THE IMPACT OF MANAGERIAL OVERCONFIDENCE AND INVESTOR SENTIMENT ON BIDDERS' ABNORMAL RETURNS

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THE IMPACT OF MANAGERIAL OVERCONFIDENCE AND INVESTOR SENTIMENT ON BIDDERS' ABNORMAL RETURNS

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Abstract

The main objective of this thesis is to investigate takeover gains for UK bidding firms and offer a behavioural approach to empirical analysis. The main issues and key findings of the three empirical chapters are summarised as follows. Chapter 3 empirically investigates the hubris hypothesis for corporate takeovers (Roll (1986)). This thesis examines whether overconfident managers destroy shareholder value (in public deals) or whether their actions generally lead to lower wealth effects (in private deals) relative to rational bidders. Bidders' short and long-term performance is also examined by employing, for the first time in a UK study, three different measures of overconfidence namely Stock Options, Multiple Acquirers and Business Press proxies. The results indicate that managers infected by hubris fail to generate superior returns than those generated by rational bidders, for all three proxies of overconfidence after controlling for various bidder and deal characteristics. We therefore argue that the well-documented destructive effect upon shareholder wealth of managerial overconfidence is not sensitive to the measure used for this behavioural bias (i.e. overconfidence). The Hubris hypothesis assumes a rational market-irrational manager framework while Shleifer and Vishny (2003) offer rational manager-irrational market framework and suggest that takeovers are driven by overvalued markets. Chapter 4 empirically investigates the proposal of Baker et al. (2007) who claims that '*the irrational manager and irrational investor stories can certainly coexist'*. Findings show that rational managers who announce takeovers in high valuation periods enjoy the highest abnormal returns while overconfident managers who announce takeover bids in low valuation periods cannot hide the poor quality or possible overpayment of their deals ending up suffering the highest losses. Lastly, Chapter 5 offers a behavioural approach to explain short –run bidder gains. Neoclassical theories suggest that the market reaction following the announcement of a takeover bid reflects either synergy or revaluation gains. Chapter 5 suggests that acquirers' abnormal returns reflect a market overreaction. Results suggest that under conditions of low information uncertainty when investors do not possess private information, the market reaction is complete (zero abnormal returns) for any type of acquisition. On the other hand, under conditions of high information uncertainty, investors overweight their private information and overreact to takeover announcements. Therefore, they generate highly positive and significant gains following the announcement of private stock and public cash deals (considered to be 'good' news), positive gains following private cash acquisitions (also defined as 'good' news) while investors heavily punish public stock deals (classified as 'bad' news).

Material contained in the thesis has not previously been submitted for a degree in this or any other institution

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Evangelos Vagenas-Nanos

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To the Memory of my Grandfathers,
Nikolaos Setsikas and Evangelos Vagenas

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Chapter 1: Introduction

Takeovers are large investment projects undertaken by firms in order to either grow the size of the firm, restructure the firm's operations or in order to penetrate new markets. In a short period of time, the structure of these firms (in terms of the firm's fundamental figures and competitive environment) can change dramatically. Small firms can use takeovers to grow larger whilst national firms can become multinational after M&A activity.

Neoclassical and behavioural explanations have been proposed to help explain why mergers and acquisitions occur. Neoclassical theories suggest that managers are rational with the aim to maximize shareholders wealth. Mergers therefore serve as a way for managers to increase their firm's market power and efficiency. Economies of scale can also be sought in the reduction of costs with the potential creation of synergies gains. The main rational motive behind M&As is the potential value creation it offers through *synergies*. This theory assumes that the value of the new merged firm will exceed the sum of the value of its previously separate entities (Jensen and Ruback, 1983). This is, however, not always supported by the empirical evidence relating to bidders' returns. Furthermore, neoclassical explanations regarding merger waves suggest that takeover activity clusters in time due to economic, technological and regulatory shocks (Gort (196), Mitchell and Mulherin (1996)). In other words, merger activity is instigated by what is commonly termed an economic disturbance.

A second school of thought pertains to the *agency theory* as suggested by Jensen (1986). This theory posits that managers rationally attempt to pursue their own objectives at the expense of shareholders' interests. A third motivation relaxes this restriction of managerial rationality and has recently been intensively debated. It is termed managerial *hubris* and was first introduced by Roll (1986). Roll's (1986) hubris hypothesis assumes that financial markets are strong-form efficient. Managers, in this setting, engage in acquisitions with an overly optimistic opinion of their own ability to create value and extract potential synergies from a proposed takeover deal. As a result, they overbid for target firms destroying the wealth of their own shareholders. Other behavioural explanations, such as market misvaluations, managerial motives and sentiment, could serve as the other driving force for takeover activity. Shleifer and Vishny (2003) suggest that managers 'time the market' to take advantage of their overvalued equity to allow for the acquisition of undervalued target firms. Similarly, Bouwman, Fuller and Nain (2009) and Rosen (2006) report that acquisitions undertaken during high valuation periods generate higher abnormal returns due to high investor sentiment. Furthermore, managerial envy (Goel and Thakor (2008)) or the pursuing of the manager's personal objectives (Morck, Scheifer and Vishny (1990)) are also driving forces for M&A activity. Managerial decisions in these aspects seem to play a significant role in the initiation and completion of a takeover bid.

This thesis focuses mainly on the cognitive biases that affect the decisions of the various participants in the market. One of the well-documented cognitive biases discussed in the psychological literature, which has been proven to affect financial decisions, is overconfidence. Overconfidence is usually presented in the form of miscalibration (Oskamp (1965)), a 'better-than-average' effect (Taylor and Brown (1988)), an illusion of control (Langer and Roth (1975)) and an unrealistic optimism (Weinstein (1980)). Glaser and Weber (2007) claim that the 'better-than-average' effect influences an investor's trading activity by causing these individuals to trade higher volumes, more frequently than would be considered normal. Odean (1998) also writes that investor overconfidence increases the market's trading volume and depth. Daniel et al. (2001) and Chuang and Lee (2006) model investors' behaviour and claim that investors are highly influenced by their biases and resultantly over and underreact to their private signals rather than to available public information.

Managerial decisions appear to play a significant role in corporate takeovers. Roll (1986) claims that takeover deals may also be driven by overconfidence. Managers infected by hubris believe that due to their own superior abilities, they can create value for the shareholders of their firms through engaging in various investment projects. The hubris hypothesis predicts why managers undertake takeovers even when there are no synergy gains. Roll (1986) suggests that overconfident managers are likely to overestimate the synergy gains on offer, if they exist at all, resulting in the payment of high premiums for the target firms. Despite the extensive theoretical work regarding investor and managerial biases, there still remains limited empirical evidence in the related areas.

Extensive literature has discussed the cost and benefits of M&As both for the target and the bidding firms. While there is unanimous agreement that the shareholders of the target firm enjoy significant gains following the announcement of a takeover deal[1], there is high controversy over whether takeovers are value-enhancing or value-destroying projects for the shareholders of the bidding firm. An unanswered question still remains in that do shareholders of the acquiring firm actually benefit from takeover bids? An extensive part of the corporate finance literature has examined various factors that affect and could help explain the market's reaction following the announcement of a takeover bid. Initially, a great number of studies failed to account for the target firm's public status. A large body of research[2] examines the short-run abnormal returns only for acquisitions of public target firms. It finds that acquirers either suffer losses or, at best, break-even. On the other hand, acquisitions of privately held firms generate positive and significant abnormal returns around the announcement of the takeover[3]. The short-run reaction to takeovers of subsidiary targets[4] is similar to the evidence provided for private targets. The managerial motive, the liquidity and the bargaining power hypotheses have all been proposed to help explain the differences for bidder gains in acquisitions of private versus public target firms. Further investigation has revealed that that the method of payment along with the target firm's status can also help explain acquirers' gains. Stock offers for public targets suffer significant losses (Travlos (1987)) while stock offers for privately held targets generate positive and significant gains (Chang (1998)). Cash offers generate marginally positive gains for both private and public targets. The corporate monitoring and the information asymmetry hypotheses explain the difference between the various methods of payments

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[1] See Dodd and Ruback (1977), Langetieg (1977), Bradley (1980), Dennis and McConnell (1986), Bradley, Desai and Kim (1988), Jarrell and Poulsen (1989), Lang, Stulz and Walkling (1989), Frank, Harris and Titman (1991), Servaes (1991), Bannerjee and Owers (1992), Conrad and Niden (1992), Healy, Palepu and Ruback (1992), Kaplan and Weisback (1992), Berkovitch and Narayanan (1993), Eckbo and Thorburn (1993), Smith and Kim (1994), Schwert (1996), Loughran and Vijh (1996), Maquieira, Megginson and Nail (1998)

[2] See Jensen and Ruback (1983), Bradley, Desai and Kim (1988), Jarrell and Poulsen (1989), , Kaplan and Weisbach (1992), Servaes (1991), Lang et al. (1991), Healy, Palepu and Ruback (1992), Mulherin and Boone (2000), Agrawal et al. (1992), Hansen and Lott (1996), Fuller et al. (2002), Higson and Elliot (1998), Sudarsanam, Holl and Salami (1996), Dodds and Quek (1985), Firth (1980), Limmack (1991), Holl and Kyriazis (1997), Draper and Paudyal (2006),and Eckbo (1986).

[3] See Hansen and Lott (1996), Fuller, Netter and Stegemoller (2002), Ang and Kohers (2001), Draper and Paudyal (2006), Chang (1998), Antoniou, Petmezas and Zhao (2007), Conn, Cosh, Guest and Hughes (2005), Faccio, McConnell and Stolin (2006) and Hertzel and Smith (1993).

[4] See Fuller et al. (2002), Moeller, Schlingemann and Stulz (2004), Conn, Cosh, Guest and Hughes (2005), Antoniou, Petmezas and Zhao (2007) and Faccio and Masulis (2005).

employed by the bidding firm in order to acquire the target firm. Literature has also explored other factors which affect short-run bidder gains. Moeller, Schlingemann and Stulz (2004) find that small bidders enjoy higher gains than large ones. There is also unanimous consent that the higher the relative size of the deal, the higher the gains obtained for the bidding firm (Asquith, Bruner and Mullins (1983), Londerer and Martin (2001), Fuller et al. (2002)). Moreover, Rau and Vermaelen (1998) and Sudarsaman and Mahate (2003) show that value (low MTBV ratios) outperform glamour (high MTBV ratios) acquirers. Additionally, research has also focused on bidders who diversify across industries and countries and bidders who undertake multiple takeover bids. Extensive evidence and analysis of the findings of this research is presented in Chapter 2 (Literature Review).

Despite the extensive theoretical and empirical work on investor biases, there is still limited empirical evidence in the application of these findings to the field of M&As. This thesis contributes to the behavioural finance literature by empirically investigating issues such as managerial overconfidence, investor sentiment and investor biases in a M&As framework.

More specifically, Chapter 3 empirically investigates the hubris hypothesis introduced by Roll (1986) in the UK takeover market. The hubris hypothesis assumes that financial markets are strong-form efficient. Manager's engage in acquisitions with an overly optimistic opinion of their own ability to create value and extract potential synergies from a proposed takeover. As a result, they overbid for target firms destroying value for their own shareholders. While there is substantial work on investor irrationalities, there is limited evidence of the effect of *managerial* overconfidence on shareholders' wealth. Evidence is limited to the US market (Hayward and Hambrick, (1997), Heaton, (2002) and Malmendier and Tate, (2008)) but nonetheless, it suggests nonetheless that overconfident managers are more likely to destroy value when involved in takeover activity. The UK merger market is an ideal testing ground for managerial overconfidence. Almost nine out of ten takeovers involve privately-held target firms with the method of payment used to finance the takeover predominantly being cash (Draper and Paudyal (2006)). In a private bid, information is limited regarding the target firm and hence managers' personal evaluations and estimations are required more than they would be in acquisitions of public targets, where an abundance of available information helps the process. With this unique characteristic of the UK market, it more likely that the phenomenon of overconfidence is observed in M&As. Furthermore, Malmendier and Tate (2008) show that overconfident managers are more likely to proceed to undertake takeovers when they have an abundant of internal resources at their disposal.

To capture managerial overconfidence, we employ three hand-collected datasets used for the first time for the UK market. The stock options proxy is based on managerial compensation packages. We identify the CEO at the time of deal announcement and classify them as overconfident if they hold their stock options until the last year before the expiration date. The multiple acquisitions proxy is based on the notion that managers who perform multiple acquisitions are subject to self-attribution bias and overconfidence. Previous studies (Doukas and Petmezas (2007), Billett and Qian (2008)) have employed similar proxies and observed the behaviour of bidding firms which have undertaken multiple bids within a specified period of time. It could be the case that bidding firms which undertake different deals have different managers at different points in time. We focus on individual CEOs and classify them as overconfident if they undertake five or more acquisitions within a period of three years. Finally, the chapter also employs the business press proxy which is based on the individual CEOs. We extract managers that are portrayed as 'confident', 'optimistic', 'overconfident' and 'overoptimistic' within the press and classify them as overconfident. The main findings suggest that overconfident managers fail to generate superior abnormal returns compared to rational managers, both in the short and long-run. Chapter 3 confirms that the hubris hypothesis is robust outside of US as well and is not sensitive to the choice of proxies used. Overall, we observe that managerial overconfidence plays a significant role in determining bidder gains. The chapter contributes to the existing literature by providing clear evidence of the personal effect of CEO's irrationalities upon bidder gains.

The hubris hypothesis, as tested in Chapter 3, assumes that managers are irrational while the market is modelled rational, able to recognise and capture this human irrationality. Irrationality has been separately studied in the literature for managers and the broader investor groups and market. Baker et al. (2007, p. 48) in a review paper argues that "the irrational manager and irrational investor stories can certainly coexist". Chapter 4 of this thesis attempts to reconcile these two theories, providing direct evidence regarding the role of managerial overconfidence in high and low market valuation periods, documenting the effect on bidders' shareholder wealth.

Shleifer and Vishny (2003) suggest an irrational market-rational manager framework. Rational managers are believed to 'time the market' to take advantage of their overvalued equity in order to acquire undervalued target firms. Consistent with this theory, Jovanovic and Rousseau (2001) and Rhodes-Kropf et al. (2005) show that more acquisitions take place during bullish markets. Bouwman et al. (2009) find that acquisitions announced during high valuation periods generate higher abnormal returns for the bidding firm's shareholders than those announced during low valuation periods. Chapter 4 simultaneously investigates both market conditions and the managerial trait of 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 negatively the quality of the deal undertaken during a hot period. On the contrary, given that high-valuation periods are associated with an increase in bidder returns, rational managers, who assess a deal more carefully and negotiate more efficiently than those who are irrational, may time the announcement of bids to further enhance the positive effect upon shareholders' wealth. Furthermore, when overconfident bidders conduct deals in depressing markets, it is unlikely that they will be able to hide the quality of the deal or the possible overpayment. Investors in low valuation markets are substantially more careful in assessing the future prospects of the deal and therefore are more likely to react more unfavourably upon the realization of a bad deal, depreciating the bidder's stock price.

We employ the stock options and the multiple acquirers proxies[5] as described in chapter 3 and examine the bidding firm gains managed by rational and overconfident managers in high and low valuation periods, as classified by the methodology of Bouwman et al. (2009). We find that rational managers who announce takeover deals during high valuation periods enjoy the highest abnormal returns. Conversely, when bids are undertaken and announced by overconfident managers during low valuation periods, investors assess the deal more carefully and heavily punish bidding firms with overconfident managers. Rational managers tend to generate positive abnormal returns in most cases, irrespective of the market conditions. Furthermore, overconfident managers who take advantage of positive investor sentiment do not destroy shareholder value when they announce takeovers during high valuation periods. Our results are robust to a multivariate analysis which controls for factors known to affect acquiring firms' returns, such as the method of payment used, the listing status of the target firm as well as the size and book-to-market ratios of the acquiring firm. Our findings suggest that the interaction of market conditions and managerial behavioral traits play a significant role in identifying the differences in acquirers' short-run abnormal returns. Chapter 4 contributes by providing clear evidence of the superior of rational managers regardless of market conditions through simultaneously investigating an irrational manager-irrational market framework.

Neoclassical theories suggest that the motive for M&As should predominantly be to extract synergistic gains as a result of economies of scale achieved after the combination of the two companies. The subsequent market reaction at the time of deal announcement should reflect these potential synergy gains on offer. Fuller et al. (2002) and Draper and Paudyal (2008) claim that the short-run market reaction to bidder's following takeover announcements may also reflect revaluation gains. Even the hubris hypothesis itself assumes that overconfident managers overpay for their targets resulting in the erosion of potential synergy gains. The market, which is assumed to be rational in the hubris setting, realizes such actions and punishes overconfident takeover activity.

[5] The business press proxy reveals similar evidence with the other two proxies, but is excluded due to small sample limitations.

Chapter 5 offers an alternative behavioural approach to explain the market's reaction following the announcement of takeover bids. Experimental evidence suggests that investors tend to overestimate the precision of their information especially when they are personally involved in its collection (Odean (1998)). Daniel et al. (1998, 2001) suggest that investors are overconfident particularly regarding their private information and tend to become even more overconfident under conditions of information uncertainty. Zhang (2006) posits that under conditions of high information uncertainty, the market should react more positively (negatively) following the announcement of good (bad) news while when uncertainty is low, the market reaction should be complete (i.e. zero abnormal returns). Zhang (2006) notes that his work does not incorporate the private information of investors in its analysis and offers that further investigation is required.

Motivated by the above theoretical and empirical evidence, we examine the market's reaction following the announcement of takeover bids under both conditions of high information uncertainty and when investors possess private information. By information uncertainty, we refer to ambiguity regarding the bidding firm's value (Zhang (2006)). Travlos (1987) suggests that stock acquisitions for public target firms convey 'bad' news to the market regarding the intrinsic value of the bidding firm while cash offers signal 'good' news. Shleifer and Vishny (2003) extend this idea proposing that bidders use equity offers when they know that their equity is overvalued. On the other hand, Chang (1998) and Draper and Paudyal (2006) suggest that takeovers for private targets paid for with stock reveal positive news to the market. The concentrated ownership of privately held firms is posited to have more of an incentive to carefully evaluate the intrinsic value of the bidder before accepting to become an owner of a large amount of the bidders stock. Hence, it is quite unlikely that acquirers' stock would be overvalued and accepted by the target in this setting. Conversely, private acquisitions paid for with cash are considered to be fairly positive indication of the bidder by the market but do not directly reveal any information about the bidder's true stock value.

In Chapter 5, we hypothesise that under conditions of information certainty, investors overweight the precision of their private information and hence there should be a positive market reaction following the announcement of private stock, public cash and private cash acquisitions (considered to be 'good' news) while the market reaction should be negative following the announcement of public stock deals (considered 'bad' news). When information uncertainty is low, and investors are less likely to possess private information, there should be no market reaction.

To capture information uncertainty for bidding firms, we employ four proxies including the bidding firm's age, size, sigma and trading volume. To capture whether investors are more likely to possess private information or not, we employ stock price (non)synchronicity as developed by Morck et al. (2000) and Chen et al. (2007). Our findings provide support for our hypotheses. We find that under high information uncertainty, bidders enjoy positive abnormal returns for private stock, public cash and private cash acquisitions. These returns are even more positive after we control for investors' private information. Under the same conditions, we observe negative abnormal returns following the announcements of public stock deals. Once again, these returns are amplified when investors are likely to possess and overweight their private information. Conversely, when uncertainty about the intrinsic value of the bidding firm is low, and investors are less likely to possess private information, the market reaction is complete (zero abnormal returns). Furthermore, we provide evidence that the market responds asymmetrically following bad and good news. The negative reaction following 'bad' news is stronger than the positive reaction following 'good' news. Finally, our findings indicate that the differences in the method of payment between cash and stock acquisitions for public (Travlos (1987)) and private (Chang (1998)) deals hold only under conditions of information uncertainty. When uncertainty is low, there are no significant differences between the two methods of financing an acquisition. In summary, Chapter 5 contributes to the existing literature by investigating the performance of bidding firms' reactions under different conditions of information uncertainty when investors possess private information.

The remainder of this thesis is organised as follows: Chapter 2 reviews the literature on the various factors that have been proven to affect bidders' performance. Chapter 3 empirically investigates the hubris hypothesis. Chapter 4 examines the bidder gains for rational and overconfident bidding firms in high and low valuation periods. Chapter 5 offers a behavioural approach of the market reaction following the announcement of various takeover deals. Chapter 6 concludes the work, discussing the main findings and contributions of this thesis.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Takeover bids are one of the most important events that occur for both the firm and the wider economy. As a result, they have been subject to extensive investigation within the finance literature. Although there is unanimous agreement for the benefits obtained by target firms, there remains a lot of ambiguity regarding the returns earned by the bidding firm around the announcement date.

It has been widely documented in the corporate finance literature that bidder gains around the announcement date of an acquisition are dependent upon a number of bidder-specific factors or other deal characteristics. In particular, the existing evidence suggests that factors such as the target firm's listing status (i.e. private, public or subsidiary), the method of payment used to finance the takeover (i.e. cash, stock or mixed offers of cash and stock) or, even more specifically, the combination of the target firm's listing status with the method of payment used, can help explain acquiring firms' short-run abnormal returns. Furthermore, the size of the bidding firm, the growth opportunities (measured using the market-to-book value ratio) of the bidding firm and the relative size between the target and bidder are also determining factors that can explain short-term bidder gains. The literature also explores the differences in acquiring firms' abnormal returns when acquirers bid for target firms within the same industry (non-diversifying deals) or in industries other than the one in which the acquirer operates (diversifying deals). In addition, research has focused on the effect upon return generation when the target firm operates domestically in the same nation as the acquirer or whether they reside in foreign country. This chapter extensively reviews the literature on the above factors and mainly focuses on the target firm's listing status and the method of payment for the deal as being the most important factors which affect a bidder's short-term performance.

The merger and acquisition game is a complicated puzzle which has invoked a great number of researchers to attempt to identify and explain the reasons behind the observed variation in the acquiring firm's abnormal returns. Apart from the factors mentioned above, which are further extended later in this chapter; behavioral explanations have also been proposed to interpret acquirers' underperformance. The hubris hypothesis (Roll (1986)) is one of them.

The hubris hypothesis suggests that managers infected by hubris overestimate their abilities and the future outcome of the project's they undertake as they underestimate the risk involved in a possible acquisition. Consequently, managers end up offering high premiums to the target companies which resultantly destroys value for their own company. There is limited empirical evidence in the literature related to this hypothesis. Chapter 3 of this thesis extensively discusses this issue. Furthermore, a growing part of the literature relates M&As and its wealth effects to various market-wide conditions such as market misvaluations and investor sentiment. Chapter 4 of this thesis further discusses the literature on the related topics and empirically investigates the effects of investor and managerial sentiment on bidders' shareholders wealth. Finally, Chapter 5 also provides a behavioral approach to explain the way in which the market reacts to M&As announcements.

The remainder of this section is organized as follows. Section 2.2 details the various factors that affect short-run bidders' performance. More specifically, Section 2.2.1 discusses the target firm's listing status, Section 2.2.2 reviews the existing studies on the method of payment and Section 2.2.3 analyzes other factors such as the size of the bidding firm, the relative size of the deal, the growth opportunities of the acquirer, whether the bidder diversifies across industries/countries as well as the gains from multiple acquisitions. Finally, Section 2.3 reviews the literature regarding the long-run post-merger gains before Section 2.4 concludes.

2.2 Short-Run Bidder Gains from Acquisitions

This section reviews the literature on various factors that have been rendered explanatory over short-term bidder gains. The Merger and Acquisition (M&A) field is a complicated puzzle that has been widely examined in the finance literature. There have been great attempts to explain and understand the creation and destruction of shareholders' wealth for both parts of the takeover (i.e. for the acquiring and acquired firms). Although it is unanimously agreed[6] that the target firm's shareholders enjoy significantly positive gains around the announcement of a takeover bid, it has been observed that bidding companies suffer losses or obtain zero abnormal returns. In a few cases it has also been shown that bidders can enjoy significant profits around the announcement date. We review studies which discuss factors such as the target firm's listing status, the method of payment, the size and market-to-book ratio of the acquirer, the relative size of the deal, diversifying versus non-diversifying deals, domestic versus foreign targets as well as the gains for acquirers that are involved in multiple bids.

2.2.1 Target Firm's Listing Status

It has been empirically observed that the market's reaction following the announcement of a takeover is significantly different for a takeover of a listed or an unlisted target firm. Takeovers for publicly listed target firms either suffer losses or at best break-even. On the other hand, the evidence suggests that takeovers of privately held or subsidiary targets generate positive abnormal returns for the bidder's shareholders. The following three subsections (2.2.1.1, 2.2.1.2 and 2.2.1.3) present the main studies which provide this evidence regarding acquisitions for public, private and subsidiary target firms respectively.

2.2.1.1 Bidder Gains from Public Target Firm Acquisitions

This subsection concentrates on the studies that document empirical evidence regarding bidder gains around the announcement of a takeover for a listed target firm. One of the seminal papers which investigate shareholders' wealth from takeover activity is by Jensen and Ruback (1983). They show that listed target firm shareholders enjoy positive abnormal returns while the shareholders of the acquiring firm do not suffer

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[6] See Dodd and Ruback (1977), Langetieg (1977), Bradley (1980), Dennis and McConnell (1986), Bradley, Desai and Kim (1988), Jarrell and Poulsen (1989), Lang, Stulz and Walkling (1989), Frank, Harris and Titman (1991), Servaes (1991), Bannerjee and Owers (1992), Conrad and Niden (1992), Healy, Palepu and Ruback (1992), Kaplan and Weisback (1992), Berkovitch and Narayanan (1993), Eckbo and Thorburn (1993), Smith and Kim (1994), Schwert (1996), Loughran and Vijh (1996), Maquieira, Megginson and Nail (1998), Draper and Paudyal (1999), Leeth and Borg (2000), Mulherin and Boone (2000), Mulherin (2000), DeLong (2001), Houtson et al. (2001), Beitel et al. (2002), Billett, King and Mauer (2003) and Goergen and Renneboog (2004).

losses following the announcement of the takeover. More specifically, bidders generate zero abnormal returns in the case of a merger while they report small positive statistically significant abnormal returns in the case of a tender offer. Jensen and Ruback (1983) examine US takeovers for the period 1962 to 1985 and find that bidding firms obtain small positive and significant gains (1% to 2%) in the whole sample period. However, the results are slightly different when splitting the sample into sub periods and losses (albeit statistically insignificant) are observed in the '80s.

Likewise, Bradley, Desai and Kim (1988) investigate the case of tender offers where many acquirers bid for the same target. The sample consists of firms listed either in the NYSE or the AMEX at the time of the acquisition over the period 1963-1984. Target firms' shareholders enjoy the largest part of the gains while bidder shareholders enjoy small positive gains only during unregulated periods. At other times the evidence shows that they suffer great losses especially the period 1981-1984. Finally, Bradley, Desai and Kim (1988) find that the combined value of the new firm increases when a successful tender offer takes place whilst the target firm realizes great profits when the competition among the bidding firms increase. Hence, they claim that their findings are inconsistent with Roll's hubris hypothesis but offer support for the synergy hypothesis.

Equally, Jarrell and Poulsen (1989) study the effect of tender offers on acquirers' shareholders wealth. 450 tender offers from 1963-1986 are examined and they report positive and significant abnormal returns for bidding firms which are much lower than those obtained by target firms. However, in the decade of the 1980s, these abnormal returns become negative but statistically insignificant. They suggest that the competition among acquirers for the target firm nullifies the gains for the acquirer from the takeover but the target firm achieves the highest benefit by receiving a high premium. Jarrell and Poulsen (1989) also suggest that the relative size between the target and the bidder plays a significant role in observing low abnormal returns to the acquiring firm. If the size of the deal is relatively small compared to the size of the acquirer, then the market's reaction to the announcement of the takeover will not have a large effect on the bidder's share price. Moreover, the wealth effects may not be incorporated in the stock price on the date of announcement but rather on the actual day of the takeover.

Similar evidence is provided by Kaplan and Weisbach (1992). They examine large acquisitions that take place between 1971 and 1982. While large looses are reported for bidders' shareholders, target firms' shareholders experience large gains during the same period. Servaes (1991) examines 704 acquisitions in the period 1972-1987 and reports negative abnormal returns (-1.07%), which decline even more (-4.71%) in the case of a hostile takeover.

The evidence also suggests that bidders' abnormal returns around the announcement of the acquisition depend on Tobin's Q as well. If Tobin's Q is considered as a measure of the quality of the management of the firm then the highest returns are observed for well managed bidders who acquire poorly managed targets. In the same respect, Lang et al. (1991) in a sample of 101 mergers and tender offers between 1968 and 1986 report negative abnormal returns (-0.4%) for the overall sample, which is largely driven by low Q bidders (-1.6%) versus the positive abnormal returns (3.5%) generated by high Q acquirers. Takeover gains further decline for low Q firm relative to high Q ones as the cash flow of low Q firms increases.

On the other hand, Healy, Palepu and Ruback (1992) examine the 50 largest US takeovers in the period 1979-1984. They find a positive relationship between cash flow improvements and takeover abnormal returns following the announcement of the merger. Additionally, Mulherin and Boone (2000) examine 1305 firms from 59 different industries in the period between 1990 and 1999 and claim that gains are created both from acquisitions and divestures. The gains are shown to be positively related to the relative size of the deal. Likewise, Agrawal et al. (1992) examine U.S. takeovers for the period 1955-1987, controlling for size and dividend yield. They find that bidders suffer losses at the level of 10% over the five years following the completion of a takeover.

A number of studies report negative gains to acquirers when they compare the takeover of listed and unlisted target firms. Hansen and Lott (1996), for a sample of takeovers for the period 1985-1990, report significant losses of -0.98% for 151 acquisitions of public targets while private deals generate 1.51%. Similar evidence is reported by Fuller et al. (2002). They compare multiple deals and claim that bidder shareholder gain when they acquire private or subsidiary target firms while they suffer losses (-1.00%) for acquisitions of listed target firms. Chang (1998) provides similar findings. He reports negative abnormal returns surrounding the acquisition of a listed target, especially when the acquirer uses stock as a method of payment while positive returns are reported for unlisted target firms. Finally, another study that compares gains from private and public acquisition is that of Ang and Kohers (2001). They also find negative abnormal returns following the acquisition of a public firm for the period 1984-1996. The above literature has presented the gains obtained by US acquiring firms following the takeover of a listed target company. We further focus on the evidence pertaining to UK takeover activity for listed target firms.

Higson and Elliot (1998) examine the abnormal returns for bidders following the takeover of U.K. listed companies for 16 years from 1975-1990. They find zero abnormal returns on a value-weighted base (due to very few large takeovers) and negative abnormal returns in an equally-weighted portfolio for the period of three years post-completion of the takeover. However, there are variations to these findings during the sample period. Moreover, there is no sign of a relationship between the abnormal returns and the dividend-yield or past return factors.

Similarly, Sudarsanam, Holl and Salami (1996) investigate the UK merger market investigating the synergy and agency hypotheses, particularly focusing on the way the outcome of the takeover is affected. More specifically, they examine 429 UK listed companies from 1980 to 1990 and find that financial synergies tend to prove more profitable than operational synergies. Furthermore, it is shown that bidders suffer losses over highly rated target firms than when acquiring less highly rated targets. This outcome is supportive of the hubris hypothesis and managerial overreaction literature concerning a lower profile target company.

Great losses are also reported by Firth (1980) who finds that mergers and acquisitions in the UK market are profitable projects for target firms while the acquiring firm suffers great losses. The value of the combined firms is also found to be slightly positive. Firth (1980) supports the notion that takeovers are initiated and motivated by managers who are driven by their desire of maximizing their personal profits. Analyzing the remuneration levels of managers, he finds that there is a significant increase in their personal benefits. Two main theories are put forward to explain these results. First, the neoclassical profit maximization theory is offered, which suggests that firms wish to maximize their profits by engaging in a takeover. However, the competition by many bidding firms for the same target results in a decrease in profits due to a lack of monopoly power, synergy gains and restructuring. Second, the maximizing management utility theory is explained, which claims that bidders sometimes acquire another company not to maximize shareholder's wealth but rather to maximize managers' personal benefits.

Another study that examines UK merger activity is the one by Dodds and Quek (1985) who study 70 listed companies for the period 1974-1976, which is considered to be the peak of the seventies merger wave. The findings suggest that firms that proceeded to conduct takeovers suffer losses compared to those who did not. Similarly, Limmack (1991) investigates 448 successful UK takeovers over the period of 1977 and 1986. He reports that the shareholders of acquirers suffer significant losses while the shareholders of target firms enjoy positive abnormal returns.

In a comparative study between US and UK acquiring firms, Franks and Harris (1989) examines 1800 UK bidders over the period 1955-1985. They claim that shareholders of target firms gain while those of bidding firms suffer losses. They also report that gains to target firms have increased over time for both US and UK target firms while losses are similar for US and UK bidding companies. Holl and Kyriazis (1997) study a sample of 178 successful UK bids and also report losses for the acquiring firm. More specifically, bidders have no gains over the period two months before, while they suffer losses (-1.7%) following, the takeover announcement. More recent studies also report losses for UK bidding firms. Draper and Paudyal (2006) in a comparative study between private versus public UK takeovers in the period 1981 to 2001, suggest that either there are no gains to bidding firms acquiring listed targets or small losses are incurred.

In contrast to the evidence presented above for US and UK bidding companies, Eckbo (1986) the case of 1900 Canadian mergers between 1964 and 1983 reports significant large gains both for bidders and targets following the announcement of a takeover. They also claim that there is no significant difference between horizontal and non-horizontal mergers and besides, the location of the bidding firm plays a significant role in the differences of bidder gains. Contrary to Eckbo’s (1986) finding, Pettway and Yamada (1986) examine 50 Japanese acquirers and report insignificant gains. However, their results are in contrast to the US findings in respect to the relative size of the deal. While the US evidence claims that gains from acquisitions are positively related to the relative size of the deal, Pettway and Yamada (1986) find higher gains in smaller relative size deals in the Japanese market.

While the vast majority of the literature suggests that gains from acquisitions of listed target acquisition generate negative or zero abnormal returns to shareholders, Alexandridis, Petmezas and Travlos (2010) examine a global merger and acquisition dataset and claim that bidders in countries apart from the UK, US and Canada enjoy significant positive abnormal returns. Acquiring firms in less competitive countries pay lower premia and therefore enjoy higher returns surrounding the acquisition announcement date. For the same reason, they find that targets in these countries receive lower premia and hence experience lower abnormal returns compared to US, UK and Canadian target firms.

Overall, the vast majority of studies regarding gains from takeovers of listed target firms report either losses or no gains for the shareholders of the acquirers. The following subsection reviews the studies that investigate short-term bidder gains from acquisitions of privately held target firms.

2.2.1.2 Bidder Gains from Private Target Firms

Hansen and Lott (1996) examine the auction theory and use data from M&As to show that market imperfections, along with portfolio diversification, leads to the shareholders' rejection of value maximizing corporate decisions. They study 252 deals of listed and unlisted target firms over a window of 20 days (-14, +5) for the period 1985-1991. Consistent with their hypotheses, they find that the shareholders of bidding firms experience higher gains (2% more) when they acquire privately held target firms. They claim that the gain differences are not driven by the degree of competition for private and public targets. They suggest that public targets have difficulty in choosing the auction methods due to the legal requirements. For example, target firms could be sued by shareholders for not considering a higher, but later, bid. On the other hand, privately held firms have more freedom in creating a more competitive auction environment. They also note that cash offers enjoy 0.6% more gains than equity ones do.

The study of Hansen and Lott (1996) reveals that gains to acquirers from privately held targets are not negative. The seminal work of Chang (1998) focuses on bidder gains when the target firm is an unlisted company as well as the method of payment[7] used. The study investigates 281 US private deals for a window of two days before the announcement of the acquisition (-1, 0) and report positive and significant gains for private stock deals (2.64%) while they find insignificant gains for cash offers (0.09%). On the contrary, he reports negative abnormal returns for acquisitions of public targets. These findings are supported by the limited competition hypothesis. In other words, in a perfectly competitive market a takeover should be a zero net present value project. However, it is assumed that the competition among private companies is limited and as a result the probability of underpayment is higher.

In the same respect, Fuller, Netter and Stegemoller (2002) examine bidder gains for acquirers that are involved in multiple acquisitions within a small period of time. They examine 3135 takeovers during the period 1990-2000 and argue that the announcement of a takeover may reveal information about different factors associated with the bidding

[7] The method of payment in private acquisitions will be discussed extensively in Section 2.2.2.2.

firm and hence the market reaction might not be solely attributed to the potential synergy gains created. By examining multiple acquisitions, they are able to extract the effect related solely to the deal and target characteristics. The findings suggest that acquirers that bid for privately held targets experience significant gains irrespective of the method of payment used. The explanation provided lies in the liquidity effect. Private target firms are not bought and sold as easily as public firms are and therefore this liquidity problem makes these companies less valuable resulting in them being acquired at a discount. This is argued to be incorporated into the market reaction and the bidding firm’s stock price. Further explanation based on the method of payments used to explain the positive reaction to private acquisitions is further developed in Section 2.2.2.2.

Similar evidence is provided by Ang and Kohers (2001). They examine 7070 US private acquisitions comparatively with 5302 US public acquisitions. The results reveal that gains to acquirers and targets are significantly positive when the target is a privately held firm. They find that private targets receive higher premia relative to public ones, attributing this to the stronger bargaining power of private targets as well as to timing options.

Draper and Paudyal (2006) extensively investigate the UK merger market and mainly focus on the difference between private and public targets. Using a large sample (1981-2001) of listed companies that acquire unlisted ones, they find that bidders, in general, enjoy positive abnormal returns around the announcement date. These are found to vary when taking into consideration the target’s listing status, the method of payment used and the relative size between the two companies. Various hypotheses have been put forward to explain this fact. Draper and Paudyal (2006) support the liquidity hypothesis which is in accordance with Chang (1998) (limited competition hypothesis). Besides this explanation, according to the managerial motive hypothesis, managers, driven by a desire of empire building, are willing to pay higher premiums for large, prestigious companies (listed companies) while this is not the case for smaller private companies.

Antoniou, Petmezas and Zhao (2007) present similar evidence for a sample of 4173 UK M&As for the period 1985-2004. They report significant gains to private acquisitions while public deals suffer losses. Their results are robust for various deals characteristics. Another UK study that examines private acquisitions is provided by Doukas and Petmezas (2007). The study includes multiple private acquisitions for the period 1980-2004. They report positive and significant gains for private deals, which are higher for bidders who do not get involved in multiple acquisitions. They also find that the gains to bidders decline as acquirers proceed to conduct more and more acquisitions. Doukas and Petmezas (2007) claim that the decline of multiple deals is driven by managerial overconfidence and self attribution bias. In the same respect, Conn, Cosh, Guest and Hughes (2005) examine 4000 acquisitions and report positive gains for private deals both from domestic and cross border acquisitions.

In a comparative study of acquisitions for listed and unlisted target firms for 17 European countries between 1996-2001, Faccio, McConnell and Stolin (2006) find insignificant returns for public deals (-0.38%) and positive and significant returns for acquisitions of private targets (1.48%). Their results remain consistent after controlling for factors such as Tobin's Q, the method of payment, the acquirer's size, blockholder creation as well as whether the target firm was from a domestic or foreign nation. The explanations are consistent with the ones presented in the previous studies.

The above M&As literature shows that private targets prove to be value enhancing for the shareholders of the bidding firm which is consistent with the general finance literature that argues that private placements of equity are profitable for the investors' shareholders (Hertzel and Smith (1993)). Monitoring efficiency and information releases are the explanations provided for the increase in shareholders wealth signaled from the investments on private equity. Moreover, such investments can be received as signs of undervaluation and a potential profitable opportunity for investors (Myers and Majluf (1984)).

2.2.1.3 Bidder Gains from Takeovers of Subsidiary Target Firms

Gains to acquirers of subsidiary target firms have drawn limited attention in the corporate finance literature. However, there are a few studies which examine the effect of subsidiary targets on the announcement abnormal returns of bidding firms. Fuller et al. (2002) study US multiple acquirers of listed, unlisted and subsidiaries targets. They find that acquisitions for subsidiary targets generate positive and significant abnormal returns (2.75%) around the announcement of the acquisition. Gains remain positive and significant for cash deals (2.56%) but are insignificant for stock-financed ones (3.23%). Abnormal returns are also positive both for single and multiple acquirers irrespective of the method of payment used. The only exception for multiple acquirers is when they use equity as the method of payment. They report negative but insignificant results (-1.02%). We have to note that this stock-financed portfolio consists only of 12 deals. Besides, Fuller et al. (2002) write that one of the motives for selling a subsidiary firm is because the firm desires to become more focused in its operations. Therefore, they examine the gains generated by diversified and non-diversified parent companies. Diversified parent companies might accept a lower price for a subsidiary firm, termed the 'diversification discount'. However, their results provide weak evidence for this argument. The gains are similar for subsidiary firms acquired by diversified or non-diversified parents.

Another US study that examines bidder gains is by Moeller, Schlingemann and Stulz (2004). Their main focus is the size of the acquirer but they examine the gains from listed, unlisted and subsidiary firm acquisitions. With respect to subsidiary targets, they find positive abnormal returns irrespective of the method of payment used or the size of the bidding firm. Similarly, Conn, Cosh, Guest and Hughes (2005), in a UK study about foreign and domestic acquirers, include subsidiary targets as well. They claim that the acquisition of a subsidiary firm is an easy and straightforward way to conduct foreign direct investments. Their findings suggest that the impact of domestic subsidiary targets and those in related industries on bidder gains are positive but not significant. Besides this, domestic public subsidiaries generate higher returns than acquisitions of domestic public non-subsidiaries do.

Similarly, evidence regarding the impact of UK subsidiary targets is provided by Antoniou, Petmezas and Zhao (2007). Results suggest that gains to acquirers for subsidiary target firms are positive and significant for the overall sample, for the first as well as for higher-order acquisitions (i.e. the 2nd, 3rd, 4th, 5th bids, etc). Shareholders of bidders enjoy positive and significant gains irrespective of the method of payment (1.23% for cash and 0.27% for non-cash deals).

Faccio and Masulis (2005) examine the method of payment used for M&As among European countries. They find that the frequency of cash deals is much higher for unlisted and subsidiary targets than for listed ones. Bidders seem to be more reluctant to issue equity to corporate sellers to acquire subsidiary firms whilst corporate sellers are also not willing to accept bidder stock as a method of payment along with other deal characteristics.

Conclusively, the evidence suggests that the shareholders of bidding firms enjoy positive and significant gains around the announcement of an acquisition for a subsidiary target firm. They appear to share similar properties as discussed for private acquisitions.

2.2.2 Method of Payment

This section reviews the literature on studies that discuss the fact that the method of payment used in mergers and acquisitions plays a significant role in explaining acquirer abnormal returns around the announcement of a takeover. The methods of payment that can be used to finance a takeover are cash, stock or a combination of the two known as mixed (i.e. cash and stock). There are various reasons provided to explain the market reaction around the announcement of an acquisition. Information asymmetries between managers and investors, managerial ownership of the acquirer and the target firm and taxation considerations are the main explanations for the effect of the various methods of payments on bidder gains. The above section presented the findings the effect on bidder gains around the announcement of a deals focusing on the target firm’s listing status. Some studies include the method of payment as a determinant factor. This section discusses the effect of the method of payment used to finance an acquisition for listed and unlisted target firms respectively. It would not be wise to examine the effect of the means of financing a takeover without simultaneously considering the target firm listing status. There is unanimous agreement that equity financing has a completely different effect on the acquisition of listed and unlisted target firms. Hence, in this section we review the literature on the method of financing taking into consideration the target firm's listing status.

2.2.2.1 Method of Payment for Public Target Firms

Myers and Majluf (1984) construct a model which describes firms' corporate investment decisions in cases where managers have information that investors do not (i.e. high information asymmetry). The main predictions of the model suggest that in cases of high information asymmetry, firms are advised to use debt to finance their investment decisions rather than issuing equity. Furthermore, firms that are unable to internally finance investment projects and have difficulty to raise low-risk debt may decide to forego good investment decisions instead of issuing equity. Firms are advocated to not pay dividends in order to create higher cash reserves and enable the firm to undertake projects when the opportunity do so arises. On the other hand, by not paying dividends, the firm is unable to reduce the information asymmetry between managers and investors. The model also predicts that when managers have information that investors do not, then issuing equity to raise cash will result in a decline in the stock price. Finally, the firm is always better-off issuing low-risk debt to finance its investments.

Triggered by the predictions of Myers and Majluf's (1984) model, Travlos (1987) examines the way that the method of payment (i.e. common stock exchange or cash offers) affects the stock returns of the bidding firms when they announce the acquisition of a listed (public) target. It is reported in the literature that mergers are usually common stock exchange offers while tender offers are usually cash offers. His findings suggest that bidding firms suffer significant losses (-2.09%) when the exchange takes place using common stocks (merger) while they experience small positive abnormal returns (0.31%) when they offer cash (tender offer). The method of payment used by bidders to acquire public targets may signal important information to the market. For instance, when managers believe that the intrinsic value of their stock is lower than the market value (i.e. overvalued stocks), they would prefer to acquire another firm by offering stocks in order to take advantage of the mispricing effect. Consequently, this information is interpreted as bad news regarding the true value of the bidding firm's stock. The opposite happens in the case when the manager offers cash to acquire the target firm. This information is considered as good news for the market, which realizes that the bidders' firm stock is undervalued (information asymmetry hypothesis). Additionally, Travlos (1987) provides evidence that the method of payment is the most influential factor since his results show that cash offers are associated with positive returns both in mergers and tender offers while common stock exchanges in mergers, as well as a combination of common stock and cash in tender offers, are associated with negative returns. An additional explanation provided by Travlos (1987) suggests that the cash and equity offers have different tax implications for the bidding firm. The taxation issue is a puzzling one. In cash offers, the shareholders of the target firm have the obligation to pay capital gains tax, but the bidding firm can raise the depreciation value of the acquired assets. In stock exchange offers, the target firm bears no tax obligations and the depreciation value of the acquired assets is not affected. Therefore, in cash offers, the bidding firm has the benefit of the higher depreciation value of the acquired assets but needs to pay a higher acquisition price to the shareholders of the target firm (Wansley, Lane and Yang (1983)). The opposite is true in the case of stock exchange offers. Hence, it is not clear whether the acquiring firm has a net benefit from a cash takeover due to taxation/depreciation implication since a higher acquisition price is required to be paid.

The third hypothesis is related to the co-insurance effect of the combination of the two firms after the acquisition. In stock offers, there is no cash flow from one company to the other resulting in an increase in the default risk of the new entity. Hence, the benefits from the takeover are transferred from the shareholders to the bondholders of the firm leading to a decline in the stock price. In contrast, a cash offer might balance the negative changes in the acquiring firm's stock prices, caused by the co-insurance effect, resulting in a neutral effect. Conclusively, according to the findings of Travlos (1987), the negative effect of stock acquisitions and the neutral effect of cash deals support the information signalling hypothesis as well as the co-insurance effect hypothesis.

Furthermore, Amihud, Lev and Travlos (1990) examine whether corporate control is related to the means of investment financing. They support the idea that the capital structure of a company may be related to the way in which managers choose to finance a project (e.g. M&A). One possible explanation is that managers want to maintain control of the firm. In this case, they most probably would choose to use internal sources (i.e. cash) or issue debt instead of issuing stock, which could weaken their control over the firm. However, issuing debt increases the likelihood of bankruptcy. Additionally, they test the tax and the information asymmetry hypotheses. They claim that stock payment is preferred when there is no willingness to pay taxes, since cash exchanges involve tax payment. With respect to the information asymmetry hypothesis, managers who have more information than outsiders would prefer to finance a possible acquisition with equity if they know that their stocks are overvalued or in cash if the opposite is true. Conclusively, they argue that the two hypotheses are not completely supported by their results but they do find that the higher the managerial ownership fraction of the acquiring firm, the larger the probability is of the acquisition being financed using cash rather than equity.

Similarly, Blackburn, Dark and Hanson (1997) examine the method of payment also taking into consideration the way in which the company is controlled and report that manager-controlled companies suffer significant losses when they make mixed offers while in the same case, owner-controlled companies enjoy significant profits. Based on the asymmetric information hypothesis, Hansen (1987) presents a model which predicts that in a presence of asymmetric information, the target firm knows its value better than the potential acquirer does. In this way, the bidding firm is more likely to choose equity as a means of financing the acquisition.

The impact of the method of payment regarding the target company is taken into consideration by Fishman (1989) who constructs a model and reports various differences that are observed between cash and stock offers. He finds that the management of the target company is more likely to reject a stock offer than a cash one. Additionally, equity offers may increase the competition among bidders while cash offers serve as a deterrent to further competition.

Choice between Cash and Equity

Faccio and Masulis (2005) explore the factors and determinants that lead managers to choose between cash, equity or a combination of them both in order to finance possible mergers or acquisitions reporting that their main objective is the trade-off between bidder corporate control threats, which discourages stock financing, and bidder financial constraints, which encourages stock financing. The study investigates European bidders, both publicly and privately held, for the period 1997-2000. The choice to study European bidding firms is explained for a number of reasons such as the wide range of ownership structures, the variations in corporate governance rules and differences in the laws and regulations. The factors that mainly affect the bidders' decision concerning the method of payment are the debt capacity and the existing leverage. Additionally, in many cases managers do not want to change the existing corporate governance structure. In cases where the corporate governance control is threatened, managers would prefer to finance the acquisition with cash, as opposed to offering to exchange stock, where the ownership is concentrated. Furthermore, cash offers are preferable in cases when the bidder wants to overcome problems such as the admission of the target's shareholders approval or regulatory costs of stock offers. Cash is an optimal choice when the bidder believes that their stock is undervalued. Other factors such as excess liquid assets, many tangible assets and little unused debt capacity can lead a bidder to use stock instead of cash. Moreover, Faccio and Masulis (2005) find that when a bidder has special access to bank borrowing, then cash financing is more likely to be used while when the target can be easily influenced by the bidder then stock offers are used for the acquisition. On the other hand, sellers (target owners) may swing between stock offers, which do not involve tax payments, and cash financing, which enables them to minimize the risk faced and provides them with liquidity benefits. From the seller's point of view, cash is preferable in order to avoid becoming a minority shareholder in a bidder with concentrated ownership. Conclusively, they support the notion that both the bidder's financial condition and corporate control concerns have a clear influence on European M&A financing choices. They find that factors such as prior stock price run-up's and the market to book value of a bidder's assets can influence the bidder's choice concerning the method of payment.

Carleton et al. (1983) divide acquisitions into: no acquired, acquired in cash takeover and acquired in an exchange of securities believing that cash takeovers have differently initiated and motivated than stock exchange takeovers. Cash offers are usually used because mergers financed in such a way are tax deductible, which proves to be a very crucial factor in the decision over the method of payment. Market imperfections and agency considerations urge managers to use cash in order to acquire firms. Cash is also used as a method of financing an acquisition in the case of hostile mergers in which bidders can overcome more efficiently obstacles brought up by the target firm's management. In addition, accounting implications also support the wide range of acquisitions financed using cash. Some of their findings relating the medium of exchange with the market to book ratio are particularly interesting. They find a positive relationship between higher market to book ratio companies and the probability of stock exchange offers which is consistent with the tax implication explanation. Low market to book companies are considered to incur higher capital gains and consequently they have to pay more taxes. As a result, it is expected that cash takeovers should be used more often. Finally, Carleton et al. (1983) support the view that low dividend paying companies should prefer stock exchange offers since the owners of such companies are people who belong to high tax brackets. Nonetheless, the opposite is proved in the results.

Martin (1996) also examines the motives that make a company choose between cash and stock offers. Their findings show that tender offers are usually cash financed projects due to the fact that their completion is faster than mergers. According to Fishman's proposition (1989), bidders tend to choose cash to avoid competition. Furthermore, Martin (1996) supports the idea that bidders with high growth opportunities are more likely to choose equity as a means of financing a takeover since managers are more flexible with stock offers and better serve their own long-run investment plans.

Mixed offers (both cash and equity)

A mixed offer using both cash and stock is another way to finance a takeover. Eckbo, Giammarino and Heinkel (1990) build a theoretical model examining the medium of exchange in takeovers and then empirically test it using data from Canadian transactions where mixed offers are not so much related with taxation. They show that an optimal choice of cash and equity can be achieved through the information asymmetries that the two parties (the bidder and the target) face. This optimal choice is justified by the data which show that bidders' abnormal returns are higher for mixed offers than they are for either pure-cash or pure-equity offers. A theoretical approach is also attempted by Berkovitch and Narayanan (1990) who create a model to examine the method of payment in takeovers, taking into consideration the competition among bidders for the same targets. Their results are in complete agreement with Travlos (1987) (i.e. that bidders earn more when they offer cash than they do for equity). However, they also provide evidence that cash offers, or the proportion of cash used in mixed offers, is positively correlated with the competition among bidders. Likewise, Brown and Ryngaert (1991) prove that low valuation bidders are more likely to make an offer including at least fifty percent stock in order to avoid capital gains taxes while high valuation ones make cash offers to avoid issuing undervalued stock. Additionally, they show that the method of financing an acquisition depends on taxation and taxation regulations.

Conclusively, the main findings regarding the method of payment used to acquire listed target firms suggests that stock offers generate negative abnormal returns while cash offers obtain zero insignificant returns. Mixed offers seem to have a more positive effect on bidder's shareholders wealth. Taxation implications and information asymmetry are the main hypotheses developed to explain the effects that different methods of payment cause.

2.2.2.2 Method of Payment for Private Target Firms

In contrast to the findings of Travlos(1987) that stock acquisitions suffer losses around the announcement of listed acquisitions while cash acquisitions generate small positive gains for the acquirer's shareholders, Chang (1998) reports significant gains (2.64%) for private acquisitions when the bidder uses stock as a method of payment and small insignificant positive gains (0.09%) for cash offers. Chang (1998) offers three hypotheses to explain his results. The limited competition hypothesis proposes that in a competitive market a takeover is a zero net present value project. However, if we assume that the competition is limited concerning privately held targets, the likelihood of underpayment is higher resulting in positive abnormal returns. The monitoring hypothesis suggests that firms acquiring privately held targets using common stocks create block holders because the target firms are typically owned by a small number of stockholders. Therefore, these new stockholders in the combined firm can monitor the manager's performance more effectively leading to a higher firm value. Finally, Chang (1998) reports the information asymmetry hypothesis which, for public target acquisitions, predicts that stock exchanges convey bad news to the market. For privately held targets, the information asymmetry hypothesis predicts the opposite effect. When stocks are offered to acquire a private firm, the shareholders of the target firm, who are usually small in number, have an incentive to examine carefully the intrinsic value of the bidding firm before ending up with a substantial number of stocks in the newly combined entity. The willingness of the target's shareholders to hold bidder's stock after examining the true value of the bidder conveys positive news to the market, indicating that the acquirer's equity is not overvalued. Likewise, Draper and Paudyal (2006) extensively study the U.K. merger market, which is vastly dominated by acquisitions of privately held firms (they constitute 80% of total acquisitions). Their sample consists of 8597 deals (7,499 private and 1,098 public targets) from 1981-2001. They use the simple CAPM model and a 3-factor Fama-French model. They find positive and significant gains for the entire sample of private targets and even higher returns when stock is used as the method of payment. These results give support to both the monitoring and managerial motive hypotheses.

To briefly summarize the literary findings, we observe from the existing empirical evidence that takeover bids for public targets generate positive abnormal returns when cash is offered as the means of financing, while bidders suffer losses in the case of equity offers. On the other hand, when examining the performance of bidders after the acquisition of a privately held target, cash offers generate zero abnormal returns while stock exchange offers become profitable for bidders' shareholders wealth. Chapter 5 extends this empirical evidence and offers a behavioral approach to explain the market reaction for takeover announcements between cash and stock offers for private and public target firms.

2.2.3 Other Determinants of Bidder Gains

Aside from the target firm's listing status and the method of payment used, there are also other deal and bidder characteristics that have been detected and proven as explanatory factors to affect bidder gains around the announcement of an acquisition. This section reviews the literature on these features. The bidding firm's size, the relative size between the target and bidding firm, the market-to-book ratio of the bidder and the origin of the target firm (i.e. domestic vs. cross-border acquisitions) have all been recognized as some of the key factors that affect a bidder's abnormal returns around the announcement of the deal. Lastly, we also review studies that discuss acquirers' abnormal returns who engage in multiple acquisitions.

2.2.3.1 Size of the Acquiring Firm

M&As are typically sizeable investments for the firm that undertakes them. Moeller, Schlingemann and Stulz (2002) examine the impact of the size (MV) of the acquiring firm on the abnormal returns surrounding the takeover. They examine 12,023 acquisitions during 1980-2001. They report significant gains (2.318%) for small bidders and insignificant gains (0.076%) for large ones. The returns for small acquirers are two percentage points higher than large acquirers irrespective of the method of payment used and whether the target is public or private. Various reasons are provided to explain this size effect. Moeller, Schlingemann and Stulz (2002) write that only one quarter of the firms acquiring public firms are small while half of those that acquire private target firms are small. It has been shown in the above sections that gains to acquirers of private targets are higher than gains from acquisitions of public target firms (Fuller et al. (2002)). Therefore, the positive gains to small firms may be driven by the fact that there is a higher percentage of small firms buying private rather than public targets. Another explanation presented is that small bidders usually pay with cash rather than with equity. Travlos (1987) shows that acquiring target firms using cash generates higher abnormal returns for bidding companies than when equity is used as a method of payment. On the other hand, Fuller et al. (2002) and Chang (1998) find that acquisitions for private targets generate positive returns both for cash and equity offers. A third explanation is based on the different characteristics of small and large firms. More specifically, large firms have more competition than small firms do when they bid for the same target and, as has been observed, competition decreases the returns earned by the acquirer. Furthermore, in small firms, managers' incentives are better aligned with those of shareholders as they have more firm ownership than is the case in large firms, where managers are more prone to being infected with hubris. Large firms offer larger acquisition premiums than smaller firms do and thus enter acquisitions with negative dollar synergy gains.

2.2.3.2 Relative Size of the Deal

Another factor that affects bidder gains around the announcement of an acquisition is the size of the target firm relative to the bidding firm. The higher the relative size of the target to the bidder, the higher the effect exerted on acquirers' abnormal returns (Jensen and Ruback (1983) and Jarrell and Poulsen (1989)). Asquith, Bruner and Mullins (1983) test this ratio on the observed abnormal returns and claim that if a bidder's value is affected by a merger, then the abnormal returns should be related to the relative size of the bidding and target firms. This proposition is supported by their results that show that the higher the relative size of the target in comparison to the bidding firm, the larger the gains observed. In other words, they report that a target half the size of the bidder generates 1.8% more profit for the bidder that a target one-tenth the size of the acquiring firm.

Similarly, Londerer and Martin (1997) relate a bidder's abnormal returns with the size of the two parties in a M&A. They split their sample by relative acquisition value (measured as the payment for the target divided by the market value of the common stocks of the bidder) into two parts and show that the lowest part of the sample produces smaller returns (0.2%) than the highest part which generates returns at a level of 1.6%. It is obvious that large acquisitions have a considerably higher effect on the acquiring firm's abnormal returns than smaller ones do.

The findings of Jarell and Poulsen (1989) are consistent with the previous studies and show that as the size of the target firm increases with respect to that of the acquiring firm, so does the abnormal returns earned by the acquiring firm. Lastly, Grullon, Michaely and Swary (1997) examine the case of mergers in the US banking sector and, more specifically, the factors that affect the method of payment used to obtain the target company, claiming that relative size is one of the determinants. More specifically, they report that the larger the target compared to the bidder, the stronger the likelihood that the acquisition will be financed using stock.

On the contrary to the above findings, Pettway and Yamada (1986) argue that the reverse phenomenon is observed for Japanese M&As. Shareholders of acquiring firms gain more in small relative size ratio deals. They suggest that when the size of the target firm is more than 20% relative to the acquiring firm's size, agency costs are likely to be higher. The losses could also be attributed to the great cultural and environmental differences between Japanese and US managerial objectives. It becomes obvious that the larger the relative size of the target firm to the acquiring firm, the higher the realized returns for the bidder which show that a large acquisition for a large bidder will have a greater impact than a smaller takeover.

2.2.3.3 Book-to-Market Ratio

Several studies attempt to explain the interaction between the pre-bid valuation of the acquirer (i.e. glamour or value) and the performance of the acquisition. Glamour firms are highly valued firms due to past high stock market performance. These firms have high past growth in sales and earnings and, consequently, ratios such as the price to earning (P/E) ratio, are relatively high while book to market value's (BTMV) are low. The opposite is observed in value firms which are mainly firms with low stock market performance where the book value to market value ratio is high.

Rau and Vermaelen (1998) examine acquirers' performance by controlling for factors such as the type of merger, the pre-bid valuation and the method of payment. They show that bidders in tender offers outperform bidders in mergers over the long-run horizon. They find that acquirers in mergers underperform up to 4% over a period of three years while those in tender offers earn positive abnormal returns of 9% over the same period. They support the idea that the underperformance in mergers is due to the poor performance of the low book-to-market 'glamour' firms. According to the extrapolation hypothesis, in companies with low book-to-market ratio's, i.e. 'glamour' firms, managers are more likely to overestimate their own abilities (i.e. they are infected with hubris). This is a natural consequence of these organizations, since glamour firms are those with high past stock returns who also benefit from a high past growth in cash flows and earnings. This superior past performance increases the hubris of the managers worsening the effect. However, the opposite is true for value firms, in which managers are more careful in the valuation process of a takeover since they want to create shareholder value in order to survive the firm. Moreover, their results support the method of payment hypothesis.

Similarly, Sudarsanam and Mahate (2003) study the post-acquisition performance of acquirers both in the short and the long-run periods. They examine whether the acquirers' performance is related to the pre-bid status of the firm (i.e. glamour or value) as well as the interaction of the acquirers' status and the method of payment. Sudarsanam and Mahate (2003) examine the price to earnings ratio (P/E), which is a measure of the esteem in which the company is held by investors, and find that companies with low P/E ratios (i.e. value firms) outperform those with high P/E ratios (i.e. glamour firms). The explanation may lie in the fact that glamour firms may be infected with hubris and their stocks may correspondingly be overvalued. The authors further divide the sample into value and glamour firms according the book to market ratio and find that low MTBV firms (value) experience larger gains than high MTBV firms (glamour) do. Concerning the interaction between the method of payment and the status of bidder, they support the notion that glamour firms' stocks (i.e. firms with high past stock returns) must be overvalued resulting in the decision to offer equity as means to acquire another firm. This is supported by their findings which indicate that glamour acquirers are more likely to use equity as a means of payment than value acquirers are. Lastly, their findings suggest that value acquirers outperform glamour acquirers in both cash and equity financed takeovers in the long run (a three year period). In accordance with Rau and Vermaelen (1998), they also claim that their findings mostly support the method of payment hypothesis rather than the extrapolation hypothesis, since cash acquirers generate higher returns than equity ones do.

In general, studies investigating acquirer's market to book ratios, a specific characteristic of the firm, conclude that value firms (i.e. a low BTMV ratio or a high MTBV ratio) outperform glamour ones. This fact is in accordance with Fama and French (1992) who agree that the book to market ratio is a proxy for unobservable common risk factors affecting the firm. Overall, this ratio has a significant relation with the realized returns for bidders.

2.2.3.4 Bidder Gains from Domestic vs. Foreign Target Firm Acquisitions

Foreign Direct Investments (FDIs) through M&As is a relatively fast way for companies that want to expand abroad to do so at a reasonable level of risk. Companies can mainly take advantage of the imperfections in the product and factor markets, differences in taxation levels and imperfections in the international financial markets. By exploiting their abilities to arbitrage institutional restrictions while taking advantage of informational externalities, firms can make the most of expanding out of their domestic markets. Moreover, companies which involve in foreign acquisitions serve the purposes of international portfolio diversification. In other words, a bidding company reduces the variability and risk it faces in relation to earnings when it expands internationally, providing diversification for the stockholders of the company. Additionally, foreign companies, due to technological variation, advanced technological knowledge or managerial expertise, can manage to reduce the overall costs for the company giving the firm the comparative advantage over domestic rivals. It is evident that M&As are a way for firms to exploit the above advantages. As a result, there are a significant number of studies that investigate this issue from the bidder and target companies' point of view.

Wansley, Lane and Yang (1983) test the way in which foreign and domestic merger bids are perceived by the US stock market. In particular, they examine the abnormal returns of acquiring firms involved in domestic and foreign bids respectively. Their results give evidence to the fact that acquirers tend to pay higher premiums for foreign targets than they do for domestic ones. After splitting their sample by the merger type and the method of payment, they find that the results remain the same in the case of cash acquisitions. The explanation offered lies in the fact that cash acquisitions involve additional tax liabilities and higher premiums should therefore be given to compensate for this increased cost. However, although foreign bids seem to outperform domestic ones, when taking into consideration the t-statistics, we can observe that the difference in the premiums between these two kind of acquisitions are statistically insignificant, especially in the case of conglomerate mergers where cash is used to finance the project.

Similarly, Eun, Kolodny and Scheraga (1996) examine the case of foreign firms acquiring U.S. companies and test the synergy and internalization hypotheses. They find that both the acquiring and the acquired firms enjoy statistically significant profits giving support to the synergy hypothesis. Furthermore, acquired firms have profits irrespective of the nationality of the acquirer. For instance, on the one hand, Japanese acquirers have the largest benefits among acquirers, while on the other hand, British bidders do not enjoy any gains out of the acquisitions. Kang (1993) also examines whether Japanese bidders and US targets benefit when they are involved in M&As in the quest to uncover the reasoning for Japanese firms to expand in to the US market. His findings suggest that both parts of the transaction enjoy statistically significant earnings. More specifically, the large gains earned by Japanese bidders are attributed to firm-specific characteristics as well as to the depreciation of the dollar relative to the Japanese yen. Moreover, political stability in the US and the size of the market could be one more reason for Japanese firms' abnormal returns. Lastly, the authors claim that US target companies have significantly higher abnormal returns when acquired by Japanese bidders than USA ones do.

Harris and Ravenscraft (1991) show that gains obtained by US companies acquired by foreign companies are higher that those acquired by domestic ones. Moreover, they find cross-border takeovers are more frequent in research and development industries while the cross-border gains are certified to exchange rate movements in FDIs. Similar results are presented by Cakici, Hessel and Tandon (1996) who examine cross-border acquisitions and report that foreign companies that acquire US targets experience positive and significant abnormal returns while US firms that acquire foreign companies earn zero profits. Moreover, they prove that the abnormal returns remain unaffected by the relative size of the target to the bidding firm and that they decrease when competition among bidders for the same target increases.

Another perspective is provided in the study by Doukas and Travlos (1988) which mainly finds that companies which announce takeovers in a country in which they already operate suffer insignificant losses. On the other hand, bidders' stock prices increase when they acquire firms in countries where an acquisition is their first project within that specific country, which is consistent with the positive multinational network hypothesis. The greatest abnormal returns are obtained by companies which diversify simultaneously across geographical and industry areas.

Although the above literature shows that foreign acquisitions are more profitable both for the acquiring and the target, Georgen and Renneboog (2004), surprisingly and contrary to FDI theories, find that domestic M&As tend to be more profitable than cross-border operations for companies involved in M&As within the European boundaries.

2.2.3.5 Diversifying vs. Non-diversifying Acquisitions

Existing empirical evidence suggests that differences exist in the gains earned between bidders who engage in acquisitions within the same industry (non-diversifying) and for those who chose to expand their business in unrelated industries (diversifying). Doukas and Kan (2008) find that firms choose to expand within the same industry when cash flows of the core business are quite high. On the other hand, when cash flows of the core business are lower than those from other activities, firms choose to invest in industries outside of their specialization. Additional findings suggest that when the growth opportunities are high in the bidders industry, these firms keep expanding internally while in the opposite case they get involved in diversifying takeovers.

In a similar work, Doukas and Kan (2004) examine the impact of a firm expanding in to other industries on the firm's cash flow and excess value. They find a direct relationship between cash flow and valuation changes with diversification. The work shows that acquiring firms who expand and acquire targets in industries unrelated to the bidder suffer higher cash flow decreases and valuation discounts.

Doukas and Travlos (1988) examine 301 US acquirers who engage in foreign acquisitions for the period 1975-1983. Their findings suggest those acquirers who engage in foreign acquisitions experience positive and significant gains when they expand for the first time in to that foreign country. These findings are consistent with the positive multinational network hypothesis. Bidder gains are also shown to be even higher when the takeover activity takes place in less developed economies and particularly when these firms simultaneously diversify across industries.

2.2.3.6 Multiple Acquisitions

In many cases, companies make more than one merger bid. There are different ways to expand. Companies may choose to acquire two or three targets in the same industry or may decide to merge into other areas as well. This section attempts to review the findings for cases where a bidder acquires many target firms.

Fuller, Netter and Stegemoller (2002) conduct a thorough study in M&As and test the case where a single bidder makes multiple acquisitions, i.e. five or more, in a short period of time (three years) aiming to prove that since the bidding company remains constant, the variation in returns should be due to the targets characteristics. Their findings suggest that firms gain when they acquire a private or a subsidiary firm while they lose when they choose a public target firm. Controlling for other factors as well, they conclude that acquiring companies enjoy higher abnormal returns when they bid for large targets and offer stock as a means of financing.

Similar results are reported for the US market for a period between 1965 to 1984 in the study of Loderer and Martin (1990). They support the idea that first-order acquisitions of bidders tend to be more profitable than higher-order ones are suggesting that bidders are better off by announcing only one acquisition. For instance, the average cumulative abnormal returns (CARs) for the first deal announced is around 1% while it goes down by 2% and 3% for the second and third deal respectively. The same results are found by

Asquith, Bruner and Mullins (1983) but they provide a different explanation and claim that successive mergers of one bidder should be not considered as unique, separate events but rather are part of an integrated long-term strategy of the firm. As a result, the outcome of this project should be captured in the first deals when most of the uncertainty is resolved. However, this proposition (known as the capitalization effect) is not supported by the results which reveal that the CARs 20 days prior to the announcement for the first deal are lower (2.8%) than the average of the CARs for the next three deals conducted (3.1%).

An interesting explanation regarding multiple acquisitions is provided by Doukas and Petmezas (2007) who study bidders that make many acquisitions (five or more) in a short period of time, defined as three years (i.e. multiple acquisitions). They show that first-order deals (1^{st} or 2^{nd}) tend to generate higher abnormal returns for the acquiring firm than later ones do (5^{th}, 6^{th}, 7^{th}, etc.). Additionally, they also find that single bidders (i.e. firms which acquire less than five companies within three years) obtain higher wealth effects than multiple acquirers do attributing these results to managers' decisions. They support the idea that managers make more careful transaction in the beginning but are infected by hubris later on.

On the other hand, Aktas, de Bodt and Roll (2009) report the same results for serial acquisitions but provide a different explanation for these results. They claim that it is not managers who are affected with hubris but rather the returns are a result of a learning experience. Hence, managers who perform many takeover projects accumulate the experience throughout. The first acquisition is profitable as it involves higher risk while the deals which follow, since are based on a more careful selection, involve less risk and consequently deliver less returns.

In the same way, Haleblian and Filkelstein (1999) test organizational experience and claim that experienced acquirers (defined as those who have performed many acquisitions in the past) perform better than inexperienced ones do, as they are able to distinguish between more and less valuable target companies. Moreover, superior performance is achieved by bidders who choose to bid for companies similar to the ones they have acquired in the past. Similarly, Doukas and Kan (2004) claim that bidders that perform unrelated acquisitions are prone to larger excess cash flow declines and valuation discounts than those who engage in related acquisitions.

On contrast to the previous evidence, Rovit and Lemire (2003) suggest that multiple acquirers (i.e. 20 or more deals within 1986-2001) perform best when they make systematic deals taking into consideration the economic cycle of the economy. Studying 724 bidders making 7,475 deals within 15 years, they report that those who make 20 or more deals enjoy almost 1.7 times more returns than those who perform 1 to 4 acquisitions and almost twice as much as those who do not get involved in the merger game.

As we have observed, most studies provide evidence that companies that get involved in many acquisitions enjoy some profits for the first few deals but these gradually decline the more deals which are undertaken. A number of explanations varying from hubris to learning are put forward as explanations for these results.

2.3 Long-Run Bidder Gains from Acquisitions

This section reviews the literature for studies that discuss the long-run post merger performance of bidding firms. The vast majority of studies show that the possible gains obtained around the announcement of the acquisition are cancelled out by the long-run negative performance of bidding firms. Despite the findings that suggest that bidding firms suffer losses in the long-run, there is still an ongoing debate over the issues that cause this underperformance. Methodological issues have also caused debate over the way which most appropriately captures a long-run bidder's performance.

Andrade, Mitchell and Stafford (2001) examine the short and long run performance of US bidders. For the period of three years following the announcement of the acquisition, they report significant losses for the overall sample (-5%), driven by the highly significant losses of stock acquisitions (-9%) contrary to the insignificant negative returns of cash deals (-1.4%). They also observe insignificant losses for growth (-6.5%) and value bidders (-2.9%).

Similarly, Loughran and Vijh (1997) examine the performance of 947 public-to-public US deals in the five-years following the completion of the acquisition during the period 1970-1989. On average, they find that tender offers where cash was used as the method of payment generate higher returns (61.7%) than their peer matching firms. On the contrary, acquirer returns for stock acquisitions underperform matching firms (-25%). The two hypotheses that support the above evidence are offered as follows. Tender offers are usually hostile and therefore the wealth gains experienced emanate from the replacement of a more efficient management team (Martin and McConnell (1991)). The second explanation suggests that bidders usually choose to proceed to undertake stock acquisitions when their equity is overvalued while they use cash when they are undervalued.

Along the same lines, Malatesta (1983) and Asquith (1983) claim that acquirers suffer significant losses one year after the announcement of the acquisition. Andre, Kooli and L'Her (2004) examine the three-year post merger performance of 267 Canadian deals. Their results show that in the long-run, bidders suffer significant losses, giving support to the extrapolation hypothesis (i.e. that glamour acquirers underperform value acquirers). Moreover, they also find evidence that stock acquisitions underperform cash deals which is consistent with the overvaluation hypothesis.

Similar evidence is provided by Rau and Vermaelen (1998). They examine 3,169 mergers and 348 tender offers between 1980 and 1991 and show that during the three year post-acquisition performance, tender offers outperform (8.56%) while mergers suffer losses ((-2.58%) for bidders acquiring public targets. However, the losses for mergers are mainly driven by glamour firms. Glamour public merger deals suffer losses of -10.82% while value public merger deals generate positive abnormal returns (9.87%) three years following the announcement. In tender offers, both value and glamour bidders enjoy positive gains, but value firms (9.81%) are shown to outperform glamour ones (4.92%). Rau and Vermaelen (1998) argue that the market extrapolates the past performance of the bidder's management. Managers of value bidders are less likely to be affected by hubris and thus this is why they outperform those defined as glamour.

A number of studies present the long-run performance of UK acquirers. Firth (1980) finds that the shareholders of the bidding firm suffer losses three years after the acquisition while the managers of these firms do not, providing support to the management maximization motivation of mergers. Similarly, Franks and Harris examine 1800 UK deals between 1955-1985. They report a loss of -13% two years after the announcement. Along the same lines, Gregory (1997) examines large (i.e. acquisitions with a deal value more than £10 million) UK acquisitions' long run performance between 1984 and 1992, using six different benchmarks. He uses a simple CAPM model, Dimson-Marsh risk and size adjusted model, a simple size-control portfolio, a multi-index model using small minus large decile returns, a value weighted multi-index model using Hoare-Govett Index as a measure of the smaller companies performance and finally a Fama and French (1996) value-weighted three factor model. He shows that the long-run performance of UK bidders is unambiguously negative for all benchmarks used. He concludes that his results are more consistent with Roll's (1986) hubris hypothesis or with managerial theories of mergers.

Alexandridis, Antoniou and Zhao (2007) present a different explanation about UK acquirers' long-run underperformance. They examine whether institutional ownership plays a significant role in explaining a bidder's long-run performance. They show that low, moderate and non-persistent institutional ownership bidders suffer higher losses than high, excessive and persistent ones respectively. Checking for market-to-book and method of payment factors, they conclude that institutional ownership is a key determinant in explaining the long-run negative performance of UK acquirers. Similarly, Alexandridis, Antoniou and Petmezas (2007) also study the post-merger performance of UK bidders. They suggest acquirers who are subject to lower divergence of opinion earn higher post-merger gains. According to Miller's (1977) theory, high divergence of opinion causes systematic overpricing in the short-run which is later corrected in the long-run.

Conclusively, most studies find that bidders suffer post merger losses in the long-run and it is only in a very few cases where positive abnormal returns are documented. In this thesis, we propose alternative evidence to explain the short and long-run bidder gains as well as other potential factors that may play a role in determining the market's reaction following the announcement of a takeover bid.

2.4 Conclusion

The evidence from the literature reviewed suggests that bidder gains are affected by various bidder, target and deal characteristics both in the short and long-term. More specifically, in the short-run, the target firm's listing status, the method of payment, the size and growth opportunities of the bidding firm, the relative size of the deal as well as whether the bidder diversifies across industries/countries affects shareholders wealth around the announcement of a takeover bid. It has also been observed that acquirers who engage in multiple bids usually generate positive gains from the first-order deal and thereafter a declining trend is observed for the following higher-order deals. The long-run post-merger performance tends to reveal negative abnormal returns for the shareholders of the acquiring firm.

Recent literature has attempted to model a behavioral approach to explain bidder gains around the announcement date. This focuses on behavioral issues to shed more light on puzzling aspects of acquirers' short and long-run gains. More specifically, Chapter 3 empirically investigates Roll's (1986) hubris hypothesis by employing three hand-collected unique proxies for the UK merger and acquisition market. Chapter 4 incorporates market valuations and investor sentiment along with rational and overconfident managers as determining factors that could affect short-run bidder gains. Finally, Chapter 5 offers a different behavioral approach to how the market and investors overreact/underreact under conditions of information uncertainty following the announcement of takeover deals.

Chapter 3: Managerial Overconfidence And Corporate Acquisitions

3.1 Introduction

A large body of the literature has so far been dedicated to exploring the motivation of and shareholders' wealth effects in mergers and acquisitions (M&As). Most of the studies conclude that bidders suffer a loss around the announcement date or at maximum break-even while negative returns are experienced in the long-run.[8] A natural question that usually arises is why then do managers use this corporate action in a considerably increasing trend?[9] In other words, why would firms undertake acquisitions, if not to create value? There are 3 main motivations documented in the literature. The first is the potential value creation of M&A activity through the realization of *synergies*, which assumes that the value of the newly combinedfirm will exceed the sum of the value of its previously separate entities (Jensen and Ruback, 1983). This is, however, not supported by the empirical evidence relating to bidders' returns. The second motivation is explained with *agency theory* as suggested by Jensen (1986). This theory posits that managers rationally attempt to pursue their own objectives at the expense of shareholders' interests. Finally, the third school of thought, which has recently been intensively debated, is managerial *hubris*. Firstly introduced by Roll (1986), the hubris hypothesis assumes that financial markets are strong-form efficient and managers engage in acquisitions with an overly optimistic opinion of their personal ability to create value and extract potential synergies from a proposed takeover. As a result, they overbid for target firms as they overestimate the benefits on offer from the deal and consequently harm their own shareholders wealth.

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

[8] For evidence on announcement period gains to acquirers see Dodd and Ruback (1977) and Moeller, Schlingemann and Stulz (2004) for the US and Draper and Paudyal (2006) for the UK. For evidence on acquirer's long run underperformance see Jensen and Ruback (1983) and Loughran and Vijh (1997) for the US and Gregory (1997) for the UK. However, Bradley and Jarrell (1988) and Franks, Harris and Titman (1991) do not find any significant underperformance of acquirers in the long run. Recent evidence shows that the announcement period gains to bidders are dependent on the listing status of targets: acquirers of listed targets tend to lose, while unlisted target acquirers gain (Faccio, McConnell and Stolin, 2006; Draper and Paudyal, 2006).

[9] "The UK mergers and acquisitions market was valued at £93bn for the first six months of 2005 following a sharp year-on-year rise of 11.8 percent. The world market saw $2 trillion worth of deals made globally, up 39 percent on the previous year" (Statistics presented in Financial Times, July 2005).

Hambrick, 1997, Heaton, 2002 and Malmendier and Tate, 2008). The US evidence suggests that managers infected by hubris are more likely to destroy value. Merger announcements signal important new information to the capital markets. Under the hubris hypothesis, the announcement of either cash or stock financed offers indicates the level of overconfidence of the bidder's management team and thereby delivers negative news to the market.[10] Billett and Qian (2008) suggest that overconfident acquirers (in other words, overconfident managers), defined as firms which are engaged in many acquisitions during a short span of time, credit their initial success to their own personal ability and as a consequence exhibit worse performance compared to 'rational' acquirers at the announcement and suffer poor long-term returns. As a result this leads to the following testable proposition: *If managers' hubris theory holds, overconfident bidders should generate negative abnormal returns since a rational stock market would react to a merger announcement as evidence that a firm may think its stock is overvalued. This would lead to a negative announcement reaction with no long-run drift.*

Quantifying overconfidence is problematic as there is no instrument readily available to use in order to directly measure a personality trait. Malmendier and Tate (2008) use two measures of overconfidence in a sample of US acquisitions. The first 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. The second is the level of press coverage for the firm and manager and in particular, the way business articles characterize managers. Doukas and Petmezas (2007) propose a different measure of overconfidence which is based on managerial acquisitiveness (i.e., the propensity to acquire companies) within a short period of time. In particular, they classify overconfident managers as firms that make 5 or more acquisitions within a 3-year period.

In this chapter, we examine, for the first time in a UK study, the effect of managerial hubris on shareholders' wealth both in the short- and long-run by exhaustively employing 3 different measures of overconfidence: i) stock options, ii) press coverage

[10] Under hubris hypothesis, stock offer signals management overconfidence infected by excellent pre-bid performance and high valuation of bidder's stock; while cash offer signals management hubris infected by excess cash flows of the bidder.

and iii) a developed measure of multiple acquisitions. More specifically, we focus on individual managers and not on firms, classifying overconfident managers as those that initiate five or more acquisitions within 3 years. It might be the case that a CEO has left a company for different reasons within a 3-year period, so focusing on the acquisition decisions of individual CEOs provides a more direct and pure evidence of managerial overconfidence.

We use a sample of 3,223 UK mergers and acquisitions between 1990 and 2005. The country choice was dictated by the fact that the U.K. has the most active merger market following the U.S., representing more than 65% of merger transactions within Europe. In addition, another interesting characteristic of a U.K. data set is that only 5.3% of UK M&A activity is 100% stock financed (Doukas and Petmezas, 2007). Since the preference of internal financing is indicative of overconfident managers (Malmendier and Tate (2008)), who tend to perceive their firm to be undervalued, the U.K. acquisitions data provides a unique opportunity to test the overconfidence hypothesis. This distinctive feature of the U.K. sample in comparison to U.S. merger deals that are primarily stock financed naturally controls for acquisitions motivated by equity overvaluation, market timing and merger waves.

The short-term results obtained from all three proxies fully support the hubris hypothesis and its link with value-decreasing M&A projects. Bidders experience negative returns at the announcement period when acquiring public firms while fail to experience superior returns over rational acquirers for private acquisitions. We also examine the long-term performance of acquirers subsequent to the acquisition announcement to detect whether the performance of acquirers is consistent with the market's reaction surrounding acquisition announcements. Our results are, in general, consistent with managerial overconfidence. Our study has several contributions. Firstly, it provides evidence that the effect of managerial overconfidence is robust outside the US and is not sensitive to the quantitative measure of overconfidence. Secondly, it adds to the empirical literature of behavioral finance by documenting evidence that overconfidence plays an important role in mergers and acquisitions. Thirdly, it adds to the empirical literature of mergers and acquisitions by illustrating the well-documented value-destruction from actions initiated by managers infected by hubris. Fourthly, it is one of the very first studies that examines individual CEOs' (as opposed to firms') acquisition decisions and documents that CEOs' prior actions, either on undertaking mergers (through multiple acquisitions proxy) or other actions (as presented in the business press or by their decision to hold stock options), have a significant influence on their future acquisition decisions and consequently upon shareholders' wealth effects.

The remainder of the chapter is organized as follows. Section 3.2 reviews the literature before 3.3 develops the hypotheses. Section 3.4 describes the data, the measures for overconfidence and the empirical methodology. Section 3.5.1 presents and interprets the short-term results. Section 3.5.2 illustrates the multivariate analysis and Section 3.5.3 reports long-term performance results. Section 3.6 concludes.

3.2 Literature Review

This section reviews existing evidence from the psychology literature that highlights various human irrationalities and cognitive biases. We also present evidence where psychological findings have been incorporated into the financial world in order to help explain various financial anomalies driven by market participants. The theoretical paper of Roll (1986), who introduced the famous hubris hypothesis, is also analyzed. Finally, we present studies related to managerial overconfidence and proxies for overconfidence.

3.2.1 Psychological Evidence about Human Irrationalities

A great part of the psychological literature investigates human biases, irrationalities and cognitive behaviour. This section summarizes the psychologists' findings concerning human beings' illusions about reality, about themselves and about the future. Unrealistic positive views of the self, illusion of control and unrealistic optimism are analyzed further in this section.

The psychology literature has shown that human beings tend to believe that they are better than others and that they have more affirmative elements than average. They overestimate their features and attribute more positive than negative descriptions for themselves (Greenwald (1980), Alice (1985), Brown (1986)). Greenwald (1980) claims that people tend to have positive unrealistic beliefs about themselves. Evidence suggests that human beings have a natural tendency to believe that they are better than average and better than their peers (Taylor and Brown (1988), Svenson (1981)). Additionally, people consider things at which they are good at as more important than things at which they lack expertise (Harackiewicz, Sansone and Manderlink (1985), Lewicki (1984), Rosenberg (1979). An additional misconception observed in human beings is that they think that they have personally improved the skills and abilities they consider important to them, even though their overall performance remains unaffected (Conway and Ross (1984)). Considering the way in which individuals perceive other people's actions, many studies support the notion that individuals give less credit for success and more blame for failure to others involved in the event considered (Forsyth and Schlenker (1977), Green and Gross (1979), Schlenker and Miller (1977)). The above findings are supported by an experiment performed by Taylor and Brown (1988). In short, the experiment asks a group of observers to rate another group of individuals according to a number of personality dimensions (i.e. by whether they are 'friendly', 'warm' or so forth). This same group of people also rated themselves and the results showed that self-ratings were significantly more positive than an observer's assessment. In other words, people attributed more favorable phrases to themselves as compared to the observer's average opinions. Additional support is provided by an experiment performed on drivers by Svenson (1990), who reported that it is in a human's nature to consider themselves as more skilful and less risky when they undertake tasks.

Frank (1935) suggests that people tend to become more overconfident when they are personally involved in a task. They overestimate their ability regarding the success of the task outcome. When individuals receive positive feedback from an outcome they previously expected to be positive, so that their prior belief was confirmed as correct, then these individuals tend to also overestimate their personal contribution to the success achieved (Miller and Ross (1975)). There are some cases in which the outcome of an event with human's abilities/skills are positively related. However, in some other cases, success is nothing more than a matter of chance and luck. It is in these cases that man has no control over the outcome. Langer (1975) discusses the issue of whether people recognize and admit that the outcome of an event is purely due to luck or whether they believe that it is due to their own abilities. Let's assume that the outcome of an certain event being favorable or unfavorable is purely as a result of a matter of luck. If, for this same event, an inidivudal believes that he/she could affect the outcome due to his/her abilities and skills, then this person is defined as experiencing a phenomenon known as the *illusion of control*. In other words, if the outcome of a task depends on practice or distraction, that means that the task is skill-orientated. However, if someone believes that the outcome of a game based on luck, such as the tossing of a coin, depends also on practice or distraction then the person in question is experiencing illusions of control. Langer and Roth's (1975) experiment concerning the prediction of coin tosses is a characteristic example. The work reports that 25% percent of the sample believes that the outcome gets worse by distraction while 40% of the sample believe that the outcome could be improved after practicing. It is obvious that these interviewees suffer from the illusion that they have control over the outcome of the coin, even though the outcome is nothing more than a matter of luck. Similarly, Fleming and Darley (1990) claim that people believe that they have a higher more probability of throwing a favorable dice if they throw the dice themselves than if someone else does it for them. Conclusively, the more involved people are in a task, the more likely it is that these indiviudals will experience an illusion of control (Langer (1975), Langer and Roth (1975)).

Future is another aspect of life that individuals cannot subjectively evaluate (Kunda (1987)). Tiger (1979) reports that future predictions are always affected by optimism. Individuals have the misconception and a constant belief that the present is better than the past and that the future will be even better (Brickman, Coates and Janoff-Bulman (1978)). Weinstein (1980) performs two experiments and shows that people believe that they personally are unlikely to be victims of misfortune while they simultaneously believe that this is more possible for their peers. This error in judgment as a result of an underestimation of negative and positive events, is termed *unrealistic optimism.* Individuals who are believed to experience unrealistic optimism, usually have a series of common beliefs about themselves. They tend to believe that the probability of themselves experiencing a negative event is less than average while on the other hand the probability of enjoying a positive event is believed to be higher than average.

Additionally, the more unwanted an event is, or the more control these indiviudals think they have over it, then the stronger these people think that they have a less than average chance of experiencing it and vice versa. Unrealistic optimism has been reported even for chance-oriented events, similar to the events discussed for the illusion of control (Irwin (1953), Langer and Roth (1975), Marks (1951)). Fischhoff et al. (1982) suggests that people tend to believe that they had a higher contribution than the actual level they had on past successful events. On the contrary, these same individuals underestimate the extent of their involvement in events considered to be failures.

There is a great number of studies which suggest that human being’s also have the natural tendency to overestimate the precision of their personal information/knowledge (Alpert and Raiffa (1982), Fischhoff, Slovic and Lichtenstein (1977)). This cognitive bias has been detected in various professions. For instance, Oskamp (1965) examines clinical psychologists while Christensen-Szalanski and Bushyhead (1981) perform experiments with physiotherapists and nurses, both finding it’s existant prevalent in these respective fields. Additionally, Stael von Holstein (1972) examines investment bankers finding further support whilst Cooper, Woo and Dunkelberg (1988) show that entrepreneurs also suffer from this bias. Russo and Schoemaker (1992) add to the literature finding the same results for managers. Similarly, results confirm the overestimation of the precision of information for engineers (Kidd (1970)), for lawyers (Wagenaar and Karen (1986)) and for negotiators (Neale and Bazerman (1990)).

The above evidence shows that human being’s psychological state is constructed such that it leads them to wrongly evaluate their actions and most of the times, they overestimate (rather than underestimate) the results and outcomes of some events. As a result, we have to consider seriously all these important psychological factors before assuming that human beings *always* act rationally, especially in relation to serious decisions made regarding future outputs. Most importantly to note is that it has been argued that people do *not* improve their judgment with experience, failing to support the view regarding a person’s ability to learn through experience (Brehmer (1980)).

3.2.2 Psychology and Finance

Although there is vast research in the psychological literature available on the issues devoted to explaining an individual's behavior and perceptions about their environment, it is only recently that studies have truly started to connect the psychological evidence with wide financial phenomena and subsequently on financial market reactions. Financial researchers have begun to employ psychological evidence relating to human irrationalities and employing it in an attempt to explain investors' behavior to help unearth information potentially related to the anomalies present in the world of finance.

Englmaier (2004) summarizes the evidence provided by psychologists arguing that known phenomena, such as narrow confidence intervals, self-serving bias, illusion of control and over-optimism, all come under the umbrella of overconfidence. Too narrow confidence intervals indicates that people tend to overestimate the precision of their predictions under uncertainty. Self-serving bias is documented as a human being's tendency to attribute their success mainly to their own ability, disregarding the possibility that it may be due simply to luck. In the case of the illusion of control, CEOs who undertake an investment project usually tend to underestimate the likelihood of it's failure. Finally, over-optimism is described as the phenomenon whereby individuals are very overconfident about projects which they are highly committed to. Another cognitive bias, also associated with overconfidence, is the fact that people tend to be more overconfident in situations when they are confronted with hard-to-answer questions (Fischhoff et al. (1977), Yates (1990) and Griffin and Tversky (1992)).

Additionally, Englmaier (2004) claims that in financial terms, overconfidence suggests an individual being too optimistic (invoking negative connotations) about the precision of signals received. Given this evidence, overconfidence has been employed in order to help explain existing market anomalies (such as momentum in stock returns). Moreover, overconfidence levels increase as success is attributed to someone's own abilities whilst evidence shows that it is related to age with younger individual's being more likely to act overconfident. For instance, Heaton (2002) focuses on managerial optimism in the corporate finance world regarding their view of projects in general and primarily shows that optimistic managers believe capital markets usually undervalue risky securities. Hence managers are prone to undervaluing positive net present value projects that are financed externally whilst also overvaluing their own corporate projects. This may result in the firm investing in negative net present value projects.

In Heaton's (2002) study, the application of evidence observed in the psychology literature to help explain managers' irrational/overconfident behavior is apparent. Heaton (2002) argues that optimistic (i.e. confident or overconfident) managers systematically overestimate the probability of the future performance of the firm being good while they simultaneously underestimate the probability of the firm performing badly. In general, people feel more optimistic in cases they believe that they have control over, and can make a significant contribution to, the final outcome (i.e. an illusion of control). It is as Adam Smith wrote, the possibility of gaining in the future is overvalued whilst the possibility of incurring losses is undervalued.

Similarly, Forbes (2005) reports that overconfidence is a decision-making bias which refers to an individual's tendency to overestimate the accuracy of their initial estimates. Forbes (2005) suggests that it could serve as a measure of the degree to which people '*do not know what they do not know*'. Overconfidence can influence managerial behavior in different ways such as in forecasting procedures, in their response to the arrival of new information and events whilst also in the way in which they present their prospects to others. Furthermore, overconfident managers tend to be more prone to introducing new products. Forbes (2005) specifically examines whether some entrepreneurs are more confident than others and the factors that lead them to suffer from such a cognitive bias[11]. He reports some interesting findings related to entrepreneurs cognitive biases in terms of individual and firm characteristic factors. More specifically, he finds that new venture managers who were the founding individual of their ventures, will be more overconfident than those who were not involved in the set-up of their firms. Moreover, demographic differences among entrepreneurs may also affect the degree of overconfidence exhibited. In particular, Forbes (2005) finds that younger entrepreneurs will be more likely to be overconfident than older ones will be. Similarly, entrepreneurs with higher levels of ESE

[11] Cognitive biases are thought processes that involve erroneous inferences or assumptions. One of these biases is overconfidence.

