The Reference Point Effect, M&A Misvaluations and Merger Decisions

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The Reference Point Effect, M&A Misvaluations and Merger Decisions

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Abstract

This thesis investigates the reference point effect on M&As. Prospect theory proposes that the reference dependence bias is firmly rooted in people's minds, affirming that people rely heavily on a piece of relevant information while making decisions. This thesis applies this reference point to M&As, showing that M&A participants are subject to reference-dependence bias. The reference point theory explains the M&A motives in a new way. The results of this thesis offer important implications to M&A practitioners.

Baker *et al.* (2012) suggest that the target's reference price enhances the target's bargaining power in the U.S. market, inspiring the author's thinking that the reference point effect is likely to be reinforced in a competitive market and in the scenario where the bidder is in the face of considerable information barriers. In this pursuit, Chapter 3 studies the reference point effect on a sample of public acquisitions involving a U.K. target. Using the target 52-week high as the reference price, a positive relationship emerges between the reference price and the offer premium. Further, there is evidence of overpayment among domestic bidders whereas little evidence among cross-border bidders, indicating that the market acquiesces the payment according to the target reference point among cross-border bidders. Evidence that reference-dependence bias serves as *the bargaining power* is confirmed outside the United States.

However, the real M&A motive of the bidder is unlikely to be revealed solely depending on the target reference point. Therefore, Chapter 4 extends Baker *et al*.'s paper (2012) by adding both the target and the bidder reference points. A *Relative Reference Point (RRP)* is proposed for M&A misvaluations as per Shleifer and Vishny (2003), indicating the extent to which the bidder is more overvalued relatively to the target. The joint reference point effects can explain the motivation of why bidders paying high offer premiums. The results obtained in this chapter show that bidders are likely to pay with stocks when RRP increases, suggesting that bidders accelerating the process of overvaluation dilution is a sign of bidder overvaluation. In addition, the offer premium increases with the RRP, indicating the motive of diluting overvaluation is to be seen by the target, leading targets to bargain over high offer premiums. When assessing the long-term performance of stock bidders, it became evident that bidders time the market by paying stocks according to the RRP.

A direct implication of prospect theory is that people seek risk in the face of loss gauged by a reference point. Chapter 5 proposes the bidder reference point to assess *the market anticipation effect*. Investors suffer mental loss when their firm's current performance is significantly below its best recently achieved performance. They anticipate that the firm will take risks to turn the table round. It was evident that the firm is rewarded with positive market reactions when it takes risks according to the market's anticipation. In a further analysis, it also emerged that managers taking the market-anticipated risks exhibit greater efforts in the processes of M&A negotiation and post-merger integration, reflected in the low offer premiums paid to the target shareholders and positive long-term abnormal returns earned.

This thesis has empirically investigated many implications of the reference point effect in the M&A context. The main aim of this thesis is to simplify M&A decisions for managers in order to structure M&A effectively.

To my parents

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“We're blind to our blindness. We have very little idea of how little we know. We're not designed to know how little we know.”

Daniel Kahneman

CHAPTER 1: INTRODUCTION

The central purpose of this thesis is to examine the reference point effect on the causes and consequences of Mergers and Acquisitions (M&As). In Collins' English Dictionary: the reference point is '*a fact forming the basis of evaluation or assessment*'. The notion of the reference point was first noted in the work of Tversky and Kahneman (1974), and developed as an important implication of Kahneman and Tversky's prospect theory (1979). Prospect theory is a descriptive theory depicting how individuals make decisions under risks. A series of implications were built in relation to the reference point, a specific point that gauges people's mental feelings about gains and losses. Prospect theory suggests that people have a strong loss-aversion tendency relative to a reference point, suggesting that people are unwilling to suffer losses and thus seeking many risks when experiencing loss, while, on the other hand, they avoid taking too many risks when enjoying gain. Feelings about the loss are more intense than those relating to gain, and feelings tend to be stronger nearer the reference point than further away from it in both the loss and the gain domains.

M&As serve as an ideal testing ground for prospect theory for four proposed reasons. First, M&As are major corporate investment activities associated with large risks. Prospect theory addresses how managers make decisions in consideration of uncertainty, which is a suitable theory to explain the M&A motive. M&As decisions are complex as they normally involve a negotiation process that requires superior skills and considerable efforts by bidder managers who are committed to completing the M&A deal to create the wealth for shareholders. It remains largely unexplored how much a bidder manager should pay for the target. Valuing targets is a very subjective task since it rests upon a large number of assumptions that make the decision-making process hard to be observed by outsiders. In such a case, the reference point price, a relevant piece of information, is likely to be employed to assess M&A motive.

Secondly, whilst existent behaviour finance theories have explained M&A motives on a basis of deal synergies, the hubris management hypothesis (Roll, 1986; Hayward and Hambrick, 1997), managerial overconfidence (Malmendier and Tate 2005, 2008), self-attribution bias (Doukas and Petmezas, 2007) and the misvaluation hypothesis (Shleifer and Vishny, 2003; Dong *et al*., 2006), prospect theory explains the M&A motive from a perspective of managerial decision-making process. This theory explains decision-making from a human's nature response, without making any assumptions regarding whether the market or the managers are rational during the course of the transaction. Given that the outcome of major investment decisions significantly affects the interests of stakeholders, the reference point price, as it is easily obtained, is likely to be considered by the managers. The reference point theory of M&As thus allows the researcher to observe how the reference-dependence bias affects managerial major corporate investment decisions, such as initiating an M&A deal or valuing the target.

