72[c]	0.89[c]
N	722	522	200	[0.067]

Panel C: Interaction

	Managerial Overconfidence		
Market Valuation	**(4) Non-Overconfident**	**(5) Overconfident**	**(4)-(5) [p-value]**
(1) High	1.72[a]	1.50[c]	0.22
N	149	56	[0.810]
(2) Neutral	1.66[a]	0.95[c]	0.71
N	244	99	[0.250]
(3) Low	1.41[a]	-0.78	2.19[c]
N	129	45	[0.092]
(1)-(3)	0.31	2.28	2.50[c]
[p-value]	[0.615]	[0.116]	[0.056]

Table 5. Acquisitions of Private Firms (Cont.)

Panel D: Cross-Sectional Analysis				
	(1)	(2)	(3)	(4)
Intercept	0.033[b]	0.037[b]	0.034[b]	0.035[b]
	(0.016)	(0.016)	(0.016)	(0.016)
High valuation period deals	0.006			
	(0.005)			
Low valuation period deals	-0.008			
	(0.007)			
Overconfident deals		-0.011[b]		
		(0.005)		
High Valuation-Non-Overconfident Deals			0.008	
			(0.005)	
High Valuation- Overconfident Deals			0.001	
			(0.008)	
Low Valuation-Non-Overconfident Deals			-0.001	
			(0.007)	
Low Valuation- Overconfident Deals			-0.025[b]	-0.025[b]
			(0.013)	(0.013)
Cash deals	-0.002	-0.002	-0.002	-0.002
	(0.004)	(0.004)	(0.005)	(0.005)
Common stock deals	-0.011	-0.009	-0.011	-0.011
	(0.009)	(0.008)	(0.008)	(0.008)
Diversifying deals	0.001	0.001	0.001	0.001
	(0.004)	(0.004)	(0.004)	(0.004)
B/M	0.001	0.001	0.001	0.001
	(0.012)	(0.012)	(0.012)	(0.012)
Large relative size	0.016	0.016	0.017	0.018
	(0.032)	(0.033)	(0.033)	(0.033)
Log (MV)	-0.009[b]	-0.010[b]	-0.009[b]	-0.009[b]
	(0.004)	(0.004)	(0.004)	(0.004)
$FTALLSH_{(-180,-3)}$	-0.016	0.017	-0.009	0.001
	(0.025)	(0.019)	(0.025)	(0.018)
$Ri\text{-}Rm_{(-180,-3)}$	0.010	0.008	0.008	0.008
	(0.009)	(0.009)	(0.009)	(0.009)
High Merger Activity	-0.001	-0.002	-0.001	-0.002
	(0.004)	(0.004)	(0.004)	(0.004)
N	702	702	702	702
Adj. R^2	2.86%	3.22%	3.80%	3.49%

Table 6. Cumulative Abnormal Returns by Market Valuation, Managerial Overconfidence and Interaction of Both with Multiple Acquirers' Proxy

This table presents the Cumulative Abnormal Returns (CARs) during five days (-2, +2) surrounding the announcement by stock market valuation conditions, managerial overconfidence, and their interaction. Abnormal returns are calculated using a modified market-adjusted model:

$$AR_{it} = R_{it} - R_{mt}$$

where R_{it} is the return on firm i at time t and R_{mt} is the value-weighted Market Index Return (FT-All Share). All acquirers are publicly traded firms listed on the London Stock Exchange (LSE). In panel A, using monthly data, each month is classified through this period as a high- (low-) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average. The number of bids for each category is reported below the mean return. In Panel B CEOs that make five or more acquisitions within a 3-year period are classified as overconfident managers. All others are classified as non-overconfident. Panel C reports the CARs for the interaction of market valuation and managerial overconfidence. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively. The (1)-(3) and (4)-(5) represent the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of high- minus low-valuation bidders and non-overconfident minus overconfident bidders respectively. The result in right bottom corner is the mean CAR for the five days (-2, +2) around the acquisition announcement of high- non-overconfident bidders minus low- overconfident bidders. P-values are reported in brackets.