(entrepreneurial self-efficacy, which captures the degree to which individuals believe they are capable of performing a task) are more overconfident than those with lower levels of ESE. Concerning organizational factors, entrepreneurs managing smaller firms are more overconfident than those managing larger ones. This could be because managers of small firms possess more information relating to the firm and therefore they are more prone to adapt cognitive biases. Additionally, entrepreneurs managing younger firms are found to be more overconfident than those managing older firms. This could be due to the fact that older firms have some standard and routine processes while in younger firms, the managers have to rely on their own perceptions and interpretive abilities. Additionally, entrepreneurs whose firms exhibit higher levels of decision comprehensiveness will be less overconfident than those whose firms are less comprehensive. Lastly, it is shown that entrepreneurs whose firms have attracted external equity investment will be less overconfident than those whose firms have not. This fact is based upon the monitoring hypothesis.

Finally, there are some interesting observations concerning the role of overconfidence in financial markets and trading. Empirical research has shown a positive relation between the level of overconfidence and trading in financial markets (Englmaier (2004)). Since the trading volume depends on the precision of the signal received, the hiring of overconfident managers leads to more aggressive trading. Research has proved that overconfident investors trade more. Adopting a dynamic perspective of this viewpoint, over time overconfident traders converge back to a realistic assessment of the situation. Periods in which the market is performing well invoking overconfident traders to pursue more aggressive strategies are found to be followed by periods of high trading volume. However, periods with high trading volume are largely associated with lower profits.

Although, the evidence largely indicates that overconfidence has a relatively negative effect in the financial world, Heaton (2002) argues that optimistic managers (irrational) may in fact be preferable to rational managers in some cases. Heaton (2002) reasons that irrational managers tend to take larger risks which lower their expected utility simultaneously increasing the probability of winning the '*tournament*' in which they are involved.

In summary, phenomena such as ‘illusion of control’ and ‘overoptimism’ regarding the future, as observed in individuals in psychology research, can be used effectively in the world of finance to help us understand deeper the processes and effects of executed financial decisions.

3.2.3 The Hubris Hypothesis

The completion of a takeover is quite complicated in that there are different stages that companies must go through before reaching a decision to become combined firm with a prospective target. Firstly, a bidding company must select an appropriate company that could possibly be acquired. The difficult stage of target valuation then follows requiring the bidding company to assess the target company’s assets. This involves the bidder taking into consideration different parameters of the target’s operations, which predominantly are difficult to accurately evaluate. Factors such as private information relating to the target company or the potential synergy gains on offer from the deal, which include a lot of subjective uncertainty, make the valuation process an obscure process in which the final estimated value of the target company can be unreliable. Nevertheless, once the bidder has calculateda valuation estimate for the potential target, the firm then compares it with the target’s current market price. If the estimated value is below the market price, then the bid will be abandoned. Conversely, if the target is perceived to be undervalued by the market then the bidder will proceed to make an offer. However, this estimated valuewill not form the initial bid offer since issues, such as rival bids, future bargaining and valuation errors, should also be taken into account. It is obvious that the calculation of the target’s value is a integral part of the takeover process.

Due to this valuation puzzle, Roll (1986) argues that takeover gains may be overestimated, if they exist at all. He also notes that there is little evidence proving that humans behave rationally. However, he assumes that the market behaves rationally since it reflects the aggregate, in which case irrational extreme behavior can be considered to cancel each other out. Furthermore, Roll’s (1986) beliefs regarding irrational individual behaviours are supported by great evidence from the field of

Psychology. Recent empirical psychological evidence supports the view that individuals do not always make rational decisions under uncertainty (Odean (1998)).

Additionally, Roll (1986) writes that managers who are involved in corporate decisions will continue undertaking takeover bids even though they may have made valuation errors in the past. Despite the fact that some companies may get involved in multiple acquisitions, this doesn't necessarily indicate that only one manager performed all of these firm's takeovers given evidence indicating high managerial turnover in firm's post-acquisition. In fact, it has been shown that an individual manager is involved in very few acquisitions over his career.

Connecting the psychological evidence that discusses human irrationality to the fact that takeovers reflect individual decisions based on the valuation process, Roll (1986) introduces the Hubris hypothesis. Managers convince themselves that the value they estimate for the potential target company is correct believing that the market has failed to reflect the full economic value of the combined firm. As a result, managers infected by hubris overvalue their target firms and consequently pay high premiums. Although there may be no actual synergy gain to execute after the takeover, the high premiums offered to the target company can be explained by the existence of valuation errors or in other words, by hubris. Roll (1986) manages to give reasonable explanations to explain why managers proceed with a takeover, even if there are no actual gains to be extracted.

According to Roll (1986), the hubris hypothesis predicts that the value of the bidding firm should decline post-acquistion whilst the value of the target should rise. The value of the combined firm is predicted to decline also. There is believed to be a higher reduction for the bidder's value than increase experienced for the target and this causes the overall decline for the combined firm. Furthermore, Roll (1986) claims that if all takeovers are motivated by hubris, then the shareholders of the bidding firms should forbid managers to participate in such ventures. However, shareholders seemingly do not prevent merger activity and thus hubris alone cannot explain the takeover puzzle.

Finally, we have to distinguish the concept and the motives between the hubris hypothesis and Jensen's (1986) agency theory. As has been noted, managers infected by hubris believe that they act for the interests of their shareholders even though they over-invest and destroy value. On the other hand, in Jensen's (1986) agency theory, managers are motivated by the private benefits of control and undertake M&As for their own personal utility. They overinvest to create the so-called empire building at the expense of stockholders because they value private benefits of control. This chapter focuses upon the existence and effects of overconfidence as per the hubris hypothesis and does not directly test Jensen's (1986) agency theory.

3.2.4 The Hubris Hypothesis as an Explanation in M&As

In some circumstances, the hubris hypothesis has been used as a potential reason to explain bidding firms' underperformance. Financial research has used the work to help explain why bidders' abnormal returns are negative, low or, certainly lower than the expected level, in M&As. Although it has previously employed as a potential explanation, the empirical research that directly tests this human irrationality remains limited. This section presents some studies that have proposed hubris as an interpretation of acquirers' underperformance.

Moeller, Schlingemann and Stulz (2004) examine the size of the acquiring firm in a takeover deal and suggest that small firms outperform large firms by 2.24%, irrespective of the status of the target firm (i.e. listed or unlisted) and the method of payment (i.e. cash, stock or mixed). Among the reasons given to support the lower abnormal returns for large firms, Moeller et al. (2004) claim that managers of large firms may be affected by hubris resulting in the offering of large premiums (i.e. overpaying) for targets. In this way, these firms enter acquisitions with negative dollar synergy gains. In other words, managerial overconfidence may be sourced from the fact that either managers have high status, have accomplished the target of growing the company to its large size or indeed because they have encountered fewer obstacles in completing the acquisition due to the abundance of financing sources offered to large firms.

In later work, Moeller, Schlingemann and Stulz (2005), when examining bidders' returns for the period 1998-2001, reach the conclusion that the large losses incurred are driven mainly by a small number of highly valued firms, claiming that their findings are consistent with the literature pertaining to managerial overestimations for the target's value (i.e. hubris).

Additionally, studies which examine the performance of bidders by controlling for the book-to-market ratio (Rau and Vermaelen (1998) for the US market and Sudarsanam and Mahate (2003) for the UK market) show that value firms (high book-to-market ratios) outperform glamour firms (low book-to-market ratios) . Glamour firms are firms with high past stock returns which have experienced high past growth in cash flows and earnings. As a result, managers in such firms are more prone to act out of hubris, overestimate their abilities due to the good past performance of the firm (individuals attribute good performance more to their own abilities than to luck) and proceed to conduct takeovers which are not value increasing for the company. On the contrary, value firms are governed by managers who have previously experienced poor performance and consequently prove to be prudent and more careful before deciding to carry on a project which might be fatal for both the survival of company and their position within it. In other words, managers in value firms are unlikely to be affected by hubris in adopting value-destroying projects. Similarly, the fact that highly rated firms suffer losses when they acquire firms with lower ratings is credited to managers infected by hubris. In other words, bidders who are highly rated in the stock market overestimate their own abilities and their managerial skills, resulting in the overpayment of targets.

The hubris hypothesis is also not rejected by the findings of Jennings and Mazzeo (1991) who examine the way in which managers think about their information set and the information provided by the market. In short, they support the view that managers do not learn from stock price movements since they consider their personal information to be superior.

Roll's (1986) introduction of the hubris hypothesis was of vital importance in providing a different way of viewing and explaining financial phenomena, especially in the world of corporate finance. Although as a concept it was introduced more than two decades ago, there is limited proof or direct empirical examination of this human irrationality. This chapter aims to fill this void.

3.2.5 Overconfidence in M&As

Mergers and Acquisitions are very important corporate decisions that require the direct involvement of managers (CEOs). In this way, they are ideal corporate events with which to use to measure or investigate the phenomenon of overconfidence. In addition, psychologists propose that M&As are a particular type of corporate decision which is directly related to overconfidence. This proposition is based on the fact that individuals who participate in such projects have complete control over the task and invariably are highly committed to it’s completion. In other words, managers run the risk of suffering from an illusion of control over the outcome with the potential to underestimate the potential failure of the project.

Malmendier and Tate (2008) show that overconfident CEOs overestimate their abilities to generate abnormal returns for their shareholders. This results in them overpaying for targets resulting in the engagement of mergers that destroy value. Moreover, overconfident CEOs believe that their firm is undervalued by the market. There seems also to be a positive relationship between overconfident CEOs and their level of acquisitiveness. It is shown that overconfident CEOs have a 65% stronger likelihood of being involving in a merger than those considered to be rational. Another interesting feature is that the effect of overconfidence is observed more often in firms that have an abundance of internal financing sources. Additionally, the market reacts four times more negatively for mergers undertaken by overconfident CEOs than it does to the announcement of deals from rational CEOs. In contrast to those managers who act to serve their own benefits (agency theory), overconfident CEOs believe that they act for the interests of their shareholders.

Doukas and Petmezas (2007) examine the performance of overconfident managers involved in mergers and acquisitions of privately held U.K. targets. They report that overconfident managers generate less abnormal returns both around the announcement date and in the long run. Consistent with the psychological evidence, this study also shows that overconfident managers believe that they have superior managerial skills and are more competent than their counterparts. This results in these firms being involved in multiple acquisitions believing each time that that they are working towards the shareholders best interests. This work explains that the reason for investigating the phenomenon of overconfidence in takeovers that involve private targets is due to the fact that there is limited information available related to these firms. As a result the decision to acquire is mainly based on managers' personal beliefs about the potential synergies in offer. In this way, overconfidence is more pronounced. Doukas and Petmezas (2007) also find that the first bids made are more profitable than higher order deals leading to the conclusion that managers attribute the success of the initial bids to their own abilities and subsequently become overconfident, continuing to acquire more companies. This finding suggests that self-attribution bias encourages overconfidence.

Similarly, Billett and Qian (2008) study US takeovers investigating the self-attribution bias. A past successful performance on the part of the firm leads to the creation of overconfident managers. Their findings show that acquirers involved in multiple bids destroy value for their shareholders. After controlling for the order of the deal, they find that the negative performance is driven by the higher order deals, while first order acquisitions enjoy higher abnormal returns. Their logit analysis reveals that managers who performed successful acquisitions in the past are more likely to be involved in future takeover activity. Ben-David, Graham and Harvey (2007) provide similar findings about overconfidence in terms of corporate decisions in general. Regarding takeovers, they report that overconfident CFOs invest more and engage in more acquisitions, with the consequences coinciding with the previous studies (i.e. negative market reactions).

A different approach is presented by Aktas, de Bodt and Roll (2007) in order to explain the declining short-run market performance of multiple acquisitions. They also find that in multiple acquisitions the first order deals are more profitable than the later deals but do not attribute this fact to hubris but rather to risk averse managers who learn from the investor's reaction from past deal announcements. In other words, managers learn while making acquisitions. Therefore, later deals that follow are more careful due to the experience of the performance of earlier deals. The learning experience and the risk associated with acquisitions decreases resulting in lower returns.

Apart from Aktas, de Bodt and Roll (2007) study, most of the literature is in agreement holding the view that there is a close connection between the corporate decisions, especially M&As decisions, and the level of overconfidence present. These works mainly conclude that overconfident managers, despite believing that they act for their shareholders best interests, actually end up destroying value, as observed by the market reaction.

3.2.6 Proxies for Overconfidence

This section discusses the various proxies employed within empirical research in attempts to capture managerial overconfidence.

Stock options proxy

The stock options proxy exploits the notion of the non-tradability of CEOs executive stock options along with the fact that these individuals cannot diversify against the firm specific risk faced. As part of their compensation plans, CEOs receive large amounts of stocks and options. However, the concept of the stock options granted to the CEOs is different from the stock options as described by the Black and Scholes (1973) model. Black and Scholes (1973) claim that rational investors can reduce their idiosyncratic risk by diversifying their option. Additionally, they claim that CEOs' stock options should not be exercised early, a fact that does not apply to executive stock options. This is because managers cannot diversify the firm specific risk faced since they are not allowed to short-sell their company stocks. Because of this restriction, risk-averse CEOs should exercise their options early, in advance of the expiration date, given a considerably high stock price (Hall and Merphy (2000), (2002)). Usually, executive stock options have a duration of ten years and are fully exercisable after the first three. Given this, after the third year, managers can exercise the option, receive the stock and can immediately cash-out.

The rationale of this proxy is that if the CEO is optimistic enough to hold the option until expiration even though the stock option is “in-the-money” at some earlier point during these seven years (from the third until the tenth year), then he/she is classified as overconfident. This is because the CEO, in holding the option, endures the firm specific risk faced because he/she believes that the stock will continue to rise further under his/her personal leadership. As a result, the future expectations of the manager must be high enough to compensate for the cost of not diversifying (Malmendier and Tate (2005), (2008)).

Business Press proxy

Another interesting way to approach overconfidence is the Business Press proxy as introduced by Malmendier and Tate (2008). In brief, this proxy takes into consideration the way in which the media (newspapers mainly) portrays the behaviour, attitude or actions of CEOs. Malmendier and Tate (2008) count the number of articles that refer to the manager as ‘confident’, ‘overconfident’, ‘optimistic’ or ‘overoptimistic’ against the number of articles that portray him as ‘reliable’, ‘cautious’, ‘conservative’, ‘practical’, ‘frugal’, ‘steady’, ‘not confident’ or ‘not optimistic’. They then construct an indicator for each CEO for each year by comparing these two groups of article and viewing which outweighs the other. If the first (second) group of articles outnumbers the second (first), then the managers is considered as overconfident (rational). This procedure is repeated for each CEO separately up until the year before his/her first merger is conducted. This is for two reasons. Firstly, this method helps to avoid press biases since the press may have an overconfident attitude towards the manager after he/she starts engaging in takeovers. Secondly the manager his/her self may want to convey overconfident signals for his/her performance and may thus try to manipulate the market.

Multiple Acquisitions

Overconfident managers tend to underestimate the risks and overestimate the synergies involved in takeovers. Moreover they have an inclination to acquire target companies quickly and frequently (Doukas and Petmezas (2007)). As a result, overconfident managers are argued to be involved in multiple acquisitions because they believe shareholders can have large and quick benefits from doing so. Doukas and Petmezas (2007) adopt the multiple acquisition proxy reporting that firms that acquire five or more target companies in a short span of time (set at three years) are considered to be overconfident. However, this proxy could be subject to criticism due to the fact that multiple acquirers could be those who perform three or four acquisitions in a shorter or longer period of time rather than three years. For instance, Billet and Qian (2007) employ the same rationale and characterize those managers as frequent acquirers who acquire at least two public targets within a period of five years. Nevertheless, the interpretations are similar. Those firms which engage in multiple acquisitions are largely considered to be overconfident.

3.3 Hypotheses Development

Existing literature within corporate finance shows that target firms enjoy significant gains after a takeover bid[12]. Conversely, the evidence is mixed regarding the wealth effect for acquiring firm shareholders. There is extensive literature which examines the factors that drive the short and long term performance of bidding firms following the announcement of an acquisition. For instance, Jensen and Ruback (1983), Bradley, Desai and Kim (1988), Jarrell and Poulsen (1989), Agrawal et al. (1992), Higson and Elliot (1998) and Sudarsanam, Holl and Salami (1996) report that acquisitions for listed targets suffer losses around the announcement of the takeover while on the other hand, Chang (1998), Fuller, Netter and Stegemoller (2002), Ang and Kohers (2001), Draper and Paudyal (2006) and Conn, Cosh, Guest and Hughes (2005) find that acquisitions for privately held target firms generate positive and significant gains following the announcement of a takeover deal. Hence this evidence suggests that the target firm’s listing status seems to play a significant role in determining bidder gains. Travlos (1987) shows that the means of financing a takeover also affects bidder gains. He

[12] See for example Dodd and Ruback (1977), Langetieg (1977), Bradley (1980), Dennis and McConnell (1986), Bradley, Desai and Kim (1988), Jarrell and Poulsen (1989), Lang, Stulz and Walkling (1989), Frank, Harris and Titman (1991), Servaes (1991), Bannerjee and Owers (1992), Conrad and Niden (1992), Healy, Palepu, and Ruback (1992), Kaplan and Weisback (1992), Berkovitch and Narayanan (1993), Smith and Kim (1994), Schwert (1996), Loughran and Vijh (1996), Maquieira, Megginson and Nail (1998), Leeth and Borg (2000), Mulherin and Boone (2000), Mulherin (2000), DeLong (2001), Houtson et al. (2001), Billett, King and Mauer (2003), Draper and Paudyal (1999), Eckbo and Thorburn (1993), Beitel et al. (2002) and Goergen and Renneboog (2004).

reports losses for acquisitions of listed targets paid for with stock while when cash is used as a means of financing the deal, there are insignificant gains. On the other hand, Chang (1998) argues that stock acquisitions generate positive abnormal returns for acquirers bidding for a private target while cash-financed deals do not produce any significant gains. Therefore, the method of payment used to finance a takeover is largely considered to be another determining factor of shareholder gains. Moeller, Schlingemman and Stulz (2004) report that small bidders enjoy higher abnormal returns while Rau and Vermaelen (1997) and Sudarsanam and Mahate (2003) report that value acquirers outperform those classified as glamour. Asquith, Bruner and Mullins (1983), among others, report that the higher the size of the target relative to the bidder's size, the higher the short-run abnormal returns earned. Hence, we observe that a number of different factors seem to affect the bidder's performance following the announcement of a takeover.

We argue that a key determinant in the performance of acquiring firms should also be what we term the 'human' factor. CEOs are highly involved in the decision-making process of undertaking and executing takeover bids. Therefore their role and personal rationality should not be ignored in empirical assessment of M&A activity. Managers play highly influential roles and thus their personal rationality and it's effects warrant further investigation.

There is substantial evidence in the psychology literature indicating that human beings suffer from various cognitive biases which result in errors and overestimations of the precision of our own abilities or judgments regarding decisions. More specifically, Englmaier (2004) claims known phenomena such as narrow confidence intervals, self-serving bias, illusion of control and over optimism all come under the umbrella of overconfidence. CEOs suffering from an illusion of control usually underestimate the probability of the potential failure for a certain project of which they are involved. One of the strong beliefs that managers have about their own firm is that the market has undervalued it given it's potential for further growth under their leadership (Heaton (2002)). Forbes (2005) writes that overconfidence is a decision-making bias and influences managerial behavior in different ways such as in forecasting the future or in response to new information and events.The essence of overconfidence and the rationale of those infected by it is summarized perfectly by Adam Smith who writes that *'the chance of gain is by every man more or less overvalued, and the chance of loss is by most men undervalued'.*

Roll (1986) documented the psychology literature pertaining to overconfidence and used it to form the famous 'hubris hypothesis' developed to help to explain corporate takeovers. Hubris can explain why managers undertake takeover bids even when there are no synergy gains. Roll (1986) assumes that markets are rational and that managers infected by hubris overestimate the potential synergy gains to be extracted proceeding to conduct takeover deals which result in a negative market reaction.

A relatively substantial part of the existing literature models investors and traders behavior based on various cognitive biases, in particular focusing on the presence and effects of overconfidence (Odean (1998), Daniel et al. (1998), (2001), Hirshleifer (2001)). However, there is limited evidence available empirically examining Roll's (1986) hubris hypothesis regarding managerial overconfidence in M&As.

We empirically investigate Roll's (1986) hubris hypothesis in a UK M&As context. The UK merger market is an ideal market in which to test the hubris hypothesis. This takeover deals are predominantly for private targets financed using cash. Privately held target firms are usually smaller firms for which information is usually limited. In such cases, the acquiring manager needs to employ his/her personal judgement to a higher degree, in which cases overconfidence would be more pronounced. In addition, UK takeovers are mainly financed using cash. Malmendier and Tate (2008) report that overconfident managers usually prefer to finance takeovers with internal sources as they believe their company is undervalued by the market. For these two reasons, the UK M&A market serves as an ideal testing ground to empirically investigate managerial overconfidence in corporate takeovers.

To capture managerial overconfidence we employ three proxies. One of the proxies which arguably most appropriately captures overconfidence is the stock options proxy as introduced by Malmendier and Tate (2005, 2008). It is based on a CEO's personal portfolio and his/her decisions regarding their executive stock option grants. As part of a manager's compensation plan, they receive huge grants of stocks and non-tradable options. Managers cannot diversify away the firm specific risk faced since they are not allowed to short-sell company stocks. Therefore, as soon as these stock options are "in-the-money" (that is, the stock option value is currently higher in the market than the strike price of the option) then managers should cash out. Managers who feel that due to their own abilities, they can drive the stock price even higher will refrain from selling/exercising their stock option until they are very close to expiration date and are considered to be overconfident. This proxy has never previously been used to examine overconfidence within the UK M&A market. We have hand collected data from bidders' annual reports regarding the bidding firm's CEO's portfolio to form the following hypothesis.

H1: Managers who hold their stock options until the last year before the expiration date should destroy more or create less value for their shareholders following the announcement of a takeover deal than their counterpart who exercise their options well in advance. This effect should hold both in the short-term and in the long-term.

A second proxy employed in this study to capture managerial overconfidence is the multiple acquirer proxy. Managers tend to attribute past successes to their own abilities, causing them to become overconfident and resulting in them proceeding to undertake more and more takeover deals. Doukas and Petmezas (2007) suggest that managers who perform five or more acquisitions within a short period of time (three years) are infected by hubris. Billet and Qian (2008) adopt a similar rationale and propose that managers who acquire at least two public target firms within five years are overconfident. Both studies mention multiple acquirers as particular *firms* that acquire target firms. Roll (1986) writes that the individual manager has limited changes to make multiple acquisitions during his career. We employ a similar approach as Doukas and Petmezas (2007) and Billett and Qian (2008) but propose that *individual managers* who acquire at least five target firms within three years are considered to be overconfident. This leads us to the testable proposition:

H2: Managers who are involved in multiple (five or more) acquisitions within a period of three years should create less or destroy more value for their shareholders following the announcement of a takeover deal than their rational counterparts who do not engage in multiple acquisitions. This effect should hold both in the short-term and in the long-term.

We also employ a third proxy to measure managerial overconfidence. Malmendier and Tate (2008) identify whether managers are portrayed by the press using key words such as ‘overconfident’ or ‘optimistic’ versus those characterized with adjectives such as ‘reliable’, ‘cautious’, ‘conservative’, ‘practical’, ‘frugal’ and ‘steady’. We follow a similar approach and create a *unique hand-collected dataset* for UK acquirers. We identify in the UK press which bidding firm CEO’s are more often described using adjectives such as ‘confident’, ‘confidence’, ‘optimistic’, ‘optimism’, ‘certain’ and ‘positive’ and which are more often characterized as ‘reliable’, ‘cautious’, ‘prudent’, ‘conservative’, ‘practical’, ‘sensible’, ‘frugal’, ‘careful’ or ‘steady’.

H3: Managers who are portrayed by the press as overconfident should create less or destroy more value for their shareholders following the announcement of a takeover deal than their rational counterparts who are viewed as prudent and cautious. This effect should hold both in the short-term and in the long-term.

This study employs three unique hand-collected datasets to examine the effects of managerial overconfidence on bidding firm shareholders wealth following the announcement of UK bidders’ M&A deals. In addition, we control for various bidder and deal characteristics highlighted by the existing literature as important factors affecting bidder gains.

3.4 Data and Methodology

3.4.1 Data

3.4.1.1 The sample

The sample consists of takeover bids announced by U.K. firms for the period 01/01/1990 to 31/12/2005, collected from the Thomson One Banker. The collection of bids announced during this period are subject to the availability of the Thomson One Banker at the time of the data collection. To be included in the final sample, the deals should meet the following criteria:

- The acquirer is a U.K. firm publicly traded on the London Stock Exchange (LSE) with five days of return data around the announcement date of the takeover and one to three years return data on the DataStream database.
- The target company is either a listed or unlisted company and can be either a domestic or a foreign company.
- The acquiring firm purchases at least 50% of the target's shares.
- The deal value is ₤1 million or more.
- The deal value represents at least 1% of the market value of the acquirer.
- Multiple deals announced within a 5 days period are excluded (after estimating the multiple acquisitions proxies)[13].
- Financial and utility firms, for both bidders and targets, are excluded from the sample (Fuller et al. (2002)).

We further split the sample according to the method of payment into three groups - a) Cash acquisitions including those deals financed purely using cash; b) stock acquisitions financed by offering shares to the target firm; and c) mixed acquisitions which are financed using a combination of cash and stock (Martin (1996)). Our final sample consists of 1,281 unique bidders who performed 3,223 deals.

[13] The multiple acquirers proxy classifies managers as overconfident if that particular manager acquires five or more target firms within three years. Once this has been calculated, the multiple deal announcements are excluded.

3.4.1.2 Sample Characteristics

[Insert Tables 3.1 and 3.2 about here]

Table 3.1 presents summary statistics by year for the overall sample and the three proxies of overconfidence respectively. The results are consistent for all measures of overconfidence, except for the business press proxy. There is a bias towards overconfidence due the selection process. The reasons for this are discussed in detail in the next section (3.4.1.3). We also observe that M&A activity experienced a gradual increase and reached its peak at the end of the 90's. Table 3.2 displays the activity of acquisitions among public and private targets, the mean and median values of acquirers and the value of deals stratified by the different types of managers (i.e. overconfident versus rational). 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 in Panel A, the mean (median) size of the acquirer is 517.73 million pounds (88.53 million pounds) for 1,281 unique acquirers, while for 3,223 targets the mean (median) size is 64.49 million pounds (6 million pounds). An interesting observation that emerges from the sample is that private firms comprise the vast majority of targets (2,839 or 88%) in contrast to the small number of publicly traded targets (384 or 12%)[14]. The mean value of acquirers in public acquisition is by far larger than the mean value of bidders in private acquisitions (more than six times the market capitalization). In deal value terms, public targets exhibit a disproportional percentage of the total deal value (74%) when considering their small contribution to the total number of acquisitions in the sample (12%). This finding could be attributed to manager's who suffer from overconfidence/hubris and consequently buy large companies taking on the risk that such a transaction can entail[15]. In addition, the summary statistics for overconfident and rational bidders are qualitatively similar for all

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

[15] It can be seen in the sample statistics that public firms are by far larger than private firms by almost three times their market capitalization.

proxies (Panels B, C and D) enhancing the robustness and reliability of the sub-samples used in the return analysis for the three different measures of overconfidence.

3.4.1.3 Measures of Overconfidence

To capture overconfidence, we employ various classification methods to ensure the robustness and reliability of the results. We use a number of proxies commonly accepted as reliable in the finance literature while we also modify others believing that they can better capture the irrationality of onverconfident human behavior. This section describes the rationale of these proxies as well as the way in which we collected the data necessary to calculate these proxies.

Stock Options Proxy

The main proxy employed in this chapter to classify managers as overconfident or rational is based on the managers' personal portfolio decisions. More specifically, we examine the actions these individuals take concerning their executive stock options (Malmendier and Tate (2008)). CEOs usually receive huge grants of stock and non-tradable options as part of their compensation plans. It has been proved that risk averse CEOs should exercise their stock options before the expiration date if they are sufficiently "in-the–money" since they are exposed to enormous firm-specific risk which cannot be diversified. Upon exercise, the managers receive shares of company stocks which are always immediately sold (Ofek and Yermack (2000)). In other words, CEOs who persistently choose to maintain their stock options until expiration are consistently exposing themselves to high levels of risk in the belief that the stock of the company can perform better due to their leadership. These CEO's matching this criteria are defined as overconfident.

We predominantly adopt this approach for measuring overconfidence. The first step of calculation is to identify the CEO's[16] who managed the bidding company of our sample around the announcement date of the deal in question. After creating a list of the names

[16] First we look for the CEO of the company around the announcement date. If there is no such post in the company we identify the managing director. In the UK market, the title for the CEO position was 'Managing Director' prior to 1995. If a company has no positions with these titles then we note the person that occupies the Chairman post.

of CEOs who decided to undertake a takeover, we observe their personal portfolios. In paericular, we investigate the decisions these individuals make concerning their stock options. We note down the date that the stock option was granted to the manager, the date that exercise of the option could begin, the expiration date of the option and finally, the strike price. Predominantly, executive options in the U.K. have a life span of ten years with a vesting period of three years, that is they are exercisable three years after the date of initially being granted. Following Malmendier and Tate (2008), if managers hold the option until the expiration date or until the last year before the expiration date, he/she is classified as overconfident. Moreover, we check whether the company stock price is higher than the strike price throughout the entire life of the option. When a manager holds the options to expiration, because he is previously unable to exercise the option as the strike price is consistently higher than the stock price, then he is not classified as overconfident but rather is defined as a rational being. In our sample there are few cases where this takes place. Mostly, the options are highly “in–the-money” (stock price is much higher than the strike price) , for considerably long periods of time (i.e. longer than one year). Consequently, we employ this way of checking the ability of the manager to exercise without involving any benchmarks. The above data collected, such as the name of the manager, the dates regarding the life of the options and the strike price, were obtained through the annual reports of the companies. The annual reports are obtained either by databases such as Lexis-Nexis and Northcote.com or alternatively, by directly requesting copies from the company itself. Finally, we manage to obtain data for 848 deals representing more than a quarter of the initial sample (Table 3.1). Following the Stock Options Proxy, 601 (70%) of these deals are identified as rational and 247 (30%) are classified as overconfident.

Multiple Acquisitions Proxy

Extensively studied in the literature, multiple acquirers are classified as firms that acquire more than one company. Fuller et al. (2002) develop further introducing a more specific definition for multiple acquirers. They write that firms which acquire five or more targets in a period of three years are classified as multiple acquirers. Doukas and Petmezas (2007) use this definition to measure overconfidence. In this study, we adopt a similar approach but differentiate it in a very significant way. We do not refer to *companies* in this work as overconfident but classify the *managers* themselves. Therefore, *managers* who perform multiple acquisitions (five or more) in a small period of time (three years) are defined as overconfident individuals. Since we focus on managerial overconfidence, it is appropriate to adopt this proxy from the perspective of the manager/CEO himself. A company may have conducted five or more acquisitions in a three-year period of time, but managerial turnover could have been high and thus various individuals could be responsible for undertaking these these projects. Table 3.1 presents the distribution of the data collected employing this proxy throughout the sample period. In total, we manage to obtain data for 3,099 deals (96% of the initial sample). Out of these, 2,256 (72%) acquisitions are classified as rational and 843 (27%) as overconfident.

Business Press Proxy

A third proxy to distinguish overconfident managers is based on the way in which outsiders perceive their personalities. In other words, we observe how the press, mainly newspapers, portrays respective manager's characters (Malmendier and Tate (2008)). To achieve that, we use the Factiva.com database which documents newspaper articles. By defining some key words, we attempt to capture the way in which journalists portray managers. We count the number of articles which include these specific words. In short, we create two indices - one with the total number of articles that described the manager using adjectives such as 'confident', 'confidence', 'optimistic', 'optimism', 'certain' and 'positive'[17] and one with total number of articles that refer to the manager as 'reliable', 'cautious', 'prudent', 'conservative', 'practical', 'sensible', 'frugal', 'careful' or 'steady'. All of these articles produced by the search-machine are hand-checked one by one to ensure that these words refer specifically to the manager and are not irrelevant citations. This procedure is repeated for each manager for each sample year. In summary, for each year the managers is characterized as rational or overconfident depending upon which group of articles outnumbers the other group for each CEO

[17] In the overconfident side, we have to note down that article, spotted by the searching machine, that include the words confident, confidence, optimistic e.t.c in phrases like '……we are confident/optimistic or remain confident/ optimistic about the future……' and similar phrases quoting managers' talks are excluded since most of the article include such phrases and an overconfidence biases could be created. Additionally, article that contain the words 'certain and positive' are including in the counting process only when they have a superlative concept.

examined. At the end of the manager's period, we observe the number of years outstanding and we reach to a decision concerning his personality. The purpose of this analysis year-by-year is to avoid overconfident biases that could be created if we simply calculated the total number of articles for each group of words and for each manager. For example, if a manager had taken an overconfident action at one point in time, then the total number of articles would have a bias towards overconfidence. To further ensure that no bias is inherent in the calculations, this procedure continually takes place five years before the beginning of the sample period until the year before the manager proceeds to conduct his first takeover . The year of announcement is excluded since the CEO could try to convey confidence and optimism to the press just before and during the acquisition. Despite all the efforts undertaken to reduce biases towards overconfidence, the number of deals identified as overconfident outnumber those deemed to be rational ones. Table 3.1 shows that we obtained data for 530 deals (almost 17% of the initial sample) out of which 196 (37%) are classified as rational and 334 (63%) as overconfident. Although, the two previous proxies graded the rational-overconfident ratio at around 7:3, the business press proxy indicates a ratio of 4:6. A possible explanation is that it is more common to find articles discussing poor behaviour characterizing managers as 'confident' or 'optimistic' rather than praising rational decisions. Consequently, the higher number of deals classified as overconfident is not because there is a bias towards overconfidence in the methodology, but rather is due to the difficulty of identifying rational managers.

3.4.2 Methodology

3.4.2.1 Short-Run Event Study Methodology

To calculate the acquiring firms' performance and identify the impact of rational and overconfident management, we employ standard event study methodology (Fuller et al. (2002)) to calculate the Cumulative Abnormal Returns (CARs) for the five-day period (-2, +2) surrounding the announcement date, as given by both DataStream and Thomson One Banker. We estimate the abnormal returns using a modified market model as follows:

$$AR_{i,t} = R_{i,t} - R_{m,t}$$

where $AR_{i,t}$ is the excess return of bidder i on day t; $R_{i,t}$ is the return of bidder i on day t measured as the percentage change in the return index including dividends of bidder i; $R_{m,t}$ is the market return estimated as the percentage change in FT-All share Index (value-weighted) on day t. The CARs are then calculated as the summation of the Abnormal Returns ($AR_{i,t}$) for the five days surrounding the announcement of the bid as indicated by the following equation:

$$CAR_i = \sum_{t=-2}^{t=+2} (R_i - R_m)$$

T-statistics are used to test the null hypothesis that the mean CAR is equal to zero for a sample of n firms is as follows:

$$t_{CAR_i} = \frac{\sum_{i=1}^{i=n} \frac{CAR_{i,t}}{n}}{\left(\sigma \left(\sum_{i=1}^{i=n} \frac{CAR_{i,t}}{n} \right) \Big/ \sqrt{n} \right)}$$

Where $CAR_{i,t}$ denotes the sample average, and $\sigma(CAR_{i,t})$ denotes the cross-sectional sample standard deviations of abnormal returns for the sample of n firms.
We do not report the t-statistic in tables but the p-value instead. The p-value provides a sense of strength of the evidence against the null hypothesis. The lower the p-value, the stronger the evidence that the mean CAR is different from zero.

Moreover, to make sure the event window (-2,+2) is the appropriate one, we calculate Abnormal Returns (ARs) for each day in a peiod of -10 to +10 days around the announcement date of the acquisitions (Table 3.3). In table 3.3, we obtain significant abnormal returns for days -2, -1, 0, 0, 1, 2 and 3 surrounding the acquisition announcement. Therefore to have a symmetrical window, we choose to employ CARs for -2 to +2 days for the rest of the short-run analysis. For the period 3 days before and 4 days after the announcement day, we observe abnormal returns which are both highly statistically insignificant and economically close to zero.

To further enhance the robustness of our window, in Table 3.4, Panels B, C and D, we report the overall picture of our sample by using different event windows such as (-

1,+1), (0, +1) and (-1,0). Further more, In Table 3.5, we recalculate our results for four different windows (-2,+2), (-1,+1), (,+1) and (-1,0) by employing Buy-Hold Abnormal Returns (BHARs) in addition to CARs. The overall picture by both approaches and all different windows remains similar to the one given by CARs (-2,+2). The analysis of these results is explained in further detail in Section 3.5.1.

The BHAR for company *i* is computed as:

$$BHAR_i = \prod_1^T (1 + R_{it}) - \prod_1^T (1 + R_{mt})$$

where R_{it} is the daily return for company *i*, and R_{mt} is the daily return of the market index.

[Insert Table 3.3 about here]

3.4.2.2 Long-Run Methodology

The long run analysis undertaken in this chapter examines the bidder's excess returns which occur over a 12- and 36- month post-event period. Following Mitchell and Stafford (2000) we employ Calendar Time Portfolio Regressions (CTPRs) analysis. The portfolios are rebalanced each month to include firms that performed a takeover during the previous month while also to remove firms that have reached the end of the 12- or 36-month period. The average monthly excess returns for the three-year post acquisition period is the intercept from the time-series regression of the calendar portfolio on the Fama and French three-factor model as follows:

$$R_{pt} - R_{ft} = a_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

Where R_{pt} is the average monthly return of the calendar portfolio at time t; R_{ft} is the monthly risk free rate of return at time t; R_{mt} is the monthly return on the market index (value-weighted); SMB_t is the monthly return on small minus large firms (value-weighted); and HML_t is the monthly return on high book-to-market minus low book-to-market firms (value-weighted). β_i, s_i, h_i, are the regression parameters and ε_{it} is error term. The intercept (α_i) measures the monthly average excess returns of acquiring firms after controlling for the effect of the three risk factors.

3.5 Empirical Evidence

This section presents the short-run, the multivariate and the long-run analyses for bidders whose managers are likely to suffer from hubris against those whose managers are considered to be rational. Our hypotheses suggest that rational acquirers should outperform overconfident ones both in the short-term and in the long-term.

3.5.1 Short-Run Analysis

This section examines the short-term bidder performance around the announcement of the takeover deal for acquisitions performed by rational and overconfident managers. We present 5 days CARs for bidding firm managed by rational managers as opposed to those managed by overconfident managers as classified using the three proxies.

Table 3.4, Panel A presents the five-day cumulative abnormal returns (CARs) for the entire sample as sorted by the target's listing status (i.e. private or public) and by the method of payment used to finance the deal (cash, stock or mixed) in order to obtain a broader perspective for the sample. The overall CAR for all bids is positive and statistically significant at the 1% significance level (1.47%) mainly driven by the positive performance obtained by acquisitions for private target firms. As indicated by the summary statistics the magnitude of these acquisitions dominate the U.K. merger market with 2,839 private bids reported over the 384 public ones. Private acquisitions enjoy 1.83% significant gains. After controlling for the method of payment, stock acquisitions gain 7.31% abnormal returns following the announcement of the deal while cash deals generate 1.28% abnormal returns, all statistically significant at the 1% significance level. This evidence is in accordance with the existing literature. Chang (1998), Ang and Cohers (2001), Draper and Paudyal (2006) and Fuller, Netter and Stegemoller (2002) show that bidders enjoy positive and significant abnormal returns around the announcement date when acquiring privately held targets. Gains are much higher in the case of stock offers supporting the limited competition [18], the monitoring [19] and the information hypotheses[20]. On the other hand, bids for listed target companies generate negative and significant returns (-1.20%). When we further separate the public sample according to the method of payment, we observe that the CARs are even more negative and significant for stock exchanges (-2.42%) while they are marginally positive and insignificant for cash offers (0.28%). This evidence is consistent with the finance literature. Numerous studies, such as those from Higson and Elliot (1998), Sudarsanam Holl and Salami (1996) and Firth (1980), provide evidence that acquisitions for public target firms generate negative abnormal returns. Additionally, Travlos (1987) reports that stock offers for public targets result in negative and significant abnormal returns while cash offers enjoy insignificant gains. This evidence is in accordance with the signalling hypothesis[21] and is supported by our sample. In general, the overall findings from our sample are in line with the existing evidence available. Furthermore, Panels B, C and D present Cumulative Abnormal Returns (CARs) for three alternative windows such as (-1,+1), (0,+1) and (-1,0). The abnormal returns for the overall sample is 1.18%, 1.08% and 0.89% regarding the three alternative windows respectively. Acquisitions for private deals generate positive (1.50%, 1.39% and 1.15%) and significant gains while takeovers for public target firms suffer significant loses (-1.20%, -1.19% and -1.06%) respective for the three alternative event windows. When controlling for the method of payment, the overall picture remains similar to the one presented by the (-2,+2) windows and consistent with the literature. For robustness reasons, apart from CARs, we also report BHARs for 4 alternative windows (Table 3.5). No significant differences are observed. In table 3.5,

[18] The Limited Competition hypothesis suggests that the bidding competition among private targets may be less intense and a resultant higher likelihood of underpayment can lead to higher returns for the bidder (Chang (1998)).
[19] The Monitoring hypothesis implies that through stock offers the small number of owners of the private firm will become blockholders of the newly-combined firm. The resultant effect is close monitoring of the managerial performance by this group of stockholders leading to an increase in firm value (Draper and Paudyal (2006) and Chang (1998)).
[20] According to the Information hypothesis, the owners of private firms have high incentives to assess properly the value of the stock of the bidding firm since they will end up owning large amounts of stock if they accept a stock offer. This fact conveys favourable news to the market about the acquirer's value and prospects resulting in a rise in the stock price of the bidders surrounding the announcement date (Chang (1998), Draper and Paudyal (2006)).
[21] The Signalling hypothesis suggests that bidding firms are more willing to offer stock as a medium of exchange in takeovers when they believe that their stock is overvalued. This piece of information is perceived by the market as having adverse impacts upon the bidder returns.

Panels A, B, C and D, we also report positive and significant gains for private takeovers (1.82%, 1.51%, 1.39% and 0.90% respectively). On the other hand, takeovers for public target firms experience significant losses (-1.17%, -1.15%, -1.16% and -1.05% respectively). Similar eveidence is observed when portfolios are split according to the method of payment. For instance, private stock acquisitions generate 7.31%, 7.03%, 6.54% and 6.86% Cumulative Abnormal Returns for (-2,+2), (-1,+1), (0,+1) and (-1,0) windows respectively (Table 3.4). Similarly, when BHARs are calculated (Table 3.5), acquisitions for private targets paid for with stock enjoy 7.09%, 6.98%, 6.28% and 7.17% BHARs for all four windows [(-2,+2), (-1,+1), (0,+1) and (-1,0) respectively]. Conclusively, our results are not sensitive neither to the method (CARs or BHARs) nor to the event window ((-2,+2), (-1,+1), (0,+1) and (-1,0)) used to analize the short-run performance of takeovers. The rest of the analysis is based on CARs (-2,+2).

[Insert Table 3.4 and 3.5 about here]

3.5.1.1 Announcement Abnormal Returns for Rational and Overconfident Acquirers as Classified by the Stock Options Proxy according to both the Target Status and Methods of Payment

This section presents the evidence relating to the short-term bidder performance for acquisitions announced by rational versus overconfident managers as classified by the stock options proxy. Malmendier and Tate (2008) support the view that managers that hold their stock option grants until the last year before the expiration date of the contract are considered to be overconfident. As outlined earlier, we also control for the target firm’s listing status and the method of payment used.

Table 3.6, Panel A reports the five-day CARs obtained by rational and overconfident managers for the whole sample. Acquiring companies governed by rational managers obtain 1.26%, statistically significant abnormal returns surrounding the announcement date of the acquisition, while their overconfident counterparts generate only 0.16% abnormal returns, statistically insignificant. The mean difference is 1.10% statistically significant at the 5% significance level. In other words, rational managers create 1.10% more value for their shareholders around the announcement date of a takeover than overconfident ones do. Furthermore, when controlling for the method of payment used to finance the takeovers, we observe that rational managers outperform overconfident ones across all different methods of payments, including cash (0.79% for rational versus 0.08% for overconfident managers) and mixed (1.72% for rational versus 0.56% for overconfident managers). It is interesting to note the large difference between rational and overconfident bids in the case of stock exchanges. The negative abnormal returns (-0.91%) observed for the whole stock options subsample for stock exchanges is mainly driven by the very negative performance of overconfident managers (-3.36% statistically significant at the 15% significance level) against the marginally positive (0.37%) performance of rational bidders. This large difference (3.73%) between the two sample means is statistically significant at the 15% significance level despite the small number of observations (23 for rational and 12 for overconfident bids). So far, our results indicate that the market views bids undertaken by rational managers more favorably than those undertaken by those classified as overconfident. To further confirm these results, we differentiate our sample according to the target's listing status in order to examine the case of private and public takeovers separately.

[Insert Table 3.6 about here]

Table 3.6, Panel B presents the performance for bidders who acquire private targets. Rational managers achieve 1.61% significant abnormal returns while overconfident ones generate only 0.72% gains. The mean difference is 0.90% and is statistically significant at the 10% level of significance. In addition, when examining the different methods of payment used, we notice that rationally behaved managers outperform overconfident ones in all cases, although the differences are only economically significant. Regarding acquisitions for public targets, we would expect bidders to suffer losses given the existing literature. Furthermore, after incorporating the hubris hypothesis, the market reaction should be even more negative for acquirers managed by overconfident CEOs. Table 3.6, Panel C illustrates on average negative abnormal returns for rational bidders (-1.09%) and an even more negative performance for overconfident ones (-2.22%). This evidence indicates that rational managers destroy less value for their shareholders in support of hypothesis one. Nevertheless, the mean differences between the rational and overconfident deals (1.14%) are only economically significant. Despite the small number of observations for stock acquisitions (13 for rational and 8 for overconfident), the mean difference between rational (0.10%) and overconfident deals (-5.24%) is statistically significant at the 15% significance level. The market depicts a significant underreaction to overconfident managers who bid for public targets offering stock as a means of payment. A possible explanation is provided by Myers and Majluf (1984) who explain the information hypothesis. It writes that companies that offer stock as a means of exchange in order to acquire public targets are perceived to be overvalued. The market underreacts to such news and our findings indicate that the market underreacts even more when overconfident managers take this action.

Conclusively, the results indicate that the market reaction is more positive or less negative to deals announced by rational rather than overconfident managers irrespective of the target's status and the method of payment used. Additionally, the statistically significant mean differences in the private targets sub-sample against the economically significant mean differences in the public one suggests that the phenomenon of overconfidence is more pronounced when manager's are bidding for private targets. This is not surprising if we consider the fact that information asymmetries are more intense for private firms. Managerial abilities and skills are therefore highly crucial in the valuation of these privately—held targets. It means that managers need to engage their personal estimations and evaluations to a higher extent and therefore overconfidence should be, and is, more pronounced when CEO's bid for privately held target firms.

3.5.1.2 Announcement Abnormal Returns for Rational and Overconfident Acquirers as Classsified by the Stock Options Proxy according to the Other Bidder and Deal Characteristics

We further control for the rational-overconfident effect by accounting for various bidder and deals characteristics that have been documented in the literature as influential factorsaffecting the bidder's performance. We divide our sample into sub-portfolios according to the acquiring firm's MTBV, size (MV) and the relative size between the acquirer and the target firm. Furthermore, we investigate whether the bidders acquire a domestic (U.K.) or a foreign company and also whether the target firm is in the same or different industry from the bidding firm.

Rau and Vermaelen (1998) show that value firms (low MTBV ratio) underperform glamour firms (high MTBV ratio) in the short-run. However, this relationship is reversed in the long run supporting the notion that the good past performance of glamour firms is not persistent in future, especially in the case of a corporate takeover. Rau and Vermaelen (1998) explain their results based on the extrapolation hypothesis. It writes that managers in glamour firms may attribute the high past performance of the firm to their own personal abilities and skills and may thus act out of overconfidence and hubris in the future having adverse consequences for the shareholders involved through destroying value for the firm. In spite of the fact that Sudarsanam and Mahate (2003) for a U.K. study find similar results in the long run, in the short run they show that value U.K. bidders perform better than glamour ones. Irrespective of the contradiction between these two studies, we would expect rationally behaved managers to outperform overconfident ones among value and glamour companies respectively.

Table 3.5, Panel A illustrates the CARs for value companies. Value companies with rational managers slightly outperform (0.31%) value companies with overconfident managers with a difference which is only economically significant. A similar result is found for private targets while the reverse is true for public targets. On the other hand, it becomes more obvious and pronounced that the phenomenon of overconfidence plays an important role in explaining bidders abnormal returns among glamour firms (Panel b, Table 3.7). Panel B demonstrates the five-day CARs for high MTBV firms (glamour). Rational bidders obtain positive abnormal returns (1.36%) around the announcement day while overconfident ones suffer losses (-0.66%). The mean difference is 2.02%, statistically significant at the 1% significance level. The same pattern holds for private and public deals. Rational bidders that bid for private target firms perform better than overconfident ones by 1.46%, statistically significant at the 5% significance level, while rational managers who acquire public targets obtain abnormal returns of –0.99% and are in a better position when compared with the very negative and marginally significant performance of overconfident directors (-5.27%). Nevertheless, the mean difference is only economically significant. Similar results are reported for the various methods of payment, except for stock deals in which the number of observations is very low. Conclusively, overconfidence is more pronounced in glamour firms. With this in mind, our findings contribute to the Rau and Vermaelen (1998) and Sudarsanam and Mahate (2003) puzzle. It is not necessarily that glamour bidding firms outperform value ones or vice versa. Rather it may be that glamour firms governed by rational directors (1.36%) outperform value rational firms (1.15%) while glamour overconfident firms (-0.66%) underperform value overconfident ones (0.85%). Firms with good past performance and high returns are not necessarily driven by overconfidence. But when managers infected by hubris lead such companies, overconfidence is amplified and the short-run performance can be highly destructive. Furthermore, the stock options proxy may not be able capture the overconfidence trait for value firms. Value firms have low growth opportunities and low MTBV ratios. The stock price is low relative to the book value. Therefore, managers may justifiably wait for some time until the firm's growth further and the stock prices increases. Consequently, managers may not exercise their stock options on justifiable basis. Conversely, the stock options proxy is an ideal proxy to capture overconfidence in glamour firms (high MTBV ratios). A rational manager should know that the firm's stock price is high enough to exercise his/her stock option grants. His/her anticipating for the stock price to increases more and more due to his/her abilities is highly likely to be driven by overconfidence.

[Insert Table 3.7 about here]

In terms of the size effect, Moeller, Schlingemann and Stulz (2004) find that small acquirers outperform large ones by 2%, irrespective of the method of payment and the target's listing status. A number of explanations have been put forward to help explain this size effect and the difference in abnormal returns between small and large firms. Among these explanations, one claims that managers infected by hubris may be responsible for this outcome. Managers' incentives in small firms are believed to be better aligned with those of the shareholders' interests. This is largely because managers in small firms have a higher proportion of stock ownership than those in large firms (Demsetz and Lehn (1985)). Conversely, managers in larger firms seem to have a tendency to be victims of overconfidence and the hubris effect. Influenced by factors such as their social status, the fact that they have grown the companies large as well as the fact they can use the company's power and the resources to proceed with fewer difficulties in acquisitions, managers in larger firms are more prone to attribute the success of the firm's investment projects to their own abilities, subsequently underestimating the possible risks involved in the takeover pursued.

Table 3.7, Panel C illustrates the five day CARs for managers who run small bidding firms. Rational managers enjoy 0.94% (1.92% for rational and 0.98% for overconfident) more abnormal returns than their overconfident counterparts. The mean difference between rational and overconfident managers for private deals (1.12%) is statistically significant at the 15% significance level while there is no statistical difference between rational and overconfident public deals. In terms of the method of payment, it is worth noting that despite the small number of observations for stock bids, the 5.01% statistically significant difference between the two types of managers is impressively large, mainly driven by the very bad performance of overconfident directors (-5.55% statistically significant). We also examine large acquiring firms. In Table 3.7, Panel D, the 1.44% statistically significant difference (5% significance level) shows that the phenomenon of overconfidence is stronger amongst managers in larger firms. This becomes even more obvious when we notice the abnormal returns earned by each group of managers. Overconfident managers seem to destroy value for their shareholders (-0.80%) while their rational counterparts enjoy small but significant profits (0.64%). Similarly, controlling for private, public, cash, stock and mixed bids, the same pattern robustly holds with economically significant differences (Note: for private deals, the differences are also statistically significant at the 15% significance level). It is evident that the overconfidence phenomenon is more profound in the portfolio of large firms. Our findings are in line with the results of Moeller et al. (2004). The rational managers of small firms (1.92%) outperform the rational managers of large firms (0.64%). Similarly the overconfident managers of small firms (0.98%) outperform the overconfident managers of large ones (-0.80%). It is shown that rational managers in small firms have the best performance while the overconfident CEO's of large firms perform the worst. This indicates that the size effect exists for all the reasons as offered by Moeller et al. (2004). However, the overconfidence phenomenon cannot be ignored.

The results show that along with the other effects accepted, overconfidence can also be used to explain part of the bidders' abnormal returns.

An additional parameter that has been shown to affect bidders' abnormal returns is the relative size of the deal. Asquith, Bruner and Mullins (1983), Jensen and Ruback (1983) and Fuller et al. (2002) report that the relative size between the acquirer and the target firm can explain part of the abnormal returns reported. More specifically, they support the view that the higher the size of the bidding firm compared to the size of the target firm, the higher the abnormal returns for the bidder around the announcement date. In other words, there is a positive relation between the relative size of the deal and the abnormal returns earned by the acquiring firm.

Table 3.7, Panel E shows the five day CARs for low relative size ratio acquirers. The 0.90% gains earned by rationally managed firms compared with the 0.38% for those managed by overconfident CEO's shows that rationally managed companies perform slightly better. The same pattern appears to hold even when we further differentiate the sample controlling for private deals. However, a reversal for public deals is observed. In terms of the method of payment, all the mean differences are highly insignificant. Panel F illustrates the five-day CARs for high relative size deals. Rationally behaved managers generate positive and significant returns (1.65%) for their shareholders while their overconfident counterparts obtain no gains (-0.03%). The mean difference between rational and overconfident managers (1.68 %) is highly significant (5% significance level) Similarly, rational bidders perform better for private, cash and stock deals while there are no significant differences for public or mixed offers.

A large percentage of the acquisitions that are executed in the U.K. market are cross-border deals. Cross-border M&As are an easy vehicle to allow U.K. companies to invest abroad (Foreign Direct Investment) whilst they also serve as an efficient way to exploit the benefits of diversification (Doukas and Travlos (1988)). Although, diversifying across countries should prove beneficial for the shareholders of the bidding firm, the empirical evidence at this stage remains inconclusive[22]. To examine whether

[22] Moeller and Schlingemann (2005), Eckbo and Thorburn (2000) and Goergen and Renneboog (2004) support the view that acquirers enjoy less abnormal returns when they acquire foreign target firm, while

overconfidence plays a role, we control for the phenomenon within domestic and foreign deals. Table 3.7, Panel G presents the CARs for acquirers that bid for firms that operate domestically (U.K.). Rational managers generate 1.25%, statistically significant returns, while overconfident ones enjoy only 0.46% insignificant gains. The difference is 0.80% and is only economically significant. Economically significant differences in favor of rational acquirers are observed after controlling for the target firm's listing status and the method of payment. The only statistical difference obtained is for stock acquisitions (5.13%) at the 10% significance level.. Similar but stronger and more intense results are observed for bidders who acquire foreign (non-U.K.) target firms. Table 3.7, Panel H demonstrates the five day CARs for cross-border acquisitions conducted by rational and overconfident managers. The difference between rational and overconfident managers (1.80%) is much higher and statistically significant at the 5% significance level in the case of foreign takeovers. Rational bidders generate positive and significant abnormal returns (1.27%) while overconfident managers suffer losses (-0.53%). We obtain more or less the same results, statistically significant at the 5% level, for private target acquisitions (1.29% for rational and -0.53% for overconfident). Rational managers keep generating higher returns following the announcement of a deal for public targets as well as cash or mixed deals, although the differences are insignificant. Due to the small number of observations for stock-financed deals, we cannot draw any meaningful inferences from the results in this case.

The above results provide evidence for our hypothesis, especially in the case of foreign acquisitions. Overconfident managers who are involved in cross-border acquisition generate the lowest abnormal returns for their shareholders. Additionally, our results are consistent with Moeller and Schlingemann's (2005) explanation given for the underperformance of bidders involved in cross border acquisitions. They support the notion that an increase in integration followed by a reduction in cost may provide good grounds for an increase of hubris. This becomes even more apparent if we compare domestic with foreign acquisitions. Rational bidders generate more or less similar abnormal returns whether they bid for domestic or foreign acquisitions while the

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Wamsley, Lane and Yang (1983) claim that acquiring foreign companies is more profitable for bidding firms.

negative performance of foreign acquirers is predominantly driven by the negative performance of overconfident managers.

Finally, we control for acquisitions of targets operating within the same or different industry to the acquiring firm. The existing literature argues that diversification has adverse results for the shareholders of the acquiring firm. Doukas and Kan (2004) report that there are reductions in cash flow and valuation discounts in cases where bidders choose ‘unrelated’ (diversifying) targets. Similarly, Berger and Ofek (1995, 1996) and Servaes (1996) report that there are no diversification benefits to be achieved and acquirers may create less profit from diversifying targets. At this stage, it is worth mentioning the explanation offered by Hadlock, Ryngaert and Thomas (2001). They argue that it is more likely that diversified companies are governed by managers who have the tendency to overinvest. Overinvesting is one of the main drawbacks in the behavior decision-making of overconfident managers. Table 3.7, Panel I presents the five-day CARs for bidders that opt to acquire firms in industries other than their primary sector. Rational managers earn 1.36% significant abnormal returns for their shareholders while overconfident ones generate only 0.20% gains. The difference of 1.15% is statistically significant at the 15% significance level. The same pattern seems to hold for private and public targets as well as for cash, stock and mixed deals. This evidence provides support to the overconfident hypothesis as well as lending support to the postulations of Hadlock, Ryngaert and Thomas’ (2001) who predict overinvestment by firms who opt for diversifying targets. Similar evidence is provided in Table 3.7, Panel J for non-diversifying acquisitions.

In summary, we observe that managers who hold their stock options until the last year before the expiration date systematically underperform those who exercise their options well in advance around the announcement of the acquisition date. After controlling for various bidder and deal characteristics, we show that the phenomenon of overconfidence is more pronounced for acquisitions of privately held targets than for listed target firms. We reason that information is more likely to be limited for privately held targets. As a result, managers are required to engage their own personal skills and judgment in the valuation process of the target firm. In the setting of UK M&A deals, whereby privately-held firms constitute the majority of the targets purchased, overconfidence can be more clearly detected if managers are infected by hubris. The evidence additionally indicates that overconfidence seems to be more prominent for glamour and large acquirers as well as for managers operating abroad and acquiring firms in industries other than the one in which their company primarily operates.

3.5.1.3 Announcement Abnormal Returns for Rational and Overconfident Acquirers as Classified by the Multiple Acquirer Proxy stratified by the Target Status and Method of Payment

One of the drawbacks of examining a sensitive issue such as managerial overconfidence is securing the correct measure to capture the existence of this human irrationality. For robustness reasons, and to ensure that the results are not sensitive to the choice of the measure employed, we employ a second proxy, termed multiple acquirers. This section presents the five day acquirers' CARs for managers who engage in multiple (at least five acquisitions within three years) deals against those who perform less acquisitions.

Table 3.8 reports the performance of rational and overconfident managers as classified by the multiple acquirers proxy. The results for the whole sample favour deals undertaken by rational managers. Table 3.8, Panel A shows that the market views takeovers undertaken by rational managers more favorably with a statistically significant outperformance at the 1% significance level over overconfident managers of 0.77% (1.65% for rational managers and 0.88% for overconfident ones). Similar findings emerge after controlling for the method of payment used. Rational managers earn 0.93%, 1.17% and 0.52% more than overconfident managers do for cash, stock and mixed bids respectively. The initial view indicates that the results support our main hypothesis, inferring that rationally behaved managers create more value than overconfident ones do.

[Insert Table 3.8 about here]

To further test our hypothesis, we split the sample on the basis of the target status. The evidence suggests that rational managers continue to outperform overconfident ones earning 1.10% more abnormal returns, a difference which is statistically significant at the 1% significance level (Table 3.8, Panel B). This is robust after controlling for the method of payment. Rational managers earn 0.88%, 6.40% and 0.79% more than overconfident ones do for cash, stock and mixed bids respectively, all of which are also statistically significant at the 1% and 5% significance levels. This evidence is in line with Doukas and Petmezas (2007) as well as supporting the hypothesis of this work. We notice that the highly positive abnormal returns of stock offers in the entire private sample (7.46%) are mainly driven by the outstandingly high performance of rational managers (8.79%).

The above pattern does not seem to be so strong for acquisitions for listed target firms. The results prove to be mixed. Rational managers outperform overconfident ones by 2.13% (statistically significant at the 10% significance level) only in cash acquisitions (Table 3.8, Panel C). However, in the overall sample for public acquisitions, rational managers invoke higher losses for their shareholders than overconfident ones do, driven predominantly by the exceedingly poor performance of rational managers conducting stock-financed acquisitions (-2.96%).

There are several possible explanations to support these findings. In public firms there is less information asymmetry in terms of the target firm. It is much easier for managers to estimate and evaluate their target firms. In the case of acquiring a privately-held target, the task of evaluation becomes more ambiguous. This indicates that in private acquisitions, managers should depend more on their personal estimations and beliefs. As a result, the outcome of their decisions is more likely to be influenced by the confidence/overconfidence inherent in their personality. Not only this, but it is reasonable to suggest that managers may act more rationally in the case of public acquisitions as they are able to think and plan more carefully based on publicly available information before undertaking such serious corporate decisions.

At this stage, it is useful to clearly distinguish the difference between the hubris hypothesis and the agency cost theory. In the latter, empire builders who act for their own interest may be more prone to acquire to acquire large, listed target firms. However, overconfident managers infected with hubris believe that since they act on behalf of their shareholders' interest, they resultingly may be more careful when considering a public, large takeover. Our proxies attempt to capture overconfident managers, not empire builders.

3.5.1.4 Announcement Abnormal Returns for Rational and Overconfident Acquirers as Classified by the Multiple Acquirer Proxy according to the Other Bidder and Deal Characteristics

This section examines the short-run performance of multiple versus single acquirers while controlling for various bidder (i.e. MTBV, size) and deal (i.e. relative size, cross-border and diversifying) characteristics.

Table 3.9, Panel A shows the five-day CARs for low M/B firms (value firms). Single acquirers (rational) earn 2.12% abnormal returns while multiple (overconfident) bidders only generate returns of 0.94%. The mean difference (1.17%) is statistically significant at the 1% significance level. The same pattern holds for acquisitions of private targets whilst also for deals financed using either cash or mixed sources. There is no significant difference for stock-financed deals. Additionally, rational managers conducting public acquisitions generate lower abnormal returns than those classified as overconfident undertaking acquisitions of publicly listed targets (insignificant difference).

In Table 3.9, Panel B we examine the performance of high M/B ratio firms (glamour firms). The results indicate that rational managers of glamour firms earn 1.16% abnormal returns while those classified as overconfident generate 0.82% abnormal returns. Similar results with small differences between the two groups are observed for acquisitions of both private and public targets whilst also for all methods of financing (i.e. cash, stock and mixed). In general, for the overall sample and for bids announced to acquire privately-held targets, rational managers create more value for their shareholders, both in glamour and value firms, with statistically significant differences for the latter.

[Insert Table 3.9 about here]

As noted ealier, the existing literature suggests that small acquirers outperform large acquirers (Moeller, Schlingemann and Stulz (2004)). We revisit this issue controlling for the overconfidence phenomenon using the multiple acquirers proxy. Table 3.9, Panel C presents the five-day CARs for small bidders. The findings show that the overall performance of bidders indicates that the market rewards rational bids (2.58%) by 1.56% more abnormal returns, statistically significant at 1%, than those announced by overconfident managers (1.02%). Similar results with large mean differences are obtained for acquisitions of private targets whilst also for cash and mixed-financing (differences of 1.78%, 1.65%, and 1.35% respectively, all statistically significant). Rational managers using stock-financing generate higher abnormal returns but the mean difference is insignificant while there is no economical or statistical difference between single and multiple acquirers for takeovers of listed firms.

Table 3.9, Panel D illustrates the five-day CARs for large firms governed by rational and overconfident managers. In general, we can note that there are very small and insignificant differences between the rational and irrational managers in the subsample of large firms. As a result we cannot reach any meaningful conclusion about the overconfidence effect in this respect.

Our analysis continues for the overconfidence effect based on the relative size of the deal. Table 3.9, Panel E reports the abnormal returns for low relative size deals. Rational managers outperform, or at least marginally outperform, overconfident ones by 0.25%, 0.23%, 2.32%, 0.44%, 3.01% and -0.31%, all statistically insignificant, for the entire sample of private targets, public targets, cash, stock and mixed financed deals respectively. Stronger evidence for the overconfidence hypothesis is presented when controlling for the high relative size portfolio. Table 3.9, Panel E shows that rational managers (2.33%) earn 0.90% (statistically significant at the 10% significance level) more abnormal returns for their shareholders than their overconfident counterparts (1.43%). Higher mean differences of 1.46%, statistically significant at 1% significance level, are observed for unlisted target acquisitions while the opposite occurs for acquisitions of listed firms. Single acquirers underperform those which conduct multiple deals by 1.53% abnormal returns, statistically significant at the 15% significance level. Comparable differences are observed for cash and mixed-financed bids, while single and multiple acquirers perform equally well for stock-financed acquisitions. In line with the stock options proxy, we find there to be only a statistical difference between the two types of managers for high relative size deals.

Table 3.9, Panel G illustrates the bidder gains for managers who acquire companies in the same country (U.K.) (i.e. domestic acquisitions) against those who acquire in countries outside of the U.K. (foreign/cross-border acquisitions). Both rational and overconfident managers generate positive and significant abnormal returns (1.68% and 0.94% respectively) but rational ones earn 0.74% (statistically significant at the 5% significance level) more than their overconfident counterparts. The same pattern holds for private-target bids and also for cash and mixed financed acquisitions, with all of the differences being statistically significant. For public listed target and stock-financed deals, rational managers seem to suffer higher losses, but the differences are statistically insignificant. The pattern is similar for cross-border acquisitions (Table 3.9, Panel H). In the overall sample, rational managers obtain positive and significant abnormal returns (1.59%) whilst overconfident ones also display positive and significant returns (0.76%). Overconfident managers are outperformed by those deemed to be rational by 0.83%, a difference which is marginally significant at the 10% significance level. Similar performance is observed for bids to acquire unlisted targets while in public target acquisitions, both types of managers perform equally poor, obtaining small and negative returns, although they are statistically insignificant. No statistical differences are observed for cash or mixed financed offers. Once again, the number of stock-financed deals is low and thus it is not possible to draw any reasonable inferences from these acquisitions. However, we can see that after controlling for domestic and foreign acquisitions, the above results are consistent with the main hypothesis of this work concerning overconfidence.

Finally, we examine deals whereby a firm acquires another that belongs to the same or to a different industry as themselves. Table 3.9, Panel I shows that rational managers who choose a target firm from an industry other than the one in which they predominantly operate enjoy 1.73% positive and significant profits. Moreover, those same deals conducted by overconfident managers obtain 1.06% positive and significant profits, an underperformance of 0.67% when compared to those of rational managers.

Rationally managed bidders acquiring privately-held targets enjoy 2.10% abnormal returns, 0.93% higher than those obtained by overconfident managers (0.93%). Both differences are statistically significant at the 10% and 5% significance levels respectively. No statistical differences are observed for deals of publicly listed targets or after we control for the method of payment used.

The same pattern holds for non-diversifying acquisitions whereby the bidder and target operate in the same industry (Table 3.9, Table J). Rational managers in the overall sample earn 0.87% abnormal returns. For private targets they earn 1.27% and for bids to acquire publicly listed targets, rational managers generate 0.45% more abnormal returns than overconfident ones do. The differences are statistically significant for the overall sample and for acquisitions of private targets. Similar evidence is observed after controlling for the different methods of payment used. The overall results indicate that both portfolios, for diversifying and non-diversifying bids, support our hypothesis. This result is consistent with the existing literature, with the exception of publicly listed target bids.

In conclusion, after employing the multiple acquirers proxy to classify managers who perform multiple acquisitions in a short period of time as overconfident, we observe that, in general, firms which are governed by rational managers create more or destroy less value for their shareholders than overconfident managers do. This evidence is consistent with both our earlier proposition as well as with the existing literature ((Malmendier and Tate (2008), Doukas and Petmezas (2007)). The performance of rational versus overconfident managers is persistent after controlling for the various methods of payment, for portfolios according to the M/B ratio, the bidder's size, the relative size of the deal and to whether or not the acquirer is bidding for a target in the same or different industry or country as themselves. The multiple acquirers proxy shows that the difference between rational and overconfident managers is more pronounced in high relative size deals, in domestic, foreign, diversifying and non-diversifying deals. Finally, the overall superior performance of rational bidders can be attributed to the superior performance of rational bidders in private acquisitions, while insignificant results are found for deals of public targets. We infer that it may be reasonable to assume that managers may act more rationally in the case of public acquisitions as they have more available information with which to use to think and plan more carefully than they have at their disposal for private target acquisitions. As noted earlier, the hubris hypothesis has a different theoretical background to the agency cost theory. Empire builders may be more prone to acquire large, listed companies who act predominantly to maximize their own personal utility. However, overconfident managers believe that they act for their shareholders' best interests and as a result may be more careful when considering a the acquisition of a listed firm. Our proxies attempt to capture overconfident managers, not empire builders. Moreover, and most importantly, there is less information asymmetry for the acquisition of listed targets. It is much easier for managers to estimate and evaluate these target firms. The task of evaluation becomes more difficult and increasingly ambiguous in the case of deals to acquire privately-held firms. This suggests that in private target acquisitions, managers depend much more on their own personal estimations and beliefs, resulting in their decisions being more likely to be influenced by the confidence/overconfidence they exhibit in their personality.

3.5.1.5 Announcement Abnormal Returns for Rational and Overconfident Acquirers as Classified by the Business Press Proxy according to the Target Status and Method of Payment

Overconfidence is a debatable and sensitive issue, which as noted is hard to truly capture. To avoid proxy biases and to ensure that the results are not sensitive to the choice of measure used, we employ a third proxywhich serves as an additional robustness test. The proxy employed in this section is the Business Press proxy. It is based on the characteristics attributed to the managers by the press. Following Malmendier and Tate (2008), we identify the management of the firms as rational or overconfident by counting the number of articles describing them as either[23]. The number of observations obtained for this proxy is relatively smaller compared to the other two proxies examined. The small number of observations for this proxy may be attributed to the limited number of articles we manage to obtain portraying managers as rational. Journalists and newspapers have the tendency to emphasise and focus on the optimistic and overconfident side of the managers without giving the same importance

[23] See the Data and Methodology section for further clarification.

for rational corporate decisions. This section discusses overconfidence using this third proxy controlling for the same bidder and deal characteristics as before.

[Insert Table 3.10 about here]

Table 3.10 illustrates the overall performance of bidding companies for the deals obtained for the Business Press Proxy. When dividing the sample into rational and overconfident managers, we observe that rational directors obtain 1.28% positive and significant abnormal returns while their overconfident counterparts generate only 0.62% positive and significant returns (Table 3.10, Panel A). Furthermore, this remains true for bids to acquire private targets (Table 3.10, Panel B). Both types of managers obtain positive CARs (2.02% and 1.29% for rational and overconfident managers respectively) but rational managers achieve 0.73% higher returns. Likewise, for public target acquisitions (Table 3.10, Panel C), both types of managers suffer losses (1.36% and -3.37% for rational and overconfident managers respectively) but rational managers destroy less value (2.01%) for their shareholders. These differences are economically but not statistically significant. These findings further reinforce our main finding that rational managers create more or destroy less value compared to their overconfident counterparts.

3.5.1.6 Announcement Abnormal Returns for Rational and Overconfident Acquirers as Classified by the Multiple Acquirer Proxy according to the Other Bidder and Deal Characteristics

This section discusses rational and overconfident managers' firm performance as classified by the business press proxy,controlling for various bidder and deal characteristics (Table 3.11). Table 3.11, Panel A reports the five-day CARs for the two types of managers for low MTBV ratio firms (value firms). Rational managers outperform those infected by hubris by 0.69%, 0.76%, 1.73%, 0.31%, -0.95% and 1.34% for the full sample and for acquisitions of private and public targets, with cash, stock and mixed financing respectively. All mean differences are statistically insignificant. The overall finding remains robust after examining the performance of glamour bidders (high MTBV ratio) (Table 3.11, Panel B). Overconfidence affects bidders' shareholder wealth by 0.54%, 1.89% and 1.95% for the overall sample as well as for bids to acquire unlisted and listed targets respectively. However, insignificant differences are obtained when controlling for the method of payment.

Table 3.11, Panels C and D present the results regarding the size effect. Moeller, Schlingemann and Stulz (2004) suggest that small firms perform better on average than larger ones do. By splitting the sample into small and large firms, we isolate this factor and examine overconfidence as classified by the Business Press Proxy. Table 3.11, Panel C reports the five day CARs for small firms. Rational managers obtain 1.22%, 0.98% and 4.10% more abnormal returns for their shareholders than managers affected by hubris for the overall sample as well as for deals for private and public targets respectively. These differences are economically but not statistically significant. Although, the mean differences are smaller and insignificant between the two types of managers in the large firms sample (Table 3.11, Panel D), they still favor rational managers. The negative effect of the existence of managerial overconfidence appears to hold after controlling for the bidders size.

The relative size between the bidder and target is another deal characteristic shown in the literature to affect the bidder’s performance. The higher the relative size of the deal, the higher the abnormal returns for the bidders’ shareholders (Asquith, Bruner and Mullins (1983)) that are generated.Table 3.11, Panel E presents the performance of low relative size deals. No significant statistical or economical difference is observed for bidders managed by either rational or overconfident managers after controlling for both the target firm’s status and for the method of payment employed. Conversely, overconfidence is shown to be more pronounced in high relative size deals (Table 3.11, Panel F). Rational managers obtain 1.75% abnormal returns, an outperformanceof 1.45% over overcfonident managers (marginally statistically significant at the 10% significance level), who earn 0.30% abnormal returns. Similarly, for private target bids, the difference between the two types of managers is 1.83%, statistically significant at the 10% level. Despite the relatively small number of observations for public bids (35 and 35 observations respectively), rationally managed firms lose 2.45% (statistically significant at the 15% significance level) less than firms infected by hubris. In high relative size ratio acquisitions, we find strong evidence indicating that overconfident managers perform much worse than rational ones do, consistent with the results as obtained using the earlier two proxies.

[Insert Table 3.11 about here]

Table 3.11, Panel G and H present the performance of bidders who acquire targets which operate within the same country of origin (U.K., domestic bids) or outside of it (foreign bids) respectively. Panel G, Table 3.11 shows that rationally behaved managers earn 1.97% positive and significant returns for their shareholders, 1.37% (marginally statistically significant at the 5% significance level) more than the performance of managers infected by hubris (0.60%). Similar evidence is obtained when controlling for the target status. Rational directors generate 1.18% (marginally statistically significant at the 10% significance level) for private target bids or destroy 2.87% less (economically significant) for bids to acquire public target. Regarding foreign takeovers (Panel H, Table 3.11), there are small and insignificant mean differences between rational and overconfident bidders.

The performance of rational versus overconfident managers does not change after controlling for firms expanding within the same or different industries from the one in which they mainly operate. Table 3.11 shows that managers infected by hubris and choose targets operating in other industries to their own in order to expand their activities perform 0.30%, 1.32% and 1.33% worse than rational managers do for all, private and public target bids respectively. This remains the true for non-diversifying acquisitions. Rational companies keep performing better, achieveing 1.02%, 1.04% and 2.55% higher returns for all, private and public target bids respectively. The outperformance of rational managers continues to remain robust even after controlling for the target industry.

In general, despite the small number of observations obtained for the business proxy, it provides extra support to the findings presented so far by the other two proxies. Employing this proxy as well, we further certify that the results presented are not subjective or sensitive to the choice of proxy. After controlling for various bid and acquirer characteristics, the overall finding suggests that the market views takeovers undertaken by rational managers more favorably than those announced by overconfident ones. In many cases for this proxy, the mean differences may be insignificant but the small number of observations is offered as a likely explanation.

3.5.1.7. Summary of Short-Run Results

This section has presented the performance of bidders' surrounding the announcement date of a takeover for both rational and overconfident managers. Three different proxies have been employed to measure the human characteristic of overconfidence to ensure the reliability and robustness of the results. To conclude, the results show that in most deals, there is a significant difference in the bidder gains generated by firms that are governed by rational versus overconfident managers. Rational directors have been found to generally create more or destroy less value for their shareholders than those infected by hubris, irrespective of the method of payment chosen or the target status.

Additionally, we identify several patterns in the CARs. Irrespective of the bidder's past performance (i.e. good or bad performances, or in other words glamour or value firms respectively), the results indicate that rational bidders generate superior abnormal returns. Moreover, overconfident managers in glamour firms create the least value for their shareholders. These results are consistent among all three proxies used. The evidence indicates that it is not necessarily true that firms with good past performance and high past returns (glamour firms) underperform firms with poor past performance (value firms). Rather, the glamour bidders performances is infected by the hubris of their managers. The separation between rational and overconfident managers, as conducted in this chapter, indicates that the phenomenon of overconfidence is both magnified and triggered by directors infected by hubris who manage glamour firms.

Regarding the size of the bidder, we notice that the size effect has a stronger influence in explaining the bidder's abnormal returns once the rationality of the manager has been controlled for. In the existing literature, small firms have been shown to outperform large ones (Moeller, Schlingemann and Stulz (2004)). We find similar results and additionally show that small rationally managed firms perform better than large firms managed by overconfident CEO's, who exhibit the worst performance. Similarly, when controlling for the relative size between the bidder and the target firm, we observe that in high relative size deals, overconfident managers generate the least abnormal returns. In other words, the higher the size of the target firm in relation to the bidder, the higher the impact made by overconfidence on the bidders' abnormal returns. Furthermore, when this impact is negative, then even more negative returns are observed. Irrespective of the type of takeover (i.e. whether they acquire a foreign or domestic target firm or indeed whether the deal is diversifying or not), rational managers keep generating superior abnormal returns for their shareholders.

Finally, we have to note that there is some mixed and confusing evidence from the results for public target takeovers, especially in the evidence generated by the multiple acquirer proxy. Mostly, multiple acquirers (overconfident) enjoy higher abnormal returns than single ones (rational) do when bidding for a public firm. This evidence may be attributed to a weakness of the proxy in effectively capturing overconfidence. A possible explanation may be that there is less information asymmetry regarding publicly listed firms and it is therefore much easier for managers to estimate and evaluate the firm in question. The task of evaluation becomes more ambiguous in the case of private firms where the manager does not have information readily available. This means that in private acquisitions managers depend much more on their own personal estimations and beliefs. As a result, the outcome of their decisions is more likely to be influenced by the confidence/overconfidence they may or may not exhibit. This evidence is supported by the economically but not statistically significant difference observed among rational and overconfident managers regarding public acquisitions. Overall, it is clear that overconfidence plays an important role in explaining part of the bidder's abnormal returns earned in the case of M&As.

3.5.2 Multivariate Analysis

The results generated so far in the univariate analysis signify that overconfident managers realise considerably lower announcement returns for their shareholders than rational ones do. However, the univariate analysis does not take into consideration the multiple effects that can impact on the short-run bidders' abnormal returns. For that reason, we adopt a multivariate regression framework whereby the bidders five day

CARs are regressed on a number of explanatory variables that have been proven in the literature to affect bidder's performance, as per the following specification:

$$CAR_i = a + \sum_{i=1}^{N} X_i + \varepsilon_i$$

In regression (1) we include both a dummy that takes the value of one if the target is unlisted and zero otherwise and a dummy that takes the value of one if the acquisition is cash (stock) financed and zero otherwise. To control for the bidder's size effect, the log of the acquirer's market value is modelled. The size of acquirers is measured by the market value one month before the deal's announcement date. Other variables included in the regressions conducted, as indicated by the existing literature, are as follows:

- The bidder's book-to-market value as measured by the bidder's net book value of assets divided by its market value one month before the announcement of the deal.
- A variable to account for the deal's relative size, as measured by the ratio between the target and bidder's size.
- A dummy variable for diversifying deals which takes the value of one 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 one 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.

In addition, other explanatory variables include the acquirer's lagged excess return for 180 days prior to the bid's announcement as well as the market portfolio return (FT-All Share) for the same 180-day period prior to the announcement.

Table 3.12 presents the correlation coefficients of each pair of variable used in the multivariate analysis. The highest correlation observed (0.34) is between the dummy variables of the stock options and the multiple acquirers proxies. However, these two variables are not used in the same regression in the multivariate analysis.

[Insert Table 3.12 about here]

Table 3.13 presents the results of the multivariate analysis for the three proxies of managerial overconfidence. The coefficients of regression (1) show that private target acquisitions (0.032) and the market's returns$_{t-180}$ (0.059) exhibit a positive relationship with the bidder's announcement returns, while the coefficient of size (-0.010) carries a negative and significant sign, consistent with the literature. To capture managerial overconfidence, in regression (2) we include only a dummy variable that takes the value of one if the deal is conducted by a firm's manager who holds stock options until the year before the expiration date and zero otherwise. We refer to this binary variable as a stock options dummy. Consistent with the results from the univariate analysis overconfident bidders as proxied by the stock options dummy have a negative and statistically significant (-0.011) association with the bidder's announcement returns at the 2% level. The significant negative relationship between overconfident managers and bidder's 5-day CARs remains in regression (3), after including all other explanatory variables, at 6% level. The stock options dummy carries a coefficient that takes the value of -0.009, suggesting that the market discounts overconfident bids by about 0.90% over the five-day window.

[Insert Table 3.13 about here]

Similar results are obtained for the multiple acquisitions proxy in regressions (4) and (5) while as expected, given the smaller number of observations, the results are weaker when we use the business press proxy in regressions (6) and (7). More specifically, in regressions (4) and (6) we consider the relationship between the 5-day CARs and overconfident managers as proxied by the multiple acquirers and business press classifications respectively. In regression (4) we include a dummy that takes the value of one if the deal is conducted by a manager who made five or more acquisitions within a three-year period or zero otherwise. The coefficient carries a negative (-0.007) and significant value which supports the predictions of the hubris hypothesis. In regression (6) we include a dummy variable that takes the value of one if the business press characterizes managers using key words such as, 'confident', 'confidence', 'optimistic', 'optimism', 'certain' and 'positive' and classify these individuals as overconfident or zero otherwise. The coefficient is negative (-0.006) but statistically insignificant. In regressions (5) and (7), we include the remaining control variables and we report a significant negative association between the level of bidder returns and managerial overconfidence. More specifically, in regression (5), the multiple acquirer overconfident dummy carries a negative (-0.006) and significant value. Similarly, in regression (7), the respective overconfident dummy for the business press proxy is also negative (-0.010) and significant. In regressions (3), (5) and (7), we control for various explanatory variables and find that the coefficients of the overconfident dummy variable remain negative and statistically significant. Overall, the results obtained from the multivariate analysis confirm the findings of the univariate discussions and further reinforce the negative effect managerial overconfidence exhibits on a bidder's announcement returns, consistent with the predictions of our proposed hypotheses.

3.5.3 Long-Run Analysis

The short run analysis has indicated that overconfident bidder generate significantly lower abnormal returns than rational acquirers do. This evidence holds after controlling for a number of different bidder and deal characteristics. We have attributed this result to the market's anticipation that mergers initiated by overconfident bidders are less likely to result in efficiency and synergy gains. To examine whether the market's reaction to acquisition announcements by overconfident bidders is correctly anticipating their future prospects we investigate their long-term performance.[24] If the market underestimates the synergy gains on offer while overestimating the value destructive effects of actions undertaken by overconfident managers, the firm's long-term performance should improve. If, on the other hand, managerial overconfidence is the driving force behind mergers, then the future performance of firms managed by overconfident CEO's should deteriorate. Intercepts are estimated using the CTPRs approach for one and three years subsequent to the acquisition announcement.

[Insert Table 3.14 about here]

[24] Rau and Vermaelen (1998) argue that the short-term event study analysis of abnormal returns might not capture the full effect of market's reaction.

Table 3.14, Panel A reports the regression results for the stock options proxy. Rational managers generate 0.11% abnormal returns per calendar month for twelve months following the announcement of the deal while overconfident managers suffer significant losses (-0.69%). The mean difference is 0.80%, statistically significant at the 5% significance level, in favour of bids announced by rational managers. Similar evidence is observed for cash-financed deals and for those acquiring privately held targets. Rational cash deals outperform overconfident cash acquisitions by 0.84%, statistically significant at the 10%. The findings also show that acquisitions for private targets announced by rational managers break-even for the twelve months following the deal announcement while private acquisitions announced by overconfident managers suffer significant losses (-0.86%). This difference amplifies for private target acquisitions financed using cash. Rational managers outperform overconfident ones by 1.13% (significant at the 2% level) per calendar month for the twelve months after the deal is announced. We observe no statistical difference for stock and mixed financed deals either for the overall or the private target subsample. The three year post-merger performance shows that rational managers outperform those who are overconfident, but the differences are statistically insignificant for the overall, private and public subsamples.

[Insert Table 3.15 about here]

Table 3.15 illustrates the long-run performance for rational and overconfident managers one year (Panel A) and three years (Panel B) following the announcement of the deal within the various portfolios according to the bidder and deal characteristics. Overall, deals announced by rational managers tend to generate higher monthly returns than those announced by overconfident ones for all ten portfolios (value and glamour, small and big bidders as well as for low and high relative size, domestic, foreign, diversifying and non-diversifying deals). The mean differences are statistically significant for the small (1.35%), big (0.99%), foreign (0.87%) and non-diversifying (1.10%) portfolios. This is also true for the three year post-merger performance (Panel B). Rational managers generate higher monthly returns but we observe fewer significant mean differences.

[Insert Table 3.16 about here]

Table 3.16 analyzes the long-run performance of rational and overconfident managed firms according to the multiple acquirer proxy. Panel A shows that single acquirers (rational) gain marginally more abnormal returns than multiple acquirers do twelve months following the acquisition announcement for the entire sample and also when controlling for the method of payment. The three year post-merger performance reveals that rational managers significantly outperform overconfident ones by 0.47%, 1.09% and 0.53% per calendar month for the entire, cash and mixed samples respectively. No significant differences are observed for stock-financed acquisitions. Similar evidence is observed when controlling for acquisitions of unlisted targets. There are no significant differences for one and three years following the deal (Panel B). Panel C illustrates the long-run performance of public target acquisitions. The one year post-merger performance shows that rational managers for the entire and cash samples significantly outperform overconfident ones by 1.18% and 1.15% respectively. This is also true for cash deals conducted three years after the acquisition. The rest of the mean differentials are in favour of rational managers but are statistically insignificant. In Table 3.17, we control for various bidder and deal characteristics. Rational managers seem to outperform overconfident ones but the mean differences are statistically insignificant twelve months after the deal announcement (Panel A). The only deviation from the pattern observed so far is observed for the small size portfolio. The same results holds for the three years post-merger apart from the big size, low relative size and diversifying portfolios. In these portfolios, rational managers significantly outperform overconfident ones.

[Insert Tables 3.17/3.18/3.19 about here]

Finally, Tables 3.18 and 3.19 illustrate the long-run performance for the business press proxy. We observe that most of the mean differences between rational and overconfident managers are statistically insignificant apart from the overall sample, where there a small reversal is observed. When controlling for the target's listing status (Panels B and C), there are some cases where rational managers marginally outperform overconfident ones or vice versa. However, most of the mean differences are statistically insignificant. Similar evidence is presented when controlling for the various acquirer and deals characteristics as discussed earlier (Table 3.19). The findings presented for the business press proxy are not fully in accordance with the two previous proxies. We do not find a significant outperformance of rational managers relative to overconfident ones. This could be because of various reasons. Firstly, the number of observations collected for this proxy is quite limited. We managed to collect data for only 530 deals. When controlling for various factors, the number of observations in each portfolio reduces significantly. Therefore, the size of this subsample could possibly be a limitation. Secondly, we discussed earlier the possibility of a bias towards overconfidence given the nature of press articles, and in general, this proxy may not be the most appropriate to use in order to capture overconfidence.

Overall, apart from the business press proxy which does not provide a clear and significant indication of the performance of the two types of managers, the stock options and the multiple acquirer proxies suggest that the initial market reaction remains consistent in the long-term as well, inferring that the market correctly reacts at the time of deal announcement. In the short-run, acquisitions announced by rational managers are favoured more than those announced by overconfident managers. We hypothesized earlier that if the market underestimates the synergy gains and overestimates the value destructive effects of actions undertaken by overconfident managers, there should be a long-run reversal whilst if managerial overconfidence is the driving force behind mergers, then the future performance of these bidders should continue to deteriorate. The stock options and the multiple acquirer proxies suggest that the initial market response holds in the long-run providing extra support to our hypothesis that overconfident managers destroy more, or create less value, for their shareholders than rational ones do.

3.6 Conclusion

Mergers and Acquisitions are motivated either for synergy gains (Jensen and Ruback (1983)), empire building motives as suggested by the agency theory (1986) or by hubris (Roll (1986)). The hubris hypothesis suggests that markets are rational and managers engage in acquisitions with an overly optimistic attitude believing that due to their own abilities, they can create value through potential synergies. Investor overconfidence has extensively drawn the attention of the literature both on an empirical and theoretical bias. However, there is limited empirical evidence on managerial overconfidence and evidence is limited to the US market (Malmendier and Tate (2008), Heaton (2002)). The hubris hypothesis posits that overconfident managers who engage in corporate takeovers tend to create less or destroy more value than their rational counterparts.

This study employs three hand-collected proxies used for the first time for the UK markets. The stock options proxy is based on CEO compensation packages. Managers who hold their stock option grants until the last year before the expiration date are classified as overconfident. The multiple acquirers proxy suggests that individual CEOs (not firms as has been used in other studies) who perform five or more acquisitions within three years are classified as overconfident. Finally, the business press proxy takes into consideration the way the media portray managers. Those described as overoptimistic and overconfident are classified as overconfident.

The UK M&As market is an ideal testing ground for the behavioural trait of overconfidence. It is the most active merger market following the US. Among European countries, the 65% of the takeover activity takes place in the UK (Doukas and Petmezas (2007)). Furthermore, almost 90% of acquisitions involve private targets (Draper and Paudyal (2006)). Information is limited regarding privately held firm. It is much more difficult for managers to estimate and evaluate their target firms and the task of evaluation becomes more ambiguous. Hence, overconfidence is more prominent. Moreover, the vast majority of the method of payment used is cash. Malmendier and Tate (2008) write that overconfident managers prefer to use internal sources to finance takeovers. These features of the UK M&As market position such a database to be the ideal testing ground for the presence and effects of the human trait of overconfidence.

Our results provide evidence that overconfident bidders destroy more or create less than their rational counter parts. In the univariate analysis, we control for various bidder, target and deal characteristics such as the target firms public status (private or public), the method of payment used (cash, stock and mixed), the size and growth opportunities of the bidder, the relative size of the deal and whether the bidder diversifies across industries/countries. The general picture across three proxies suggests that rational managers are rewarded more than overconfident managers following the announcement of a takeover. The overconfidence effect is more pronounced for acquisitions for private targets due the limited information available to the managers of the bidding firm. This is more evident for the multiple acquirers proxy. The business press proxy offers a similar but weaker picture regarding overconfidence. We have to note that the number of observation achieved for the business press proxy is limited compared to the other two. The multivariate analysis simultaneously controls for all the various factors that affect bidder gains and provides support to the hypothesis that overconfidence managers destroy more value for their shareholders wealth. Lastly, the long-run performance confirms that the initial market reaction holds in the long-run. Overconfident managers as classified by the stock options proxy significantly outperform rational ones. Mean differentials are in favour of rational managers as approached by the multiple acquiers proxy. No statistical differences are observed for the business press proxy in the long-run.

Overall, the finding provides additional support to the theoretical predictions of previous US studies indicating that the effect of managerial overconfidence on bidders' returns is not sensitive neither to the overconfidence measure nor is it limited to the US market. Our evidence implies that the conventional executive pay structure is unlikely to mitigate the harmful effects of managerial overconfidence, reinforcing the importance of strong corporate governance systems in the health of organizations.

The hubris hypothesis posits that managers are overoptimist about their own abilities and the markets which are strong-form efficient capture this effect by punishing bidders when they announce takeovers. Other studies (Odean (1998)) suggest that investors are also overconfident, especially in booming periods. Rosen (2006) argues that managers may be infected with the same optimism as investors during bullish periods. As Baker et al. (2007, p. 48) argue, "the irrational manager and irrational investor stories can certainly coexist". The chapter that follows (chapter 4) examines the interaction of managerial overconfidence across various market conditions.

Table 3.1 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 (rational versus overconfident). The summary statistics are provided on the basis of a sample of 3,223 acquisitions from 1990 to 2005 undertaken by 1,281 unique bidders. Acquirers are publicly traded firms listed on the London Stock Exchange (LSE). Targets include both domestic and foreign public and private firms. Overconfident and rational managers are classified based on 3 different proxies: 1) Stock Options: Managers who hold stock options until the year before the expiration date are classified as overconfident. All others are classified as rational. 2) Multiple Acquirers: Individual CEOs who made 5 or more acquisitions within a 3 year period are called overconfident. All others are rational. 3) Business Press: Managers characterized by the business press with the words ‘confident’, ‘confidence’, ‘optimistic’, ‘optimism’, ‘certain’ and ‘positive are classified as overconfident managers. Those characterized as ‘reliable’, ‘cautious’, ‘prudent’, ‘conservative’, ‘practical’, ‘sensible’, ‘frugal’, ‘careful’ or ‘steady’ are classified as rational managers.

Proxy		**Stock Options**			**Multiple Acquirers**			**Business Press**		
Year	**All**	**All**	**Rational**	**Overconfident**	**All**	**Rational**	**Overconfident**	**All**	**Rational**	**Overconfident**
1990	124	18	8	10	121	98	23	19	2	17
1991	100	20	14	6	98	70	28	19	8	11
1992	91	23	14	9	90	64	26	18	5	13
1993	103	29	19	10	101	71	30	21	7	14
1994	169	52	35	17	167	130	37	27	10	17
1995	177	47	31	16	175	119	56	28	5	23
1996	195	56	41	15	187	129	58	26	11	15
1997	272	76	49	27	260	158	102	29	10	19
1998	292	77	58	19	281	187	94	54	15	39
1999	310	88	64	24	295	214	81	50	23	27
2000	344	98	64	34	319	233	86	69	29	40
2001	266	73	50	23	252	187	65	40	14	26
2002	212	60	51	9	200	148	52	32	13	19
2003	171	43	31	12	167	130	37	25	10	15
2004	204	52	44	8	195	161	34	38	18	20
2005	193	36	28	8	191	157	34	35	16	19
Total	**3,223**	**848**	**601**	**247**	**3,099**	**2256**	**843**	**530**	**196**	**334**
Total (%)	**100.00%**	**26.31%**	**70.87%**	**29.13%**	**96.15%**	**72.80%**	**27.20%**	**16.44%**	**36.98%**	**63.02%**

Table 3.2 Summary Statistics of Acquisitions by Stock Options, Multiple Acquirers, and Business Press Proxies

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 1281 unique bidders. Acquirers are publicly traded firms listed on the London Stock Exchange (LSE). Targets include both domestic and foreign public and private firms. Overconfident and rational managers are classified based on 3 different proxies: 1) Stock Options: Managers who hold stock options until the year before the expiration date are classified as overconfident. All others are classified as rational. 2) Multiple Acquirers: Individual CEOs who made 5 or more acquisitions within a 3 year period are called overconfident. All others are rational. 3) Business Press: Managers characterized by the business press with the words ‘confident’, ‘confidence’, ‘optimistic’, ‘optimism’, ‘certain’ and ‘positive are classified as overconfident managers. Those characterized as ‘reliable’, ‘cautious’, ‘prudent’, ‘conservative’, ‘practical’, ‘sensible’, ‘frugal’, ‘careful’ or ‘steady’ are classified as rational managers. Panel A presents statistics for all deals, Panel B for stock options’ proxy, Panel C for multiple acquirers’ proxy and Panel D for business press, respectively. The mean and median size for each acquirer and each target is the firm size at the year the deal was announced. 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 Acquirer Value (£ mil)	Median Acquirer Value (£ mil)	Mean Target Value (£ mil)	Median Target Value (£ mil)	Total Deal Value (£ mil)	% of Total Deal Value	% of Total Number of acquisitions
Panel A: All Deals								
All Deals	3,223	517.728	88.53	64.485	6	207,834.564	100.00%	100.00%
Private	2,839	305.481	80.66	18.876	5	53,589.777	25.78%	88.09%
Public	384	2,086.918	209.52	401.679	50.04	154,244.787	74.22%	11.91%
Panel B: Stock Options Proxy								
All Deals	848	638.333	154.29	59.236	8.325	50,232.57	100.00%	100.00%
Rational	601	617.915	161.47	62.349	8.276	37,471.76	74.60%	70.87%
Overconfident	247	688.014	137.85	51.663	8.4	12,760.81	25.40	29.13%
Private Deals	722	409.887	147.13	21.677	6.16	15,651.123	31.16%	85.14%
Rational	522	386.482	154.695	22.415	6.5	11,700.672	74.76%	72.30%
Overconfident	200	470.974	111.735	19.752	5.701	3,950.451	25.24%	27.70%
Public Deals	126	1,947.363	362.99	274.456	81.125	34,581.446	68.84%	14.86%
Rational	79	2,147.128	362.92	326.216	79	25,771.089	74.52%	62.70%
Overconfident	47	1,611.588	363.06	187.454	87.113	8,810.357	25.48%	37.30%

Table 3.2-Continued

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
Panel C: Multiple Acquirers Proxy								
All Deals	3,099	522.98	88.02	66.229	6	205,242.726	100.00%	100.00%
Rational	2,256	572.805	73.055	78.506	6.088	177,110.472	86.29%	72.80%
Overconfident	843	389.64	137.85	33.372	5.694	28,132.254	13.71%	27.20%
Private Deals	2,723	301.527	80.16	18.949	5	51,596.911	25.14%	87.87%
Rational	1,953	294.847	65.21	17.49	4.912	34,157.642	66.20%	71.72%
Overconfident	770	318.469	127.675	22.648	5.001	17,439.269	33.80%	28.28%
Public Deals	376	2126.75	212.14	408.632	50.795	153,645.815	74.86%	12.13%
Rational	303	2,364.398	214.07	471.792	49.089	142,952.83	93.04%	80.59%
Overconfident	73	1,140.348	202.69	146.479	59.35	10,692.985	6.96%	19.41%
Panel D: Business Press Proxy								
All Deals	530	1,534.5	214.97	210.717	10.715	111,679.955	100.00%	100.00%
Rational	196	2,499.179	218.775	441.371	10.35	86,508.646	77.46%	36.98%
Overconfident	334	968.402	213.49	75.363	11.227	25,171.309	22.54%	63.02%
Private Deals	439	661.194	152.53	31.72	7.772	13,925.008	12.47%	82.83%
Rational	153	849.772	152.54	42.357	6.27	6,480.601	46.54%	34.85%
Overconfident	286	560.311	149.68	26.029	8.5	7,444.407	53.46%	65.15%
Public Deals	91	5,747.484	1,635.45	1074.23	247.2	97,754.947	87.53%	17.17%
Rational	43	8,367.999	3467.2	1,861.117	492.312	80,028.045	81.87%	47.25%
Overconfident	48	3,399.939	1,241.94	369.31	174.525	17,726.902	18.13%	52.75%

Table 3.3 Abnormal Returns (ARs) of All Acquirers

This table present the Abnormal Returns (ARs) t days before and after the announcement date of all acquirers included in the full sample. Abnormal returns are calculated using a modified market-adjusted model:

$$AR = R_{i,t} - R_{m,t}$$

where $R_{i,t}$ is the return on firm i at time t and $R_{m,t}$ is the value-weighted Market Index Return (FT-All share). All acquirers are publicly traded firms listed on the London Stock Exchange (LSE). a, b, c denote significance level at 1%, 5% and 10% respectively. P-values are presented in brackets. The full sample size is 3,223 deals.

Days before/after announcement	AR	p-value
-10	0.02%	(0.595)
-9	0.12%[b]	(0.021)
-8	0.06%	(0.133)
-7	0.00%	(0.992)
-6	0.08%[c]	(0.063)
-5	0.05%	(0.257)
-4	0.09%[b]	(0.037)
-3	-0.01%	(0.836)
-2	**0.13%[a]**	**(0.008)**
-1	**0.10%[b]**	**(0.038)**
0	**0.79%[a]**	**(0.000)**
1	**0.30%[a]**	**(0.000)**
2	**0.15%[a]**	**(0.004)**
3	**0.09%[b]**	**(0.030)**
4	0.00%	(0.960)
5	0.08%[c]	(0.070)
6	0.01%	(0.892)
7	-0.03%	(0.544)
8	0.03%	(0.484)
9	0.01%	(0.774)
10	-0.05%	(0.274)

Table 3.4 Cumulative Abnormal Returns (CARs) of All Acquirers

This table present the Cumulative Abnormal Returns (CARs) for various windows. Panel A presents CARs during five days (-2,+2) surrounding the announcement of all acquirers included in the full sample. Panels B, C, D and E present CARs for (-1,+1), (0,+1) and (-1,0) windows respectively surrounding the announcement day. Abnormal returns are calculated using a modified market-adjusted model:

$$AR = R_{i,t} - R_{m,t}$$

where $R_{i,t}$ is the return on firm i at time t and $R_{m,t}$ is the value-weighted Market Index Return (FT-All share). All acquirers are publicly traded firms listed on the London Stock Exchange (LSE). This table illustrates the gains to acquirers included in the full sample of all, private and public targets. The CARs are reported on the basis of the method of payment as well. 'Cash' indicates only cash deals, 'Stock' refers only to share deals and 'Mixed' includes all other transactions financed by a combination of cash and shares. a, b, c denote significance level at 1%, 5% and 10% respectively. P-values are presented in brackets. The sample size n is presented below the p-value.

Panel A: CARs (-2,+2)				
	All	**Cash**	**Stock**	**Mixed**
All	1.47%[a]	1.17%[a]	2.63%[b]	1.58%[a]
p-value	(0.000)	(0.000)	(0.044)	(0.000)
n	3,223	1,351	208	1,664
Private	1.83%[a]	1.28%[a]	7.31%[a]	1.88%[a]
p-value	(0.000)	(0.000)	(0.002)	(0.000)
n	2,839	1,194	108	1,537
Public	-1.20%[a]	0.28%	-2.42%[a]	-2.06%[a]
p-value	(0.006)	(0.646)	(0.009)	(0.009)
n	384	157	100	127
Panel B: CARs (-1,+1)				
	All	**Cash**	**Stock**	**Mixed**
All	1.18%[a]	0.89%[a]	2.55%[c]	1.24%[a]
p-value	(0.000)	(0.000)	(0.053)	(0.000)
n	3,223	1,351	208	1,664
Private	1.50%[a]	0.98%[a]	7.03%[a]	1.52%[a]
p-value	(0.000)	(0.000)	(0.003)	(0.000)
n	2,839	1,194	108	1,537
Public	-1.20%[a]	0.27%	-2.28%[a]	-2.17%[a]
p-value	(0.002)	(0.625)	(0.006)	(0.001)
n	384	157	100	127
Panel C: CARs (0,+1)				
	All	**Cash**	**Stock**	**Mixed**
All	1.08%[a]	0.82%[a]	2.29%[c]	1.15%[a]
p-value	(0.000)	(0.000)	(0.068)	(0.000)
n	3,223	1,351	208	1,664
Private	1.39%[a]	0.90%[a]	6.54%[a]	1.41%[a]
p-value	(0.000)	(0.000)	(0.004)	(0.000)
n	2,839	1,194	108	1,537
Public	-1.19%[a]	0.20%	-2.30%[a]	-2.04%[a]
p-value	(0.001)	(0.654)	(0.004)	(0.001)
n	384	157	100	127

Table 3.4-continued

Panel D: CARs (-1,0)				
	All	**Cash**	**Stock**	**Mixed**
All	0.89%[a]	0.59%[a]	2.85%[b]	0.88%[a]
p-value	(0.000)	(0.000)	(0.016)	(0.000)
n	3,223	1,351	208	1,664
Private	1.15%[a]	0.71%[a]	6.86%[a]	1.10%[a]
p-value	(0.000)	(0.000)	(0.001)	(0.000)
n	2,839	1,194	108	1,537
Public	-1.06%[a]	-0.24%	-1.47%[b]	-1.75%[a]
p-value	(0.001)	(0.569)	(0.038)	(0.001)
n	384	157	100	127

Table 3.5 Buy-Hold Abnormal Returns (BHARs) of All Acquirers

This table present the Buy-Hold Abnormal Returns (BHARs) for various windows. Panel A presents BHARs for five days (-2,+2) surrounding the announcement of all acquirers included in the full sample. Panels B, C, D and E present BHARs for (-1,+1), (0,+1) and (-1,0) windows respectively surrounding the announcement day. The BHAR for company *i* is computed as:

$$BHAR_i = \prod_1^T (1 + R_{it}) - \prod_1^T (1 + R_{mt})$$

where R_{it} is the daily return for company *i*, and R_{mt} is the daily return of the market index. All acquirers are publicly traded firms listed on the London Stock Exchange (LSE). This table illustrates the gains to acquirers included in the full sample of all, private and public targets. The BHARs are reported on the basis of the method of payment as well. 'Cash' indicates only cash deals, 'Stock' refers only to share deals and 'Mixed' includes all other transactions financed by a combination of cash and shares. We use their skewness adjusted bootstrap t-statistics procedure to compute the statistical significance of the abnormal returns (1000 replications). a, b, c denote significance level at 1%, 5% and 10% respectively. P-values are presented in brackets. The sample size n is presented below the p-value.

Panel A: BHARs (-2,+2)				
	All	**Cash**	**Stock**	**Mixed**
All	1.46%[a]	1.16%[a]	2.50%[b]	1.57%[a]
p-value	(0.000)	(0.000)	(0.030)	(0.000)
n	3,223	1,351	208	1,664
Private	1.82%[a]	1.28%[a]	7.09%[a]	1.87%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)
n	2,839	1,194	108	1,537
Public	-1.17%[b]	0.31%	-2.45%[a]	-2.00%[a]
p-value	(0.014)	(0.619)	(0.007)	(0.008)
n	384	157	100	127
Panel B: BHARs (-1,+1)				
	All	**Cash**	**Stock**	**Mixed**
All	1.19%[a]	0.92%[a]	2.54%[b]	1.25%[a]
p-value	(0.000)	(0.000)	(0.028)	(0.000)
n	3,223	1,351	208	1,664
Private	1.51%[a]	1.00%[a]	6.98%[a]	1.52%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)
n	2,839	1,194	108	1,537
Public	-1.15%[a]	0.33%	-2.26%[a]	-2.12%[a]
p-value	(0.009)	(0.554)	(0.005)	(0.002)
n	384	157	100	127
Panel C: BHARs (0,+1)				
	All	**Cash**	**Stock**	**Mixed**
All	1.09%[a]	0.83%[a]	2.17%[b]	1.16%[a]
p-value	(0.000)	(0.000)	(0.049)	(0.000)
n	3,223	1,351	208	1,664
Private	1.39%[a]	0.91%[a]	6.28%[a]	1.42%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)
n	2,839	1,194	108	1,537
Public	-1.16%[a]	0.23%	-2.27%[a]	-2.00%[a]
p-value	(0.002)	(0.618)	(0.003)	(0.001)
n	384	157	100	127

Table 3.5-continued

Panel D: BHARs (-1,0)				
	All	**Cash**	**Stock**	**Mixed**
All	0.90%[a]	0.60%[a]	3.01%[a]	0.88%[a]
p-value	(0.000)	(0.000)	(0.001)	(0.000)
n	3,223	1,351	208	1,664
Private	1.16%[a]	0.71%[a]	7.17%[a]	1.09%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)
n	2,839	1,194	108	1,537
Public	-1.05%[a]	-0.23%	-1.48%[b]	-1.74%[a]
p-value	(0.002)	(0.657)	(0.042)	(0.002)
n	384	157	100	127

Table 3.6 Cumulative Abnormal Returns (CARs) of Rational and Overconfident Acquirers by the Stock Options Proxy

This table present the Cumulative Abnormal Returns (CARs) during five days (-2, +2) surrounding the announcement of rational and overconfident acquirers as classified by the Stock Options Proxy. Abnormal returns are calculated using a modified market-adjusted model:

$$AR = R_{i,t} - R_{m,t}$$

where $R_{i,t}$ is the return on firm i at time t and $R_{m,t}$ is the value-weighted Market Index Return (FT-All share). All acquirers are publicly traded firms listed on the London Stock Exchange (LSE). Managers who hold stock options until the year before the expiration date are classified as overconfident. All others are classified as rational. Panel A illustrates the gains to acquirers of all targets as classified whether the acquirer's manager is rational or overconfident. Panel B and C shows the CARs for acquirers acquiring private and public targets respectively. The CARs are reported on the basis of the method of payment as well. 'Cash' indicates only cash deals, 'Stock' refers only to share deals and 'Mixed' includes all other transactions financed by a combination of cash and shares. a, b, c denote significance level at 1%, 5% and 10% respectively. P-values are presented in brackets. The sample size n is presented below the p-value. At the end of each panel, the differential (1)-(2) between rational minus overconfident means is presented.

	Stock Options Proxy			
	All	**Cash**	**Stock**	**Mixed**
Panel A: All Targets				
All	0.94%[a]	0.58%[b]	-0.91%	1.38%[a]
p-value	(0.000)	(0.041)	(0.365)	(0.000)
N	848	372	35	441
Rational (1)	1.26%[a]	0.79%[b]	0.37%	1.72%[a]
p-value	(0.000)	(0.014)	(0.701)	(0.000)
N	601	263	23	315
Overconfident (2)	0.16%	0.08%	-3.36%	0.56%
p-value	(0.729)	(0.890)	(0.148)	(0.423)
n	247	109	12	126
Differential (1)-(2)	1.10%[b]	0.71%	3.73%	1.16%
p-value	(0.031)	(0.291)	(0.134)	(0.136)
Panel B: Private Targets				
All	1.37%[a]	0.82%[a]	0.63%	1.84%[a]
p-value	(0.000)	(0.004)	(0.442)	(0.000)
n	722	318	14	390
Rational (1)	1.61%[a]	1.05%[a]	0.72%	2.11%[a]
p-value	(0.000)	(0.002)	(0.153)	(0.000)
N	522	230	10	282
Overconfident (2)	0.72%[c]	0.22%	0.40%	1.13%[c]
p-value	(0.096)	(0.699)	(0.896)	(0.078)
n	200	88	4	108
Differential (1)-(2)	0.90%[c]	0.83%	0.32%	0.98%
p-value	(0.067)	(0.210)	(0.917)	(0.180)

Table 3.6-Continued

Panel C: Public Targets				
All	-1.51%[b]	-0.81%	-1.94%	-2.07%
p-value	(0.039)	(0.417)	(0.225)	(0.122)
n	126	54	21	51
Rational (1)	-1.09%	-1.01%	0.10%	-1.63%
p-value	(0.149)	(0.352)	(0.955)	(0.215)
N	79	33	13	33
Overconfident (2)	-2.22%	-0.50%	-5.24%	-2.89%
p-value	(0.144)	(0.799)	(0.103)	(0.341)
n	47	21	8	18
Differential (1)-(2)	1.14%	-0.50%	5.33%	1.26%
p-value	(0.498)	(0.823)	(0.128)	(0.699)

Table 3.7 Cumulative Abnormal Returns (CARs) of Rational and Overconfident Acquirers by Stock Options Proxy and Deal Features

This table presents the Cumulative Abnormal Returns (CARs) during five days (-2, +2) surrounding the announcement of rational and overconfident acquirers by stock options' proxy. 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). Managers who hold stock options until the year before the expiration date are classified as overconfident. All others are classified as rational. All Panels shows the returns to rational and overconfident bidders by target's ownership status (public or private) and the method of payment (all-cash and non-cash (i.e., any other type of offer)). Panels A (B) shows the CARs for value (glamour) bidders. Acquirers with higher (lower) than median book-to-market ratio (a month prior to bid announcement) are categorized as value (glamour) bidders. Panels C (D) shows the CARs for small (big) bidders. Acquirers with larger (smaller) than median size (a month prior to bid announcement) are categorized as big (small) bidders. Panels E (F) shows the CARs for high (low) relative size deals. The relative size of the deal is defined as the deal value divided by the market value of the acquirer a month before the announcement date. Deals above (below) the median relative size are classified as high (low) RS. Panels G (H) shows the CARs for domestic (foreign) bidders. Acquisitions with bidders and targets originated from the same (different) country are defined as domestic (foreign) acquisitions. Panels I (J) shows the CARs for diversifying (non-diversifying) bidders. An acquisition is defined as diversifying (focused) when the acquirer's two-digit SIC code is different (the same) from that of the target. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively. The Differential (1)-(2) represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of rational versus overconfident bidders. P-values are reported in brackets. The sample size n is presented below the p-value.

Panel A: Value Bidders							**Panel B: Glamour Bidders**						
	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**		**All**	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
Rational	1.15%[a]	1.55%[a]	-1.17%	0.61%	2.63%	1.57%[a]	Rational	1.36%[a]	1.68%[a]	-0.99%	0.98%[b]	-0.85%	1.84%[a]
p-value	(0.001)	(0.000)	(0.234)	(0.155)	(0.193)	(0.005)	p-value	(0.000)	(0.000)	(0.399)	(0.041)	(0.398)	(0.000)
n	290	248	42	135	8	147	n	311	274	37	128	15	168
Overconfident	0.85%	1.17%[c]	-0.33%	0.52%	-4.74%[c]	2.03%[b]	Overconfident	-0.66%	0.21%	-5.27%	-0.46%	3.54%	-0.96%
p-value	(0.150)	(0.080)	(0.791)	(0.498)	(0.062)	(0.026)	p-value	(0.348)	(0.684)	(0.129)	(0.623)	(0.617)	(0.363)
n	134	105	29	60	10	64	n	113	95	18	49	2	62
Differential (1)-(2)	0.31%	0.37%	-0.84%	0.09%	7.38%[b]	-0.45%	Differential (1)-(2)	2.02%[a]	1.46%[b]	4.29%	1.44%	-4.39%	2.80%[b]
p-value	(0.652)	(0.621)	(0.593)	(0.920)	(0.022)	(0.663)	p-value	(0.009)	(0.017)	(0.235)	(0.170)	(0.557)	(0.015)

Table 3.7-Continued

Panel C: Small Bidders							Panel D: Large Bidders						
	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**		**All**	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
Rational	1.92%[a]	2.37%[a]	-1.59%	1.11%[b]	-0.54%	2.81%[a]	Rational	0.64%[b]	0.88%[a]	-0.72%	0.54%	4.66%	0.64%
p-value	(0.000)	(0.000)	(0.122)	(0.022)	(0.534)	(0.000)	p-value	(0.035)	(0.004)	(0.499)	(0.211)	(0.224)	(0.144)
n	291	258	33	116	19	156	n	310	264	46	147	4	159
Overconfident	0.98%	1.24%[c]	-1.09%	0.89%	-5.55%[c]	1.80%[c]	Overconfident	-0.80%	-0.04%	-2.75%	-0.74%	1.02%	-0.99%
p-value	(0.116)	(0.052)	(0.646)	(0.271)	(0.066)	(0.054)	p-value	(0.225)	(0.939)	(0.163)	(0.396)	(0.781)	(0.340)
n	133	118	15	55	8	70	n	114	82	32	54	4	56
Differential (1)-(2)	0.94%	1.12%	-0.50%	0.23%	5.01%[c]	1.02%	Differential (1)-(2)	1.44%[b]	0.92%	2.03%	1.27%	3.64%	1.63%
p-value	(0.187)	(0.124)	(0.846)	(0.808)	(0.099)	(0.337)	p-value	(0.048)	(0.122)	(0.360)	(0.189)	(0.458)	(0.149)

Panel E: Low Relative Size Deals							Panel F: High Relative Size Deals						
	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**		**All**	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
Rational	0.90%[a]	0.94%[a]	-0.38%	0.87%[a]	0.32%	0.96%[b]	Rational	1.65%[a]	2.56%[a]	-1.18%	0.66%	0.39%	2.38%[a]
p-value	(0.000)	(0.000)	(0.813)	(0.008)	(0.669)	(0.011)	p-value	(0.000)	(0.000)	(0.155)	(0.298)	(0.776)	(0.000)
n	313	304	9	159	7	147	n	288	218	70	104	16	168
Overconfident	0.38%	0.18%	2.66%	0.89%	1.26%	-0.24%	Overconfident	-0.03%	1.27%[c]	-3.38%[b]	-0.81%	-4.90%[c]	1.10%
p-value	(0.473)	(0.723)	(0.428)	(0.282)	(0.769)	(0.726)	p-value	(0.969)	(0.069)	(0.048)	(0.340)	(0.084)	(0.308)
n	111	102	9	57	3	51	n	136	98	38	52	9	75
Differential (1)-(2)	0.52%	0.76%	-3.04%	-0.02%	-0.94%	1.19%	Differential (1)-(2)	1.68%[b]	1.28%	2.20%	1.47%	5.29%[c]	1.28%
p-value	(0.376)	(0.181)	(0.409)	(0.983)	(0.828)	(0.126)	p-value	(0.039)	(0.122)	(0.237)	(0.165)	(0.085)	(0.289)

Panel G: Domestic Target Firms							Panel H: Foreign Target Firms						
	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**		**All**	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
Rational	1.25%[a]	1.79%[a]	-1.98%[b]	0.92%[b]	0.41%	1.55%[a]	Rational	1.27%[a]	1.29%[a]	1.10%	0.62%	-0.07%	2.11%[a]
p-value	(0.000)	(0.000)	(0.026)	(0.025)	(0.697)	(0.000)	p-value	(0.001)	(0.002)	(0.432)	(0.225)	(0.960)	(0.001)
n	394	338	56	149	21	224	n	207	184	23	114	2	91
Overconfident	0.46%	1.28%[a]	-2.87%	0.51%	-4.72%[c]	0.98%	Overconfident	-0.53%	-0.53%	-0.53%	-0.72%	3.43%	-0.55%
p-value	(0.379)	(0.007)	(0.101)	(0.442)	(0.077)	(0.207)	p-value	(0.560)	(0.555)	(0.868)	(0.538)	(0.139)	(0.713)
n	172	138	34	71	10	91	n	75	62	13	38	2	35
Differential (1)-(2)	0.80%	0.51%	0.89%	0.41%	5.13%[c]	0.57%	Differential (1)-(2)	1.80%[c]	1.82%[c]	1.63%	1.34%	-3.50%	2.66%
p-value	(0.179)	(0.352)	(0.644)	(0.596)	(0.070)	(0.517)	p-value	(0.071)	(0.066)	(0.640)	(0.295)	(0.226)	(0.103)

Table 3.7-Continued

Panel I: Diversifying Deals						
	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
Rational	1.36%[a]	1.74%[a]	-0.97%	0.73%[c]	1.14%	1.93%[a]
p-value	(0.000)	(0.000)	(0.300)	(0.071)	(0.372)	(0.000)
n	325	279	46	146	15	164
Overconfident	0.20%	0.70%	-3.12%	0.05%	-0.85%	0.38%
p-value	(0.761)	(0.219)	(0.363)	(0.924)	(0.784)	(0.718)
n	122	106	16	44	6	72
Differential (1)-(2)	1.15%	1.03%	2.15%	0.69%	1.99%	1.54%
p-value	(0.114)	(0.111)	(0.542)	(0.292)	(0.554)	(0.182)

Panel J: Non-Diversifying Deals						
	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
Rational	1.15%[a]	1.47%[a]	-1.24%	0.86%[c]	-1.09%	1.49%[a]
p-value	(0.002)	(0.000)	(0.324)	(0.094)	(0.438)	(0.006)
n	276	243	33	117	8	151
Overconfident	0.11%	0.73%	-1.76%	0.10%	-5.88%	0.79%
p-value	(0.857)	(0.262)	(0.257)	(0.911)	(0.114)	(0.330)
n	125	94	31	65	6	54
Differential (1)-(2)	1.03%	0.74%	0.52%	0.76%	4.78%	0.70%
p-value	(0.152)	(0.323)	(0.793)	(0.478)	(0.203)	(0.470)

Table 3.8 Cumulative Abnormal Returns (CARs) of Rational and Overconfident Acquirers by the Multiple Acquirers Proxy

This table present the Cumulative Abnormal Returns (CARs) during five days (-2,+2) surrounding the announcement of rational and overconfident acquirers as classified by the Stock Options Proxy. Abnormal returns are calculated using a modified market-adjusted model:

$$AR = R_{i,t} - R_{m,t}$$

where $R_{i,t}$ is the return on firm i at time t and $R_{m,t}$ is the value-weighted Market Index Return (FT-All share). All acquirers are publicly traded firms listed on the London Stock Exchange (LSE). Individual CEOs who made 5 or more acquisitions within a 3 year period are called overconfident. All others are rational. All others are classified as rational. Panel A illustrates the gains to acquirers of all targets as classified whether the acquirer's manager is rational or overconfident. Panel B and C shows the CARs for acquirers acquiring private and public targets respectively. The CARs are reported on the basis of the method of payment as well. 'Cash' indicates only cash deals, 'Stock' refers only to share deals and 'Mixed' includes all other transactions financed by a combination of cash and shares. a, b, c denote significance level at 1%, 5% and 10% respectively. P-values are presented in brackets. The sample size n is presented below the p-value. At the end of each panel, the Differential (1)-(2) between rational minus overconfident means is presented.

	All	Cash	Stock	Mixed
Panel A: All Targets				
All	1.44%[a]	1.11%[a]	2.76%[b]	1.54%[a]
p-value	(0.000)	(0.000)	(0.037)	(0.000)
n	3,099	1,295	204	1,600
Rational (1)	1.65%[a]	1.37%[a]	2.98%[c]	1.68%[a]
p-value	(0.000)	(0.000)	(0.064)	(0.000)
N	2,256	931	166	1,159
Overconfident (2)	0.88%[a]	0.44%[c]	1.81%	1.16%[a]
p-value	(0.000)	(0.082)	(0.130)	(0.000)
n	843	364	38	441
Differential (1)-(2)	0.77%[a]	0.93%[a]	1.17%	0.52%
p-value	(0.005)	(0.005)	(0.555)	(0.169)
Panel B: Private Targets				
All	1.80%[a]	1.22%[a]	7.46%[a]	1.84%[a]
p-value	(0.000)	(0.000)	(0.002)	(0.000)
n	2,723	1,141	106	1,476
Rational (1)	2.11%[a]	1.48%[a]	8.79%[a]	2.06%[a]
p-value	(0.000)	(0.000)	(0.003)	(0.000)
N	1,953	805	84	1,064
Overconfident (2)	1.01%[a]	0.60%[b]	2.38%	1.27%[a]
p-value	(0.000)	(0.022)	(0.122)	(0.000)
n	770	336	22	412
Differential (1)-(2)	1.10%[a]	0.88%[a]	6.40%[b]	0.79%[b]
p-value	(0.000)	(0.010)	(0.050)	(0.042)

Table 3.8-Continued

Panel C: Public Targets				
All	-1.18%[a]	0.28%	-2.31%[b]	-2.11%[a]
p-value	(0.007)	(0.636)	(0.014)	(0.008)
n	376	154	98	124
Rational (1)	-1.34%[a]	0.67%	-2.96%[a]	-2.62%[a]
p-value	(0.009)	(0.336)	(0.005)	(0.007)
N	303	126	82	95
Overconfident (2)	-0.51%	-1.46%	1.03%	-0.44%
p-value	(0.489)	(0.148)	(0.604)	(0.711)
n	73	28	16	29
Differential (1)-(2)	-0.83%	2.13%[c]	-3.99%[c]	-2.17%
p-value	(0.351)	(0.081)	(0.082)	(0.157)

Table 3.9 Cumulative Abnormal Returns (CARs) of Rational and Overconfident Acquirers by Multiple Acquirers Proxy and Deal Features

This table presents the Cumulative Abnormal Returns (CARs) during five days (-2, +2) surrounding the announcement of rational and overconfident acquirers by stock options' proxy. 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). Individual CEOs who made 5 or more acquisitions within a 3 year period are called overconfident. All others are rational. All Panels shows the returns to rational and overconfident bidders by target's ownership status (public or private) and the method of payment (all-cash and non-cash (i.e., any other type of offer)). Panels A (B) shows the CARs for value (glamour) bidders. Acquirers with higher (lower) than median book-to-market ratio (a month prior to bid announcement) are categorized as value (glamour) bidders. Panels C (D) shows the CARs for small (big) bidders. Acquirers with larger (smaller) than median size (a month prior to bid announcement) are categorized as big (small) bidders. Panels E (F) shows the CARs for high (low) relative size deals. The relative size of the deal is defined as the deal value divided by the market value of the acquirer a month before the announcement date. Deals above (below) the median relative size are classified as high (low) RS. Panels G (H) shows the CARs for domestic (foreign) bidders. Acquisitions with bidders and targets originated from the same (different) country are defined as domestic (foreign) acquisitions. Panels I (J) shows the CARs for diversifying (non-diversifying) bidders. An acquisition is defined as diversifying (focused) when the acquirer's two-digit SIC code is different (the same) from that of the target. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively. The Differential (1)-(2) represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of rational versus overconfident bidders. P-values are reported in brackets. The sample size n is presented below the p-value.

Panel A: Value Bidders							**Panel B: Glamour Bidders**						
	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**		**All**	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
Rational	2.12%[a]	2.65%[a]	-1.02%[c]	1.75%[a]	3.90%	2.15%[a]	Rational	1.16%[a]	1.57%[a]	-1.75%[b]	0.91%[a]	1.79%	1.26%[a]
p-value	(0.000)	(0.000)	(0.100)	(0.000)	(0.127)	(0.000)	p-value	(0.000)	(0.000)	(0.041)	(0.005)	(0.281)	(0.000)
n	1,153	985	168	512	94	547	n	1,103	968	135	419	72	612
Overconfident	0.94%[a]	1.01%[a]	0.26%	0.62%[c]	3.97%[b]	0.96%[b]	Overconfident	0.82%[a]	1.01%[a]	-1.22%	0.21%	-0.58%	1.28%[a]
p-value	(0.001)	(0.000)	(0.781)	(0.052)	(0.010)	(0.038)	p-value	(0.002)	(0.000)	(0.284)	(0.602)	(0.750)	(0.000)
n	397	362	35	202	20	175	n	446	408	38	162	18	266
Differential (1)-(2)	1.17%[a]	1.64%[a]	-1.27%	1.12%[a]	-0.07%	1.19%[c]	Differential (1)-(2)	0.34%	0.56%	-0.54%	0.70%	2.37%	-0.03%
p-value	(0.004)	(0.000)	(0.255)	(0.009)	(0.981)	(0.052)	p-value	(0.347)	(0.131)	(0.704)	(0.177)	(0.335)	(0.953)

Table 3.9-Continued

Panel C: Small Bidders							**Panel D: Large Bidders**						
	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**		**All**	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
Rational	2.58%[a]	2.93%[a]	-1.13%	2.15%[a]	3.75%[c]	2.64%[a]	Rational	0.54%[b]	1.02%[a]	-1.46%[b]	0.72%[a]	1.10%	0.30%
p-value	(0.000)	(0.000)	(0.262)	(0.000)	(0.083)	(0.000)	p-value	(0.011)	(0.000)	(0.011)	(0.006)	(0.515)	(0.361)
n	1,226	1121	105	425	118	683	n	1,030	832	198	506	48	476
Overconfident	1.02%[a]	1.15%[a]	-1.08%	0.50%	1.96%	1.29%[a]	Overconfident	0.79%[a]	0.92%[a]	-0.31%	0.41%	1.61%	1.07%[a]
p-value	(0.001)	(0.000)	(0.512)	(0.211)	(0.274)	(0.003)	p-value	(0.001)	(0.000)	(0.708)	(0.212)	(0.292)	(0.003)
n	324	305	19	130	22	172	n	519	465	54	234	16	269
Differential (1)-(2)	1.56%[a]	1.78%[a]	-0.05%	1.65%[a]	1.79%	1.35%[b]	Differential (1)-(2)	-0.25%	0.10%	-1.15%	0.31%	-0.51%	-0.77%
p-value	(0.000)	(0.000)	(0.980)	(0.002)	(0.519)	(0.018)	p-value	(0.445)	(0.761)	(0.252)	(0.455)	(0.819)	(0.112)
Panel E: Low Relative Size Deals							**Panel F: High Relative Size Deals**						
	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**		**All**	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
Rational	0.81%[a]	0.87%[a]	-0.04%	0.79%[a]	1.77%	0.74%[a]	Rational	2.33%[a]	3.29%[a]	-1.67%[a]	2.08%[a]	3.39%	2.29%[a]
p-value	(0.000)	(0.000)	(0.959)	(0.001)	(0.176)	(0.010)	p-value	(0.000)	(0.000)	(0.006)	(0.000)	(0.108)	(0.000)
n	1,010	949	61	513	42	455	n	1,246	1,004	242	418	124	704
Overconfident	0.57%[a]	0.63%[a]	-2.36%	0.35%	-1.24%	0.87%[a]	Overconfident	1.43%[a]	1.83%[a]	-0.15%	0.67%	3.40%[b]	1.58%[a]
p-value	(0.010)	(0.004)	(0.331)	(0.229)	(0.526)	(0.008)	p-value	(0.000)	(0.000)	(0.847)	(0.184)	(0.023)	(0.001)
n	540	528	12	264	13	263	n	303	242	61	100	25	178
Differential (1)-(2)	0.25%	0.23%	2.32%	0.44%	3.01%	-0.13%	Differential (1)-(2)	0.90%[c]	1.46%[a]	-1.53%	1.41%[b]	0.00%	0.70%
p-value	(0.391)	(0.416)	(0.364)	(0.240)	(0.203)	(0.770)	p-value	(0.062)	(0.007)	(0.114)	(0.027)	(0.999)	(0.255)
Panel G: Domestic Target Firms							**Panel H: Foreign Target Firms**						
	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**		**All**	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
Rational	1.68%[a]	2.24%[a]	-1.76%[a]	1.49%[a]	1.02%	1.90%[a]	Rational	1.59%[a]	1.84%[a]	-0.25%	1.18%[a]	10.32%[b]	1.06%[b]
p-value	(0.000)	(0.000)	(0.003)	(0.000)	(0.550)	(0.000)	p-value	(0.000)	(0.000)	(0.797)	(0.002)	(0.012)	(0.031)
n	1,561	1,341	220	571	131	859	n	695	612	83	360	35	300
Overconfident	0.94%[a]	1.10%[a]	-0.68%	0.33%	2.48%[b]	1.20%[a]	Overconfident	0.76%[b]	0.83%[b]	-0.11%	0.60%	-1.15%	1.06%[c]
p-value	(0.000)	(0.000)	(0.382)	(0.269)	(0.012)	(0.000)	p-value	(0.035)	(0.023)	(0.946)	(0.178)	(0.825)	(0.059)
n	561	510	51	216	31	314	n	282	260	22	148	7	127
Differential (1)-(2)	0.74%[b]	1.14%[a]	-1.08%	1.16%[a]	-1.46%	0.70%	Differential (1)-(2)	0.83%	1.00%[c]	-0.14%	0.58%	11.47%[c]	0.00%
p-value	(0.023)	(0.001)	(0.271)	(0.004)	(0.454)	(0.114)	p-value	(0.102)	(0.057)	(0.943)	(0.318)	(0.092)	(0.996)

Table 3.9-Continued

Panel I: Diversifying Deals							Panel J: Non-Diversifying Deals						
	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**		**All**	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
Rational	1.73%[a]	2.10%[a]	-1.03%	1.30%[a]	6.02%[c]	1.56%[a]	Rational	1.57%[a]	2.12%[a]	-1.58%[b]	1.44%[a]	0.82%	1.79%[a]
p-value	(0.000)	(0.000)	(0.202)	(0.000)	(0.073)	(0.000)	p-value	(0.000)	(0.000)	(0.017)	(0.000)	(0.552)	(0.000)
n	1,101	971	130	466	69	566	n	1,155	982	173	465	97	593
Overconfident	1.06%[a]	1.17%[a]	0.23%	0.89%[b]	1.36%	1.17%[a]	Overconfident	0.70%[a]	0.86%[a]	-2.03%	0.02%	2.68%[b]	1.15%[a]
p-value	(0.000)	(0.000)	(0.799)	(0.014)	(0.428)	(0.002)	p-value	(0.010)	(0.002)	(0.103)	(0.949)	(0.038)	(0.006)
n	417	368	49	176	25	216	n	426	402	24	188	13	225
Differential (1)-(2)	0.67%[c]	0.93%[b]	-1.27%	0.42%	4.66%	0.39%	Differential (1)-(2)	0.87%[b]	1.27%[a]	0.45%	1.42%[a]	-1.86%	0.65%
p-value	(0.091)	(0.026)	(0.299)	(0.356)	(0.213)	(0.436)	p-value	(0.022)	(0.002)	(0.742)	(0.004)	(0.303)	(0.255)

Table 3.10 Cumulative Abnormal Returns (CARs) of Rational and Overconfident Acquirers by the Business Press Proxy

This table present the Cumulative Abnormal Returns (CARs) during five days (-2,+2) surrounding the announcement of rational and overconfident acquirers as classified by the Stock Options Proxy. Abnormal returns are calculated using a modified market-adjusted model:

$$AR = R_{i,t} - R_{m,t}$$

where $R_{i,t}$ is the return on firm i at time t and $R_{m,t}$ is the value-weighted Market Index Return (FT-All share). All acquirers are publicly traded firms listed on the London Stock Exchange (LSE). Managers characterized by the business press with the words 'confident', 'confidence', 'optimistic', 'optimism', 'certain' and 'positive are classified as overconfident managers. Those characterized as 'reliable', 'cautious', 'prudent', 'conservative', 'practical', 'sensible', 'frugal', 'careful' or 'steady' are classified as rational managers. All others are classified as rational. Panel A illustrates the gains to acquirers of all targets as classified whether the acquirer's manager is rational or overconfident. Panel B and C shows the CARs for acquirers acquiring private and public targets respectively. The CARs are reported on the basis of the method of payment as well. 'Cash' indicates only cash deals, 'Stock' refers only to share deals and 'Mixed' includes all other transactions financed by a combination of cash and shares. a, b, c denote significance level at 1%, 5% and 10% respectively. P-values are presented in brackets. The sample size n is presented below the p-value. At the end of each panel, the Differential (1)-(2) between rational minus overconfident means is presented.

	All	**Cash**	**Stock**	**Mixed**
Panel A: All Targets				
All	0.86%[a]	0.93%[a]	-2.04%	1.05%[a]
p-value	(0.001)	(0.005)	(0.156)	(0.010)
n	530	249	23	258
Rational (1)	1.28%[a]	1.32%[b]	-1.76%	1.52%[b]
p-value	(0.006)	(0.022)	(0.357)	(0.043)
N	196	92	9	95
Overconfident (2)	0.62%[b]	0.70%[c]	-2.22%	0.78%
p-value	(0.047)	(0.081)	(0.291)	(0.102)
n	334	157	14	163
Differential (1)-(2)	0.66%	0.62%	0.47%	0.74%
p-value	(0.231)	(0.373)	(0.865)	(0.399)
Panel B: Private Targets				
All	1.54%[a]	1.48%[a]	0.70%	1.64%[a]
p-value	(0.000)	(0.000)	(0.674)	(0.000)
n	439	199	12	228
Rational (1)	2.02%[a]	1.49%[b]	-1.21%	2.78%[a]
p-value	(0.000)	(0.026)	(0.471)	(0.001)
n	153	72	6	75
Overconfident (2)	1.29%[a]	1.48%[a]	2.62%	1.07%[b]
p-value	(0.000)	(0.001)	(0.394)	(0.019)
n	286	127	6	153
Differential (1)-(2)	0.73%	0.01%	-3.82%	1.71%[c]
p-value	(0.216)	(0.992)	(0.271)	(0.062)

Table 3.10-Continued

Panel C: Public Targets				
All	-2.42%[a]	-1.27%[c]	-5.03%[b]	-3.39%[b]
p-value	(0.001)	(0.088)	(0.030)	(0.025)
n	91	50	11	30
Rational (1)	-1.36%	0.72%	-2.85%	-3.22%[b]
p-value	(0.164)	(0.530)	(0.632)	(0.048)
N	43	20	3	20
Overconfident (2)	-3.37%[a]	-2.59%[a]	-5.85%[b]	-3.73%
p-value	(0.001)	(0.007)	(0.030)	(0.272)
n	48	30	8	10
Differential (1)-(2)	2.01%	3.31%[b]	3.00%	0.52%
p-value	(0.136)	(0.026)	(0.642)	(0.886)

Table 3.11 Cumulative Abnormal Returns (CARs) of Rational and Overconfident Acquirers by Stock Options Proxy and Deal Features

This table presents the Cumulative Abnormal Returns (CARs) during five days (-2, +2) surrounding the announcement of rational and overconfident acquirers by stock options' proxy. 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). Managers characterized by the business press with the words 'confident', 'confidence', 'optimistic', 'optimism', 'certain' and 'positive are classified as overconfident managers. Those characterized as 'reliable', 'cautious', 'prudent', 'conservative', 'practical', 'sensible', 'frugal', 'careful' or 'steady' are classified as rational managers. All Panels shows the returns to rational and overconfident bidders by target's ownership status (public or private) and the method of payment (all-cash and non-cash (i.e., any other type of offer)). Panels A (B) shows the CARs for value (glamour) bidders. Acquirers with higher (lower) than median book-to-market ratio (a month prior to bid announcement) are categorized as value (glamour) bidders. Panels C (D) shows the CARs for small (big) bidders. Acquirers with larger (smaller) than median size (a month prior to bid announcement) are categorized as big (small) bidders. Panels E (F) shows the CARs for high (low) relative size deals. The relative size of the deal is defined as the deal value divided by the market value of the acquirer a month before the announcement date. Deals above (below) the median relative size are classified as high (low) RS. Panels G (H) shows the CARs for domestic (foreign) bidders. Acquisitions with bidders and targets originated from the same (different) country are defined as domestic (foreign) acquisitions. Panels I (J) shows the CARs for diversifying (non-diversifying) bidders. An acquisition is defined as diversifying (focused) when the acquirer's two-digit SIC code is different (the same) from that of the target. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively. The Differential (1)-(2) represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of rational versus overconfident bidders. P-values are reported in brackets. The sample size n is presented below the p-value.

Panel A: Value Bidders							Panel B: Glamour Bidders						
	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**		**All**	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
Rational	1.51%[b]	2.12%[a]	-0.66%	1.53%[b]	-1.42%	1.88%	Rational	0.98%	1.89%[a]	-2.25%	0.96%	-2.44%	1.20%
p-value	(0.017)	(0.004)	(0.589)	(0.038)	(0.593)	(0.112)	p-value	(0.145)	(0.008)	(0.169)	(0.308)	(0.474)	(0.217)
n	110	86	24	59	6	45	n	86	67	19	33	3	50
Overconfident	0.82%[c]	1.36%[a]	-2.40%	1.21%[b]	-0.47%	0.54%	Overconfident	0.44%	1.22%[a]	-4.20%[a]	0.26%	-3.20%	0.99%[c]
p-value	(0.091)	(0.008)	(0.110)	(0.037)	(0.896)	(0.496)	p-value	(0.274)	(0.002)	(0.002)	(0.642)	(0.255)	(0.078)
n	155	133	22	73	5	77	n	179	153	26	84	9	86
Differential (1)-(2)	0.69%	0.76%	1.73%	0.31%	-0.95%	1.34%	Differential (1)-(2)	0.54%	0.67%	1.95%	0.70%	0.76%	0.21%
p-value	(0.386)	(0.385)	(0.361)	(0.734)	(0.828)	(0.342)	p-value	(0.486)	(0.403)	(0.329)	(0.521)	(0.850)	(0.852)

Table 3.11-Continued

Panel C: Small Bidders

	All	Private	Public	Cash	Stock	Mixed
Rational	2.47%[a]	2.58%[a]	1.31%	2.27%[b]	-2.54%	3.20%[a]
p-value	(0.001)	(0.001)	(0.688)	(0.024)	(0.401)	(0.005)
n	97	89	8	45	5	47
Overconfident	1.25%[a]	1.59%[a]	-2.79%	1.35%[b]	-3.79%	1.64%[b]
p-value	(0.005)	(0.000)	(0.134)	(0.017)	(0.250)	(0.012)
n	168	155	13	75	8	85
Differential (1)-(2)	1.22%	0.98%	4.10%	0.91%	1.25%	1.56%
p-value	(0.147)	(0.250)	(0.276)	(0.417)	(0.765)	(0.220)

Panel D: Large Bidders

	All	Private	Public	Cash	Stock	Mixed
Rational	0.10%	1.24%[c]	-1.97%[b]	0.42%	-0.78%	-0.13%
p-value	(0.850)	(0.055)	(0.044)	(0.478)	(0.782)	(0.894)
n	99	64	35	47	4	48
Overconfident	-0.03%	0.92%[b]	-3.59%[a]	0.11%	-0.14%	-0.17%
p-value	(0.946)	(0.034)	(0.003)	(0.849)	(0.957)	(0.809)
n	166	131	35	82	6	78
Differential (1)-(2)	0.13%	0.32%	1.62%	0.31%	-0.64%	0.04%
p-value	(0.849)	(0.679)	(0.270)	(0.706)	(0.863)	(0.975)

Panel E: Low Relative Size Deals

	All	Private	Public	Cash	Stock	Mixed
Rational	0.75%	0.95%[c]	-1.33%	0.49%	0.00%[a]	1.36%
p-value	(0.135)	(0.078)	(0.285)	(0.374)	(0.000)	(0.149)
n	93	85	8	54	1	38
Overconfident	0.91%[b]	1.10%[a]	-1.88%	0.34%	3.36%	1.43%[b]
p-value	(0.015)	(0.003)	(0.367)	(0.492)	(0.216)	(0.014)
n	172	161	11	89	4	79
Differential (1)-(2)	-0.16%	-0.15%	0.55%	0.15%	0.00%	-0.07%
p-value	(0.798)	(0.812)	(0.813)	(0.841)	(0.000)	(0.946)

Panel F: High Relative Size Deals

	All	Private	Public	Cash	Stock	Mixed
Rational	1.75%[b]	3.36%[a]	-1.37%	2.50%[b]	-0.98%	1.63%
p-value	(0.020)	(0.000)	(0.246)	(0.030)	(0.612)	(0.137)
n	103	68	35	38	8	57
Overconfident	0.30%	1.52%[a]	-3.82%[a]	1.18%[c]	-4.45%[c]	0.16%
p-value	(0.548)	(0.005)	(0.001)	(0.079)	(0.095)	(0.827)
n	162	125	37	68	10	84
Differential (1)-(2)	1.45%	1.83%[b]	2.45%	1.33%	3.48%	1.47%
p-value	(0.107)	(0.079)	(0.122)	(0.308)	(0.266)	(0.265)

Panel G: Domestic Target Firms

	All	Private	Public	Cash	Stock	Mixed
Rational	1.97%[a]	2.58%[a]	-1.03%	2.08%[a]	-2.50%	2.40%[b]
p-value	(0.001)	(0.000)	(0.511)	(0.007)	(0.220)	(0.012)
n	131	109	22	55	8	68
Overconfident	0.60%	1.39%[a]	-3.90%[a]	0.45%	-3.81%[c]	1.15%[b]
p-value	(0.106)	(0.000)	(0.003)	(0.373)	(0.079)	(0.031)
n	227	193	34	92	12	123
Differential (1)-(2)	1.37%[c]	1.18%	2.87%	1.64%[c]	1.31%	1.26%
p-value	(0.051)	(0.102)	(0.151)	(0.069)	(0.634)	(0.243)

Panel H: Foreign Target Firms

	All	Private	Public	Cash	Stock	Mixed
Rational	-0.12%	0.64%	-1.71%	0.19%	0.00%	-0.71%
p-value	(0.853)	(0.410)	(0.157)	(0.826)	(0.000)	(0.496)
n	65	44	21	37	1	27
Overconfident	0.65%	1.06%[c]	-2.09%	1.07%	7.29%	-0.36%
p-value	(0.255)	(0.089)	(0.109)	(0.111)	(0.260)	(0.734)
n	107	93	14	65	2	40
Differential (1)-(2)	-0.77%	-0.43%	0.39%	-0.87%	0.00%[a]	-0.35%
p-value	(0.373)	(0.665)	(0.820)	(0.423)	(0.000)	(0.810)

Table 3.11-Continued

Panel I: Diversifying Deals						
	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
Rational	0.66%	1.32%[b]	-2.13%	0.22%	0.00%	1.46%
p-value	(0.239)	(0.022)	(0.191)	(0.657)	(0.000)	(0.162)
n	100	81	19	53	1	46
Overconfident	0.36%	0.88%[b]	-3.46%[b]	0.87%[c]	-2.06%	-0.11%
p-value	(0.371)	(0.030)	(0.019)	(0.079)	(0.631)	(0.872)
n	176	155	21	92	4	80
Differential (1)-(2)	0.30%	0.44%	1.33%	-0.65%	0.00%	1.56%
p-value	(0.661)	(0.527)	(0.525)	(0.354)	(0.000)	(0.202)

Panel J: Non-Diversifying Deals						
	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
Rational	1.92%[a]	2.81%[a]	-0.75%	2.82%[b]	-0.38%	1.58%
p-value	(0.009)	(0.002)	(0.541)	(0.016)	(0.780)	(0.150)
n	96	72	24	39	8	49
Overconfident	0.90%[c]	1.77%[a]	-3.30%[b]	0.47%	-2.29%	1.63%[b]
p-value	(0.062)	(0.000)	(0.016)	(0.493)	(0.384)	(0.018)
n	158	131	27	65	10	83
Differential (1)-(2)	1.02%	1.04%	2.55%	2.35%[c]	1.90%	-0.05%
p-value	(0.243)	(0.291)	(0.155)	(0.077)	(0.512)	(0.969)

Table 3.12 Correlation Matrix of Control Variables

This Table presents the correlations coefficient among all the variable that are used in the multivariate analysis. Overconfidence variables include the following dummies: Stock Options dummy which takes the value of 1 if the manager holds the options until the year before the expiration date and 0 otherwise. Multiple acquirers' dummy which takes the value of 1 if a manager conducts five or more acquisitions within a 3-year period and 0 otherwise. The interaction proxy variable is a dummy that takes the value of 1, if managers are classified as overconfident with both the stock options and the multiple acquirers' proxies and zero otherwise. Business Press dummy which takes the value of 1 if managers are characterized by the business press with the words 'confident', 'confidence', 'optimistic', 'optimism', 'certain' and 'positive and zero otherwise. Target ownership status dummy takes the value of one if the target is private and zero otherwise; cash (stock) deals is an indicator variable that takes the value of 1 for acquisitions financed with 100% cash (stock) and 0 otherwise. The size of acquirers (Log MV) is the natural logarithm of bidder's market value a month before the deal's announcement. Diversifying deals is a dummy that takes the value of 1 when the acquirer's two-digit SIC code is different from that of the target and 0 otherwise. 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 target and bidder size. 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

Table 3.12-contniued

	Overconfident (Stock Options)	Overconfident (Multiple Acquirers)	Overconfident (Business Press)	Private	Cash	Stock	Log (MV)	BTMV	Relative Size	Diversifying	Merger Activity (1=Active, high)	FTALLSH	Ri-Rm
Overconfident (Stock Options)	1												
Overconfident (Multiple Acquirers)	0.340	1											
Overconfident (Business Press)	-0.037	0.157	1										
Private	-0.075	0.097	0.065	1									
Cash	0.003	0.001	0.017	0.008	1								
Stock	0.024	-0.009	-0.051	-0.293	-0.223	1							
Log (MV)	-0.026	-0.094	0.140	-0.228	0.137	-0.099	1						
BTMV	0.060	-0.108	-0.030	-0.062	0.024	0.066	-0.223	1					
Relative Size	0.034	-0.037	-0.088	-0.108	-0.095	0.121	-0.231	0.255	1				
Diversifying	-0.043	0.016	0.006	0.008	0.014	-0.016	-0.003	0.004	-0.008	1			
Merger Activity (1=Active, high)	-0.032	0.031	-0.040	0.042	0.032	-0.027	-0.022	-0.010	0.016	0.013	1		
FTALLSH	0.033	-0.051	0.027	-0.012	0.042	0.001	0.023	-0.053	-0.008	0.038	0.288	1	
Ri-Rm	-0.028	0.041	-0.002	-0.002	-0.087	0.074	0.003	-0.041	0.005	0.002	-0.047	0.026	1

Table 3.13 Regressions of CARs on Proxies of Managerial Overconfidence and Deal Features

This table presents regression estimates of the acquirer's five-day cumulative abnormal return controlling for managerial overconfidence effect and other deal and acquirer characteristics. Overconfidence variables include the following dummies: Stock Options dummy which takes the value of 1 if the manager holds the options until the year before the expiration date and 0 otherwise. Multiple acquirers' dummy which takes the value of 1 if a manager conducts five or more acquisitions within a 3-year period and 0 otherwise. The interaction proxy variable is a dummy that takes the value of 1, if managers are classified as overconfident with both the stock options and the multiple acquirers' proxies and zero otherwise. Business Press dummy which takes the value of 1 if managers are characterized by the business press with the words 'confident', 'confidence', 'optimistic', 'optimism', 'certain' and 'positive and zero otherwise. Target ownership status dummy takes the value of one if the target is private and zero otherwise; cash (stock) deals is an indicator variable that takes the value of 1 for acquisitions financed with 100% cash (stock) and 0 otherwise. The size of acquirers (Log MV) is the natural logarithm of bidder's market value a month before the deal's announcement. Diversifying deals is a dummy that takes the value of 1 when the acquirer's two-digit SIC code is different from that of the target and 0 otherwise. 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 target and bidder size. 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. P-values are reported in brackets. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively.

Table 3.13-Continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	-0.003	0.012[a]	0.029[b]	0.016[a]	-0.005	0.013[a]	0.045[b]
	(0.868)	(0.000)	(0.042)	(0.000)	(0.836)	(0.003)	(0.014)
Overconfident deals (stock options) (Dummy = 1, if the acquirer's manager is overconfident)		-0.011[b]	-0.009[c]				
		(0.017)	(0.058)				
Overconfident deals (multiple acquirers) (Dummy = 1, if the acquirer's manager is overconfident)				-0.007[a]	-0.006[b]		
				(0.026)	(0.028)		
Overconfident deals (business press) (Dummy = 1, if the acquirer's manager is overconfident)						-0.006	-0.010[c]
						(0.217)	(0.067)
Private target deals (Dummy = 1, if the target is a private firm)	0.032[a]		0.014[c]		0.033[a]		0.020[b]
	(0.000)		(0.084)		(0.000)		(0.013)
Cash deals (Dummy = 1, if the deal is settled either in cash and/or debt)	0.001		-0.007[c]		0.000		0.001
	(0.791)		(0.100)		(0.946)		(0.800)
Common stock deals (Dummy = 1, if the deal is settled in shares only)	0.02		-0.023[c]		0.021		-0.023
	(0.162)		(0.052)		(0.152)		(0.14)
Diversifying deals (Dummy = 1, If target and acquirer belong to different	0.003		0.000		0.002		-0.014[a]
	(0.384)		(0.922)		(0.449)		(0.009)
B/M	0.005		0.001		0.005		0.001
	(0.730)		(0.531)		(0.731)		(0.838)
Relative size	0.007		-0.014		0.007		-0.037[a]
	(0.551)		(0.316)		(0.558)		(0.008)
Log (MV)	-0.010[b]		-0.011[a]		-0.009[c]		-0.013[a]
	(0.048)		(0.001)		(0.079)		(0.000)
$FTALLSH_{(-180,-3)}$	0.059[a]		0.024		0.056[a]		0.034
	(0.000)		(0.176)		(0.001)		(0.135)
$Ri\text{-}Rm_{(-180,-3)}$	0.006		0.013		0.005		-0.005
	(0.172)		(0.124)		(0.205)		(0.601)
High Merger Activity (Dummy=1, if the deal is announced in a quarter of high	-0.004		-0.001		-0.003		-0.005
	(0.144)		(0.792)		(0.250)		(0.301)
N	3,038	848	831	3,099	2,935	530	521
F-Statistics	6.94	4.69	3.16	7.89	6.08	1.43	5.14
Adj. R^2	5.11%	0.67%	5.65%	0.16%	5.25%	0.29%	12.66%

Table 3.14 Calendar-Time Portfolio Regressions (CTPRs) of Long-Run Stock Returns using the Fama-French 3-Factor Model by Stock Options Proxy

Monthly average abnormal returns (in percent) of bidders for one and three years following the announcement of bids are reported by the target ownership status (private (Panel B) or public (Panel C)) and method of payment (cash, stock and mixed offers) for rational and overconfident acquirers as classified by the stock options proxy. Managers who hold stock options until the year before the expiration date are classified as overconfident. All others are classified as rational. The calendar-time excess returns reported in the table are estimated using the Fama-French 3-factor model with the following regression:

$$R_{pt} - R_{ft} = a_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

The value of alpha (α_i) represents the average monthly excess returns for each sample group in the table. Acquirers enter the portfolio on the announcement month of successful bid and remain for 36 months and the portfolios are rebalanced. Statistical significance of returns (different from zero) are represented by 'a', 'b' and 'c' at 1%, 5% and 10%, respectively. P-values are reported in brackets. Standard errors are corrected for heteroscedasticity. The number of observations, the number of calendar observations and the R^2 of each regression are also reported. The table also reports Rational (1) minus Overconfident (2) zero investment portfolio alphas.

	Stock Options Proxy (1 Year)				*Stock Options Proxy (3 Years)*			
	All	**Cash**	**Stock**	**Mixed**	**All**	**Cash**	**Stock**	**Mixed**
Panel A: All Targets								
All	-0.09%	-0.28%	-1.23%[b]	0.14%	-0.10%	-0.12%	-0.62%	-0.12%
p-value	(0.683)	(0.259)	(0.029)	(0.628)	(0.564)	(0.576)	(0.152)	(0.577)
Obs.	848	372	35	441	848	372	35	441
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	75.16%	67.36%	17.75%	63.34%	78.07%	74.32%	22.61%	72.63%
Rational (1)	0.11%	0.10%	-0.65%	0.11%	-0.09%	0.01%	-0.75%	-0.15%
p-value	(0.642)	(0.715)	(0.261)	(0.710)	(0.667)	(0.963)	(0.126)	(0.514)
Obs.	601	263	23	315	601	263	23	315
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	68.28%	55.97%	6.61%	57.76%	73.34%	68.13%	13.95%	67.76%
Overconfident (2)	-0.69%[b]	-0.73%	-1.24%[b]	0.19%	-0.28%	-0.36%	-0.78%	-0.25%
p-value	(0.046)	(0.065)	(0.042)	(0.729)	(0.337)	(0.308)	(0.191)	(0.499)
Obs.	247	109	12	126	247	109	12	126
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	56.91%	37.77%	15.67%	37.94%	60.24%	42.83%	24.14%	50.10%
Differential (1) - (2)	0.80%[b]	0.84%[c]	0.59%	-0.07%	0.19%	0.37%	0.03%	0.10%
p-value	(0.031)	(0.077)	(0.481)	(0.893)	(0.568)	(0.374)	(0.966)	(0.808)
R^2	2.67%	1.24%	4.11%	7.47%	4.51%	1.12%	4.36%	7.39%

Table 3.14-Continued

Panel B: Private Targets								
All	-0.20%	-0.21%	-1.60%[b]	-0.15%	-0.13%	-0.07%	-2.44%[b]	-0.29%
p-value	(0.353)	(0.473)	(0.027)	(0.557)	(0.486)	(0.746)	(0.012)	(0.179)
Obs.	722	318	14	390	722	318	14	390
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	70.24%	55.22%	6.90%	65.60%	75.87%	68.56%	11.81%	72.46%
Rational (1)	0.02%	0.21%	-1.32%[b]	-0.18%	-0.07%	0.14%	-2.65%[a]	-0.27%
p-value	(0.947)	(0.528)	(0.034)	(0.534)	(0.736)	(0.567)	(0.006)	(0.253)
Obs.	522	230	10	282	522	230	10	282
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	63.79%	45.15%	5.83%	58.55%	72.40%	63.18%	11.16%	68.35%
Overconfident (2)	-0.86%[b]	-0.92%[b]	-0.89%	0.18%	-0.37%	-0.42%	-0.52%	-0.34%
p-value	(0.011)	(0.027)	(0.138)	(0.721)	(0.233)	(0.257)	(0.403)	(0.327)
Obs.	200	88	4	108	200	88	4	108
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	53.13%	33.16%	4.61%	34.14%	51.71%	38.57%	8.69%	43.01%
Differential (1) - (2)	0.88%[b]	1.13%[b]	-0.43%	-0.36%	0.31%	0.56%	-2.13%[c]	0.07%
p-value	(0.013)	(0.019)	(0.608)	(0.501)	(0.376)	(0.173)	(0.058)	(0.857)
R^2	3.50%	0.69%	1.67%	5.17%	1.36%	1.00%	2.31%	2.83%
Panel C: Public Targets								
All	0.43%	-0.38%	-0.53%	0.39%	-0.01%	-0.14%	-0.34%	0.35%
p-value	(0.240)	(0.366)	(0.219)	(0.478)	(0.968)	(0.655)	(0.463)	(0.284)
Obs.	126	54	21	51	126	54	21	51
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	55.73%	42.52%	12.93%	36.81%	60.40%	56.57%	16.47%	46.26%
Rational (1)	0.52%	-0.30%	-0.30%	0.68%	-0.11%	-0.21%	-0.06%	0.17%
p-value	(0.188)	(0.513)	(0.478)	(0.176)	(0.702)	(0.567)	(0.898)	(0.641)
Obs.	79	33	13	33	79	33	13	33
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	43.04%	28.45%	3.82%	25.64%	52.41%	49.29%	14.62%	40.18%
Overconfident (2)	0.39%	-0.29%	-0.75%[c]	-0.47%	0.42%	-0.03%	-0.48%	0.09%
p-value	(0.378)	(0.466)	(0.065)	(0.440)	(0.226)	(0.931)	(0.317)	(0.856)
Obs.	47	21	8	18	47	21	8	18
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	23.85%	18.71%	10.02%	21.68%	41.38%	33.54%	15.11%	28.66%
Differential (1) - (2)	0.13%	-0.01%	0.45%	1.15%	-0.53%	-0.18%	0.42%	0.08%
p-value	(0.822)	(0.983)	(0.444)	(0.154)	(0.197)	(0.711)	(0.466)	(0.900)
R^2	4.79%	4.73%	2.70%	4.42%	4.83%	5.94%	0.21%	5.54%

Table 3.15 Calendar-Time Portfolio Regressions (CTPRs) of Long-Run Stock Returns using the Fama-French 3-Factor Model by Stock Options Proxy for Various Bidder and Deal Characteristics

Monthly average abnormal returns (in percent) of bidders for one (Panel A) and three (Panel B) years following the announcement of bids are reported by various acquirer and deal characteristics (value, glamour, small and big bidders, low and high relative size deals, domestic, foreign, diversifying and non-diversifying deals) for rational and overconfident acquirers as classified by the stock options proxy. Managers who hold stock options until the year before the expiration date are classified as overconfident. All others are classified as rational. Acquirers with higher (lower) than median book-to-market ratio (a month prior to bid announcement) are categorized as value (glamour) bidders. Acquirers with larger (smaller) than median size (a month prior to bid announcement) are categorized as big (small) bidders. The relative size of the deal is defined as the deal value divided by the market value of the acquirer a month before the announcement date. Deals above (below) the median relative size are classified as high (low). Acquisitions with bidders and targets originated from the same (different) country are defined as domestic (foreign) acquisitions. An acquisition is defined as diversifying (focused) when the acquirer's two-digit SIC code is different (the same) from that of the target. The calendar-time excess returns reported in the table are estimated using the Fama-French 3-factor model with the following regression:

$$R_{pt} - R_{ft} = a_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

The value of alpha (α_i) represents the average monthly excess returns for each sample group in the table. Acquirers enter the portfolio on the announcement month of successful bid and remain for 36 months and the portfolios are rebalanced. Statistical significance of returns (different from zero) are represented by 'a', 'b' and 'c' at 1%, 5% and 10%, respectively. P-values are reported in brackets. Standard errors are corrected for heteroscedasticity. The number of observations, the number of calendar observations and the R^2 of each regression are also reported. The table also reports Rational (1) minus Overconfident (2) zero investment portfolio alphas.

Table 3.15-Continued

Panel A: 1 Year										
	Value	**Glamour**	**Small**	**Big**	**LowRS**	**HighRS**	**Domestic**	**Foreign**	**Diversifying**	**Non-Diversifying**
All	0.04%	-0.08%	0.71%[a]	-0.21%	-0.19%	-0.07%	0.01%	-0.30%	-0.07%	-0.17%
p-value	(0.877)	(0.777)	(0.004)	(0.356)	(0.491)	(0.793)	(0.967)	(0.295)	(0.803)	(0.540)
Obs.	424	423	424	424	424	424	566	282	447	401
Calendar Obs.	203	203	203	203	203	203	203	203	203	203
R^2	62.09%	66.21%	64.61%	73.12%	63.72%	66.03%	66.50%	66.75%	66.31%	64.50%
Rational (1)	0.15%	0.03%	1.09%[a]	-0.03%	-0.10%	0.19%	0.10%	-0.03%	0.09%	0.27%
p-value	(0.627)	(0.922)	(0.001)	(0.903)	(0.702)	(0.569)	(0.708)	(0.912)	(0.754)	(0.409)
Obs.	291	309	291	310	313	288	394	207	325	276
Calendar Obs.	203	203	203	203	203	203	203	203	203	203
R^2	54.37%	63.50%	50.47%	66.07%	59.16%	52.28%	58.59%	61.43%	62.56%	45.91%
Overconfident (2)	-0.52%	-0.20%	-0.26%	-1.02%	-0.41%	-0.55%	-0.27%	-0.90%[b]	-0.58%	-0.83%[b]
p-value	(0.165)	(0.684)	(0.543)	(0.028)	(0.342)	(0.177)	(0.453)	(0.066)	(0.214)	(0.045)
Obs.	133	114	133	114	111	136	172	75	122	125
Calendar Obs.	203	203	203	203	203	203	203	203	203	203
R^2	42.13%	42.61%	40.33%	43.33%	48.00%	40.59%	52.55%	39.76%	40.71%	48.76%
Differential (1) - (2)	0.67%	0.23%	1.35%[a]	0.99%[b]	0.30%	0.74%	0.37%	0.87%[c]	0.68%	1.10%[b]
p-value	(0.147)	(0.667)	(0.010)	(0.044)	(0.484)	(0.146)	(0.371)	(0.099)	(0.187)	(0.031)
R^2	3.22%	0.91%	1.44%	3.18%	3.18%	0.92%	3.07%	1.14%	6.29%	5.38%

Table 3.15-Continued

Panel B: 3 Years										
	Value	**Glamour**	**Small**	**Big**	**LowRS**	**HighRS**	**Domestic**	**Foreign**	**Diversifying**	**Non-Diversifying**
All	0.11%	-0.41%[c]	0.38%[c]	-0.24%	-0.13%	-0.32%	-0.05%	-0.30%	-0.20%	-0.20%
p-value	(0.621)	(0.078)	(0.055)	(0.297)	(0.542)	(0.153)	(0.786)	(0.260)	(0.344)	(0.525)
Obs.	408	403	408	403	404	407	539	272	426	385
Calendar Obs.	215	215	215	215	215	215	215	215	215	215
R^2	67.53%	73.20%	71.30%	72.96%	72.42%	72.14%	73.97%	68.85%	72.58%	61.89%
Rational (1)	0.20%	-0.45%[c]	0.70%[b]	-0.21%	-0.09%	-0.26%	-0.14%	-0.12%	-0.14%	0.02%
p-value	(0.396)	(0.057)	(0.011)	(0.390)	(0.674)	(0.346)	(0.506)	(0.662)	(0.531)	(0.960)
Obs.	277	295	276	296	298	274	373	199	309	263
Calendar Obs.	215	215	215	215	215	215	215	215	215	215
R^2	65.75%	68.67%	58.22%	68.42%	68.21%	61.44%	67.31%	64.94%	68.85%	45.77%
Overconfident (2)	-0.26%	-0.07%	-0.01%	-0.37%	-0.16%	-0.31%	0.19%	-0.56%	-0.70%[c]	-0.21%
p-value	(0.401)	(0.829)	(0.977)	(0.221)	(0.634)	(0.348)	(0.544)	(0.117)	(0.073)	(0.464)
Obs.	131	108	132	107	106	133	166	73	117	122
Calendar Obs.	215	215	215	215	215	215	215	215	215	215
R^2	41.15%	59.57%	36.05%	60.34%	56.14%	47.55%	51.83%	55.12%	44.70%	60.67%
Differential (1) - (2)	0.46%	-0.38%	0.71%	0.16%	0.07%	0.05%	-0.32%	0.44%	0.56%	0.22%
p-value	(0.194)	(0.331)	(0.105)	(0.653)	(0.845)	(0.902)	(0.357)	(0.280)	(0.177)	(0.644)
R^2	6.45%	6.99%	5.67%	6.77%	4.56%	2.23%	3.78%	4.17%	0.50%	7.88%

Table 3.16 Calendar-Time Portfolio Regressions (CTPRs) of Long-Run Stock Returns using the Fama-French 3-Factor Model by Multiple Acquirers Proxy

Monthly average abnormal returns (in percent) of bidders for one and three years following the announcement of bids are reported by the target ownership status (private (Panel B) or public (Panel C)) and method of payment (cash, stock and mixed offers) for rational and overconfident acquirers as classified by the multiple acquirers proxy. Individual CEOs who made 5 or more acquisitions within a 3 year period are called overconfident. All others are classified as rational. The calendar-time excess returns reported in the table are estimated using the Fama-French 3-factor model with the following regression:

$$R_{pt} - R_{ft} = a_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

The value of alpha (α_i) represents the average monthly excess returns for each sample group in the table. Acquirers enter the portfolio on the announcement month of successful bid and remain for 36 months and the portfolios are rebalanced. Statistical significance of returns (different from zero) are represented by 'a', 'b' and 'c' at 1%, 5% and 10%, respectively. P-values are reported in brackets. Standard errors are corrected for heteroscedasticity. The number of observations, the number of calendar observations and the R^2 of each regression are also reported. The table also reports Rational (1) minus Overconfident (2) zero investment portfolio alphas.

	Multiple Acquirers Proxy (1 Year)				*Multiple Acquirers Proxy (3 Years)*			
	All	**Cash**	**Stock**	**Mixed**	**All**	**Cash**	**Stock**	**Mixed**
Panel A: All Targets								
All	-0.13%	-0.24%	-0.68%	-0.05%	-0.15%	-0.05%	-0.51%	-0.25%
p-value	(0.408)	(0.197)	(0.272)	(0.814)	(0.224)	(0.713)	(0.241)	(0.176)
Obs.	3,099	1,295	204	1,600	3,099	1,295	204	1,600
Calendar Obs.	203	203	203	203	214	215	214	215
R^2	82.80%	75.94%	32.97%	70.67%	87.24%	85.02%	47.74%	78.46%
Rational (1)	-0.12%	-0.23%	-0.47%	0.04%	-0.12%	0.00%	-0.49%	-0.19%
p-value	(0.456)	(0.274)	(0.425)	(0.867)	(0.360)	(0.977)	(0.280)	(0.285)
Obs.	2,256	931	166	1,159	2,256	931	166	1,159
Calendar Obs.	203	203	203	203	214	215	214	215
R^2	79.15%	66.58%	32.89%	62.33%	85.94%	80.43%	45.01%	77.03%
Overconfident (2)	-0.29%	-0.30%	0.35%	-0.43%	-0.58%[c]	-1.08%	-0.56%	-0.73%[b]
p-value	(0.300)	(0.290)	(0.666)	(0.204)	(0.074)	(0.169)	(0.410)	(0.029)
Obs.	843	364	38	441	843	364	38	441
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	70.72%	62.43%	14.89%	64.31%	70.97%	45.31%	19.37%	64.49%
Differential (1) - (2)	0.17%	0.07%	-0.82%	0.47%	0.47%	1.09%	0.06%	0.53%[c]
p-value	(0.525)	(0.837)	(0.387)	(0.195)	(0.133)	(0.161)	(0.935)	(0.098)
R^2	11.88%	4.00%	1.01%	5.12%	16.66%	12.50%	1.18%	9.71%

Table 3.16-Continued

Panel B: Private Targets								
All	-0.11%	-0.24%	0.37%	-0.20%	-0.03%	0.08%	-0.25%	-0.33%
p-value	(0.598)	(0.295)	(0.649)	(0.456)	(0.838)	(0.597)	(0.711)	(0.131)
Obs.	2,723	1,141	106	1,476	2,723	1,141	106	1,476
Calendar Obs.	203	203	203	203	214	215	214	215
R^2	76.17%	65.66%	30.03%	70.02%	84.23%	79.82%	34.89%	76.18%
Rational (1)	-0.14%	-0.35%	0.38%	-0.03%	0.01%	0.09%	-0.12%	-0.24%
p-value	(0.535)	(0.207)	(0.621)	(0.908)	(0.972)	(0.641)	(0.871)	(0.265)
Obs.	1,953	805	84	1,064	1,953	805	84	1,064
Calendar Obs.	203	203	203	203	214	215	214	215
R^2	70.94%	53.74%	26.15%	63.33%	83.94%	71.56%	28.22%	75.93%
Overconfident (2)	-0.21%	-0.13%	-0.83%	-0.49%	-0.50%	-0.87%	-0.78%	-0.78%[c]
p-value	(0.480)	(0.649)	(0.457)	(0.183)	(0.136)	(0.268)	(0.345)	(0.027)
Obs.	770	336	22	412	770	336	22	412
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	68.14%	59.56%	9.42%	60.65%	68.26%	42.41%	15.42%	62.57%
Differential (1) - (2)	0.07%	-0.21%	1.22%	0.46%	0.51%	0.96%	0.64%	0.55%[c]
p-value	(0.807)	(0.571)	(0.354)	(0.230)	(0.161)	(0.262)	(0.528)	(0.089)
R^2	5.99%	3.30%	1.07%	2.03%	10.90%	9.83%	0.97%	5.82%
Panel C: Public Targets								
All	-0.10%	0.09%	-1.12%[c]	-0.48%	-0.24%	-0.25%	-0.69%[c]	-0.15%
p-value	(0.622)	(0.746)	(0.056)	(0.222)	(0.128)	(0.195)	(0.070)	(0.522)
Obs.	376	154	98	124	376	154	98	124
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	69.72%	59.62%	25.73%	39.68%	78.92%	75.21%	48.87%	63.81%
Rational (1)	0.03%	0.26%	-1.15%[c]	-0.26%	-0.18%	-0.12%	-0.57%	-0.16%
p-value	(0.879)	(0.367)	(0.062)	(0.573)	(0.271)	(0.562)	(0.153)	(0.509)
Obs.	303	126	82	95	303	126	82	95
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	65.15%	57.90%	24.12%	31.85%	76.19%	69.89%	47.39%	61.13%
Overconfident (2)	-1.15%	-0.89%[c]	-0.46%	-0.66%	-0.52%	-0.95%[b]	-0.68%[a]	0.02%
p-value	(0.035)	(0.057)	(0.283)	(0.246)	(0.125)	(0.012)	(0.006)	(0.972)
Obs.	73	28	16	29	73	28	16	29
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	32.73%	23.71%	9.92%	12.97%	52.62%	46.80%	23.24%	26.46%
Differential (1) - (2)	1.18%[b]	1.15%[b]	-0.69%	0.40%	0.33%	0.83%[c]	0.11%	-0.17%
p-value	(0.045)	(0.031)	(0.328)	(0.595)	(0.379)	(0.059)	(0.805)	(0.710)
R^2	1.23%	7.55%	7.88%	4.71%	2.26%	5.61%	22.57%	2.61%

Table 3.17 Calendar-Time Portfolio Regressions (CTPRs) of Long-Run Stock Returns using the Fama-French 3-Factor Model by Multiple Acquirers Proxy for Various Bidder and Deal Characteristics

Monthly average abnormal returns (in percent) of bidders for one (Panel A) and three (Panel B) years following the announcement of bids are reported by various acquirer and deal characteristics (value, glamour, small and big bidders, low and high relative size deals, domestic, foreign, diversifying and non-diversifying deals) for rational and overconfident acquirers as classified by the multiple acquirers proxy. Individual CEOs who made 5 or more acquisitions within a 3 year period are called overconfident. All others are classified as rational. Acquirers with higher (lower) than median book-to-market ratio (a month prior to bid announcement) are categorized as value (glamour) bidders. Acquirers with larger (smaller) than median size (a month prior to bid announcement) are categorized as big (small) bidders. The relative size of the deal is defined as the deal value divided by the market value of the acquirer a month before the announcement date. Deals above (below) the median relative size are classified as high (low). Acquisitions with bidders and targets originated from the same (different) country are defined as domestic (foreign) acquisitions. An acquisition is defined as diversifying (focused) when the acquirer's two-digit SIC code is different (the same) from that of the target. The calendar-time excess returns reported in the table are estimated using the Fama-French 3-factor model with the following regression:

$$R_{pt} - R_{ft} = a_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

The value of alpha (α_i) represents the average monthly excess returns for each sample group in the table. Acquirers enter the portfolio on the announcement month of successful bid and remain for 36 months and the portfolios are rebalanced. Statistical significance of returns (different from zero) are represented by 'a', 'b' and 'c' at 1%, 5% and 10%, respectively. P-values are reported in brackets. Standard errors are corrected for heteroscedasticity. The number of observations, the number of calendar observations and the R^2 of each regression are also reported. The table also reports Rational (1) minus Overconfident (2) zero investment portfolio alphas.

Table 3.17-Continued

Panel B: 1 Year										
	Value	**Glamour**	**Small**	**Big**	**LowRS**	**HighRS**	**Domestic**	**Foreign**	**Diversifying**	**Non-Diversifying**
All	0.01%	-0.29%	0.36%	-0.16%	-0.24%	0.09%	0.00%	-0.25%	-0.30%	0.05%
p-value	(0.966)	(0.148)	(0.187)	(0.320)	(0.299)	(0.665)	(0.980)	(0.210)	(0.125)	(0.797)
Obs.	1,535	1,535	1,522	1,548	1,550	1,549	2,122	977	1,518	1,581
Calendar Obs.	203	203	203	203	203	203	203	203	203	203
R^2	72.40%	76.50%	66.49%	81.67%	71.44%	71.67%	79.98%	73.92%	73.43%	74.98%
Rational (1)	-0.05%	-0.26%	-0.11%	-0.12%	-0.25%	0.06%	0.04%	-0.29%	-0.26%	-0.02%
p-value	(0.830)	(0.209)	(0.700)	(0.480)	(0.303)	(0.781)	(0.823)	(0.194)	(0.204)	(0.946)
Obs.	1,144	1,088	1,203	1,029	1,010	1,246	1,561	695	1,101	1,155
Calendar Obs.	203	203	203	203	203	203	203	203	203	203
R^2	66.48%	72.49%	65.19%	77.92%	66.82%	65.70%	74.19%	68.37%	69.03%	69.91%
Overconfident (2)	-0.09%	-0.36%	1.40%[a]	-0.48%	-0.43%	0.16%	0.00%	-0.68%[b]	-0.59%[c]	0.03%
p-value	(0.759)	(0.300)	(0.000)	(0.108)	(0.196)	(0.703)	(0.997)	(0.049)	(0.072)	(0.934)
Obs.	391	447	319	519	540	303	561	282	417	426
Calendar Obs.	203	203	203	203	203	203	203	203	203	203
R^2	53.95%	62.39%	51.12%	67.92%	62.54%	49.15%	65.46%	58.23%	60.55%	60.57%
Differential (1) - (2)	0.04%	0.10%	-1.51%[a]	0.37%	0.17%	-0.09%	0.04%	0.39%	0.32%	-0.04%
p-value	(0.897)	(0.761)	(0.000)	(0.204)	(0.583)	(0.834)	(0.901)	(0.269)	(0.326)	(0.901)
R^2	6.83%	5.42%	6.98%	11.69%	6.41%	2.58%	8.70%	3.10%	10.26%	4.45%

Table 3.17-Continued

Panel B: 3 Years										
	Value	**Glamour**	**Small**	**Big**	**LowRS**	**HighRS**	**Domestic**	**Foreign**	**Diversifying**	**Non-Diversifying**
All	-0.11%	-0.26%[c]	0.38%	-0.18%	-0.13%	-0.25%	-0.12%	-0.18%	-0.21%	-0.09%
p-value	(0.521)	(0.074)	(0.173)	(0.153)	(0.393)	(0.129)	(0.345)	(0.242)	(0.127)	(0.577)
Obs.	1,449	1,430	1,447	1,432	1,440	1,439	1,971	908	1,418	1,461
Calendar Obs.	214	215	214	215	215	214	214	215	214	215
R^2	79.54%	83.63%	66.39%	86.73%	83.25%	79.51%	85.60%	81.46%	86.08%	79.94%
Rational (1)	-0.09%	-0.23%	0.13%	-0.13%	-0.09%	-0.24%	-0.05%	-0.16%	-0.14%	-0.10%
p-value	(0.592)	(0.117)	(0.642)	(0.339)	(0.587)	(0.165)	(0.737)	(0.310)	(0.342)	(0.523)
Obs.	1,067	1,008	1,131	944	925	1,150	1,440	635	1,020	1,055
Calendar Obs.	214	215	214	215	215	214	214	215	214	215
R^2	76.89%	81.34%	62.49%	85.23%	80.04%	76.34%	82.94%	79.07%	83.28%	78.41%
Overconfident (2)	-0.49%	-0.35%	0.68%[c]	-0.73%[b]	-0.61%[c]	0.15%	-0.57%[c]	-0.18%	-1.33%[c]	-0.30%
p-value	(0.161)	(0.210)	(0.054)	(0.028)	(0.069)	(0.683)	(0.095)	(0.537)	(0.094)	(0.344)
Obs.	382	422	316	488	515	289	531	273	398	406
Calendar Obs.	215	215	215	215	215	215	215	215	215	215
R^2	56.82%	69.15%	54.08%	69.90%	69.05%	50.89%	66.74%	67.26%	41.45%	65.06%
Differential (1) - (2)	0.40%	0.12%	-0.56%	0.60%[c]	0.53%[c]	-0.39%	0.52%	0.02%	1.19%	0.20%
p-value	(0.280)	(0.660)	(0.115)	(0.055)	(0.099)	(0.313)	(0.137)	(0.956)	(0.127)	(0.530)
R^2	12.64%	9.58%	2.74%	16.98%	15.35%	1.09%	10.72%	7.37%	10.34%	10.84%

Table 3.18 Calendar-Time Portfolio Regressions (CTPRs) of Long-Run Stock Returns using the Fama-French 3-Factor Model by Business Press Proxy

Monthly average abnormal returns (in percent) of bidders for one and three years following the announcement of bids are reported by the target ownership status (private (Panel B) or public (Panel C)) and method of payment (cash, stock and mixed offers) for rational and overconfident acquirers as classified by the business press proxy. Managers characterized by the business press with the words 'confident', 'confidence', 'optimistic', 'optimism', 'certain' and 'positive are classified as overconfident managers. Those characterized as 'reliable', 'cautious', 'prudent', 'conservative', 'practical', 'sensible', 'frugal', 'careful' or 'steady' are classified as rational managers. The calendar-time excess returns reported in the table are estimated using the Fama-French 3-factor model with the following regression:

$$R_{pt} - R_{ft} = a_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

The value of alpha (α_i) represents the average monthly excess returns for each sample group in the table. Acquirers enter the portfolio on the announcement month of successful bid and remain for 36 months and the portfolios are rebalanced. Statistical significance of returns (different from zero) are represented by 'a', 'b' and 'c' at 1%, 5% and 10%, respectively. P-values are reported in brackets. Standard errors are corrected for heteroscedasticity. The number of observations, the number of calendar observations and the R^2 of each regression are also reported. The table also reports Rational (1) minus Overconfident (2) zero investment portfolio alphas.

	Business Proxy (1 Year)				***Business Proxy (3 Years)***			
	All	**Cash**	**Stock**	**Mixed**	**All**	**Cash**	**Stock**	**Mixed**
				Panel A: All Targets				
All	-0.08%	0.01%	-1.18%	-0.14%	-0.10%	-0.02%	-1.20%[c]	-0.23%
p-value	(0.702)	(0.970)	(0.109)	(0.686)	(0.575)	(0.913)	(0.055)	(0.377)
Obs.	530	249	23	258	530	249	23	258
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	68.53%	62.79%	18.44%	50.05%	79.07%	75.31%	30.74%	64.99%
Rational (1)	-0.66%[b]	-0.45%	-2.01%[a]	-1.13%[b]	-0.55%[b]	-0.52%	-2.49%[a]	-0.60%[c]
p-value	(0.039)	(0.296)	(0.002)	(0.037)	(0.016)	(0.112)	(0.001)	(0.051)
Obs.	196	92	9	95	196	92	9	95
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	48.07%	29.82%	12.44%	28.06%	66.66%	52.29%	14.01%	55.12%
Overconfident (2)	0.09%	-0.08%	-0.79%	0.57%	-0.06%	-0.11%	-0.58%	-0.19%
p-value	(0.713)	(0.799)	(0.274)	(0.215)	(0.806)	(0.650)	(0.259)	(0.610)
Obs.	334	157	14	163	334	157	14	163
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	66.32%	54.42%	11.94%	47.04%	72.84%	66.88%	27.44%	56.23%
Differential (1) - (2)	-0.76%[c]	-0.36%	-1.22%	-1.70%[b]	-0.49%	-0.40%	-1.91%[b]	-0.41%
p-value	(0.059)	(0.517)	(0.213)	(0.011)	(0.105)	(0.325)	(0.031)	(0.337)
R^2	0.97%	3.32%	1.22%	0.95%	1.40%	2.95%	4.11%	3.23%

Table 3.18-Continued

Panel B: Private Targets								
All	0.12%	-0.22%	-2.38%[a]	0.12%	0.06%	0.02%	-2.22%[b]	-0.47%
p-value	(0.689)	(0.518)	(0.006)	(0.759)	(0.823)	(0.924)	(0.013)	(0.195)
Obs.	439	199	12	228	439	199	12	228
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	56.86%	46.57%	11.18%	54.97%	68.84%	59.88%	12.02%	63.50%
Rational (1)	-0.32%	-0.53%	-2.38%[a]	-1.04%[c]	-0.42%	-0.32%	-2.56%[a]	-1.14%[a]
p-value	(0.365)	(0.265)	(0.000)	(0.099)	(0.121)	(0.431)	(0.001)	(0.010)
Obs.	153	72	6	75	153	72	6	75
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	41.02%	23.21%	8.81%	27.91%	58.49%	34.21%	5.87%	55.71%
Overconfident (2)	0.36%	-0.41%	-0.53%	0.79%[c]	0.09%	-0.21%	-1.08%	-0.06%
p-value	(0.407)	(0.382)	(0.392)	(0.098)	(0.805)	(0.480)	(0.105)	(0.894)
Obs.	286	127	6	153	286	127	6	153
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	43.65%	38.28%	3.91%	45.93%	56.18%	59.12%	13.20%	50.46%
Differential (1) - (2)	-0.68%	-0.11%	-1.85%[b]	-1.84%[b]	-0.50%	-0.11%	-1.48%	-1.09%[b]
p-value	(0.209)	(0.873)	(0.043)	(0.017)	(0.256)	(0.837)	(0.153)	(0.022)
R^2	1.92%	3.07%	2.51%	0.72%	2.20%	4.16%	2.84%	2.07%
Panel C: Public Targets								
All	-0.41%	-0.12%	-0.67%	-0.66%	-0.49%[b]	-0.14%	-0.81%[c]	-0.76%[c]
p-value	(0.270)	(0.770)	(0.363)	(0.206)	(0.047)	(0.599)	(0.077)	(0.086)
Obs.	91	50	11	30	91	50	11	30
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	48.46%	30.18%	10.31%	21.45%	64.80%	59.38%	19.86%	33.70%
Rational (1)	-0.84%[c]	-0.33%	-0.35%[c]	-1.21%[b]	-0.99%[b]	-0.50%	-0.68%	-0.91%[b]
p-value	(0.083)	(0.325)	(0.098)	(0.013)	(0.012)	(0.127)	(0.144)	(0.037)
Obs.	43	20	3	20	43	20	3	20
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	23.54%	16.00%	3.76%	16.31%	33.62%	28.37%	8.89%	26.74%
Overconfident (2)	-0.82%	-0.58%	-0.87%	-0.59%	-0.35%	-0.03%	-1.22%[b]	-0.89%[c]
p-value	(0.132)	(0.259)	(0.221)	(0.217)	(0.222)	(0.926)	(0.030)	(0.089)
Obs.	48	30	8	10	48	30	8	10
Calendar Obs.	203	203	203	203	215	215	215	215
R^2	26.50%	22.75%	8.48%	5.75%	56.96%	51.34%	11.72%	23.01%
Differential (1) - (2)	-0.02%	0.25%	0.53%	-0.62%	-0.64%	-0.47%	0.54%	-0.03%
p-value	(0.982)	(0.682)	(0.484)	(0.371)	(0.201)	(0.327)	(0.438)	(0.966)
R^2	2.53%	4.67%	5.67%	2.84%	1.64%	7.17%	1.91%	1.41%

Table 3.19 Calendar-Time Portfolio Regressions (CTPRs) of Long-Run Stock Returns using the Fama-French 3-Factor Model by Business Press Proxy for Various Bidder and Deal Characteristics

Monthly average abnormal returns (in percent) of bidders for one (Panel A) and three (Panel B) years following the announcement of bids are reported by various acquirer and deal characteristics (value, glamour, small and big bidders, low and high relative size deals, domestic, foreign, diversifying and non-diversifying deals) for rational and overconfident acquirers as classified by the business press proxy. Managers characterized by the business press with the words ‘confident’, ‘confidence’, ‘optimistic’, ‘optimism’, ‘certain’ and ‘positive are classified as overconfident managers. Those characterized as ‘reliable’, ‘cautious’, ‘prudent’, ‘conservative’, ‘practical’, ‘sensible’, ‘frugal’, ‘careful’ or ‘steady’ are classified as rational managers. Acquirers with higher (lower) than median book-to-market ratio (a month prior to bid announcement) are categorized as value (glamour) bidders. Acquirers with larger (smaller) than median size (a month prior to bid announcement) are categorized as big (small) bidders. The relative size of the deal is defined as the deal value divided by the market value of the acquirer a month before the announcement date. Deals above (below) the median relative size are classified as high (low). Acquisitions with bidders and targets originated from the same (different) country are defined as domestic (foreign) acquisitions. An acquisition is defined as diversifying (focused) when the acquirer’s two-digit SIC code is different (the same) from that of the target. The calendar-time excess returns reported in the table are estimated using the Fama-French 3-factor model with the following regression:

$$R_{pt} - R_{ft} = a_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

The value of alpha (α_i) represents the average monthly excess returns for each sample group in the table. Acquirers enter the portfolio on the announcement month of successful bid and remain for 36 months and the portfolios are rebalanced. Statistical significance of returns (different from zero) are represented by ‘a’, ‘b’ and ‘c’ at 1%, 5% and 10%, respectively. P-values are reported in brackets. Standard errors are corrected for heteroscedasticity. The number of observations, the number of calendar observations and the R^2 of each regression are also reported. The table also reports Rational (1) minus Overconfident (2) zero investment portfolio alphas.