Panel A: Market valuation

	All Bidders	High	Neutral	Low	Differential High-Low
CARs (-2,+2)	1.44[a]	1.85[a]	1.67[a]	0.54[c]	1.31[a]
N	3099	972	1410	717	[0.002]

Panel B: Managerial Overconfidence

	All Bidders	Non-Overconfident	Overconfident	Differential
CARs (-2,+2)	1.44[a]	1.65[a]	0.88[a]	0.77[a]
N	3099	2256	843	[0.005]

Panel C: Interaction between Market Valuation & Overconfidence

	Managerial Overconfidence		
Market Valuation	**(4) Non-Overconfident**	**(5) Overconfident**	**(4)-(5) [p-value]**
(1) High	2.16[a]	1.22[a]	0.94[c]
N	640	294	[0.057]
(2) Neutral	1.79[a]	0.92[a]	0.88[b]
N	1105	378	[0.028]
(3) Low	0.69[c]	0.19	0.50
N	511	171	[0.401]
(1)-(3)	1.47[a]	1.03[c]	1.97[a]
[p-value]	[0.008]	[0.059]	[0.001]

Table 7. Cross-Sectional analysis with Multiple Acquirers' Proxy

This table presents regression estimates of the acquirer's five-day cumulative abnormal return (-2, +2) surrounding the announcement controlling for market valuation and managerial overconfidence effects and other deal and acquirer characteristics. The vector of explanatory variables includes dummies representing bids announced by firms with rational (overconfident) managers during high (low) market valuation periods, high-valuation period deals and low-valuation period deals. Using monthly data, each month is classified through this period as a high- (low-) valuation month if the detrended market P/E of that month belongs to the top (bottom) half of all detrended P/Es above (below) the past five-year average. Overconfidence deals dummy is a binary variable that takes the value of 1 if a manager conducts five or more acquisitions within a 3-year period and 0 otherwise. Private variable is a dummy that takes the value of one if the target is private and zero otherwise; cash deals is an indicator variable taking the value of 1 for acquisitions financed with 100% cash and 0 otherwise. Common-stock deals is an indicator variable taking the value of 1 for acquisitions financed with 100% stock and 0 otherwise. The size of acquirers is measured by the log of the market value a month before the deal's announcement. Bidder's book-to-market is measured by the bidder's net book value of assets divided by its market value a month before the announcement of the deal; a deal's relative size is the ratio between the deal value and the market value of the bidder firm; a dummy variable for diversifying deals take the value of 1 when the acquirer's two-digit SIC code is different from that of the target, and 0 otherwise. Merger activity dummy variable takes the value of 1 if the deal is announced during a high activity M&A period, and zero otherwise. This categorization is based on aggregate quarterly M&A statistics from the UK National Statistics Office. Each quarter is categorised as an active period if the number of deals is more than the median and passive otherwise. Finally, other explanatory variables include: the acquirer's lagged excess return for 180 days prior to the bid's announcement; and the market portfolio return (FT-All Share) for the same 180-day period prior to the announcement. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively. Robust standard errors are reported in brackets.

	(1)	(2)	(3)	(4)
Intercept	0.005[c]	0.005	0.003	0.005
	(0.023)	(0.023)	(0.023)	(0.023)
High valuation period deals	0.005			
	(0.003)			
Low valuation period deals	-0.002			
	(0.004)			
Overconfident deals		-0.006[b]		
		(0.003)		
High Valuation-Non-Overconfident Deals			0.007[c]	
			(0.004)	
High Valuation- Overconfident Deals			-0.001	
			(0.004)	
Low Valuation-Non-Overconfident Deals			-0.001	
			(0.005)	
Low Valuation- Overconfident Deals			-0.005	-0.005
			(0.006)	(0.006)
Private target deals	0.026[a]	0.027[a]	0.027[a]	0.026[a]
	(0.008)	(0.008)	(0.008)	(0.008)
Cash deals	0.001	0.001	0.001	0.001
	(0.003)	(0.003)	(0.003)	(0.003)
Common stock deals	0.007	0.007	0.007	0.007
	(0.011)	(0.010)	(0.011)	(0.010)
Diversifying deals	0.003	0.003	0.003	0.003
	(0.003)	(0.003)	(0.003)	(0.003)
B/M	0.005	0.005	0.005	0.005
	(0.016)	(0.016)	(0.016)	(0.016)
Relative size	0.010	0.010	0.010	0.010
	(0.017)	(0.017)	(0.017)	(0.017)
Log (MV)	-0.011[b]	-0.011[b]	-0.011[b]	-0.011[b]
	(0.005)	(0.005)	(0.005)	(0.005)
$FTALLSH_{(-180,-3)}$	0.045[b]	0.060[a]	0.046[b]	0.056[a]
	(0.019)	(0.016)	(0.019)	(0.017)
$Ri\text{-}Rm_{(-180,-3)}$	0.006[a]	0.005[a]	0.006	0.006
	(0.004)	(0.004)	(0.004)	(0.004)
High Merger Activity	-0.002	-0.003	-0.002	-0.003
	(0.003)	(0.003)	(0.003)	(0.003)
N	2916	2916	2916	2916
F-Statistics	6.07[a]	6.69[a]	5.44[a]	6.82[a]
Adj. R^2	5.51%	5.53%	5.59%	5.46%