Table 3.19-Continued

Panel A: 1 Year										
	Value	**Glamour**	**Small**	**Big**	**LowRS**	**HighRS**	**Domestic**	**Foreign**	**Diversifying**	**Non-Diversifying**
All	0.04%	-0.24%	0.42%	-0.12%	-0.36%	0.43%	-0.06%	-0.33%	-0.14%	-0.13%
p-value	(0.881)	(0.377)	(0.150)	(0.596)	(0.256)	(0.145)	(0.818)	(0.266)	(0.604)	(0.669)
Obs.	265	264	264	265	265	264	357	172	276	253
Calendar Obs.	203	203	203	203	203	203	203	203	203	203
R^2	49.66%	61.66%	61.34%	65.65%	58.50%	53.52%	60.63%	53.42%	53.79%	57.40%
Rational (1)	-1.32%[a]	-0.26%	-0.43%	-0.85%[b]	-1.27%[a]	-0.86%[c]	-0.86%[c]	-0.48%	-0.41%	-0.57%
p-value	(0.005)	(0.579)	(0.345)	(0.019)	(0.002)	(0.080)	(0.058)	(0.271)	(0.382)	(0.160)
Obs.	110	86	97	99	93	103	131	65	100	96
Calendar Obs.	203	203	203	203	203	203	203	203	203	203
R^2	35.52%	30.25%	29.01%	43.11%	35.79%	30.11%	35.06%	32.92%	31.20%	26.44%
Overconfident (2)	-0.04%	-0.35%	0.42%	0.07%	0.14%	0.06%	-0.14%	-0.39%	0.11%	0.25%
p-value	(0.916)	(0.267)	(0.251)	(0.797)	(0.754)	(0.871)	(0.675)	(0.373)	(0.710)	(0.505)
Obs.	155	178	167	166	172	161	226	107	176	157
Calendar Obs.	203	203	203	203	203	203	203	203	203	203
R^2	40.31%	59.54%	52.85%	63.13%	44.81%	47.69%	59.66%	39.11%	53.90%	47.74%
Differential (1) - (2)	-1.27%[c]	0.09%	-0.85%	-0.92%[b]	-1.41%[b]	-0.92%	-0.72%	-0.09%	-0.52%	-0.82%
p-value	(0.055)	(0.867)	(0.147)	(0.039)	(0.014)	(0.131)	(0.194)	(0.879)	(0.315)	(0.156)
R^2	2.05%	5.35%	3.12%	1.21%	1.49%	0.56%	2.65%	1.65%	1.77%	3.90%

Table 3.19-Continued

Panel b: 3 Years										
	Value	**Glamour**	**Small**	**Big**	**LowRS**	**HighRS**	**Domestic**	**Foreign**	**Diversifying**	**Non-Diversifying**
All	-0.06%	-0.23%	0.16%	-0.11%	-0.14%	-0.06%	-0.27%	-0.06%	-0.10%	-0.21%
p-value	(0.775)	(0.266)	(0.515)	(0.524)	(0.542)	(0.807)	(0.227)	(0.749)	(0.614)	(0.355)
Obs.	249	245	244	250	252	242	335	159	259	235
Calendar Obs.	215	215	215	215	215	215	215	215	215	215
R^2	67.91%	73.12%	68.00%	78.03%	70.10%	66.44%	71.39%	71.45%	76.83%	68.38%
Rational (1)	-1.53%[a]	-0.36%	-0.12%	-0.58%[b]	-0.74%[b]	-1.39%[a]	-0.58%[b]	-0.65%[b]	-0.42%	-0.74%[b]
p-value	(0.001)	(0.193)	(0.733)	(0.017)	(0.011)	(0.002)	(0.040)	(0.045)	(0.122)	(0.022)
Obs.	103	77	88	92	89	91	122	58	90	90
Calendar Obs.	215	215	215	215	215	215	215	215	215	215
R^2	41.17%	56.22%	44.16%	64.73%	51.26%	40.01%	54.94%	50.34%	59.06%	43.50%
Overconfident (2)	-0.04%	-0.50%[c]	0.11%	-0.08%	-0.14%	-0.15%	-0.47%	-0.02%	-0.04%	-0.09%
p-value	(0.900)	(0.082)	(0.724)	(0.734)	(0.674)	(0.557)	(0.107)	(0.941)	(0.860)	(0.799)
Obs.	146	168	156	158	163	151	213	101	169	145
Calendar Obs.	215	215	215	215	215	215	215	215	215	215
R^2	56.40%	64.42%	59.03%	72.49%	59.70%	60.77%	67.13%	56.51%	70.93%	55.14%
Differential (1) - (2)	-1.49%[a]	0.14%	-0.23%	-0.51%	-0.59%	-1.24%[b]	-0.11%	-0.63%	-0.38%	-0.65%
p-value	(0.007)	(0.715)	(0.623)	(0.108)	(0.172)	(0.024)	(0.780)	(0.159)	(0.256)	(0.184)
R^2	2.11%	2.79%	4.44%	1.02%	5.05%	0.83%	4.77%	1.01%	0.71%	3.44%

CHAPTER 4: MANAGERIAL OVERCONFIDENCE IN HIGH AND LOW VALUATION MARKETS AND GAINS TO ACQUISITIONS

4.1 Introduction

A large body of financial literature had revealed that behavioral elements of managers and the wider market are important driving forces behind 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 considered to be rational agents who time the market and exploit the opportunities that may arise when stock market is in unreasonably high, ultimately to the benefit of their shareholders. Consistent with this theory, empirical research has shown that more acquisitions take place when stock markets are bullish than when they are depressed (Jovanovic and Rousseau (2001), Rhodes-Kropf et al. (2005)). Bouwman et al. (2009) also argue that acquisitions in periods of booming stock markets (i.e. high valuation periods) are fundamentally different from those in periods of depressing stock markets (i.e. low valuation periods).

Whilst Shleifer and Vishny (2003) consider the manager to be a rational agent, Roll's (1986) hubris hypothesis presents the investor as the rational party in a rational investor-irrational manager framework. In this way, financial markets are assumed to be efficient. In this environment, Roll (1986) suggests that managers engage in acquisitions with an overly optimistic opinion of their own ability to create value and extract potential synergies from a proposed takeover. In other words, overconfident managers feel that they hold the unique ability to identify hidden synergies and select good targets superior to their rivals. These individuals tend to overestimate the future returns from their investment projects, or indeed the capitalized value of their future leadership, and therefore overbid for the target in question, to the detriment of their shareholders' wealth.[25] In later work, Malmendier and Tate (2008) document that overconfident managers are more likely to engage in acquisitions and actually realize worse performance than rational managers.

[25] Doukas and Petmezas (2007) and Billett and Qian (2008) test the self-attribution bias as a source of overconfidence. They define managers infected by self-attribution as 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 according to deal order.

While the individual effects of managerial overconfidence and market valuation have already been examined in the literature, their interaction remains an unanswered question. As Baker et al. (2007, p. 48) suggest "*the irrational manager and irrational investor stories can certainly coexist*". Chapter Four attempts to reconcile these two stories of irrational managers and irrational investors, providing evidence about the role of managerial overconfidence in high and low market valuation periods and the resultant effect to bidders' shareholders wealth.

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 negatively influence the quality of the deal during a hot period. On the contrary, given that high-valuation periods are associated with an increase in bidder returns, rational managers, who assess a deal relatively more carefully and negotiate more efficiently, may time the announcement of bids in order to enhance shareholders' wealth. Furthermore, when overconfident bidders conduct deals in depressing markets, it is unlikely that they will be able to hide the poor quality of the deal alongside the possible overpayment. Investors in low valuation markets are substantially more careful and conservative in assessing the future prospects of the deal and are therefore likely to react more unfavourably upon the realization that the deal is bad. This results in actions which effectively depreciate the bidder's stock price. Given the above rationale, we predict that *bidders are more likely to gain the most (least) when they are run by rational (overconfident) managers and the deal takes place in a bull (bear) market*.

Using a sample of UK acquisitions for the period 1990-2005 to investigate our leading hypothesis, we document supportive evidence that the interaction between aggregate market valuations and different behavioral traits of managers is a key determinant of bidders' announcement returns. We select to study the U.K. market primarily because it has the most active takeover market following the U.S., representing more than 65% of merger transactions conducted in Europe.

Our results provide evidence of the importance of the interaction between managerial and aggregate market valuations in shaping acquirers' returns. More specifically, the difference in the acquisition performance between the portfolios of deals undertaken by rational managers in high valuation periods and those conducted by overconfident managers in low valuation periods is 3.05%, economically and statistically significant for the five-day period surrounding the bid announcement. In addition, bidders with rational managers appear to gain the most in high valuation periods, while firms and their shareholders would be better placed 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, such as the method of payment, the listing status of the target firm, as well as the size and book-to-market ratio of the acquiring firm.

In addition to our short-term findings, we also assess the long-run performance of bidders to assess whether our results are robust over time. We do not find evidence that acquisitions in high and low-valuation periods generate abnormal returns in the long-term post-event period. However, we do find that acquisitions conducted by overconfident bidders continue to perform worse than acquisitions by rational bidders in the long-term. This provides further evidence to the superior performance of deals undertaken by rational managers.

The study has several contributions. Firstly, it provides direct evidence that the interrelation between market valuation periods and managers with varying degrees of rationality is an important factor in shaping acquiring firm's returns. While the individual effect of managerial overconfidence has already been examined in the literature, the varying effect it exerts along with stock market conditions has before now, been largely neglected. Secondly, in contrast to overconfident managers, our results indicate that rational managers are able to *create* value for their shareholders through acquisitions in *all* market valuation periods. This is a significant factor given wide evidence documenting bidding firm losses. Thirdly, it is reported in this work that bidders have a worse performance on average when they are managed by individuals who are considered to be overconfident in all market conditions. This suggests that overconfidence in manager's is never to the benefit of the acquiring firm shareholders involved. Lastly, this chapter provides evidence that the effect of managerial overconfidence is robust outside the US and insensitive to the choice over the quantitative measure of overconfidence.

The remainder of this chapter is organized as follows. Section 4.2 reviews the literature. Section 4.3 develops the hypotheses. Section 4.4 discusses the data and methodology of the empirical work before Section 4.5 analyzes the results. In particular, Section 4.5.1 presents the short-run univariate analysis, Section 4.5.2 illustrates the multivariate findings and Section 4.5.3 shows the one and three year post-merger performance. Section 4.6 concludes the chapter.

4.2 Literature Review

This section reviews the literature on factors and incentives that cause merger and merger clustering in time. More specifically, we review reasons based on the neoclassical school of thought of why merger waves occur. Then, we present behavioural explanation of market misevaluations as well as the performance of takeover activity in overvalued/undervalued periods in time. Lastly, we review the literature on main features that cause overconfidence as well as the hubris hypothesis.

4.2.1 Merger Waves

There are numerous points in time where merger clustering has been observed during the last century. While merger activity generally moves at levels considered normal, at some points in time, we witness spikes in the activity whereby many companies in the market begin acquiring or merging with other firms causing so-called merger waves. A sizeable stream of theoretical and empirical research on merger waves has attempted to explain the reasons behind why a great number of companies choose to proceed to undertake various takeovers at the same time. Explanations range from neoclassical theories of disturbance theory to behavioural approaches involving managerial decisions and biases. Section 4.2.1 will briefly introduce the key theories from each school of thought.

4.2.1.1 The Neoclassical Approach

The neoclassical hypothesis of merger waves proposes that clustering of mergers through time is a result of some economic, regulatory or technological shock in the industry. The merger wave occurs because of a massive reaction of firms inside and outside the industry to this shock causing them to reallocate the industry's assets through mergers and acquisitions.

The cluster of merger activity throughout time is not a recent phenomenon. Nelson (1959) examines merger movements in the American industry during 1885-1956 and reports three distinct periods (1889-1902, 1926-1930 and 1946-1956) during which the merger movements were so wide that it led to the characterization of merger waves. Economic growth or the development of the transportation system is two of the rationales examined and put forward as a an explanation for the high spikes in merger activity. Most importantly, Nelson (1959) takes into consideration the effect of the development of capital markets and observes that there is a high correlation between high merger activity and stock prices, indicating that merger waves may have their origins within stock price movements.

Similarly, Holmstrong and Kaplan (2001) discuss the nature of the 1980s and 1990s merger waves. Most of the U.S. deals undertaken during the decade of 1980s have been characterised as hostile takeovers. Technically, this infers that the bidders in the eighties made direct offers to the shareholders of the target firm, effectively ignoring the opposing managerial team. Those companies that did not wish to go through this hostile restructuring, tried to appear less attractive in this period in order to avoid being acquired. The vast majority of mergers recorded during this decade are also largely described as leverage buy-outs (LBO). Firms preferred to borrow money in order to acquire target firms rather than to issue new stock or using their cash reserves. The notion of high LBO activity has been attributed to investor greed. Recent evidence[26] suggests that merger waves are driven by investor sentiment. Therefore, the offering of sentiment as a merger wave motive has always been considered throughout time. In addition, excess capacity and managerial unwillingness to give out free cash flows was

[26] See Rosen (2006)

also one of the factors behind the 1980s merger wave (Jensen (1983)). Shleifer and Vishny (1990) suggest that the failure of conglomerates as a result of the merger wave of the 1960s urged a lot of firms to return to their original specializations and therefore provided a motive to sell-off their unrelated divisions. However, there remains mixed evidence over the validity of this implication. If the number of mergers conducted in the eighties is as a result of deconglomeration then that implies that diversification in the sixties destroyed corporate value. However, the evidence on diversification also remains mixed[27]. Holmstrong and Kaplan (2001) report that deconglomeration might have played some role for the 1980s merger wave but cannot be attributed as the driving force.

There is no doubt that takeovers during the eighties proved to be profitable for the companies and efficiency gains are involved.[28] There are various reasons that explain the profitability of LBOs during the 1980s merger wave. LBOs enabled managers to have more equity in the newly combined company. In that way, managers had stronger incentives to increase shareholders value whilst also making money for themselves as well. Managers stopped viewing capital as costless money and it was recognised that the amount which had been borrowed to acquire firms had to be repaid. Hence, managers had to work harder in order to generate the payment on the capital borrowed, possibly increasing the efficiency of the firm. Finally, in many of the merged firms, the board consisted of a small number of members which owned large portions of equity, resulting in better managerial monitoring. The increase in leverage buy-outs did however lead to an increase in 'toxic' bonds, as well, ultimately ending in a credit crunch during the late eighties, finalizing the high merger activity. Apart from that, anti-takeover legislation and political pressure against high leverage levels are also some of the determining factors that caused this merger wave to terminate (Jensen (1991), Comment and Schwert (1995)).

[27] Lang and Stulz (1994) and Berger and Ofek (1995) find that diversification destroys value while Graham, Lemmon and Wolf (2000), Gampa and Kedia (1999), Chevalier (1999), Hyland (1999), Lamont and Polk (2002) and Villalonga (2001) cannot propose that diversification is the explanation of value destruction.

[28] Jarrell, Brickley and Netter (1988), Bhagat, Shleifer and Vishny (1990), Kaplan (1989), Rosett (1988)

On the other hand, discussing the 1990s merger wave, Schwert (2000) observes that hostile mergers are not as strong a phenomenon as they used to be in the decade of 1980s. An increase in incentive-based compensation (Hall and Liebman (1998)) was more pronounced during the decade of 1990s. Managers had more incentives to earn more money through equity-based compensation. In general, the 1990s wave is more associated with assets employed in order to exploit growth opportunities in markets and new technologies. Therefore, we observe that firms started using equity instead of debt in the nineties wave. Conclusively, during the 1980s merger wave, takeovers appeared to be profitable. Profitability is closely linked with managerial compensation incentives and the structure of the board of the combined company and seems to be one of the main factors that helps explain the returns earned. These two issues will be discussed further.

Jovanovic and Rousseau (2001) attempt to explain merger movements during the last century and mainly focus on technological changes that have occurred. They show that merger waves are closely related to significant technological changes throughout time. In other words, many firms are unable to adapt to the new technology introduced probably because of a managerial lack of experience and skills. Consequently, these types of firms are acquired by others more superior in terms of adapting to the new technological changes. Furthermore, Jovanovic and Rousseau (2001) provide evidence on why antitrust and regulation policies as well as globalization cannot alone explain merger waves. A very interesting point of this study is the fact that merger waves arise during booming stock market periods. Their model generates a positive relationship between takeovers and periods of high price-earnings ratios in the stock market. This evidence indirectly serves to form a foundation for behavioural works, to be discussed in the forthcoming section.

Harford (2005) examines the causes of merger waves from both the neoclassical and behavioural points of view. He investigates whether mergers are linked to the stock market or whether they are as a result of an economic disturbance. His results suggest that mergers cluster around economic, regulatory and technological shocks favouring the neoclassical school of though. He employs logit models to predict when a merger wave starts and finds that mergers occur after some market disturbance. However, he writes that the disturbance alone does not cause a wider merger wave. For a wave to be instigated, Harford (2005) suggests that market liquidity must be of a level sufficient enough to allow firms to engage in M&A activity. The behavioural factors (prior industry returns, the standard deviation of the firm's return and market-to-book ratio) employed in the model are found to ultimately have limited explanatory value.

As the foundation to the neoclassical aspects of Harford's work, Gort (1969) shows that acquisitions cluster in certain types of industries. The introduction of new technology and a change of stock prices are the major economic shocks that Gort (1969) finds increase valuations and therefore create merger movements. Mulherin and Boone (2000) find significant industry clustering for acquisitions and divestitures in the 1990s. Their results show that the positive wealth effects observed are consistent with synergistic explanations rather than nonsynergistic models based on managerial entrenchment, hubris and empire building.

Economic growth, deconglomeration, technological innovation as well as economic and regulatory shocks are some of the explanations that have been studied and examined in order to explain and understand why merger waves occur. A very important issue that has been pinpointed in some of the above studies is the fact that merger wave periods appear to coincide with bullish stock markets. A high correlation between merger movements and stock prices has been observed in many works. However, this fact remained a simple observation without being attributed further explanatory value until recent times. Is there any relationship between the two factors, that is between high merger activity and bullish stock markets? Is this relationship a coincidence? Does a booming market drive merger waves or vice versa? The forthcoming section discusses the literature related to the above questions, a result of the behavioural school of research.

4.2.1.2 The Behavioural Approach

Various studies have attempted to explain merger waves based on neoclassical theory as presented above. However, whilst these models have offered much, the impact of the behaviour of market participants cannot be ignored. This has led to the emergence of the behavioural field of finance, particularly in terms of the particular effects driving merger activity and their resultant impact on shareholder wealth creation. Shleifer and Vishny (2003) propose a market-timing model, which suggests that acquisitions are driven by stock market misvaluations. The model outlined explains who acquires whom, the method of payment that managers use, the valuation effects of the merger itself as well as the causation factors which influence the wider merger waves. This work has formed an integral part of the growing behavioural finance literature. The key assumptions of the model are that financial markets do not fully reflect all information, so that firms can become incorrectly priced in the short-term. The second assumption proposes that managers are fully rational, able to take advantage of the market discrepancies by undertaking takeovers in order to exploit all possible synergy and misvaluation effects. More specifically, rational managers decide to conduct a takeover when their firms are overvalued, since their stock is an attractive means by which to pay for undervalued or less overvalued target firms. In this case, the motive for acquisitions does not lie in potential synergy gains, but rather managers attempt mergers in order to save some of the overvaluation for the long-run holders. In other words, managers opt to acquire undervalued companies using their overvalued stock, which can have less harmful effects for shareholders in the long-run.

Similar evidence is provided by Ang and Cheng (2006). They also investigate the misvaluation hypothesis and find supportive evidence of the idea that misvaluation is an important driver for bidders to undertake stock acquisitions. Consistent with the previous research in this field, they also show that overvalued companies are more likely to finance their acquisition using their overvalued stock. Acquirers are shown to be more overvalued in successful stock mergers than in unsuccessful ones. Finally, the work shows that the shareholders of stock-acquirers enjoy more wealth than their counterparts do in firms that do not engage in acquisitions. Consistent with Rhodes-Kropf, Robinson and Viswanathan (2005) and Dong et al. (2006), Ang and Cheng (2006) also find that cash acquirers are less overvalued than stock acquirers whilst cash targets are undervalued relative to stock targets.

With this in mind, there is substantial empirical evidence suggesting that merger waves coincide with high market valuations. This is evident even in studies that have attempted to approach merger waves via neoclassical theory. For instance, Maksimovic and Phillips (2001) posit that there is a link between periods of high merger activity and high market misvaluations. In addition, they propose that firms tend to use stock rather than cash in order to acquire firms in high valuation/high merger activity periods. Moreover, Martin (1996) has showed that firms which engage in stock acquisitions have lower book-to-market ratios than those which use cash.

Rhodes-Kropf and Viswanathan (2004) write that there is a close relationship between misvaluation and merger waves. Empirical evidence and theoretical models constructed suggest a high correlation between stock mergers and high valuation periods. However, they deny to accept the 'naïve' explanation that overvalued bidders offer their overvalued stock to targets who then simply accept it. They question whether or not targets are irrational enough to accept bidders' overvalued equity. Therefore, they attempt to offer an alternative explanation which could describe the relationship between high merger volume in periods when prices are away from their fundamental values on either side. Stock mergers are different than cash mergers within the misvaluation hypothesis. In a stock–financed merger, the target firm receives part of the stock of the bidding company and should therefore have an incentive to value the acquirer's equity. The target firm has to decide whether the value of the bidder's shares is close to fundamental prices or whether it is currently misvalued, away from the intrinsic level. Research also shows that the valuation of the bidder's shares changes and depends on the timing of the announcement of the takeover. The bidder's valuation is one of the most crucial issues in takeovers, especially when stock is involved and the target management has to find out what the true value is on behalf of their shareholders to attempt to construct a fair deal.

Rhodes-Kropf and Viswanathan (2004) set up their model assuming that targets behave rationally, have limited information on the bidder's value but also hold private information about the value of their own company. Additionally, the bidder's managers are considered to have private information about their own firm's value and the potential value of the combined firm. The work also assumes that both the bidder and the target are listed firms and that the market values might not coincide with the intrinsic values, attributing the misvaluation of the firm's to two components: the firm-specific component and the market-wide component. The managers of the target firm will decide on whether the merger will take place or not. They are also aware of whether their firm is correctly valued or if it is under or over its true level. Nevertheless, they will have difficulty in differentiating between whether the over or undervaluation effect is as a result of a firm, sector/market wide effect or a combination of them both and at what extent the misvaluation is. The decision of the completion of the merger will be based on whether the synergy gains are positive or not. However, both the bidders and target's information about the synergy gains on offer are affected by the overall market misvaluation as well. Therefore the target is assumed to be aware of the fact that some of the overvaluation is due to the market-wide effect and the management is considered to correctly try to decompose the misvaluation effect from the value of the synergy gains. Despite this, the target's managers will tend to attribute more value to the high synergy gains. In other words, the more overvalued the market is, the higher the estimation error will be regarding the potential synergy benefits.

In short, the model of Rhodes-Kropf and Viswanathan (2004) suggests that in high valuation periods, target firms are more prone to overestimate the synergy gains on offer from a prospective deal and accept the takeover as a result. Consequently, it is more likely that more takeovers will occur during high valuation periods providing an alternative explanation for merger waves. We have to make clear that in the model presented, the authors do not assume that the synergy gains are higher during high valuation periods. Neither is it assumed that are managers are more willing to sell their firms for less than they are worth or that they are less than fully rational. However, the model does accept that even fully rational managers can sometimes make valuation mistakes under these conditions.

Rhodes-Kropf, Robinson and Viswanathan (2005) find strong supportive evidence for the Rhodes-Kropf and Viswanathan (2004) and Shleifer and Vishny (2003) theories, which implies that misvaluation drives merger waves. To empirically investigate these theories, Rhodes-Kropf, Robinson and Viswanathan (2005) decompose the M/B ratio into three components: the firm specific misvaluation error, the sector specific error and the long-run pricing to book. More specifically, they investigate misvaluation by decomposing the market-to-book ratio into the market-to-value component and the value-to-book ratio. The first component (the Market to Value ratio) is used to account for the discrepancies between price and the true value and can be used as a measure of misvaluation. This component could be used to show a behavioural anomaly or the asymmetric information between informed insiders and the market. The second component (the Value to Book ratio) captures growth opportunities in the sense that it is not affected by misvaluation. The work finds that bidders with high firm specific misvaluation errors use stock to acquire targets with low firm specific misvaluation errors, especially in period where there is positive sector wide misvaluation. The results propose that targets acquired using cash are relatively undervalued to those acquired using stock. Consistent with the merger wave literature, Rhodes-Kropf, Robinson and Viswanathan (2005) also argue that merger activity is positively correlated with short-run deviations in valuation. Finally, it is shown that low long-run value-to-book firms buy high long-run value-to-book targets.

There are different reasons that could explain this finding. Managers in overvalued companies acquire targets with high long-run value in order to restore the market's confidence. Another explanation is that low skilled managers of undervalued companies may desire to acquire managerial talent from outside to change the organizational behaviour. Lastly, managers may also wish to strengthen their position in the firm by acquiring high value targets. It is obvious that managerial incentives and decisions are involved in every corporate decision and, as has already been suggested, they affect a number of variables in the case of mergers and acquisitions as well. Therefore, the 'human' factor has to be taken seriously into consideration while studying various aspects of corporate takeovers.

Dong, Hirshleifer, Richardson and Teoh (2006) test the misvaluation hypothesis, as presented above, alongside the Q-theory of takeovers. The Q-theory posits that high quality acquirers improve bad targets. They employ two proxies to investigate their propositions, namely the price-to-book (P/B) and the price-to-residual-income-model-value (P/V) for the bidder and target misvaluation. They find that misvaluation affects the method of payment, premium level, takeover hostility, offer success and bidder and target announcement returns in the takeover puzzle. They also show that in the entire sample bidders are always overvalued relative to their targets and that the more overvalued they are, the more likely it is that they will use stock as the mode of payment. Lastly, they find that the Q-hypothesis is stronger in the pre-1990 period while the misvaluation hypothesis is stronger during the 1990s decade.

Although the neoclassical perspective that merger waves are as a result of some kind of economic disturbance, the behavioural approach is useful to consider to help fill some vacant gaps in the research. Behavioural Finance can help to shed light on issues like who buys who in merger transactions, the means of financing used and to generally comprehend how misvaluation affects merger activity. Strong theoretical and empirical evidence proposes that M&As are not necessarily driven by technological or innovation shocks. Instead, managers motivated by market misvaluations, in an attempt to take advantage of their overvalued equity, proceed to conduct corporate takeovers.

4.2.1.3 Market Valuation and Acquisition Quality

Aside from the unquestionable fact that acquisitions occur in high magnitude during high valuation periods, some studies have concentrated on the quality of these takeovers. Research in this field has attempted to investigate the way in which bidders' shareholder wealth is affected from acquisitions undertaken in high and low valuation periods. For instance, Bouwman, Fuller and Nain (2009) claim that market valuation not only affects the volume of acquisition taking place during specific periods in time, but also impacts on the quality of these deals as well. More specifically, they show that acquisitions undertaken during high valuation periods enjoy significantly higher abnormal returns than those undertaken during low valuation periods. However, this picture is reversed in the long-run with three possible explanations such as overpayment, market timing and managerial herding, being examined. Managers are likely to overpay during high valuation periods, but empirical evidence suggests that premiums are simultaneously significantly lower. In addition, Bouwman, Fuller and Nain (2009) examine market timing as a potential reason for the long-run underperformance of high-valuation period acquisitions. Managers are more enthusiastic to pay with overvalued stock during bullish periods and as a result they are expected to experience a correction in their stock prices over the long-term. However, when they split the sample of high acquisitions down into those who announce a takeover when their stock is near an annual high, they find evidence that these types of acquisitions enjoy higher abnormal returns in the long run. Therefore, both the overpayment and market timing explanations are declined.

Finally, they investigate whether managerial herding can explain the results. Managerial herding models suggest that those who move later during the wave have lower returns. They split the sample of high acquisitions into early and late movers. After performing various tests, they find that losses come from those who decide to move later during the merger wave. Therefore, the better quality of acquisitions announced during high valuation periods is driven by the very superior performance of early acquirers in the merger wave.

Similarly, Rosen (2006) examines whether market wide dynamics affect shareholders' wealth in corporate takeovers. He studies the case when mergers are announced during 'hot' merger markets and the effect of these mergers on the shareholders' wealth. 'Hot' merger market are categorised as the periods in which many recent mergers have been announced by other companies as well. The results suggest that bidders' stock prices are likely to increase when mergers are announced during 'hot' merger markets or during periods in which the market itself is performing well. However, he observes that there is a long-run reversal for those mergers. For deals announced during periods other than 'hot', merger markets enjoy higher abnormal returns in the long-run (three years). Similar evidence is provided by Petmezas (2009) who finds that acquisitions announced during hot periods generate higher abnormal returns than those announced during cold periods. The results show a long-run reversal which indicates that the initial favourable market reaction is due to investor sentiment.

Three theories are examined to explain this merger momentum, i.e. the correlation between market conditions (hot merger periods) and the announcement returns. Firstly, the neoclassical theory suggests that mergers occur in order to create synergies and maximize shareholders wealth. During high merger activity periods, the synergies are positively affected by these market shocks. Therefore, mergers announced during these periods are expected to be better than other mergers in other market conditions. However, no long-run drift is expected if the neoclassical explanation truly holds.

Secondly, the managerial motivations theory suggests that during merger waves, managers are more willing to make acquisitions so as to avoid been acquired by others (Gorton et al. (2005), Morck, Shleifer and Vishny (1990)). Consequently, managers may choose targets which might not be particularly profitable or able to offer synergy gains to the bidding firm, ending up with the manager creating less or destroying value for their firms. Under this theory, the correlation between recent merger activity and announcement returns should be negative. The information should be fully incorporated in to the short-term returns and no long run reversal should therefore be expected. Finally, the last theory suggested to explain merger momentum is based on the fact that some investors, and possibly managers, may be overly optimistic. There is evidence which reports that investor sentiment can have a positive effect on corporate announcements, a factor irrelevant to synergy gains. Therefore, during high merger activity, this theory writes that investors act out of over optimism and are not able to rationally evaluate between relevant and irrelevant information. For instance, Helwege and Liang (1996) find evidence that Initial Public Offerings (IPOs) that take place during hot markets perform superior to those announced during cold markets and their results propose that managers take advantage of irrational investors and investor optimism during hot periods.

Conclusively, acquisitions announced during high valuation periods seem to increase shareholders' wealth in the short-run. Investor sentiment is presented to be one of the main reasons driving the high performance. Managers think that the market is more positive and optimistic during high valuation periods and choose to announce a takeover in order to take advantage of the positive and optimistic climate. Additionally, supportive evidence on the above concern has been observed in other areas of corporate finance, such as Initial Public Offerings (IPOs).

4.2.1.4 Investor Sentiment and Initial Public Offerings (IPOs)

This section reviews the literature on Initial Public Offerings and the impact of investor sentiment on the initial market response to companies' stock prices. The concept of hot and cold market periods has not only been examined for the case of mergers and acquisitions. A sizeable stream of theoretical and empirical research on Initial Public

Offerings (IPOs) has revealed the reasons and differences between companies that choose to go public during high and low valuation periods.

Hot IPO markets are described as a periods with unusually high volumes of firms going public, usually being underpriced. Some studies characterize hot markets as periods where many firms of high quality decide to go public (Allen and Faulhaber (1989)). Others suggest that technological innovation in specific industries is the primary determinant that makes many firms decide to go public during the same period. However, a strand of the IPOs literature claims that hot market firms are of a lower quality because they seem to have lower abnormal returns, supporting that investor sentiment results in the creation hot markets (Loughran and Ritter (1995), Lerner (1994), Field (1997)).

Helwege and Liang (2002) investigate the short- and the long-run performance of firms that decide to go public during hot and cold IPO periods for the period 1975-2000. They find that hot periods within industries coincide with hot periods of the overall market, which implies that it is not necessarily an industry specific effect. There are no circumstances in which the overall market is hot because of one or two hot industries. The findings also conclude that the quality and future prosperity of the firm are not significantly different in the two types of markets. Technological changes do not seem to be the major driving force behind why we observe clustering of IPOs during different periods in time. However, their results are more consistent with the theory that hot IPO markets are mostly driven by investor optimism, although this may not suggest direct and active planning by managers. Investors seem to be much more optimistic during hot periods. As a result, firms can go public at a more favourable price and raise more funds at their initial public offerings. Similarly, Loughran, Ritter and Rydqvist (1994) find that companies time their offerings when valuations are high but investors enjoy less abnormal returns in the long-run, which is an indication of timing investor sentiment. Lee, Shleifer and Thaler (1991) also report that companies choose to go public when investor sentiment is high. Firms time their IPOs to occur during periods of excessive valuation (Baker and Wurgler (2000)).

Ljungqvist, Nanda and Singh (2006) construct a model which attempts to connect and explain the various IPO anomalies to a common basis. Anomalies, such as IPO underpricing, hot and cold markets alongside long-run underperformance, can be explained by the behaviour of a group of irrational investors. More specifically, the model aims to capture the strategic plans of issuers and underwriters that attempt to take advantage of the market's mispricing and the divergence of opinion among investors.

In addition, they claim that one of the reasons that companies choose not to set their initial offering price too high is due to the fact that if they choose to conducte the IPO during a hot market, the investors' optimism could boost the share price to higher levels. From the social welfare point of view, firms that go public for opportunistic reasons by exploiting investor optimism in hot periods are a disadvantage for the overall economy. These firms may have negative present value investment opportunities. Therefore, when the investor sentiment goes down, these firms might go bankrupt but the high quality firms left in the market are affected by the overall climate and may subsequently have difficulty in raising funds.

In short, one of the prevailing explanations in the IPO literature is that firms choose to go public during hot market periods in order to take advantage of the positive investor sentiment and investor optimism, which dominates these climates. Managerial decisions are highly affected by market conditions and they undoubtedly attempt to exploit irrational investor sentiment for short term benefits.

4.2.1.5 Managerial Incentives and Merger Waves

The neoclassical approach of mergers as a result of some economic or innovation shock has been presented as one of the theories behind merger waves. Alternatively the behavioural approach evolved recently to explain merger clustering through time and offers much in suggesting that merger activity is stock market driven. Nevertheless, new theories based on managerial decision-making and compensation incentives have started developing in order to approach the phenomenon of merger waves from a different angle.

Goel and Thakor (2008) present a model which claims that merger waves are caused because of managerial decisions based on envy. More specifically, the model proposes that when a manager proceeds to undertake an acquisition, the size of the company increases and so does the manager's compensation. Managers, being envious for other managers' compensation, also start making acquisitions to increase the size of their own companies and their own compensation benefits. The more acquisitions that take place, the more envy is triggered amongst managers resulting in more acquisitions, which end up creating the so-called merger waves. The model predicts, and subsequent findings support, that early acquirers in a merger wave achieve higher synergies than later acquirers whose acquisition activity is believed to be triggered by envy. Another prediction and finding is that acquirers late in the wave enjoy less wealth gains than those acquirers which moved early in the merger movement. Compensation of bidders' managers is higher for early acquirers than that of late merger movers. Finally, targets acquired in early wave deals are smaller compared to the size of targets of late wave acquirers.

Gorton, Kahl and Rosen (2005) introduce a different model to explain merger clustering during various periods in time. Their model is also based on managerial decisions and specifically focuses on the managerial objective of avoiding a potential takeover threat. The basic feature of the model is that managers may wish to keep control of their own firm and remain independent. There are cases where firms have been acquired and its managers have then been assigned inferior positions in the new company or have even lost their jobs (Morck, Shleifer and Vishny (1988)). Gorton et al. (2005) also assume that firms of a relatively small size cannot acquire large firms, mainly due to the financial difficulties that arise. It is obvious that it is not easy to raise funds by issuing debt for a larger acquisition, because that could result in increasing the company's financial distress, leading managers out of their jobs. The above restraints imply that a firm cannot acquire a company which is larger than its own size. In this way, the chance of large companies being acquired decreases. Hasbrouck (1985) and Palepu (1986) find that the probability of a firm being acquired declines as the size of the firm increases.

The rational scenario would be that managers are not interested in making defensive acquisitions but remain more concerned with maximizing shareholders' wealth. In this way, there is no defensive merger pressure and only profitable acquisitions should take place.

However, the more likely scenario is that managers wish to remain independent and as a result, defensive managers acquire firms in order to increase their size and lessen the likelihood of their firm being acquired. This behaviour triggers other managers' defensive motives and drives them to acquire for the same reason. Therefore, a merger of defensive waves takes place. This theory has a similar conceptual framework to the one presented by Goel and Thakor (2008) in their attempts to explain merger waves based on managerial enviousness.

To summarise, the literature based on managerial biases has been introduced in order to give alternative explanations for merger waves. Once again, we observe that the human factor has to be taken seriously into consideration when attempting to study corporate governance issues. Managerial biases definitely can affect shareholders' wealth.

4.2.1.6 Managerial Incentives and Takeovers

Morck, Scheifer and Vishny (1990), based on a sample of US acquisitions consisting of 326 takeovers between 1975 and 1987, investigate the issue of whether acquisitions performance is driven by managers' objectives. More specifically, they notice that bidders that suffer the highest losses are those who diversify, those who buy a fast growing target and those where the manager's performance was relatively poor preceding the acquisition. Morck, Scheifer and Vishny (1990) suggest that managers overpay for targets that fulfil their own personal objectives rather than meeting the requirements of shareholders' value maximization. For instance, when a manager is set to receive high personal benefits out of a project, he is likely to undertake it although he might affect the market value of the company. Morck, Scheifer and Vishny (1990) design their methodology in such a way that they are able to capture the negative relationship between managerial objectives and the market value of the acquiring firm.

There are different explanations that show why managers choose to acquire firms from industries other than the one they primarily operate in so as to engage in M&As for their own personal utility maximisation. For instance, a manager may choose to diversify the holdings of the firms in cases where managers themselves are not properly diversified. Moreover, to secure his job in the firm, managers can expand in other industries at which he might be better skilled. Finally, diversification may be the only solution so as to avoid bankruptcy.

Buying growing firms could also be driven by managerial objectives. The managers of the new growing company are not a big threat for the existing manager. Therefore, managers can feel more relaxed and secure in the company. Besides, incorporating growing firms in their companies can enhance their prestige and strengthen the reputation of the existing manager's in their respective fields. Finally, a manager may wish to secure the long term survival of the firm and acquiring a young, growing firm can help to achieve this objective.

Lastly, bad managers are likely to make bad acquisitions simply because of their inability to do otherwise. These managers are in need of engaging in takeover activities so as to secure the survival of the firm and maybe find new businesses in which they can perform better. However, bad managers end up performing disastrous acquisitions. This comes in contrast to Roll's hubris hypotheses, which suggests that good performers make bad acquisitions because they are affected by hubris. In this alternative setting, poor performing managers, for the reason explained above, who wish to pursue their own personal objectives, are more likely to acquire young, rapid growing firms and diversify in industries other than the one they perform. Thus, managerial personal objectives seem to drive the poor performance of bad performing managers who acquire growing firms and diversify.

4.2.2 Overconfidence

One of the most developing and significant concepts in the field of behavioural finance is the phenomenon of overconfidence. Overconfidence has been well developed in the psychology literature and is mainly presented in the forms of miscalibration, better-than-average effect, illusion of control and unrealistic optimism. While the concept had been well established and studied in the field of psychology, it is only recently that economists have introduced this phenomenon to partially solve some existing financial puzzles that failed to be interpreted using the standard economic models. However, applying overconfidence in financial and economic models as a well-established and definite fact should be treated with caution and care. This section reviews some of the main concepts and ideas of overconfidence in the field of psychology and afterwards, we will attempt to link these concepts with financial decisions. Overconfidence was extensively reviewed in Chapter 3. Nevertheless, we briefly report the main concepts that enhance overconfidence.

Overconfidence as Miscalibration

Overconfidence in psychology is strongly linked to calibration and the probability of correct judgement. Therefore, the term overconfidence is often interpreted as one of the forms of miscalibration. Calibration is usually studied on general knowledge questions. For instance, participants are asked to answer set questions and attribute a probability that their given answers are correct. Miscalibration reflects the difference between the accuracy rate and the probability assigned by the participant that his answers are correct. Oskamp (1965) studies overconfidence as excess certainty over accuracy and most importantly, he suggests that confidence increases when one takes part in an evaluation task. Similarly, Fischhoff et al. (1977) show that overconfidence seems to be quite strong, especially in cases in which the experiment participants seemed to be ‘certain’ or ‘almost certain’ in rating the likelihood of their answers being correct. Introducing financial incentives into the experiment did not improve the phenomenon. Whilst overconfidence was initially studied as a form of miscalibration, many researchers have extended this phenomenon into the area of positive illusions, including the better-than-average effect, unrealistic optimism and illusion of control. We further review these concepts now as their impact appears to be more pronounced in fields such as economics and finance.

Better-than-Average Effect

Psychological literature has proved that when people compare themselves with others, they tend to believe that they are superior to an average representative of the comparable group. For instance, Svenson (1981) shows that people consider themselves as more skilful and less risky at driving than the skills of others when compared. Taylor and Brown (1988) suggest that positive features can be more accurately attributed to us than to others and there exists a form of self-serving bias in self-assessment. The self-serving bias makes people attribute more responsibility for success, and conversely less for failure, to themselves. In a similar context, Miller and Ross (1975) claim that people attribute success to their own abilities while they tend to be failure is a result of exogenous factors. Thus, agents tend to believe that their contribution to a joint task is higher than what it really is and that their personal information is different than what the other members of the group are privy to. Finally, Babcock and Loewenstein (1997) also posit that the better-than-average effect is partly caused by the self-serving bias.

Unrealistic Optimism

Unrealistic optimism is usually analysed in the context of the better-than-average effect and is defined as people's wrong estimation about future events. Weinstein (1980) mainly examines unrealistic optimism and in experiments, participants evaluate the probabilities of a potential future fortune or misfortune to an average person. People tend to attribute more probability to the idea that a positive incident will happen to them than to others whilst they also claim that there are less chances that they will be victim to a negative incident. When we carefully examine the probabilities of an event happening to ourselves or to others, unrealistic optimism declines but does not altogether disappear.

Illusion of Control

Taylor and Brown (1988) show that people tend to believe they can influence the outcome of an event despite the fact that the event outcome may depend on pure luck. For instance, a typical example of the illusion of control is an event where people prefer to throw the dice themselves to heighten the chances of success or choose a specific ticket for the lottery. Although both incidents are chance-driven events, people believe that the outcome would be more favourable if they are involved themselves. Similarly, Langer and Roth (1975) show that participants believe that they are able to predict the outcome of coin-tossing better than others do, and are convinced that any success enjoyed is due to their experience and ability, and not due to luck.

Overconfidence, and the above facets of overconfidence, have been implemented in the finance and economics literature to interpret some financial puzzles that could not be explained by the standard economic models. We will now present some of the findings thus far from this field.

4.2.2.1 Overconfidence on Financial Markets

Overconfidence in financial markets is usually defined as the overestimation or error in the interpretation of one's precise information or knowledge. This phenomenon has been introduced to interpret behaviours both on the investors' side and on managerial decisions. The phenomenon of overconfidence in financial markets is studied through experimental work alongside qualitative studies via questionnaires developed from psychology. However, these methods are often criticized for problems such as non-representative sampling. Small sample sizes and laboratory conditions are different from the true reflections of the real world. Besides this, proxies adapted to measure overconfidence have raised a lot of criticism and doubt.

Despite being an important factor to explain various financial behaviours, overconfidence has to be treated with caution. We provide a brief review of studies based on overconfidence in financial markets both from the empirical and theoretical viewpoints. Biais et al. (2005) use a set of questionnaires to study overconfidence and suggest that overconfident agents perform worse than those who are not affected. Glaser and Weber (2007) suggest that the better-than-average effect influences investors and leads them to trade more often, resulting in high trading volume. De Bondt (1998), in a large questionnaire study, also reveals that investors are affected by all of the different facets of overconfidence. A very interesting finding is presented by Maciejovsky and Kirchler (2002) who find that levels of overconfidence increase towards the end of an experiment, when participants start to depend on their knowledge. Participants attribute more value to their own abilities and overestimate their acquired knowledge and information.

In theoretical models, overconfidence is interpreted as investors' overestimating the precision of their information (i.e. they overestimate private signals and underestimate public ones) whilst they underestimate the risk involved. As a consequence they end up holding riskier portfolios. Odean's (1998) model suggests that traders' overestimation leads to a high trading volume, larger market depth and volatility. De Long et al. (1990) suggest that noise traders have higher profits than rational ones due to their aggressive trading. Similar predictions are presented by Hirschleifer and Luo (2001). On the other hand, Gervais and Odean's (2001) predict that overconfident traders enjoy lower returns because they increase the trading volume and volatility, which in turn affects their results. Daniel et al. (2001) present a model in which overconfident investors cause some kind of mispricing, which is exploited by rational market participants. They assume that investors are overconfident only towards private and not public information. Similarly, Chuang and Lee (2006) adapt the same assumption in their model, writing that overconfident investors over- and underreact to private rather than public information. This assumption is employed by most of behavioural finance models which involve overconfidence.

Empirical evidence seems to support the predictions of the models. Odean (1999) and Odean and Barber (2000, 2001) use a unique dataset of information on investors trading activity obtained from a large US firm. Empirical evidence suggests that overconfident traders who trade very often do not have the desirable results they wish for. Excess trading volume is also attributed to overconfidence. The fact that overconfident investors trade more frequently is also confirmed by Chuang and Lee (2006) and Statman et al. (2003). Furthermore, Chuang and Lee (2006) exploit a large sample of US listed firms between 1963 and 2001 and consistently find evidence for overreaction to private signals and underreaction to public ones.

It is evident that a considerable stream of research, both theoretical and empirical, has employed overconfidence in an attempt to explain some of the puzzles of the financial world. High trading volumes, aggressive and frequent trading, high volatility and an overreaction to private signals are some of the phenomena which have been attributed to irrationally overconfident investors and traders' behaviours. Apart from financial markets, this behavioural bias has recently been extended in to other fields of finance, particularly corporate finance. The next section discusses the applicability of overconfidence in this setting.

4.2.2.2 Overconfidence in Corporate Finance – Managerial Hubris

Projects and events in corporate finance are mainly affected by CEO's decisions. One of the major decisions made by CEOs is in relation to merger and acquisitions. Managerial biases can definitely influence the prosperities of the company and shareholders' wealth. Psychologists suggest that overconfidence is closely related to Mergers and Acquisitions and here we show how.

An early work on the phenomenon of overconfidence in M&As by Roll (1986) posits that acquisitions may not only be driven by synergy gains but a hubris factor could also be a potential driver of acquisitions. Roll does not directly refer to overconfidence as such, but discusses that managers feel certain that that valuations are correct. As has been discussed above, recent literature shows that this behaviour lies close to the definitions of miscalibration and overconfidence. Roll (1986) suggests that the difficulty in M&A's lies in correctly valuing the target firm. The CEO of the bidding company has to assess the target company's assets taking into consideration different parameters. Most of the time, this is a particularly difficult task to be accurately evaluate. Factors such as non public information of the target company or the calculation of synergy gains, which themselves include a lot of uncertainty, make the valuation process an even more obscure game in which the final estimated value of the target company can be extremely unreliable. Managers infected by hubris tend to overestimate the synergy gains on offer and proceed to conduct acquisitions which have little or nothing to offer to their shareholders.

The concept of overconfidence has been recently reexamined in the event of M&As. Malmendier and Tate (2008) adapt two different proxies for overconfidence and show that overconfident CEOs over-estimate their own abilities to generate returns whilst they also overpay for their target resulting in bidders engaging in mergers that destroy value. One of the proxies used is based on managerial compensation. CEOs that delay to exercise their options, because they overestimate the returns they can generate in the future, are defined as overconfident. The second proxy is based on the way in which the press portays CEOs. Based on these two proxies, Malmendier and Tate (2008) show that overconfident CEOs believe that their firm is undervalued by the market. There seems to be a positive relationship between overconfident CEOs and their level of acquisitiveness and it is shown that these individuals have 65% more possibility of being involved in a merger if they are overconfident. Overconfidence seems to be enhanced in cases where there is abundance of internal financing sources. Additionally, the market reacts four times more negatively for mergers undertaken by overconfident CEOs than it does to deals announced by non-overconfident CEOs. Similarly, for the UK market, Doukas and Petmezas (2007) employ a different proxy to measure overconfidence and prove that overconfident managers end up destroying value for their shareholders. Based on psychological evidence, they claim that overconfident managers believe themselves to have superior managerial skills and are more competent than their counterparts resulting in these firms being involved in multiple acquisitions, under the belief that they are aligned with shareholders interests. Therefore, bidders who perform five or more acquisitions in a small period of time (three years) are defined as overconfident.

The importance of investigating the phenomenon of overconfidence in takeovers that involve private targets is due to the fact that there is limited information available regarding private targets. Consequently the decision to acquire is mainly based on the manager’s personal belief about the potential synergies to extract from the deal. The results from Doukas and Petmezas (2007) concerning the performance of multiple acquisitions show that first-order bids are more profitable than higher order deals leading to the conclusion that managers attribute the initial successful bid to their own abilities and afterwards they become overconfident and continue to acquire more companies. This is taken as evident proof of the self-attribution bias.

A great deal of literature considers the issue of managerial biases in corporate finance, especially in terms of mergers and acquisitions, and it is proven that managerial overconfidence ends up destroying value for the bidders’ shareholders wealth. It’s relation to this chapter will now be presented.

4.3 Hypotheses Development

The market valuation theory posits that, when stocks are overvalued, managers are likely to engage in acquisitions, especially in stock-financed deals, using their overvalued equity to acquire less-overvalued companies (Shleifer and Vishny, 2003). Hence, more bids should take place during stock market booms when investors, as a group, become overoptimistic and drive stock prices higher than their fundamental value. During periods of high market valuations caused by investor's optimism, the market reaction to a bid announcement should be more favorable than to bids announced at other times (Bouwman et al. 2009) due to the increased sentiment in the market. Thus, we expect that acquirers during high-valuation markets earn substantially higher returns than those conducting deals in low-valuation periods.

H1: Abnormal Returns for acquisitions announced during high valuation periods should be higher than abnormal returns of acquisitions announced during low valuation periods.

Roll (1986) was the first to study the behavioral element of overconfidence in an M&A context. In this framework, managers may overestimate the synergy gains of the potential merger either because they believe that they have above-average abilities to lead the deal or via the potentiall underestimation of the downside of the merger due to the illusion of control over its outcome (Malmendier and Tate, 2008). The managers of bidding firms that have experienced recent success may believe that they can create value from acquisitions (Billett and Qian, 2008). However, overconfidence itself may also lead managers to undertake bad acquisitions. Hence, we should expect that overconfident managers should experience lower returns in their acquisitions.

Rosen (2006) argues that managers are likely to have the same optimism as investors during bullish periods. Hence, managers might overestimate the potential synergies from the merger, which is likely to influence the quality of the deal undertaken during a hot period. If managers are rewarded for increasing stock prices, then they have an incentive to conduct acquisitions in hot markets, as even a bad deal is likely to temporarily increase the 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 further enhance shareholders' wealth. On the other hand, when overconfident bidders conduct deals in depressed markets, it is extremely unlikely that they will be able to hide the poor 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 they are likely to react even more unfavourably when realizing that the deal is bad, depreciating the bidder's stock price further. Given the above, we should expect that bidders should gain (lose) the most when they are run by rational (overconfident) managers and when the deal takes place in bull (bear) markets. Following the above discussion, we form the following two hypotheses:

H2: Rational managers who announce acquisitions during high valuation periods should obtain the highest abnormal returns around the announcement of the acquisition date.

H3: Overconfident managers who announce acquisitions during low valuation periods should obtain the lowest abnormal returns around the announcement of the acquisition date.

4.4. Data and Methodology

4.4.1 Data

4.4.1.1 The sample

The sample consists of takeover bids announced by U.K. firms for the period 01/01/1990-31/12/2005, as collected from the Thomson One Banker. The announcement bids collected are subject to the availability of Thomson One Banker at the time of data collection. To be included in the final sample, the deals should meet the following criteria:

- The acquirer is a U.K. firm publicly traded on the London Stock Exchange (LSE) and has five days of return data around the announcement date of the takeover available as well as one to three years return data on the DataStream database.
- The target company is either a listed or unlisted company and can be a domestic or a foreign company.
- The acquiring firm purchases at least 50% of the target's shares.
- The deal value is ₤1 million or more.
- The deal value represents at least 1% of the market value of the acquirer.
- Multiple deals announced within five days of each other are excluded (after estimating the multiple acquisitions proxies)[29].
- Financial and utility firms, for both bidders and targets, are excluded from the sample (Fuller et al. (2002)).

We further split the sample according to the method of payment into three groups: a) Cash acquisitions which include acquisitions which have been financed using cash; b) stock acquisitions which have been financed through a share exchangewith the target firm; and c) mixed acquisitions which are a combination of cash and stock offers (Martin (1996)). Finally our sample consists of 1281 unique bidders who performed 3223 deals.

4.4.1.2 High, Neutral and Low Valuation Periods

To classify the stock market into high, neutral and low valuation periods, we follow Bouwman, Fuller and Nain (2009). We use monthly data of the P/E ratio of the value-weighted market index (Total Market UK (TOTMKUK[30])), in order to classify each month as a high, neutral or low valuation market period. We refer to acquisitions announced during those months as high, neutral and low acquisitions, respectively.

The P/E ratio of the market has drifted upwards through time. To avoid characterizing acquisitions clustered during the first half of the period as low valuation and those

[29] The multiple acquirers proxy is based on the fact that a manager acquires five or more target firms within three years. The multiple deal announcements are then excluded after calculating this proxy.
[30] The P/E ratio data was collected from DataStream. DataStream provides P/E data for the FTSE All Share Index from 1993 onwards. Therefore, we use the P/E data for TOTMKUK, which is the closest index to the FTSE All Share (the correlation between the two is 99.92%).

clustered during the second half as high valuation acquisition, we remove the trend from the ratio.

We detrend the market P/E by removing the best fit straight line from the P/E of the month in question and the five preceding years. Then, each month is characterized as above (below) average if the detrended market P/E of that month is above (below) this past five-year average. Finally, the top-half of the above average months are classified as high-valuation periods and the bottom half of the below average months are classified as low-valuation periods. All other months are classified as neutral-valuation periods. Following this method, we end up having classified half of the months as neutral valuation periods (96 months) and the other half as high-low valuation periods. In total we have 96 neutral months, 56 high valuation months and 40 low valuation months.

4.4.1.3 Measures of Overconfidence

To capture overconfidence, we adopt various methods to ensure our results are reliable. We use a number of proxies, commonly accepted in the finance literature, whilse we modify others believing that they can better capture the human irrational behavior in their new format. This section describes the rationale of these proxies as well as the way in which we collected the data required.

Stock Options Proxy

The main proxy employed in this chapter to classify managers as overconfident or rational is based on the managers' personal portfolio decisions. More specifically, we examine the actions CEO's take concerning their executive stock options (Malmendier and Tate (2005)). CEOs usually receive huge grants of stock and non-tradable options as part of their compensation plans. It has been proved that risk averse CEOs should exercise their stock options before expiration if they are sufficiently "in-the-money" since they are exposed to enormous firm specific risk which cannot be diversified. Upon exercise, the managers receive shares of company stocks which are always immediately sold (Ofek and Yermack (2000)). In other words, CEOs who persistently choose to maintain their stock options until expiration, continuing to expose themselves to high levels of risk in the belief that the stock of the company will rise higher due to their superior leadership in the future, are defined as overconfident.

We adopt this approach for measuring overconfidence. The first step is to identify the CEOs[31] who managed the bidding companies of our sample around the announcement date provided by Thomson One Banker. After creating a list of the names of the CEOs who decided to undertake the takeover, we observe their personal portfolios and, more specifically, the actions they take concerning their stock options. We record the date that the stock option was granted to the manager, the date that he/she can start exercising the option, the expiration date of the option and finally, the strike price. Principally, executive stock options in the U.K. have a life span of ten years with a vesting period of three years (that is, they are exercisable after three years from the date of being first granted). Following Malmendier and Tate (2005), if managers hold the option until the expiration date, or until the last year before the expiration date, he is classified as overconfident. Moreover, we check whether the company stock price is higher than the strike price throughout the course of its life. When a manager holds the options to expiration because he is unable to exercise the option as the strike price is higher than the stock price at all times, then he is not classified as overconfident but as a rationally behaved person. In our sample, there are few cases where this is true. In the majority, all of the options are highly “in-the-money” (i.e. the stock price is much higher than the strike price) and for considerably long periods of time (i.e. for over one year). Consequently, we employ this way of checking the ability of manager to exercise their options rationally without involving any benchmarks. The above data, such as the name of the manager, the dates regarding the life of the options and the strike price, were obtained through the annual reports of the companies. The annual reports are obtained either by databases such as Lexis-Nexis and Northcote.com or directly by requesting copies from the company itself. Finally, we manage to obtain data for 848 deals, which represent more than a quarter of the initial sample (Table 4.1, Panel B). Following the Stock Options Proxy, 601 (70%) of these deals are identified as rational while 247 (30%) are deemed to beoverconfident.

[31] First we look for the CEO of the company around the announcement date. If there is no such post in the company we identify the managing director. In the UK market, the position for the CEO was initially titled Managing Director prior to1995. If the company has no positions for either of these titles then we examine and report the person that holds the Chairman post.

Multiple Acquisitions Proxy

Multiple acquirers are classified as firms that acquire more than one company as has been studied in the literature. Fuller et al. (2002) introduces a more specific definition for multiple acquirers. They classify companies that acquire five or more targets in a period of three years as multiple acquirers. Doukas and Petmezas (2007) also use this definition to measure overconfidence. In this study, we adopt a similar approach but differentiate it in a very significant way. In this work, we do not refer to the companies themselves but to the managers which direct them. Therefore, managers who perform multiple acquisitions (five or more) in a small period of time (three years) are defined as overconfident. Since we focus on managerial overconfidence, it would be wise to adopt this proxy from the perspective of the manager/CEO himself. A company may have conducted five or more acquisitions in a three-year period of time, but literature on managerial turnover following M&As suggests that different individuals may have been responsible for each deal. Table 4.1, Panel C presents the distribution of the data collected employing this proxy throughout the sample period. In total, we manage to obtain data for 3099 deals (96% of the initial sample). Out of these, 2256 (72%) acquisitions are classified as rational and 843 (27%) as overconfident. As a side note, on the whole, acquisitions performed by rational and overconfident managers will be defined as rational and overconfident deals. In the same way, acquisitions announced during high, neutral or low valuation periods will be defined as high, neutral and low respectively. The combination of managers and valuation periods will define the acquisition. For instance, a takeover from a rational manager announced during a high valuation month will be denoted as a high-rational acquisition. In the same way, we consider low valuation-rational manager (low-rational), high valuation-overconfident manager (high-overconfident) and low valuation-overconfident manager (low-overconfident) takeovers.

4.4.1.4 Summary Statistics

Table 4.1, Panel A presents the overall annual distribution of our sample, as well as the distribution of acquisitions according to the valuation classification in which they have been announced (i.e. high, neutral and low). According to the Bouwman, Fuller and Nain (2009) methodology of classifying months into high, neutral and low valuation periods, the sum of high and low valuation months is equal to that of the neutral valuation months. For that reason, we observe that 47.60% of all acquisitions took place during neutral valuation periods, while 30.16% and 22.25% of takeovers were announced during high and low valuation periods accordingly. The fact that more acquisitions are undertaken during high valuation periods is consistent with the findings of Bouwman, Fuller and Nain (2009). They also observe a higher percentage of takeovers during overvalued markets.

[Insert Table 4.1 about here]

Table 4.1, Panels B and C present the annual distribution of acquisitions according to the stock options and multiple acquirers proxies, respectively, in measuring managerial overconfidence. Table 4.1, Panels B and C report the annual distribution of acquisitions according to whether the managers that undertook the acquisition was rational or overconfident, to the valuation classification in which the acquisition was announced (i.e. a high or low valuation month) and also according to the combination of the two (i.e. high or low valuation acquisitions performed by rational or overconfident managers).

The nature of the two proxies for overconfidence is different. One proxy is based on managerial compensation and the other one is derived from the level of managerial acquisitiveness (as explained above). Moreover, due to collection difficulties, we manage to obtain a smaller sample for the stock options proxy. There are 848 deals for the stock options proxy sample and 3099 deals for the multiple acquirer’s proxy sample out of the overall 3223 deals in the full sample. Despite these two major differences in the two proxies, alongside the problems in using proxies in general, some interesting results are found. Table 4.1, Panels A and Panel B report that 70.87% and 29.13% of the deals are performed by rational and overconfident managers respectively according to the stock options proxy. Similar ratios are observed for the multiple acquirers proxy. Rational managers undertook 72.80% of takeovers whilst overconfident ones conducted the remaining 27.20%. This evidence shows that despite the differences of the two proxies, the proportion of rational-overconfident deals remains the same for the two proxies. Similar proportions are observed when we split the samples according to the valuation of the market in which the acquisitions were announced (i.e. high or low months).

Table 4.1, Panel B (Stock Options Proxy) shows that 29.25% and 23.58% of the acquisitions were announced during high and low valuation months respectively while Table 4.1, Panel C (Multiple acquirers Proxy) supports with similar results. 30.14% and 22.01% of the deals are defined as high and low acquisitions respectively. The above proportions for each proxy when considered separately are also representative for the whole sample. The proportion between the two proxies remains very close to each other even when we split the sample according to the combination of rational-overconfident and high-low acquisitions. 20.64% of the total acquisitions according to the stock options proxy (Table 4.1, Panel B) are announced by rational managers in high valuation periods. When measuring overconfidence with the multiple acquirers proxy (Table 4.1, Panel C), the proportion of acquisitions announced by rational managers during high valuation periods is 20.65%. Similarly, overconfident managers engage in acquisitions announced during undervalued periods in a proportion of 6.60% according to the stock options proxy while this figure is slightly lower at 5.52% according to the multiple acquirers' proxy. Similar proportions are observed for high-overconfident and low-rational deals for both proxies (see Table 4.1, Panels B and C). Therefore, the initial proportions observed for rational-overconfident managers for the two proxies remains even after we split the sample into high and low acquisitions. Conclusively, despite the different nature and the different size of the two proxies, the proportions remain similar for both of them, enhancing the robustness and reliability of the two sub-samples used in the return analysis for the two proxies.

Table 4.2 illustrates the activity of acquisitions among public and private targets as well as high, neutral and low deals. It displays the mean and median value of the acquirer as well as the mean and median value of the transaction. Table 4.2, Panels B and C, are split according to the type of manager (i.e. rational or overconfident) that performs the acquisitions for the two proxies (i.e. stock options and multiple acquirers' proxy). The acquirer's market capitalization is equal to the price per share one-month prior to the bid announcement multiplied by the number of common shares outstanding. The target firm size is measured as the deal value of the bid at the announcement. Table 4.2, Panel A shows that the mean (median) size of the bidder is 517.73 (88.53) million pounds for

1,281 unique acquirers in contrast to the smaller mean (median) size of target firms of 64.49 (6) million pounds. This is mainly driven by the vast majority of private target firms observed in the sample. Out of the 3,223 takeovers in the full sample, in 2,839 (88%) of them, the acquirer bids for a private target in contrast to the 384 (12%) public targets recorded. The high percentage of private targets in the UK market is consistent with the existing literature.[32]

[Insert Table 4.2 about here]

Table 4.2, Panel A also presents the mean and median value of the bidder and target after splitting the sample into high, neutral and low acquisitions. There seems to be an even distribution among the three groups. Finally, the summary statistics for overconfident and rational bidders are qualitatively similar for both proxies (Table 4.2, Panels B and C), which further enhances the robustness and reliability of the sub-samples used in the return analysis for the three different measures of overconfidence.

4.4.2 Methodology

4.4.2.1 Short-Run Event Study Methodology

To calculate the acquiring firms' performance and identify the impact of rational and overconfident management, we employ standard event study methodology (Fuller et al. (2002)) to calculate the Cumulative Abnormal Returns (CARs) for the five-day period (-2, +2) surrounding the announcement date, as given by both DataStream and Thomson One Banker (SDC). We estimate the abnormal returns earned in the short-term using a modified market model as follows:

$$AR_{i,t} = R_{i,t} - R_{m,t}$$

where $AR_{i,t}$ is the excess return of bidder i on day t; $R_{i,t}$ is the return of bidder i on day t measured as the percentage change in the return index, which includes the dividends of bidder i; $R_{m,t}$ is the market return estimated as the percentage change in the FT-All

[32] Conn, Cosh, Guest and Hughes (2005) report that privately held targets account for more than 80% of domestic acquisitions. Faccio and Masulis (2005) report 90% private target acquisitions for the period 1997-2000. Doukas and Petmezas (2007) document that 91% of UK deals conducted between 1980 and 2004 were to acquire privately held firms.

share Index (value-weighted) on day t. The CARs are then calculated as the summation of the Abnormal Returns ($AR_{i,t}$) for the five days surrounding the announcement of the bid as indicated by the following equation:

$$CAR_i = \sum_{t=-2}^{t=+2} (R_i - R_m)$$

T-statistics are used to test the null hypothesis that the mean CAR is equal to zero for a sample of n firms is as follows:

$$t_{CAR_i} = \frac{\sum_{i=1}^{i=n} \frac{CAR_{i,t}}{n}}{\left(\sigma\left(\sum_{i=1}^{i=n} \frac{CAR_{i,t}}{n} \right) \Big/ \sqrt{n} \right)}$$

Where $CAR_{i,t}$ denotes the sample average, and $\sigma(CAR_{i,t})$ denotes the cross-sectional sample standard deviations of abnormal returns for the sample of n firms.
We do not report the t-statistic in tables but the p-value instead. The p-value provides a sense of strength of the evidence against the null hypothesis. The lower the p-value, the stronger the evidence that the mean CAR is different from zero.

As discussed in Section 3.4.2.1 of Chapter 3, it has been shown that the ideal window for our study is -2 to +2 around the acquisitions date. Also, in Section 3.5.1 of Chapter 3, we show that our results are not sensitive to the method (CARs or BHARs) or the event window used. In Chapter 4, we use the same sample as used in Chapter 3. Therefore we keep using the CARs(-2,+2) to assess the short-run performance of various takeovers.

4.4.2.2 Long-Run Methodology

The long run analysis undertaken in this chapter examines the bidder’s excess returns which occur over a 12- and 36- month post-event period. Following Mitchell and Stafford (2000) we employ Calendar Time Portfolio Regressions (CTPRs) analysis. The portfolios are rebalanced each month to include firms that performed a takeover during the previous month while also to remove firms that have reached the end of the 12- or 36-month period. The average monthly excess returns for the three-year post acquisition period is the intercept from the time-series regression of the calendar portfolio on the Fama and French three-factor model as follows:

$$R_{pt} - R_{ft} = a_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

Where R_{pt} is the average monthly return of the calendar portfolio at time t; R_{ft} is the monthly risk free rate of return at time t; R_{mt} is the monthly return on the market index (value-weighted); SMB_t is the monthly return on small minus large firms (value-weighted); and HML_t is the monthly return on high book-to-market minus low book-to-market firms (value-weighted). β_i, s_i, h_i, are the regression parameters and ε_{it} is error term. The intercept (α_i) measures the monthly average excess returns of acquiring firms after controlling for the effect of the three risk factors.

4.5 Empirical Findings

This section discusses the announcement abnormal returns earned by bidders, the multivariate results and the long-run performance of bidding firms that announce acquisitions in high and low valuation periods respectively. Most importantly, we examine the interaction between the performance of rational and overconfident managers who announce takeover deals in high and low valuation periods.

4.5.1 Short-Run Analysis

This section presents the short-run analysis and discusses the cumulative abnormal returns (hereafter CARs) of the respective bidding firms. It attempts to reveal the differential performance in terms of the abnormal returns generated between the two types of managers - rational and overconfident - when announcing acquisitions during overvalued or undervalued markets, in terms of all of the possible combinations this connotes. CARs measure the abnormal returns of the acquirer around the announcement date (-2, +2). Initially, the abnormal returns are presented for the entire sample and then for acquisitions announced during high and low valuation periods. The portfolios are also split according to the method of payment and the target's public status. The main part of the analysis focuses on the bidders' short-run abnormal returns in the rational-irrational manager-investor framework. More specifically, we examine the five day performance of rational and overconfident investors who announce acquisitions in high and low valuation periods (i.e. High-Rational, High-Overconfident, Low-Rational and Low-Overconfident deals as defined earlier). This framework is examined when portfolios have been divided according to the various bidder and deal characteristics documented in the literature as influential factors affecting acquirers' abnormal returns. Such characteristics include the method of payment, the targets listing status, the bidders' growth opportunities (MTBV), the bidders' size (MV), the relative size of the deal, whether the bidder expands in the same or acquires a firm from a different industry and finally, whether the target company is of domestic or foreign origin. All portfolios are analyzed for both proxies of overconfidence.

4.5.1.1 Bidder Gains for Acquisitions Announced during High and Low Valuation Periods

Table 4.3 illustrates the CARs for the whole sample of acquisitions for deals announced during high, neutral and low valuation periods on the basis of the target firm's listing status (i.e. public or private) and the method of payment (i.e. cash, stock or mixed). Table 4.3 shows that the overall short-run performance of the whole sample (3,223 deals) is gains of 1.47% earned around the announcement date, statistically significant at the 1% level, which is driven by the positive and significant performance (1.83%) of private acquisitions that populate the UK market (2,899 or 88% in our sample). 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 date which is explained by the limited competition,[33] the monitoring[34] and the information hypotheses.[35] On the contrary,

[33] 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 higher returns for the bidder (Chang 1998)

[34] 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 (Drapper and Paudyal (2006), Chang (1998)).

[35] 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

acquisitions of listed target firms suffer a loss (-1.20%) around the announcement date (Travlos (1987)). The CARs for cash and stock acquisitions are positive and equal to 1.17% and 2.63% respectively, also predominantly driven by the large proportion of private deals in our sample (Draper and Paudyal (2006)). The overall findings of our sample are in accordance with the documented literature on M&As. Table 4.3 also displays the short run performance of acquisitions announced during high, neutral and low valuation periods as measured by the methodology of Bouwman, Fuller and Nain (2009). On the whole, acquisitions announced during high valuation periods enjoy the highest profits, followed by those announced in neutral valuation months. Finally those conducted in undervalued periods underperform the rest of the sample. More specifically, for the overall sample, acquisitions announced in high valuation periods enjoy 1.31%, statistically significant at the 1% level, more abnormal returns than those announced during low valuation periods. Bids for listed target firms generate negative abnormal returns in line with the documented literature, but those announced during high markets generate marginally negative and statistically insignificant returns (-0.15%) while those announced in low periods suffer greater significant losses (-2.71%). The mean difference (1.21%) between high versus low deals is statistically significant at the 1% significance level. Similarly, deals of private targets as well as those financed using cash, stock and mixed methods in high valuation periods significantly outperform those announced in low valuation periods by 1.21%, 0.98%, 4.31% and 1.31% respectively. The high differential of 4.31% for stock deals, statistically significant at the 18% level (probably because of the small number of stock acquisitions in the UK market), provides support to the Sheifer and Vishny (2003) stock driven acquisition theory. In other words, managers take advantage of their overvalued equity to acquire undervalued or less overvalued targets. The overall results are consistent with existing studies that empirically investigate the quality of mergers in different valuation market periods (Rosen (2006), Bouwman et al. (2009)).

[Insert Table 4.3 about here]

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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))

Table 4.4 illustrates the performance of deals announced during high, neutral and low valuation periods after controlling for various bidder and deal characteristics. We control for the effect of market valuations in the various portfolios including the value, glamour, small, big, low and high relative size, diversifying, non-diversifying, domestic and foreign classifications. The findings show that high acquisitions significantly outperform low acquisitions. More specifically, deals announced in high periods generate 1.45%, 1.13%, 1.75%, 0.97%, 0.70%, 1.94%, 0.83%, 1.74%, 1.21% and 1.54% more abnormal returns than deals announced in low periods for the value, glamour, small, big, low and high relative size, diversifying, non-diversifying, domestic and foreign portfolios respectively. All the mean differences (apart from the diversifying portfolio) are statistically significant at the 1%, 5% and 10% significance levels.

[Insert Table 4.4 about here]

According to Rosen (2006), the good performance of high acquisitions could be due to the fact that CEOs exploit the market conditions and conduct acquisitions during hot periods only to boost up the company's stock prices. Managers usually enjoy large bonuses for increasing the price of their stocks. Literature on IPOs also suggests that investor sentiment is the dominant reason behind firms' decisions to become publicly listed during overvalued markets. If investor sentiment biases can affect acquisitions at this degree, then we have to consider managerial sentiment as well. CEOs decide which firm in the market will be the takeover target as well as controlling the timing of the announcement. Therefore, it is of great importance to take into consideration the parameter of managerial biases and the way that different types of managers are affected during overvalued and undervalued markets.

4.5.1.2 Bidder Gains by Rational and Overconfident Managers in High and Low Valuation Periods

The main purpose and contribution of this study is to uncover any potential differences between when rational or overconfident managers engage in acquisitions that take place during periods of high or low investor sentiment. The findings above imply that managers exploit investor sentiment during overvalued periods in order to boost up their company's stock price and therefore obtain positive short-run gains. In this section, we attempt to uncover the bidders' gains in a rational-irrational manager-investor framework.

[Insert Table 4.5 and 4.6 about here]

Table 4.5, Panel A, reports the CARs for rational and overconfident managers as measured by the stock options proxy. Rational managers enjoy positive and significant gains in all different states of market valuation (1.36% for high, 1.26% for neutral and 1.13% for low periods). Acquisitions announced during high valuation periods outperform those announced during low valuation markets for the overall sample (1.10%), continuing to hold after we control for rational and overconfident managers. More importantly, the highest performance (1.36%) is achieved by rational managers who announce takeovers in high valuation months. This is due to the fact that rational managers choose targets firms which generate positive synergies for the combined firm as well as taking advantage of the high investor sentiment which boosts their stock prices up even further. On the other hand, CEOs infected by hubris that bid for target companies in low valuation months suffer the highest losses (-1.69%). In low valuation periods, the investor sentiment is likely to also be low and investors more carefully assess the future prospects of the deal. In such periods, overconfident managers are less likely to be able to hide possible overpayments. Hence, a manager's poor choice, both for the targets' potential synergies and the timing of the acquisition, can lead to negative abnormal returns for acquirer's shareholders wealth. The high differential (3.05%, statistically significant at the 5% level) between high-rational deals versus low-overconfident ones strongly indicates that acquirer's gains are definitely affected by the CEO's optimal choice for the target firm and the timing of deal announcement. The picture remains the same when measuring the managerial bias of overconfidence using the multiple acquirers' proxy (Table 4.6, Panel A). The high performance (1.65%) of rational managers is mainly driven by the positive and significant gains (2.16%) achieved during high valuation months contrary to those obtained (0.69%) in low valuation periods. On the other hand, overconfident deals (0.88%) are highly affected by the low insignificant gains obtained in low valuation periods (0.19%). The multiple acquirers' proxy, despite being based on a different rationale to the options proxy as well as having a smaller subsample size, also indicates that bidder gains are driven by the high performance (2.16%) of high-rational deals contrary to the low insignificant performance of low-overconfident deals (0.19%). The statistically significant differential (1.97%, significant at the 1% level of significance) reinforces the argument that managerial decisions, over which targets to pursue and when they should be acquired, can crucially affect bidders' returns. We further test the rational-irrational investor-managers framework according to the target firm's listing status and method of payment in the following sections.

4.5.1.3 Bidder Gains by Rational and Overconfident Managers in High and Low Valuation Periods by Target's Listing Status

This section discusses the acquirers' abnormal returns as obtained by rational and overconfident managers in various valuation market conditions after splitting the portfolios according to the targets listing status. Private takeovers are the ideal ground in which to capture and study the phenomenon of overconfidence (Doukas and Petmeazas (2007)). The UK market is populated by private deals and hence a representative sample is obtained. The information for private deals is limited, which means that managers of the bidding firm need to involve their own personal estimation and valuation skills. Thus, if they are infected by hubris, the valuation process may be highly influenced by this bias.

Table 4.5, Panel B reports bidders' gains for private deals according to the stock options proxy. Rational acquisitions outperform overconfident ones both in the overall sample by 0.90%, statistically significant at the 10% level, and for the various valuation states of the market (especially in low periods where the mean difference is 2.19%, statistically significant at the 10% level). Rational-high deals earn 1.72% significant abnormal returns around the announcement date. High-overconfident deals earn 1.50% while low-rational ones obtain 1.41% abnormal returns. These findings indicate that even if overconfident managers possibly overpay for their target, the short-run performance is enhanced by the positive investor sentiment in the market. The small mean differences between rational acquisitions in the different states of market valuations (1.72% for high-rational, 1.66% for neutral rational and 1.41% for low-rational) shows that rational managers manage to generate positive abnormal returns irrespective of investor sentiment. Overconfident deals are boosted up by investor sentiment in high valuation periods (1.50%). On the other hand, the market reacts even more unfavorably to overconfident deals conducted in low periods. In addition, it is evident in the portfolio for private targets that a combination of managerial decisions can influence bidder gains. The high differential (2.50%, statistically significant at the 6% level) between high-rational and low-overconfident deals reinforces this argument confirming that rational managers who taking advantage of the high investor sentiment in the market manage to boost up their stock prices even more and resultantly obtain the best possible outcome for their shareholders, contrary to the devastating results of overconfident deals undertaken in undervalued periods.

The above results and conclusions and not subject to the proxy used to measure overconfidence. When employing the multiple acquirers proxy (Table 4.6, Panel B), the overall picture remains robust. Overall, rational-high bids outperform overconfident-low ones by 1.10% and 1.28% respectively. More specifically, the highest short-run performance (2.59%) is obtained by rational bidders who choose to acquire targets with positive synergy gains in periods in which they can take advantage of the investor sentiment. Overconfident managers seem to generate positive and significant gains (1.43%) when announcing deals during high valuation periods whilst rational-low deals also enjoy 1.16% positive and significant abnormal returns. There is no market reaction for low-overconfident acquisitions (0.29%, statistically insignificant). The differential between high-rational and low-overconfident deals is 2.31%, statistically significant at the 1% level, similar to the results observed for the stock options proxy.

Table 4.5, Panel C (using the stock options proxy) shows that in all possible circumstances (i.e. for the overall sample, the type of manager or the market conditions), bidders' suffer losses, all of which are statistically insignificant, most probably due to the small number of observations of each portfolio. All differentials are positive in favor of rational and high acquisitions accordingly but they are statistically insignificant. This could be as a result of the small sample size. Bids for listed firms are relatively scarce in the UK market compared to private deals (only 12% of our sample accounts for public deals). As a result when splitting the sample of public bids into other sub-portfolios, the sample sizes for each classification declines even more. Apart from this, the insignificant differential between rational-overconfident bids, despite being positive (1.14% for the overall public portfolio), could indicate that the phenomenon of overconfidence is less pronounced for public bids. More information is available for listed target firms and therefore managers can easier evaluate the target firm and the potential synergies on offer. This infers that there is less involvement regarding the personal critical abilities and beliefs of the manager, in which case the impact of overconfidence influencing the manager's decisions is lessened. Despite the small sample size and the lack of the overconfidence effect in this portfolio, the rational-irrational manager investor framework still holds. The CARs for high-rational deals are the least negative (-0.70%) when compared to the high losses of low-overconfident deals (-5.40%). The small number of observations in each portfolio cannot lead to any fruitful conclusions. Despite this fact, the fact that rational CEOs in high periods lose 4.70% less that overconfident ones do in low periods provides extra support to our hypotheses. When measuring overconfidence using the multiple acquirers' proxy (Table 4.6, Panel C), the findings are more mixed. High-rational acquisitions (-0.11%) remain superior to low-overconfident ones (-1.37%), but it appears that rational managers in low periods suffer the highest losses (-2.49%). This fact, alongside other inconsistencies (such as the fact that rational bids seem to underperform overconfident ones) may rise from the fact that this proxy fails to capture overconfidence for listed targets. Listed targets are usually large firms which will have a greater impact in the after takeover performance in the post-event period for the combined company. Hence, managers may be more careful when choosing to bid for a listed firm. Besides, as mentioned above, there is less information asymmetry for public firms and the evaluation process is not so much influenced by managers' personal estimations and beliefs regarding the target's intrinsic value. Despite the problems of truly capturing overconfidence in the public portfolio, the high-rational bids still seem to be the portfolio that suffers the lowest losses.

Overall, in both the private and public portfolios, managerial decisions in terms of which target to acquire and when to do so, can have considerably significant effects on bidder gains. Rational managers who opt for targets with positive synergies and announce the deal during high valuation periods so that they can exploit the positive investor sentiment, obtain the highest possible short-run abnormal returns for their shareholders. On the other hand, overconfident managers who overpay for their targets and, moreover, when this takes place during low valuation periods in which the low sentiment in the market will not boost the bidders share price, generate negative returns for their shareholders. These effects are better observed in the private target portfolio where the phenomenon of overconfidence is best captured.

4.5.1.4 Bidder Gains by Rational and Overconfident Managers in High and Low Valuation Periods according to the Method of Payment

This section presents the short-run acquisition performance of bidders according to the various managerial traits in various valuation states of the market differentiated on the basis of the method of payment used to finance the acquisition.

Panel D of Table 4.5 reports the bidder gains for cash acquisitions according to the stock options proxy. Rational deals enjoy similar profits during the various valuation periods (1.13% for high, 0.75% for neutral and 0.42% for low valuation periods). Greater differences are observed between the various market conditions for overconfident deals (1.43% for high, -0.18% for neutral and -1.12% for low), which indicates that rational managers' good performance is not so much affected by the market condition whilst there is a positive effect on overconfident deals exerted by high investor sentiment. Therefore, these latter deals are not catastrophic for the bidders' shareholders, contrary to the performance of overconfident deals in low valuation periods. The mean difference between high-rational and low-overconfident acquisitions is 2.24%, statistically significant at the 16% level. The overall findings of the rational-irrational manager-investor framework remain unaffected when accounting for overconfidence using the multiple acquirers proxy (Table 4.6, Panel D). This proxy also confirms that the bidder's performance is affected by the excellent performance of high-rational deals (1.45%) and negatively affected by the poor performance of low-overconfident ones (-1.01%). The mean difference is 2.46%, highly significant at the 1% level.

It would not be wise to draw fruitful conclusions for the stock acquisitions portfolio due to the limited observations obtained for each classification. Stock acquisitions are quite scarce in the UK market. For the stock options proxy (Table 4.5, Panel E) high-rational, high-overconfident, low-rational and low-overconfident portfolios consist of 7, 4, 2 and

2 observations respectively whilst for the multiple acquirers proxy (Table 4.6, Panel E), the same portfolios comprise of 48, 15, 36 and 4 observation respectively.

Panel F of Table 4.5 presents bidders' performance for mixed deals (i.e. where the means of financing the acquisitions was a combination of cash and equity). Rational managers (as measured using the stock options proxy) obtain significant positive abnormal returns of a similar level as previously found (1.69%, 1.75% and 1.69% for high, neutral and low valuation periods respectively) for their shareholders. This evidence also implies that rational managers' choice for value enhancing targets has a positive effect on bidders' shareholders wealth. On the other hand, overconfident managers' choices generate positive abnormal returns (1.03%) when the acquisition is announced in high valuation periods but the results are catastrophic (-1.53%) when investor sentiment is low and does not help to boost the bidder's stock price. The mean difference between high-rational and low-overconfident deals is 3.22% (statistically significant at the 14% level). Similar evidence is obtained when measuring overconfidence using the multiple acquirers proxy (Table 4.6, Panel F). Bidders' abnormal returns seem to be driven by the superior performance of high-rational deals (2.49%) compared to the poor performance (0.68%) of low-overconfident ones (the differential is 1.81%, statistically significant at the 5% level).

Conclusively, the rational-overconfident managers in high-low valuation periods pattern remains robust even after we split the sample according to the method of payment chosen to finance the acquisition. In other words, bidders' returns are affected by the choice of rational managers to acquire value enhancing targets and the decision to announce these acquisitions during overvalued periods. Conversely, the performance of overconfident managers who undertake deals in low valuation periods is disastrous regardless of the financing choice. The UK market lacks stock acquisitions and the small size of the sub-portfolios prevents concrete conclusions to be extracted from these deals.

4.5.1.5 Bidder Gains by Rational and Overconfident Managers in High and Low Valuation Periods according to Various Bidder and Deal Characteristics

<u>Bidders' Growth Opportunities (MTBV)</u>

A number of factors have been studied in the literature and have been shown to affect bidders' returns. Rau and Vermaelen (1998) and Sudarsanam and Mahate (2003) suggest that bidders' returns are influenced by the prior bidders' growth opportunities. Both studies claim that low book-to-market (glamour) acquirers significantly underperform while high book-to-market (value) acquirers have been shown to outperform in the long-run. While Sudarsanam and Mahate (2003) for the UK market find similar results for the short run, Rau and Vermaelen (1998) find the opposite. Rau and Vermaelen (2003) explain that the difference in performance between the two types of bidders (value vs. glamour) is attributed to the fact that glamour firms are infected with hubris and prefer to finance their takeovers using their overvalued equity.

[Insert Table 4.7 and 4.8 about here]

This section examines the way in which managerial decisions are affected when controlling for the prior growth opportunities of the bidder. Table 4.7, Panel A illustrates acquirers' five day abnormal returns for rational–overconfident managers in overvalued and undervalued periods for acquirers with low prior growth opportunities (value bidders). The results are puzzling for value acquirers according to the stock options proxy. In the overall sample there is no significant difference between those who announce acquisitions in high valuation periods and those which announce in low valuation periods, neither between rational or overconfident managers, hence it is not reliable if we draw further conclusions when the decisions are combined. The stock options proxy may not be able to fully capture overconfidence for value bidders. This proxy is based on whether managers exercise well-in-advance of the expiration or whether they leave it close to the date. Value bidders are companies with high B/M ratios, which signify that they have low growth opportunities. As a result, managers would not have the opportunity to exercise their stock options according to the conditions of this proxy. The stock price is likely to be lower than, or around, the strike price of the stock option granted to the manager. Hence, managers would justifiably wait until the stock price goes high enough in order to be profitable for them to exercise the options. For that reason, managers who wait until late to exercise the options may have been wrongly classified as overconfident in the value portfolios.

For the same reason, glamour bidders are the ideal type of companies in which to capture overconfidence by using the stock options proxy. Glamour bidders have high growth opportunities and managers should have a great incentive to exercise their stock options to obtain the maximum benefits. Hence, those who wait until the last year of expiration believing that they will be able to rise their companies' stock prices even more, can definitely be characterized as overconfident. Table 4.7, Panel B shows bidders returns for glamour acquirers according to the managerial bias and market valuation. Overall, rational bidders generate 1.80% (statistically significant at the 5% level) more abnormal returns than their overconfident counterparts while those who announce bids in high valuation periods earn 1.41% (statistically significant at the 5% level) more abnormal returns than those who announce acquisitions in low valuation periods. When the decisions are combined, the findings suggest that managers who choose to bid for value enhancing targets and take advantage of investor sentiment in the market generate profits of 2.04% while when the inverse decisions are taken by overconfident managers (i.e. they bid for value destroying targets) and the acquisition is announced during undervalued markets (i.e. low investor sentiment), then shareholders' wealth is declined by 2.96%. The difference (5.01%) is statistically significant at the 5% significance level.

Similar evidence is obtained when measuring overconfidence with the multiple acquirers proxy. Table 4.8, Panel A illustrates bidders' abnormal returns for value acquirers. High-rational deals generate the highest abnormal returns (2.42%) contrary to the very poor performance of low-overconfident deals (0.24%). The difference is also statistically significant at the 5% level. The same results are observed in the glamour portfolio as well (Table 4.8, Panel B). The difference between high-rational vs. low-overconfident deals is 1.66%, statistically significant at the 5% level. In line with Sudarsanam and Mahate (2003), value high-rational bidders outperform their glamour counterparts (2.42% vs. 1.71%). In general, even when controlling for bidders' past growth opportunities, the general hypothesis that managerial decisions affect bidder gains remains to hold.

4.5.1.6. Announcement Abnormal Returns of Manager-Investor Rational-Irrational Framework by Bidders' Size (MV)

Moeller, Schlingemann and Stulz (2002) show that bidders' size affect the gains involved in acquisitions attributing this fact to various factors. In particular, small bidders earn on average 2% more abnormal returns around the announcement day than large bidders do. Small acquirers usually acquire private firms which typically generate positive abnormal returns (Fuller et al. (2002)). In addition, small companies usually also use cash to finance the takeover. Cash acquisitions have also been shown to be profitable (Travlos (1987)). In small companies, managerial incentives are better aligned with those of shareholders. Hence, by controlling for acquirers' size, we can check whether managerial decisions still affect bidders' gains. Table 4.7, Panel C shows that in the portfolio of small firms, there is a difference of 3.47% (statistically significant at the 16% significance level) in the short-run performance between high-rational and low overconfident deals, mainly driven by the poor performance of overconfident managers during periods of low investor sentiment. The same pattern holds in the portfolio of large bidders, as defined by using their Market Value. High-rational bidders generate 2.84% more abnormal returns than low-overconfident ones. The difference is also statistically significant at the 10% significance level.

When employing the multiple acquirers proxy, the overall findings remain unchanged. In both the small (Table 4.8, Panel C) and large (Table 4.8, Panel D) portfolios, rational bidders who announce takeovers during high valuation periods outperform their overconfident counterparts who announce bids in low valuations. This is more evident in the portfolio of small companies where the differential is 3.42%, highly statistically significant, while the small difference in the portfolio of large acquirers can be attributed to the weakness of the multiple acquirers proxy to capture overconfidence in this instance.

Regardless of this, both proxies find that in all different states of the market and for all types of bidders, small firms in most cases outperform large ones in accordance to Moeller, Schlingemann and Stulz (2002). Hence, it is evident that bidder gains are driven by rational managerial decisions to choose value enhancing targets and to announce such deals so as to take advantage of the prevailing investor sentiment at the same time in order to further boost the price of the stock even more, even after controlling for bidders' size.

4.5.1.7. Announcement Abnormal Returns of Manager-Investor Rational-Irrational Framework by Deal's Relative Size

It has been widely documented in the literature that the relative size of the target in relation to the bidding firm is a major factor that affects bidders' announcement returns (Asquith et al. (1983), Jensen and Ruback (1983), Jarrell and Poulsen (1989) and Fuller et al. (2002)). The empirical findings of such works suggest that the higher the relative size of the target to the bidding firm, the larger the abnormal returns generated around the acquisition date whilst the initial structure of the firm also changes as a result of the acquisition. Loderer and Martin (1990) argue that large firms tend to overpay for their targets whilst large acquisitions also seem to be overpriced, having an adverse effect on stock prices. This may be related to the fact that large targets are more likely to be financed using shares in merger and acquisition deals (Myers and Majluf (1984) and DeAngelo et al. (1984)) which in turn results in lower abnormal returns generation. Hence, it would be of great use to our analysis to examine managerial decisions under the perspective of this important factor for bidding firms' shareholders wealth.

Our finding suggest that in both the low and the high relative size portfolios, using the stock options and the multiple acquirers proxies (Panels E and F in Tables 6 and 7), the highest returns are generated by rational managers who bid for value enhancing targets and announce these acquisitions during overvalued periods. Conversely, the poorest performance is observed for deals in which overconfident managers are involved ending up destroying value for their shareholders and deteriorating the performance of the firm after the takeover is announced during undervalued periods. Therefore, the results show that managerial decisions regarding the target and the timing of the merger announcement remain consistent with the main hypothesis of this chapter even when controlling for the relative size of the target to the bidding firm.

4.5.1.8. Announcement Abnormal Returns of Manager-Investor Rational-Irrational Framework by Focused and Diversified Acquisitions

The evidence on whether diversification through merger and acquisitions creates value is not clear. Lang and stulz (1994) and Berger and Ofek (1995) find that diversification destroys value while Graham, Lemmon and Wolf (2000), Gampa and Kedia (1999), Chevalier (1999), Hyland (1999), Lamont and Polk (2002) and Villalonga (2001) are unable to find that diversification is the explanation for value destruction reported. Nevertheless, we examine the reaction of bidders' share price around the announcement date when managers choose to acquire firms in the same industry (i.e. focussed acquisitions) or from a different industry than the one in which the bidding firm primarily operates (i.e. diversifying acquisitions). Table 4.7, Panel G, shows that rational bidders who diversify into other industries obtain positive and significant returns of similar magnitude throughout the various states of the market (1.03% for high, 1.58% for neutral and 1.35% for low valuation periods). Similar results are obtained for overconfident managers except for those acquisitions that are announced during low valuation periods, where overconfident bidders are found to suffer the highest losses (3.21%). The high and statistically significant differential between high-rational and low-overconfident deals gives further support to the hypothesis that managerial decisions of the type of target to be acquired and the timing of the acquisition drive bidder gains.

Similar evidence is found when managers choose to acquire firms in the same industry (Table 4.7, Panel H). In this instance, the difference in announcement abnormal returns between high-rational and low-overconfident deals is 2.11% (statistically significant at the 20% significance level). Table 4.8, Panels G and H, provide supportive evidence to the main hypothesis, when measuring overconfidence using the multiple acquirers proxy. Overall, managerial decisions seem to drive bidders' gain even after splitting the portfolios according to the target industry.

4.5.1.9. Announcement Abnormal Returns of Manager-Investor Rational-Irrational Framework by Domestic and Foreign Acquisitions

A great strand of the existing literature discusses bidding firms' announcement abnormal returns when companies get involved in domestic or foreign acquisitions (Wansley, Lane and Yang (1983), Eun, Kolodny and Scheraga (1996), Kang (1993), Harris and Ravenscraft (1991) and Cakici, Hessel and Tandon (1996)).

Hence, we also examine managerial decisions in relation to the target nation as well. Panels I and G of Table 4.7 illustrate the five day announcement returns for bidders who acquire targets from the same country or from a foreign nation as well as those undertaken by rational and overconfident managers as measured using the stock options proxy. The findings suggest that in the domestic portfolio, rational managers perform equally well irrespective of the valuation period in which they announce the acquisition, while overconfident managers enjoy positive abnormal returns when they announce takeovers during high or neutral valuation periods. However, they suffer losses when the deal takes place during low valuation periods. The differences between bidders' performances are even more pronounced when managers bid for targets domiciled in foreign countries. In this portfolio, the overconfidence effect is captured in a more pronounced way. Managers infected with hubris feel that they can exploit more synergy gains when they engage in cross-border acquisitions. Therefore, overconfident managers who announce acquisitions during undervalued periods suffer great losses (-3.38%). The difference between high-rational and low-overconfident deals is 4.89%, statistically significant at the 5% significance level. Similar evidence is obtained when measuring overconfidence using the multiple acquirers proxy (Panels I and J of Table 4.8). The differences between high-rational and low-overconfident deals are 1.65% and 2.69%, both statistically significant at the 5% level, for domestic and foreign acquisitions respectively.

Overall, managerial decisions in terms of selecting the appropriate target company and the timing of the announcement seem to play a very important role even when controlling for domestic and cross-border acquisitions.

4.5.1.10. Summary of Short-Term Univariate Findings

This section has analyzed whether or not managerial decisions affect bidders' five-day announcement returns. Our results suggest that rational managers who bid for value enhancing targets generate positive abnormal returns for their shareholders while overconfident managers overestimate synergies and end up destroying shareholder value. In addition, it is found that managers who exploit investor sentiment and announce takeovers during overvalued periods, boost their share prices and these deals perform better than those announced during undervalued periods overall.

However, the differentials between rational vs. overconfident managers are not significant when examined in various valuation periods (i.e. high, neutral and low) and similarly deals announced during high valuation periods are not statistically significant different to those announced during low valuation periods for each type of manager (i.e. rational and overconfident). On the other hand, when the decisions are combined, bidders' returns seem to be highly affected by the managerial decisions taken. More specifically, in most portfolios, the differentials between high-rational vs. low-overconfident deals are highly statistically significant. In other words, rational managers who choose to acquire value enhancing targets and at the same time exploit investor sentiment by announcing the takeover during overvalued periods generate the highest possible abnormal returns around the announcement day. Conversely, overconfident managers who overestimate synergy gains and acquire firms which are value destroying for their shareholders and choose to announce their deal during undervalued periods, generate disastrous results for the bidding firm's shareholders. The above findings hold when using both proxies (i.e. stock options and multiple acquirers proxy) to capture managerial overconfidence. The high-rational vs. low-overconfident pattern is also robust after controlling for various factors that can affect bidders' returns. In fact, the differentials are even higher in portfolios in which the overconfidence effect can be more effectively captured, for example in glamour-bidder deals. The performance of low-rational and high-overconfident deals is more or less found to be at the same level. The share price around the announcement date for low-rational deals is boosted by the appropriate choice of the target firm but does not benefit from the investor sentiment whilst the five-day CARs for high-overconfident deals are not too low due to the positive reaction from the stock market's high sentiment.

4.5.2 Multivariate Analysis

The univariate analysis results clearly indicate that overconfident bidders realize considerably lower announcement returns than rational acquirers do, especially during low stock market valuation periods while rational managers who announce takeover deals during high valuation periods generate the highest abnormal returns for their shareholders. However, the univariate analysis does not allow for the interaction between the various determinants of acquirers' gains and consequently does not account for the simultaneous effects of multiple factors. To better examine whether differences in acquirer and deal characteristics can help explain the abnormal return differentials in more depth, we adopt a multivariate regression framework where announcement period returns earned by bidders are regressed against a set of explanatory variables that have been proven in the literature as influential over bidders' performance.

Various deal features and bidder characteristics are known to affect the announcement period gains. For instance, Rau and Vermaelen (1998) argue that glamour acquirers outperform value acquirers at the announcement period using a sample of US acquisitions while Sudarsanam and Mahate (2003) provide evidence of the opposite pattern in the UK. Moeller, Schlingemann and Stulz (2004) provide evidence that smaller bidders gain more than larger bidders. Accordingly, Fuller et al. (2002) report that bidder's gains are a decreasing (increasing) function of the relative size of the target to acquirer in public (private) acquisitions. Finally, Doukas and Kan (2004) also show that bidders engaged in diversifying acquisition are more likely to suffer losses.[36]

To overcome such limitations, we adopt a multivariate regression framework where bidders' five day abnormal announcement returns (CARs) are regressed against a set of explanatory variables that may affect bidders' gains as per the following model:

[36] The evidence on diversifying M&As is mixed. For example, Lang and Stulz (1994) and Berger and Ofek (1995) show that diversifying deals destroy value while Jensen and Ruback (1983) and Bradley, Desai and Kim (1988) report evidence of positive gains from diversifying acquisitions.

$$CAR_i = a + \sum_{i=1}^{N} X_i + \varepsilon_i$$

The intercept (α) measures the excess return to bidders after accounting for various explanatory variables while the vector of explanatory variables 'X' includes variables that are likely to explain bidders' abnormal returns. Tables 4.10 and 4.12 illustrate the multivariate analysis results when measuring overconfidence using the stock options and the multiple acquirers proxies respectively.

All the regressions include: a dummy variable that takes the value of one if the target is private and zero otherwise; a dummy variable that takes the value of one if the acquisition is stock- (cash-) financed and zero otherwise; and a dummy variable for diversifying deals which takes the value of one when the acquirer's two-digit SIC code is different from that of the target and zero otherwise. To control for the bidder's size effect, the log of the Market Value of the acquiring firm is also included. The size of acquirers is measured by the market value of the respective firm one month before the deal's announcement. Other variables included in the regressions 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 one month before the announcement of the deal; the deal's relative size, which is measured by the ratio of the deal value of the bid over the bidder's market value; a merger activity dummy variable which takes the value of one if the deal is announced during a highly active 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.

Table 4.9 and 4.11 presents the correlation coefficients of each pair of variable used in the multivariate analysis for the stock options and the multiple acquirers proxies respectively. We observe high correlations between the interactive variables HighRational, HighOverconfident, LowRational, LowOverconfident and the High, Low and Rational, Overconfident dummy. However, these two variables are not used in the same regression in the multivariate analysis.

[Insert Table 4.9 and 4.11 about here]

In Table 4.10, Regression (1) includes two extra variables: a dummy which takes the value of one if the acquisition was announced during high valuation periods and zero otherwise; and a dummy variable which takes the value of one if the acquisition was announced during low valuation periods and zero otherwise. The coefficient of the high valuation period dummy is positive and statistically significant while the coefficient of the low valuation period dummy is negative, which is consistent with literature (Bouwman, Fuller and Nain (2009)). Deals announced during high valuation periods generate higher abnormal returns than those announced during low valuation periods. The rest of the coefficients of regression (1) show that private acquisitions, stock deals (due to dominance of private acquisitions financed with stock), book-to-market, large relative size deals, acquirer's returns $_{t-1}$ and market's returns $_{t-1}$ exhibit a positive relationship with the bidder's announcement returns, consistent with the literature.

[Insert Table 4.10 and 4.12 about here]

In regression (2), a dummy variable which takes the value of one if the manager of the acquiring firm was defined as overconfident with the stock options proxy and zero otherwise is included. The coefficient for the overconfident dummy is negative (-0.011) as expected and statistically significant at the 5% level. This indicates a negative relationship between the announcement returns and the value destroying overconfidence effect.

Regression (3) includes the vector of explanatory variables including all of the previous dummy variables, plus additional dummy variables to capture for bids announced by firms with rational (overconfident) managers at the time of high (low) market valuation to allow for the interaction between managerial overconfidence and the aggregate market performance. The dummy of high valuation-rational acquirers carries a positive coefficient and is statistically significant at the 5% level. Accordingly, low valuation-overconfident deals have a significantly negative relationship with bidder returns, which supports the interaction effect of managerial overconfidence and market valuation.

Finally, in regression (4), we examine the interaction of a dummy which takes the value of one if the deal was undertaken by an overconfident manager and was announced during a low valuation period and zero otherwise, with the other entire explanatory variables included. The coefficient of this variable is highly negative which implies the disruptive effect to a bidder's performance of such deals. The same four regressions are investigated in the subsample of the multiple acquirers proxy in Table 4.12. The results clearly indicate that the big picture of the rational-irrational investor-manager framework remains the same.

Overall, the evidence found reaffirms the finding that a bidder's announcement period gains depend jointly on the behavioural elements of the aggregate stock market valuation conditions and managerial overconfidence. Evidence from both univariate and multivariate analyses provides support that bidders infected with managerial overconfidence experience lower announcement period returns. In addition, the results also support the prediction of the stock market valuation theory that bidders achieve positive returns on the announcement of takeover deals.

4.5.3 Long-Run Analysis

The short-run analysis suggests that the highest short-run performance around the announcement of the acquisition is achieved by rational managers who announce acquisitions during booming periods while overconfident CEOs who overpay for their targets and announce deals during bear markets suffer the highest losses, or indeed enjoy the lowest gains. Furthermore, acquisitions announced by overconfident managers during high valuation periods do not destroy value for their shareholders. To examine the one and three year post-merger performance of rational and overconfident deals in high and low valuation periods, we follow Mitchell and Stafford (2000) and employ Calendar Time Portfolio Regression (CTPRs) analysis. Intercepts of the CTPRs approach are reported for one and three years after the acquisition announcement.

[Insert Table 4.13 and 4.14 about here]

Table 4.13 presents the one and three year post-merger performance of acquisitions announced during high, neutral and low valuation periods for the entire sample. Table 4.13, Panel A illustrates the long-term performance one year after the announcement of the deal. No significance difference between high and low acquisitions is observed. Similarly, in Table 4.13, Panel B, the three year post merger performance suggests no statistical or economic difference between high and low deals. Table 4.14 reports the long-run performance of rational and overconfident bidders, as measured using the stock options proxy, when announcing takeovers in high and low valuation periods. Rational managers are shown to generate 0.80% more calendar abnormal returns in the 12 months following the announcement of the deal (Table 4.14, Panel A). Rational and overconfident managers generate marginally negative and insignificant gains (-0.18% and -0.13% respectively) overall while overconfident managers in bearish periods suffer -0.59% significant monthly calendar losses. Similar results are presented in Table 4.14, Panel B which reports the three year post-merger performance.

[Insert Table 4.15 about here]

Table 4.15 employs the multiple acquirers proxy to capture managerial overconfidence. Both one (Table 4.15, Panel A) and three (Table 4.15, Panel B) years after the announcement of the deal, we fail to observe any significant differences between high-rational and low-overconfident acquisitions. High-rational deals seem to achieve a less negative performance than low-overconfident deals but the performances are statistically insignificant.

In summary, rational managers generate higher calendar abnormal returns one and three years after the announcement of the takeover but, in general, the long-run analysis does not reveal significant difference.

4.6 Conclusion

Chapter 4 examines the interaction between rational and overconfident managers in high and low valuations periods and the resultant effect on bidder gains. The hubris hypothesis of Roll (1986) is based on an irrational manager-rational market framework. Markets are efficient and managers who engage in takeover activity have an overly optimistic attitude. They believe that they can create synergistic gains due to their own personal abilities and skills. As a result, they tend to overestimate the future returns and synergy gains on offer and end up paying higher premium to acquire the target firms. Existing literature (Malmendier and Tate (2008)), as well as the empirical evidence presented in the previous chapter, revealed that overconfident managers which undertake takeover deals enjoy less abnormal returns than their rational counterparts. On the other hand, Shleifer and Vishny (2003) propose a rational manager-irrational market framework whereby managers time the market and take advantage of their overvalued equity in order to acquire undervalued target firms to the benefit their own existing shareholders. Theories suggest that overvalued markets are one of the explanations for merger waves. Jovanovic and Rousseau (2001) and Rhodes-Kropf et al. (2005) suggest that more takeovers take place during booming periods as opposed to times of recession. Bouwman et al. (2009) find that acquisitions that take place during high valuation periods generate higher abnormal returns than those in low valuation periods. This chapter examine bidder gains in rational-irrational managerial-investor framework. It is as Baker et al. (2007, p. 48) wrote, '*the irrational manager and irrational investor stories can certainly coexist'*. Rosen (2006) suggests that managers may be infected with the same optimism as investors in bullish markets and this further supports the idea of the two parties at times both being irrational.

Following Bouwman et. al. (2009), we classify our sample period into different stock market valuation periods (i.e. high, neutral and low) in order to study the differences between deals undertaken by overconfident managers and those conducted by rational managers. For managerial overconfidence, we employ the stock options and the multiple acquirers' proxy as extensively discussed in this and the previous chapter. The evidence presented in this chapter suggests there is a joint significance of the aggregate market condition with managerial (non-)overconfidence in shaping the gains endowed to acquirers. More specifically, acquisitions undertaken by rational acquirers during overvalued periods generate the highest abnormal returns for their shareholders, consistent with our initial proposition. Rational managers assess the target firm more carefully, negotiate more efficiently and ultimately take advantage of market timing to create the highest possible abnormal returns for their shareholders. Conversely, our findings show that overconfident managers who announce takeovers during low valuation periods suffer the highest losses. During depressed markets, managers are unlikely to hide the quality of the deal and the possible overpayment involved. In low valuation periods, investors are more likely to assess the deal more carefully resulting in a more unfavourable reaction to the announcement of a takeover deal by an overconfident manager. The univariate analysis indicates that deals announced by rational managers in high periods are fundamentally different to those deals announced by overconfident managers in low periods. The high-rational vs. low-overconfident pattern also holds when controlling for various bidder and deal characteristics that have been reported as affecting bidders' performance. In fact, the differentials are even higher in portfolios in which the overconfidence effect is more pronounced. Furthermore, our findings show that rational managers tend to generate positive abnormal returns for their shareholders irrespective of the market conditions in which the deal is undertaken. In addition, overconfident managers who announce acquisitions in high valuation periods do not suffer high losses. Instead, they take advantage of the high investor sentiment and can potentially use it to hide any overpayments or the overall poor quality of the deal. Hence, in high valuation periods, even the stock price of overconfident managers is boosted by high investor sentiment.

Evidence revealed in the univariate analysis is further reaffirmed within the cross-sectional analysis results. We simultaneously control for the managerial bias and the different market conditions as well as other control variables that affect short-run bidder performance. The coefficient for the high valuation-rational manager's dummy carries the most positive and statistically significant value while the low valuation-overconfident manager's dummy carries a negative and significant value. Results are largely similar when measuring overconfidence with the stock options and the multiple acquirers' proxy. The long-run analysis provides a similar but weaker picture in favor of deals announced by rational managers in high valuation periods.

Overall this chapter contributes to the existing literature by simultaneously investigating the effects of managerial (non-)overconfidence in various market conditions. The work indicates that M&As in the UK, when conducted by a rational manager, are consistently superior to those undertaken by an overconfident CEO. Whilst behavioural finance offers much in terms of growing our understanding of the M&A market, it appears that shareholders themselves would be better placed if the neoclassical school of efficient markets and participants held true more often in reality.

Table 4.1 Summary Statistics of Acquisitions by Year

The table presents the number of acquisitions by year and the percentage of total number of acquisitions by market valuation periods (Panel A) and bidder type (rational versus overconfident, Panel B). The summary statistics are provided on the basis of a sample of 3223 acquisitions from 1990 to 2005 undertaken by 1281 unique bidders. Acquirers are publicly traded firms listed on the London Stock Exchange (LSE). Using monthly, 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 rational managers are classified based on 3 different proxies: 1) Stock Options: Managers who hold stock options until the year before the expiration date are classified as overconfident. All others are classified as rational. 2) Multiple Acquirers: Individual CEOs who made 5 or more acquisitions within a 3 year period are called overconfident. All others are rational.

Panel A: All Deals		**Valuation Periods**		
Year	**All**	**High**	**Neutral**	**Low**
1990	124	0	124	0
1991	100	91	9	0
1992	91	64	27	0
1993	103	21	82	0
1994	169	9	58	102
1995	177	0	100	77
1996	195	0	195	0
1997	272	180	92	0
1998	292	217	75	0
1999	310	269	41	0
2000	344	0	243	101
2001	266	0	0	266
2002	212	0	76	136
2003	171	23	113	35
2004	204	68	136	0
2005	193	30	163	0
Total	**3,223**	**972**	**1,534**	**717**
Total (%)	**100.00%**	**30.16%**	**47.60%**	**22.25%**

Table 4.1-Continued

	Panel B: Stock Options Proxy								
Year	**All**	**Rational**	**Overconfident**	**High**	**Low**	**High-**	**High-Overconfident**	**Low-**	**Low-Overconfident**
1990	18	8	10	0	0	0	0	0	0
1991	20	14	6	19	0	13	6	0	0
1992	23	14	9	13	0	8	5	0	0
1993	29	19	10	6	0	4	2	0	0
1994	52	35	17	0	28	0	0	18	10
1995	47	31	16	0	22	0	0	14	8
1996	56	41	15	0	0	0	0	0	0
1997	76	49	27	49	0	33	16	0	0
1998	77	58	19	61	0	45	16	0	0
1999	88	64	24	76	0	53	23	0	0
2000	98	64	34	0	27	0	0	18	9
2001	73	50	23	0	73	0	0	50	23
2002	60	51	9	0	38	0	0	34	4
2003	43	31	12	3	12	2	1	10	2
2004	52	44	8	18	0	14	4	0	0
2005	36	28	8	3	0	3	0	0	0
Total	**848**	**601**	**247**	**248**	**200**	**175**	**73**	**144**	**56**
Total (%)	**26.31%**	**70.87%**	**29.13%**	**29.25%**	**23.58**	**20.64%**	**8.61%**	**16.98%**	**6.60%**

Table 4.1-Continued

	Panel C: Multiple Acquirers Proxy								
Year	**All**	**Rational**	**Overconfident**	**High**	**Low**	**High-**	**High-Overconfident**	**Low-**	**Low-Overconfident**
1990	121	98	23	0	0	0	0	0	0
1991	98	70	28	89	0	63	26	0	0
1992	90	64	26	64	0	44	20	0	0
1993	101	71	30	21	0	13	8	0	0
1994	167	130	37	9	101	8	1	82	19
1995	175	119	56	0	76	0	0	52	24
1996	187	129	58	0	0	0	0	0	0
1997	260	158	102	171	0	96	75	0	0
1998	281	187	94	208	0	136	72	0	0
1999	295	214	81	255	0	183	72	0	0
2000	319	233	86	0	92	0	0	70	22
2001	252	187	65	0	252	0	0	187	65
2002	200	148	52	0	127	0	0	96	31
2003	167	130	37	23	34	18	5	24	10
2004	195	161	34	65	0	55	10	0	0
2005	191	157	34	29	0	24	5	0	0
Total	**3,099**	**2,256**	**843**	**934**	**682**	**640**	**294**	**511**	**171**
Total (%)	**96.15%**	**72.80%**	**27.20%**	**30.14%**	**22.01**	**20.65%**	**9.49%**	**16.49%**	**5.52%**

Table 4.2 Summary Statistics for Acquisitions for the Stock Options Proxy and the Multiple Acquirers Proxy

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 1281 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 rational managers are classified based on 3 different proxies: 1) Stock Options: Managers who hold stock options until the year before the expiration date are classified as overconfident. All others are classified as rational. 2) Multiple Acquirers: Individual CEOs who made 5 or more acquisitions within a 3 year period are called overconfident. All others are rational. Panel A presents statistics for all deals and by market valuation periods, Panel B for stock options' proxy and Panel C for multiple acquirers' proxy, respectively. The mean and median size for each acquirer and each target is the firm size at the year the deal was announced. 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	Mean Market	Median Market	Mean Transaction	Median	Total Deal	% of Total	% of
				Panel A: All Deals				
All Deals	3,223	517.728	88.53	64.485	6	207,834.564	100.00%	100.00%
Private	2,839	305.481	80.66	18.876	5	53,589.777	25.78%	88.09%
Public	384	2,086.918	209.52	401.679	50.04	154,244.787	74.22%	11.91%
High	972	517.718	90.49	93.249	5.75	90,637.727	43.61%	30.16%
Neutral	1,534	516.660	91.37	60.055	6	92,124.373	44.33%	47.60%
Low	717	520.026	78.02	34.968	6.4	25,072.464	12.06%	22.25%

Table 4.2-Continued

Panel B: Stock Options Proxy								
All Deals	848	638.333	154.29	59.237	8.32	50,232.569	100.00%	26.31%
Rational	601	617.915	161.47	62.349	8.28	37,471.761	74.60%	70.87%
Overconfident	247	688.014	137.85	51.663	8.4	12,760.808	25.40%	29.13%
High	248	535.494	150.58	53.365	10.95	13,234.612	26.35%	29.25%
Low	200	724.116	211.78	57.806	9.53	11,561.319	23.02%	23.58%
All Private Deals	722	409.887	147.13	21.677	6.16	15,651.123	31.16%	85.14%
Rational	522	386.482	154.69	22.415	6.5	11,700.672	74.76%	72.30%
Overconfident	200	470.974	111.73	19.752	5.70	3,950.451	25.24%	27.70%
High	205	385.178	137.85	24.015	6.16	4,923.098	31.46%	28.39%
Low	174	510.154	193.07	22.061	8.16	3,838.611	24.53%	24.10%
All Public Deals	126	1,947.363	362.99	274.456	81.12	34,581.446	68.84%	14.86%
Rational	79	2,147.128	362.92	326.216	79	25,771.089	74.52%	62.70%
Overconfident	47	1,611.588	363.06	187.454	87.11	8,810.357	25.48%	37.30%
High	43	1,252.120	362.92	193.291	77.13	8,311.514	24.03%	34.13%
Low	26	2,156.019	626.25	297.027	117.93	7,722.708	22.33%	20.63%

Table 4.2-Continued

Panel C: Multiple Acquirers Proxy								
All Deals	3,099	522.98	88.02	66.229	6	205,242.726	100.00%	96.15%
Rational	2,256	572.805	73.05	78.506	6.08	177,110.472	86.29%	72.80%
Overconfident	843	389.64	137.85	33.372	5.69	28,132.254	13.71%	27.20%
High	934	518.708	89.86	96.068	5.77	89,727.757	43.72%	30.14%
Low	682	533.681	77.9	35.812	6.37	24,423.698	11.90%	22.01%
All Private Deals	2,723	301.527	80.16	18.949	5	51,596.911	25.14%	87.87%
Rational	1,953	294.847	65.21	17.49	4.9	34,157.642	66.20%	71.72%
Overconfident	770	318.469	127.67	22.648	5.00	17,439.269	33.80%	28.28%
High	805	297.895	79.03	16.590	4.65	13,354.895	25.88%	29.56%
Low	606	307.513	76.44	19.780	5.5	11,987.242	23.23%	22.25%
All Public Deals	376	2126.75	212.14	408.632	50.79	153,645.815	74.86%	12.13%
Rational	303	2,364.398	214.07	471.792	49.09	142,952.83	93.04%	80.59%
Overconfident	73	1,140.348	202.69	146.479	59.35	10,692.985	6.96%	19.41%
High	129	1,896.648	211.39	592.038	50	76,372.862	49.71%	34.31%
Low	76	2,337.069	177.77	163.637	44.39	12,436.456	8.09%	20.21%

Table 4.3 Cumulative Abnormal Returns (CARs) by Market Valuation

This table present the Cumulative Abnormal Returns (CARs) during five days (-2,+2) surrounding the announcement of all acquirers included in the full sample. Abnormal returns are calculated using a modified market-adjusted model:

$$AR = R_{i,t} - R_{m,t}$$

where $R_{i,t}$ is the return on firm i at time t and $R_{m,t}$ is the value-weighted Market Index Return (FT-All share). All acquirers are publicly traded firms listed on the London Stock Exchange (LSE). This table illustrates the gains to acquirers included in the full sample of all, private and public targets. The CARs are reported on the basis of the method of payment as well. 'Cash' indicates only cash deals, 'Stock' refers only to share deals and 'Mixed' includes all other transactions financed by a combination of cash and shares. 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 Differential (1)-(3) represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of high- minus low-valuation bidders. a, b, c denote significance level at 1%, 5% and 10% respectively. P-values are presented in brackets. The sample size N is presented below the mean.

	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
All	1.47%[a]	1.83%[a]	-1.20%a	1.17%[a]	2.63%[b]	1.58%[a]
p-value	(0.000)	(0.000)	(0.006)	(0.000)	(0.044)	(0.000)
N	3,223	2,839	384	1,351	208	1,664
High (1)	1.85%[a]	2.16%[a]	-0.15%	1.31%[a]	3.39%[c]	2.14%[a]
p-value	(0.000)	(0.000)	(0.840)	(0.000)	(0.061)	(0.000)
N	972	841	131	431	64	477
Neutral (2)	1.67%[a]	2.04%[a]	-1.30%[b]	1.40%[a]	3.61%[c]	1.64%[a]
p-value	(0.000)	(0.000)	(0.034)	(0.000)	(0.095)	(0.000)
N	1,534	1,361	173	665	102	767
Low (3)	0.54%[c]	0.95%[a]	-2.71%[b]	0.32%	-0.92%	0.82%[b]
p-value	(0.085)	(0.003)	(0.013)	(0.431)	(0.727)	(0.040)
N	717	637	80	255	42	420
Different. (1)-(3)	1.31%[a]	1.21%[a]	2.57%[b]	0.98%[c]	4.31%	1.31%[b]
p-value	(0.002)	(0.005)	(0.048)	(0.054)	(0.176)	(0.021)

Table 4.4 Cumulative Abnormal Returns (CARs) by Market Valuation and Other Bidder and Deal Characteristics

This table present the Cumulative Abnormal Returns (CARs) during five days (-2,+2) surrounding the announcement of all acquirers included in the full sample. Abnormal returns are calculated using a modified market-adjusted model:

$$AR = R_{i,t} - R_{m,t}$$

where $R_{i,t}$ is the return on firm i at time t and $R_{m,t}$ is the value-weighted Market Index Return (FT-All share). All 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. Acquirers with higher (lower) than median book-to-market ratio (a month prior to bid announcement) are categorized as value (glamour) bidders. Acquirers with larger (smaller) than median size (a month prior to bid announcement) are categorized as big (small) bidders. The relative size of the deal is defined as the deal value divided by the market value of the acquirer a month before the announcement date. Deals above (below) the median relative size are classified as high (low) relative size. An acquisition is defined as diversifying (non-diversifying) when the acquirer's two-digit SIC code is different (the same) from that of the target. Acquisitions with bidders and targets originated from the same (different) country are defined as domestic (foreign) acquisitions. The Differential (1)-(3) represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of high-minus low-valuation bidders. a, b, c denote significance level at 1%, 5% and 10% respectively. P-values are presented in brackets. The sample size N is presented below the mean.

	Value	**Glamour**	**Small**	**Big**	**Low Rel. Size**	**High Rel. Size**	**Diversifying**	**Non-Diversifying**	**Domestic**	**Foreign**
All	1.83%[a]	1.06%[a]	2.25%[a]	0.69%[a]	0.83%[a]	2.12%[a]	1.60%[a]	1.35%[a]	1.47%[a]	1.47%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	1,596	1,596	1,612	1,611	1,612	1,611	1,586	1,637	2,206	1,017
High	2.03%[a]	1.51%[a]	2.82%[a]	0.92%[a]	1.07%[a]	2.66%[a]	1.60%[a]	2.10%[a]	1.81%[a]	1.94%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	445	517	477	495	493	479	482	490	668	304
Neutral	2.35%[a]	1.02%[a]	2.49%[a]	0.87%[a]	0.88%[a]	2.45%[a]	1.93%[a]	1.38%[a]	1.68%[a]	1.65%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	737	780	755	779	768	766	788	746	1033	501
Low	0.62%	0.38%	1.07%[b]	-0.05%	0.36%	0.72%	0.77%[c]	0.36%	0.60%[c]	0.40%
p-value	(0.152)	(0.411)	(0.027)	(0.901)	(0.294)	(0.169)	(0.089)	(0.404)	(0.091)	(0.535)
N	414	299	380	337	351	366	316	401	505	212
Different. (1)-(3)	1.45%[b]	1.13%[b]	1.75%[a]	0.97%[b]	0.70%[c]	1.94%[a]	0.83%	1.74%[a]	1.21%[b]	1.54%[c]
p-value	(0.020)	(0.041)	(0.009)	(0.039)	(0.094)	(0.006)	(0.162)	(0.003)	(0.013)	(0.049)

Table 4.5 Announcement 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). 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. Managers who hold stock options until the year before the expiration date are classified as overconfident. All others are classified as rational. CARs are reported for the interaction of market valuation and managerial overconfidence. 'Cash' indicates only cash deals, 'Stock' refers only to share deals and 'Mixed' includes all other transactions financed by a combination of cash and shares. Panel A, B, C, D, E and F present CARs for the entire, private targets, public targets, cash, stock and mixed deals subsample respectively. 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 rational 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- rational bidders minus low- overconfident bidders. N denotes the number of observations and is reported below the mean return. P-values are reported in brackets.

Panel A: All Targets				
	All	**Rational (4)**	**Overconfident (5)**	**Different. (4)-(5)**
All	0.94%[a]	1.26%[a]	0.16%	1.10%[b]
p-value	(0.000)	(0.000)	(0.729)	(0.031)
N	848	601	247	
High (1)	1.21%[a]	1.36%[a]	0.83%	0.54%
p-value	(0.002)	(0.003)	(0.268)	(0.537)
N	248	175	73	
Neutral (2)	1.07%[a]	1.26%[a]	0.62%	0.64%
p-value	(0.000)	(0.000)	(0.256)	(0.317)
N	400	282	118	
Low (3)	0.34%	1.13%[a]	-1.69%	2.81%[b]
p-value	(0.482)	(0.008)	(0.203)	(0.045)
N	200	144	56	
Different. (1)-(3)	0.87%	0.24%	2.51%[c]	3.05%[b]
p-value	(0.161)	(0.703)	(0.098)	(0.031)

Table 4.5-Continued

Panel B: Private Targets				
	All	**Rational (4)**	**Overconfident (5)**	**Different. (4)-(5)**
All	1.37%[a]	1.61%[a]	0.72%[c]	0.90%[c]
p-value	(0.000)	(0.000)	(0.096)	(0.067)
N	722	522	200	
High (1)	1.66%[a]	1.72%[a]	1.50%[c]	0.22%
p-value	(0.000)	(0.000)	(0.062)	(0.810)
N	205	149	56	
Neutral (2)	1.45%[a]	1.66%[a]	0.95%[c]	0.71%
p-value	(0.000)	(0.000)	(0.057)	(0.250)
N	343	244	99	
Low (3)	0.84%[c]	1.41%[a]	-0.78%	2.19%[c]
p-value	(0.062)	(0.001)	(0.520)	(0.092)
N	174	129	45	
Different. (1)-(3)	0.82%	0.31%	2.28%	2.50%[c]
p-value	(0.170)	(0.615)	(0.116)	(0.056)
Panel C: Public Targets				
	All	**Rational (4)**	**Overconfident (5)**	**Different. (4)-(5)**
All	-1.51%[b]	-1.09%	-2.22%	1.14%
p-value	(0.039)	(0.149)	(0.144)	(0.498)
N	126	79	47	
High (1)	-0.97%	-0.70%	-1.40%	0.70%
p-value	(0.388)	(0.639)	(0.441)	(0.762)
N	43	26	17	
Neutral (2)	-1.22%	-1.27%	-1.12%	-0.15%
p-value	(0.219)	(0.222)	(0.611)	(0.950)
N	57	38	19	
Low (3)	-3.02%	-1.28%	-5.40%	4.12%
p-value	(0.162)	(0.432)	(0.258)	(0.405)
N	26	15	11	
Different. (1)-(3)	2.05%	0.58%	4.00%	4.70%
p-value	(0.395)	(0.790)	(0.423)	(0.340)
Panel D: Cash Deals				
	All	**Rational (4)**	**Overconfident (5)**	**Different. (4)-(5)**
All	0.58%[b]	0.79%[b]	0.08%	0.71%
p-value	(0.041)	(0.014)	(0.890)	(0.291)
N	372	263	109	
High (1)	1.21%[b]	1.13%[c]	1.43%	-0.30%
p-value	(0.037)	(0.090)	(0.238)	(0.824)
N	113	83	30	
Neutral (2)	0.44%	0.75%[c]	-0.18%	0.93%
p-value	(0.256)	(0.089)	(0.814)	(0.296)
N	176	118	58	
Low (3)	0.03%	0.42%	-1.12%	1.53%
p-value	(0.959)	(0.493)	(0.430)	(0.319)
N	83	62	21	
Different. (1)-(3)	1.18%	0.71%	2.55%	2.24%
p-value	(0.148)	(0.429)	(0.170)	(0.155)

Table 4.5-Continued

Panel E: Stock Deals				
	All	**Rational (4)**	**Overconfident (5)**	**Different. (4)-(5)**
All	-0.91%	0.37%	-3.36%	3.73%
p-value	(0.365)	(0.701)	(0.148)	(0.134)
N	35	23	12	
High (1)	-1.96%	0.18%	-5.71%	5.89%
p-value	(0.248)	(0.916)	(0.112)	(0.111)
N	11	7	4	
Neutral (2)	0.42%	0.39%	0.50%	-0.11%
p-value	(0.729)	(0.773)	(0.864)	(0.972)
N	20	14	6	
Low (3)	-4.71%	0.83%	-10.25%	11.07%
p-value	(0.360)	(0.781)	(0.379)	(0.372)
N	4	2	2	
Different. (1)-(3)	2.75%	-0.64%	4.54%	10.43%
p-value	(0.596)	(0.841)	(0.650)	(0.382)

Panel F: Mixed Deals				
	All	**Rational (4)**	**Overconfident (5)**	**Different. (4)-(5)**
All	1.38%[a]	1.72%[a]	0.56%	1.16%
p-value	(0.000)	(0.000)	(0.423)	(0.136)
N	441	315	126	
High (1)	1.48%[a]	1.69%[b]	1.03%	0.66%
p-value	(0.007)	(0.011)	(0.294)	(0.575)
N	124	85	39	
Neutral (2)	1.68%[a]	1.75%[a]	1.49%[c]	0.26%
p-value	(0.000)	(0.002)	(0.063)	(0.788)
N	204	150	54	
Low (3)	0.75%	1.69%[a]	-1.53%	3.22%
p-value	(0.306)	(0.006)	(0.449)	(0.131)
N	113	80	33	
Different. (1)-(3)	0.74%	0.01%	2.56%	3.22%
p-value	(0.415)	(0.996)	(0.254)	(0.133)

Table 4.6 Announcement 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). 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. CEOs that make five or more acquisitions within a 3-year period are classified as overconfident managers. All others are classified as rational. CARs are reported for the interaction of market valuation and managerial overconfidence. 'Cash' indicates only cash deals, 'Stock' refers only to share deals and 'Mixed' includes all other transactions financed by a combination of cash and shares. Panel A, B, C, D, E and F present CARs for the entire, private targets, public targets, cash, stock and mixed deals subsample respectively. 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 rational 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- rational bidders minus low- overconfident bidders. N denotes the number of observations and is reported below the mean return. P-values are reported in brackets.

Panel A: All Targets				
	All	**Rational (4)**	**Overconfident (5)**	**Different. (4)-(5)**
All	1.44%[a]	1.65%[a]	0.88%[a]	0.77%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.005)
N	3,099	2,256	843	
High (1)	1.86%[a]	2.16%[a]	1.22%[a]	0.94%[c]
p-value	(0.000)	(0.000)	(0.000)	(0.057)
N	934	640	294	
Neutral (2)	1.57%[a]	1.79%[a]	0.92%[a]	0.88%[b]
p-value	(0.000)	(0.000)	(0.001)	(0.028)
N	1,438	1,105	378	
Low (3)	0.57%[c]	0.69%[c]	0.19%	0.50%
p-value	(0.081)	(0.089)	(0.669)	(0.401)
N	682	511	171	
Different. (1)-(3)	1.30%[a]	1.47%[a]	1.03%[c]	1.97%[a]
p-value	(0.002)	(0.008)	(0.059)	(0.001)

Table 4.6-Continued

Panel B: Private Targets				
	All	**Rational (4)**	**Overconfident (5)**	**Different. (4)-(5)**
All	1.80%[a]	2.11%[a]	1.01%[a]	1.10%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)
N	2,723	1,953	770	
High (1)	2.21%[a]	2.59%[a]	1.43%[a]	1.16%[b]
p-value	(0.000)	(0.000)	(0.000)	(0.028)
N	805	537	268	
Neutral (2)	1.95%[a]	2.28%[a]	1.02%[a]	1.27%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.002)
N	1,312	971	341	
Low (3)	0.93%[a]	1.16%[a]	0.29%	0.88%
p-value	(0.005)	(0.006)	(0.536)	(0.160)
N	606	445	161	
Different. (1)-(3)	1.28%[a]	1.43%[b]	1.15%[b]	2.31%[a]
p-value	(0.004)	(0.015)	(0.045)	(0.000)
Panel C: Public Targets				
	All	**Rational (4)**	**Overconfident (5)**	**Different. (4)-(5)**
All	-1.18%[a]	-1.34%[a]	-0.51%	-0.83%
p-value	(0.007)	(0.009)	(0.489)	(0.351)
N	376	303	73	
High (1)	-0.28%	-0.11%	-0.96%	0.85%
p-value	(0.694)	(0.895)	(0.372)	(0.538)
N	129	103	26	
Neutral (2)	-1.34%[b]	-1.72%[b]	0.04%	-1.76%
p-value	(0.028)	(0.015)	(0.974)	(0.209)
N	171	134	37	
Low (3)	-2.35%[b]	-2.49%[c]	-1.37%	-1.12%
p-value	(0.037)	(0.051)	(0.317)	(0.539)
N	76	66	10	
Different. (1)-(3)	2.06%	2.38%	0.41%	1.26%
p-value	(0.120)	(0.122)	(0.807)	(0.430)
Panel D: Cash Deals				
	All	**Rational (4)**	**Overconfident (5)**	**Different. (4)-(5)**
All	1.11%[a]	1.37%[a]	0.44%[c]	0.93%[a]
p-value	(0.000)	(0.000)	(0.082)	(0.005)
N	1,295	931	364	
High (1)	1.23%[a]	1.45%[a]	0.80%[c]	0.65%
p-value	(0.000)	(0.000)	(0.078)	(0.284)
N	409	271	138	
Neutral (2)	1.34%[a]	1.58%[a]	0.66%[b]	0.92%[b]
p-value	(0.000)	(0.000)	(0.050)	(0.040)
N	643	476	167	
Low (3)	0.31%	0.73%	-1.01%	1.75%[b]
p-value	(0.461)	(0.154)	(0.115)	(0.034)
N	243	184	59	
Different. (1)-(3)	0.92%[c]	0.71%	1.81%[b]	2.46%[a]
p-value	(0.079)	(0.278)	(0.021)	(0.001)

Table 4.6-Continued

Panel E: Stock Deals				
	All	**Rational (4)**	**Overconfident (5)**	**Different. (4)-(5)**
All	2.76%[b]	2.98%[c]	1.81%	1.17%
p-value	(0.037)	(0.064)	(0.130)	(0.555)
N	204	166	38	
High (1)	3.44%[c]	3.97%[c]	1.72%	2.26%
p-value	(0.062)	(0.091)	(0.363)	(0.447)
N	63	48	15	
Neutral (2)	3.73%[c]	4.30%	1.28%	3.01%
p-value	(0.087)	(0.106)	(0.486)	(0.347)
N	101	82	19	
Low (3)	-0.73%	-1.33%	4.66%	-5.99%
p-value	(0.790)	(0.662)	(0.153)	(0.144)
N	40	36	4	
Different. (1)-(3)	4.17%	5.31%	-2.94%	-0.68%
p-value	(0.208)	(0.167)	(0.960)	(0.843)
Panel F: Mixed Deals				
	All	**Rational (4)**	**Overconfident (5)**	**Different. (4)-(5)**
All	1.54%[a]	1.68%[a]	1.16%[a]	0.52%
p-value	(0.000)	(0.000)	(0.000)	(0.169)
N	1,600	1,159	441	
High (1)	2.21%[a]	2.49%[a]	1.59%[a]	0.90%
p-value	(0.000)	(0.000)	(0.001)	(0.216)
N	462	321	141	
Neutral (2)	1.48%[a]	1.61%[a]	1.11%[a]	0.50%
p-value	(0.000)	(0.000)	(0.008)	(0.357)
N	739	547	192	
Low (3)	0.85%[b]	0.92%[c]	0.68%	0.24%
p-value	(0.037)	(0.077)	(0.250)	(0.763)
N	399	291	108	
Different. (1)-(3)	1.36%[b]	1.57%[b]	0.91%	1.81%[b]
p-value	(0.019)	(0.038)	(0.232)	(0.026)

Table 4.7 Announcement Returns by Market Valuation, Managerial Overconfidence and Interaction of Both with Stock Options Proxy and Other Bidder and Deal Characteristics

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). 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. Managers who hold stock options until the year before the expiration date are classified as overconfident. All others are classified as rational. CARs are reported for the interaction of market valuation and managerial overconfidence. Panels A, B, C, D, E, F, G, H, I and J present CARs for value, glamour, small and big bidder, low and high relative size, diversifying, non-diversifying, domestic and foreign deals respectively. Acquirers with higher (lower) than median book-to-market ratio (a month prior to bid announcement) are categorized as value (glamour) bidders. Acquirers with bigger (smaller) than median size (a month prior to bid announcement) are categorized as big (small) bidders. The relative size of the deal is defined as the deal value divided by the market value of the acquirer a month before the announcement date. Deals above (below) the median relative size are classified as high (low) relative size. An acquisition is defined as diversifying (non-diversifying) when the acquirer's two-digit SIC code is different (the same) from that of the target. Acquisitions with bidders and targets originated from the same (different) country are defined as domestic (foreign) acquisitions. 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 rational 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- rational bidders minus low- overconfident bidders. N denotes the number of observations and is reported below the mean return. P-values are reported in brackets.

	Panel A: Value Bidders				**Panel B: Glamour Bidders**			
	All	**Ration.**	**Overcon.**	**Dif (4)-(5)**	**All**	**Ration.**	**Overcon.**	**Dif (4)-(5)**
All	1.12%[a]	1.21%[a]	0.91%	0.31%	0.80%[a]	1.30%[a]	-0.51%	1.80%[a]
p-value	(0.001)	(0.001)	(0.162)	(0.679)	(0.005)	(0.000)	(0.425)	(0.011)
N	375	259	116		472	341	131	
High (1)	0.93%	0.41%	2.10%	-1.69%	1.41%[a]	2.04%[a]	-0.17%	2.21%[a]
p-value	(0.138)	(0.526)	(0.144)	(0.280)	(0.004)	(0.001)	(0.819)	(0.021)
N	105	73	32		143	102	41	
Neutral (2)	1.29%[a]	1.42%[b]	1.02%	0.40%	0.91%[b]	1.16%[a]	0.28%	0.88%
p-value	(0.009)	(0.025)	(0.181)	(0.685)	(0.012)	(0.005)	(0.722)	(0.312)
N	167	113	54		232	168	64	
Low (3)	1.03%[c]	1.69%[a]	-0.58%	2.27%	-0.39%	0.55%	-2.96%	3.51%
p-value	(0.089)	(0.006)	(0.692)	(0.155)	(0.608)	(0.360)	(0.205)	(0.147)
N	103	73	30		97	71	26	
Differ. (1)-(3)	-0.10%	-1.28%	2.68%	0.99%	1.80%[b]	1.49%[c]	2.80%	5.01%[b]
p-value	(0.906)	(0.148)	(0.188)	(0.535)	(0.047)	(0.081)	(0.251)	(0.043)

Table 4.7-Continued

	Panel C: Small Bidders				**Panel D: Big Bidders**			
	All	**Ration.**	**Overcon.**	**Dif (4)-(5)**	**All**	**Ration. (4)**	**Overcon.**	**Dif (4)-(5)**
All	1.74%[a]	2.24%[a]	0.76%	1.47%[c]	0.51%[b]	0.79%[a]	-0.24%	1.03%
p-value	(0.000	(0.000)	(0.294)	(0.082)	(0.042	(0.004)	(0.676)	(0.108)
N	293	195	98		555	406	149	
High (1)	1.62%[b]	1.74%[b]	1.41%	0.33%	0.99%[b]	1.19%[b]	0.44%	0.75%
p-value	(0.012	(0.034)	(0.195)	(0.806)	(0.040	(0.029)	(0.665)	(0.518)
N	84	55	29		164	120	44	
Neutral (2)	2.06%[a]	2.31%[a]	1.54%[c]	0.78%	0.53%	0.73%[c]	0.01%	0.72%
p-value	(0.000	(0.001)	(0.074)	(0.474)	(0.122	(0.062)	(0.991)	(0.372)
N	142	95	47		258	187	71	
Low (3)	1.23%	2.68%[a]	-1.74%	4.42%[c]	-	0.42%	-1.65%	2.08%
p-value	(0.175	(0.000)	(0.451)	(0.074)	(0.848	(0.417)	(0.312)	(0.227)
N	67	45	22		133	99	34	
Differ. (1)-(3)	0.39%	-0.95%	3.15%	3.47%	1.10%	0.77%	2.10%	2.84%
p-value	(0.722	(0.369)	(0.218)	(0.160)	(0.139	(0.304)	(0.275)	(0.101)
	Panel E: Low Relative Size Deals				**Panel F: High Relative Size Deals**			
	All	**Ration.**	**Overcon.**	**Dif (4)-(5)**	**All**	**Ration. (4)**	**Overcon.**	**Dif (4)-(5)**
All	0.90%[a]	1.03%[a]	0.55%	0.48%	1.00%[b]	1.63%[a]	-0.31%	1.94%[b]
p-value	(0.000	(0.000)	(0.277)	(0.383)	(0.016	(0.001)	(0.697)	(0.038)
N	503	368	135		345	233	112	
High (1)	1.26%[a]	1.41%[a]	0.89%	0.52%	1.14%	1.31%	0.75%	0.56%
p-value	(0.002	(0.002)	(0.323)	(0.605)	(0.106	(0.127)	(0.552)	(0.714)
N	138	98	40		110	77	33	
Neutral (2)	0.81%[a]	0.72%[b]	1.06%	-0.34%	1.45%[b]	2.14%[a]	0.09%	2.05%[c]
p-value	(0.009	(0.029)	(0.155)	(0.679)	(0.011	(0.004)	(0.908)	(0.062)
N	239	175	64		161	107	54	
Low (3)	0.66%	1.19%[b]	-0.96%	2.15%[c]	-	1.01%	-2.58%	3.60%
p-value	(0.142	(0.014)	(0.359)	(0.066)	(0.849	(0.232)	(0.341)	(0.208)
N	126	95	31		74	49	25	
Differ. (1)-(3)	0.60%	0.22%	1.85%	2.37%[b]	1.34%	0.29%	3.33%	3.89%
p-value	(0.321	(0.736)	(0.179)	(0.041)	(0.293	(0.805)	(0.264)	(0.174)
	Panel G: Diversifying Deals				**Panel H: Non-Diversifying Deals**			
	All	**Ration.**	**Overcon.**	**Dif (4)-(5)**	**All**	**Ration. (4)**	**Overcon.**	**Dif (4)-(5)**
All	1.04%[a]	1.36%[a]	0.20%	1.15%	0.82%[a]	1.15%[a]	0.11%	1.03%
p-value	(0.000	(0.000)	(0.761)	(0.114)	(0.010	(0.002)	(0.857)	(0.152)
N	447	325	122		401	276	125	
High (1)	1.03%[c]	1.03%[c]	1.06%	-0.03%	1.41%[b]	1.84%[a]	0.65%	1.20%
p-value	(0.053	(0.087)	(0.370)	(0.980)	(0.012	(0.008)	(0.509)	(0.313)
N	135	103	32		113	72	41	
Neutral (2)	1.48%[a]	1.58%[a]	1.23%[b]	0.35%	0.59%	0.88%	-0.08%	0.96%
p-value	(0.000	(0.000)	(0.045)	(0.634)	(0.240	(0.140)	(0.928)	(0.385)
N	218	155	63		182	127	55	
Low (3)	0.04%	1.35%[b]	-3.21%	4.56%[c]	0.61%	0.94%	-0.27%	1.20%
p-value	(0.958	(0.024)	(0.152)	(0.052)	(0.316	(0.127)	(0.859)	(0.462)
N	94	67	27		106	77	29	
Differ. (1)-(3)	0.99%	-0.32%	4.27%[c]	4.23%[c]	0.80%	0.91%	0.92%	2.11%
p-value	(0.290	(0.698)	(0.091)	(0.070)	(0.326	(0.317)	(0.611)	(0.207)

Table 4.7-Continued

	Panel I: Domestic Deals				**Panel J: Foreign Deals**			
	All	**Ration.**	**Overcon.**	**Dif (4)-(5)**	**All**	**Ration. (4)**	**Overcon.**	**Dif (4)-(5)**
All	1.01%[a]	1.25%[a]	0.46%	0.80%	0.79%[b]	1.27%[a]	-0.53%	1.80%[c]
p-value	(0.000	(0.000)	(0.379)	(0.179)	(0.036	(0.001)	(0.560)	(0.071)
N	566	394	172		282	207	75	
High (1)	1.14%[b]	1.28%[b]	0.88%	0.39%	1.34%[c]	1.52%[b]	0.61%	0.90%
p-value	(0.013	(0.024)	(0.277)	(0.688)	(0.059	(0.047)	(0.750)	(0.661)
N	170	112	58		78	63	15	
Neutral (2)	1.02%[a]	1.17%[a]	0.64%	0.53%	1.18%[b]	1.44%[b]	0.57%	0.87%
p-value	(0.003	(0.007)	(0.225)	(0.437)	(0.033	(0.015)	(0.654)	(0.532)
N	266	187	79		134	95	39	
Low (3)	0.83%	1.39%[a]	-0.67%	2.06%	-	0.63%	-3.38%[c]	4.01%[b]
p-value	(0.183	(0.009)	(0.715)	(0.285)	(0.443	(0.391)	(0.061)	(0.039)
N	130	95	35		70	49	21	
Differ. (1)-(3)	0.31%	-0.11%	1.55%	1.95%	1.92%[c]	0.89%	3.99%	4.89%[b]
p-value	(0.689	(0.886)	(0.440)	(0.313)	(0.063	(0.395)	(0.126)	(0.014)

Table 4.8 Announcement Returns by Market Valuation, Managerial Overconfidence and Interaction of Both with Multiple Acquirers Proxy and Other Bidder and Deal Characteristics

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). 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. CEOs that make five or more acquisitions within a 3-year period are classified as overconfident managers. All others are classified as rational. CARs are reported for the interaction of market valuation and managerial overconfidence. Panels A, B, C, D, E, F, G, H, I and J present CARs for value, glamour, small and big bidder, low and high relative size, diversifying, non-diversifying, domestic and foreign deals respectively. Acquirers with higher (lower) than median book-to-market ratio (a month prior to bid announcement) are categorized as value (glamour) bidders. Acquirers with bigger (smaller) than median size (a month prior to bid announcement) are categorized as big (small) bidders. The relative size of the deal is defined as the deal value divided by the market value of the acquirer a month before the announcement date. Deals above (below) the median relative size are classified as high (low) relative size. An acquisition is defined as diversifying (non-diversifying) when the acquirer's two-digit SIC code is different (the same) from that of the target. Acquisitions with bidders and targets originated from the same (different) country are defined as domestic (foreign) acquisitions. 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 rational 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- rational bidders minus low- overconfident bidders. N denotes the number of observations and is reported below the mean return. P-values are reported in brackets.

	Panel A: Value Bidders				**Panel B: Glamour Bidders**			
	All	**Ration.(4)**	**Overcon.(5**	**Dif (4)-**	**All**	**Ration.(4)**	**Overon.(5**	**Dif(4)-(5)**
All	1.84%[a]	2.13%[a]	0.97%[a]	1.16%[a]	0.98%[a]	1.08%[a]	0.76%[a]	0.32%
p-value	(0.000)	(0.000)	(0.000)	(0.005)	(0.000)	(0.000)	(0.004)	(0.385)
N	1,538	1,146	392		1,532	1,086	446	
High (1)	2.00%[a]	2.42%[a]	1.03%[b]	1.39%[c]	1.59%[a]	1.71%[a]	1.35%[a]	0.36%
p-value	(0.000)	(0.000)	(0.028)	(0.073)	(0.000)	(0.000)	(0.003)	(0.564)
N	431	300	131		493	331	162	
Neutral (2)	2.34%[a]	2.62%[a]	1.38%[a]	1.24%[b]	0.86%[a]	0.99%[a]	0.55%	0.44%
p-value	(0.000)	(0.000)	(0.001)	(0.041)	(0.002)	(0.007)	(0.146)	(0.395)
N	713	553	160		754	539	215	
Low (3)	0.75%[c]	0.93%	0.24%	0.68%	0.26%	0.33%	0.05%	0.28%
p-value	(0.092)	(0.100)	(0.690)	(0.410)	(0.578)	(0.575)	(0.938)	(0.747)
N	394	293	101		285	216	69	
Differ. (1)-(3)	1.25%[b]	1.50%[c]	0.79%	2.18%[b]	1.33%[b]	1.38%[c]	1.30%[c]	1.66%[b]
p-value	(0.050)	(0.074)	(0.304)	(0.013)	(0.019)	(0.057)	(0.097)	(0.031)

Table 4.8-Continued

	Panel C: Small Bidders				Panel D: Big Bidders			
	All	**Ration.(4)**	**Overcon.(5**	**Dif (4)-**	**All**	**Ration.(4)**	**Overon.(5**	**Dif(4)-(5)**
All	2.25%[a]	2.57%[a]	1.02%[a]	1.55%[a]	0.63%[a]	0.54%[b]	0.79%[a]	-0.24%
p-value	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.011)	(0.001)	(0.450)
N	1,556	1,230	326		1,543	1,026	517	
High (1)	2.86%[a]	3.50%[a]	1.06%[b]	2.45%[a]	0.90%[a]	0.65%[b]	1.34%[a]	-0.69%
p-value	(0.000)	(0.000)	(0.041)	(0.003)	(0.001)	(0.049)	(0.002)	(0.198)
N	460	338	122		474	302	172	
Neutral (2)	2.41%[a]	2.64%[a]	1.42%[a]	1.22%[c]	0.75%[a]	0.81%[a]	0.63%[c]	0.18%
p-value	(0.000)	(0.000)	(0.002)	(0.060)	(0.002)	(0.010)	(0.064)	(0.702)
N	734	595	139		749	510	239	
Low (3)	1.13%[b]	1.36%[b]	0.09%	1.27%	-0.08%	-0.24%	0.25%	-0.49%
p-value	(0.023)	(0.022)	(0.882)	(0.132)	(0.848)	(0.643)	(0.684)	(0.541)
N	362	297	65		320	214	106	
Differ. (1)-(3)	1.72%[b]	2.14%[b]	0.97%	3.42%[a]	0.98%[b]	0.89%	1.09%	0.40%
p-value	(0.013)	(0.013)	(0.222)	(0.000)	(0.040)	(0.145)	(0.142)	(0.561)
	Panel E: Low Relative Size Deals				**Panel F: High Relative Size Deals**			
	All	**Ration.(4)**	**Overcon.(5**	**Dif (4)-**	**All**	**Ration.(4)**	**Overon.(5**	**Dif(4)-(5)**
All	0.73%[a]	0.80%[a]	0.61%[a]	0.18%	2.14%[a]	2.33%[a]	1.34%[a]	0.99%[b]
p-value	(0.000)	(0.000)	(0.005)	(0.517)	(0.000)	(0.000)	(0.000)	(0.039)
N	1,539	1,003	536		1,560	1,253	307	
High (1)	1.06%[a]	1.03%[a]	1.11%[a]	-0.09%	2.68%[a]	3.09%[a]	1.40%[b]	1.69%[c]
p-value	(0.000)	(0.001)	(0.003)	(0.859)	(0.000)	(0.000)	(0.024)	(0.053)
N	469	288	181		465	352	113	
Neutral (2)	0.76%[a]	0.88%[a]	0.50%	0.38%	2.38%[a]	2.54%[a]	1.65%[a]	0.90%
p-value	(0.000)	(0.000)	(0.121)	(0.342)	(0.000)	(0.000)	(0.001)	(0.192)
N	737	498	239		746	607	139	
Low (3)	0.22%	0.30%	0.07%	0.23%	0.90%	0.98%	0.45%	0.54%
p-value	(0.541)	(0.529)	(0.897)	(0.738)	(0.093)	(0.110)	(0.607)	(0.614)
N	333	217	116		349	294	55	
Differ. (1)-(3)	0.84%[b]	0.73%	1.05%[c]	0.96%	1.78%[b]	2.10%[b]	0.95%	2.64%[b]
p-value	(0.048)	(0.198)	(0.094)	(0.109)	(0.015)	(0.016)	(0.371)	(0.014)
	Panel G: Diversifying Deals				**Panel H: Non-Diversifying Deals**			
	All	**Ration.(4)**	**Overcon.(5**	**Dif (4)-**	**All**	**Ration.(4)**	**Overon.(**	**Dif(4)-(5)**
All	1.55%[a]	1.73%[a]	1.06%[a]	0.67%[c]	1.34%[a]	1.57%[a]	0.70%[a]	0.87%[b]
p-value	(0.000)	(0.000)	(0.000)	(0.091)	(0.000)	(0.000)	(0.010)	(0.022)
N	1,518	1,101	417		1,581	1,155	426	
High (1)	1.59%[a]	1.80%[a]	1.15%[b]	0.65%	2.14%[a]	2.51%[a]	1.30%[a]	1.21%[c]
p-value	(0.000)	(0.001)	(0.019)	(0.358)	(0.000)	(0.000)	(0.003)	(0.076)
N	464	315	149		470	325	145	
Neutral (2)	1.80%[a]	2.10%[a]	0.94%[a]	1.16%[b]	1.33%[a]	1.48%[a]	0.90%[b]	0.58%
p-value	(0.000)	(0.000)	(0.008)	(0.039)	(0.000)	(0.000)	(0.033)	(0.307)
N	761	565	196		722	540	182	
Low (3)	0.82%[c]	0.69%	1.22%[c]	-0.53%	0.38%	0.70%	-0.56%	1.26%
p-value	(0.084)	(0.244)	(0.065)	(0.546)	(0.395)	(0.213)	(0.344)	(0.123)
N	293	221	72		389	290	99	
Differ. (1)-(3)	0.77%	1.11%	-0.07%	0.58%	1.76%[a]	1.81%[b]	1.86%[b]	3.07%[a]
p-value	(0.204)	(0.157)	(0.932)	(0.484)	(0.003)	(0.019)	(0.012)	(0.000)

Table 4.8-Continued

	Panel I: Domestic Deals				Panel J: Foreign Deals			
	All	**Ration.(4)**	**Overcon.(5**	**Dif (4)-**	**All**	**Ration.(4)**	**Overon.(**	**Dif(4)-(5)**
All	1.48%[a]	1.68%[a]	0.94%[a]	0.74%[b]	1.35%[a]	1.59%[a]	0.76%[b]	0.83%
p-value	(0.000)	(0.000)	(0.000)	(0.023)	(0.000)	(0.000)	(0.035)	(0.102)
N	2,122	1,561	561		977	695	282	
High (1)	1.86%[a]	2.18%[a]	1.12%[a]	1.10%[c]	1.86%[b]	2.10%[b]	1.42%[b]	0.69%
p-value	(0.000)	(0.000)	(0.003)	(0.071)	(0.000)	(0.001)	(0.024)	(0.432)
N	643	451	192		291	189	102	
Neutral (2)	1.63%[a]	1.84%[a]	0.99%[a]	0.85%[c]	1.46%[a]	1.71%[a]	0.78%	0.92%
p-value	(0.000)	(0.000)	(0.002)	(0.077)	(0.000)	(0.001)	(0.127)	(0.196)
N	999	749	250		484	356	128	
Low (3)	0.66%[c]	0.71%	0.53%	0.18%	0.34%	0.65%	-0.58%	1.23%
p-value	(0.071)	(0.123)	(0.302)	(0.788)	(0.612)	(0.436)	(0.505)	(0.307)
N	480	361	119		202	150	52	
Differ. (1)-(3)	1.20%[b]	1.47%[b]	0.59%	1.65%[b]	1.53%[c]	1.45%	2.00%[c]	2.69%[b]
p-value	(0.016)	(0.023)	(0.345)	(0.016)	(0.058)	(0.164)	(0.063)	(0.013)

Table 4.9 Correlation Matrix of Control Variables for the Stock Options Proxy

This Table presents the correlations coefficient among all the variable that are used in the multivariate analysis. 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.

Table 4.9-continued

	MV (H)	MV (L)	OVER CONFI DENT (option s)	High Ratio nal	HighO vercon f.	LowR ational	LowO vercon f.	Private	Cash	Stock	Log (MV)	BTMV	Divers ifying	Relati ve Size	FTAL LSH	Ri-Rm	Merger Activity (1=Active, high)
MV (H)	1																
MV (L)	-0.351	1															
Overconfident (options)	0.004	-0.014	1														
HighRational	0.793	-0.283	-0.327	1													
HighOverconf.	0.477	-0.171	0.479	-0.157	1												
LowRational	-0.291	0.814	-0.290	-0.231	-0.139	1											
LowOverconf.	-0.171	0.479	0.415	-0.136	-0.082	-0.120	1										
Private	-0.032	0.012	-0.075	0.000	-0.073	0.056	-0.036	1									
Cash	0.064	-0.093	-0.016	0.062	0.015	-0.021	-0.056	0.046	1								
Stock	0.003	0.010	0.016	-0.011	0.009	-0.056	-0.021	-0.276	-0.338	1							
Log (MV)	0.013	-0.014	-0.026	0.004	-0.015	0.048	0.028	-0.228	0.139	-0.125	1						
BTMV	-0.019	0.024	0.060	-0.019	0.005	-0.013	-0.002	-0.062	0.008	0.068	-0.223	1					
Diversifying	0.005	-0.055	-0.043	0.063	-0.055	-0.056	-0.024	0.008	0.016	-0.019	-0.003	0.004	1				
Relative Size	-0.017	0.010	0.034	-0.022	0.028	-0.031	0.012	-0.108	-0.109	0.147	-0.231	0.255	-0.008	1			
FTALLSH	0.404	-0.631	0.033	0.305	0.207	-0.575	-0.254	-0.012	0.074	-0.008	0.023	-0.053	0.038	-0.008	1		
Ri-Rm	-0.043	-0.066	-0.026	-0.098	-0.042	0.024	-0.071	0.000	-0.093	0.107	0.006	-0.041	0.000	-0.001	0.025	1	
Merger Activity (1=Active,	0.010	-0.252	-0.032	0.048	-0.015	-0.218	-0.080	0.042	0.060	-0.059	-0.022	-0.010	0.013	0.016	0.288	-0.049	1

Table 4.10 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. N denotes the number of observations. P-values are reported in brackets.

Table 4.10-Continued

	(1)	(2)	(3)	(4)
Intercept	0.023[b]	0.031[b]	0.025[c]	0.028[b]
	(0.083)	(0.016)	(0.058)	(0.030)
High valuation period deals	0.008[c]			
(Dummy = 1, if the deal is announced in a high valuation	(0.100)			
Low valuation period deals	0.002			
(Dummy = 1 if the deal is announced in a low valuation	(0.804)			
Overconfident deals (stock options)		-0.011[b]		
(Dummy = 1, if the acquirer's manager is overconfident)		(0.011)		
High Valuation-Non-Overconfident Deals (stock options)			0.011[b]	
(Dummy = 1, if the deal is announced in a high-valuation month and the bidder's manager is non-overconfident)			(0.041)	
High Valuation- Overconfident Deals (stock options)			0.000	
(Dummy = 1, if the deal is announced in a high-valuation month and the bidder's manager is overconfident)			(0.989)	
Low Valuation-Non-Overconfident Deals (stock options)			0.005	
(Dummy = 1, if the deal is announced in a low-valuation month and the bidder's manager is non-overconfident)			(0.508)	
Low Valuation- Overconfident Deals (stock options)			-0.014	-0.018[b]
(Dummy = 1, if the deal is announced in a low-valuation month and the bidder's manager is overconfident)			(0.101)	(0.034)
Private target deals	0.012[c]	0.011	0.011	0.011[c]
(Dummy = 1, if the target is a private firm)	(0.073)	(0.129)	(0.109)	(0.100)
Cash deals	-0.002	-0.002	-0.003	-0.002
(Dummy = 1, if the deal is settled either in cash and/or debt)	(0.598)	(0.607)	(0.523)	(0.556)
Common stock deals	-0.021[b]	-0.021[b]	-0.021[b]	-0.022[b]
(Dummy = 1, if the deal is settled in shares only)	(0.013)	(0.012)	(0.012)	(0.011)
Diversifying deals	0.003	0.003	0.003	0.003
(Dummy = 1, If target and acquirer belong to different	(0.416)	(0.519)	(0.491)	(0.458)
B/M	0.001	0.001	0.001	0.001
	(0.567)	(0.446)	(0.559)	(0.572)
Relative size	-0.009	-0.010	-0.009	-0.009
	(0.301)	(0.219)	(0.289)	(0.271)
Log (MV)	-0.011[a]	-0.012[a]	-0.011[a]	-0.011[a]
	(0.001)	(0.001)	(0.001)	(0.001)
FTALLSH $_{(-180,-3)}$	0.012	0.031[c]	0.017	0.02
	(0.630)	(0.086)	(0.474)	(0.298)
Ri-Rm $_{(-180,-3)}$	0.018[a]	0.016[a]	0.017[a]	0.016[a]
	(0.001)	(0.003)	(0.002)	(0.004)
High Merger Activity	-0.001	-0.002	-0.001	-0.001
(Dummy=1, if the deal is announced in a quarter of high M&A activities)	(0.863)	(0.671)	(0.866)	(0.746)
N	822	822	822	822
F-Statistics	2.91[a]	3.36[a]	2.88[a]	3.25[a]
Adj. R^2	5.38%	5.79%	6.11%	5.56%

Table 4.11 Correlation Matrix of Control Variables for Multiple Acquirers Proxy

This Table presents the correlations coefficient among all the variable that are used in the multivariate analysis. 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.

Table 4.11-comntinued

	MV (H)	MV (L)	Overconfident (multiple)	HighRational	HighOverconf.	LowRational	LowOverconf.	Private	Cash	Stock	Log (MV)	BTMV	Diversifying	Relative Size	FTALLSH	Ri-Rm	Merger Activity (1=Active, high)
MV (H)	1																
MV (L)	-0.351	1															
Overconfident (multiple)	0.063	-0.025	1														
HighRational	0.777	-0.271	-0.312	1													
HighOverconf.	0.493	-0.172	0.530	-0.165	1												
LowRational	-0.292	0.837	-0.272	-0.227	-0.144	1											
LowOverconf.	-0.159	0.455	0.395	-0.123	-0.078	-0.107	1										
Private	-0.032	0.012	0.065	-0.062	0.033	-0.011	0.047	1									
Cash	0.064	-0.093	0.018	0.036	0.042	-0.075	-0.038	0.046	1								
Stock	0.003	0.010	-0.074	0.031	-0.036	0.033	-0.041	-0.276	-0.338	1							
Log (MV)	0.013	-0.014	0.140	-0.029	0.059	-0.052	0.065	-0.228	0.139	-0.125	1						
BTMV	-0.019	0.024	-0.030	-0.009	-0.011	0.014	0.005	-0.062	0.008	0.068	-0.223	1					
Diversifying	0.005	-0.055	0.006	0.002	0.011	-0.051	-0.033	0.008	0.016	-0.019	-0.003	0.004	1				
Relative Size	-0.017	0.010	-0.088	0.016	-0.048	0.036	-0.042	-0.108	-0.109	0.147	-0.231	0.255	-0.008	1			
FTALLSH	0.404	-0.631	0.027	0.299	0.211	-0.514	-0.306	-0.012	0.074	-0.008	0.023	-0.053	0.038	-0.008	1		
Ri-Rm	-0.043	-0.066	0.000	-0.027	-0.025	-0.069	-0.006	0.000	-0.093	0.107	0.006	-0.041	0.000	-0.001	0.025	1	
Merger Activity (1=Active,	0.010	-0.252	-0.040	0.013	-0.007	-0.198	-0.136	0.042	0.060	-0.059	-0.022	-0.010	0.013	0.016	0.288	-0.049	1

Table 4.12 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. N denotes the number of observations. P-values are reported in brackets.

Table 4.12-Continued

	(1)	(2)	(3)	(4)
Intercept	0.005	0.005	0.003	0.005
	(0.589)	(0.530)	(0.681)	(0.528)
High valuation period deals	0.005			
(Dummy = 1, if the deal is announced in a high valuation	(0.206)			
Low valuation period deals	-0.002			
(Dummy = 1 if the deal is announced in a low valuation	(0.600)			
Overconfident deals (multiple acquisitions)		-0.006[c]		
(Dummy = 1, if the acquirer's manager is overconfident)		(0.091)		
High Valuation-Non-Overconfident Deals (multiple			0.007[c]	
(Dummy = 1, if the deal is announced in a high-valuation month and the bidder's manager is non-overconfident)			(0.071)	
High Valuation- Overconfident Deals (multiple acquisitions)			-0.001	
(Dummy = 1, if the deal is announced in a high-valuation month and the bidder's manager is overconfident)			(0.802)	
Low Valuation-Non-Overconfident Deals (multiple			-0.001	
(Dummy = 1, if the deal is announced in a low-valuation month and the bidder's manager is non-overconfident)			(0.769)	
Low Valuation- Overconfident Deals (multiple acquisitions)			-0.005	-0.005
(Dummy = 1, if the deal is announced in a low-valuation month and the bidder's manager is overconfident)			(0.480)	(0.479)
Private target deals	0.026[a]	0.027[a]	0.027[a]	0.026[a]
(Dummy = 1, if the target is a private firm)	(0.000)	(0.000)	(0.000)	(0.000)
Cash deals	0.001	0.001	0.001	0.001
(Dummy = 1, if the deal is settled either in cash and/or debt)	(0.807)	(0.777)	(0.827)	(0.767)
Common stock deals	0.007	0.007	0.007	0.007
(Dummy = 1, if the deal is settled in shares only)	(0.200)	(0.209)	(0.209)	(0.201)
Diversifying deals	0.003	0.003	0.003	0.003
(Dummy = 1, If target and acquirer belong to different	(0.365)	(0.365)	(0.360)	(0.374)
B/M	0.005[a]	0.005[a]	0.005[a]	0.005[a]
	(0.001)	(0.001)	(0.001)	(0.001)
Relative size	0.010[a]	0.010[a]	0.010[a]	0.010[a]
	(0.000)	(0.000)	(0.000)	(0.000)
Log (MV)	-0.011[a]	-0.011[a]	-0.011[a]	-0.011[a]
	(0.000)	(0.000)	(0.000)	(0.000)
$FTALLSH_{(-180,-3)}$	0.045[b]	0.060[a]	0.046[b]	0.056[a]
	(0.012)	(0.000)	(0.011)	(0.000)
$Ri\text{-}Rm_{(-180,-3)}$	0.006[a]	0.005[a]	0.006[a]	0.006[a]
	(0.002)	(0.002)	(0.002)	(0.002)
High Merger Activity	-0.002	-0.003	-0.002	-0.003
(Dummy=1, if the deal is announced in a quarter of high M&A activities)	(0.466)	(0.356)	(0.445)	(0.379)
N	2,916	2,916	2,916	2,916
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%

Table 4.13 12 and 36 Months Calendar-Time Portfolio Regressions (CTPRs) of Long-Run Stock Returns using the Fama-French 3-Factor Model by Market Valuation

Monthly average abnormal returns (in percent) of bidders for one (Panel A) and three years (Panel B) following the announcement of bids are reported by the target ownership status (public or private) and method of payment (all-cash and non-cash (i.e., any other type of offer)) for high, neutral and low valuation-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. The calendar-time excess returns reported in the table are estimated using the Fama-French 3-factor model with the following regression:

$$R_{pt} - R_{ft} = a_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

The value of alpha (α_i) represents the average monthly excess returns for each sample group in the table. Acquirers enter the portfolio on the announcement month of successful bid and remain for 36 months and the portfolios are rebalanced. Statistical significance of returns (different from zero) are represented by ‘a’, ‘b’ and ‘c’ at 1%, 5% and 10%, respectively. P-values are reported in brackets. Standard errors are corrected for heteroscedasticity. The number of observations, the number of calendar observations and the R^2 of each regression are also reported. The table also reports High (1) minus Low (2) zero investment portfolio alphas.

Panel A: 1 Year						
	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
All	-0.13%	-0.11%	-0.11%	-0.22%	-0.64%	-0.05%
p-value	(0.409)	(0.586)	(0.574)	(0.223)	(0.305)	(0.820)
Obs.	3,223	2,839	384	1,351	208	1664
Calendar Obs.	203	203	203	203	203	203
Rsquared	82.98%	76.87%	70.28%	76.48%	32.90%	71.11%
High (1)	-0.26%	-0.25%	0.02%	-0.34%	-1.01%	-0.09%
p-value	(0.244)	(0.369)	(0.947)	(0.174)	(0.153)	(0.750)
Obs.	972	841	131	431	64	477
Calendar Obs.	203	203	203	203	203	203
Rsquared	36.22%	31.19%	23.75%	35.02%	6.99%	24.84%
Neutral (2)	0.11%	-0.05%	0.05%	-0.34%	-0.36%	0.10%
p-value	(0.697)	(0.840)	(0.913)	(0.188)	(0.587)	(0.708)
Obs.	1,534	1,361	173	665	102	767
Calendar Obs.	203	203	203	203	203	203
Rsquared	53.11%	61.08%	25.99%	48.32%	20.15%	53.26%
Low (3)	-0.32%	-0.43%[b]	-0.24%	-0.21%	-0.27%	-0.65%[b]
p-value	(0.111)	(0.029)	(0.336)	(0.310)	(0.467)	(0.017)
Obs.	717	637	80	255	42	420
Calendar Obs.	203	203	203	203	203	203
Rsquared	32.32%	34.24%	24.58%	24.40%	19.72%	31.47%
Different (1)-(3)	0.06%	0.18%	0.26%	-0.13%	-0.73%	0.56%
p-value	(0.863)	(0.643)	(0.563)	(0.715)	(0.374)	(0.206)
Rsquared	5.36%	4.36%	3.79%	6.98%	2.15%	4.09%

Table 4.13-Continued

Panel B: 3 Years						
	All	**Private**	**Public**	**Cash**	**Stock**	**Mixed**
All	-0.16%	-0.04%	-0.24%	-0.05%	-0.50%	-0.25%
p-value	(0.214)	(0.812)	(0.125)	(0.698)	(0.247)	(0.167)
Obs.	3,030	2,659	371	1,265	199	1566
Calendar Obs.	214	214	215	215	214	215
Rsquared	87.36%	84.57%	78.95%	85.13%	47.78%	78.97%
High (1)	-0.14%	-0.10%	-0.10%	0.10%	-0.58%	-0.24%
p-value	(0.506)	(0.634)	(0.723)	(0.666)	(0.305)	(0.355)
Obs.	942	812	130	416	59	467
Calendar Obs.	215	215	215	215	215	215
Rsquared	60.15%	56.40%	43.70%	53.75%	21.69%	51.19%
Neutral (2)	-0.17%	-0.08%	-0.35%	-0.26%	-0.51%	-0.24%
p-value	(0.255)	(0.622)	(0.110)	(0.139)	(0.384)	(0.183)
Obs.	1,371	1,210	161	594	98	679
Calendar Obs.	215	215	215	215	215	215
Rsquared	83.48%	81.49%	66.92%	79.18%	38.19%	77.25%
Low (3)	-0.25%	-0.27%	-0.24%	-0.18%	-0.12%	-0.43%[c]
p-value	(0.154)	(0.183)	(0.238)	(0.296)	(0.724)	(0.088)
Obs.	717	637	80	255	42	420
Calendar Obs.	214	214	215	215	214	215
Rsquared	40.03%	42.08%	25.82%	32.16%	26.15%	36.73%
Different (1)-(3)	0.11%	0.16%	0.14%	0.27%	0.27%	0.20%
p-value	(0.686)	(0.588)	(0.693)	(0.316)	(0.316)	(0.570)
Rsquared	14.69%	6.74%	14.02%	16.09%	16.09%	3.82%

Table 4.14 12 and 36 Months Calendar-Time Portfolio Regressions (CTPRs) of Long-Run Stock Returns using the Fama-French 3-Factor Model for Rational and Overconfident Managers by the Stock Options Proxy and Market Valuation

Monthly average abnormal returns (in percent) of bidders for one (Panel A) and three years (Panel B) following the announcement of bids are reported by rational and overconfident managers as approached by the stock options proxy and high and low valuation-deals. Managers who hold stock options until the year before the expiration date are classified as overconfident. All others are classified as rational. 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 calendar-time excess returns reported in the table are estimated using the Fama-French 3-factor model with the following regression:

$$R_{pt} - R_{ft} = a_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

The value of alpha (α_i) represents the average monthly excess returns for each sample group in the table. Acquirers enter the portfolio on the announcement month of successful bid and remain for 36 months and the portfolios are rebalanced. Statistical significance of returns (different from zero) are represented by ‘a’, ‘b’ and ‘c’ at 1%, 5% and 10%, respectively. P-values are reported in brackets. Standard errors are corrected for heteroscedasticity. The number of observations, the number of calendar observations and the R^2 of each regression are also reported. The table also reports High (1) minus Low (2) and Rational (4) minus Overconfident (5) zero investment portfolio alphas.

Panel A: 1 Year				
	All	**Rational (4)**	**Overconfident (5)**	**Differnt (4)-(5)**
All	-0.09%	0.11%	-0.69%[b]	0.80%[b]
p-value	(0.683)	(0.642)	(0.046)	(0.031)
Obs.	848	601	247	
Calendar Obs.	203	203	203	203
Rsquared	75.16%	68.28%	56.91%	2.67%
High (1)	-0.16%	-0.18%	-0.13%	-0.04%
p-value	(0.540)	(0.506)	(0.740)	(0.907)
Obs.	248	175	73	
Calendar Obs.	203	203	203	203
Rsquared	31.40%	30.06%	15.79%	2.28%
Neutral (2)	0.30%	0.65%[b]	-0.82%[b]	1.47%[a]
p-value	(0.313)	(0.045)	(0.047)	(0.001)
Obs.	400	282	118	
Calendar Obs.	203	203	203	203
Rsquared	49.16%	40.74%	34.14%	0.11%
Low (3)	-0.56%[b]	-0.48%[b]	-0.59%[b]	0.11%
p-value	(0.030)	(0.039)	(0.048)	(0.638)
Obs.	200	144	56	
Calendar Obs.	203	203	203	203
Rsquared	27.86%	28.26%	21.40%	0.54%
Different (1)-(3)	0.40%	0.30%	0.46%	0.41%
p-value	(0.336)	(0.457)	(0.387)	(0.351)
Rsquared	3.32%	5.19%	2.76%	3.22%

Table 4.14-Continued

Panel B: 3 Years				
	All	**Rational (4)**	**Overconfident (5)**	**Differnt (4)-(5)**
All	-0.10%	-0.09%	-0.28%	0.19%
p-value	(0.564)	(0.667)	(0.337)	(0.568)
Obs.	812	573	239	
Calendar Obs.	215	215	215	215
Rsquared	78.07%	73.34%	60.24%	4.51%
High (1)	-0.19%	-0.29%	0.04%	-0.33%
p-value	(0.453)	(0.313)	(0.887)	(0.308)
Obs.	245	172	73	
Calendar Obs.	215	215	215	215
Rsquared	54.08%	49.04%	39.11%	6.13%
Neutral (2)	0.08%	0.02%	-0.34%	0.37%
p-value	(0.728)	(0.922)	(0.276)	(0.285)
Obs.	367	257	110	
Calendar Obs.	215	215	215	215
Rsquared	67.94%	62.57%	60.26%	8.04%
Low (3)	-0.37%	-0.30%	-0.52%[c]	0.22%
p-value	(0.136)	(0.203)	(0.071)	(0.293)
Obs.	200	144	56	
Calendar Obs.	215	215	215	215
Rsquared	33.59%	32.35%	26.83%	1.43%
Different (1)-(3)	0.18%	0.01%	0.56%	0.23%
p-value	(0.605)	(0.989)	(0.153)	(0.565)
Rsquared	8.25%	11.97%	3.68%	7.34%

Table 4.15 12 and 36 Months Calendar-Time Portfolio Regressions (CTPRs) of Long-Run Stock Returns using the Fama-French 3-Factor Model for Rational and Overconfident Managers by the Stock Options Proxy and Market Valuation

Monthly average abnormal returns (in percent) of bidders for one (Panel A) and three years (Panel B) following the announcement of bids are reported by rational and overconfident managers as approached by the multiple acquirers proxy and high and low valuation-deals. Individual CEOs who made 5 or more acquisitions within a 3 year period are called overconfident. All others are classified as rational. 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 calendar-time excess returns reported in the table are estimated using the Fama-French 3-factor model with the following regression:

$$R_{pt} - R_{ft} = a_i + \beta_i (R_{mt} - R_{ft}) + s_i SMB_t + h_i HML_t + \varepsilon_{it}$$

The value of alpha (α_i) represents the average monthly excess returns for each sample group in the table. Acquirers enter the portfolio on the announcement month of successful bid and remain for 36 months and the portfolios are rebalanced. Statistical significance of returns (different from zero) are represented by 'a', 'b' and 'c' at 1%, 5% and 10%, respectively. P-values are reported in brackets. Standard errors are corrected for heteroscedasticity. The number of observations, the number of calendar observations and the R^2 of each regression are also reported. The table also reports High (1) minus Low (2) and Rational (4) minus Overconfident (5) zero investment portfolio alphas.

Panel A: 1 Year				
	All	**Rational (4)**	**Overconfident (5)**	**Differnt (4)-(5)**
All	-0.13%	-0.12%	-0.29%	0.17%
p-value	(0.408)	(0.456)	(0.300)	(0.525)
Obs.	3,099	2,256	843	
Calendar Obs.	203	203	203	203
Rsquared	82.80%	79.15%	70.72%	11.88%
High (1)	-0.29%	-0.28%	-0.49%	0.21%
p-value	(0.202)	(0.228)	(0.133)	(0.442)
Obs.	934	640	294	
Calendar Obs.	203	203	203	203
Rsquared	36.05%	34.17%	27.23%	0.61%
Neutral (2)	0.11%	0.08%	-0.26%	0.34%
p-value	(0.705)	(0.814)	(0.422)	(0.360)
Obs.	1,483	1,105	378	
Calendar Obs.	203	203	203	203
Rsquared	52.73%	43.33%	52.80%	4.89%
Low (3)	-0.31%	-0.22%	-0.41%	0.19%
p-value	(0.123)	(0.346)	(0.168)	(0.494)
Obs.	682	511	171	
Calendar Obs.	203	203	203	203
Rsquared	32.12%	28.07%	22.99%	1.19%
Different (1)-(3)	0.02%	-0.06%	-0.08%	0.13%
p-value	(0.957)	(0.869)	(0.875)	(0.762)
Rsquared	5.37%	5.20%	3.19%	4.82%

Table 4.15-Continued

Panel B: 3 Years				
	All	**Rational (4)**	**Overconfident (5)**	**Differnt (4)-(5)**
All	-0.15%	-0.12%	-0.58%[c]	0.46%
p-value	(0.224)	(0.360)	(0.074)	(0.133)
Obs.	2,908	2,099	809	
Calendar Obs.	214	214	215	214
Rsquared	87.24%	85.94%	70.97%	16.60%
High (1)	-0.17%	-0.11%	-0.79%[c]	0.68%
p-value	(0.431)	(0.608)	(0.095)	(0.149)
Obs.	905	616	289	
Calendar Obs.	215	215	215	215
Rsquared	59.57%	57.00%	37.94%	3.78%
Neutral (2)	-0.17%	-0.10%	-0.58%[b]	0.48%[b]
p-value	(0.278)	(0.559)	(0.016)	(0.045)
Obs.	1,321	972	349	
Calendar Obs.	215	215	215	215
Rsquared	83.10%	78.99%	75.77%	18.36%
Low (3)	-0.24%	-0.27%	-0.36%	0.08%
p-value	(0.171)	(0.124)	(0.201)	(0.716)
Obs.	682	511	171	
Calendar Obs.	214	214	215	214
Rsquared	39.79%	37.24%	29.76%	4.57%
Different (1)-(3)	0.07%	0.16%	-0.43%	0.24%
p-value	(0.802)	(0.572)	(0.431)	(0.476)
Rsquared	15.43%	15.16%	8.34%	4.24%

CHAPTER 5: INFORMATION UNCERTAINTY, PRIVATE INFORMATION AND BIDDER GAINS

5.1 Introduction

Extensive literature has investigated short-run bidder gains and possible factors which affect shareholders wealth following the announcement of a takeover deal. This chapter introduces a behavioural approach to explain bidder gains following the announcement of corporate takeovers. We empirically examine the market reaction under conditions of information uncertainties when investors possess private information. By information uncertainty, we mean ambiguity about the bidding firm's value (Zhang (2006)).

Traditional approaches to M&A gains suggest that the market reaction following the announcement of a takeover illustrates potential synergy or revaluation gains. Neoclassical theories suggest that the motive for M&As should be synergetic gains coming from economies of scale after the combination of the two companies and the market reaction at the announcement day should reflect potential synergy gains. Fuller et al. (2002) and Draper and Paudyal (2008) claim that short-run market reaction to bidder takeover announcements may reflect revaluation gains. Fuller at al. (2002) claims that gains in first order deals maybe higher because they incorporate revaluation gains apart from synergy gains. Draper and Paudyal (2008) further control for information asymmetries between investors and managers and find that undervalued bidder due to high information asymmetry between managers and investors, announce takeover to attract attention and therefore boost their stock price back to fundamental values, ending up enjoying the highest abnormal. Our analysis is motivated by the theoretical work of behavioural finance models. One of the most well-documented investor biases is overconfidence. Experimental evidence shows that investors tend to overestimate the precision of their information, especially in cases where they have been personally involved in the collection of this information. (Odean (1998)). The theoretical model of Daniel et al. (1998) predicts that investors are overconfident about their private information. As a result, they attribute more weight to their private information and underrect to public signals. Additionally, Daniel et al. (1998, 2001) also claim that investor become even more overconfident under conditions of information uncertainty. Jiang, Lee and Zhang (2004) and Zhang (2006) also suggest that the investor overreaction should be more prominent under conditions of information uncertainty since investors become more overconfident for firms that are hard to value. Zhang (2006) suggests that under conditions of information uncertainty, announcements of good news generate relatively higher abnormal returns while announcements of bad news generate relatively lower abnormal returns. This hypothesis is motivated by the findings of Chan, Jegadeesh and Lakonishok (1996) who claim that price continuation is due to a gradual market reaction and Hirshleifer (2001) and Daniel, Hirshleifer and Subrahmanyam (1998, 2001). Zhang (2006) combines these two findings and suggests the following hypothesis: "*If the slow market response to information is due to psychological biases such as overconfidence, these psychological biases will be larger and, hence, the price response will be slower when there is more ambiguity about the implications of the information for a firm's value"*. In his analysis, Zhang (2006) controls only for information uncertainties and does not include private information of the investor into the analysis and proposes that further investigation is required.

Motivated by the above empirical and theoretical evidence, we examine the market reaction following takeover announcements for high and low information uncertainty bidding firms when investors possess or do not possess private information. We hypothesize that for value ambiguous bidders when investors possess private information, they will overreact and generate highly positive abnormal returns following the announcement of acquisitions for private targets financed with cash or stock and for public targets financed with cash (good news). On the other hand, under the same conditions, the market reaction will be negative following announcements of takeovers for public targets paid for with stock (bad news).

When uncertainty about the bidder's intrinsic value is low and investors are less likely to have collected private information, the market reaction should be complete (zero abnormal returns).

There is substantial evidence which suggests that the target firm's listing status and the method of payment used to finance the takeover signal different news about the valuation conditions of the bidding firm. One of the hypotheses employed by Travlos (1987) to explain the underperformance of acquisitions of public targets paid for with stock relative to those paid for with cash is the signalling hypothesis. He suggests that investors perceive a stock acquisition as “bad” news assuming that the bidder is overvalued. The opposite signal is received by investors when cash is used as a method of payment. Furthermore, Shleifer and Vishny (2003) in an attempt to explain merger waves claim that overvalued bidders use their overvalued equity to acquire undervalued target firms.

With respect to acquisitions for private firms, Chang (1998) and Draper and Paudyal (2006) support that good news is signalled when stock is used as method of financing the takeover. The reasoning offered is that the concentrated ownership of the privately held firm has more incentive to carefully evaluate the bidder’s stock. Hence, it is quite unlikely that they would accept overvalued equity. Additionally, a cash acquisition for a private firm is usually a positive announcement but does not reveal much information regarding the bidder’s intrinsic value. Acquirer are less uncertain about the potential synergy gains and are confident enough to offer cash as they are not willing to share potential synergy gains with the ownership of the target firm by creating blockholders. Therefore, a cash acquisition does not directly reveal information about the bidding stock value but can in generally be classified as a relatively positive piece of information.

We employ four proxies for information uncertainty, such as: the age, the size, the sigma and the trading volume of the bidding firm. Furthermore, to capture whether investors are more likely to possess private information or not, we employ stock price synchronicity as introduced by Roll (1988) and further developed by Morck et al. (2000) and Chen et al. (2007).

The main findings suggest that bidders subject to high information uncertainty generate higher abnormal returns relative to low information uncertainty bidding firm’s following the announcement of private acquisitions paid for with cash and equity and for public targets paid for with cash, while the opposite effect is observed for public acquisitions paid for equity. Furthermore, when we control for private information, high information uncertainty deals generate stronger positive abnormal returns for private cash and stock and public cash deals, and even more negative returns for public stock takeovers. When uncertainty is lower and investors are likely to possess private information (high synchronicity), zero economical and statistical abnormal returns are obtained. We also show that the findings of Travlos (1987) and Chang (1998) for the method of payment in public and private acquisitions respectively hold *only* under conditions of information uncertainty. In other words, public and private acquisitions paid for with cash are fundamentally different from those paid for using equity *only* under conditions of high information uncertainty.

The remainder of this chapter is structured as follows. Section 2 reviews the literature on investor biases, value ambiguity and stock price synchronicity. Section 3 develops the hypotheses. Section 4 discusses the data and methodology used. Section 5 analyses the empirical findings beforeSection 6 summarizes the conclusions of the investigation.

5.2 Literature Review

This section reviews the literature on issues related to investor biases, such as overconfidence and value ambiguity. The purpose is to identify the association of such biases with overreaction and underreaction of financial markets. We also review the literature on a recently developed issue which is stock price synchronicity. Stock price synchronicity is a measured mainly used in the finance literature to measure stock price informativeness and hidden private information in stock prices.

5.2.1 Overconfidence: An Investor Bias

Traditional financial models tend to incorporate assumptions unrealistic of the real world. In the recent past, financial researchers have started including factors driven by individual behaviour and their cognitive biases within financial modelling. One of the most common human bias studies in the finance literature which has been modelled in order to help explain a number of financial anomalies is overconfidence.

Odean (1998) claims that investors are overconfident and markets, in turn, become affected by this psychological bias. Some of the key predictions of his model suggest that overconfident investors trade more than rational ones. In doing so, they cause the market depth to increase but their expected utility remains lower than rational investors'. In addition, the literature has revealed that a market underreaction can be caused by abstract, statistical and relevant information while an overreaction is triggered by less relevant information.

In a similar context, Odean (1999) investigates the question of whether excess trading activity is in fact driven by investor overconfidence. Using a large database of individuals' trading activity, excluding deals that could be triggered by a shortage in liquidity and tax loss purposes, Odean writes that in some cases, overconfident investors are likely to trade even when the trading cost to be incurred is higher than the expected profit to be made.

Statman, Thorley and Vorkink (2006) adopt the justification that high trading volume is triggered by, and thereby an indicator of, overconfident traders in financial markets. Testing for self-attribution bias, the authors show that past returns are highly associated with higher future trading volume. The positive relationship between high turnover and lagged past returns holds both for market-wide and individual stocks, but is more pronounced for market-wide shocks. In other words, during periods of high market returns, investors become overconfident and in the following period, high trading volume can be observed. This evidence further supports the hypothesis of investor overconfidence and indicates that the phenomenon of overconfidence is more pronounced for small stocks and within periods when investors' portfolios consist of a large number of stocks.

Along the same lines, Gervais and Odean (2001) develop a model in which they allow investors to become overconfident through 'learning'. After a successful trading strategy, investor biases increase as investors attribute the successful outcome of the strategy to their own abilities. In this way, investors become more overconfident after the successful execution of a trading strategy. On the contrary, the opposite effect has been found to occur after the failure of an executed trading strategy with overconfidence levels diminishing. Gervais and Odean (2001) allow for this dynamic change of overconfidence within their model. The overconfidence level changes are shown to be more prominent for traders that having been trading for a short period of time. More experienced investors adjust their biases in a better way whilst those who have only been trading for a shorter period of time lack the foresight to recognise their trading biases. Since successful strategies have been found to make traders overconfident, overconfident traders as a result must be wealthy individuals. But it is important to note that overconfidence does not itself directly create wealth but rather wealth creates overconfidence. In the long-run period, the authors show that investors lose both wealth and confidence. The model also proves that overconfident traders lead to an increase in both the trading volume and volatility of the market.

Benos (1998) attempts to examine and explain various financial anomalies, such as short-term profit taking, wide price movements and aggressive trading. He attributes the source of such behaviour to investors' biases and irrationality and more specifically to overconfidence and persistent errors. Investor biases are mainly triggered in two cases. In the first case, investors do not have the relevant information required and they have to forecast it whilst in the second scenario, investors have information but the quality is poorer and not precise. In the first sceanrio, investors have attributed various probabilities to forecast the event outcome and as they are usually driven by their biases, they tend to believe that their judgements are better than they actually are. In the second case, some investors may realize that the information is not perfect and contains noise whilst others might perceive that this information is perfect and as a consequence they overestimate their precision. Some of Benos' (1998) model predictions are that informed overconfident investors' trading activity and their associated behaviour results in the increase of price volatility, price informativeness, market depth and trading volume. Overconfident investors usually overweight the precision of their information and therefore place larger orders. This result in higher price volatility and more of investors' private information is revealed to the market. Additionally, overconfident investors seem to enjoy high profits even higher than those of rational ones. This can be attributed to the fact that overconfident investors trade aggressively and benefit from the advantage of the 'first-mover'.

Daniel, Hirshleifer and Subrahmanyan (1998) also agree that several market reactions which have been documented in the finance literature cannot be explained by traditional models which are based on the assumptions that markets are rational and securities are rationally priced as a reaction to publicly available information. The authors report that short-term momentum, long-term reversals and high volatility of asset prices relative to fundamentals are some of the market anomalies that traditional models cannot fully explain. Furthermore, some corporate decisions witnessed seem to be associated with market anomalies. DeBondt and Thaler (1985) support that psychological finance models based on psychological evidence could help to explain more deeply individuals' behaviour. Daniel, Hirshleifer and Subrahmanyan (1998) continue to build a model to address these issues. The model itself is based on investors' overconfidence and variations in overconfidence driven by self-attribution bias.

A large part of the psychology literature[37] suggests that individuals overestimate their own abilities in the decision making process whilst also overestimating the precision of the outcome of the decision made. Investors extract information from various sources (for example, from financial statements, the press, rumours amongst others). If they overestimate their ability to extract this information or they overweight the precision and significance of this information, then they will end up overreacting by underestimating the forecast error involved in their decision-making.

Overconfidence has also been found to be usually enhanced by the individual's personal involvement in the information collection process. It has been found that investors will be more overconfident with signals or information that they have themselves extracted. Daniel et al (1998) define overconfident investors as those which overestimate the precision of their private information as opposed to the public signals available. They find that overconfident investors who possess private information will overweight this information, leading to a stock price overreaction. When an investor trades on his/her private information/signals and subsequently receives a public signal which serves to confirm the trading strategy being executed then the investor's confidence will rise. Conversely, if the signal does not confirm the strategy adopted, then the investor's confidence will remain unaffected or will decline slightly. Therefore, investors start trading with unbiased beliefs but as public signals arrive, they serve to boost the investor's confidence when they confirm the validity of the private information collected. This shows that the arrival of new public information can cause overreaction

[37] Griffin and Tversky (1992), Greenwald (1980), Svenson (1981), Cooper et al. 1988, Taylor and Brown (1988), Alpert and Raiffa (1982), Fischhoff, Slovic, and Lichtenstein (1977), Batchelor and Dua (1992), Lichtenstein, Fischhoff, and Phillips (1982) and Yates (1990).

due to the existing private signals held. This self-attribution bias can explain short-run momentum and long-run reversals in stock prices. One of the advantages of this model developed by Daniel et al. (1998) when compared to previous behavioural models[38] is that it assumes that investors get overconfident about private signals and therefore allows for both over- and under-reaction effects. Furthermore, the authors claim that since the model is mainly based on private information and subsequent under or overreaction, its predictive power will be more evident for firms with higher information uncertainty.

Similarly, Daniel, Hirshleifer and Subrahmanyan (2001) develop a model in which asset prices reflect both covariance risk and investors misvaluation. More specifically, they assume that investors use their private information incorrectly and therefore, in equilibrium securities are mispriced. As a consequence, misvaluation ratios can be used to explain or predict future returns. Evidence suggests that earnings/price or book/market ratios can predict future returns. However, a drawback of these ratios is that they can also be interpreted a risk measures aside from their use as proxies of misvaluation. The model of Daniel et al. (2001) fills this gap in the finance psychology literature by showing that both risk and misvaluation measures jointly can predict the cross-section of stock returns. One of the main predictions of the model constructed is that misvaluation ratio proxies could better predict risk-adjusted returns for firms that are hard to value. Finally, Hirshleifer (2001) discusses the importance of investor psychology being incorporated in asset pricing models to predict future returns. Psychological literature suggests that overconfident people tend to believe that their knowledge and predictions, especially about things that they are considered specialists of, are more accurate than they really are. Overconfidence seems to be enhanced when feedback about the individual's actions or decisions is inconclusive (Einhorn (1980), Griffin and Tversky (1992). Hence, Hirshleifer (2001) suggests that psychological biases grow both under conditions of greater uncertainty and in the absence of accurate feedback about fundamentals. Evidence on information uncertainty and ambiguity are further discussed later in this section.

[38] Kyle and Wang (1997), Odean (1998) and Wang (1998) define overconfidence as overestimation of information precision regardless of whether the information is private or public.

Overreaction/Underreaction

Two of the most important and common observed irregularities discussed in the behavioural finance literature relates to the overreaction and underreaction of the market and its participants to news. Underreaction suggests that information and news received by the market are slowly incorporated into stock prices. As a result, we witness high autocorrelation throughout the period until all news is fully incorporated in the stock prices. On the other hand, overreaction suggests that investors overweight their information and resultantly overreact to news received which consequentially drives prices away from fundamentals. The outcome of both biases is that empirically, we observe a long term reversal and subsequent correction to the effects originally exerted upon stock prices. On this basis, rational investors can take advantage of these two market ‘phenomena’ and obtain risk-free profits. The concept of risk-free profit conflicts with the predictions of the efficient market hypothesis. Fama and French (1996) suggest that their 3-factor model can be exerted to capture overreaction but fails to account for underreaction. Barberis, Shleifer and Vishny (1998) state that this is a challenge for behavioural finance modelling and in their work, they attempt to explain investors’ beliefs which leads to such phenomena. Their model is concerned upon attempts to model investors behaviour and beliefs about future earnings. The work itself is mainly motivated by the behavioural evidence presented by Griffin and Tversky (1992). Griffin and Tversky (1992) claim that investors seem to overweight information that they are associated with while they attribute lower weight to information which has realistic statistical probabilities. In other words, underreaction is caused by low strength and high statistical weight news while overreaction can be attributed to high strength and low statistical weight announcements. Various historical financial anomalies can be explained by Barberis et al.’s (1998) model. For instance, the 1987 crash caused a great decline to stock prices and increased dramatically the volatility of the stock market. Investors responded with an overreaction to the news and started selling their stocks despite the fact their decisions were not based on news regarding the companies’ fundamental values. Hence, the crash can be described as a high strength, low weight event, and according to the model predictions, it caused overreaction. Klibanoff et al. (1998) present an example of the closed-end country funds which can also be explained by Barberis et al.’s (1998) model. There is a price overreaction observed to stocks when a fund that includes these stocks in their portfolios is presented in the front pages of the press of the respective country. The weight of the news is constant but the strength of the news climbs highly. Consequently, an overreaction is observed. The model also explains experimental evidence which suggests that investor decisions fail under uncertainty. However, the model does not explain why arbitrage is not able to correct this mispricing. A possible explanation of why arbitrage trading is limited could be due to the fact investors biases are quite unpredictable especially in the short-run forcing prices to move even further away from fundamentals. This unpredictability in investor sentiment causes extra risk for arbitrageurs and leaves inefficiencies within the market place.

Conclusively, the above discussion suggests that the human bias of overconfidence is an important factor that can explain a number of anomalies observed in financial markets. Most of the behavioural models successfully manage to provide further explanations of the way that investor overconfidence affects financial markets. The root of the problem is that overconfident traders overweight their private information while they underreact to public signals.

5.2.2 Value Ambiguity

Evidence suggests that investor biases are enhanced under conditions of information uncertainties or ambiguity. More specifically, Hirshleifer (2001) posits that psychological biases grow under conditions of great uncertainty and in the absence of accurate feedback about fundamentals while Daniel et al. (1998) claim that the predictive power of their model will be more evident for firms with higher information uncertainty. This section reviews the literature on value ambiguity.

Financial participants are bombarded with a great number of news, information and signals. However, it is hard for them to distinguish which of the signals are precise and reliable and which are not. Becker and Browson (1964) discuss Ellberg’s paradox which suggests that investors violate the expected utility theory due to aversion to ambiguity. They suggest that individuals are usually ambiguity-averse and are willing to pay a small amount if they can resultantly avoid ambiguity. Similarly, Epstein and Schneider (2008) analyse and model investors’ behaviour when they find it hard to judge the quality of the signal. In such cases, investors treat the signal as ambiguous. They do not act as Bayesian investors but attribute various probabilities for possible outcomes.

Two main outcomes are observed related to ambiguous signals. Firstly, investors react asymmetrically to ambiguous signals. That means that investors react more strongly to bad news than to good news. As worst case scenario, investors perceive good ambiguous news as unreliable while bad ambiguous news as reliable. Secondly, investors will be negatively preoccupied on the anticipation of an ambiguous signal. Investors require extra returns to bear the expected low quality information. At some point, Epstein and Schneider (2008) note that event study conclusions should be treated with caution. A possible negative market reaction does not necessarily imply that investors disapprove fundamentals but it could be due to disapproval to ambiguous information. Furthermore, idiosyncratic volatility of fundamentals seems to be highly associated with ambiguity and plays a significant role in investors' overreaction. When fundamental volatility is high, investors require an even higher compensation when confronted with ambiguous signals. On the other hand, when volatility of fundamentals is low, there is a lower impact of whether information quality is high or low. The difference between risk and ambiguity premia is that the main concern of ambiguous averse investors is uncertainty. Highly ambiguous assets are believed to have lower mean payoff.

Abnormal returns seem to exhibit skewness because of the fact that ambiguity is driven by the asymmetric response to various signals of ambiguous quality. More specifically, investors seem to overreact to bad intangible signals while they underreact to bad tangible signals. For instance, a tangible signal could be considered to be past dividends payments which are countable, while an intangible signal could relate to the announcement of future dividends. Overreaction and underreaction occurs because investors consider ambiguity only about intangible but not tangible signals. The subsequent long-run price correction is driven by the arrival of tangible information which corrects the market overreaction due to the intangible news received.

Zengjing and Epstein (2002) state that traditional models used to consider only risk as a main factor to explain any observed excess abnormal returns. They create a model which takes into consideration ambiguous-averse investors, but excludes those deemed to be risk averse. They prove that expected returns are a function of risk and ambiguity averse premia. Additionally, uncertainty is equally important component of risk to consider for investment decisions. Furthermore, Epstein and Schneider (2007) consider both risk and ambiguity in the learning process. Traditional models assume that participants allocate specific probabilities to all possibly uncertain events. That means that probabilities are fixed and given and are not influenced by behaviour biases such as confidence levels. In other words, there is so separation between known and unknown probabilities. However, in reality, individuals treat ambiguous events differently from risky events. Because of this, the model developed by Epstein and Schneider (2007) allows participants to change their prior beliefs as they learn. They compare changes in biases under uncertainty to changes in risk under learning.

Veronesi (2000) investigates uncertainty and investors' risk preferences to explain various phenomena and anomalies in the finance world. The model assumes that the drift of fundamentals follows a process with unobservable regime shifts which is formalized by a two-stage Markov model. Investors based on past experience, set their probabilities for each stage. The model predicts that investors will react more rapidly to news under conditions of high uncertainty, which causes an increase in volatility. Furthermore, in good periods, investors tend to desire a higher discount over expected future dividends following bad news. This occurs in order to compensate investors for undertaking the higher risk involved as a consequence of higher uncertainty. As a result, the price declines more than the expected decline of expected future dividends. In the same way, in bad times, good news makes the expected future dividends increase as well as increasing the discount factor. However, although the price increases, it does so less than the increase observed in expected dividends. In short, the model shows that the sensitivity of price changes is higher during good times than bad. On the contrary, the volatility of returns is lower in good times and it increases more during bad times. The increase is even higher under conditions of uncertainty.

5.2.3 Information Uncertainty and Market Overreaction/ Underreaction

Zhang (2006) is motivated by two strands of the behavioural finance literature. Firstly, the short-term stock price continuation is attributed to investor behavioural biases, such as the discussed overconfidence to new information as well as a sluggish response of the market to new information (Chan, Jegadeesh and Lakonishok (1996)[39]). Secondly, behavioural models suggest that psychological biases are enhanced under conditions of information uncertainty. Zhang (2006) combines these two ideas and suggests that if psychological biases like overconfidence are the reason for the slow market response to new information, then they will be more prominent, whilst the market response will be slower, under conditions of high information uncertainty regarding a firm’s value. Zhang (2006) defines information uncertainty as ambiguity regarding new information relating to the firm’s value. This ambiguity is derived from two sources - volatility of the underlying fundamentals and a shortage of information about the firm.

Zhang (2006) examines two price anomalies - post-analyst forecast revision and price momentum. He chooses these two anomalies because they can be observed regularly, whilst they also can be easily classified as good and bad news. In addition, they bring new public information to the market. Zhang (2006) classifies positive forecast revisions and past winners as good news and negative revisions or past losers as bad news.

To capture information uncertainty, Zhang (2006) uses six proxies, all of which provide similar results. These are firm size, firm age, analyst coverage, dispersion in analyst forecasts, return volatility and cash flow volatility. The main findings show that under conditions of information uncertainty, higher stock returns are generated after the

[39] Chan, Jegadeesh and Lakonishok (1996) attempt to examine the sources of predictability of future returns based on past returns and suggest that future return drifts in stock returns are highly predicted by past returns and earnings surprises. Earning announcements are a continuous source of information for the firm. Their findings suggest that a great part of the momentum effect can be explained by earnings announcement releases. Results reveal that almost half of the momentum effect can be observed around earnings announcements. Generally, if the market responds positively or negatively to earnings surprises, then the market will keep moving in the same direction over the next two subsequent announcements. Apart from earning announcements, the slow response of analysts seems to be related to the momentum effect. Analysts are relatively slow in revising and revealing information especially for firms that do not perform very well. Conclusively, they suggest that the momentum effect can be associated to the slow and sluggish market’s reaction to new information.

announcement of good news and lower stock returns are generated following the announcement of bad news. These findings imply that under uncertainty, the market responds slowly to the new information. On the other hand, under low information uncertainty conditions, the market is relatively complete and there is low market reaction and therefore little stock return predictability based on new information.

Zhang (2006) claims that his main finding is primarily related to the behavioural model developed by Daniel et al. (1998, 2001). In short, Daniel et al. (1998) assume in their model that investors are overconfident about their private information and due to this psychological bias, they overreact to private information. In addition, the authors suggest that the psychological bias of overconfidence increases under conditions of information uncertainty when the firm's value is difficult to predict. The arguments developed in the model of Daniel et al. (1998, 2001) suggests that information uncertainty is associated with empirical work which suggests that higher (lower) stock returns are obtained following good (bad) news. However, Zhang (2006) does not incorporate a measure to capture for investor private information and overconfidence. Behavioural models which claim that investors give more importance to older information relative to newer due to anchoring or conservatism biases whilst they overweigh their prior information even more under uncertainty could explain his results. Size is one of the proxies used to capture information uncertainty. This study shows that size behaves more like a proxy for information uncertainty than as a risk factor.

5.2.4 Stock Price Synchronicity

5.2.4.1 Informative Stock Prices and Stock Price Synchronicity

The behavioural finance models have focused on the role of private information and the subsequent impact on investors' cognitive biases and their following investment decisions. This section reviews the literature on stock price synchronicity. In short, this work defines the concept of synchronicity as the co-movements of stock price returns with the market return. Furthermore, in this section, we analyse in depth what synchronicity measures capture, how they are measured and how synchronicity has been used in the literature.

One of the roles of financial markets is to facilitate the production and accumulation of information into stock prices. This happens through the trading activities of speculators on stock prices. Financial economists support the notion that stock returns incorporate firm-specific and market-wide information. Furthermore, Roll (1988) claims that stock prices move together depending on the amount of firm-specific or market-wide information capitalized in the stock prices. Roll (1988) also explains that stock price movements are influenced by market-wide economic shocks, by industry shocks and by news specific to the firm. He suggests that a low R^2 value should be observed in periods of no public news about the firm, indicating that the price movement is triggered by private information.

Chen, Goldstein and Jiang (2007) adopt synchronicity as a measure of stock price informativeness and show that there is a strong positive relationship between the amount of private information within stock prices and the sensitivity of corporate investment to stock prices. They suggest that managers learn from the private information incorporated in stock prices and take advantage of this information within their corporate investment decisions. More specifically, they suggest that private information is incorporated in stock prices through speculators trading activity. Theoretical evidence (Dow and Gorton (1997), Subrahmanyam and Titman (1999)) suggests that managers can extract useful information hidden in stock prices. Stock prices accumulate a lot of information from various trading participants in the market who do not have any other way of communicating with the firm apart from via the trading process. Consequently, stock prices may incorporate information that managers do not have. It is more likely that this type of information is related to issues like the demand for the firm's product or strategic issues, rather than information relating to technological issues. When managers attempt to maximize their firm's expected value, they will use all the possible available information they have at their disposal. Therefore, managers can be influenced by this type of information incorporated in stock prices and it will, in turn, affect their investment decisions. Hence, the investment decision will be highly influenced by stock prices when private information is hidden within them.

A crucial challenge is the way that this private information can be empirically captured. Different stocks have different levels of private information incorporated within them due to the various costs involved in the acquisition and production of such information (Grossman and Stiglitz (1980)). One of the measures frequently used is stock price synchronicity. As mentioned earlier, Roll (1988) shows that the measure of stock price nonsynchronicty is not correlated with public information and thereby serves as a good approach to capture private information. In Roll’s own words, he claims ‘‘the financial press misses a great deal of relevant information generated privately’’ (Roll, 1988, page 564).

Chen, Goldstein and Jiang (2007) main findings suggest a positive relationship between the measures for private information and the sensitivity of investment to price which indicates that the high level of private information incorporated in stock prices provide managers with new information which is used in the manager’s investment decisions. The authors clarify two things regarding their conclusions. Firstly, the private information that is new to the managers is not the only new information received. Some public information may also be new to them. However, the amount of private information transmitted through speculators’ trading activity increases the amount of new information available to the managers thereby increasing the probability of managers relying more on a higher amount of new information. Secondly, their results show that a high amount of private information does not imply that stock prices are close to fundamentals. The variation between stock price and fundamental value depends on the amount of public information as well. The incorporation of private information is a timely procedure and that may imply that stock prices with more private than public information might be further away from fundamentals. Finally, they clarify their finding that financial analysts do not have any effect on managers’ investment decisions by explaining that since managers already know the information produced by analysts, the latter adds no extra information value to their decisions. Supporting this explanation, Easley, O’Hara and Paperman (1998) find that analysts add noise to stock prices and reduce the amount of private information within them.

The concept itself of stock price synchronicity was initially introduced by Roll (1988) and then further developed by Morck, Yeung and Yu (2000). Roll (1988) measures synchronicity as the R^2 of the following linear regression:

$$r_{it} = a_i + b_i r_{mt} + e_{it}$$

Where r_{it} is the rerun of stock i at week t, and r_{mt} is the market index return at week t. A high R^2 in the above regression shows high stock price synchronicity. R^2 is bounded within the interval [0,1]. To avoid this limitation, Morck et al. (2000) employ a standard econometric approach apply logistic transformations to that variable:

$$Synchronicity = \log(\frac{R^2}{1-R^2})$$

Using this measure, Morck, Yeung and Yu (2000) find that stock prices move asynchronously in countries with high Gross Domestic Product (GDP) while stock prices tend to move together in less developed economies. They examine three possible reasons for this result. Their first explanation is that in less developed countries, fundamentals might be more closely correlated to one another resulting in a more synchronous manner in the stock price movement. Moreover, in these countries, private property rights are less protected. Political actions and rumours can cause market-wide stock price changes. The lack of poor property protection acts as a deterrent for risk arbitrager who could insert more information to the market and counter the effect of political actions and rumours. De Long et al. (1989, 1990) show that less informed trading leads to more noise trading resulting in an increase in stock price synchronicity. Finally, Morck, Yeung and Yu (2000) hypothesize that their result could be because in countries with low levels of investor protection relative to corporate insiders, results in less informed trading leading in higher co-movement in stock prices.

Support is provided only for the last two hypotheses upon further examination. Li, Morck, Yang and Yeung (2004) find similar evidence with Morck et al. (2000) relating to a number of emerging markets. More specifically, they show that higher firm-specific variation is associated with greater market capital openness and good government integrity.

Along the same lines, Durnev, Morck, Yeung and Zarowin (2003) investigate whether firm-specific returns variation is associated with more or less informed stock prices. Stock price changes are the main communication tool of stock markets used in order to signal actions for more efficient investment decisions and the reallocation of resources. In other words, if stock prices were fully informative and therefore closer to fundamentals, capital would be more correctly priced and managers could take more efficient investment decisions as they could get better feedback from stock price changes.

Information can force prices closer to fundamentals through a revaluation process following the announcement of public news and through the incorporation of private information which is collected and possessed by arbitragers. Durnev, Morck, Yeung and Zarowin (2003) also adopt Roll's (1988) R^2 approach to study stock price informativeness. They find a positive relationship between current returns and future earnings for firms with low price synchronicity (high price informativeness). This finding suggests that information about future earnings is currently incorporated in stock prices. Their overall conclusion suggests that high stock price variation is linked with higher price informativeness.

Durnev, Morck and Yeung (2004) also attempt to examine whether there is any relationship between capital investment decisions and stock price informativeness and whether informative stock prices indeed lead to more efficient decisions. To measure investment efficiency, they employ the Tobin's q ratio. For price informativeness, Durnev et al. (2004) choose to use stock price return variation. Their empirical findings also support the notion that return variation is triggered by the trading of investors who possess private information. They adopt the reasoning of Grossman and Stiglitz (1980) who claim that a lower cost of private information acquisition leads to more informative stock prices. Additionally, they are in favour of the findings supported by previous literature (Roll (1988), Morck et al. (2000), Durnev et al. (2001), Bushman et al. (2004)) which associate high stock return variation with trading on private information. Their main findings support that stock return variation is mainly due to stock price private information rather than frenzy noise and is more accurately reflected in stock prices whilst their results also show that more informative stock prices enhance more efficient corporate investments.

Lin and Myers (2006) try to explain the findings of Morck, Yeung and Yu (2000), which support that R^2 is higher in countries with less developed financial systems and poor corporate governance. They suggest that variations in investor's property rights could explain the relationship between R^2 and financial development.

However, Jin and Myers (2000) claim that investors rights do not affect R^2 when there is complete transparency in the firm. They suggest that the lack of transparency between insiders (managers) and outsiders (investors) could explain this phenomenon. Opaqueness of the firm can be both positive and negative. In other words, managers can take advantage of the firm's liquidity and cash flows in good periods but on the other hand they have to bear the downside risk involved of not revealing all information to outsiders. Their findings suggest a negative relationship between R^2 and various measures of opaqueness. Additionally, they also show that high R^2 firms are more likely to experience high sudden negative abnormal returns.

Bushman, Piotroski and Smith (2004) and Wurgler (2000) also discuss the issue of capital allocation in financial markets relative to stock price informativeness. Bushman, Piotroski and Smith (2004) argue that the level of information available to outside investors is of great importance in the success and efficiency of capital allocation within an economy. Financial theories claim that the main importance lies in the fact that information availability reduces information and transaction costs. Despite this fact, they claim that there is a gap in the literature over why there is such variation in information environments around the world. They create a model that incorporates information-systems as a part of corporate transparency. They find that the quality of information systems positively contribute to financial transparency. After accounting for financial and government transparency, they conclude that government transparency is associated with a country's legal regime while financial transparency can be linked to its political economy.

In a related study, Wurgler (2000) argues that signals emanating from financial markets are of great importance in the decision of capital allocation and investment opportunities, especially if these signals include a great amount of firm-specific information. His findings suggest that developed financial markets seem to improve and increase investment in growing industries while the opposite occurs in declining industries. Wurgler (2000) also show a positive relationship between firm-specific information in domestic stock returns and capital allocation efficiency.

Another study which employs stock price synchronicity as a measure of price informativeness is that of Fernades and Ferreira (2008). They examine the effect of the stock price informativeness of non-US companies cross-listing in the US market. They attempt to shed light on the relationship between price informativeness and the impact of cross-listing. They use stock price synchronicity in order to capture firm specific information in stock prices. Their findings suggest that stock price informativeness increases for firms in developed countries while it decreases for firms within emerging markets. The problem with firms in emerging markets can be attributed to the fact that more analysts start following these firms after they have been cross-listed in the US market. Financial analysts usually are associated more with the gathering of industry and market wide information rather than firm specific information.

Veldkamp (2006) develops a model based on investors’ information choices in order to explain stock price co-movements. The acquisition of information is costly depending on the type of information acquired and the type of asset considered. Following the laws of demand and supply, information which exhibits high demand is less expensive than low-demand information. Rational investors buy information for a small group of assets and most of them choose to buy low cost information, which is the same information which the rest of the investor group buys, because they all prefer low-costs. Therefore, this common information about a specific group of assets can also affect the prices of the remaining assets leading to a co-movement among assets in the markets. Veldkamp (2006) shows that stock price co-movement can be driven by rational investors and information markets. Investors are more willing to take advantage of cheap, publicly available information, such as industry or market specific information, leading to greater stock price co-movement and consequently less informative stock prices.

Haggard, Martin and Pereira (2008) examine the effect of voluntary disclosure policy within Veldkamp's (2006) and Jin and Myers's (2006) models. Following Veldkamp's (2006) model, they suggest that if firms decide to voluntarily disclose private information publicly, then it would not be costly for investors to acquire such information. Hence, investors will rely more on firm-specific information rather than market or industry-wide information leading to an increase in price informativeness. According to Jin and Myers's (2006) risk-based model, opaqueness of the firm due to the lack of private firm-specific information between insiders and outsiders can lead to large negative returns. Hence, voluntary disclosure of firm-specific information will increase stock price informativeness leading to less co-movement and fewer market crashes. Haggard, Martin and Pereira (2008), using stock price synchronicity as a measure of stock informativeness, find support for the two theories mentioned above and show that higher voluntary disclosure leads to more informative stock prices.

Another approach that discusses the role of private information, as measured by stock price synchronicity, is presented by Ferreira, Ferreira and Raposo (2008). They examine the relationship between price informativeness and corporate boards. One of the questions they attempt to answer is whether stock price informativeness and the role of corporate boards act as substitutes or complements for one another. They provide two explanations which could justify whether a relationship between price informativeness and the monitoring role of the board should exist. Firstly, the more private information is available, the more efficient the market's monitoring role is. Hence managers avoid taking value destroying projects for their firms in fear of becoming easier takeover targets. With this in mind, managers fear for their own job security and this acts as a deterrent for value-destroying corporate activity. Secondly, besides this fact, high stock price informativeness also enables managers to have more information at their disposal and in turn makes the monitoring role more efficient. On one hand, high price informativeness increases monitoring efficiency but on the other hand the need for board independence declines. Therefore, it is ambiguous over whether or not the information acquisition complements or substitutes monitoring. The authors find a positive relationship between stock price informativeness and members of the boards being absent while they report a negative relationship between firm-specific information and the number of meetings taking place as well as board independence. This evidence clearly indicates that board independence and firm-specific information are substitutes for one another.

5.2.4.2 Market Participants and Stock Price Synchronicity

Piotroski and Roulstone (2004) examine the degree to which trading activities affect stock price informativeness. Stock prices include firm-specific, industry-specific and market-wide information. They suggest that some trading groups in the market, such as insiders, institutional investors and financial analysts, through their trading process are able to change the levels of firm, industry and market-wide information impounded in stock prices as measured with stock return synchronicity. Each different party has a different relationship and affects differently the three types of information included in the stock prices.

Insiders are those parties which possess the most quality information about the firm. They know the risk and opportunities involved in the operations of the firm and therefore there should be a direct link between insiders' trading and flow of firm-specific information into the stock price, eventually leading to more informative stock prices and a reduction in stock price synchronicity.

Institutional investors can affect the flow of information to stock prices according to their role regarding the firm. If they have a large stake in the firm, then they might have a significant amount of private information and will have a stronger motive to ensure better monitoring of the firm and its managers. While large trades may be driven by the private information possessed by the institutional investor, small trading may happen due to liquidation problems or re-balancing issues. Hence, the effect on stock price synchronicity is not as clear as for insiders.

Finally, the literature agrees that financial analysts usually gather information regarding the industry and the market and convey this information through firm-specific earnings forecasts. Therefore, findings suggest that stock price synchronicity increases in response to analysts' trading activities. Conclusively, the role of analysts in the price formation process is to collect and convey firm-specific information and identify common industry-specific information that all firms in the industry share. Overall, Piotroski and Roulstone (2004) also suggest that stock price synchronicity is a good measure to use in order to capture firm and market-specific information.

Similarly, Chan and Hameed (2006) examine the effect of a security analyst on stock price informativeness in emerging markets. In emerging markets, there is a lack of disclosure of firm-specific information and informed trading is discouraged for a number of reasons. The regulatory systems are weak and as a result information disclosure is not obligatory. Within these markets, corporate transparency is weak and many companies are predominantly family-owned. Therefore, the role of the security analyst during the process of information conveyance in these markets is ambiguous. As noted earlier by investigations conducted by Morck, Yeung and Yu (2000), emerging markets suffer from weak property rights protection. Because of this, investors demand for analysts' contributions into the dissemination process of private firm-specific information may be higher. On the other hand, due to the difficulty in collecting such information in emerging markets, the type of information produced by analysts may be more of a macroeconomic quality level. Chan and Hameed (2006) address this issue examining the role of analysts and use stock return synchronicity to capture the amount of firm-specific information included in stock prices. Their findings suggest that more analyst coverage leads to higher stock return synchronicity which is consistent with Piotroski and Roulstone (2004). Additionally, while examining the lead-lag relationship of low and high following firms and stock returns, they find that high analyst-following portfolios lead returns of low analyst-following portfolios. This finding gives support to the fact that market-wide information is incorporated faster in the stock prices of firms which are followed by many analysts. Conclusively, Chan and Hameed (2006) suggest that security analyst information is most relevant to the market-wide component of stock price synchronicity. Along the same lines, Easley, O'Hara and Paperman (1998), Roulstone (2003) and Piotroski and Roulstone (2004) also show that analyst coverage itself is not a good proxy for firm-specific information in stock prices since financial analysts are more closely related to industry and market specific information, deteriorating stock price informativeness.

5.3 Hypotheses Development

The main hypotheses of this chapter are based on the idea that acquisition announcement reflect reaction to news following the announcement of various takeovers is a market overreaction. More specifically, under conditions of information uncertainty, investors are likely to overweight their private information and overreact to takeover announcements.

It has been widely documented in the corporate finance literature that the target firm's listing status plays a significant role in explaining short-term bidder gains from takeover deals. More specifically, takeovers for public target firms generate negative or zero abnormal returns (Jensen and Ruback (1983), Bradley, Desai and Kim (1988), Jarrell and Poulsen (1989), Higson and Elliot (1998)). On the other hand, takeovers for privately-held targets generate positive and significant gains for the bidding firm's shareholders (Hansen and Lott (1996), Chang (1998), Fuller, Netter and Stegemoller (2002), Draper and Paudyal (2006)). It has also been observed that the picture of the short-term bidder gains changes when taking into consideration the method of payment along with the target firm's status. Travlos (1987) shows that takeovers for public targets suffer losses when stock is employed as a means of financing the acquisition. When cash is used to finance the acquisition, bidders obtain insignificant gains.

The difference in bidder gains between the two methods of payment can be explained by the signaling hypothesis which suggests that bidders which use stock to finance their acquisitions are more likely to be overvalued. Chang (1998) proposes that the method of payment used to acquire a potential target firm has the opposite effect for acquisitions for private targets. Stock acquisitions for private targets firm experience the most positive significant returns while cash deals generate lower positive and insignificant gains. The Limited Competition, the Monitoring and the Information Hypothesis can explain this difference[40].

With the review of the existing literature complete, this chapter proposes a behavioral approach based on investor biases to explain short-term market reaction following takeover announcement deals. The hypotheses tested in this work will now be developed.

5.3.1 Investor Biases and Information Uncertainty

Daniel, Hirshleifer and Subrahmanyan (1998) build a model based on investor behaviour biases such as overconfidence and self-attribution bias. They suggest that investors, who are involved in extracting information from various sources, end up overestimating the precision of such information. Investors become even more overconfident about this information, overweight it and subsequently overreact. Daniel et al. (1998, 2001) claim that the predictability of a future return should be higher under conditions of information uncertainty. The reasoning is that individuals become even more overconfident under such conditions. Chan et al. (1996) suggest that the price continuation observed in some cases is because of a gradual market response to information. Motivated by the findings of Chan at al. (1996) and Daniel at al. (1998, 2001), Zhang (2006) suggests that high information uncertainty should generate higher (lower) expected abnormal returns following good (bad) news relative to conditions of low information uncertainty.

We empirically test the above hypothesis in a Mergers and Acquisitions framework. The Myers and Majluf (1984) theory suggests that managers who know that their firm's stock price is undervalued will prefer to finance a potential acquisition with cash while when they know that their stock price is overvalued, they will prefer stock. The signalling hypothesis, as proposed in Travlos (1987), suggests that investors will perceive an announcement of an equity offer for a public target as bad news since they interpret that bidding firm is overvalued. On the other hand, cash offers are perceived as good news about the acquiring firm's intrinsic value. Shleifer and Vishny (2003)

[40] These hypotheses will be further analyzed in more depth later in this section

propose a model in order to explain merger waves. They suggest that bidding firms whose stock is overvalued proceed to takeover using equity as a method of payment. Consequently, acquisitions of public targets paid for with stock can be classified as bad news regarding the bidding firm's true value while those paid for with cash can be classified as good news.

On the other hand, Chang (1998) and Draper and Paudyal (2006) suggest the opposite effect for stock offers for acquisitions for private targets. Investors interpret a stock acquisition for a private target as good news, since the small number of owners of the private firm has stronger incentive to carefully examine the true value of the bidders stock. Therefore, it is highly unlikely that the owner of the privately held firm will accept stock if it is overvalued. Due to the signalling effect, private stock acquisitions can be classified as good news that the bidder stock price is not overvalued.

A cash acquisition for a private firm is usually a positive announcement but does not reveal much information about the bidder's intrinsic value. The acquirer is less uncertain about the potential synergy gains and is confident enough to offer cash. It infers loosely that the bidder is confident as they do not issue equity in order to avoid sharing potential synergy gains with the ownership of the target firm, as would be the case using equity which would result in the creation of blockholders. Therefore, a cash acquisition does not directly reveal information about the bidder's stock value but can in general be classified as a relative positive piece of information.

Following the above discussion, we form the following hypothesis:

H1: Bidding firms subject to high information uncertainty should generate higher abnormal returns for acquisitions for private targets paid for with cash or equity and acquisitions for public targets paid for with cash compared to bidding firms who are subject to low information uncertainty. On the contrary, bidding firms subject to high information uncertainty should generate lower abnormal returns for acquisitions for public targets paid for with equity compared to bidding firms who are subject to low information uncertainty.

The differences in the method of payments as proposed by the literature are likely to be driven by the market overreaction for bidders for which there is high information uncertainty. Therefore, we propose the following hypothesis:

H2: Cash acquisitions should be fundamentally different from stock acquisitions for private or public targets only under conditions of high information uncertainty. Cash acquisitions should not be fundamentally different from stock acquisitions for private or public targets under conditions of low information uncertainty.

5.3.2 Information Uncertainty and Private Information

In the literature which discusses investor biases (Daniel et al. 1998, 2001), much emphasis is given to private information. Daniel et al. (1998) claim that investors are overconfident and overweight the precision of their private information but do not do so for public signals. Zhang (2006) reports that he does not incorporate measures of private information and recommends that further research is required. This work extends the previous literature and moves a step ahead by employing private information in the empirical analysis.

Stock price synchronicity (R^2), introduced by Roll (1998) as measure of private information, is employed in this work. Roll (1988) suggests that stock price changes are due to market-wide, industry and firm-specific information. A low R^2 indicates that the price changes are triggered by private information. This measure has been widely used in the literature to test or capture private information. Specifically, Chen, Goldstein and Jiang (2007) employ stock price synchronicity to measure the level of private information incorporated into stock prices in order to examine whether managers learn from the market and to investigate whether their decisions are consequently influenced from this information, resulting in an impact on the investments undertaken. A great number of studies also employ synchronicity as a measure of private information, such as Morck, Yeung and Yu (2000), Li, Morck, Yang and Yeung (2004), Durnev, Morck, Yeung and Zarowin (2003), Fernandes and Ferreira (2008, 2009), Jin and Myers (2000), Haggard, Martin and Pereira (2008), as documented earlier in the literature review.

With this in mind, the following two hypotheses are also formed:

H3: Under conditions of high information uncertainty, low synchronicity bidding firms for acquisitions of private targets paid for with cash or equity, as well as acquisitions for public targets paid for with cash, will generate the highest positive abnormal returns while acquisitions for public targets paid for with equity will generate the lowest negative abnormal returns.

H4: There will be no market reaction following any type of acquisition (private cash, private stock, public cash or public stock) announced by high synchronicity bidding firms under conditions of low information uncertainty.

5.4 Data and Methodology

5.4.1 Data

5.4.1.1 The Sample

The sample consists of takeover announcement deals undertaken by UK bidding firms for the period between 01/01/1985 and 31/08/2009. The announcements were collected by Thomson One Banker. To be included in our final sample, the deals need to meet the following criteria:

- The acquirer is a U.K. firm publicly traded on the London Stock Exchange (LSE) with five days of return data available around the announcement date of the takeover as well as available data for one to three years returns from the DataStream database.
- The target company is either a listed or unlisted company and can be a domestic or a foreign company.
- The acquiring firm purchases at least 50% of the target's shares.
- The deal value is £1 million or more.
- The deal value represents at least 1% of the market value of the acquirer.
- Multiple deals announced within a 5 day period are excluded.

- o Financial and utility firms, for both bidders and targets, are excluded from the sample (Fuller, Netter and Stegemoeller (2002)).

After excluding deals that do not meet these criteria, our sample comprises of 7019 deals.

5.4.1.2 Sample Characteristics

Table 5.1 illustrates summary statistics for the number of takeovers as distributed by year for the period 1985 to 2009. Panel A shows the distribution for the whole sample, according to the synchronicity of the bidding firm. Panels B, C, D and E present acquisition distributions by synchronicity and information uncertainty as well as a combination of the two for the age, size, sigma and trading volume proxies respectively.

[Insert Table 5.1 about here]

We notice a gradual increase in mergers from the beginning of the sample period (1985) and an overpopulation of takeover activity at the end of 1990s. This is consistent with the late 90s merger wave. Regarding synchronicity, we observe that until 1995, the stock returns of bidding firms were more synchronous with market movements while after 1996, low synchronicity firms outnumber high synchronicity ones. Morck et al. (2000) find that stock returns move more synchronously in developing countries than in developed ones. The UK market is one of the most developed markets in the world but in the late ’80s and early ’90s, it appears to display developing characteristics. Aside from this, the economic growth and the wider use of internet services at the late ’90s seem to have allowed for more informative prices since investors have more and more means by which to collect private information. Finally, with respect to information uncertainty, on average, we observe a higher inclination towards low uncertainty bidders in the beginning of the sample period, while this changes after 2000-2001. Probably, after the 1999-2000 dot-com bubble, investors started feeling more uncertain about the true value of the bidding firms and this is reflected in the statistics compiled.

Table 5.2 presents the number of acquisitions, the mean (median) market value of the bidder and transaction value for the whole sample. It also stratifies bidders according to the target status (private or public), method of payment (cash or stock), information uncertainty (high or low) and synchronicity (high or low) of the deal(s) undertaken.

[Insert Table 5.2 about here]

The bidder's market capitalization is measured as the price per share one month prior to the bid multiplied by the number of shares outstanding. The transaction value shows the target firm size. In Panel A, for the whole sample the mean (median) size of the acquirer is 1,255.83 (130.22) million pounds while for target firms, the respective mean (median) is 197 (11.7) million pounds. This evidence shows the large difference in size between bidding and target firms. This can mainly be attributed to the fact that the UK M&A market is overpopulated by acquisitions for privately held companies. Acquisitions for private targets amount to 4,058 deals in the sample analysed while public targets comprise only 713, which represents only 10% of the entire sample[41]. The picture of the overall sample regarding the distribution of private versus public deals is consistent with the evidence presented by Draper and Paudyal (2006) and Faccio and Masulis (2005). On average, the findings remain similar and can be considered robust as shown in Panels B, C, D and E for the information uncertainty proxies. Table 5.3 presents summary statistics for the synchronicity measure of R^2 for the different portfolios according to the method of payment and the target status for the entire sample and for the subsample as they have been classified by the four proxies for information uncertainty. Low R^2 indicates that the firm move less synchronously with the market and therefore it is more likely that investors possess private information for it. Findings show that the average R^2 is the highest for the public cash portfolio and the lowest for the private stock ones. Furthermore, we observe that high information uncertainty firm experience on average lower synchronicity, which is consistent among all four proxies for information uncertainty. That shows that investors seek to collect and acquire more private information for firms that they feel more uncertain about its

[41] Our sample consists of private, public and subsidiary acquisitions. The reason for including subsidiaries was to increase the sample size so as to allow for high versus low uncertainty or synchronicity deals to be more normally distributed. The presentation and analysis of subsidiary firms do not serve the purposes of this study.

true value while for low uncertainty firms more public information is available and the need to look for private information is lower.

[Insert Table 5.3 about here]

5.4.1.3 Measures for Information Uncertainty

Age is the first proxy used to capture information uncertainty. Literature suggests that the younger the firm, the higher the amount of uncertainty there is regarding the firm's value (Zhang (2006), Jiang, Lee and Zhang (2004), Barry and Brown (1985)). Young firms are associated with a lower amount of information dissemination. Age is measured as the difference between the date of incorporation of the firm and the date of the announcement of the acquisition.

Size is the second proxy employed to capture information uncertainty about the bidder's value. Small firms are less likely to disclose a lot of information and are less diversified than larger firms. However, small firms also have a lower number of suppliers, investors and customers and therefore the accessibility of information can be more difficult. Hence, small size firms are more likely to be associated with a higher degree of information uncertainty (Zhang (2006)). Size is measured as the Market Value (MV) of the bidding firm 20 days before the announcement of the acquisition.

Sigma is the third measure employed to measure information uncertainty. Bidders with high return volatility are more likely to exhibit uncertainty about their true value (Zhang (2006), Jiang, Lee and Zhang (2004)) than those with more stable operations. Sigma is measured as the daily bidder excess returns 200 days before the announcement of the acquisition.

Trading Volume is the fourth and last proxy used within this work. It is employed in order to capture information uncertainty. Low trading volumes suggest that a lower number of investors, and therefore less trading activity, are associated with the firm. Trading Volume is measured as the average trading volume of the bidder 12 months prior to the announcement of the acquisition.

5.4.1.4 Measures for Private Information - Stock Price Non(Synchronicity)

The measure used to capture private information is stock price (non)synchronicity. This measure was initially introduced by Roll (1988) and then further developed by Morck, Yeung and Yu (2000), Durnev, Morck, Yeung and Zarowin (2003), Durnev, Morck and Yeung (2004) and Chen, Goldstein and Jiang (2007). The main concept is based on the correlation of the firm's stock returns with the market and the industry returns. When the firm's stock returns are highly correlated with the market or industry, then it is less likely that the firm's stock price will include or convey firm-specific information. Hence, a lower correlation between the firm's stock returns with the market and industry returns could suggest that the firm's stock price is more likely to include a higher amount of private information. More specifically, Roll (1988) shows that this measure has lower correlation with public information and is more likely to capture private information. Roll (1988, page 564) writes that '*the financial press misses a great deal of relevant information generated privately*'.

This investigation follows Chen, Goldstein and Jiang (2007) to measure stock price synchronicity. The variation of stock returns can be decomposed into the following components - market-wide variation, industry-specific variation and firm-specific variation. This work needs to capture the last component of firm-specific variation which can be measure by the R^2 of the following regression:

$$r_{i,j,t} = \beta_{i,0} + \beta_{i,m}\ r_{m,t} + \beta_{i,j}\ r_{j,t} + \varepsilon_{i,t}$$

where $r_{i,j,t}$ is the return of bidder i in industry j at time t, $r_{m,t}$ is the market return at time t and $r_{j,t}$ is the return of industry j at time t. To construct this regression, weekly returns for a period of 24 weeks (6 months) before the announcement of the acquisition are used.

5.4.2 Methodologies

5.4.2.1 Short-Run Event Study Methodology

To calculate the acquiring firms' performance and identify the short-run impact of information uncertainty and private information, we employ standard event study methodology (Fuller et al (2002)) to calculate the Cumulative Abnormal Returns (CARs) for a five-day period (-2, +2) around the announcement date, as provided by Datastream. We estimate abnormal returns using the modified market model:

$$AR_{i,t} = R_{i,t} - R_{m,t}$$

Where $AR_{i,t}$ is the excess return of bidder i on day t; $R_{i,t}$ is the return of bidder i on day t measured as the percentage change in return index including dividends of bidder i; and $R_{m,t}$ is the market return estimated as the percentage change in FT-All share Index (value weighted) on day t. The CARs are calculated as the sum of the Abnormal Returns ($AR_{i,t}$) for the five days surrounding the announcement of the bid as per the following equation:

$$CAR_i = \sum_{t=-2}^{t=+2} (R_i - R_m)$$

T-statistics are used to test the null hypothesis that the mean CAR is equal to zero for a sample of n firms is as follows:

$$t_{CAR_i} = \frac{\sum_{i=1}^{i=n} \frac{CAR_{i,t}}{n}}{\left(\sigma\left(\sum_{i=1}^{i=n} \frac{CAR_{i,t}}{n} \right) \Big/ \sqrt{n} \right)}$$

Where $CAR_{i,t}$ denotes the sample average, and $\sigma(CAR_{i,t})$ denotes the cross-sectional sample standard deviations of abnormal returns for the sample of n firms.

We do not report the t-statistic in tables but the p-value instead. The p-value provides a sense of strength of the evidence against the null hypothesis. The lower the p-value, the stronger the evidence that the mean CAR is different from zero.

To further enhance our choice of using the event window of -2 to +2 days surrounding the acquisition date, we calculate Abnormal Returns for a period of -10 to +10 days around the acquisition date (Table 5.4, Panel A). Our results in Panel A of Table 5.4 show that Abnormal Retruns are significant for days -2, -1, 0, +1 and +2. That indicates that there is some lickage of information 2 days before the event and some delay of information incorporated in the stock price 2 days after the event. Therefore, the event window (-2,+2) suggested by Fuller et al. (2002) is the most appropriate one to be used in our study as well.

5.4.2.2 Long-Run Methodology

To examine the long-run abnormal stock returns, we employ the 12- and 36-month buy-and-hold abnormal return (BHAR) approach advocated by Barber and Lyon (1997). The BHAR is computed as:

$$BHAR_i = \prod_1^T (1 + R_{it}) - \prod_1^T (1 + R_{mt})$$

where R_{it} is the monthly return for company i and R_{mt} is the monthly return of the market index. Following Lyon, Barber and Tsai (1999), the skewness adjusted bootstrap t-statistics procedure is employed to compute the statistical significance of the abnormal returns.

5.5 Empirical Findings

This section presents the short-run, multivariate and long-run findings of our analysis. We split the sample according to the target firm public status (private or public) and the method of payment (cash or stock). To test for the hypotheses set, deals are divided according to the uncertainty of the bidding firm for the four proxies calculated as well as by stock price synchronicity.

5.5.1 Short-Run Analysis

In this section, we examine the five day cumulative abnormal returns (CARs) measure around a small window (-2, +2) surrounding the announcement of the acquisition date.

Table 5.4, Panel B presents the overall picture of the entire sample. The sample consists of 7019 deals which generate 1.46% abnormal returns in the short-run period. The positive and significant gains of the overall sample are mainly driven by the vast majority of acquisitions for private deals which experience positive and significant gains (1.69%) relative to the negative and insignificant abnormal returns of acquisitions of public targets. Consistent with Chang (1998), acquisitions for private targets paid for with stock enjoy highly positive and significant gains (3.60%) relative to the positive gains of those paid for with cash (1.13%). The difference between stock and cash acquisitions for private targets is 2.47%, statistically significant at the 5% significance level. Conversely, in accordance with Travlos (1987), acquisitions for listed companies financed with equity suffer high losses (-2.04%) while those financed with cash generate positive abnormal returns (0.95%). The difference between cash and stock deals (2.99%) is also statistically significant at the 1% significance level.

[Insert Table 5.4 about here]

5.5.1.1 Bidder Gains under Information Uncertainty Conditions

The purpose of this section is to investigate whether investor biases are enhanced under conditions of uncertainty which therefore results in a market overreaction following takeover announcements. We present abnormal returns for high information uncertainty (High IU) versus low information uncertainty (Low IU) bidders for various types of acquisitions as divided by the target firm status and the method of payment used to finance the takeover. Age, size, sigma and trading volume of the acquiring firm are the four proxies employed to capture information uncertainties.

5.5.1.1.1 Bidder Gains by the Age of the Bidding Firm

Table 5.5 presents five day CARs for bidding firms as per the age of the bidding firm. High IU refers to young bidding firms for which investors are more likely to be uncertain about their value while Low IU refers to older bidding firms for which investors are more likely to have more information about the firm’s true value. Table 5.5, Panel A shows that bidders subject to High IU generate higher gains (1.81%) than those who suffer from Low IU (0.97%) and their difference is statistically significant.

To examine the source of the effect, the sample is split by deals for private target firms (Panel B) and those for public target firms (Panel C). Furthermore we control for the method of payment used to finance the takeover.

In Panel B, for the overall sample, acquisitions for private targets generate 1.70% abnormal returns around the announcement of the deal, which is driven by the superior performance observed for acquisitions financed with stock (3.61%) versus those financed with cash (1.14%). This difference is statistically significant and consistent with Chang (1998). As has been discussed in the earlier hypotheses development, private stock deals signal good news for the value of the bidding firm. We observe that the highest gains are obtained by bidders of private stock acquisitions when there is high information uncertainty (4.85%). When information uncertainty about the bidding firm value is lower, the market reaction to the announcement of such deals is also correspondingly significantly lower (1.56%) and the difference (3.29%) is marginally significant at the 10% significance level. Similar results are obtained for private cash deals. Private cash acquisitions are positive signals for the market but not as positive as those deals financed with equity. Therefore, the market reaction to the announcement of such deals is also more positive when there is high information uncertainty (1.51%) than when uncertainty is lower (0.57%). The difference is also statistically significant at the 5% significance level. The findings thus far are consistent with the first hypothesis outlined in Section 5.3.1 and the hypothesis presented by Zhang (2006). Investors seem to underreact to a higher degree when there is higher information uncertainty and produce relatively higher abnormal returns following good news.

[Insert Table 5.5 about here]

Panel C illustrates bidder announcement abnormal returns for acquisitions of public target firms. For the overall sample, public deals generate negative and insignificant gains (-0.46%) mainly driven by the negative performance of stock deals (-2.09%) relative to the positive gains from public cash acquisitions (0.97%). The difference between cash and stock deals is statistically significant (3.05%) and consistent with the findings of Travlos (1987). Similar to the evidence observed for private acquisitions, public cash deals also signal relatively good news that the bidder is not overvalued.

Therefore, acquisitions for high information uncertainty bidders generate higher abnormal returns (1.77%) relative to those which are subject to lower uncertainty (0.62%). This evidence is also consistent with Zhang (2006) and shows that investors generate higher returns following good news under conditions of high information uncertainty. The negative market reaction to public stock acquisitions (-2.09%) becomes even more negative (-3.62%) when investors are ambiguous about the bidding firm value while the market reaction is economically and statistically insignificant (-0.12%) when there is not much uncertainty about the firm's value. The difference is 3.50%, statistically significant at the 5% significance level. It is clear that the negative performance of public stock acquisitions is driven by announcements for high information uncertainty bidders. This indicates that under conditions of greater information uncertainty, investors underreact and produce relatively lower abnormal returns following bad news. This evidence is also consistent with Zhang's (2006) theory.

The initial difference in the overall sample for public targets between cash and stock deals, which is 3.05% (statistically significant at 1% significance level), increases by almost 2.50% and becomes 5.40% (statistically significant at the 1% significance level) when investors are ambiguous about the firm's value (Table 5.5, Panel C). This is driven by a more positive market reaction for public cash acquisitions (1.77%) and a more negative reaction for public stock deals (-3.62%), under conditions of high information uncertainty about the firm's value. On the contrary, when uncertainty is lower, the market reaction is more complete regarding the two types of financing and the difference is only 0.74%, statistically insignificant. The evidence shows that Travlos' (1987) findings are driven by, and hold only for, firms for which investors are ambiguous about their true value. Similarly, in Table 5.5, Panel B, it can be observed that the same pattern regarding the methods of financing an acquisition holds also for takeovers of private targets as well. Chang (1998) suggests that acquisitions for private targets paid for with cash are fundamentally different than those paid for with equity. The findings here support this evidence (-2.47%, statistically significant at the 5% significance level). However, this difference is driven by deals announced by value ambiguous firms due to the very positive market reaction to private stock deals (4.85%). In short, the difference for takeovers of private targets between cash and stock deals is 3.34%, statistically significant at the 10% significance level, under conditions of high information uncertainty while this difference is statistically insignificant (1.00%) under conditions of low information uncertainty.

Conclusively, the results support the first two hypotheses. They indicate that under conditions of information uncertainty, investors react more positively following good news (private cash, private stock, public cash acquisitions) and more negatively following bad news (public stock acquisitions). In addition the results indicate that the findings of Travlos (1987) and Chang (1998) regarding the method of payment in takeovers hold only when investors are ambiguous about the firm's value. When they are not, there is no statistical difference observed between cash and stock acquisitions for a private or a public target firm.

5.5.1.1.2 Bidder Gains by the Size of the Bidding Firm

For robustness reasons, we use various measures to capture value ambiguity about the firm's value. Our second measure is the size of the acquirer. The smaller the firms size, the higher the probability that the firm releases less information. Table 5.6 shows bidder abnormal returns for high and low information uncertainty bidding firms by using the proxy of the bidder's size. Table 5.6, Panel A shows that bidders subject to high information uncertainty gain 2.50% around the announcement of the takeover while those subject to low information uncertainty enjoy small positive gains of 0.67%. The difference (1.83%) is statistically significant at the 1% significance level. When controlling for target status and the method of payment, we observe that the higher gains for value ambiguous firms are driven by takeovers for private target firms paid for with stock (5.09%). Table 5.6, Panel B shows that private stock deals generate 3.57% more gains, statistically significant at the 1% significance level, under conditions of high relative to low information uncertainty about the bidding firm's value. Similar results are obtained for private cash (Panel B) and public cash (Panel C) takeovers, which enjoy 1.81% and 1.79% more gains respectively when subject to high rather than low information uncertainty. On the other hand, the market heavily punishes takeovers for public targets paid for with equity (-3.33%) when investors are ambiguous for the bidding firm's value. This evidence provides extra support to our first hypothesis.

Under information uncertainty, investors react more positively following good news (private and public cash deals) while they react more negatively following bad news (public stock deals).

[Insert Table 5.6 about here]

In Table 5.6, Panel C we also observe that the difference between takeovers for public targets paid for with cash outperform those paid for with equity by 2.99%, statistically significant at the 1% significance level, consistent with Travlos (1987). However, this difference is mainly driven by takeovers announced by value ambiguous bidders. Under conditions of information uncertainty investors react even more positively to cash acquisitions and even more negatively for stock acquisitions of public targets. This results in a huge difference between the two different methods of payment (5.77%, statistically significant at the 1% significance level). On the contrary, the difference becomes smaller (1.46%) and insignificant for less value ambiguous bidders that announce takeovers of public target firms when paid for with cash or stock. The same pattern appears for takeovers of private targets as well (Panel B). The difference between stock and cash deals is statistically significant only under conditions of information uncertainty (2.79%) while this difference declines (1.03%) and is statistically insignificant when comparing bidders for which investors are less uncertain about their true value.

Overall, our findings give support to the first two hypotheses. Firm size as a proxy for information uncertainty produces the same results and conclusions as those presented when using the age proxy for information uncertainty. Our results shed light in explaining some of the reasons of the outperformance of small firms as presented by Moeller, Schlingemman and Stulz (2004). They suggest that overall, small firms gain almost 2% more than large firms, attributing this difference to hubris and overpayment of large firms. We suggest that a possible reason for small firms' outperformance could be due to information uncertainties raised around the firm's value and investors' overreaction to such uncertainties.

5.5.1.1.3 Bidder Gains by the Sigma of the Bidding Firm

A third measure used to proxy for information uncertainty is the stock price volatility or Sigma of the bidding firm. The higher the sigma, then the higher the information uncertainty present regarding the firm's true value. Results are presented in Table 5.7 and are highly consistent with those presented by the two previous proxies (age and size). More specifically, Table 5.7, Panel A shows that in the overall sample, value ambiguous bidders generate higher short-run abnormal returns than less value ambiguous bidding firms. The same pattern presented above holds for this proxy as well. The outperformance of acquirers subject to high information uncertainty is driven by private stock (4.52%), private cash (1.81%) and public cash (1.94%) deals that outperform those whose value is less ambiguous by 2.24%, 1.19% and 1.90% respectively. Conversely, bidders subject to high information uncertainty who bid for public target firms paid for with equity (-4.10%) underperform by 3.71% those subject to lower uncertainty (-0.39%). All the differences (apart from private stock acquisitions) are statistically significant at the 5% and 10% significance levels. The results obtained, by using stock volatility as an information uncertainty proxy, provide further support to the hypothesis that under conditions of information uncertainty, the market reaction is more positive following private or public cash acquisitions (good news) and more negative following public stock acquisitions (bad news).

[Insert Table 5.7 about here]

We also observe that gains between cash and stock offers are statistically significant only when we compare deals announced by value ambiguous acquiring firms. More specifically, stock offers outperform cash offers for private firms by 2.71%, statistically significant at the 10% significance level, under conditions of high information uncertainty while this difference decreases (1.66%) and becomes statistically insignificant under conditions of low information uncertainty. The method of payment effect is even more pronounced for acquisitions of public targets. More specifically, cash acquisitions for public targets outperform those financed using stock by 6.04%, statistically significant at the 1% significance level, when investors are uncertain about the bidding firm true value, while this difference disappears (0.43%, statistically insignificant) when investors are more assured about the firms' value. Overall, the stock volatility as a proxy for information uncertainty offers the same pattern in our results and provides further support to our hypotheses.

5.5.1.1.4 Bidder Gains by the Trading Volume of the Bidding Firm

Finally, we employ trading volume as a forth proxy for information uncertainty. Table 5.8 presents five day CARs for bidding firms that are subject to high and low information uncertainty as proxied by the trading volume of the bidding firm as an average of 12 months before the announcement of the acquisition. Table 5.8, Panel A depicts that high information uncertainty bidders generate positive and significant abnormal returns (2.17%) which is 1.33% more than the gains obtained by low information uncertainty bidding firms (0.85%). The difference is also statistically significant at the 1% significance level. The same story holds for this proxy as well, with some minor deviations. In Panels B and C, under conditions of information uncertainty, the market reacts the most positively following the announcement of a private stock (3.47%), private cash (2.45%) and public cash (3.27%) acquisition while the market heavily punishes public stock deals (-6.43%). However, the market's reaction is more complete when there is lower uncertainty about the bidder's value apart from the case of private stock acquisitions. Once again, most of the differentials between low and high uncertainty deals are statistically significant apart from private stock deals. These findings provide extra support to the hypothesis that investors react more positively following good news and more negatively following bad news under conditions of information uncertainty.

Furthermore, Panel C shows that the difference between cash and stock acquisitions is 9.70%, statistically significant at the 1% significance level while this difference goes down to 0.63, statistically insignificant for low uncertainty bidders. For the trading volume proxy, both differentials (high and low) are statistically insignificant for private deals (Panel B). Conclusively, the overall picture remains the same apart from some minor deviations.

[Insert Table 5.8 about here]

5.5.1.2 Bidder Gains under Information Uncertainty Conditions and Private Information

Zhang's (2006) hypothesis is inspired by Daniel at al. (1998), whose model suggests that investors are more overconfident about their private information and therefore overweight private information and underreact to public signals. In addition, Daniel et al. (1998) argue that stock return predictability should be more pronounced for high value ambiguous firms for the reason that investors tend to be more overconfident under conditions of information uncertainty. Driven by these arguments, Zhang (2006) suggests that higher uncertainty generates higher abnormal returns following good news and lower returns following bad news. However, Zhang (2006) does not incorporate measures of private information in his empirical analysis and suggests in his own words that his '*evidence leaves the door open*' for such testing. The measure we employ to capture private information is stock price synchronicity. It was initially introduced by Roll (1988) and further developed by Morck, Yeung, and Yu (2000), Durnev et al. (2003), Durnev, Morck, and Yeung (2004) and Chen, Goldstein and Jiang (2006).

Following the predictions of Daniel at al. (1998,2001) and Zhang's (2006) testable hypothesis, we suggest that under conditions of information uncertainty, when investors possess private information, they will react even more positively following good news and even more negatively following bad news. When uncertainty is lower and investors do not possess private information, the market reaction should be complete, that is no reaction should be observed for either good or bad news. The following four sections empirically test this hypothesis in a M&A framework.

5.5.1.2.1 Bidder Gains by the Age and the Stock Price Informativeness of the Bidding Firm

Table 5.9 presents abnormal returns for high and low information uncertainty bidders as well as for those which exhibit high and low synchronicity (HighS and LowS) before presenting the interaction of the two. In Table 5.9, the proxy used to capture information uncertainty is the bidder's age. As noted earlier, the younger the bidder, then the higher the uncertainty there is present about its value. Low stock price synchronicity, as measured during the period of 6 months before the announcement of the takeover, indicates that the stock price of the bidding firm is less synchronous with market returns and therefore investors are more likely to possess private information about the firm. On the other hand, high synchronicity implies that the stock price of the bidder moves more synchronously with the market return and investors are less likely to have collected and less likely to possess private information.

[Insert Table 5.9 about here]

Table 5.9, Panel A shows the bidder abnormal returns for the entire sample. The overall picture indicates that high information uncertainty bidders gain positive and significant abnormal returns around the announcement of the acquisitions (1.95%) relative to low information uncertainty ones (1.02%). The difference (0.92%) is statistically significant at the 1% significance level. Furthermore, bidders whose stock returns were less synchronous with the market before the announcement of the acquisition gain 0.98% (statistically significant at the 1% significance level) more abnormal returns than those whose stock returns were more synchronous with the market index. Under conditions of information uncertainty, abnormal returns increase even more (2.22%) when investors possess private information (low synchronicity) while the acquisition gains go down to 0.53% when there is not much ambiguity and investors have not collected private information. This is a first indication that the market overreacts under uncertainty and even more so when investors possess and overweight their private information. However, it is not wise to draw fruitful conclusions from the picture of the overall sample, which includes acquisitions both for private and public targets which were financed with cash, stock or mixed methods of payment. In the next panels of Table 5.9, we examine separately private, private cash, private stock, public, public cash and public stock deals.

Panel B illustrates bidder abnormal returns only for acquisitions of private targets. The overall picture remains similar with the results presented for the overall sample. High uncertainty bidders (2.17%) outperform those subject to lower uncertainty (1.11%) by 1.06% (statistically significant). Moreover, when investors possess private information, they overreact even more under uncertainty (2.61%) while the market is relatively complete when there is lower uncertainty and investors are less likely to possess private information (0.62%).

The results presented in Table 5.9, Panels C and D for acquisitions of private targets paid for with cash and equity respectively are more insightful. We discussed earlier that acquisitions for private targets paid for with cash signal relatively good news for the bidding firm's value. The market reacts more positively following the announcement of private cash deals when investors are ambiguous about the firm value (1.64%) than when there is more certainty (0.64%). Furthermore, gains to low synchronicity bidders (1.83%) are 1.24% (statistically significant) higher than high synchronicity bidding firms. This implies that investors who are more likely to possess private information overweight this information and react more positively following good news than those who are less likely to have such private information.

After combining the two effects of uncertainty and private information, we observe that investors indeed overweight private information especially under conditions of ambiguity and the market reaction is even more positive and significant (2.43%). On the other hand, when there is less ambiguity about the firm's value, we observe a less positive reaction which declines even more (0.19%) when investors do not possess much private information. The differential between high and low information uncertainty bidders is 1.00%, statistically significant. For the two extreme portfolios of high uncertainty with investors who possess private information versus low uncertainty with investors who have not collected private information, the difference increases to 2.24%, statistically significant at the 1% significance level.

The above evidence is even more pronounced following the announcement of private stock acquisitions (Table 5.9, Panel D). Acquisitions for private targets paid for with stock signal even more positive news for the bidder's value, as has already been discussed. High information uncertainty bidders gain positive and significant gains (5.08%) while low information uncertainty ones obtain only 1.93% insignificant gains. Moreover, high synchronicity acquiring firms (5.75%) enjoy 3.87% more abnormal returns than their low synchronicity counterparts (1.10%). The interaction of the two effects shows that high information uncertainty-low synchronicity bidders gain the highest abnormal returns (6.32%) while low information uncertainty-high synchronicity bidders have marginally positive and highly insignificant abnormal returns (0.49%). The difference between high and low information uncertainty bidders, which was previously 3.15%, is almost doubled (5.83%) when controlling for those who possess and those who do not possess private information. This evidence is consistent with our third hypothesis. Under conditions of uncertainty, investors overweight their private information even more and generate highly positive abnormal returns following good news. On the other hand, when uncertainty is low and the likelihood that investors have collected private information is also low, the market reaction is complete (no abnormal returns).

The analysis of acquisitions for public targets reveals interesting conclusions. Table 5.9, Panel F illustrates abnormal returns for acquiring firms that bid for public targets. All methods of payments (cash, stock and mixed) are included and hence the results are quite inconclusive. When controlling for the method of payment, the effect becomes clearer. Acquisitions for public targets paid for with cash signal that the acquiring firm is less likely to be overvalued (good news regarding the acquirer's value). Once again, gains for value ambiguous acquirers following the announcement of a public cash deals is 2.09%, statistically significant (Panel G). Investors react even more positively (3.85%) when they possess private information and there is ambiguity about the bidder's intrinsic value. This evidence also provides extra evidence to our third hypothesis. On the other hand, gains to low information uncertainty bidders are marginally positive and significant (0.94%) while when there is less ambiguity and investors do not have private information, there are no significant gains (0.84%).

The results presented in Panel H are really interesting since the market reaction is in exactly the opposite direction following public acquisitions financed with stock. The market reaction following the announcement of a public stock acquisitions when there is uncertainty about the bidder value is more negative (-3.87%) than when uncertainty is lower (-0.28%). Low synchronicity bidders that are subject to high uncertainty experience even more negative abnormal returns (-5.89%) following the announcement of an acquisition for a public target paid for with stock while high synchronicity ones for which uncertainty is lower obtain marginally positive and insignificant gains

(0.61%). This evidence implies that under uncertainty, the market reacts negatively following the announcement of bad news and when investors possess private information, they overweight this information and overreact resulting in an even more negative market reaction. On the other hand, when there is lower uncertainty and investors do not possess private information (hence they have no information to overweight or overreact), the market reaction is complete. We also observe that the difference between high versus low information uncertainty bidders is -3.58%, statistically significant and when we control for private information, the difference between the two extreme portfolios (low synchronicity-high uncertainty versus high synchronicity-low uncertainty) is almost doubled (-6.50%). It is positively surprising to notice that despite the small number of observations in the two portfolios, the differential is still highly significant.

Table 5.9, Panels E and I show the differentials between cash and stock acquisitions for private and public targets respectively. In Panel E, we observe that the difference between cash and stock acquisitions for the overall sample is -2.57%, statistically significant, which is consistent with Chang (1998). This difference remains significant only for high uncertainty and low synchronicity bidders. This implies that cash acquisitions are fundamentally different than stock ones only when investors overreact due to information uncertainty or because they overweight their private information. The rest of the differentials are statistically insignificant mainly because both private cash and private stock signal relatively positive and strongly positive news respectively for the bidder’s true value. However, the sample size of the portfolios can be a limitation.

On the other hand, acquisitions of public targets paid for with cash signal good news that the bidder is more likely to be undervalued while those paid for with equity signal bad news since the bidder is more likely to be overvalued. Panel I depicts that the difference between cash and stock acquisitions for public targets is 3.49%, statistically significant. This finding is in support of Travlos (1987). Additionally, this difference increases to 5.96% and 5.07%, statistically significant at the 1% significance level, for high uncertainty and low synchronicity bidders respectively. This is due to the fact that under uncertainty or when investors possess private information, they overreact more positively and more negatively following public cash and public stock announcement respectively and the differences consequently amplify. When controlling for both effects simultaneously, the overreaction is even more pronounced and the difference for low synchronicity-high information uncertainty between the two methods of payment is 9.74%, statistically significant at the 1% significance level (despite the small size of the portfolios). On the contrary, for the portfolio of high synchronicity-low uncertainty, there is statistically and economically no significant difference (0.19%) between cash and stock acquisitions.

Conclusively, greater information uncertainty, when investors are more likely to possess private information, generate the highest abnormal returns following private stock, public cash and private cash acquisitions while the most negative abnormal returns are experienced following the announcement of public stock acquisitions. This evidence suggests that under uncertainty, investors overweight their private information and react very positively following the announcement of good news while the market reaction is very negative following the announcement of bad news. When uncertainty is lower and investors do not possess private information, the market reaction is complete irrespective of the type of the target firm’s public status or the method of payment used.

5.5.1.2.2 Bidder Gains by the Size and the Stock Price Informativeness of the Bidding Firm

Table 5.10 presents the bidder abnormal returns around of the announcement of an acquisition, taking into consideration the bidder’s stock return synchronicity, which is a measure of the private information of the bidder’s stock price, and also the size of the bidder, which is used as a proxy for the information uncertainty present regarding the bidders value.

Table 5.10, Panel A illustrates the abnormal returns for the whole sample. The highest performance is achieved by low synchronicity-high uncertainty bidders (2.72%) while the lowest gains (0.45%) are experienced by high synchronicity-low uncertainty bidders. However, the whole sample included all types of acquisitions, which have already been shown to have different effects and thus it would not be wise to draw fruitful conclusions from Panel A.

The overall picture is similar for acquisitions of private targets (Table 5.10, Panel B) which are generally perceived as a good signal by the market and therefore we notice a positive overreaction especially when there is high uncertainty and investors have collected private information (3.11%). The evidence for acquisitions of public targets is also mixed since both types of method of payment are included in the overall public sample (Table 5.10, Panel F).

[Insert Table 5.10 about here]

To capture the effect of the different types of deals, we split them according to the target status and method of payment as well. Table 5.10, Panel C illustrates bidder gains for private cash acquisitions. High uncertainty and low synchronicity bidders generate 2.66% and 1.83% respectively while low uncertainty and high synchronicity ones experience marginally positive and significant gains of 0.46% and 0.59% respectively. When controlling for both effects simultaneously, we observe that low synchronicity-high uncertainty bidders experience even more positive and significant gains (3.02%) while high synchronicity-low uncertainty ones obtain insignificant gains. Similar and more pronounced results are obtained for private stock acquisitions which serve as a stronger signal of good news for the market (Table 5.10, Panel D). The highest abnormal returns are obtained by low synchronicity-high uncertainty bidders (6.57%) while there is no market reaction (0.76% insignificant gains) for high synchronicity-low uncertainty bidding firms. The differential between these two types of acquirers is 5.81%, statistically significant. The market reaction is also positive (1.14%) following the announcement of public cash acquisitions (Table 5.10, Panel G) which are also perceived as strongly positive news about the acquirer's intrinsic value. Under uncertainty the market reaction is even more positive (3.25%) and when we simultaneously control for investor's private information, we observe positive and significant gains of 4.23%. On the contrary, in the absence of uncertainty and private information, the market reacts less positively (1.12%). The above evidence provides extra support for the hypothesis that investors overweight their private information under conditions of information uncertainty and generate highly positive abnormal returns following the announcement of acquisitions which are more likely to reveal good news about the acquirer's true value.

The opposite effect is observed following the announcement of public acquisitions paid for with equity (Table 5.10, Panel H). Overall, public stock acquisitions generate negative and significant losses (-2.35%) which under uncertainty increase to -3.82% and when we control for private information, the short-run bidder gains go even lower to -4.10%. However, in the absence of uncertainty and private information, acquisition announcements do not generate significant gains. A small anomaly observed in this panel (Table 5.10, Panel H) is that high synchronicity-high uncertainty deals generate -6.18% losses, which could be attributed to the small number of observations in the portfolio (11 deals).

Finally, we test whether cash and stock takeovers are fundamentally different for private and public deals respectively (Table 5.10, Panel E and I). Panel E shows that stock deals significantly outperform cash deals by 2.57% in the sample of takeovers of privately held targets, which is driven by deals announced by value ambiguous acquirers (2.85%) or by low synchronicity acquirers (3.92%). Panel I shows the difference in the methods of payment of public takeovers, which are more pronounced due to the market reaction in different directions for each method of financing the takeover. The differences are large and highly significant for high uncertainty (7.07%), low synchronicity (5.07%), low synchronicity-high uncertainty (8.43%), and high synchronicity-high uncertainty (8.54%). There seems to be no statistical difference between cash and stock deals for low uncertainty acquirers. The findings obtained by employing size as a proxy for information uncertainty also support our hypotheses.

5.5.1.2.3 Bidder Gains by the Sigma and the Stock Price Informativeness of the Bidding Firm

For robustness reason a third proxy is employed to capture information uncertainty about the bidding firm and examine the impact of uncertainty when investors possess private information. We use stock return volatility or sigma of the firm as a third proxy to capture uncertainty. The higher the sigma, the higher the volatility, the higher investors' uncertainty about the acquiring firm. In Table 5.11, Panels A, B and F illustrate bidder abnormal returns for the whole sample, for acquisitions for private and public targets respectively. The highest performance is observed for low synchronicity-high uncertainty bidders for the overall (2.74%) and private (3.12%) sample while marginally positive gains are obtained for high synchronicity-low uncertainty bidders (0.46% for the whole and 0.52% for the private sample). The results are mainly driven by the positive performance of private cash and stock deals. In contrast, the overall performance of acquisitions for public targets seems to be the most negative for low synchronicity-high uncertainty acquirers (-1.58%), mainly driven by the negative performance of stock acquisitions.

[Insert Table 5.11 about here]

The findings are more insightful when controlling for both the target's public status as well as for the method of payment. Table 5.11, Panel C shows the performance of private cash deals for which announcements are perceived as relatively good news about the bidder's real value. The higher the uncertainty, the higher the abnormal returns bidders enjoy (1.77% versus 0.74%). Furthermore, the lower the synchronicity, the higher the returns for bidding firms (1.74% versus 0.61%). The differences in both cases are statistically significant. When the two effects are examined together, the market reacts highly positively for low synchronicity-high uncertainty deals while it is relatively complete for the rest of the combinations. The differential between the performances of the two extreme portfolios (low-synchronicity-high uncertainty versus high synchronicity-low uncertainty) is doubled relative to when the effects where separately examined.

Similar and more pronounced evidence is observed for private stock deals (Table 5.11, Panel D) which are perceived as even more positive news regarding the acquirer value. Low synchronicity–high uncertainty deals generate the most positive returns (6.57%) while when uncertainty is low and bidder's stock price synchronicity is high, there is no market reaction (0.03%). The difference between high versus low uncertainty bidders is 1.26% (insignificant) while between low versus high synchronicity ones it is 4.28%

(significant). When controlling for both effects, the differential goes up to 6.54% (statistically significant). More or less, the picture is similar for public cash acquisitions (Table 5.11, Panel G) which also serve as positive signals for the bidder's value. The above evidence indicates that when there is high uncertainty or when investors possess private information, they overreact following the announcement of private or public cash acquisition (good news) and more over the reaction is highly positive when both effects are taken simultaneously into account. On the other hand, in the absence of uncertainty and private information, there is no market reaction.

The picture is totally reversed following the announcement of public stock acquisitions which are mainly considered to be negative news concerning the bidder's valuation (Table 5.11, Panel H). High uncertainty generates more positive returns following the announcement of public stock deals. The differential between high and low uncertainty acquisitions is -4.35% (statistically significant). However, the results when controlling for private information are inconclusive in this panel (-2.82% for low and -2.37 for high synchronicity bidders). When controlling for both effects, we observe that under uncertainty investors overweight private information (when they possess it) and such deals are heavily punished (-5.52%). On the other hand, lower uncertainty and lack of private information triggers no market reaction.

We also examine the differences in the performance for cash and stock deals. Table 5.11, Panel E presents the differentials between private cash minus private stock acquisitions. They are statistically significant only for the overall sample and for low synchronicity acquirers. This is attributed to the fact that both cash and stock acquisitions for private targets are perceived as good news by the market (stock more positively than cash), and the market moves to the same direction. In Table 5.11, Panel I, the differences are more pronounced between public cash and public stock takeovers. The differences are significant for the overall sample (3.57%, significant), mainly driven by high uncertainty (6.84%, significant) and low synchronicity (5.09%, significant) deals. The highest difference is observed for the low synchronicity-high uncertainty portfolios. Under uncertainty, investors with private information overreact in different directions for cash and stock acquisitions.

Using sigma as a third proxy for information uncertainty, we can conclude that under uncertainty, investors bias increases and they consequently overweight their private information. As a result, investors overreact, generating positive returns following the announcement of private stock, private cash and public cash acquisition while the outcome is totally negative for public stock deals. When uncertainty is low and investors are less likely to possess private information, abnormal returns are economically and statistically equal to zero irrespective of the type of the deal.

5.5.1.2.4 Bidder Gains by the Trading Volume and the Stock Price Informativeness of the Bidding Firm

[Insert Table 5.12 about here]

Finally, trading volume is employed as a forth proxy to examine investors reaction under uncertainty and when they have private information. The big picture is more or less consistent with the finding obtained with the other three proxies. Some minor anomalies are noticed mainly due to the smaller number of observations obtained for the bidding firm's trading volume. In Table 5.12, Panels A, B and F illustrate the bidder's 5 day CARs for the overall, private and public samples respectively. Once again, for more intuitive results, we will focus on the four types of acquisitions, as split according to their public status and method of payment.

Under information uncertainty about the bidder's value, investors' biases are increased and therefore they overweight their private information. As a result, they react positively following the announcement of private cash (2.95%, panel C), private stock (4.23%, panel D) and public cash (2.29%, panel G) acquisitions while under the same conditions, they heavily punish (-6.48%, panel H) public stock deals. On the other hand, in the absence of private information and uncertainty about the bidder's value, the market reaction is more complete. We simply observe very low returns which are mainly statistically insignificant. More specifically, private cash, private stock, public cash and public stock acquisitions generate 0.44% (insignificant), 1.27% (insignificant), 1.12% (significant) and -1.33% (insignificant) abnormal returns around the announcement of the acquisition respectively.

The difference between cash and stock deals for private, as well as cash acquisitions for private (Panel E) and public (Panel I) acquisitions, follow a similar pattern as presented before. The differentials are mainly insignificant for private acquisitions since the market reaction moves towards the same direction for cash and stock offers. Conversely, differences between cash and stock offers for public targets are significantly amplified, especially under conditions of uncertainty, even more so when the effect of private information is also taken into consideration. There are no significant differences when uncertainty is low. Overall this proxy is consistent with the findings obtained from the previous proxies, confirming our hypothesis and offering extra supportive evidence to our theory.

In short, there is consistency amongst all four proxies used for information uncertainty. The main findings suggest that under conditions of information uncertainty, investors overweight their private information and react highly positively following the announcement of private cash, private stock and public cash acquisitions (good news) while the market reaction is highly negative following the announcement of public stock deals (bad news). On the contrary, when investors are less ambiguous about the true value of the bidding firm, in the absence of private information, no market reaction is observed. Furthermore, concerning the findings of Travlos (1987) and Chang (1998) regarding the method of payment used, we suggest that cash deals are fundamentally different from stock deals only under conditions of information uncertainty.

5.5.2 Multivariate Analysis

The univariate analysis clearly shows that under conditions of uncertainty and especially when investors possess private information, they overreact positively following the announcement of private cash, private stock and public cash acquisitions (good news about the bidder’s value) while under the same conditions there is a highly negative market reaction following the announcement of public stock deals (bad news about the bidder’s value). However, the univariate analysis does not take into consideration the multiple effects that can affect short-run bidders’ abnormal returns, and the interaction between these influential factors. For that reason, we adopt a multivariate regression framework where the bidder's five day CARs are regressed on a number of explanatory variables that have been proved in the literature to affect bidder's performance, as per the following equation:

$$CAR_i = a + \sum_{i=1}^{N} X_i + \varepsilon_i$$

In the regressions, we include the following variables: a dummy variable (HighIU) that takes the value of 1 if the deal has been undertaken by a bidder subject to high information uncertainty and zero otherwise; and a dummy variable (LowSynchr) that takes the value of 1 if the deal was announced by a low synchronicity bidder and zero otherwise. We also include interactive variables such as: a dummy variable that takes the value of one if the deal in question was announced by a high synchronicity bidder subject to high uncertainty (HsHia) and zero otherwise; a dummy variable that takes the value of one if the deal in question was announced by a high synchronicity bidder subject to low uncertainty (HsLiu) and zero otherwise; a dummy variable that takes the value of one if the deal was announced by a low synchronicity bidder subject to high uncertainty (LsHiu) and zero otherwise; and finally a dummy variable that takes the value of one if the deal was announced by a low synchronicity bidder subject to low uncertainty (LsLiu) and zero otherwise. The control variables included are the following: a dummy variable that takes the value of one if the takeover target firm was a privately owned firm and zero otherwise; and a dummy variable that takes the value of one if the takeover is finance with cash (stock) and zero otherwise. The private, cash and stock dummy variables are not included in the regressions when we examine the effect of uncertainty and private information solely on private and public takeovers financed with cash or equity. Furthermore, we account for the bidder's market-to-book ratio, as measured by the bidder's market value one month before the announcement divided by the net book value of assets, and the deal's relative size, which is the ratio of the deal value over the bidder's market value. Additionally, we include dummy variables for diversifying and domestic deals that take the value of one if the target firm is involved in an industry different than the bidder's and whether the target is domestically based in the same market as the acquirer respectively and zero otherwise. Lastly, the acquirer's lagged excess return for 180 days prior to the announcement and the market portfolio return (FT-All Share) for the same 180-day period prior to the announcement bid are included.

Table 5.13 presents the correlation coefficients of each pair of variable used in the multivariate analysis. We observe high correlations between the interactive variables HsHiu, HsLiu, LsHiu, LsLiu and the HighIU, LowIU. However, these two variables are not used in the same regression in the multivariate analysis.

[Insert Table 5.13 about here]

Table 5.14 presents the results of the multivariate analysis for the overall sample and for all four proxies for information uncertainty. The coefficient of the HighIU dummy of regression (1) shows that there is a positive and significant relationship between bidder abnormal returns and high uncertainty. In regression (2), the coefficient for LowSynchr dummy is also positive. This evidence indicates that higher bidder abnormal returns are associated with higher uncertainty and higher levels of private information. Similarly, a positive relationship is observed in regressions (7), (8), (13), (14), (19) and (20) for the size, sigma and trading volume proxies respectively. When controlling for the interaction effect, we observe that the High synchronicity-Low information uncertainty (HsLiu) variable is negatively associated with the bidder's five day CARs (regression (3)), while there is a positive relationship between abnormal returns and low synchronicity deals announced by bidders subject to high information uncertainty (regression (4)). In regression (5), we include all 4 combinations of the interaction portfolios to examine whether the effect still holds after controlling for the effect of the rest of the portfolios. The LsHiu dummy exhibits a positive coefficient while the other three have negative coefficients. The most negative relationship is with the HsLiu dummy variable. Finally in regression (6), we include the HighIU, the LowSynchr and the LsHiu dummy to examine how much of the effect can be explained by the interaction variable. The results indicate an insignificant coefficient for the interaction variable while only the uncertainty variable is significant. Similar evidence is presented regarding the other three proxies; age, sigma and trading volume. The findings for the overall sample indicate that the bidder's abnormal returns exhibit a positive relationship with high uncertainty conditions and the existence of private information, even more so when both effects simultaneously exist. Besides, it seems that the effect is mainly driven by the uncertainty factor. The rest of the analysis focusses solely on the various types of acquisitions based on the targets firm's status (private or public) and the method of payment (cash or stock).

[Insert Table 5.14 about here]

Table 5.15 presents the multivariate analysis results for private cash, private stock, public cash and public stock. In Table 5.15, information uncertainty is measured by the proxy of age. The results show that in regression (1), the HighIU dummy exhibits almost a zero coefficient (0.001) for private cash deals which becomes positive in regressions (7) and (13) for private stock (0.031) and public cash (0.031) takeovers respectively. The coefficient of the same dummy is negative (-0.0024) for public stock acquisitions (regression 19). These results confirm the evidence presented so far that the higher the uncertainty, the higher the abnormal returns for bidders that announce private or public cash acquisitions and the lower the gains for those that announce public stock deals. The coefficients of the LowSynchr dummy (regressions (2), (8), (14) and (20)) follow the same pattern with the HighIU dummy. Moreover, there is a negative and significant relationship between the HsLiu dummy and abnormal returns for private and public cash deals (regressions (3), (9) and (15)) while it becomes positive and significant for public stock acquisitions (regression (21)). Exactly the opposite effect is observed for the LsHiu dummy. The coefficient is almost zero for private cash acquisitions (regression (4)), while it becomes more positive for private cash and public stock deals (regressions (10) and (16) respectively). A reversal is observed for public stock deals. The coefficient in regression (22) is negative and statistically significant. The same pattern holds for the two interactive dummy variables (HsLiu and LsHiu) when controlling for all four combinations (regressions (5), (11), (17) and (23)) and whether the effect is driven by uncertainty or private information (regressions (6), (12), (18) and (24)).

[Insert Table 5.15 about here]

Tables 5.15, 5.16 and 5.17 illustrate the multivariate analysis results for the size, sigma and trading volume proxies respectively. The findings are largely consistent with the results presented for the age proxy.

[Insert Tables 5.16, 5.17 and 5.18 about here]

Conclusively, the findings and conclusions of the univariate analysis are further supported by the cross-sectional results. Despite the finding that some coefficients are insignificant, the overall picture suggests a positive relationship between bidder abnormal returns with uncertainty and private information, which is enhanced when the two factors are combined following the announcement of good news regarding the bidder's true value (private or public cash acquisitions). A negative and significant relationship is reported following bad news (public stock takeovers).

5.5.3 Bidder Information Uncertainty, Private Information and Bidders' Long-term Performance

The findings of the short-run analysis show that under uncertainty, investors' biases increase, investor's resultantly overweight their private information and consequently overreact to various takeover announcements generating very positive abnormal returns following the announcement of private cash, private stock and public cash takeovers. Conversely, the market reaction is very negative following announcements for public stock takeovers. On the other hand, there is no market reaction when uncertainty is lower and investors do not have private information. This section aims to investigate the long-run performance of these takeovers and examine whether the initial short-run reaction was simply a market overreaction (reversal and correction in the long-run) or whether it was a rational reaction which keeps holding in the long-run as well. Due to the small number of observations in some portfolios, we employ the Buy-and-Hold-Abnormal Returns (BHARs) methodology.

Table 5.19 illustrates the 1 year long-run performance and Table 5.19 shows the 3 year long-run performance of UK acquirers. Table 5.19, Panel A shows that acquisitions announced by bidders subject to high information uncertainty underperform those announced by bidders subject to lower uncertainty by 6.65% (statistically significant), 8.10% (statistically significant), 4.54% (statistically significant) for the age, sigma and trading volume proxies respectively. There is no significant difference when size is used as a proxy for uncertainty. 3 years after the announcement of the acquisition, bidders suffer higher losses but similar differences are observed between high and low uncertainty acquirers (Table 5.20, Panel A). Differences range from around 6.47% to 16.90%, statistically significant for all four proxies.

[Insert Tables 5.19 and 5.20 about here]

When controlling for private information, we observe no statistical differences between low versus high synchronicity acquirers neither 1 year nor 3 years after the acquisition. Reversals are observed for the extreme portfolios. Low synchronicity bidders subject to high uncertainty seem to underperform high synchronicity ones subject to lower uncertainty by 4.36% to 6.82%, statistically significant for the age, sigma and trading volume proxies. Similar differences with higher bidder losses are observed 3 years after the announcement of the deal (Table 5.20, Panel A). Differences for the size proxy are insignificant.

The long-run results for the overall sample suggest that there is a reversal in bidder gains when controlling for information uncertainty. This is a first indication that in the short-run, investors' biases were high and they resultantly overreacted to the announcement of the takeover acquisition.

Similar findings are presented regarding acquisitions for private targets 1 and 3 years after the announcement of the deal (Panel B, Table 5.19 and 5.20 respectively). High uncertainty bidders seem to underperform low uncertainty ones by a difference which ranges from 4.55% to 11.89% (significant) 1 year after the announcement of the deal (results do not hold for size as a proxy) and 7.00% to 19.26% (significant) 3 years later. On the other hand, low synchronicity investors keep marginally underperforming high synchronicity ones by around 3%, marginally significant at the 10% significance level 1 year after the deal (Table 5.19, Panel B) while we observe small insignificant reversals 3 years after the deal (Table 5.20, Panel B). Mixed evidence is illustrated between low synchronicity bidders subject to high uncertainty versus high synchronicity ones subject to low uncertainty ones. There are small insignificant reversals in the first years following the deal while the reversal increases in magnitude and becomes significant in some cases 3 years following the deal.

Panels C and D show the long-run performance of acquisitions for private targets paid for with cash and stock respectively. More specifically, private cash acquisitions suffer losses 1 year after the announcement and even higher losses 3 years later. More importantly, there are no significant economical or statistical differences between high versus low uncertainty bidders, between high versus low synchronicity bidders or when the two effects are simultaneously taken into account for almost all four proxies used to capture uncertainty. These findings hold both for the 1 year long-run performance (Table 5.19, Panel C) and the 3 year long-run performance (Table 5.20, Panel C) following the announcement of the deal.

The picture for private acquisitions paid for with stock is quite different (Panel D). The results are pretty mixed when controlling for uncertainty. There is no reversal for the age (insignificant) and size (significant) proxies while the other two proxies show insignificant reversals for 1 year following the announcement. The 3 year post-acquisition performance mainly indicates that low uncertainty bidders, although they suffer losses, outperform high uncertainty ones. In contrast, no reversals are observed for low versus high synchronicity bidders. Low synchronicity bidders enjoy positive insignificant gains while high synchronicity ones suffer high losses. The differences between the two types of acquirers are significant for all for proxies 1 year after the deal. The 3 year post acquisition performance shows the same picture and the difference remains statistically significant for all 4 proxies as well. The picture remains similar when controlling for the difference in long-run performance between low synchronicity-high uncertainty versus high synchronicity-low uncertainty deals mainly driven by the synchronicity effect.

This evidence suggests that investors who possess private information about the acquiring firm (low synchronicity) may be more effective in valuing the outcome of the acquisitions and therefore their short-run reaction is a rational one indicating that indeed private stock acquisitions do create or destroy less value both in the short and long-run for the bidders;' shareholders.

Panel E presents BHARs for acquisitions of public targets. The main findings suggest that bidders subject to high uncertainty suffer higher losses than those subject to lower uncertainty. The differences between the two groups are statistically significant and seem to hold for all 4 proxies, both for 1 year and 3 years following the announcement of the deal. However, no statistical or economical difference is observed when controlling for high versus low synchronicity bidders.

Panels F and G present BHARs for public targets paid for with cash and with stock. In terms of cash payment, low uncertainty acquirers outperform high uncertainty acquirers (a reversal compared to short-run), low synchronicity bidders outperform high synchronicity bidders (no reversal compared to short-run) and there is no large differences between the two extreme portfolios when both uncertainty and private information are taken into consideration (LsHiu vs. HsLiu). We have to note that all the above differences for almost all four proxies, both 1 and 3 year after the acquisition, are statistically insignificant.

Finally, the most interesting result from Panel G which illustrates the long-run performance of public stock acquisitions is that high uncertainty bidders keep underperforming low uncertainty ones as was presented and discussed in the short-run analysis. The 1 year post merger performance (Table 5.19) displays a statistical difference which ranges from 16.21% to 22.77%. The evidence is quite mixed among the four proxies for the 3 year post-merger performance. When controlling for private information or for its combination with information uncertainty, no statistically significant differences are obtained.
In conclusion, the main findings drawn from the investigation of the 1 and 3 year long-run performance is that regardless of any uncertainty or private information effects, bidders suffer losses 1 year following, and even higher losses 3 year after, the announcement of the acquisition.

More specifically, regarding information uncertainty, the initial positive outperformance of acquisitions announced by bidders subject to high versus those subject to low information uncertainty is mainly reversed, apart from public stock deals. For public stock acquisitions, high uncertainty bidders underperformed low uncertainty ones and they keep underperforming in the long-run as well. Hence, irrespective of the type of the acquisition, high uncertainty regarding the bidder's value around the announcement of the deal destroys more value in the long-run than bidders subject to lower uncertainty. Regarding private information, as captured by synchronicity, in most of the cases there is either no statistical differences or low synchronicity acquirers keep outperforming as they did in the short-run. This is an indication that investors who possess private information about the bidding firm proceed to more accurate and rational valuation decisions around the announcement date, which remains true in the long-term as well. Due to the above contradictory long-run outcomes, the comparison of the two portfolios where both effects are taken into account does not lead to many economical and statistical significant differences.

5.6 Conclusion

This chapter has examined the market response to takeover announcements. We adopt a behavioural approach to UK mergers and acquisitions under conditions of information uncertainty and private information. More specifically, we examine short and long-term bidder gains controlling for information uncertainty and investor's private information in the surrounding environment of the bidder. We define information uncertainty as ambiguity present regarding the bidding firm's intrinsic value. To capture information uncertainties, we employ four proxies, namely the age, size, sigma and trading volume of the bidding firm. To measure whether investors are more or less likely to possess private information, we use stock price synchronicity as introduced by Roll (1988) and further extended by Morck et al. (2000) and Chan et al. (2006).
The main findings suggest that bidders subject to high information uncertainty generate higher abnormal returns relative to low information uncertainty bidding firm's following the announcement of private acquisitions paid for with cash and equity and for public targets paid for with cash, while the opposite effect is observed for public acquisitions paid for equity.

Furthermore, when we control for private information, high information uncertainty deals generate stronger positive abnormal returns for private cash and stock and public cash deals, and even more negative returns for public stock takeovers. When uncertainty is lower and investors are likely to possess private information (high synchronicity), zero economical and statistical abnormal returns are obtained.

This evidence is consistent with Daniel et al. (1998, 2001) who suggest that investors are overconfident and overreact to public announcements under conditions of uncertainty. Furthermore, they claim that investors, due to self-attribution bias, become even more overconfident about their private information and overreact even more. Consequently, under uncertainty, investors with private information react highly positively following the announcement of good news (private cash, private stock, public cash deals) while they react very negatively following the announcement of bad news (public stock deals). When there is low uncertainty and investors do not possess private information, the market reaction is complete.

We also show that the findings of Travlos (1987) and Chang (1998) for the method of payment in public and private acquisitions respectively hold only under conditions of information uncertainty. In other words, public and private acquisitions paid for with cash are fundamentally different from those paid for using equity only under conditions of high information uncertainty. The statistically significant differences are mainly driven by the investor's overreaction to high uncertainty deals. This difference is amplified even more when controlling for private information but only for acquisitions of public target firms. The reasoning offered is that public cash deals are considered as good news while public stock deals are signals of bad news and therefore the market overreacts in opposite directions.

Additionally, we provide a different approach regarding size as determinant factor of takeover bids. Moeller, Schlingemman and Stulz (2002) show that small bidding firms generate on average 2% higher abnormal returns relative to larger bidding companies. We use size as a proxy for information uncertainty. With this in mind, we suggest that the observed size effect could be driven by investors biases enhanced under conditions of uncertainty.

Furthermore, the multivariate analysis results show that the coefficients of the high uncertainty dummy are mostly negative and significant following the announcement of public acquisitions paid for with stock. This evidence is consistent with Epstein and Schneider (2008) who suggest that investors react asymmetrically to news when they are ambiguous about the firm value. Bernard et al. (1997), La Porta et al. (1997) and Skinner and Sloan (1999) show significant differences in the markets response with regards to good and bad news.

Finally, consistent with previous literature[42], overall, we find that bidding firms suffer losses 1 year following the announcement, and even higher losses 3 years later. Moreover, there is a reversal regarding high versus low information uncertainty acquisitions apart from the case of acquisitions for public targets paid for with stock. Hence, irrespective of the type of the acquisition, high uncertainty regarding the bidder's value around the announcement of the deal destroys more value in the long-run than lower uncertainty counterparts. When controlling for private information (low versus high synchronicity bids), we observe no statistical difference. In some cases low synchronicity bidders keep outperforming high synchronicity ones as was found in the short-run as well. Due to the contradictory findings regarding uncertainty (reversal) and private information (no reversal), the comparison and the effect between the two portfolios where both effects are taken into account is difficult to be examined and the results do not show any fruitful conclusive outcomes.

Overall, this study offers a different approach to explain the market reaction following announcement takeovers. The short-run market reaction to M&As announcements reflect either potential synergy or revaluation gains. Our evidence suggests that there is a simple market overreaction driven by investor biases. Investors' biases increase especially with uncertainty and depending on the signal conveyed by each type of takeover, investors react either positively or negatively. In the absence of uncertainty, the market reaction is complete.

[42] Andrade, Mitchell and Stafford (2001), Loughran and Vijh (1997), Malatesta (1983), Asquith (1983), Rau and Vermaelen (1998), Gregory (1997), Alexandridis, Antoniou and Zhao (2007)

Table 5.1 Summary Statistics by acquisitions by Year

The table presents the number of acquisitions by year and the percentage of total number of acquisitions by synchronicity (Panel A) and information uncertainty proxies (Panel B, C, D and E). The summary statistics are provided on the basis of a sample of 6,043 acquisitions from 1985 to 2009 undertaken by 1883 unique bidders. Acquirers are publicly traded firms listed on the London Stock Exchange (LSE). Panel A presents statistics by year for the whole sample. Synchronicity is measured as the R^2 of the following regression:

$$r_{i,j,t}= \beta_{i,0} + \beta_{i,m}\, r_{m,t} + \beta_{i,j}\, r_{j,t} + \varepsilon_{i,t}$$

where $r_{i,j,t}$ is the return of bidder i in industry j at time t, $r_{m,t}$ is the market return at time t and $r_{j,t}$ is the return of industry j at time t. The lowest 33% R^2 firms are classified as low synchronicity, the highest 33% R^2 firms as high synchronicity and the rest as medium. Panel B shows statistics for information uncertainty as approached with the proxy of Age. The 33% youngest acquirers are classified as high uncertainty, the 33% oldest as low uncertainty and the medium 33% as of medium uncertainty. Age is measured as the difference between the incorporation date of the firm until the announcement date of the deal. Panel C illustrates statistics for the Size proxy. The 33% smallest acquirers are classified as high uncertainty, the 33% largest as low uncertainty and the medium 33% as of medium uncertainty. Size is measured as the market capitalization (MV) of the bidding firm 20 days before the announcement date of the deal. Panel D shows statistics for the Sigma proxy. The 33% highest sigma acquirers are classified as high uncertainty, the 33% lowest sigma as low uncertainty and the medium 33% as of medium uncertainty. Sigma is measured by the standard deviation of daily excess returns 200 days before the announcement date of the deal. Finally, Panel E presents descriptive statistics for the Trading Volume proxy. The 33% less active acquirers are classified as high uncertainty, the 33% most active as low uncertainty and the medium 33% as of medium uncertainty. Trading Volume is measured as the average of the monthly trading volume of the acquirer before the announcement date of the deal. Portfolios HsHiu, HsLiu, LsHiu and LsLiu relate to the combination portfolios of High(Low)Synchronicity for bidders subject to High (Low) Information Uncertainty respectively.

Table 5.1-Continued

Panel A: All Deals				
Year	**All**	**High Synchronicity**	**Medium Synchronicity**	**Low Synchronicity**
1985	9	4	3	2
1986	20	12	7	1
1987	48	28	13	7
1988	125	81	25	19
1989	164	96	41	27
1990	97	46	34	17
1991	89	39	28	22
1992	119	50	37	32
1993	159	33	63	63
1994	196	83	62	51
1995	193	44	76	73
1996	239	49	81	109
1997	303	70	110	123
1998	382	117	141	124
1999	459	106	165	188
2000	531	157	171	203
2001	404	159	141	104
2002	325	107	121	97
2003	246	81	91	74
2004	306	77	111	118
2005	405	115	130	160
2006	412	122	118	172
2007	464	191	137	136
2008	269	114	96	59
2009	79	34	11	34
Total	**6,043**	**2,015**	**2,013**	**2,015**
Total (%)	**100.00%**	**33.34%**	**33.31%**	**33.34%**

Table 5.1-Continued

Panel B: Information Uncertainty (IU) by Age												
Year	**All**	**HighSynchr.**	**MediumSynchr.**	**LowSynchr.**	**All**	**High IU**	**Medium**	**Low IU**	**HsHiu**	**HsLiu**	**LsHiu**	**LsLiu**
1985	9	4	3	2	9	2	7	0	2	0	0	0
1986	20	12	7	1	25	1	24	0	1	0	0	0
1987	48	28	13	7	72	11	23	38	6	14	0	3
1988	125	81	25	19	179	50	54	75	15	40	8	4
1989	164	96	41	27	236	51	96	89	15	54	4	3
1990	97	46	34	17	164	39	63	62	5	27	3	5
1991	89	39	28	22	130	35	44	51	8	21	7	6
1992	119	50	37	32	156	38	35	83	12	34	7	15
1993	159	33	63	63	213	50	49	114	4	20	27	21
1994	196	83	62	51	276	50	84	142	12	56	13	13
1995	193	44	76	73	266	50	79	137	7	30	14	38
1996	239	49	81	109	319	73	91	155	7	28	31	50
1997	303	70	110	123	412	128	127	157	19	36	32	53
1998	382	117	141	124	474	160	127	187	29	61	45	41
1999	459	106	165	188	507	181	164	162	26	47	76	58
2000	531	157	171	203	558	223	194	141	71	49	80	41
2001	404	159	141	104	408	175	131	102	62	46	47	20
2002	325	107	121	97	327	130	118	79	26	39	44	22
2003	246	81	91	74	250	87	90	73	14	36	33	13
2004	306	77	111	118	306	121	115	70	24	24	50	21
2005	405	115	130	160	408	177	131	100	26	48	85	25
2006	412	122	118	172	414	172	141	101	34	56	79	25
2007	464	191	137	136	466	187	177	102	45	63	82	15
2008	269	114	96	59	270	91	108	71	24	49	25	11
2009	79	34	11	34	80	27	35	18	11	13	13	3
Total	**6,043**	**2,015**	**2,013**	**2,015**	**6,925**	**2,309**	**2,307**	**2,309**	**505**	**891**	**805**	**506**
Total (%)	**100.00%**	**33.34%**	**33.31%**	**33.34%**	**100.00%**	**33.34%**	**33.31%**	**33.34%**	**7.29%**	**12.87%**	**11.62%**	**7.31%**

Table 5.1-Continued

Panel C: Information Uncertainty (IU) by Size (MV)												
Year	**All**	**HighSynchr.**	**MediumSynchr.**	**LowSynchr.**	**All**	**High IU**	**Medium**	**Low IU**	**HsHiu**	**HsLiu**	**LsHiu**	**LsLiu**
1985	9	4	3	2	9	1	2	6	0	4	1	1
1986	20	12	7	1	25	1	9	15	0	11	0	1
1987	48	28	13	7	75	21	15	39	5	19	4	2
1988	125	81	25	19	185	56	67	62	17	40	12	2
1989	164	96	41	27	246	84	89	73	17	52	20	0
1990	97	46	34	17	172	61	61	50	8	24	8	2
1991	89	39	28	22	137	60	38	39	12	22	15	2
1992	119	50	37	32	160	56	57	47	2	29	15	2
1993	159	33	63	63	214	78	75	61	2	22	29	9
1994	196	83	62	51	280	88	112	80	8	53	27	2
1995	193	44	76	73	269	67	121	81	2	29	20	12
1996	239	49	81	109	324	87	138	99	6	27	30	27
1997	303	70	110	123	419	150	149	120	14	44	55	19
1998	382	117	141	124	483	145	175	163	12	71	49	27
1999	459	106	165	188	513	156	179	178	12	64	84	43
2000	531	157	171	203	569	141	194	234	25	99	65	60
2001	404	159	141	104	410	143	129	138	42	73	47	27
2002	325	107	121	97	328	127	90	111	18	64	55	14
2003	246	81	91	74	250	90	80	80	8	50	42	10
2004	306	77	111	118	309	118	95	96	15	47	59	20
2005	405	115	130	160	412	155	123	134	23	75	79	21
2006	412	122	118	172	414	162	132	120	20	79	92	16
2007	464	191	137	136	466	164	122	180	20	145	84	8
2008	269	114	96	59	270	96	62	112	11	86	37	3
2009	79	34	11	34	80	33	25	22	5	19	21	1
Total	**6,043**	**2,015**	**2,013**	**2,015**	**7,019**	**2,340**	**2,339**	**2,340**	**304**	**1,248**	**950**	**331**
Total (%)	**100.00%**	**33.34%**	**33.31%**	**33.34%**	**100.00%**	**33.34%**	**33.32%**	**33.34%**	**4.33%**	**17.78%**	**13.53%**	**4.72%**

Table 5.1-Continued

Panel D: Information Uncertainty (IU) by Sigma												
Year	**All**	**HighSynchr.**	**MediumSynchr.**	**LowSynchr.**	**All**	**High IU**	**Medium**	**Low IU**	**HsHiu**	**HsLiu**	**LsHiu**	**LsLiu**
1985	7	2	3	2	7	1	1	5	0	1	0	2
1986	20	12	7	1	25	2	12	11	1	5	0	1
1987	47	27	13	7	71	19	29	23	4	10	3	1
1988	123	80	24	19	175	49	93	33	16	16	5	8
1989	163	95	41	27	234	19	44	171	3	75	7	19
1990	96	45	34	17	163	16	44	103	1	36	5	8
1991	88	38	28	22	129	17	33	79	5	24	3	11
1992	119	50	37	32	155	23	39	93	2	40	6	18
1993	156	33	61	62	209	36	63	110	2	23	15	25
1994	193	81	62	50	271	40	61	170	5	61	7	28
1995	192	43	76	73	264	14	47	203	0	39	4	56
1996	233	46	80	107	309	40	64	205	3	37	14	76
1997	293	67	106	120	399	64	112	223	2	42	27	64
1998	374	114	139	121	463	133	227	103	32	14	33	31
1999	441	98	161	182	489	258	206	25	59	1	88	13
2000	498	145	160	193	525	352	135	38	122	2	105	21
2001	384	151	137	96	388	226	139	23	100	4	52	9
2002	312	103	116	93	314	169	127	18	53	7	54	6
2003	245	81	91	73	249	153	81	15	46	7	43	5
2004	286	72	104	110	286	80	99	107	13	34	36	34
2005	387	111	128	148	389	95	114	180	17	72	45	53
2006	391	114	111	166	393	109	167	117	23	54	56	37
2007	441	183	132	126	443	105	182	156	23	98	41	31
2008	266	112	96	58	267	138	107	22	40	16	37	0
2009	79	34	11	34	80	75	5	0	29	0	34	0
Total	**5,834**	**1,937**	**1,958**	**1,939**	**6,697**	**2,233**	**2,231**	**2,233**	**601**	**718**	**720**	**557**
Total (%)	**100.00%**	**33.20%**	**33.56%**	**33.24%**	**100.00%**	**33.34%**	**33.31%**	**33.34%**	**8.97%**	**10.72%**	**10.75%**	**8.32%**

Table 5.1-Continued

Panel E: Information Uncertainty (IU) by Trading Volume												
Year	**All**	**HighSynchr.**	**MediumSynchr.**	**LowSynchr.**	**All**	**High IU**	**Medium**	**Low IU**	**HsHiu**	**HsLiu**	**LsHiu**	**LsLiu**
1985	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0
1987	7	5	1	1	15	0	0	15	0	5	0	1
1988	27	23	3	1	37	1	1	35	0	23	0	1
1989	48	45	3	0	54	1	4	49	0	43	0	0
1990	23	19	2	2	29	1	6	22	0	17	0	2
1991	39	26	8	5	55	6	27	22	4	15	1	2
1992	71	39	16	16	87	20	42	25	4	16	9	2
1993	95	24	39	32	123	33	46	44	1	16	13	10
1994	124	70	35	19	177	47	74	56	9	37	10	1
1995	142	41	54	47	201	82	64	55	9	19	22	10
1996	159	35	55	69	214	54	99	61	3	21	26	12
1997	204	56	78	70	272	93	104	75	11	32	32	11
1998	293	99	106	88	359	110	145	104	9	54	42	18
1999	358	87	136	135	398	136	137	125	12	54	59	24
2000	411	133	127	151	434	124	158	152	28	76	58	36
2001	337	140	117	80	340	116	119	105	34	59	39	14
2002	313	103	117	93	315	129	95	91	18	55	51	16
2003	245	81	90	74	248	85	82	81	5	54	39	10
2004	288	72	104	112	288	106	81	101	11	46	49	23
2005	388	111	128	149	389	141	122	126	21	73	74	18
2006	396	114	113	169	398	157	117	124	17	76	84	26
2007	444	185	134	125	445	168	128	149	23	112	81	9
2008	265	111	96	58	266	97	64	105	13	76	42	3
2009	79	34	11	34	79	34	26	19	6	16	22	1
Total	**4,756**	**1,653**	**1,573**	**1,530**	**5,223**	**1,741**	**1,741**	**1,741**	**238**	**995**	**753**	**250**
Total (%)	**100.00%**	**34.76%**	**33.07%**	**32.17%**	**100.00%**	**33.33%**	**33.33%**	**33.33%**	**4.56%**	**19.05%**	**14.42%**	**4.79%**

Table 5.2 Summary Statistics for Acquisitions as classified by Synchronicity and Information Uncertainty for the Age, Size, Sigma and Trading Volume Proxy and the Combination of the Both

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 7019 acquisitions from 1985 to 2009 undertaken by 1883 unique bidders. Acquirers are publicly traded firms listed on the London Stock Exchange (LSE). Targets include both domestic and foreign public and private firms. Synchronicity is measured as the R^2 of the following regression:

$$r_{i,j,t} = \beta_{i,0} + \beta_{i,m}\, r_{m,t} + \beta_{i,j}\, r_{j,t} + \varepsilon_{i,t}$$

where $r_{i,j,t}$ is the return of bidder i in industry j at time t, $r_{m,t}$ is the market return at time t and $r_{j,t}$ is the return of industry j at time t. The lowest 33% R^2 firms are classified as low synchronicity, the highest 33% R^2 firms as high synchronicity and the rest as medium. Panel A illustrates descriptive statistics for the whole sample. Panel B presents descriptive statistics for information uncertainty as approached with the proxy of Age. The 33% youngest acquirers are classified as high uncertainty, the 33% oldest as low uncertainty and the medium 33% as of medium uncertainty. Age is measured as the difference between the incorporation date of the firm until the announcement date of the deal. Panel C illustrates descriptive statistics for the Size proxy. The 33% smallest acquirers are classified as high uncertainty, the 33% largest as low uncertainty and the medium 33% as of medium uncertainty. Size is measured as the market capitalization (MV) of the bidding firm 20 days before the announcement date of the deal. Panel D shows statistics for the Sigma proxy. The 33% highest sigma acquirers are classified as high uncertainty, the 33% lowest sigma as low uncertainty and the medium 33% as of medium uncertainty. Sigma is measured by the standard deviation of daily excess returns 200 days before the announcement date of the deal. Finally, Panel E presents descriptive statistics for the Trading Volume proxy. The 33% less active acquirers are classified as high uncertainty, the 33% most active as low uncertainty and the medium 33% as of medium uncertainty. Trading Volume is measured as the average of the monthly trading volume of the acquirer before the announcement date of the deal. Portfolios HsHiu, HsLiu, LsHiu and LsLiu relate to the combination portfolios of High (Low)Synchronicity for bidders subject to High (Low) Information Uncertainty respectively. 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	Number of	Mean Market	Median Market	Mean	Median	Total Deal Value	% of Total	% of Total Number of
				Panel A: All Deals				
All Deals	7,019	1,255.832	130.220	197.006	11.705	1,214,203.537	100.00%	100.00%
Private	4,058	626.825	98.490	29.786	8.306	94,154.342	7.75%	57.81%
Public	713	3,817.170	293.320	1,389.924	89.064	894,878.302	73.70%	10.16%
Cash	3199	1,849.901	220.070	105.517	12.265	268,049.885	22.08%	45.58%
Stock	544	1,033.016	58.785	675.695	17.991	320,214.872	26.37%	7.75%

Table 5.2-Continued

Panel B: Information Uncertainty (IU) by Age Proxy								
All Deals	6,043	1,405.788	137.370	222.480	12.354	1,344,444.478	100.00%	100.00%
Private	3,541	688.445	101.190	31.246	8.718	110,640.859	8.23%	58.60%
Public	636	4,198.382	336.075	1,540.578	106.196	979,807.698	72.88%	10.52%
Cash	2,678	2,134.553	260.575	118.610	13.381	317,636.682	23.63%	44.32%
Stock	486	1,136.646	58.940	747.560	17.701	363,313.927	27.02%	8.04%
High IU	2,066	562.745	53.685	86.046	8.626	177,771.926	13.22%	34.19%
Low IU	1,964	2,241.962	432.240	315.140	19.464	618,935.846	46.04%	32.50%
High Synchr	2,015	3,333.335	544.320	517.062	21.500	1,041,880.598	77.50%	33.34%
Low Synchr	2,015	340.624	63.330	67.637	8.986	136,288.440	10.14%	33.34%
LsHiu	805	180.943	35.570	30.085	7.298	24,218.582	1.80%	13.32%
LsLiu	506	599.827	130.710	117.737	11.544	59,574.807	4.43%	8.37%
HsHiu	505	1,584.188	130.940	208.710	11.965	105,398.578	7.84%	8.36%
HsLiu	891	3,980.700	1,077.920	542.925	36.914	483,746.503	35.98%	14.74%
Panel C: Information Uncertainty (IU) by Size Proxy								
All Deals	6,043	1,405.788	137.370	222.480	12.354	1,344,444.478	100.00%	100.00%
Private	3,541	688.445	101.190	31.246	8.718	110,640.859	8.23%	58.60%
Public	636	4,198.382	336.075	1,540.578	106.196	979,807.698	72.88%	10.52%
Cash	2,678	2,134.553	260.575	118.610	13.381	317,636.682	23.63%	44.32%
Stock	486	1,136.646	58.940	747.560	17.701	363,313.927	27.02%	8.04%
High IU	1,972	22.839	20.605	13.988	5.142	27,584.646	2.05%	32.63%
Low IU	2,114	3,864.475	1,062.925	593.530	40.693	1,254,722.043	93.33%	34.98%
High Synchr	2,015	3,333.335	544.320	517.062	21.500	1,041,880.598	77.50%	33.34%
Low Synchr	2,015	340.624	63.330	67.637	8.986	136,288.440	10.14%	33.34%
LsHiu	950	22.318	19.780	12.130	5.162	11,523.399	0.86%	15.72%
LsLiu	331	1,711.663	660.740	315.811	30.859	104,533.334	7.78%	5.48%
HsHiu	304	24.148	23.070	12.645	4.979	3,844.145	0.29%	5.03%
HsLiu	1,248	5,319.379	1,513.890	820.320	46.814	1,023,759.439	76.15%	20.65%

Table 5.2-Continued

Panel D: Information Uncertainty (IU) by Sigma Proxy								
All Deals	5,834	1,437.498	143.685	229.625	12.739	1,339,629.734	100.00%	100.00%
Private	3,385	700.790	107.360	31.828	8.800	107,738.595	8.04%	58.02%
Public	625	4,248.951	344.940	1,566.834	113.302	979,271.372	73.10%	10.71%
Cash	2,618	2,152.905	269.430	120.472	13.491	315,396.245	23.54%	44.87%
Stock	473	1,166.683	59.330	766.903	17.921	362,745.244	27.08%	8.11%
High IU	2,064	882.649	63.100	152.137	9.584	314,010.902	23.44%	35.38%
Low IU	1,818	2,193.902	231.960	198.375	15.434	360,645.634	26.92%	31.16%
High Synchr	1,937	3,419.458	578.520	536.620	23.095	1,039,432.852	77.59%	33.20%
Low Synchr	1,939	350.346	65.870	69.689	9.000	135,126.687	10.09%	33.24%
LsHiu	720	303.699	29.885	46.894	7.014	33,763.411	2.52%	12.34%
LsLiu	557	472.504	105.400	104.087	9.450	57,976.732	4.33%	9.55%
HsHiu	601	2,143.667	319.640	381.734	16.667	229,422.143	17.13%	10.30%
HsLiu	718	4,659.565	1,174.235	349.610	33.124	251,020.202	18.74%	12.31%
Panel E: Information Uncertainty (IU) by Trading Volume Proxy								
All Deals	4,756	1,661.942	189.065	272.097	14.248	1,294,092.286	100.00%	100.00%
Private	2,775	758.174	128.480	35.223	9.747	97,742.607	7.55%	58.35%
Public	500	5,160.459	529.545	1,917.072	154.827	958,536.057	74.07%	10.51%
Cash	2,174	2,505.233	387.685	136.799	16.245	297,401.316	22.98%	45.71%
Stock	350	1,309.338	65.290	1,013.554	19.266	354,744.054	27.41%	7.36%
High IU	1,592	107.209	34.430	23.665	6.982	37,675.272	2.91%	33.47%
Low IU	1,641	4,441.586	1,403.360	720.650	43.708	1,182,587.450	91.38%	34.50%
High Synchr	1,653	3,809.237	785.830	617.297	26.370	1,020,392.031	78.85%	34.76%
Low Synchr	1,530	405.149	74.040	80.517	9.708	123,190.564	9.52%	32.17%
LsHiu	753	65.490	29.500	20.427	6.815	15,381.355	1.19%	15.83%
LsLiu	250	1,805.423	668.135	327.032	22.915	81,758.007	6.32%	5.26%
HsHiu	238	296.953	54.365	32.461	7.538	7,725.828	0.60%	5.00%
HsLiu	995	6,091.007	2,039.010	996.410	57.940	991,427.721	76.61%	20.92%

Table 5.3 R^2 Summary Statistics for the Entire Sample and Information Uncertainty as Classified by the Age, Size, Sigma and trading Volume Proxy

Table presents the average R^2 for each of the all, private cash, privatestock, publiccash and publicstock portfolios for the entire sample as well as it has been classified by the age, size, sigma and trading volume proxies.
R^2 is estimated by the following regression:

$$r_{i,j,t} = \beta_{i,0} + \beta_{i,m} r_{m,t} + \beta_{i,j} r_{j,t} + \varepsilon_{i,t}$$

where $r_{i,j,t}$ is the return of bidder i in industry j at time t, $r_{m,t}$ is the market return at time t and $r_{j,t}$ is the return of industry j at time t. The lowest 33% R^2 firms are classified as low synchronicity, the highest 33% R^2 firms as high synchronicity and the rest as medium. Panel A illustrates descriptive statistics for the whole sample. Panel B presents descriptive statistics for information uncertainty as approached with the proxy of Age. The 33% youngest acquirers are classified as high uncertainty, the 33% oldest as low uncertainty and the medium 33% as of medium uncertainty. Age is measured as the difference between the incorporation date of the firm until the announcement date of the deal. Panel C illustrates descriptive statistics for the Size proxy. The 33% smallest acquirers are classified as high uncertainty, the 33% largest as low uncertainty and the medium 33% as of medium uncertainty. Size is measured as the market capitalization (MV) of the bidding firm 20 days before the announcement date of the deal. Panel D shows statistics for the Sigma proxy. The 33% highest sigma acquirers are classified as high uncertainty, the 33% lowest sigma as low uncertainty and the medium 33% as of medium uncertainty. Sigma is measured by the standard deviation of daily excess returns 200 days before the announcement date of the deal. Finally, Panel E presents descriptive statistics for the Trading Volume proxy. The 33% less active acquirers are classified as high uncertainty, the 33% most active as low uncertainty and the medium 33% as of medium uncertainty. Trading Volume is measured as the average of the monthly trading volume of the acquirer before the announcement date of the deal

	All	PrivateCash	PrivateStock	PublicCash	PublicStock
Panel A: All Deals					
All Deals	32.24%	20.80%	17.22%	30.88%	19.19%
Panel B: Information Uncertainty by Age					
High IU	15.90%	17.16%	15.52%	23.11%	17.94%
Medium IU	18.77%	20.00%	15.79%	27.48%	15.54%
Low IU	24.84%	24.16%	25.32%	37.50%	25.22%
Panel C: Information Uncertainty by Size					
High IU	12.14%	12.46%	10.97%	12.49%	12.61%
Medium IU	15.07%	15.25%	17.52%	19.84%	15.67%
Low IU	31.22%	30.98%	34.37%	37.40%	32.52%
Panel D: Information Uncertainty by Sigma					
High IU	18.19%	20.26%	15.57%	25.69%	17.47%
Medium IU	18.94%	19.51%	18.00%	30.59%	22.26%
Low IU	22.35%	22.46%	21.11%	35.16%	17.39%
Panel E: Information Uncertainty by Trading Volume					
High IU	11.73%	11.30%	11.51%	12.44%	10.49%
Medium IU	16.65%	18.00%	17.99%	20.33%	13.23%
Low IU	32.24%	32.02%	27.12%	39.59%	33.23%

Table 5.4 Abnormal Returns (ARs) and Cumulative Abnormal Returns (CARs) for the Entire Sample

This table presents Abnormal Returns (ARs) and Cumulative Abnormal Returns for the entire sample. Panel A present the Abnormal Returns (ARs) t days before and after the announcement date of all acquirers included in the full sample. Abnormal returns are calculated using a modified market-adjusted model:

$$AR = R_{i,t} - R_{m,t}$$

where $R_{i,t}$ is the return on firm i at time t and $R_{m,t}$ is the value-weighted Market Index Return (FT-All share). P-values are presented in brackets. The full sample size is 7019 deals.
Panel B presents the Cumulative Abnormal Returns (CARs) during five days (-2, +2) surrounding the announcement for the entire sample. The number of bids for each category is reported below the mean return. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively. The Dif (1)-(2) represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of cash versus stock acquisitions. P-values are reported in brackets.

Panel A: Abnormal Returns (AR)		
Days Before/ After Announcemnt Day	**AR**	**p-value**
-10	0.01%	(0.758)
-9	0.04%	(0.126)
-8	0.03%	(0.235)
-7	0.00%	(0.967)
-6	0.13%	(0.000)
-5	-0.01%	(0.693)
-4	0.06%	(0.032)
-3	-0.01%	(0.759)
-2	**0.07%**	(**0.011**)
-1	**0.12%**	(**0.000**)
0	**0.83%**	(**0.000**)
1	**0.33%**	(**0.000**)
2	**0.12%**	(**0.000**)
3	0.02%	(0.397)
4	0.04%	(0.122)
5	0.06%	(0.035)
6	0.01%	(0.686)
7	-0.04%	(0.173)
8	-0.04%	(0.100)
9	-0.02%	(0.576)
10	-0.03%	(0.370)

Table 5.4-continued

Panel B: CARs					
	All	**Cash (1)**	**Stock(2)**	**Mixed (3)**	**Dif (1)-(2)**
All	1.46%[a]	1.30%[a]	1.70%[a]	1.57%[a]	-0.40%
p-value	(0.000)	(0.000)	(0.002)	(0.000)	(0.482)
N	7,019	3,199	544	3,276	
Private	1.69%[a]	1.13%[a]	3.60%[a]	1.82%[a]	-2.47%[b]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.012)
N	4,058	1,416	248	2,394	
Public	-0.46%	0.95%[b]	-2.04%[a]	-0.89%[c]	2.99%[a]
p-value	(0.113)	(0.012)	(0.001)	(0.099)	(0.000)
N	713	297	208	208	
Subsidiary	1.65%[a]	1.54%[a]	5.20%[a]	1.44%[a]	-3.66%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.007)
N	2,248	1,486	88	674	

Table 5.5 Cumulative Abnormal Returns (CARs) of High and Low Uncertainty Acquirers by Age of the Acquiring Firm

This table presents the Cumulative Abnormal Returns (CARs) during five days (-2, +2) surrounding the announcement of high and low information uncertainty acquirers by the age of the acquirer. 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). The 33% youngest acquirers are classified as high uncertainty, the 33% oldest as low uncertainty and the medium 33% as of medium uncertainty. Age is measured as the difference between the incorporation date of the firm until the announcement date of the deal. Panel A illustrates the gains to acquirers for the entire sample, Panel B for acquisitions for private target firms and Panel C for acquisitions for public target firms and the method of payment (cash, stock and mixed (combined offer of both cash and stock). The number of bids for each category is reported below the mean return. Significance levels at 1%, 5% and 10% are represented by ‘a’, ‘b’ and ‘c’, respectively. The H-L [(1)-(3)] represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of high versus low uncertainty bidders. The Dif (cash-stock) represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of cash versus stock offers. P-values are reported in brackets.

Table 5.5-Continued

Panel A: Entire Sample					
	All	**HighIU (1)**	**MediumIU (2)**	**LowIU (3)**	**H-L [(1)-(3)]**
All	1.47%[a]	1.81%[a]	1.62%[a]	0.97%[a]	0.84%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	6,925	2,309	2,307	2,309	
Panel B: Private Targets					
	All	**Cash**	**Stock**	**Mixed**	**Dif(Cash-Stock)**
All	1.70%[a]	1.14%[a]	3.61%[a]	1.83%[a]	-2.47%[b]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.012)
N	4,006	1,392	247	2,367	
HighIU (1)	2.04%[a]	1.51%[a]	4.85%[a]	1.92%[a]	-3.34%[c]
p-value	(0.000)	(0.000)	(0.004)	(0.000)	(0.052)
N	1,478	395	114	969	
MediumIU (2)	1.82%[a]	1.53%[a]	3.02%[b]	1.84%[a]	-1.49%
p-value	(0.000)	(0.000)	(0.048)	(0.000)	(0.337)
N	1,391	446	90	855	
LowIU (3)	1.12%[a]	0.57%[a]	1.56%	1.64%[a]	-1.00%
p-value	(0.000)	(0.004)	(0.192)	(0.000)	(0.409)
N	1,137	551	43	543	
H-L [(1)-(3)]	0.92%[a]	0.94%[b]	3.29%	0.29%	
p-value	(0.004)	(0.030)	(0.108)	(0.508)	
Panel C: Public Targets					
	All	**Cash**	**Stock**	**Mixed**	**Dif(Cash-Stock)**
All	-0.46%	0.97%[b]	-2.09%[a]	-0.88%	3.05%[a]
p-value	(0.115)	(0.011)	(0.001)	(0.104)	(0.000)
N	708	296	206	206	
HighIU (1)	-1.26%[c]	1.77%[c]	-3.62%[a]	-1.19%	5.40%[a]
p-value	(0.066)	(0.055)	(0.005)	(0.305)	(0.001)
N	197	62	81	54	
MediumIU (2)	-0.38%	0.93%	-1.91%[b]	-0.79%	2.84%[b]
p-value	(0.455)	(0.224)	(0.025)	(0.461)	(0.013)
N	233	100	68	65	
LowIU (3)	0.04%	0.62%	-0.12%	-0.76%	0.74%
p-value	(0.916)	(0.163)	(0.902)	(0.292)	(0.488)
N	278	134	57	87	
H-L [(1)-(3)]	-1.30%[c]	1.15%	-3.50%[b]	-0.43%	
p-value	(0.095)	(0.257)	(0.027)	(0.749)	

Table 5.6 Cumulative Abnormal Returns (CARs) of High and Low Uncertainty Acquirers by Size of the Acquiring Firm

This table presents the Cumulative Abnormal Returns (CARs) during five days (-2, +2) surrounding the announcement of high and low information uncertainty acquirers by the size of the acquirer. 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). The 33% smallest acquirers are classified as high uncertainty, the 33% largest as low uncertainty and the medium 33% as of medium uncertainty. Size is measured as the market capitalization (MV) of the bidding firm 20 days before the announcement date of the deal. Panel A illustrates the gains to acquirers for the entire sample, Panel B for acquisitions for private target firms and Panel C for acquisitions for public target firms and the method of payment (cash, stock and mixed (combined offer of both cash and stock). The number of bids for each category is reported below the mean return. Significance levels at 1%, 5% and 10% are represented by ‘a’, ‘b’ and ‘c’, respectively. The H-L [(1)-(3)] represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of high versus low uncertainty bidders. The Dif (cash-stock) represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of cash versus stock offers. P-values are reported in brackets.

Table 5.6-Continued

Panel A: Entire Sample					
	All	**HighIU (1)**	**MediumIU (2)**	**LowIU (3)**	**H-L [(1)-(3)]**
All	1.46%[a]	2.50%[a]	1.20%[a]	0.67%[a]	1.83%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	7,019	2,340	2,339	2,340	
Panel B: Private Targets					
	All	**Cash**	**Stock**	**Mixed**	**Dif(Cash-Stock)**
All	1.69%[a]	1.13%[a]	3.60%[a]	1.82%[a]	-2.47%[b]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.012)
N	4,058	1,416	248	2,394	
HighIU (1)	2.81%[a]	2.30%[a]	5.09%[a]	2.69%[a]	-2.79%[c]
p-value	(0.000)	(0.000)	(0.001)	(0.000)	(0.085)
N	1,561	385	140	1,036	
MediumIU (2)	1.32%[a]	0.92%[a]	1.80%	1.52%[a]	-0.88%
p-value	(0.000)	(0.000)	(0.189)	(0.000)	(0.524)
N	1,410	499	58	853	
LowIU (3)	0.56%[a]	0.48%[b]	1.51%	0.54%[c]	-1.03%
p-value	(0.002)	(0.032)	(0.197)	(0.064)	(0.387)
N	1,087	532	50	505	
H-L [(1)-(3)]	2.25%[a]	1.81%[a]	3.57%[c]	2.15%[a]	
p-value	(0.000)	(0.000)	(0.066)	(0.000)	
Panel C: Public Targets					
	All	**Cash**	**Stock**	**Mixed**	**Dif(Cash-Stock)**
All	-0.46%	0.95%[b]	-2.04%[a]	-0.89%[c]	2.99%[a]
p-value	(0.113)	(0.012)	(0.001)	(0.099)	(0.000)
N	713	297	208	208	
HighIU (1)	-1.31%	2.44%[c]	-3.33%[a]	-0.98%	5.77%[a]
p-value	(0.936)	(0.051)	(0.009)	(0.447)	(0.001)
N	160	38	78	44	
MediumIU (2)	-0.68%	0.95%	-1.59%[b]	-1.35%	2.54%[b]
p-value	(0.126)	(0.184)	(0.020)	(0.157)	(0.010)
N	199	66	76	57	
LowIU (3)	0.05%	0.65%	-0.81%	-0.61%	1.46%
p-value	(0.904)	(0.164)	(0.521)	(0.422)	(0.278)
N	354	193	54	107	
H-L [(1)-(3)]	-1.36%	1.79%	-2.52%	-0.36%	
p-value	(0.120)	(0.174)	(0.156)	(0.808)	

Table 5.7 Cumulative Abnormal Returns (CARs) of High and Low Uncertainty Acquirers by Sigma of the Acquiring Firm

This table presents the Cumulative Abnormal Returns (CARs) during five days (-2, +2) surrounding the announcement of high and low information uncertainty acquirers by the sigma of the acquirer. 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). The 33% highest sigma acquirers are classified as high uncertainty, the 33% lowest sigma as low uncertainty and the medium 33% as of medium uncertainty. Sigma is measured by the standard deviation of daily excess returns 200 days before the announcement date of the deal. Panel A illustrates the gains to acquirers for the entire sample, Panel B for acquisitions for private target firms and Panel C for acquisitions for public target firms and the method of payment (cash, stock and mixed (combined offer of both cash and stock). The number of bids for each category is reported below the mean return. Significance levels at 1%, 5% and 10% are represented by ‘a’, ‘b’ and ‘c’, respectively. The H-L [(1)-(3)] represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of high versus low uncertainty bidders. The Dif (cash-stock) represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of cash versus stock offers. P-values are reported in brackets.

Table 5.7-Continued

Panel A: Entire Sample					
	All	**HighIU (1)**	**MediumIU (2)**	**LowIU (3)**	**H-L [(1)-(3)]**
All	1.43%[a]	2.27%[a]	1.20%[a]	0.81%[a]	1.46%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	6,697	2,233	2,231	2,233	
Panel B: Private Targets					
	All	**Cash**	**Stock**	**Mixed**	**Dif(Cash-Stock)**
All	1.66%[a]	1.10%[a]	3.83%[a]	1.76%[a]	-2.73%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.007)
N	3,840	1,353	240	2,247	
HighIU (1)	2.46%[a]	1.81%[a]	4.52%[a]	2.44%[a]	-2.71%[c]
p-value	(0.000)	(0.000)	(0.003)	(0.000)	(0.089)
N	1,385	395	135	855	
MediumIU (2)	1.40%[a]	0.98%[a]	3.90%[a]	1.52%[a]	-2.92%[b]
p-value	(0.000)	(0.000)	(0.007)	(0.000)	(0.040)
N	1,293	489	43	761	
LowIU (3)	0.98%[a]	0.62%[a]	2.28%	1.12%[a]	-1.66%
p-value	(0.000)	(0.000)	(0.175)	(0.000)	(0.323)
N	1,162	469	62	631	
H-L [(1)-(3)]	1.48%[a]	1.19%[b]	2.24%	1.32%[a]	
p-value	(0.000)	(0.017)	(0.321)	(0.002)	
Panel C: Public Targets					
	All	**Cash**	**Stock**	**Mixed**	**Dif(Cash-Stock)**
All	-0.46%	0.96%[b]	-2.15%[a]	-0.84%	3.11%[a]
p-value	(0.118)	(0.013)	(0.001)	(0.126)	(0.000)
N	695	291	200	204	
HighIU (1)	-0.61%	1.94%[b]	-4.10%[a]	0.45%	6.04%[a]
p-value	(0.360)	(0.045)	(0.001)	(0.707)	(0.000)
N	245	88	86	71	
MediumIU (2)	-0.23%	1.11%[c]	-0.94%	-1.67%[c]	2.05%[b]
p-value	(0.594)	(0.064)	(0.260)	(0.068)	(0.046)
N	212	94	59	59	
LowIU (3)	-0.51%	0.04%	-0.39%	-1.41%[b]	0.43%
p-value	(0.143)	(0.925)	(0.648)	(0.036)	(0.652)
N	238	109	55	74	
H-L [(1)-(3)]	-0.10%	1.90%[c]	-3.71%[b]	1.86%	
p-value	(0.890)	(0.072)	(0.015)	(0.174)	

Table 5.8 Cumulative Abnormal Returns (CARs) of High and Low Uncertainty Acquirers by Trading Volume of the Acquiring Firm

This table presents the Cumulative Abnormal Returns (CARs) during five days (-2, +2) surrounding the announcement of high and low information uncertainty acquirers by the trading volume of the acquirer. 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). The 33% less active acquirers are classified as high uncertainty, the 33% most active as low uncertainty and the medium 33% as of medium uncertainty. Trading Volume is measured as the average of the monthly trading volume of the acquirer before the announcement date of the deal. Panel A illustrates the gains to acquirers for the entire sample, Panel B for acquisitions for private target firms and Panel C for acquisitions for public target firms and the method of payment (cash, stock and mixed (combined offer of both cash and stock). The number of bids for each category is reported below the mean return. Significance levels at 1%, 5% and 10% are represented by ‘a’, ‘b’ and ‘c’, respectively. The H-L [(1)-(3)] represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of high versus low uncertainty bidders. The Dif (cash-stock) represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of cash versus stock offers. P-values are reported in brackets.

Table 5.8-Continued

Panel A: Entire Sample					
	All	**HighIU (1)**	**MediumIU (2)**	**LowIU (3)**	**H-L [(1)-(3)]**
All	1.53%[a]	2.17%[a]	1.57%[a]	0.85%[a]	1.33%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	5,223	1,741	1,741	1,741	
Panel B: Private Targets					
	All	**Cash**	**Stock**	**Mixed**	**Dif(Cash-Stock)**
All	1.71%[a]	1.22%[a]	3.80%[a]	1.81%[a]	-2.58%[b]
p-value	(0.000)	(0.000)	(0.002)	(0.000)	(0.038)
N	3,024	1,080	172	1,772	
HighIU (1)	2.46%[a]	2.45%[a]	3.47%[c]	2.35%[a]	-1.02%
p-value	(0.000)	(0.000)	(0.053)	(0.000)	(0.579)
N	1,199	310	93	796	
MediumIU (2)	1.48%[a]	0.97%[a]	4.88%[c]	1.54%[a]	-3.90%
p-value	(0.000)	(0.002)	(0.071)	(0.000)	(0.148)
N	1,053	379	44	630	
LowIU (3)	0.87%[a]	0.49%[c]	3.34%[c]	1.05%[a]	-2.85%
p-value	772	391	35	346	
N	(0.000)	(0.051)	(0.060)	(0.002)	(0.110)
H-L [(1)-(3)]	(0.000)	(0.000)	(0.960)	(0.007)	
p-value	1.60%[a]	1.96%[a]	0.13%	1.30%[a]	
Panel C: Public Targets					
	All	**Cash**	**Stock**	**Mixed**	**Dif(Cash-Stock)**
All	-0.39%	1.10%[b]	-2.71%[a]	-0.64%	3.81%[a]
p-value	(0.270)	(0.011)	(0.002)	(0.321)	(0.000)
N	533	239	137	157	
HighIU (1)	-2.24%[b]	3.27%[b]	-6.43%[a]	-2.82%[b]	9.70%[a]
p-value	(0.020)	(0.028)	(0.000)	(0.034)	(0.000)
N	115	37	44	34	
MediumIU (2)	0.09%	0.66%	-2.01%[c]	1.67%	2.67%[c]
p-value	(0.885)	(0.411)	(0.084)	(0.228)	(0.058)
N	145	59	46	40	
LowIU (3)	0.13%	0.72%	0.09%	-0.85%	0.63%
p-value	(0.765)	(0.165)	(0.951)	(0.316)	(0.686)
N	273	143	47	83	
H-L [(1)-(3)]	-2.38%[b]	2.55%[c]	-6.52%[a]	-1.97%	
p-value	(0.025)	(0.100)	(0.004)	(0.203)	

Table 5.9 Cumulative Abnormal Returns (CARs) of High and Low Uncertainty and High and Low Synchronicity Acquirers by Age of the Acquiring Firm

This table presents the Cumulative Abnormal Returns (CARs) during five days (-2, +2) surrounding the announcement of high and low information uncertainty acquirers by the age of the acquirer and high and low synchronicity acquirers. Synchronicity is measured as the R^2 of the following regression:

$$r_{i,j,t}= \beta_{i,0} + \beta_{i,m}\, r_{m,t} + \beta_{i,j}\, r_{j,t} + \varepsilon_{i,t}$$

where $r_{i,j,t}$ is the return of bidder i in industry j at time t, $r_{m,t}$ is the market return at time t and $r_{j,t}$ is the return of industry j at time t. 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). The 33% youngest acquirers are classified as high uncertainty, the 33% oldest as low uncertainty and the medium 33% as of medium uncertainty. Age is measured as the difference between the incorporation date of the firm until the announcement date of the deal. The lowest 33% R^2 firms are classified as low synchronicity, the highest 33% R^2 firms as high synchronicity and the rest as medium. Panel A illustrates the gains to acquirers for the entire sample, Panel B for acquisitions for private target firms only, Panel C for acquisitions for private target paid for with cash, Panel D for acquisitions for private target paid for with equity, Panel F for acquisitions for public target firms only, Panel G for acquisitions for public target paid for with cash and Panel H for acquisitions for public target paid for with stock. Cash deals are deals financed with 100% cash and stock deals are deals financed 100% with stock. The L-H [(2)-(1)] at the last row of each panel represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of low versus high synchronicity bidders. The H-L [(4)-(5)] at the last column of each panel represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of high versus low uncertainty bidders. The diagonal differential in each panel represent the difference in mean CARs for the five days (-2, +2) around the acquisition announcement between low synchronicity-high uncertainty versus high synchronicity-low uncertainty bidders. Panels E and I illustrate the differentials of cash versus stock acquisitions for private and public targets respectively for all the combinations of portfolios. The number of bids for each category is reported below the mean return. Significance levels at 1%, 5% and 10% are represented by ‘a’, ‘b’ and ‘c’, respectively. P-values are reported in brackets.

Panel A: Entire Sample					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	1.55%[a]	1.95%[a]	1.02%[a]	1.64%[a]	0.92%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	6,043	2,066	1,964	2,013	
HighSynchr (1)	0.93%[a]	1.43%[a]	0.53%[a]	1.08%[a]	0.90%[c]
p-value	(0.000)	(0.001)	(0.002)	(0.000)	(0.058)
N	2,015	505	891	619	
LowSynchr (2)	1.91%[a]	2.22%[a]	1.16%[a]	2.09%[a]	1.06%[b]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.025)
N	2,015	805	506	704	
MediumSynchr (3)	1.81%[a]	2.01%[a]	1.68%[a]	1.69%[a]	0.32%
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.459)
N	2,013	756	567	690	
L-H [(2)-(1)]	0.98%[a]	0.78%	0.63%[c]	1.01%[b]	1.69%[a]
p-value	(0.000)	(0.177)	(0.060)	(0.018)	(0.000)

Table 5.9-Continued

Panel B: Private Targets					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	1.79%[a]	2.17%[a]	1.11%[a]	1.92%[a]	1.06%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
N	3,541	1,347	979	1,215	
HighSynchr (1)	1.08%[a]	1.26%[b]	0.62%[b]	1.45%[a]	0.63%
p-value	(0.000)	(0.035)	(0.031)	(0.000)	(0.338)
N	1,058	315	400	343	
LowSynchr (2)	2.20%[a]	2.61%[a]	1.39%[a]	2.24%[a]	1.21%[b]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.040)
N	1,277	547	293	437	
MediumSynchr (3)	1.98%[a]	2.28%[a]	1.50%[a]	1.96%[a]	0.78%
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.181)
N	1,206	485	286	435	
L-H [(2)-(1)]	1.12%[a]	1.35%[c]	0.77%[c]	0.79%	1.98%[a]
p-value	(0.002)	(0.073)	(0.100)	(0.160)	(0.000)

Panel C: Private Targets paid with by Cash					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	1.22%[a]	1.64%[a]	0.64%[a]	1.56%[a]	1.00%[b]
p-value	(0.000)	(0.000)	(0.003)	(0.000)	(0.037)
N	1,201	351	471	379	
HighSynchr (1)	0.59%[b]	0.06%	0.19%	1.64%[a]	-0.13%
p-value	(0.021)	(0.939)	(0.517)	(0.000)	(0.873)
N	451	96	222	133	
LowSynchr (2)	1.83%[a]	2.43%[a]	0.89%[b]	2.09%[a]	1.54%[c]
p-value	(0.000)	(0.003)	(0.032)	(0.010)	(0.087)
N	371	131	117	123	
MediumSynchr (3)	1.38%[a]	2.02%[a]	1.18%[b]	0.95%	0.85%
p-value	(0.000)	(0.002)	(0.011)	(0.121)	(0.280)
N	379	124	132	123	
L-H [(2)-(1)]	1.24%[a]	2.37%[b]	0.70%	0.45%	2.24%[a]
p-value	(0.010)	(0.032)	(0.164)	(0.618)	(0.009)

Panel D: Private Targets paid with by Stock					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	3.80%[a]	5.08%[a]	1.93%	3.00%[c]	3.15%
p-value	(0.000)	(0.005)	(0.163)	(0.065)	(0.160)
N	226	106	37	83	
HighSynchr (1)	1.10%	1.65%	0.49%	0.84%	1.16%
p-value	(0.500)	(0.637)	(0.807)	(0.533)	(0.772)
N	60	26	16	18	
LowSynchr (2)	5.75%[a]	6.32%[c]	4.20%[b]	5.65%[c]	2.11%
p-value	(0.003)	(0.062)	(0.030)	(0.060)	(0.568)
N	80	36	11	33	
MediumSynchr (3)	3.87%[b]	6.09%[b]	1.72%	1.48%	4.36%
p-value	(0.030)	(0.026)	(0.637)	(0.599)	(0.334)
N	86	44	10	32	
L-H [(2)-(1)]	4.65%[c]	4.67%	3.71%	4.81%	5.83%
p-value	(0.064)	(0.331)	(0.161)	(0.138)	(0.134)

Table 5.9-Continued

Panel E: DifferentIUl (Private Cash - Private Stock)					
	All	**HighIU**	**LowIU**	**MediumIU**	
All	-2.57%[b]	-3.44%[c]	-1.29%	-1.44%	
p-value	(0.016)	(0.062)	(0.354)	(0.385)	
HighSynchr	-0.51%	-1.59%	-0.30%	0.80%	
p-value	(0.757)	(0.657)	(0.882)	(0.571)	
LowSynchr	-3.92%[b]	-3.88%	-3.31%[c]	-3.55%	
p-value	(0.047)	(0.257)	(0.079)	(0.244)	
MediumSynchr	-2.49%	-4.07%	-0.55%	-0.53%	
p-value	(0.167)	(0.141)	(0.881)	(0.854)	
Panel F: Public Targets					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	-0.48%	-1.28%[c]	0.21%	-0.55%	-1.49%[c]
p-value	(0.133)	(0.077)	(0.613)	(0.309)	(0.073)
N	636	185	242	209	
HighSynchr (1)	-0.31%	-0.88%	0.31%	-0.90%	-1.19%
p-value	(0.484)	(0.505)	(0.518)	(0.272)	(0.397)
N	267	61	129	77	
LowSynchr (2)	-0.78%	-2.50%[c]	0.06%	0.05%	-2.56%
p-value	(0.240)	(0.061)	(0.957)	(0.961)	(0.127)
N	166	54	50	62	
MediumSynchr (3)	-0.45%	-0.69%	0.11%	-0.71%	-0.80%
p-value	(0.452)	(0.551)	(0.903)	(0.475)	(0.587)
N	203	70	63	70	
L-H [(2)-(1)]	-0.47%	-1.62%	-0.25%	0.95%	-2.81%[b]
p-value	(0.557)	(0.381)	(0.824)	(0.477)	(0.047)
Panel G: Public Targets paid by with Cash					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	1.14%[a]	2.09%[b]	0.94%[c]	0.78%	1.15%
p-value	(0.007)	(0.039)	(0.065)	(0.356)	(0.305)
N	253	56	111	86	
HighSynchr (1)	1.16%[b]	1.76%	0.80%	1.51%	0.96%
p-value	(0.018)	(0.248)	(0.166)	(0.131)	(0.551)
N	136	22	75	39	
LowSynchr (2)	2.27%[c]	3.85%[c]	0.84%	1.85%	3.01%
p-value	(0.062)	(0.085)	(0.492)	(0.461)	(0.223)
N	45	16	13	16	
MediumSynchr (3)	0.41%	0.93%	1.47%	-0.69%	-0.54%
p-value	(0.659)	(0.592)	(0.326)	(0.661)	(0.813)
N	72	18	23	31	
L-H [(2)-(1)]	1.11%	2.09%	0.04%	0.34%	3.05%
p-value	(0.389)	(0.421)	(0.975)	(0.899)	(0.176)

Table 5.9-Continued

Panel H: Public Targets paid by with Stock					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	-2.35%[a]	-3.87%[a]	-0.28%	-2.25%[b]	-3.58%[b]
p-value	(0.001)	(0.005)	(0.786)	(0.011)	(0.035)
N	187	75	52	60	
HighSynchr (1)	-2.32%[c]	-3.73%	0.61%	-4.52%[b]	-4.34%
p-value	(0.072)	(0.201)	(0.618)	(0.021)	(0.169)
N	57	22	21	14	
LowSynchr (2)	-2.80%[b]	-5.89%[a]	-0.14%	-1.23%	-5.75%
p-value	(0.016)	(0.003)	(0.965)	(0.403)	(0.117)
N	62	24	13	25	
MediumSynchr (3)	-1.96%[c]	-2.30%	-1.43%	-1.95%	-0.87%
p-value	(0.080)	(0.315)	(0.376)	(0.145)	(0.753)
N	68	29	18	21	
L-H [(2)-(1)]	-0.48%	-2.16%	-0.75%	3.29%	-6.50%[a]
p-value	(0.779)	(0.523)	(0.821)	(0.152)	(0.005)
Panel I: DifferentIUl (Public Cash - Public Stock)					
	All	**HighIU**	**LowIU**	**MediumIU**	
All	3.49%[a]	5.96%[a]	1.23%	3.03%[b]	
p-value	(0.000)	(0.001)	(0.290)	(0.013)	
HighSynchr	3.49%[b]	5.49%[c]	0.19%	6.03%[a]	
p-value	(0.012)	(0.095)	(0.888)	(0.006)	
LowSynchr	5.07%[a]	9.74%[a]	0.98%	3.08%	
p-value	(0.003)	(0.001)	(0.767)	(0.289)	
MediumSynchr	2.36%	3.23%	2.90%	1.26%	
p-value	(0.101)	(0.258)	(0.185)	(0.534)	

Table 5.10 Cumulative Abnormal Returns (CARs) of High and Low Uncertainty and High and Low Synchronicity Acquirers by Size of the Acquiring Firm

This table presents the Cumulative Abnormal Returns (CARs) during five days (-2, +2) surrounding the announcement of high and low information uncertainty acquirers by the size of the acquirer and high and low synchronicity acquirers. Synchronicity is measured as the R^2 of the following regression:

$$r_{i,j,t} = \beta_{i,0} + \beta_{i,m} r_{m,t} + \beta_{i,j} r_{j,t} + \varepsilon_{i,t}$$

where $r_{i,j,t}$ is the return of bidder i in industry j at time t, $r_{m,t}$ is the market return at time t and $r_{j,t}$ is the return of industry j at time t.
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). The 33% smallest acquirers are classified as high uncertainty, the 33% largest as low uncertainty and the medium 33% as of medium uncertainty. Size is measured as the market capitalization (MV) of the bidding firm 20 days before the announcement date of the deal. The lowest 33% R^2 firms are classified as low synchronicity, the highest 33% R^2 firms as high synchronicity and the rest as medium. Panel A illustrates the gains to acquirers for the entire sample, Panel B for acquisitions for private target firms only, Panel C for acquisitions for private target paid for with cash, Panel D for acquisitions for private target paid for with equity, Panel F for acquisitions for public target firms only, Panel G for acquisitions for public target paid for with cash and Panel H for acquisitions for public target paid for with stock. Cash deals are deals financed with 100% cash and stock deals are deals financed 100% with stock. The L-H [(2)-(1)] at the last row of each panel represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of low versus high synchronicity bidders. The H-L [(4)-(5)] at the last column of each panel represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of high versus low uncertainty bidders. The diagonal differential in each panel represent the difference in mean CARs for the five days (-2, +2) around the acquisition announcement between low synchronicity-high uncertainty versus high synchronicity-low uncertainty bidders. Panels E and I illustrate the differentials of cash versus stock acquisitions for private and public targets respectively for all the combinations of portfolios. The number of bids for each category is reported below the mean return. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively. P-values are reported in brackets.

Panel A: Entire Sample					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	1.55%[a]	2.70%[a]	0.64%[a]	1.37%[a]	2.06%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	6,043	1,972	2,114	1,957	
HighSynchr (1)	0.93%[a]	1.96%[a]	0.45%[a]	1.53%[a]	1.52%[a]
p-value	(0.000)	(0.000)	(0.007)	(0.000)	(0.009)
N	2,015	304	1,248	463	
LowSynchr (2)	1.91%[a]	2.72%[a]	1.24%[a]	1.16%[a]	1.48%[a]
p-value	(0.000)	(0.000)	(0.001)	(0.000)	(0.004)
N	2,015	950	331	734	
MediumSynchr (3)	1.81%[a]	2.97%[a]	0.72%[a]	1.47%[a]	2.26%[a]
p-value	(0.000)	(0.000)	(0.007)	(0.000)	(0.000)
N	2,013	718	535	760	
L-H [(2)-(1)]	0.98%[a]	0.75%	0.79%[b]	-0.37%	2.27%[a]
p-value	(0.000)	(0.255)	(0.044)	(0.410)	(0.000)

Table 5.10-Continued

Panel B: Private Targets					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	1.79%[a]	3.03%[a]	0.51%[a]	1.47%[a]	2.52%[a]
p-value	(0.000)	(0.000)	(0.009)	(0.000)	(0.000)
N	3,541	1,337	988	1,216	
HighSynchr (1)	1.08%[a]	2.21%[a]	0.45%[c]	1.52%[a]	1.76%[b]
p-value	(0.000)	(0.003)	(0.084)	(0.001)	(0.024)
N	1,058	201	564	293	
LowSynchr (2)	2.20%[a]	3.11%[a]	1.10%[b]	1.29%[a]	2.01%[a]
p-value	(0.000)	(0.000)	(0.023)	(0.000)	(0.002)
N	1,277	658	158	461	
MediumSynchr (3)	1.98%[a]	3.26%[a]	0.29%	1.63%[a]	2.98%[a]
p-value	(0.000)	(0.000)	(0.435)	(0.000)	(0.000)
N	1,206	478	266	462	
L-H [(2)-(1)]	1.12%[a]	0.90%	0.65%	-0.23%	2.66%[a]
p-value	(0.002)	(0.292)	(0.237)	(0.688)	(0.000)
Panel C: Private Targets paid with by Cash					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	1.22%[a]	2.66%[a]	0.46%[c]	1.02%[a]	2.20%[a]
p-value	(0.000)	(0.000)	(0.056)	(0.000)	(0.000)
N	1,201	313	480	408	
HighSynchr (1)	0.59%[b]	1.37%	0.50%[c]	0.44%	0.87%
p-value	(0.021)	(0.205)	(0.100)	(0.321)	(0.435)
N	451	53	293	105	
LowSynchr (2)	1.83%[a]	3.02%[a]	0.04%	1.36%[a]	2.98%[a]
p-value	(0.000)	(0.000)	(0.948)	(0.002)	(0.004)
N	371	156	63	152	
MediumSynchr (3)	1.38%[a]	2.78%[a]	0.58%	1.08%[b]	2.21%[b]
p-value	(0.000)	(0.000)	(0.260)	(0.024)	(0.016)
N	379	104	124	151	
L-H [(2)-(1)]	1.24%[a]	1.65%	-0.46%	0.92%	2.52%[a]
p-value	(0.010)	(0.226)	(0.499)	(0.137)	(0.005)
Panel D: Private Targets paid with by Stock					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	3.80%[a]	5.51%[a]	1.44%	1.80%	4.06%[c]
p-value	(0.000)	(0.002)	(0.265)	(0.213)	(0.057)
N	226	126	45	55	
HighSynchr (1)	1.10%	4.87%	0.76%	-2.29%	4.11%
p-value	(0.500)	(0.327)	(0.686)	(0.140)	(0.435)
N	60	16	29	15	
LowSynchr (2)	5.75%[a]	6.57%[b]	5.91%[c]	2.66%	0.66%
p-value	(0.003)	(0.011)	(0.055)	(0.265)	(0.844)
N	80	59	5	16	
MediumSynchr (3)	3.87%[b]	4.48%[c]	1.22%	3.79%	3.26%
p-value	(0.030)	(0.100)	(0.402)	(0.172)	(0.284)
N	86	51	11	24	
L-H [(2)-(1)]	4.65%[c]	1.70%	5.15%	4.94%[c]	5.81%[c]
p-value	(0.064)	(0.757)	(0.102)	(0.081)	(0.065)

Table 5.10-Continued

Panel E: DifferentIUl (Private Cash - Private Stock)					
	All	**HighIU**	**LowIU**	**MediumIU**	
All	-2.57%[b]	-2.85%	-0.99%	-0.78%	
p-value	(0.016)	(0.109)	(0.452)	(0.593)	
HighSynchr	-0.51%	-3.51%	-0.26%	2.73%[c]	
p-value	(0.757)	(0.487)	(0.890)	(0.092)	
LowSynchr	-3.92%[b]	-3.56%	-5.87%[c]	-1.29%	
p-value	(0.047)	(0.179)	(0.054)	(0.587)	
MediumSynchr	-2.49%	-1.69%	-0.64%	-2.71%	
p-value	(0.167)	(0.545)	(0.672)	(0.330)	
Panel F: Public Targets					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	-0.48%	-1.47%[c]	0.12%	-0.79%	-1.59%[c]
p-value	(0.133)	(0.085)	(0.777)	(0.115)	(0.094)
N	636	143	327	166	
HighSynchr (1)	-0.31%	-3.24%	0.13%	-0.83%	-3.38%
p-value	(0.484)	(0.145)	(0.780)	(0.438)	(0.138)
N	267	24	204	39	
LowSynchr (2)	-0.78%	-1.35%	0.57%	-1.46%[c]	-1.92%
p-value	(0.240)	(0.254)	(0.652)	(0.100)	(0.267)
N	166	66	52	48	
MediumSynchr (3)	-0.45%	-0.82%	-0.26%	-0.37%	-0.56%
p-value	(0.452)	(0.583)	(0.798)	(0.622)	(0.754)
N	203	53	71	79	
L-H [(2)-(1)]	-0.47%	1.90%	0.44%	-0.63%	-1.48%
p-value	(0.558)	(0.443)	(0.746)	(0.650)	(0.244)
Panel G: Public Targets paid by with Cash					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	1.14%[a]	3.25%[b]	0.73%	1.27%	2.52%[c]
p-value	(0.007)	(0.024)	(0.150)	(0.128)	(0.091)
N	253	31	173	49	
HighSynchr (1)	1.16%[b]	2.36%	1.12%[b]	0.93%	1.24%
p-value	(0.018)	(0.180)	(0.038)	(0.519)	(0.469)
N	136	6	118	12	
LowSynchr (2)	2.27%[c]	4.23%[b]	1.56%	1.32%	2.68%
p-value	(0.062)	(0.044)	(0.470)	(0.425)	(0.351)
N	45	13	21	11	
MediumSynchr (3)	0.41%	2.63%	-1.15%	1.41%	3.78%
p-value	(0.659)	(0.377)	(0.392)	(0.279)	(0.248)
N	72	12	34	26	
L-H [(2)-(1)]	1.11%	1.87%	0.43%	0.40%	3.11%
p-value	(0.389)	(0.450)	(0.845)	(0.854)	(0.135)

Table 5.10-Continued

Panel H: Public Targets paid by with Cash					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	-2.35%[a]	-3.82%[a]	-0.74%	-2.03%[a]	-3.08%[c]
p-value	(0.001)	(0.005)	(0.569)	(0.007)	(0.099)
N	187	71	52	64	
HighSynchr (1)	-2.32%[c]	-6.18%	-1.08%	-2.15%	-5.10%
p-value	(0.072)	(0.194)	(0.482)	(0.207)	(0.297)
N	57	11	32	14	
LowSynchr (2)	-2.80%[b]	-4.10%[b]	1.14%	-2.87%[b]	-5.24%
p-value	(0.016)	(0.035)	(0.768)	(0.015)	(0.230)
N	62	29	10	23	
MediumSynchr (3)	-1.96%[c]	-2.71%	-1.56%	-1.24%	-1.16%
p-value	(0.080)	(0.177)	(0.631)	(0.319)	(0.758)
N	68	31	10	27	
L-H [(2)-(1)]	-0.48%	2.08%	2.21%	-0.72%	-3.03%
p-value	(0.779)	(0.673)	(0.594)	(0.714)	(0.210)
Panel I: DifferentIUl (Public Cash - Public Stock)					
	All	**HighIU**	**LowIU**	**MediumIU**	
All	3.49%[a]	7.07%[a]	1.47%	3.30%[a]	
p-value	(0.000)	(0.000)	(0.295)	(0.003)	
HighSynchr	3.49%[b]	8.54%[c]	2.20%	3.08%	
p-value	(0.012)	(0.094)	(0.178)	(0.162)	
LowSynchr	5.07%[a]	8.34%[a]	0.42%	4.19%[b]	
p-value	(0.003)	(0.003)	(0.923)	(0.042)	
MediumSynchr	2.36%	5.34%	0.41%	2.66%	
p-value	(0.101)	(0.138)	(0.907)	(0.139)	

Table 5.11 Cumulative Abnormal Returns (CARs) of High and Low Uncertainty and High and Low Synchronicity Acquirers by Sigma of the Acquiring Firm

This table presents the Cumulative Abnormal Returns (CARs) during five days (-2, +2) surrounding the announcement of high and low information uncertainty acquirers by the sigma of the acquirer and high and low synchronicity acquirers. Synchronicity is measured as the R^2 of the following regression:

$$r_{i,j,t} = \beta_{i,0} + \beta_{i,m} r_{m,t} + \beta_{i,j} r_{j,t} + \varepsilon_{i,t}$$

where $r_{i,j,t}$ is the return of bidder i in industry j at time t, $r_{m,t}$ is the market return at time t and $r_{j,t}$ is the return of industry j at time t.

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). The 33% highest sigma acquirers are classified as high uncertainty, the 33% lowest sigma as low uncertainty and the medium 33% as of medium uncertainty. Sigma is measured by the standard deviation of daily excess returns 200 days before the announcement date of the deal. The lowest 33% R^2 firms are classified as low synchronicity, the highest 33% R^2 firms as high synchronicity and the rest as medium. Panel A illustrates the gains to acquirers for the entire sample, Panel B for acquisitions for private target firms only, Panel C for acquisitions for private target paid for with cash, Panel D for acquisitions for private target paid for with equity, Panel F for acquisitions for public target firms only, Panel G for acquisitions for public target paid for with cash and Panel H for acquisitions for public target paid for with stock. Cash deals are deals financed with 100% cash and stock deals are deals financed 100% with stock. The L-H [(2)-(1)] at the last row of each panel represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of low versus high synchronicity bidders. The H-L [(4)-(5)] at the last column of each panel represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of high versus low uncertainty bidders. The diagonal differential in each panel represent the difference in mean CARs for the five days (-2, +2) around the acquisition announcement between low synchronicity-high uncertainty versus high synchronicity-low uncertainty bidders. Panels E and I illustrate the differentials of cash versus stock acquisitions for private and public targets respectively for all the combinations of portfolios. The number of bids for each category is reported below the mean return. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively. P-values are reported in brackets.

Panel A: Entire Sample					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	1.51%[a]	2.32%[a]	0.91%[a]	1.21%[a]	1.42%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	5,834	2,064	1,818	1,952	
HighSynchr (1)	0.87%[a]	1.45%[a]	0.46%[a]	0.78%[a]	0.99%[b]
p-value	(0.000)	(0.000)	(0.001)	(0.001)	(0.020)
N	1,937	601	718	618	
LowSynchr (2)	1.88%[a]	2.74%[a]	1.16%[a]	1.54%[a]	1.58%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.003)
N	1,939	720	557	662	
MediumSynchr (3)	1.78%[a]	2.62%[a]	1.24%[a]	1.29%[a]	1.38%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.004)
N	1,958	743	543	672	
L-H [(2)-(1)]	1.01%[a]	1.29%[b]	0.70%[a]	0.76%[b]	2.28%[a]
p-value	(0.000)	(0.041)	(0.005)	(0.030)	(0.000)

Table 5.11-Continued

Panel B: Private Targets					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	1.75%[a]	2.55%[a]	1.06%[a]	1.43%[a]	1.49%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	3,385	1,283	956	1,146	
HighSynchr (1)	0.99%[a]	1.39%[b]	0.52%[a]	1.01%[a]	0.87%
p-value	(0.000)	(0.012)	(0.006)	(0.001)	(0.135)
N	1,003	362	321	320	
LowSynchr (2)	2.16%[a]	3.12%[a]	1.31%[a]	1.77%[a]	1.81%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.007)
N	1,222	470	333	419	
MediumSynchr (3)	1.97%[a]	2.88%[a]	1.35%[a]	1.41%[a]	1.53%[b]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.021)
N	1,160	451	302	407	
L-H [(2)-(1)]	1.18%[a]	1.73%[b]	0.79%[b]	0.77%[c]	2.60%[a]
p-value	(0.001)	(0.036)	(0.015)	(0.085)	(0.000)
Panel C: Private Targets paid with by Cash					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	1.17%[a]	1.77%[a]	0.74%[a]	1.04%[a]	1.03%[c]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.054)
N	1,168	360	379	429	
HighSynchr (1)	0.61%[b]	0.47%	0.58%[b]	0.76%[c]	-0.11%
p-value	(0.019)	(0.488)	(0.023)	(0.071)	(0.873)
N	436	126	158	152	
LowSynchr (2)	1.74%[a]	2.75%[b]	0.94%[b]	1.50%[a]	1.81%
p-value	(0.000)	(0.014)	(0.019)	(0.001)	(0.126)
N	360	116	107	137	
MediumSynchr (3)	1.26%[a]	2.19%[a]	0.77%[b]	0.88%[c]	1.42%[c]
p-value	(0.000)	(0.005)	(0.038)	(0.063)	(0.096)
N	372	118	114	140	
L-H [(2)-(1)]	1.13%[b]	2.28%[c]	0.36%	0.74%	2.17%[c]
p-value	(0.021)	(0.079)	(0.443)	(0.227)	(0.058)
Panel D: Private Targets paid with by Stock					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	4.04%[a]	4.30%[a]	3.04%	4.49%[a]	1.26%
p-value	(0.000)	(0.006)	(0.134)	(0.006)	(0.620)
N	219	131	51	37	
HighSynchr (1)	1.60%	3.39%	0.03%	-0.06%	3.36%
p-value	(0.332)	(0.315)	(0.982)	(0.966)	(0.350)
N	57	27	19	11	
LowSynchr (2)	5.89%[a]	6.57%[b]	3.67%	6.56%[a]	2.90%
p-value	(0.004)	(0.046)	(0.145)	(0.003)	(0.471)
N	77	45	18	14	
MediumSynchr (3)	4.00%[b]	2.99%	6.33%	6.25%	-3.34%
p-value	(0.027)	(0.126)	(0.342)	(0.137)	(0.625)
N	85	59	14	12	
L-H [(2)-(1)]	4.28%[c]	3.18%	3.64%	6.62%[a]	6.54%[c]
p-value	(0.097)	(0.492)	(0.193)	(0.006)	(0.063)

Table 5.11-Continued

Panel E: DifferentIUl (Private Cash - Private Stock)					
	All	**HighIU**	**LowIU**	**MediumIU**	
All	-2.88%[a]	-2.53%	-2.30%	-3.46%[b]	
p-value	(0.009)	(0.122)	(0.256)	(0.031)	
HighSynchr	-0.99%	-2.92%	0.55%	0.81%	
p-value	(0.551)	(0.394)	(0.679)	(0.554)	
LowSynchr	-4.15%[b]	-3.82%	-2.73%	-5.06%[b]	
p-value	(0.042)	(0.264)	(0.277)	(0.015)	
MediumSynchr	-2.74%	-0.80%	-5.56%	-5.37%	
p-value	(0.132)	(0.700)	(0.403)	(0.197)	
Panel F: Public Targets					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	-0.47%	-0.74%	-0.24%	-0.39%	-0.50%
p-value	(0.142)	(0.294)	(0.520)	(0.405)	(0.532)
N	625	229	204	192	
HighSynchr (1)	-0.28%	0.35%	-0.16%	-1.06%	0.51%
p-value	(0.543)	(0.765)	(0.718)	(0.132)	(0.684)
N	260	80	101	79	
LowSynchr (2)	-0.76%	-1.58%	-0.56%	0.10%	-1.02%
p-value	(0.257)	(0.241)	(0.536)	(0.918)	(0.527)
N	164	66	46	52	
MediumSynchr (3)	-0.49%	-1.14%	-0.13%	0.06%	-1.01%
p-value	(0.412)	(0.342)	(0.874)	(0.941)	(0.490)
N	201	83	57	61	
L-H [(2)-(1)]	-0.48%	-1.93%	-0.40%	1.16%	-1.42%
p-value	(0.549)	(0.280)	(0.692)	(0.337)	(0.316)
Panel G: Public Targets paid by with Cash					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	1.15%[a]	2.15%[b]	0.48%	0.89%	1.67%
p-value	(0.008)	(0.041)	(0.305)	(0.184)	(0.145)
N	250	80	90	80	
HighSynchr (1)	1.15%[b]	3.14%[b]	0.46%	0.44%	2.68%[c]
p-value	(0.020)	(0.035)	(0.300)	(0.585)	(0.080)
N	134	35	58	41	
LowSynchr (2)	2.27%[c]	5.14%[b]	1.16%	-0.02%	3.98%
p-value	(0.062)	(0.045)	(0.504)	(0.993)	(0.182)
N	45	17	13	15	
MediumSynchr (3)	0.42%	-0.89%	0.10%	2.21%	-0.99%
p-value	(0.650)	(0.620)	(0.946)	(0.127)	(0.664)
N	71	28	19	24	
L-H [(2)-(1)]	1.12%	2.01%	0.70%	-0.46%	4.69%[c]
p-value	(0.385)	(0.474)	(0.692)	(0.807)	(0.068)

Table 5.11-Continued

Panel H: Public Targets paid by with Stock					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	-2.43%[a]	-4.69%[a]	-0.34%	-0.89%	-4.35%[a]
p-value	(0.001)	(0.001)	(0.712)	(0.323)	(0.007)
N	181	80	48	53	
HighSynchr (1)	-2.37%[c]	-4.86%	0.15%	-1.41%	-5.01%
p-value	(0.079)	(0.110)	(0.941)	(0.267)	(0.168)
N	54	21	13	20	
LowSynchr (2)	-2.82%[b]	-5.52%[a]	-1.40%	-0.30%	-4.12%
p-value	(0.019)	(0.008)	(0.475)	(0.880)	(0.136)
N	60	26	14	20	
MediumSynchr (3)	-2.12%[c]	-3.93%[c]	0.06%	-1.02%	-3.99%[c]
p-value	(0.060)	(0.064)	(0.962)	(0.373)	(0.098)
N	67	33	21	13	
L-H [(2)-(1)]	-0.44%	-0.66%	-1.56%	1.11%	-5.67%[c]
p-value	(0.802)	(0.851)	(0.582)	(0.632)	(0.051)
Panel I: DifferentIUl (Public Cash - Public Stock)					
	All	**HighIU**	**LowIU**	**MediumIU**	
All	3.57%[a]	6.84%[a]	0.82%	1.78%	
p-value	(0.000)	(0.000)	(0.428)	(0.113)	
HighSynchr	3.52%[b]	7.99%[b]	0.30%	1.85%	
p-value	(0.015)	(0.020)	(0.887)	(0.217)	
LowSynchr	5.09%[a]	10.66%[a]	2.56%	0.28%	
p-value	(0.003)	(0.001)	(0.323)	(0.913)	
MediumSynchr	2.54%[c]	3.04%	0.04%	3.24%[c]	
p-value	(0.081)	(0.267)	(0.983)	(0.078)	

Table 5.12 Cumulative Abnormal Returns (CARs) of High and Low Uncertainty and High and Low Synchronicity Acquirers by Trading Volume of the Acquiring Firm

This table presents the Cumulative Abnormal Returns (CARs) during five days (-2, +2) surrounding the announcement of high and low information uncertainty acquirers by the trading volume of the acquirer and high and low synchronicity acquirers. Synchronicity is measured as the R^2 of the following regression:

$$r_{i,j,t} = \beta_{i,0} + \beta_{i,m} r_{m,t} + \beta_{i,j} r_{j,t} + \varepsilon_{i,t}$$

where $r_{i,j,t}$ is the return of bidder i in industry j at time t, $r_{m,t}$ is the market return at time t and $r_{j,t}$ is the return of industry j at time t.

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). The 33% less active acquirers are classified as high uncertainty, the 33% most active as low uncertainty and the medium 33% as of medium uncertainty. Trading Volume is measured as the average of the monthly trading volume of the acquirer before the announcement date of the deal. The lowest 33% R^2 firms are classified as low synchronicity, the highest 33% R^2 firms as high synchronicity and the rest as medium. Panel A illustrates the gains to acquirers for the entire sample, Panel B for acquisitions for private target firms only, Panel C for acquisitions for private target paid for with cash, Panel D for acquisitions for private target paid for with equity, Panel F for acquisitions for public target firms only, Panel G for acquisitions for public target paid for with cash and Panel H for acquisitions for public target paid for with stock. Cash deals are deals financed with 100% cash and stock deals are deals financed 100% with stock. The L-H [(2)-(1)] at the last row of each panel represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of low versus high synchronicity bidders. The H-L [(4)-(5)] at the last column of each panel represents the differences in mean CARs for the five days (-2, +2) around the acquisition announcement of high versus low uncertainty bidders. The diagonal differential in each panel represent the difference in mean CARs for the five days (-2, +2) around the acquisition announcement between low synchronicity-high uncertainty versus high synchronicity-low uncertainty bidders. Panels E and I illustrate the differentials of cash versus stock acquisitions for private and public targets respectively for all the combinations of portfolios. The number of bids for each category is reported below the mean return. Significance levels at 1%, 5% and 10% are represented by ‘a’, ‘b’ and ‘c’, respectively. P-values are reported in brackets.

Panel A: Entire Sample					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	1.56%[a]	2.17%[a]	0.87%[a]	1.65%[a]	1.31%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	4,756	1,592	1,641	1,523	
HighSynchr (1)	0.87%[a]	1.61%[a]	0.62%[a]	1.06%[a]	0.99%
p-value	(0.000)	(0.007)	(0.001)	(0.006)	(0.113)
N	1,653	238	995	420	
LowSynchr (2)	2.00%[a]	1.97%[a]	1.51%[a]	2.29%[a]	0.46%
p-value	(0.000)	(0.000)	(0.001)	(0.000)	(0.430)
N	1,530	753	250	527	
MediumSynchr (3)	1.84%[a]	2.66%[a]	1.09%[a]	1.50%[a]	1.57%[a]
p-value	(0.000)	(0.000)	(0.001)	(0.000)	(0.004)
N	1,573	601	396	576	
L-H [(2)-(1)]	1.13%[a]	0.36%	0.89%[c]	1.23%[b]	1.35%[a]
p-value	(0.000)	(0.615)	(0.062)	(0.020)	(0.002)

Table 5.12-Continued

Panel B: Private Targets					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	1.76%[a]	2.48%[a]	0.89%[a]	1.58%[a]	1.58%[a]
p-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	2,775	1,110	736	929	
HighSynchr (1)	0.95%[a]	1.66%[b]	0.64%[b]	1.03%[b]	1.03%
p-value	(0.000)	(0.029)	(0.022)	(0.047)	(0.203)
N	850	153	430	267	
LowSynchr (2)	2.36%[a]	2.47%[a]	1.96%[a]	2.32%[a]	0.51%
p-value	(0.000)	(0.000)	(0.001)	(0.000)	(0.482)
N	981	537	120	324	
MediumSynchr (3)	1.86%[a]	2.78%[a]	0.80%[c]	1.30%[a]	1.98%[a]
p-value	(0.000)	(0.000)	(0.067)	(0.002)	(0.005)
N	944	420	186	338	
L-H [(2)-(1)]	1.41%[a]	0.81%	1.32%[b]	1.29%[c]	1.83%[a]
p-value	(0.000)	(0.357)	(0.038)	(0.073)	(0.001)
Panel C: Private Targets paid with by Cash					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	1.27%[a]	2.43%[a]	0.57%[b]	1.07%[a]	1.87%[a]
p-value	(0.000)	(0.000)	(0.028)	(0.002)	(0.001)
N	977	284	369	324	
HighSynchr (1)	0.60%[b]	1.08%	0.44%	0.81%	0.64%
p-value	(0.036)	(0.324)	(0.187)	(0.185)	(0.574)
N	379	38	240	101	
LowSynchr (2)	2.12%[a]	2.95%[a]	1.15%[c]	1.56%[a]	1.80%[c]
p-value	(0.000)	(0.000)	(0.069)	(0.010)	(0.071)
N	299	137	55	107	
MediumSynchr (3)	1.28%[a]	2.24%[a]	0.54%	0.84%	1.70%[b]
p-value	(0.000)	(0.002)	(0.289)	(0.136)	(0.049)
N	299	109	74	116	
L-H [(2)-(1)]	1.52%[a]	1.87%	0.71%	0.74%	2.52%[a]
p-value	(0.003)	(0.163)	(0.313)	(0.382)	(0.003)
Panel D: Private Targets paid with by Stock					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	4.02%[a]	3.77%[b]	3.34%[c]	5.15%[c]	0.43%
p-value	(0.002)	(0.049)	(0.060)	(0.083)	(0.868)
N	162	87	35	40	
HighSynchr (1)	2.38%	-1.50%	1.27%	8.07%	-2.77%
p-value	(0.306)	(0.475)	(0.639)	(0.260)	(0.414)
N	40	11	18	11	
LowSynchr (2)	5.51%[b]	4.23%	5.94%	9.73%	-1.71%
p-value	(0.021)	(0.103)	(0.172)	(0.209)	(0.705)
N	54	38	5	11	
MediumSynchr (3)	3.80%[c]	4.83%	5.37%[c]	0.56%	-0.54%
p-value	(0.072)	(0.172)	(0.071)	(0.804)	(0.902)
N	68	38	12	18	
L-H [(2)-(1)]	3.13%	5.73%[c]	4.67%	1.66%	2.96%
p-value	(0.338)	(0.084)	(0.321)	(0.869)	(0.423)

Table 5.12-Continued

Panel E: DifferentIUl (Private Cash - Private Stock)					
	All	**HighIU**	**LowIU**	**MediumIU**	
All	-2.74%[b]	-1.34%	-2.78%	-4.08%	
p-value	(0.037)	(0.495)	(0.119)	(0.169)	
HighSynchr	-1.77%	2.58%	-0.83%	-7.26%	
p-value	(0.447)	(0.277)	(0.761)	(0.310)	
LowSynchr	-3.39%	-1.28%	-4.79%	-8.17%	
p-value	(0.155)	(0.632)	(0.253)	(0.287)	
MediumSynchr	-2.52%	-2.59%	-4.83%	0.27%	
p-value	(0.236)	(0.469)	(0.103)	(0.906)	

Panel F: Public Targets					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	-0.41%	-2.33%[b]	0.16%	0.10%	-2.49%[b]
p-value	(0.277)	(0.019)	(0.739)	(0.881)	(0.024)
N	500	110	257	133	
HighSynchr (1)	-0.26%	-3.87%	0.06%	-0.11%	-3.93%
p-value	(0.619)	(0.192)	(0.912)	(0.922)	(0.192)
N	218	16	166	36	
LowSynchr (2)	-0.80%	-2.77%[b]	0.39%	0.65%	-3.16%
p-value	(0.297)	(0.034)	(0.802)	(0.568)	(0.120)
N	133	54	31	48	
MediumSynchr (3)	-0.28%	-1.14%	0.30%	-0.29%	-1.44%
p-value	(0.708)	(0.526)	(0.773)	(0.804)	(0.487)
N	149	40	60	49	
L-H [(2)-(1)]	-0.54%	1.10%	0.33%	0.77%	-2.83%[b]
p-value	(0.556)	(0.726)	(0.843)	(0.636)	(0.046)

Panel G: Public Targets paid by with Cash					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	1.12%[b]	3.14%[b]	0.76%	0.63%	2.38%
p-value	(0.017)	(0.038)	(0.184)	(0.466)	(0.135)
N	217	36	129	52	
HighSynchr (1)	1.02%[c]	2.67%	1.12%[c]	0.04%	1.54%
p-value	(0.058)	(0.216)	(0.084)	(0.970)	(0.466)
N	115	6	90	19	
LowSynchr (2)	2.22%[c]	2.29%	0.87%	3.22%	1.43%
p-value	(0.086)	(0.338)	(0.677)	(0.170)	(0.647)
N	41	14	12	15	
MediumSynchr (3)	0.58%	4.06%	-0.49%	-0.90%	4.55%
p-value	(0.568)	(0.134)	(0.737)	(0.472)	(0.135)
N	61	16	27	18	
L-H [(2)-(1)]	1.19%	-0.37%	-0.25%	3.19%	1.17%
p-value	(0.386)	(0.902)	(0.907)	(0.203)	(0.632)

Table 5.12-Continued

Panel H: Public Targets paid by with Stock					
	All	**HighIU (4)**	**LowIU (5)**	**MediumIU (6)**	**H-L [(4)-(5)]**
All	-2.79%[a]	-6.85%[a]	0.01%	-2.02%[c]	-6.86%[a]
p-value	(0.002)	(0.001)	(0.994)	(0.093)	(0.005)
N	130	40	46	44	
HighSynchr (1)	-2.59%	-13.30%	-1.33%	-0.40%	-11.96%
p-value	(0.132)	(0.110)	(0.451)	(0.918)	(0.141)
N	41	5	27	9	
LowSynchr (2)	-3.00%[b]	-6.48%[b]	2.00%	-1.81%	-8.47%
p-value	(0.036)	(0.012)	(0.655)	(0.217)	(0.108)
N	45	18	8	19	
MediumSynchr (3)	-2.75%[c]	-5.34%[c]	1.87%	-3.18%	-7.21%
p-value	(0.098)	(0.093)	(0.606)	(0.118)	(0.132)
N	44	17	11	16	
L-H [(2)-(1)]	-0.41%	6.82%	3.33%	-1.42%	-5.14%[c]
p-value	(0.849)	(0.368)	(0.488)	(0.729)	(0.085)

Panel I: DifferentIUl (Public Cash - Public Stock)					
	All	**HighIU**	**LowIU**	**MediumIU**	
All	3.91%[a]	9.99%[a]	0.75%	2.65%[c]	
p-value	(0.000)	(0.000)	(0.640)	(0.072)	
HighSynchr	3.61%[b]	15.96%[c]	2.46%	0.43%	
p-value	(0.046)	(0.069)	(0.195)	(0.913)	
LowSynchr	5.22%[a]	8.77%[b]	-1.13%	5.03%[c]	
p-value	(0.007)	(0.012)	(0.817)	(0.068)	
MediumSynchr	3.33%[c]	9.40%[b]	-2.35%	2.27%	
p-value	(0.086)	(0.024)	(0.544)	(0.327)	

Table 5.13 Correlation Matrix Table for Control Variables

This Table presents the correlations coefficient among all the variable that are used in the multivariate analysis. Information Uncertainty (IU) is captured by four proxies. The 33% youngest acquirers are classified as high uncertainty, the 33% oldest as low uncertainty and the medium 33% as of medium uncertainty. Age is measured as the difference between the incorporation date of the firm until the announcement date of the deal. The 33% smallest acquirers are classified as high uncertainty, the 33% largest as low uncertainty and the medium 33% as of medium uncertainty. Size is measured as the market capitalization (MV) of the bidding firm 20 days before the announcement date of the deal. The 33% highest sigma acquirers are classified as high uncertainty, the 33% lowest sigma as low uncertainty and the medium 33% as of medium uncertainty. Sigma is measured by the standard deviation of daily excess returns 200 days before the announcement date of the deal. Finally, the 33% less active acquirers are classified as high uncertainty, the 33% most active as low uncertainty and the medium 33% as of medium uncertainty. Trading Volume is measured as the average of the monthly trading volume of the acquirer before the announcement date of the deal. Synchronicity is the logarithmic transformation of R^2.
Synchronicity is measured as the R^2 of the following regression:

$$r_{i,j,t}= \beta_{i,0} + \beta_{i,m}\, r_{m,t} + \beta_{i,j}\, r_{j,t} + \varepsilon_{i,t}$$

where $r_{i,j,t}$ is the return of bidder i in industry j at time t, $r_{m,t}$ is the market return at time t and $r_{j,t}$ is the return of industry j at time t. The lowest 33% R^2 firms are classified as low synchronicity, the highest 33% R^2 firms as high synchronicity and the rest as medium.
HighIU dummy takes the value of 1 of the bid was announced by a high information uncertainty bidder according to the four proxies, and zero otherwise. The LowSynchr dummy takes the value of 1 if the bid was announced by a low synchronicity bidder and zero otherwise. Target ownership status dummy takes the value of one if the target is private and zero otherwise; cash (stock) deals is an indicator variable that takes the value of 1 for acquisitions financed with 100% cash (stock) and 0 otherwise. Diversifying deals is a dummy that takes the value of 1 when the acquirer’s two-digit SIC code is different from that of the target and 0 otherwise. Bidder’s market-to-book is measured by the bidder’s market value a month before the announcement of the deal divided by its net book value of assets; a deal’s relative size is the ratio between target and bidder size. Domestic deals dummy takes the value of 1 for acquisitions of UK firms and zero 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 5.13-continued

Panel A: Age															
	HighIU	**LowSynchr.**	**HsHiu**	**HsLiu**	**LsHiu**	**LsLiu**	**Private**	**Cash**	**Stock**	**MTBV**	**Relative Size**	**Domestic**	**Diversifying**	**FTALLSH**	**Ri-Rm**
HighIU	1														
LowSynchr.	0.086	1													
HsHiu	0.419	-0.214	1												
HsLiu	-0.300	-0.294	-0.126	1											
LsHiu	0.544	0.554	-0.118	-0.163	1										
LsLiu	-0.218	0.427	-0.091	-0.126	-0.119	1									
Private	0.088	0.069	0.023	-0.116	0.074	-0.004	1								
Cash	-0.140	-0.107	-0.036	0.170	-0.098	0.023	-0.251	1							
Stock	0.055	0.022	0.032	-0.054	0.013	-0.032	-0.072	-0.265	1						
MTBV	0.033	-0.009	0.044	-0.023	-0.009	-0.014	0.011	-0.028	0.016	1					
Relative Size	0.049	0.009	-0.009	-0.045	0.023	-0.017	0.000	-0.076	0.138	-0.011	1				
Domestic	0.096	0.100	0.003	-0.149	0.092	0.001	0.012	-0.118	0.075	-0.028	0.011	1			
Diversifying	-0.106	-0.028	-0.035	0.084	-0.079	0.068	0.027	0.002	0.012	-0.030	0.030	0.016	1		
FTALLSH	-0.040	0.083	-0.069	-0.020	0.032	0.066	-0.020	0.013	0.024	0.020	0.005	0.030	0.029	1	
Ri-Rm	0.070	0.024	0.034	-0.050	0.028	-0.027	0.037	-0.070	0.098	0.075	0.002	0.003	-0.007	0.025	1
Panel B: Size															
	HighIU	**LowSynchr.**	**HsHiu**	**HsLiu**	**LsHiu**	**LsLiu**	**Private**	**Cash**	**Stock**	**MTBV**	**Relative Size**	**Domestic**	**Diversifying**	**FTALLSH**	**Ri-Rm**
HighIU	1														
LowSynchr.	0.219	1													
HsHiu	0.331	-0.163	1												
HsLiu	-0.355	-0.361	-0.117	1											
LsHiu	0.621	0.611	-0.099	-0.220	1										
LsLiu	-0.168	0.340	-0.055	-0.123	-0.104	1									
Private	0.127	0.069	0.035	-0.139	0.094	-0.053	1								
Cash	-0.208	-0.107	-0.047	0.183	-0.147	0.043	-0.251	1							
Stock	0.093	0.022	0.018	-0.052	0.060	-0.020	-0.072	-0.265	1						
MTBV	-0.027	-0.009	0.014	0.000	-0.024	0.043	0.011	-0.028	0.016	1					
Relative Size	0.133	0.009	0.045	-0.059	0.056	-0.024	0.000	-0.076	0.138	-0.011	1				
Domestic	0.235	0.100	0.082	-0.228	0.137	-0.045	0.012	-0.118	0.075	-0.028	0.011	1			
Diversifying	-0.038	-0.028	-0.020	0.039	-0.032	-0.003	0.027	0.002	0.012	-0.030	0.030	0.016	1		
FTALLSH	-0.005	0.083	-0.047	-0.033	0.032	0.042	-0.020	0.013	0.024	0.020	0.005	0.030	0.029	1	
Ri-Rm	-0.007	0.024	-0.012	-0.022	0.003	0.014	0.037	-0.070	0.098	0.075	0.002	0.003	-0.007	0.025	1

Table 5.13-continued

Panel C: Sigma															
	HighIU	**LowSynchr.**	**HsHiu**	**HsLiu**	**LsHiu**	**LsLiu**	**Private**	**Cash**	**Stock**	**MTBV**	**Relative Size**	**Domestic**	**Diversifying**	**FTALLSH**	**Ri-Rm**
HighIU	1														
LowSynchr.	0.026	1													
HsHiu	0.458	-0.239	1												
HsLiu	-0.277	-0.264	-0.127	1											
LsHiu	0.507	0.532	-0.127	-0.141	1										
LsLiu	-0.240	0.460	-0.110	-0.122	-0.122	1									
Private	0.067	0.069	0.015	-0.101	0.055	0.012	1								
Cash	-0.138	-0.107	-0.021	0.133	-0.108	-0.028	-0.251	1							
Stock	0.106	0.022	0.017	-0.048	0.068	-0.013	-0.072	-0.265	1						
MTBV	0.029	-0.009	0.002	0.009	0.022	-0.009	0.011	-0.028	0.016	1					
Relative Size	0.061	0.009	-0.003	-0.032	0.039	-0.016	0.000	-0.076	0.138	-0.011	1				
Domestic	-0.021	0.100	-0.083	-0.096	0.038	0.068	0.012	-0.118	0.075	-0.028	0.011	1			
Diversifying	-0.059	-0.028	-0.014	0.044	-0.041	0.028	0.027	0.002	0.012	-0.030	0.030	0.016	1		
FTALLSH	-0.205	0.083	-0.201	0.096	-0.025	0.124	-0.020	0.013	0.024	0.020	0.005	0.030	0.029	1	
Ri-Rm	0.133	0.024	0.029	-0.047	0.093	-0.039	0.037	-0.070	0.098	0.075	0.002	0.003	-0.007	0.025	1
Panel D: Trading Volume															
	HighIU	**LowSynchr.**	**HsHiu**	**HsLiu**	**LsHiu**	**LsLiu**	**Private**	**Cash**	**Stock**	**MTBV**	**Relative Size**	**Domestic**	**Diversifying**	**FTALLSH**	**Ri-Rm**
HighIU	1														
LowSynchr.	0.230	1													
HsHiu	0.324	-0.158	1												
HsLiu	-0.365	-0.354	-0.118	1											
LsHiu	0.611	0.630	-0.100	-0.223	1										
LsLiu	-0.167	0.342	-0.054	-0.121	-0.102	1									
Private	0.157	0.069	0.028	-0.158	0.114	-0.049	1								
Cash	-0.193	-0.107	-0.046	0.187	-0.140	0.047	-0.251	1							
Stock	0.053	0.022	0.005	-0.048	0.028	0.002	-0.072	-0.265	1						
MTBV	0.015	-0.009	-0.007	-0.001	0.002	0.031	0.011	-0.028	0.016	1					
Relative Size	0.106	0.009	0.031	-0.053	0.044	-0.020	0.000	-0.076	0.138	-0.011	1				
Domestic	0.186	0.100	0.063	-0.219	0.109	-0.038	0.012	-0.118	0.075	-0.028	0.011	1			
Diversifying	-0.040	-0.028	-0.001	0.036	-0.020	0.006	0.027	0.002	0.012	-0.030	0.030	0.016	1		
FTALLSH	-0.021	0.083	-0.054	-0.023	0.021	0.044	-0.020	0.013	0.024	0.020	0.005	0.030	0.029	1	
Ri-Rm	0.004	0.024	0.007	-0.047	-0.002	0.026	0.037	-0.070	0.098	0.075	0.002	0.003	-0.007	0.025	1

Table 5.14 Regressions of CARs on Proxies of Information Uncertainty, Synchronicity and Deal Features for the Whole Sample

This table presents regression estimates of the acquirer's five-day cumulative abnormal return controlling for information unceratainty and synchronicity of the bidder's stock price. Information Uncertainty (IU) is captured by four proxies. The 33% youngest acquirers are classified as high uncertainty, the 33% oldest as low uncertainty and the medium 33% as of medium uncertainty. Age is measured as the difference between the incorporation date of the firm until the announcement date of the deal. The 33% smallest acquirers are classified as high uncertainty, the 33% largest as low uncertainty and the medium 33% as of medium uncertainty. Size is measured as the market capitalization (MV) of the bidding firm 20 days before the announcement date of the deal. The 33% highest sigma acquirers are classified as high uncertainty, the 33% lowest sigma as low uncertainty and the medium 33% as of medium uncertainty. Sigma is measured by the standard deviation of daily excess returns 200 days before the announcement date of the deal. Finally, the 33% less active acquirers are classified as high uncertainty, the 33% most active as low uncertainty and the medium 33% as of medium uncertainty. Trading Volume is measured as the average of the monthly trading volume of the acquirer before the announcement date of the deal. Synchronicity is the logarithmic transformation of R^2.
Synchronicity is measured as the R^2 of the following regression:

$$r_{i,j,t}= \beta_{i,0} + \beta_{i,m} r_{m,t} + \beta_{i,j} r_{j,t} +\varepsilon_{i,t}$$

where $r_{i,j,t}$ is the return of bidder i in industry j at time t, $r_{m,t}$ is the market return at time t and $r_{j,t}$ is the return of industry j at time t. The lowest 33% R^2 firms are classified as low synchronicity, the highest 33% R^2 firms as high synchronicity and the rest as medium.
HighIU dummy takes the value of 1 of the bid was announced by a high information uncertainty bidder according to the four proxies, and zero otherwise. The LowSynchr dummy takes the value of 1 if the bid was announced by a low synchronicity bidder and zero otherwise. Target ownership status dummy takes the value of one if the target is private and zero otherwise; cash (stock) deals is an indicator variable that takes the value of 1 for acquisitions financed with 100% cash (stock) and 0 otherwise. Diversifying deals is a dummy that takes the value of 1 when the acquirer's two-digit SIC code is different from that of the target and 0 otherwise. Bidder's market-to-book is measured by the bidder's market value a month before the announcement of the deal divided by its net book value of assets; a deal's relative size is the ratio between target and bidder size. Domestic deals dummy takes the value of 1 for acquisitions of UK firms and zero 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. P-values are reported in brackets under the coefficients. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively.

Table 5.14-Continued

All	Age						Size						Sigma						VO					
CARs	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
HighIU	0.005[b]					0.006[c]	0.019[a]					0.021[a]	0.016[a]					0.016[a]	0.009[a]					0.014[a]
	(0.061)					(0.078)	(0.000)					(0.000)	(0.000)					(0.000)	(0.003)					(0.000)
LowSynchr		0.003				0.004		0.003				0.001		0.003				0.002		0.003				0.008[b]
		(0.177)				(0.172)		(0.177)				(0.555)		(0.177)				(0.262)		(0.177)				(0.013)
HsHiu					-0.002						0.009						0.004						0.000	
					(0.703)						(0.170)						(0.376)						(0.986)	
HsLiu			-0.010[a]		-0.010[a]				-0.012[a]		-0.010[a]				-0.012[a]		-0.011[a]				-0.010[a]		-0.010[a]	
			(0.000)		(0.000)				(0.000)		(0.000)				(0.000)		(0.000)				(0.000)		(0.000)	
LsHiu				0.005	0.003	-0.002				0.013[a]	0.011[a]	-0.004				0.014[a]	0.000[a]	0.002				0.003	0.000	-0.014
				(0.223)	(0.491)	(0.757)				(0.002)	(0.007)	(0.485)				(0.004)	(0.000)	(0.792)				(0.551)	(0.927)	(0.021)
LsLiu					-0.007[b]						-0.004						-0.007[a]						-0.003	
					(0.041)						(0.262)						(0.005)						(0.541)	
Private target	0.006[a]	0.006[a]	0.005[b]	0.006[a]	0.005[b]	0.006[b]	0.004[b]	0.006[b]	0.005[b]	0.005[b]	0.005[b]	0.004[b]	0.005[b]	0.006[a]	0.005[b]	0.006[b]	0.005[b]	0.005[b]	0.004[c]	0.006[a]	0.004[c]	0.005[b]	0.004[a]	0.004
	(0.010)	(0.009)	(0.016)	(0.009)	(0.018)	(0.012)	(0.043)	(0.009)	(0.026)	(0.015)	(0.048)	(0.047)	(0.013)	(0.009)	(0.016)	(0.011)	(0.021)	(0.017)	(0.087)	(0.009)	(0.085)	(0.042)	(0.094)	(0.104)
Cash deals	-0.001	-0.001	0.000	-0.001	0.000	0.000	0.001	-0.001	0.000	0.000	0.001	0.001	0.000	-0.001	0.000	0.000	0.000	0.001	0.000	-0.001	0.000	-0.001	0.000	0.000
	(0.730)	(0.682)	(0.895)	(0.669)	(0.968)	(0.835)	(0.536)	(0.682)	(0.974)	(0.938)	(0.681)	(0.532)	(0.889)	(0.682)	(0.845)	(0.829)	(0.980)	(0.808)	(0.986)	(0.682)	(0.987)	(0.745)	(0.957)	(0.902)
Stock deals	0.001	0.001	0.001	0.001	0.001	0.001	-0.001	0.001	0.001	0.001	0.001	0.000	-0.001	0.001	0.001	0.001	0.000	-0.001	0.002	0.001	0.003	0.003	0.003	0.002
	(0.893)	(0.866)	(0.888)	(0.864)	(0.903)	(0.898)	(0.933)	(0.866)	(0.875)	(0.925)	(0.934)	(0.938)	(0.882)	(0.866)	(0.885)	(0.935)	(0.987)	(0.872)	(0.775)	(0.866)	(0.755)	(0.752)	(0.754)	(0.762)
M/B	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.324)	(0.341)	(0.320)	(0.345)	(0.333)	(0.326)	(0.429)	(0.341)	(0.337)	(0.374)	(0.379)	(0.434)	(0.293)	(0.341)	(0.348)	(0.300)	(0.310)	(0.296)	(0.683)	(0.341)	(0.701)	(0.701)	(0.708)	(0.680)
Relative Size	0.000	0.000	0.000	0.000	0.000	0.000	-0.001	0.000	0.000	0.000	0.000	-0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	(0.700)	(0.824)	(0.804)	(0.819)	(0.795)	(0.810)	(0.507)	(0.824)	(0.788)	(0.791)	(0.747)	(0.631)	(0.650)	(0.824)	(0.808)	(0.798)	(0.781)	(0.744)	(0.684)	(0.824)	(0.820)	(0.836)	(0.818)	(0.780)
Domestic deals	0.004[c]	0.004[c]	0.003	0.004[c]	0.003	0.004[c]	0.000	0.004[c]	0.002	0.003	0.001	0.000	0.005[b]	0.004[c]	0.004[c]	0.004[c]	0.004[c]	0.005[b]	0.003	0.004[c]	0.003	0.004[c]	0.003	0.003
	(0.088)	(0.059)	(0.122)	(0.060)	(0.152)	(0.093)	(0.951)	(0.059)	(0.314)	(0.145)	(0.628)	(0.928)	(0.029)	(0.059)	(0.089)	(0.054)	(0.068)	(0.030)	(0.214)	(0.059)	(0.215)	(0.061)	(0.234)	(0.276)
Diversifying	-0.002	-0.002	-0.001	-0.002	-0.001	-0.001	-0.001	-0.002	-0.002	-0.002	-0.001	-0.001	-0.001	-0.002	-0.002	-0.002	-0.001	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.001
	(0.469)	(0.364)	(0.506)	(0.410)	(0.638)	(0.495)	(0.632)	(0.364)	(0.449)	(0.431)	(0.542)	(0.652)	(0.553)	(0.364)	(0.422)	(0.432)	(0.547)	(0.593)	(0.561)	(0.364)	(0.505)	(0.429)	(0.513)	(0.579)

Table 5.14-Continued

$FTALLASH_{(-180,-3)}$	**0.040[a]**	**0.039[a]**	**0.040[a]**	**0.040[a]**	**0.040[a]**	**0.040[a]**	**0.041[a]**	**0.039[a]**	**0.039[a]**	**0.039[a]**	**0.039[a]**	**0.042[a]**	**0.052[a]**	**0.039[a]**	**0.044[a]**	**0.041[a]**	**0.048[a]**	**0.052[a]**	**0.041[a]**	**0.039[a]**	**0.039[a]**	**0.040[a]**	**0.039[a]**	**0.040[a]**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$R_i - R_{m(-180,-3)}$	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**-0.001**	**0.000**	**0.000**	**-0.001**	**-0.001**	**-0.001**	**-0.001**	**0.000**	**-0.001**	**-0.001**	**-0.001**	**-0.001**
	(0.852)	(0.875)	(0.836)	(0.869)	(0.813)	(0.820)	(0.986)	(0.875)	(0.869)	(0.901)	(0.903)	(0.963)	(0.567)	(0.875)	(0.832)	(0.748)	(0.669)	(0.540)	(0.674)	(0.875)	(0.614)	(0.660)	(0.619)	(0.646)
Intercept	**0.008[b]**	**0.008[a]**	**0.011[a]**	**0.009[a]**	**0.011[a]**	**0.007[b]**	**0.005[c]**	**0.008[a]**	**0.013[a]**	**0.008[b]**	**0.011[a]**	**0.005**	**0.002**	**0.008[a]**	**0.011[a]**	**0.007[b]**	**0.009[a]**	**0.001**	**0.008[b]**	**0.008[a]**	**0.013[a]**	**0.010[a]**	**0.013[a]**	**0.006[c]**
	(0.012)	(0.010)	(0.001)	(0.006)	(0.000)	(0.039)	(0.080)	(0.010)	(0.000)	(0.012)	(0.001)	(0.119)	(0.444)	(0.010)	(0.001)	(0.019)	(0.006)	(0.630)	(0.015)	(0.010)	(0.000)	(0.004)	(0.000)	(0.063)
N	5,786	5,757	5,757	5,757	5,757	5,757	5,786	5,757	5,757	5,757	5,757	5,757	5,784	5,757	5,755	5,755	5,755	5,755	4,651	5,757	4,637	4,637	4,637	4,637
Adj. R^2	0.71%	0.68%	0.83%	0.69%	0.90%	0.76%	1.66%	0.68%	0.97%	0.95%	1.25%	1.72%	1.45%	0.68%	0.88%	0.98%	1.24%	1.53%	0.83%	0.68%	0.80%	0.59%	0.81%	0.98%

Table 5.15 Regressions of CARs on Information Uncertainty by Age, Synchronicity and Deal Features

This table presents regression estimates of the acquirer's five-day cumulative abnormal return controlling for information unceratainty and synchronicity of the bidder's stock price. The 33% youngest acquirers are classified as high uncertainty, the 33% oldest as low uncertainty and the medium 33% as of medium uncertainty. Age is measured as the difference between the incorporation date of the firm until the announcement date of the deal. Synchronicity is the logarithmic transformation of R^2. Synchronicity is measured as the R^2 of the following regression:

$$r_{i,j,t}= \beta_{i,0} + \beta_{i,m} r_{m,t} + \beta_{i,j} r_{j,t} + \varepsilon_{i,t}$$

where $r_{i,j,t}$ is the return of bidder i in industry j at time t, $r_{m,t}$ is the market return at time t and $r_{j,t}$ is the return of industry j at time t. The lowest 33% R^2 firms are classified as low synchronicity, the highest 33% R^2 firms as high synchronicity and the rest as medium.
HighIU dummy takes the value of 1 of the bid was announced by a high information uncertainty bidder according to the four proxies, and zero otherwise. The LowSynchr dummy takes the value of 1 if the bid was announced by a low synchronicity bidder and zero otherwise. Target ownership status dummy takes the value of one if the target is private and zero otherwise; cash (stock) deals is an indicator variable that takes the value of 1 for acquisitions financed with 100% cash (stock) and 0 otherwise. Diversifying deals is a dummy that takes the value of 1 when the acquirer's two-digit SIC code is different from that of the target and 0 otherwise. Bidder's market-to-book is measured by the bidder's market value a month before the announcement of the deal divided by its net book value of assets; a deal's relative size is the ratio between target and bidder size. Domestic deals dummy takes the value of 1 for acquisitions of UK firms and zero 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. P-values are reported in square brackets under the coefficients. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively.

Table 5.15-Continued

	PrivateCash						PrivateStock						PublicCash						PublicStock					
CARs	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**	**(16)**	**(17)**	**(18)**	**(19)**	**(20)**	**(21)**	**(22)**	**(23)**	**(24)**
HighIU	**0.001**					**0.001**	**0.031**					**0.041**	**0.013**					**0.010**	**-0.024**					**-0.011**
	(0.890)					(0.825)	(0.162)					(0.120)	(0.234)					(0.441)	(0.146)					(0.586)
LowSynchr		**0.002**				**0.002**		**0.030**				**0.042^{c}**		**0.009**				**0.005**		**-0.018**				**-0.003**
		(0.689)				(0.624)		(0.220)				(0.099)		(0.462)				(0.770)		(0.194)				(0.863)
HsHiu					**-0.009**						**-0.013**						**0.014**						**0.006**	
					(0.302)						(0.756)						(0.457)						(0.869)	
HsLiu			**-0.007^{c}**		**-0.009^{b}**				**-0.048^{c}**		**-0.046^{c}**				**-0.006**		**-0.002**				**0.029^{c}**		**0.025**	
			(0.074)		(0.028)				(0.053)		(0.073)				(0.515)		(0.824)				(0.057)		(0.106)	
LsHiu				**0.001**	**-0.002**	**-0.002**				**0.032**	**0.026**	**-0.027**				**0.020**	**0.021**	**0.008**				**-0.054^{b}**	**-0.049^{b}**	**-0.044**
				(0.933)	(0.824)	(0.871)				(0.403)	(0.513)	(0.583)				(0.235)	(0.240)	(0.764)				(0.015)	(0.026)	(0.173)
LsLiu					**-0.007**						**-0.012**						**0.003**						**0.011**	
					(0.146)						(0.630)						(0.861)						(0.705)	
M/B	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**-0.001**	**-0.001^{c}**	**-0.001**	**-0.001**	**-0.001**	**-0.001^{c}**	**-0.001**	**0.000**	**-0.001**	**0.000**	**-0.001**	**-0.001**	**-0.002^{c}**	**-0.003^{b}**	**-0.002^{b}**	**-0.002^{c}**	**-0.002**	**-0.002**
	(0.676)	(0.672)	(0.673)	(0.675)	(0.678)	(0.675)	(0.138)	(0.092)	(0.108)	(0.131)	(0.116)	(0.089)	(0.248)	(0.288)	(0.237)	(0.264)	(0.256)	(0.250)	(0.078)	(0.031)	(0.029)	(0.086)	(0.106)	(0.105)
Relative Size	**0.022^{c}**	**0.022^{c}**	**0.021^{c}**	**0.022^{c}**	**0.021^{c}**	**0.021^{c}**	**-0.001**	**-0.002**	**-0.002**	**-0.002**	**-0.002**	**-0.001**	**0.003**	**0.003**	**0.003**	**0.004**	**0.003**	**0.003**	**-0.005**	**-0.006**	**-0.005**	**-0.005**	**-0.005**	**-0.005**
	(0.061)	(0.058)	(0.070)	(0.061)	(0.072)	(0.065)	(0.226)	(0.375)	(0.352)	(0.379)	(0.348)	(0.411)	(0.748)	(0.702)	(0.698)	(0.685)	(0.711)	(0.770)	(0.232)	(0.240)	(0.268)	(0.257)	(0.281)	(0.254)
Domestic deals	**0.003**	**0.003**	**0.002**	**0.003**	**0.002**	**0.003**	**-0.006**	**-0.011**	**-0.009**	**-0.007**	**-0.009**	**-0.010**	**-0.010**	**-0.011**	**-0.011**	**-0.012**	**-0.011**	**-0.011**	**-0.039**	**-0.040^{c}**	**-0.038**	**-0.040^{c}**	**-0.040^{c}**	**-0.040^{c}**
	(0.444)	(0.439)	(0.575)	(0.417)	(0.631)	(0.444)	(0.773)	(0.615)	(0.684)	(0.741)	(0.691)	(0.675)	(0.243)	(0.201)	(0.208)	(0.184)	(0.220)	(0.215)	(0.114)	(0.091)	(0.112)	(0.089)	(0.098)	(0.097)
Diversifying	**-0.004**	**-0.004**	**-0.004**	**-0.004**	**-0.004**	**-0.004**	**-0.001**	**-0.001**	**-0.001**	**0.001**	**0.001**	**-0.002**	**0.005**	**0.003**	**0.004**	**0.004**	**0.005**	**0.005**	**-0.001**	**-0.001**	**0.000**	**-0.005**	**-0.005**	**-0.005**
	(0.270)	(0.260)	(0.311)	(0.251)	(0.325)	(0.263)	(0.976)	(0.962)	(0.981)	(0.967)	(0.952)	(0.943)	(0.586)	(0.676)	(0.667)	(0.628)	(0.568)	(0.587)	(0.948)	(0.970)	(0.998)	(0.735)	(0.715)	(0.721)
FTALLASH$_{(-180,-3)}$	**0.043^{a}**	**0.043^{a}**	**0.042^{a}**	**0.043^{a}**	**0.041^{a}**	**0.043^{a}**	**0.101**	**0.081**	**0.085**	**0.092**	**0.089**	**0.098**	**0.024**	**0.019**	**0.021**	**0.019**	**0.024**	**0.021**	**0.157^{a}**	**0.164^{a}**	**0.154^{a}**	**0.172^{a}**	**0.173^{a}**	**0.172^{a}**
	(0.003)	(0.004)	(0.005)	(0.003)	(0.005)	(0.004)	(0.141)	(0.260)	(0.242)	(0.199)	(0.216)	(0.162)	(0.423)	(0.535)	(0.477)	(0.521)	(0.457)	(0.484)	(0.006)	(0.003)	(0.007)	(0.002)	(0.001)	(0.002)
$R_i - R_{m(-180,-3)}$	**-0.005**	**-0.005**	**-0.005**	**-0.005**	**-0.005**	**-0.005**	**0.000**	**0.001**	**0.000**	**0.001**	**0.000**	**0.000**	**0.041^{a}**	**0.040^{a}**	**0.041^{a}**	**0.040^{a}**	**0.040^{a}**	**0.040^{a}**	**-0.001**	**-0.002**	**-0.002**	**0.000**	**0.000**	**0.000**
	(0.538)	(0.535)	(0.517)	(0.536)	(0.559)	(0.529)	(0.992)	(0.901)	(0.968)	(0.913)	(0.928)	(0.999)	(0.005)	(0.007)	(0.008)	(0.006)	(0.006)	(0.005)	(0.840)	(0.508)	(0.754)	(0.923)	(0.997)	(0.985)
Intercept	**0.007^{c}**	**0.007**	**0.009^{b}**	**0.007^{c}**	**0.011^{b}**	**0.007**	**0.034**	**0.044^{b}**	**0.056^{a}**	**0.044^{b}**	**0.053^{a}**	**0.023**	**0.009**	**0.011**	**0.014**	**0.011**	**0.010**	**0.009**	**0.025**	**0.025**	**0.013**	**0.026**	**0.020**	**0.029**
	(0.086)	(0.102)	(0.042)	(0.077)	(0.017)	(0.122)	(0.104)	(0.026)	(0.006)	(0.016)	(0.010)	(0.301)	(0.293)	(0.181)	(0.135)	(0.171)	(0.348)	(0.297)	(0.285)	(0.272)	(0.574)	(0.271)	(0.389)	(0.203)
N	1159	1154	1154	1154	1154	1154	222	217	217	217	217	217	250	249	249	249	249	249	178	177	177	177	177	177
Adj. R^2	5.47%	5.49%	5.65%	5.48%	5.84%	5.50%	4.58%	4.51%	4.33%	4.23%	4.80%	5.61%	8.87%	8.51%	8.40%	8.78%	9.12%	9.06%	13.34%	12.83%	13.04%	15.41%	16.15%	15.64%

Table 5.16 Regressions of CARs on Information Uncertainty by Size, Synchronicity and Deal Features

This table presents regression estimates of the acquirer's five-day cumulative abnormal return controlling for information unceratainty and synchronicity of the bidder's stock price. The 33% smallest acquirers are classified as high uncertainty, the 33% largest as low uncertainty and the medium 33% as of medium uncertainty. Size is measured as the market capitalization (MV) of the bidding firm 20 days before the announcement date of the deal. Synchronicity is measured as the R^2 of the following regression:

$$r_{i,j,t} = \beta_{i,0} + \beta_{i,m} r_{m,t} + \beta_{i,j} r_{j,t} + \varepsilon_{i,t}$$

where $r_{i,j,t}$ is the return of bidder i in industry j at time t, $r_{m,t}$ is the market return at time t and $r_{j,t}$ is the return of industry j at time t. The lowest 33% R^2 firms are classified as low synchronicity, the highest 33% R^2 firms as high synchronicity and the rest as medium.
HighIU dummy takes the value of 1 of the bid was announced by a high information uncertainty bidder according to the four proxies, and zero otherwise. The LowSynchr dummy takes the value of 1 if the bid was announced by a low synchronicity bidder and zero otherwise. Target ownership status dummy takes the value of one if the target is private and zero otherwise; cash (stock) deals is an indicator variable that takes the value of 1 for acquisitions financed with 100% cash (stock) and 0 otherwise. Diversifying deals is a dummy that takes the value of 1 when the acquirer's two-digit SIC code is different from that of the target and 0 otherwise. Bidder's market-to-book is measured by the bidder's market value a month before the announcement of the deal divided by its net book value of assets; a deal's relative size is the ratio between target and bidder size. Domestic deals dummy takes the value of 1 for acquisitions of UK firms and zero 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. P-values are reported in square brackets under the coefficients. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively.

Table 5.16-Continued

	PrivateCash						PrivateStock						PublicCash						PublicStock					
CARs	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)
HighIU	0.013^{c}					0.014^{c}	0.051^{b}					0.058^{b}	0.027^{c}					0.024	-0.020					-0.010
	(0.059)					(0.095)	(0.015)					(0.030)	(0.072)					(0.257)	(0.165)					(0.598)
LowSynchr		0.002				0.001		0.030				0.038		0.009				0.003		-0.018				-0.005
		(0.689)				(0.885)		(0.220)				(0.142)		(0.462)				(0.834)		(0.194)				(0.796)
HsHiu					0.009						0.058						0.004						-0.022	
					(0.473)						(0.331)						(0.863)						(0.660)	
HsLiu			-0.003		-0.003				-0.047^{b}		-0.032				0.000		0.002				0.020		0.014	
			(0.416)		(0.508)				(0.039)		(0.170)				(0.982)		(0.852)				(0.235)		(0.409)	
LsHiu				0.008	0.008	-0.003				0.035	0.037	-0.032				0.030	0.031	0.008				-0.035^{c}	-0.032	-0.024
				(0.329)	(0.366)	(0.782)				(0.231)	(0.224)	(0.458)				(0.123)	(0.125)	(0.795)				(0.098)	(0.137)	(0.500)
LsLiu					-0.009						0.063						0.000						0.022	
					(0.182)						(0.165)						(0.988)						(0.567)	
M/B	0.000	0.000	0.000	0.000	0.000	0.000	-0.001	-0.001^{c}	-0.001^{c}	-0.001	-0.001^{c}	-0.001	0.000	0.000	0.000	0.000	0.000	0.000	-0.003^{b}	-0.003^{b}	-0.003^{b}	-0.003^{b}	-0.003^{b}	-0.003^{b}
	(0.656)	(0.672)	(0.679)	(0.647)	(0.673)	(0.665)	(0.200)	(0.092)	(0.094)	(0.148)	(0.056)	(0.145)	(0.453)	(0.288)	(0.295)	(0.358)	(0.404)	(0.450)	(0.022)	(0.031)	(0.035)	(0.014)	(0.020)	(0.015)
Relative Size	0.019	0.022^{c}	0.021^{c}	0.021^{c}	0.020	0.019	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.001	0.003	0.004	0.002	0.002	-0.001	-0.004	-0.006	-0.005	-0.005	-0.005	-0.005
	(0.197)	(0.058)	(0.066)	(0.087)	(0.119)	(0.199)	(0.134)	(0.375)	(0.327)	(0.364)	(0.249)	(0.240)	(0.900)	(0.702)	(0.672)	(0.835)	(0.820)	(0.874)	(0.306)	(0.240)	(0.266)	(0.236)	(0.235)	(0.266)
Domestic deals	0.000	0.003	0.002	0.002	0.001	0.000	-0.018	-0.011	-0.014	-0.010	-0.017	-0.020	-0.013	-0.011	-0.011	-0.012	-0.012	-0.014	-0.038	-0.040^{c}	-0.039	-0.044^{c}	-0.041^{c}	-0.043
	(0.942)	(0.439)	(0.524)	(0.544)	(0.737)	(0.913)	(0.398)	(0.615)	(0.534)	(0.649)	(0.432)	(0.380)	(0.130)	(0.201)	(0.239)	(0.177)	(0.210)	(0.119)	(0.113)	(0.091)	(0.101)	(0.070)	(0.093)	(0.111)
Diversifying	-0.003	-0.004	-0.004	-0.004	-0.004	-0.003	-0.004	-0.001	-0.002	-0.001	-0.004	-0.004	0.005	0.003	0.003	0.003	0.003	0.005	0.003	-0.001	0.000	0.002	0.003	0.002
	(0.407)	(0.260)	(0.259)	(0.305)	(0.327)	(0.394)	(0.852)	(0.962)	(0.913)	(0.948)	(0.869)	(0.856)	(0.555)	(0.676)	(0.698)	(0.683)	(0.687)	(0.580)	(0.850)	(0.970)	(0.991)	(0.890)	(0.861)	(0.899)
$FTALLASH_{(-180,-3)}$	0.042^{a}	0.043^{a}	0.043^{a}	0.043^{a}	0.044^{a}	0.042^{a}	0.085	0.081	0.080	0.081	0.075	0.086	0.026	0.019	0.021	0.020	0.020	0.024	0.146^{a}	0.164^{a}	0.156^{a}	0.157^{a}	0.148^{a}	0.154^{a}
	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.005)	(0.222)	(0.260)	(0.266)	(0.260)	(0.298)	(0.235)	(0.370)	(0.535)	(0.472)	(0.503)	(0.500)	(0.401)	(0.008)	(0.003)	(0.006)	(0.005)	(0.004)	(0.004)
$R_i - R_{m(-180,-3)}$	-0.004	-0.005	-0.005	-0.005	-0.005	-0.004	0.001	0.001	0.001	0.000	0.001	0.001	0.041^{b}	0.040^{a}	0.041^{a}	0.041^{b}	0.040^{b}	0.040^{b}	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002
	(0.593)	(0.535)	(0.553)	(0.560)	(0.574)	(0.586)	(0.852)	(0.901)	(0.887)	(0.926)	(0.826)	(0.812)	(0.011)	(0.007)	(0.008)	(0.011)	(0.017)	(0.013)	(0.479)	(0.508)	(0.670)	(0.353)	(0.593)	(0.422)
Intercept	0.006	0.007	0.009^{c}	0.007	0.008^{c}	0.005	0.031	0.044^{b}	0.063^{a}	0.044^{b}	0.051^{b}	0.024	0.011	0.011	0.012	0.012	0.010	0.011	0.023	0.025	0.014	0.028	0.023	0.030
	(0.174)	(0.102)	(0.067)	(0.103)	(0.089)	(0.182)	(0.122)	(0.026)	(0.003)	(0.024)	(0.012)	(0.233)	(0.177)	(0.181)	(0.282)	(0.138)	(0.382)	(0.191)	(0.305)	(0.272)	(0.545)	(0.243)	(0.327)	(0.201)
N	1,159	1,154	1,154	1,154	1,154	1,154	222	217	217	217	217	217	250	249	249	249	249	249	178	177	177	177	177	177
Adj. R^2	6.09%	5.49%	5.52%	5.64%	5.83%	6.11%	5.97%	4.51%	4.70%	4.64%	6.29%	6.67%	9.70%	8.51%	8.26%	9.19%	9.21%	9.90%	12.87%	12.83%	12.71%	13.89%	14.81%	14.06%

Table 5.17 Regressions of CARs on Information Uncertainty by Sigma, Synchronicity and Deal Features

This table presents regression estimates of the acquirer's five-day cumulative abnormal return controlling for information unceratainty and synchronicity of the bidder's stock price. The 33% highest sigma acquirers are classified as high uncertainty, the 33% lowest sigma as low uncertainty and the medium 33% as of medium uncertainty. Sigma is measured by the standard deviation of daily excess returns 200 days before the announcement date of the deal. Synchronicity is measured as the R^2 of the following regression:

$$r_{i,j,t}= \beta_{i,0} + \beta_{i,m}\, r_{m,t} + \beta_{i,j}\, r_{j,t} +\varepsilon_{i,t}$$

where $r_{i,j,t}$ is the return of bidder i in industry j at time t, $r_{m,t}$ is the market return at time t and $r_{j,t}$ is the return of industry j at time t. The lowest 33% R^2 firms are classified as low synchronicity, the highest 33% R^2 firms as high synchronicity and the rest as medium.
HighIU dummy takes the value of 1 of the bid was announced by a high information uncertainty bidder according to the four proxies, and zero otherwise. The LowSynchr dummy takes the value of 1 if the bid was announced by a low synchronicity bidder and zero otherwise. Target ownership status dummy takes the value of one if the target is private and zero otherwise; cash (stock) deals is an indicator variable that takes the value of 1 for acquisitions financed with 100% cash (stock) and 0 otherwise. Diversifying deals is a dummy that takes the value of 1 when the acquirer's two-digit SIC code is different from that of the target and 0 otherwise. Bidder's market-to-book is measured by the bidder's market value a month before the announcement of the deal divided by its net book value of assets; a deal's relative size is the ratio between target and bidder size. Domestic deals dummy takes the value of 1 for acquisitions of UK firms and zero 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. P-values are reported in square brackets under the coefficients. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively.

Table 5.17-Continued

	PrivateCash						PrivateStock						PublicCash						PublicStock					
CARs	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**	**(16)**	**(17)**	**(18)**	**(19)**	**(20)**	**(21)**	**(22)**	**(23)**	**(24)**
HighIU	**0.009^{c}**					**0.008**	**0.023**					**0.017**	**0.008**					**0.002**	**-0.032^{b}**					**-0.023**
	(0.082)					(0.189)	(0.342)					(0.528)	(0.465)					(0.858)	(0.044)					(0.228)
LowSynchr		**0.002**				**0.000**		**0.030**				**0.017**		**0.009**				**-0.001**		**-0.018**				**-0.006**
		(0.689)				(0.936)		(0.220)				(0.526)		(0.462)				(0.919)		(0.194)				(0.689)
HsHiu					**0.000**						**0.003**						**0.024**						**-0.004**	
					(0.988)						(0.931)						(0.139)						(0.906)	
HsLiu			**-0.005**		**-0.005**				**-0.053^{a}**		**-0.045^{b}**				**-0.007**		**0.000**				**0.015**		**0.008**	
			(0.123)		(0.151)				(0.002)		(0.015)				(0.336)		(0.959)				(0.526)		(0.718)	
LsHiu				**0.011**	**0.009**	**0.006**				**0.044**	**0.039**	**0.022**				**0.028**	**0.033**	**0.028**				**-0.042^{c}**	**-0.042^{c}**	**-0.022**
				(0.295)	(0.366)	(0.651)				(0.240)	(0.314)	(0.641)				(0.195)	(0.142)	(0.322)				(0.061)	(0.058)	(0.476)
LsLiu					**-0.007**						**-0.011**						**0.008**						**-0.006**	
					(0.174)						(0.703)						(0.662)						(0.786)	
M/B	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**-0.001**	**-0.001^{c}**	**-0.001**	**-0.001^{c}**	**-0.001^{c}**	**-0.001^{c}**	**-0.001**	**0.000**	**-0.001**	**-0.001**	**-0.001**	**-0.001**	**-0.002^{b}**	**-0.003^{b}**	**-0.003^{b}**	**-0.003^{c}**	**-0.003^{c}**	**-0.002^{c}**
	(0.685)	(0.672)	(0.672)	(0.679)	(0.704)	(0.686)	(0.101)	(0.092)	(0.103)	(0.080)	(0.074)	(0.078)	(0.275)	(0.288)	(0.275)	(0.217)	(0.346)	(0.223)	(0.045)	(0.031)	(0.027)	(0.063)	(0.067)	(0.063)
Relative Size	**0.021^{c}**	**0.022^{c}**	**0.021^{c}**	**0.021^{c}**	**0.021^{c}**	**0.020^{c}**	**-0.001**	**-0.002**	**-0.002**	**-0.002**	**-0.002**	**-0.002**	**0.004**	**0.003**	**0.004**	**0.003**	**0.003**	**0.003**	**-0.005**	**-0.006**	**-0.005**	**-0.006**	**-0.006**	**-0.005**
	(0.082)	(0.058)	(0.062)	(0.064)	(0.068)	(0.085)	(0.250)	(0.375)	(0.360)	(0.369)	(0.360)	(0.358)	(0.694)	(0.702)	(0.695)	(0.748)	(0.714)	(0.755)	(0.282)	(0.240)	(0.257)	(0.241)	(0.240)	(0.265)
Domestic deals	**0.003**	**0.003**	**0.003**	**0.003**	**0.003**	**0.003**	**-0.005**	**-0.011**	**-0.009**	**-0.006**	**-0.007**	**-0.006**	**-0.011**	**-0.011**	**-0.012**	**-0.011**	**-0.010**	**-0.011**	**-0.047^{c}**	**-0.040^{c}**	**-0.040^{c}**	**-0.045^{c}**	**-0.045^{c}**	**-0.048^{b}**
	(0.396)	(0.439)	(0.459)	(0.456)	(0.447)	(0.396)	(0.819)	(0.615)	(0.686)	(0.782)	(0.770)	(0.790)	(0.227)	(0.201)	(0.199)	(0.225)	(0.250)	(0.232)	(0.055)	(0.091)	(0.093)	(0.057)	(0.056)	(0.049)
Diversifying	**-0.004**	**-0.004**	**-0.004**	**-0.004**	**-0.004**	**-0.004**	**-0.004**	**-0.001**	**-0.003**	**-0.005**	**-0.006**	**-0.004**	**0.003**	**0.003**	**0.003**	**0.003**	**0.003**	**0.003**	**0.003**	**-0.001**	**-0.001**	**-0.004**	**-0.004**	**-0.001**
	(0.319)	(0.260)	(0.257)	(0.289)	(0.302)	(0.316)	(0.858)	(0.962)	(0.880)	(0.823)	(0.777)	(0.841)	(0.694)	(0.676)	(0.696)	(0.758)	(0.687)	(0.767)	(0.855)	(0.970)	(0.970)	(0.774)	(0.773)	(0.938)
$FTALLASH_{(-180,-3)}$	**0.051^{a}**	**0.043^{a}**	**0.045^{a}**	**0.044^{a}**	**0.048^{a}**	**0.051^{a}**	**0.106**	**0.081**	**0.086**	**0.104**	**0.108**	**0.112**	**0.024**	**0.019**	**0.022**	**0.016**	**0.026**	**0.017**	**0.117^{b}**	**0.164^{a}**	**0.151^{a}**	**0.156^{a}**	**0.152^{a}**	**0.132^{b}**
	(0.001)	(0.004)	(0.003)	(0.003)	(0.002)	(0.002)	(0.168)	(0.260)	(0.234)	(0.173)	(0.162)	(0.172)	(0.427)	(0.535)	(0.451)	(0.602)	(0.403)	(0.594)	(0.040)	(0.003)	(0.008)	(0.005)	(0.008)	(0.018)
$R_i - R_{m(-180,-3)}$	**-0.006**	**-0.005**	**-0.005**	**-0.006**	**-0.006**	**-0.007**	**0.000**	**0.001**	**0.000**	**0.001**	**0.000**	**0.000**	**0.040^{b}**	**0.040^{a}**	**0.041^{a}**	**0.038^{a}**	**0.036^{b}**	**0.038^{b}**	**-0.001**	**-0.002**	**-0.002**	**-0.001**	**-0.001**	**0.000**
	(0.424)	(0.535)	(0.521)	(0.486)	(0.456)	(0.419)	(0.998)	(0.901)	(0.977)	(0.919)	(0.965)	(0.954)	(0.014)	(0.007)	(0.009)	(0.008)	(0.022)	(0.011)	(0.951)	(0.508)	(0.680)	(0.857)	(0.871)	(0.991)
Intercept	**0.004**	**0.007**	**0.008^{c}**	**0.007**	**0.008**	**0.004**	**0.036**	**0.044^{b}**	**0.059^{a}**	**0.043^{b}**	**0.050^{b}**	**0.031**	**0.009**	**0.011**	**0.014**	**0.011**	**0.006**	**0.011**	**0.038**	**0.025**	**0.018**	**0.031**	**0.032**	**0.042^{c}**
	(0.356)	(0.102)	(0.057)	(0.132)	(0.103)	(0.316)	(0.137)	(0.026)	(0.005)	(0.029)	(0.023)	(0.218)	(0.221)	(0.181)	(0.125)	(0.153)	(0.523)	(0.175)	(0.112)	(0.272)	(0.424)	(0.185)	(0.179)	(0.079)
N	1,159	1,154	1,154	1,154	1,154	1,154	222	217	217	217	217	217	250	249	249	249	249	249	177	177	176	176	176	176
Adj. R^2	5.88%	5.49%	5.55%	5.72%	5.86%	5.93%	4.10%	4.51%	4.60%	4.91%	5.57%	5.10%	8.57%	8.51%	8.45%	9.31%	10.74%	9.33%	14.36%	12.83%	12.29%	14.49%	14.60%	15.31%

Table 5.18 Regressions of CARs on Information Uncertainty by Trading Volume, Synchronicity and Deal Features

This table presents regression estimates of the acquirer's five-day cumulative abnormal return controlling for information uncertainty and synchronicity of the bidder's stock price. The 33% less active acquirers are classified as high uncertainty, the 33% most active as low uncertainty and the medium 33% as of medium uncertainty. Trading Volume is measured as the average of the monthly trading volume of the acquirer before the announcement date of the deal. Synchronicity is measured as the R^2 of the following regression:

$$r_{i,j,t} = \beta_{i,0} + \beta_{i,m} r_{m,t} + \beta_{i,j} r_{j,t} + \varepsilon_{i,t}$$

where $r_{i,j,t}$ is the return of bidder i in industry j at time t, $r_{m,t}$ is the market return at time t and $r_{j,t}$ is the return of industry j at time t. The lowest 33% R^2 firms are classified as low synchronicity, the highest 33% R^2 firms as high synchronicity and the rest as medium.
HighIU dummy takes the value of 1 of the bid was announced by a high information uncertainty bidder according to the four proxies, and zero otherwise. The LowSynchr dummy takes the value of 1 if the bid was announced by a low synchronicity bidder and zero otherwise. Target ownership status dummy takes the value of one if the target is private and zero otherwise; cash (stock) deals is an indicator variable that takes the value of 1 for acquisitions financed with 100% cash (stock) and 0 otherwise. Diversifying deals is a dummy that takes the value of 1 when the acquirer's two-digit SIC code is different from that of the target and 0 otherwise. Bidder's market-to-book is measured by the bidder's market value a month before the announcement of the deal divided by its net book value of assets; a deal's relative size is the ratio between target and bidder size. Domestic deals dummy takes the value of 1 for acquisitions of UK firms and zero 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. P-values are reported in square brackets under the coefficients. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively.

Table 5.18-Continued

	PrivateCash						**PrivateStock**						**PublicCash**						**PublicStock**					
CARs	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**	**(13)**	**(14)**	**(15)**	**(16)**	**(17)**	**(18)**	**(19)**	**(20)**	**(21)**	**(22)**	**(23)**	**(24)**
HighIU	**0.006**					**0.006**	**0.013**					**0.031**	**0.020**					**0.025**	**-0.067[a]**					**-0.065[b]**
	(0.224)					(0.349)	(0.659)					(0.391)	(0.216)					(0.230)	(0.001)					(0.036)
LowSynchr		**0.002**				**0.001**		**0.030**				**0.065**		**0.009**				**0.010**		**-0.018**				**-0.017**
		(0.689)				(0.813)		(0.220)				(0.263)		(0.462)				(0.518)		(0.194)				(0.432)
HsHiu					**-0.006**						**-0.047**						**0.016**						**-0.091**	
					(0.627)						(0.306)						(0.438)						(0.203)	
HsLiu			**-0.004**		**-0.004**				**-0.049**		**-0.053**				**0.000**		**0.003**				**0.033**		**0.021**	
			(0.347)		(0.406)				(0.113)		(0.117)				(0.968)		(0.785)				(0.109)		(0.300)	
LsHiu				**0.004**	**0.003**	**-0.001**				**0.008**	**-0.004**	**-0.068**				**0.011**	**0.013**	**-0.016**				**-0.064[b]**	**-0.060[b]**	**0.003**
				(0.508)	(0.637)	(0.914)				(0.813)	(0.905)	(0.337)				(0.657)	(0.610)	(0.627)				(0.011)	(0.021)	(0.954)
LsLiu					**0.000**						**0.010**						**0.007**						**0.048**	
					(0.992)						(0.843)						(0.762)						(0.340)	
M/B	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**-0.001[c]**	**-0.001[c]**	**-0.001[c]**	**-0.001[c]**	**-0.001[c]**	**-0.001[c]**	**-0.001**	**0.000**	**-0.001**	**-0.001**	**-0.001**	**-0.001**	**-0.005[a]**	**-0.003[b]**	**-0.005[a]**	**-0.005[a]**	**-0.005[a]**	**-0.005[a]**
	(0.835)	(0.672)	(0.851)	(0.832)	(0.838)	(0.837)	(0.080)	(0.092)	(0.074)	(0.084)	(0.080)	(0.084)	(0.285)	(0.288)	(0.152)	(0.188)	(0.236)	(0.244)	(0.001)	(0.031)	(0.001)	(0.000)	(0.000)	(0.001)
Relative Size	**0.031[b]**	**0.022[c]**	**0.031[a]**	**0.031[a]**	**0.031[a]**	**0.031[a]**	**-0.001**	**-0.002**	**-0.002**	**-0.002**	**-0.002**	**-0.002**	**0.004**	**0.003**	**0.009**	**0.008**	**0.008**	**0.003**	**-0.005**	**-0.006**	**-0.005**	**-0.005**	**-0.005**	**-0.005**
	(0.000)	(0.058)	(0.000)	(0.000)	(0.000)	(0.000)	(0.189)	(0.375)	(0.295)	(0.330)	(0.421)	(0.297)	(0.764)	(0.702)	(0.510)	(0.558)	(0.552)	(0.813)	(0.228)	(0.240)	(0.361)	(0.318)	(0.315)	(0.236)
Domestic deals	**0.004**	**0.003**	**0.004**	**0.005**	**0.004**	**0.004**	**-0.020**	**-0.011**	**-0.017**	**-0.015**	**-0.016**	**-0.023**	**-0.014**	**-0.011**	**-0.013**	**-0.014**	**-0.013**	**-0.014**	**-0.051[b]**	**-0.040[c]**	**-0.056[b]**	**-0.0603[b]**	**-0.058[b]**	**-0.052**
	(0.295)	(0.439)	(0.268)	(0.228)	(0.285)	(0.305)	(0.491)	(0.615)	(0.520)	(0.590)	(0.586)	(0.437)	(0.139)	(0.201)	(0.211)	(0.158)	(0.221)	(0.144)	(0.046)	(0.091)	(0.042)	(0.019)	(0.034)	(0.059)
Diversifying	**-0.001**	**-0.004**	**-0.001**	**-0.001**	**-0.001**	**-0.001**	**-0.013**	**-0.001**	**-0.013**	**-0.013**	**-0.014**	**-0.015**	**-0.001**	**0.003**	**0.000**	**0.000**	**0.000**	**0.000**	**-0.003**	**-0.001**	**0.000**	**0.000**	**-0.005**	**-0.004**
	(0.768)	(0.260)	(0.749)	(0.737)	(0.770)	(0.771)	(0.618)	(0.962)	(0.622)	(0.645)	(0.626)	(0.576)	(0.921)	(0.676)	(0.990)	(0.981)	(0.985)	(0.973)	(0.853)	(0.970)	(0.992)	(0.990)	(0.794)	(0.813)
$FTALLASH_{(-180,-3)}$	**0.059[a]**	**0.043[a]**	**0.058[a]**	**0.058[a]**	**0.057[a]**	**0.058[a]**	**0.112**	**0.081**	**0.119**	**0.115**	**0.123**	**0.144**	**0.001**	**0.019**	**0.003**	**0.000**	**0.000**	**0.000**	**0.172[a]**	**0.164[a]**	**0.180[b]**	**0.189[a]**	**0.163[b]**	**0.187[a]**
	(0.000)	(0.004)	(0.000)	(0.000)	(0.001)	(0.000)	(0.181)	(0.260)	(0.179)	(0.202)	(0.175)	(0.140)	(0.985)	(0.535)	(0.938)	(0.998)	(0.990)	(0.991)	(0.010)	(0.003)	(0.018)	(0.009)	(0.023)	(0.006)
$R_i - R_{m(-180,-3)}$	**-0.002**	**-0.005**	**-0.002**	**-0.002**	**-0.002**	**-0.002**	**0.000**	**0.001**	**0.000**	**0.000**	**0.000**	**0.000**	**0.044[a]**	**0.040[a]**	**0.045[a]**	**0.045[a]**	**0.046[a]**	**0.043[a]**	**-0.002**	**-0.002**	**-0.001**	**-0.002**	**-0.004**	**-0.002**
	(0.854)	(0.535)	(0.863)	(0.844)	(0.866)	(0.855)	(0.990)	(0.901)	(0.932)	(0.981)	(0.928)	(0.963)	(0.007)	(0.007)	(0.003)	(0.003)	(0.003)	(0.008)	(0.772)	(0.508)	(0.802)	(0.271)	(0.281)	(0.762)
Intercept	**0.003**	**0.007**	**0.005**	**0.004**	**0.005**	**0.003**	**0.063[a]**	**0.044[b]**	**0.075[a]**	**0.065[a]**	**0.078[a]**	**0.050[b]**	**0.012**	**0.011**	**0.012**	**0.013**	**0.010**	**0.011**	**0.054[b]**	**0.025**	**0.029**	**0.052[c]**	**0.047[c]**	**0.060[b]**
	(0.498)	(0.102)	(0.242)	(0.397)	(0.290)	(0.532)	(0.008)	(0.026)	(0.002)	(0.004)	(0.002)	(0.032)	(0.136)	(0.181)	(0.279)	(0.120)	(0.427)	(0.203)	(0.038)	(0.272)	(0.283)	(0.051)	(0.068)	(0.029)
N	958	1,154	955	955	955	955	162	217	158	158	158	158	216	249	216	216	216	216	125	177	125	125	125	125
Adj. R^2	10.66%	5.49%	10.57%	10.56%	10.64%	10.66%	5.38%	4.51%	6.27%	5.44%	6.79%	6.75%	11.55%	8.51%	10.56%	10.71%	10.89%	11.79%	23.67%	12.83%	16.54%	19.49%	24.12%	24.12%

Table 5.19 Long Term BHARs (12 Months) by Bidder's Stock Price Synchronicity, Information Uncertainty and the their Interaction

This table presents the Buy-and-Hold Abnormal Returns (BHARs) for 12 months following the announcement of bids of High (Low) Uncertainty Acquirers, High (Low) Synchronicity Acquirers and their interaction (LsHiu and HsLiu). Information Uncertainty (IU) is captured by four proxies. The 33% youngest acquirers are classified as high uncertainty, the 33% oldest as low uncertainty and the medium 33% as of medium uncertainty. Age is measured as the difference between the incorporation date of the firm until the announcement date of the deal. The 33% smallest acquirers are classified as high uncertainty, the 33% largest as low uncertainty and the medium 33% as of medium uncertainty. Size is measured as the market capitalization (MV) of the bidding firm 20 days before the announcement date of the deal. The 33% highest sigma acquirers are classified as high uncertainty, the 33% lowest sigma as low uncertainty and the medium 33% as of medium uncertainty. Sigma is measured by the standard deviation of daily excess returns 200 days before the announcement date of the deal. Finally, the 33% less active acquirers are classified as high uncertainty, the 33% most active as low uncertainty and the medium 33% as of medium uncertainty. Trading Volume is measured as the average of the monthly trading volume of the acquirer before the announcement date of the deal. Synchronicity is measured as the R^2 of the following regression:

$$r_{i,j,t} = \beta_{i,0} + \beta_{i,m} r_{m,t} + \beta_{i,j} r_{j,t} + \varepsilon_{i,t}$$

where $r_{i,j,t}$ is the return of bidder i in industry j at time t, $r_{m,t}$ is the market return at time t and $r_{j,t}$ is the return of industry j at time t. The lowest 33% R^2 firms are classified as low synchronicity, the highest 33% R^2 firms as high synchronicity and the rest as medium The BHAR for company *i* is computed as:

$$BHAR_i = \prod_1^T (1 + R_{it}) - \prod_1^T (1 + R_{mt})$$

where R_{it} is the monthly return for company *i*, and R_{mt} is the monthly return of the market index. Panel A presents 12 month BHARs for the whole sample, Panel B for acquisitions for private targets only, Panel C for acquisitions for private targets paid for with cash, Panel D for acquisitions for private targets paid for with equity, Panel E for acquisitions for public targets only, Panel F for acquisitions for public targets paid for with cash and Panel G for acquisitions for public targets paid for with equity. Following Lyon, Barber and Tsai (1999), we use their skewness adjusted bootstrap t-statistics procedure to compute the statistical significance of the abnormal returns (1000 replications). The number of bids for each category is reported next to the z-statistic. P-value are presented next to the number of observations. Significance levels at 1%, 5% and 10% are represented by ‘a’, ‘b’ and ‘c’, respectively. The Dif(Hiu-Liu) represents the differences in mean BHARs for 12 months post the acquisition announcement of High versus low information uncertainty acquisitions. The Dif(Ls-Hs) represents the differences in mean BHARs for 12 months post the acquisition announcement of Low versus High synchronicity acquirers. The Dif((LsHiu-HsLiu) represents the differences in mean BHARs for 12 months post the acquisition announcement of low synchronicity bidders subject to high uncertainty versus high synchronicity bidders subject to low uncertainty.

Table 5.19-Continued

	Age			**Size**			**Sigma**			**Trading VO**		
Panel A: Whole Sample												
	Average	**N**	**p-value**	**Average**	**N**	**p-value**	**Average**	**N**	**p-value**	**Average**	**N**	**p-value**
AllAll	-8.38%[a]	5,941	0.000	-8.38%[a]	5,941	0.000	-8.02%[a]	5,734	0.000	-8.89%[a]	4,663	0.000
AllHiu	-13.30%[a]	2,032	0.000	-8.79%[a]	1,934	0.000	-13.17%[a]	1,978	0.000	-10.99%[a]	1,552	0.000
AllLiu	-6.64%[a]	1,944	0.000	-9.43%[a]	2,081	0.000	-5.07%[a]	1,813	0.000	-6.44%[a]	1,617	0.000
Dif(Hiu-Liu)	**-6.65%[a]**		**0.000**	**0.65%**		**0.679**	**-8.10%[a]**		**0.000**	**-4.54%[a]**		**0.005**
AllHs	-8.92%[a]	1,968	0.000	-8.92%[a]	1,968	0.000	-8.71%[a]	1,892	0.000	-8.88%[a]	1,610	0.000
AllLs	-7.81%[a]	1,977	0.000	-7.81%[a]	1,977	0.000	-7.38%[a]	1,901	0.000	-8.35%[a]	1,494	0.000
Dif(Ls-Hs)	**1.12%**		**0.453**	**1.12%**		**0.453**	**1.34%**		**0.368**	**0.52%**		**0.754**
AllLsHiu	-12.37%[a]	791	0.000	-8.61%[a]	927	0.000	-12.15%[a]	684	0.000	-11.42%[a]	730	0.000
AllHsLiu	-8.01%[a]	877	0.000	-9.64%[a]	1,220	0.000	-5.33%[a]	717	0.000	-6.47%[a]	974	0.000
Dif(LsHiu-HsLiu)	**-4.36%[b]**		**0.036**	**1.03%**		**0.631**	**-6.82%[a]**		**0.010**	**-4.95%[b]**		**0.029**
Panel B: Private Acquisitions												
Priv.All	-10.60%[a]	3,478	0.000	-10.60%[a]	3,478	0.000	-10.08%[a]	3,323	0.000	-11.74%[a]	2,716	0.000
Priv.Hiu	-16.23%[a]	1,323	0.000	-11.25%[a]	1,310	0.000	-17.10%[a]	1,228	0.000	-13.24%[a]	1,080	0.000
Priv.Liu	-9.65%[a]	967	0.000	-13.32%[a]	972	0.000	-5.21%[a]	954	0.000	-8.70%[a]	726	0.000
Dif(Hiu-Liu)	**-6.58%[a]**		**0.001**	**2.07%**		**0.311**	**-11.89%[a]**		**0.000**	**-4.55%[b]**		**0.037**
Priv.Hs	-12.59%[a]	1,035	0.000	-12.59%[a]	1,035	0.000	-12.12%[a]	981	0.000	-13.05%[a]	828	0.000
Priv.Ls	-9.22%[a]	1,247	0.000	-9.22%[a]	1,247	0.000	-8.78%[a]	1,192	0.000	-10.19%[a]	952	0.000
Dif(Ls-Hs)	**3.37%**		**0.104**	**3.37%**		**0.104**	**3.34%**		**0.108**	**2.86%**		**0.213**
Priv.LsHiu	-13.41%[a]	534	0.000	-9.84%[a]	640	0.001	-13.16%[a]	441	0.001	-12.60%[a]	519	0.000
Priv.HsLiu	-12.41%[a]	392	0.000	-13.40%[a]	551	0.000	-6.55%[a]	321	0.000	-8.80%[a]	422	0.000
Dif(LsHiu-HsLiu)	**-1.00%**		**0.719**	**3.56%**		**0.224**	**-6.61%[c]**		**0.069**	**-3.80%**		**0.206**

Table 5.19-Continued

Panel C: Private Acquisitions paid for with Cash												
Priv.CashAll	-5.50%[a]	1,174	0.000	-5.50%[a]	1,174	0.000	-5.11%[a]	1,142	0.000	-4.96%[a]	953	0.001
Priv.CashHiu	-5.63%[c]	341	0.098	-6.18%[c]	307	0.072	-8.43%[a]	337	0.010	-1.00%	274	0.769
Priv.CashLiu	-7.17%[a]	465	0.000	-8.47%[a]	471	0.000	-3.84%[b]	378	0.040	-6.57%[a]	365	0.001
Dif(Hiu-Liu)	**1.54%**		**0.651**	**2.29%**		**0.516**	**-4.59%**		**0.166**	**5.57%**		**0.119**
Priv.CashHs	-8.03%[a]	438	0.000	-8.03%[a]	438	0.000	-7.14%[a]	424	0.001	-7.35%[a]	367	0.001
Priv.CashLs	-6.98%[a]	361	0.005	-6.98%[a]	361	0.005	-7.20%[a]	350	0.003	-5.31%[c]	289	0.066
Dif(Ls-Hs)	**1.05%**		**0.715**	**1.05%**		**0.715**	**-0.07%**		**0.982**	**2.04%**		**0.520**
Priv.CashLsHiu	-2.93%	128	0.523	-6.38%	152	0.125	-12.89%[b]	106	0.035	-4.09%	133	0.321
Priv.CashHsLiu	-8.20%[a]	219	0.000	-7.32%[a]	286	0.003	-5.10%[b]	158	0.013	-6.09%[b]	237	0.022
Dif(LsHiu-HsLiu)	**5.26%**		**0.277**	**0.94%**		**0.830**	**-7.79%**		**0.135**	**2.00%**		**0.658**
Panel D: Private Acquisitions paid for with Stock												
Priv.StockAll	-9.64%	223	0.113	-9.64%	223	0.125	-11.80%[c]	216	0.066	-12.59%[c]	160	0.086
Priv.StockHiu	-12.34%	105	0.248	-1.43%	123	0.908	-16.55%[c]	129	0.100	-18.58%	85	0.194
Priv.StockLiu	-21.98%[a]	37	0.008	-23.17%[b]	45	0.014	-4.34%	50	0.395	-13.32%	35	0.196
Dif(Hiu-Liu)	**9.64%**		**0.369**	**21.75%**		**0.076**	**-12.21%**		**0.213**	**-5.26%**		**0.689**
Priv.StockHs	-18.92%	60	0.305	-18.92%	60	0.321	-29.86%[a]	57	0.001	-18.69%	40	0.506
Priv.StockLs	5.50%	79	0.586	5.50%	79	0.589	6.97%	76	0.486	0.48%	54	0.927
Dif(Ls-Hs)	**24.42%**		**0.112**	**24.42%**		**0.112**	**36.82%[a]**		**0.006**	**19.16%**		**0.330**
Priv.StockLsHiu	-6.79%	36	0.770	9.35%	58	0.498	16.26%	45	0.345	1.58%	38	0.887
Priv.StockHsLiu	-32.31%[b]	16	0.043	-26.93%[b]	29	0.044	-7.08%	19	0.499	-23.39%	18	0.198
Dif(LsHiu-HsLiu)	**25.52%**		**0.150**	**36.28%[b]**		**0.048**	**23.34%**		**0.264**	**24.97%**		**0.281**

Table 5.19-Continued

Panel E: Public Acquisitions												
PublicAll	-11.97%[a]	619	0.000	-11.97%[a]	619	0.000	-11.65%[a]	609	0.000	-11.55%[a]	487	0.000
PublicHiu	-20.18%[a]	179	0.000	-18.29%[a]	139	0.000	-20.42%[a]	216	0.000	-19.91%[a]	108	0.001
PublicLiu	-6.69%[a]	240	0.000	-6.59%[a]	318	0.007	-7.85%[a]	201	0.000	-7.76%[b]	251	0.012
Dif(Hiu-Liu)	**-13.49%[a]**		**0.000**	**-11.70%[a]**		**0.008**	**-12.57%[a]**		**0.001**	**-12.15%[b]**		**0.014**
PublicHs	-8.96%[a]	254	0.006	-8.96%[a]	254	0.007	-8.42%[a]	248	0.005	-7.71%[b]	207	0.028
PublicLs	-11.71%[a]	164	0.001	-11.71%[a]	164	0.001	-11.48%[a]	162	0.001	-10.84%[a]	132	0.005
Dif(Ls-Hs)	**-2.76%**		**0.475**	**-2.76%**		**0.475**	**-3.06%**		**0.430**	**-3.13%**		**0.476**
PublicLsHiu	-16.43%[b]	54	0.029	-16.60%[b]	65	0.014	-21.27%[a]	65	0.000	-17.05%[b]	53	0.029
PublicHsLiu	-6.63%[a]	127	0.008	-7.24%[b]	196	0.044	-6.92%[b]	100	0.015	-5.82%	160	0.123
Dif(LsHiu-HsLiu)	**-9.80%**		**0.118**	**-9.36%**		**0.116**	**-14.35%[a]**		**0.007**	**-11.23%**		**0.092**
Panel F: Public Acquisitions paid for with Cash												
Public.CashAll	-8.54%[a]	248	0.000	-8.54%[a]	248	0.000	-8.37%[a]	246	0.000	-7.84%[a]	214	0.000
Public.CashHiu	-11.02%[b]	54	0.048	-9.17%	31	0.239	-13.87%[a]	77	0.000	-10.00%	36	0.129
Public.CashLiu	-5.49%[b]	110	0.032	-7.24%[a]	168	0.001	-5.36%[c]	89	0.068	-5.94%[b]	127	0.013
Dif(Hiu-Liu)	**-5.53%**		**0.378**	**-1.94%**		**0.822**	**-8.51%[c]**		**0.084**	**-4.06%**		**0.592**
Public.CashHs	-7.69%[a]	131	0.001	-7.69%[a]	131	0.001	-7.73%[a]	130	0.002	-7.17%[a]	112	0.008
Public.CashLs	-1.07%	45	0.825	-1.07%	45	0.831	-1.07%	45	0.818	-0.81%	41	0.879
Dif(Ls-Hs)	**6.62%**		**0.229**	**6.62%**		**0.229**	**6.65%**		**0.227**	**6.36%**		**0.284**
Public.CashLsHiu	-4.62%	16	0.694	-4.49%	13	0.733	-2.18%	17	0.774	0.45%	14	1.000
Public.CashHsLiu	-6.48%[b]	74	0.030	-8.16%[a]	113	0.002	-4.00%	57	0.183	-6.03%[b]	88	0.029
Dif(LsHiu-HsLiu)	**1.86%**		**0.871**	**3.67%**		**0.792**	**1.81%**		**0.821**	**6.48%**		**0.576**

Table 5.19-Continued

Panel G: Public Acquisitions paid for with Stock												
Public.StockAll	-22.29%[a]	179	0.000	-22.29%[a]	179	0.000	-21.86%[a]	173	0.000	-22.91%[a]	123	0.000
Public.StockHiu	-33.90%[a]	73	0.000	-27.95%[a]	67	0.002	-34.59%[a]	73	0.000	-34.98%[b]	38	0.032
Public.StockLiu	-11.14%[b]	51	0.015	-11.55%	51	0.109	-14.87%[a]	47	0.001	-18.77%[a]	45	0.000
Dif(Hiu-Liu)	**-22.77%[a]**		**0.000**	**-16.40%[b]**		**0.029**	**-19.72%[a]**		**0.001**	**-16.21%[c]**		**0.088**
Public.StockHs	-20.22%[b]	52	0.025	-20.22%[b]	52	0.026	-18.64%[b]	49	0.046	-17.07%[c]	36	0.100
Public.StockLs	-22.50%[b]	61	0.009	-22.50%[b]	61	0.011	-22.23%[a]	59	0.010	-24.98%[c]	44	0.053
Dif(Ls-Hs)	**-2.29%**		**0.759**	**-2.29%**		**0.759**	**-3.59%**		**0.632**	**-7.91%**		**0.393**
Public.StockLsHiu	-34.48%[a]	24	0.000	-26.14%[a]	28	0.005	-36.19%[a]	25	0.000	-37.08%[c]	17	0.088
Public.StockHsLiu	-8.62%	20	0.103	-15.49%[a]	31	0.006	-19.97%[a]	13	0.001	-18.69%[a]	26	0.006
Dif(LsHiu-HsLiu)	**-25.86%[a]**		**0.004**	**-10.65%**		**0.232**	**-16.22%**		**0.147**	**-18.38%**		**0.115**

Table 5.20 Long Term BHARs (36 Months) by Bidder's Stock Price Synchronicity, Information Uncertainty and the their Interaction

This table presents the Buy-and-Hold Abnormal Returns (BHARs) for 36 months following the announcement of bids of High (Low) Uncertainty Acquirers, High (Low) Synchronicity Acquirers and their interaction (LsHiu and HsLiu). Information Uncertainty (IU) is captured by four proxies. The 33% youngest acquirers are classified as high uncertainty, the 33% oldest as low uncertainty and the medium 33% as of medium uncertainty. Age is measured as the difference between the incorporation date of the firm until the announcement date of the deal. The 33% smallest acquirers are classified as high uncertainty, the 33% largest as low uncertainty and the medium 33% as of medium uncertainty. Size is measured as the market capitalization (MV) of the bidding firm 20 days before the announcement date of the deal. The 33% highest sigma acquirers are classified as high uncertainty, the 33% lowest sigma as low uncertainty and the medium 33% as of medium uncertainty. Sigma is measured by the standard deviation of daily excess returns 200 days before the announcement date of the deal. Finally, the 33% less active acquirers are classified as high uncertainty, the 33% most active as low uncertainty and the medium 33% as of medium uncertainty. Trading Volume is measured as the average of the monthly trading volume of the acquirer before the announcement date of the deal. Synchronicity is measured as the R^2 of the following regression:

$$r_{i,j,t} = \beta_{i,0} + \beta_{i,m} r_{m,t} + \beta_{i,j} r_{j,t} + \varepsilon_{i,t}$$

where $r_{i,j,t}$ is the return of bidder i in industry j at time t, $r_{m,t}$ is the market return at time t and $r_{j,t}$ is the return of industry j at time t. The lowest 33% R^2 firms are classified as low synchronicity, the highest 33% R^2 firms as high synchronicity and the rest as medium. The BHAR for company *i* is computed as:

$$BHAR_i = \prod_1^T (1 + R_{it}) - \prod_1^T (1 + R_{mt})$$

where R_{it} is the monthly return for company *i*, and R_{mt} is the monthly return of the market index. Panel A presents 36 month BHARs for the whole sample, Panel B for acquisitions for private targets only, Panel C for acquisitions for private targets paid for with cash, Panel D for acquisitions for private targets paid for with equity, Panel E for acquisitions for public targets only, Panel F for acquisitions for public targets paid for with cash and Panel G for acquisitions for public targets paid for with equity. Following Lyon, Barber and Tsai (1999), we use their skewness adjusted bootstrap t-statistics procedure to compute the statistical significance of the abnormal returns (1000 replications). The number of bids for each category is reported next to the z-statistic. P-value are presented next to the number of observations. Significance levels at 1%, 5% and 10% are represented by 'a', 'b' and 'c', respectively. The Dif(Hiu-Liu) represents the differences in mean BHARs for 36 months post the acquisition announcement of High versus low information uncertainty acquisitions. The Dif(Ls-Hs) represents the differences in mean BHARs for 36 months post the acquisition announcement of Low versus High synchronicity acquirers. The Dif((LsHiu-HsLiu) represents the differences in mean BHARs for 36 months post the acquisition announcement of low synchronicity bidders subject to high uncertainty versus high synchronicity bidders subject to low uncertainty.

Table 5.20-Continued

	Age			Size			Sigma			Trading VO		
	Panel A: Whole Sample											
	Average	**Count**	**p-value**	**Average**	**Count**	**p-value**	**Average**	**Count**	**p-value**	**Average**	**Count**	**p-value**
AllAll	-28.97%[a]	5,189	0.000	-28.97%[a]	5,189	0.000	-28.53%[a]	5,011	0.000	-27.95%[a]	3,938	0.000
AllHiu	-35.71%[a]	1,748	0.000	-32.33%[a]	1,667	0.000	-35.85%[a]	1,738	0.000	-35.97%[a]	1,286	0.001
AllLiu	-27.19%[a]	1,763	0.000	-25.66%[a]	1,786	0.000	-29.38%[a]	1,630	0.000	-19.07%[a]	1,357	0.000
Dif(Hiu-Liu)	**-8.52%[a]**		**0.002**	**-6.67%[b]**		**0.018**	**-6.47%[b]**		**0.021**	**-16.90%[a]**		**0.000**
AllHs	-28.34%[a]	1,666	0.000	-28.34%[a]	1,666	0.000	-28.00%[a]	1,601	0.000	-26.30%[a]	1,318	0.000
AllLs	-29.72%[a]	1,763	0.000	-29.72%[a]	1,763	0.000	-28.99%[a]	1,699	0.000	-30.05%[a]	1,293	0.000
Dif(Ls-Hs)	**-1.38%**		**0.604**	**-1.38%**		**0.604**	**-0.99%**		**0.717**	**-3.74%**		**0.201**
AllLsHiu	-36.09%[a]	677	0.000	-31.13%[a]	795	0.000	-37.23%[a]	601	0.000	-39.53%[a]	600	0.000
AllHsLiu	-26.30%[a]	763	0.000	-27.30%[a]	989	0.000	-26.98%[a]	599	0.000	-22.85%[a]	786	0.000
Dif(LsHiu-HsLiu)	**-9.79%[b]**		**0.011**	**-3.83%**		**0.325**	**-10.25%[b]**		**0.022**	**-16.68%[a]**		**0.000**
	Panel B: Private Acquisitions											
Priv.All	-35.04%[a]	2,947	0.000	-35.04%[a]	2,947	0.000	-34.48%[a]	2815	0.000	-35.07%[a]	2,206	0.000
Priv.Hiu	-40.38%[a]	1,112	0.000	-39.52%[a]	1,099	0.000	-45.49%[a]	1,049	0.000	-42.55%[a]	857	0.000
Priv.Liu	-33.38%[a]	845	0.000	-30.70%[a]	799	0.000	-32.98%[a]	844	0.000	-23.30%[a]	573	0.000
Dif(Hiu-Liu)	**-7.00%[b]**		**0.037**	**-8.81%[a]**		**0.009**	**-12.51%[a]**		**0.000**	**-19.26%[a]**		**0.000**
Priv.Hs	-34.67%[a]	848	0.000	-34.67%[a]	848	0.000	-33.86%[a]	803	0.000	-33.31%[a]	649	0.000
Priv.Ls	-37.15%[a]	1,080	0.000	-37.15%[a]	1,080	0.000	-36.81%[a]	1,034	0.000	-37.97%[a]	795	0.000
Dif(Ls-Hs)	**-2.48%**		**0.464**	**-2.48%**		**0.464**	**-2.95%**		**0.399**	**-4.66%**		**0.210**
Priv.LsHiu	-38.20%[a]	444	0.000	-39.16%[a]	532	0.000	-45.61%[a]	375	0.000	-43.79%[a]	409	0.000
Priv.HsLiu	-30.97%[a]	324	0.000	-32.91%	420	0.146	-34.65%[a]	260	0.001	-28.17%[b]	319	0.050
Dif(LsHiu-HsLiu)	**-7.23%**		**0.137**	**-6.25%**		**0.179**	**-10.96%[c]**		**0.053**	**-15.62%[a]**		**0.003**

Table 5.20-Continued

Panel C: Private Acquisitions paid for with Cash												
Priv.CashAll	-22.95%[a]	994	0.000	-22.95%[a]	994	0.000	-23.34%[a]	968	0.000	-21.09%[a]	778	0.000
Priv.CashHiu	-22.58%[a]	285	0.002	-30.66%[a]	268	0.000	-32.37%[a]	292	0.000	-29.62%[a]	223	0.000
Priv.CashLiu	-25.02%[a]	403	0.000	-23.16%[a]	374	0.000	-24.37%[a]	330	0.000	-15.67%[a]	285	0.002
Dif(Hiu-Liu)	**2.45%**		**0.712**	**-7.50%**		**0.218**	**-8.00%**		**0.182**	**-13.95%[b]**		**0.021**
Priv.CashHs	-24.45%[a]	347	0.000	-24.45%[a]	347	0.000	-23.99%[a]	336	0.000	-21.71%[a]	278	0.000
Priv.CashLs	-23.99%[a]	318	0.000	-23.99%[a]	318	0.000	-24.81%[a]	309	0.000	-22.27%[a]	248	0.000
Dif(Ls-Hs)	**0.46%**		**0.936**	**0.46%**		**0.936**	**-0.83%**		**0.886**	**-0.56%**		**0.925**
Priv.CashLsHiu	-19.15%[a]	110	0.058	-24.42%[a]	129	0.005	-34.24%[b]	93	0.011	-30.05%[a]	108	0.000
Priv.CashHsLiu	-18.46%[a]	180	0.000	-23.72%[a]	212	0.000	-29.53%[a]	125	0.000	-18.98%[a]	175	0.000
Dif(LsHiu-HsLiu)	**-0.69%**		**0.941**	**-0.71%**		**0.934**	**-4.70%**		**0.639**	**-11.07%**		**0.158**
Panel D: Private Acquisitions paid for with Stock												
Priv.StockAll	-54.70%[a]	204	0.000	-54.70%[a]	204	0.000	-55.10%[a]	198	0.000	-61.84%[a]	142	0.000
Priv.StockHiu	-62.17%[b]	96	0.016	-56.23%[a]	112	0.000	-61.29%[a]	115	0.000	-69.90%[c]	76	0.074
Priv.StockLiu	-52.16%	36	0.368	-60.08%[a]	43	0.005	-45.40%[a]	49	0.006	-44.56%[c]	30	0.081
Dif(Hiu-Liu)	**-10.01%**		**0.474**	**3.84%**		**0.758**	**-15.89%**		**0.148**	**-25.34%[c]**		**0.090**
Priv.StockHs	-64.45%[a]	57	0.000	-64.45%[a]	57	0.000	-67.19%[a]	54	0.000	-74.37%[a]	37	0.008
Priv.StockLs	-46.82%[a]	71	0.005	-46.82%[a]	71	0.001	-46.27%[a]	69	0.003	-46.67%[c]	47	0.059
Dif(Ls-Hs)	**17.63%**		**0.143**	**17.63%**		**0.143**	**20.92%[c]**		**0.084**	**27.71%[c]**		**0.067**
Priv.StockLsHiu	-56.69%	30	0.786	-53.81%[b]	51	0.044	-42.57%[c]	39	0.062	-58.81%	32	0.579
Priv.StockHsLiu	-68.23%	15	0.883	-72.00%	27	0.132	-53.51%[c]	18	0.061	-73.02%	16	0.278
Dif(LsHiu-HsLiu)	**11.54%**		**0.411**	**18.19%**		**0.203**	**10.94%**		**0.563**	**14.21%**		**0.467**

Table 5.20-Continued

Panel E: Public Acquisitions												
PublicAll	-27.77%[a]	561	0.000	-27.77%[a]	561	0.000	-27.89%[a]	553	0.000	-23.37%a[a]	431	0.000
PublicHiu	-41.64%[a]	160	0.000	-35.37%[a]	130	0.000	-35.06%[a]	201	0.000	-34.07%[a]	100	0.004
PublicLiu	-21.05%[a]	226	0.000	-22.56%[a]	282	0.000	-32.61%[a]	181	0.000	-14.57%[a]	216	0.001
Dif(Hiu-Liu)	**-20.59%[a]**		**0.003**	**-12.82%**		**0.111**	**-2.45%**		**0.707**	**-19.50%**		**0.025**
PublicHs	-27.95%[a]	225	0.000	-27.95%[a]	225	0.000	-27.99%[a]	220	0.000	-21.30%[a]	179	0.000
PublicLs	-24.20%[a]	156	0.000	-24.20%[a]	156	0.000	-24.02%[a]	154	0.000	-22.21%[a]	124	0.004
Dif(Ls-Hs)	**3.75%**		**0.601**	**3.75%**		**0.601**	**3.98%**		**0.585**	**-0.91%**		**0.910**
PublicLsHiu	-37.08%[b]	51	0.023	-28.62%[b]	61	0.028	-30.16%[b]	63	0.024	-33.49%[c]	49	0.054
PublicHsLiu	-24.64%[a]	116	0.000	-24.63%[a]	168	0.000	-27.90%[a]	83	0.000	-19.49%[a]	135	0.002
Dif(LsHiu-HsLiu)	**-12.44%**		**0.333**	**-3.99%**		**0.734**	**-2.26%**		**0.854**	**-14.00%**		**0.245**
Panel F: Public Acquisitions paid for with Cash												
Public.CashAll	-17.53%[a]	220	0.000	-17.53%[a]	220	0.000	-17.53%[a]	220	0.000	-13.71%[a]	188	0.004
Public.CashHiu	-25.84%[c]	47	0.076	-26.03%	28	0.148	-25.30%[b]	73	0.024	-18.98%	32	0.157
Public.CashLiu	-15.14%[b]	101	0.011	-14.69%[b]	146	0.013	-20.90%[a]	77	0.007	-7.46%	108	0.220
Dif(Hiu-Liu)	**-10.70%**		**0.420**	**-11.34%**		**0.507**	**-4.40%**		**0.652**	**-11.51%**		**0.380**
Public.CashHs	-23.31%[a]	111	0.004	-23.31%[a]	111	0.004	-23.31%[a]	111	0.009	-16.01%	93	0.032
Public.CashLs	-11.44%	43	0.361	-11.44%	43	0.353	-11.44%	43	0.325	-14.15%	39	0.271
Dif(Ls-Hs)	**11.87%**		**0.359**	**11.87%**		**0.359**	**11.87%**		**0.359**	**1.86%**		**0.888**
Public.CashLsHiu	-24.50%	15	0.336	-4.19%	12	0.893	-19.23%	17	0.449	-15.52%	13	0.380
Public.CashHsLiu	-20.75%[a]	68	0.010	-18.73%[b]	94	0.029	-18.80%[b]	46	0.048	-15.44%	72	0.119
Dif(LsHiu-HsLiu)	**-3.76%**		**0.874**	**14.54%**		**0.604**	**-0.43%**		**0.983**	**-0.08%**		**0.997**

Table 5.20-Continued

Panel G: Public Acquisitions paid for with Stock												
Public.StockAll	-42.33%[a]	168	0.000	-42.33%[a]	168	0.000	-43.18%[a]	162	0.000	-37.01%[a]	112	0.000
Public.StockHiu	-54.61%[a]	69	0.001	-43.20%[a]	64	0.005	-52.25%[a]	66	0.005	-51.50%	37	0.169
Public.StockLiu	-26.33%[b]	49	0.041	-41.81%[a]	46	0.000	-45.49%[a]	45	0.003	-23.80%[c]	40	0.055
Dif(Hiu-Liu)	**-28.28%[b]**		**0.020**	**-1.38%**		**0.911**	**-6.76%**		**0.583**	**-27.70%[c]**		**0.099**
Public.StockHs	-40.94%	48	0.192	-40.94%	48	0.193	-41.67%	45	0.206	-26.97%	32	0.450
Public.StockLs	-39.21%[a]	58	0.004	-39.21%[a]	58	0.003	-39.24%[a]	56	0.002	-35.79%[b]	41	0.025
Dif(Ls-Hs)	**1.73%**		**0.894**	**1.73%**		**0.894**	**2.43%**		**0.859**	**-8.82%**		**0.592**
Public.StockLsHiu	-51.25%	22	0.285	-34.24%	27	0.160	-46.22%	23	0.280	-55.99%	16	0.486
Public.StockHsLiu	-30.87%[b]	18	0.036	-38.59%[b]	27	0.015	-41.75%	11	0.125	-30.90%[b]	22	0.044
Dif(LsHiu-HsLiu)	**-20.38%**		**0.269**	**4.35%**		**0.797**	**-4.47%**		**0.859**	**-25.09%**		**0.132**

CHAPTER 6: CONCLUSION

6.1 Conclusion

The primary aim of this thesis is to offer a behavioural approach to help explain bidding firms' abnormal returns following the announcement of a takeover bid. A great number of factors have been identified in the corporate finance literature as explanatory variables in relation to short-run bidder gains. However, there is limited evidence in the behavioural finance school in a M&A framework. This thesis provides an in-depth empirical analysis on issues related to behavioural heuristics, such as managerial overconfidence and investor sentiment that can affect bidder gains.

The existing literature suggests that bidders' abnormal returns can be explained by factors such as the target firm's listing status, the method of payment used to finance the acquisition, a combination of these two factors as well as the bidders' growth opportunities, the bidder's size, the relative size of the deal and also whether the bidder diversifies acquiring targets within different industries/countries.

Neoclassical theories suggest that takeovers are motivated by the potential creation of synergy gains (Jensen and Ruback (1983)). Two firms merge, or one acquires the other, and through economies of scale, shareholders can benefit due to potential synergy. Jensen (1986) develops the agency theory of takeovers and suggests that the main motive behind M&As is that managers chase targets to fulfil their own personal interests by engaging in takeovers. Shleifer and Vishny (2003) introduce the stock market driven acquisition motive. They suggest that managers 'time the market' and during overvalued periods, they take advantage of their overvalued equity in order to acquire undervalued target firms. Another school of thought suggests that takeovers are driven by managerial overoptimism. Roll (1986) introduces the hubris hypothesis for corporate takeovers which suggests that takeovers can be motivated by an overly optimistic attitude of the belief that managers can create value and extract potential synergy gains due to their own abilities.

Unlike investor overconfidence, which has been extensively examined in theoretical and empirical investigations, there is limited evidence regarding managerial overconfidence. Evidence is provided for the US market by Malmendier and Tate

(2008) and Hayward and Hambrick (1997). *Chapter 3* of this thesis focuses on the effect of managerial overconfidence on UK bidding firms' abnormal returns earned around the announcement of a takeover bid. To capture overconfidence, we employ three hand-collected proxies, used for the first time in a UK dataset. Due to the fact that managerial overconfidence is a difficult behaviour to truly capture, and also for robustness reasons, we employ three different proxies. The stock options proxy is based on managers' compensation grants. Through annual reviews, we hand-collected data related to their personal portfolios and examined when they are granted the stock option, when they can exercise it, when they exercise it and when the option expires. The rationale behind the stock options proxy suggests that managers, due to the fact that they cannot diversify the firm specific risk that the stock options carry, should exercise it as soon as it is 'in-the-money'. Managers who hold the option until the last year before the expiration date are classified as overconfident. The second proxy is based on managers' acquisitiveness. Doukas and Petmezas (2007) and Billett and Qian (2008) claim that firms that are involved in multiple acquisitions within a short period of time are driven by overconfidence and self-attribution bias. These two studies examine the multiple acquisitiveness of firms. We argue that it might not be the same individual in these multiple bidders that holds the manager's post throughout the takeover activity of a specific firm. We employ a similar proxy but classify *individual* CEOs who perform five or more acquisitions within three years as overconfident. Lastly, the third proxy is based on how the press characterizes various managers. We collect articles that portray managers as 'optimistic', 'overoptimistic', 'confident' and 'overconfident' and articles that portray them as 'reliable', 'cautious', 'conservative', 'practical', 'frugal', 'steady', 'not confident' or 'not optimistic'. If the number of articles in the first group outnumbers the second, then managers are classified as overconfident.

The UK M&A market is an ideal testing ground for the behavioural trait of overconfidence. It is the most active merger market following the US. Among European countries, 65% of the total takeover activity conducted takes place in the UK (Doukas and Petmezas (2007)). Furthermore, almost 90% of acquisitions involve private targets (Draper and Paudyal (2006)). Information is limited regarding privately held firm. It is much more difficult for managers to estimate and value private target firm and the task of evaluation becomes more ambiguous. Hence, overconfidence is more prominent in this setting. Moreover, the vast majority of the method of payment used is cash. Malmendier and Tate (2008) write that overconfident managers prefer to use internal sources to finance takeovers. These features of the UK M&A market position such a database to be an ideal testing ground for the presence and effects of the human trait of overconfidence.

The main findings suggest that overconfident managers destroy more or create less value than rational managers do. We control for a number of factors that have been proven to affect bidder gains, such as the target firms listing status (private or public), the method of payment used (cash, stock and mixed), the size and growth opportunities of the bidder, the relative size of the deal and whether the bidder diversifies across industries/countries. The big picture across all three proxies suggests that in the short-run, acquisitions announced by rational managers generate higher abnormal returns than those announced by overconfident managers. Furthermore, the phenomenon of overconfidence is more prominent in portfolios such the one comprising of private targets, cash-financing, glamour and large bidders. As mentioned above, information is limited for privately held firms and managers need to involve their personal estimations and valuation skills to a higher degree. Besides this, glamour firms and large firms, due to their past successes, are more likely to be governed by managers infected by hubris. The business press proxy offers a similar but weaker picture, most likely due to the limited number of observations that were able to be collected. The pattern of rational versus overconfident managers is reaffirmed in the cross-sectional analysis where we simultaneously control for various factors that affect a bidder's performance. The long-run analysis is consistent with the findings of the short-run analysis, especially for the stock options and multiple acquirers proxies. No significant mean differences are uncovered for the business press proxy. Overall, the findings provide additional support to the theoretical predictions of previous US studies indicating that the effect of *managerial* overconfidence on bidders' returns is not sensitive neither to the overconfidence measure nor is it limited to the US market.

The hubris hypothesis as examined in Chapter 3 suggests an irrational manager-rational market framework. Other studies (Odean (1998)) have also suggested that investors are also overconfident, especially in bullish periods. Rosen (2006) argues that managers may be infected with the same optimism as investors during bullish periods. As Baker et al. (2007, p. 48) argue, "*the irrational manager and irrational investor stories can certainly coexist*". *Chapter 4* examines the interaction of managerial overconfidence with bidders' performance across various market conditions.

More specifically, Shleifer and Vishny (2003) present a model in which managers are rational and are able to take advantage of irrational markets. According to Shleifer and Vishny (2003), managers 'time the market' to capitalise on overvalued periods, in which they use their overvalued equity to proceed to conduct takeover activity by acquiring undervalued target firms. The market driven acquisition theory is confirmed by the findings of Jovanovic and Rousseau (2001) and Rhodes-Kropf et al. (2005) while Bouwman et al. (2009) find that takeovers announced during high valuation periods generate higher returns than those announced during low valuation periods.

We follow Bouwman et al. (2009) to classify the market in to high, neutral and low valuation periods and we employ the stock options and the multiple acquirers proxy as described in Chapter 3. In Chapter 4, the empirical results strongly support the notion that short-run bidder gains can be well explained by the joint effect of market conditions and managerial (non-)overconfidence. More specifically, rational managers who announce takeovers during high valuation periods generate the highest abnormal returns for their shareholders. Rational managers assess the target firm more carefully, negotiate more efficiently and take advantage of market timing in order to create the highest possible abnormal returns for their shareholders. Conversely, the findings also show that overconfident managers who announce takeovers during low valuation periods suffer the highest losses. During depressed markets, managers are unlike to hide the poor quality of the deal and the possible overpayment incurred. In low valuation periods, conservative investors are more likely to assess the deal more carefully resulting in a more unfavourable reactiong to the announcement of a takeover deal by an overconfident manager. The univariate analysis shows that deals announced by rational managers in high periods are statistically different from those announced by overconfident managers in low periods. The high-rational vs. low-overconfident pattern also holds when controlling for various bidder and deal characteristics that affect bidders' performance and the differentials are even higher in portfolios in which the overconfidence effect is more pronounced. Furthermore, our findings show that rational managers tend to generate positive abnormal returns for their shareholders irrespective of the market conditions. In addition, overconfident managers who announce acquisitions in high valuation periods do not suffer high losses. They are able to take advantage of the high investor sentiment and can hide possible overpayments or the low quality of the deal. Hence, in high valuation periods, even the stock price of overconfident managers is boosted by the evident high investor sentiment.

The cross-sectional analysis results provide extra support to the findings of the univariate analysis. We simultaneously control for the managerial bias and the different market conditions alongside other control variables that affect bidders' performance in the short-run. The coefficient for the high valuation-rational manager dummy carries the most positive and statistically significant value while the low valuation-overconfident manager dummy carries a negative and significant value. Results are, on large, similar when measuring overconfidence with the stock options and the multiple acquirers proxies. Finally, the long-run analysis provides a similar but weaker picture in favor of deals announced by rational managers in high valuation periods

Chapter 5 offers another behavioural approach on how the market reacts under conditions of information uncertainty, especially in cases where investors also possess private information. The neoclassical approach to M&A announcements suggests that the market reaction should reflect the potential synergy gains following the announcement of a takeover (Jensen and Ruback (1983)). The market should reward value enhancing projects and punish takeovers with no or negative synergy gains. Fuller et al. (2002) and Draper and Paudyal (2008) claim that part of the market's reaction to takeover announcements is due to revaluation gains. More specifically, they suggest that first-order deals generate higher returns because part of the gains is due to a revaluation effect, mostly corrected at the first announcement. Chapter 5 offers a different approach to explain short-run bidder gains. Our work is motivated by the theoretical and empirical foundations of behavioural finance models. Odean (1998) claims that investors are overconfident and overestimate the precision of their information especially when they are personally involved in the collection process. The theoretical model of Daniel et al. (1998) predicts that investors are overconfident about their private information and tend to attribute more weight to their private signals than to public ones received. Similarly, Daniel et al. (1998, 2001) claim that investors' overconfidence is magnified under conditions of information uncertainty. In the same respect, Zhang (2006) and Jiang, Lee and Zhang (2004) also claim investors overreaction is more prominent under conditions of information uncertainty. Specifically, Zhang (2006) finds that under conditions of information uncertainty, relatively 'good' news generates higher abnormal returns while relatively 'bad' news generates lower abnormal returns. He also writes that he does not control for the private information of the investor. Motivated by the above evidence, we investigate the market's reaction following the announcement of various takeover deals under conditions of information uncertainty as well as in cases where investors possess private information.

The existing literature suggests that the target firm's listing status along with the method of payment used to finance the deal conveys various signals to the market regarding the bidding firm's intrinsic value. Travlos (1987) writes that the market perceives acquisitions for publicly listed targets paid for with equity as 'bad' news as investors assume that the bidders' equity is overvalued. Conversely, cash offers signal 'good' news to the market about the intrinsic value of the bidding firm as investors consider it a signal that the bidders' stock price is undervalued. Additionally, Shleifer and Vishny (2003) also suggest that overvalued bidders are more likely to use equity to proceed to takeovers. On the other hand, Chang (1998) and Draper and Paudyal (2006) posit that takeovers for privately held targets paid for with equity signal 'good' news to the market as the concentrated ownership of the target firm has a stronger more incentive to carefully evaluate the intrinsic value of the bidder before accepting a large amount of stock is an exchange offer. Hence, it is quite unlikely that the owners of the target firm will accept overvalued equity. Cash offers for private target firms are usually positive signals but do not reveal much information regarding the bidder's intrinsic value. In using cash to acquire a privately held firm, bidders tend to be less uncertain about the potential synergy gains and are confident enough to offer cash as they are not willing to share the potential synergy gains with the ownership of the target firm by creating blockholders. Therefore, a cash acquisition does not directly reveal information about the value of the bidding stock but can, in general, be classified as a relatively positive piece of information.

Motivated by the above evidence, we hypothesize that under conditions of information uncertainty and in times when investors possess private information, they will overreact and generate positive abnormal returns following the announcement of private stock, public cash and private cash takeover announcements (signals of ‘good’ news) while the market will react negatively following public stock deals (signal of ‘bad’ news). When uncertainty is low and investors are less likely to possess private information, the market reaction should be complete (i.e. zero abnormal returns should be earned) irrespective of the type of the deal announced.

We employ four proxies for information uncertainty namely, age, size, sigma and trading volume of the bidding firm. For private information, we adopt stock return (non)synchronicity as introduced by Roll (1988) and further developed by Morck et al. (2000) and Chen et al. (2006).

Our main findings suggest that bidders subject to high information uncertainty regarding the target generate higher abnormal returns relative to low information uncertainty about the bidding firm’s value following the announcement of private acquisitions paid for with cash and equity and for public targets paid for with cash, while the opposite effect is observed for public acquisitions paid for equity. Additionally, when we control for the private information of the investor, we find that under high information uncertainty and when investors are likely to possess private information, the market reacts highly positively following the announcement of private stock, public cash and private cash deals (‘good’ news), while it reacts highly negatively following takeovers for public targets paid for with equity (‘bad’ news). When uncertainty is lower and investors are less likely to possess private information (high synchronicity), the market reaction is complete (zero abnormal returns).

The empirical findings also show that the findings of Travlos (1987) and Chang (1998) for the method of payment in public and private acquisitions respectively hold only under conditions of information uncertainty. In other words, public and private acquisitions paid for with cash are fundamentally different from those paid for using equity *only* under conditions of high information uncertainty. The statistically significant differences are mainly driven by the investor’s overreaction to high uncertainty deals. This difference is amplified even more when controlling for investors’ private information but only for acquisitions of public target firms. The reasoning offered is that public cash deals are considered as ‘good’ news while public stock deals are signals of ‘bad’ news and therefore the market overreacts in opposite directions. The multivariate analysis shows that the reaction is stronger towards ‘bad’ signals (public stock deals). This evidence is consistent with Epstein and Schneider (2008) who suggest that investors react asymmetrically to news when they are ambiguous about the firm value. Furthermore, Bernard et al. (1997), La Porta et al. (1997) and Skinner and Sloan (1999) show significant differences in the markets response with regards to good and bad news.

Additionally, we offer a different perspective to studies that examine size as a determining factor to value creation from M&As. Moeller et al. (2004) show that small bidders generate higher returns than larger bidders do and offer a number of explanations to justify their findings. The final empirical chapter of this thesis suggests that the higher returns generated by small firms may be due to the higher information associated with such acquirers.

On the whole, Chapter 5 offers a different approach to explain the market’s reaction following the announcement of takeovers. The neoclassical theory posits that the short-run market reaction to M&A announcements reflects either potential synergy or revaluation gains. Our evidence suggests that there is a simple market overreaction driven by investor biases. Investors’ biases increase especially with uncertainty and, depending on the signal conveyed by each type of takeover, investors react either positively or negatively. In the absence of uncertainty, the market reaction is complete.

Overall, the evidence provided in this thesis provides extra evidence in the growing field of behavioural finance. Gervais (2009) and Subrahmanyam (2007), in their review papers, highlight the need for further extensive research into various behavioural aspects such as agent biases and other financial participants’ biases that affect stock prices. Specifically, Subrahmanyam (2007), in his concluding remarks, writes that the well-documented cognitive bias of overconfidence is a topic worthy of further research. He also notes that CEOs profiles and characteristics should be used to predict corporate takeovers. This thesis reinforces the idea that behavioural phenomena such as financial participants' cognitive biases can explain to a great extent the abnormal returns earned following takeover announcements.

6.2 Reflective Review and Implications

This thesis offers further explanations on various behavioural factors that affect short and long-run performance of bidding firms that engage in corporate takeovers. Neoclassical theories have attempted to shed light on both the factors which trigger M&A activity and the explanations behind takeover gains. This thesis has further extended both the limited studies and the theories developed within the field of behavioural finance. Its findings could have several implications for institutional investors, block holders, managers and firm owners and these will be reviewed in this section.

One of the main conclusions discussed in this thesis concerns the proposition that managers who are infected by hubris end up destroying value for their shareholders. Institutional investors or block holders could help prevent this wealth destruction through imposing further restraints and monitoring closely the behaviour of CEOs who have a tendency to act in an overconfident manner. Furthermore, the evidence in this thesis shows that this managerial bias when also combined with the market's sentiment could have either destructive or very positive outcomes for the shareholders of the bidding firm. Therefore, it would be advisable for managers to time the market in order toobtain the highest possible gains for their shareholders through capitalising upon positive market sentiment. Lastly, we show that uncertainty triggers sentiment and investors react highly negatively to takeovers for listed target firms paid for with stock. In these circumstances, it would be wiser if managers released more information to increase the transparency of their firms in order to create a clearer view of their company's fundamental value. In this way investors would be able to judge their decisions in a more objective way.

Despite the thorough analysis on various behavioural issues which has been conducted, additionalinvestigation is required to provide answers to related issues. This thesis focuses on managerial overconfidence by examining the behaviour of CEOs. However, the board of each company consists of various members. The impact of each member of the board and how they could prevent various decisions that are not in accordance with shareholders' interests is still an open and unexplored topic. Furthermore, other managerial characteristics apart from overconfidence could also influence their decisions. For instance, Kaplan, Klebanov and Sorensen (2010) investigate a sample of managerial characteristics which reveal information on general ability and interpersonal characteristic skills. Further exploration in this field would undoubtedly prove to be promising.

A sensitive issue on which further development is required is the validity of proxies used to approach managerial overconfidence. There is a lot of criticism around the ability of each different proxy to capture this sensitive behavioural bias. Managers could be interviewed through questionnaires and more precisely could be identified as more or less overconfident. This approach may prove fruitful in further investigations.

Additionally, one of the proxies used to capture overconfidence is multiple takeovers. An unanswered question is the impact of one takeover bid to another and the learning outcomes of each deal both to the managers and investors. The findings of this thesis has provided many further research fields and thus undoubtedly has generated further stimulation to increase investigations in the area of behavioural finance.

Overall, this work has not only provided findings to preoccupy and stimulate the minds of academicians, but it has also provided valuable information for both policy makers and those which govern the actions of managers. Policy makers can use the findings to try to further regulate the merger market and help reduce the losses incurred whilst shareholders can use the findings in order to assess the true performance and worth of the managers representing them.

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