Thirdly, whilst traditional theories explain the M&A motive from the perspective of the bidder, reference point thinking could help the researcher to explain M&A motives from the perspectives of the two firms involved in an M&A deal (i.e. the two firms involved). Because the agreement of an M&A deal cannot be reached without the consent of the two firms involved, bidders should consider the willingness for deal acceptance on the target side while making M&A decisions. The reference point used in this thesis is an item of price information that reflects the market's perspective on a firm's prospects. Managers who make major decisions should also be concerned about the market's reactions. Therefore, focusing on the reference point effect enables a big picture on how investment strategy is formulated and how it is structured from the perspectives of major participants in M&As. This thesis examines role of the reference point effect played on various central aspects of M&As, including offer premiums, the method of payment and managerial risk-taking attitude, which significantly affect M&A outcomes.

Finally, M&As offer the researcher many considerations on how the reference point effect is reinforced. One possible explanation for people looking at a salient piece of information is because there exists considerable uncertainty about the information, making the true situation less likely to be accurately observed. This raises the concern as to whether the reference point effect is significant in the setting where the level of information asymmetry is high according to the information asymmetry hypothesis. Addressing this concern, the reference point theory of M&As was made use of in a sample consisting of both cross-border and domestic bidders' acquisitions of a U.K. target. It was expected that the reference point effect would be stronger for cross-border bidders than domestic bidders based on the rationale that domestic bidders, with sophisticated networking, are more advantageous in gathering information than cross-border bidders. A common intuition suggests that managers are skilful and have private information about their firms, and have better understanding than the market in terms of the deal. Thus, it is expected that managers (i.e. more experienced investors) should be less likely to be influenced by a single number, such as a reference point price, instead, they tend to take other relevant factors into consideration, whilst the market (i.e. less experienced investors) tends to put greater emphasis on the reference point due to limited information and limited time in which to process the deal. If this is the case, the reference point effect should have little impact on managers' decision-making process. However, it may not be the case, as managers who work for the best interests of the shareholders should provide rationale to shareholders as to why they initiate an M&A deal and how it is valued, implying that the reference point is used as an important decision-making tool for shareholders to judge M&A performance. This thesis integrating prospect theory into the M&A testing ground gives the researcher better knowledge on how different M&A stakeholders understand M&A motives.

Neoclassical M&A theory suggests that managers are rational and thus add the value to the firm through M&As (Jensen and Ruback, 1983). According to Jensen (1988), M&As are a process of allocating and integrating resources of a firm so as to maximise the firm's value. His view is well supported by Berkovitch and Narayanan (1993) and Hodgkinson and Partington (2008) who found synergies gains an essential motive for M&As, dominating over other proposed M&A motives, such as hubris and agency problems. Despite this, it is a well-documented fact that bidders do not gain in either the short or the long run, whilst targets gain in M&As (Jensen and Ruback, 1983). The fundamental reason for bidder's underperformance is overpayment, which is the offer price paid to the target shareholders largely is greater than the expected synergies gains following a merger. Bidder shareholders may find the firm has difficulty generating synergies if high offer premiums are offered to the target shareholders, since they are directly observed by the market, leading to negative market reactions once the bid is announced.

One thread in relevant literature contributes the concept of overpayment to the agency conflicts of interests between managers and shareholders, which arise when managers seize the opportunity to acquire firms to pursue their own benefits at the expenses of their shareholders. As a result, bidder managers tend to pay excessively for targets. Jensen (1986) studied the performance of a bidder with large free cash flow and found that managers tend to engage in ill-conceived investment projects. In a similar vein, Morck *et al*. (1990) find managers fail to maximise the value of the firm, as they tend to engage in value-destroying deals for the purposes of risk reduction and job security. Fu *et al*. (2013) found that severe agency problems lead to the firm's underperformance in the long term. All of these studies indicate that managerial overpayment destroys the value of a firm.

Another thread in relevant literature concerns overpayment to behavioural finance explanations. Roll (1986) was the first to develop the hubris management hypothesis that managers tend to overestimate the synergies gains to be generated by M&As and accordingly overpay for the target. In this line of thinking, Hayward and Hambrick (1997) found the self-importance of top managers leads to overpayment. Malmendier and Tate (2008) found overconfidence in managers having a strong preference for their firm's stocks tends to lead to the completion of more acquisitions associated with negative market reactions. Rau and Vermaelen (1998) contribute such managerial overconfidence to market-to-book value (MTBV), showing that high MTBV firms tend to be associated with strong stock price momentum due to better historical performance, thus being overvalued. The positive market reaction therefore reinforces the managerial illusion of control[1], leading to excessive unnecessary acquisitions. Moeller *et al*. (2004) ascribe managerial confidence to firm size, suggesting that larger firms are associated with worse performance than that of smaller firms, reasoning that managers of larger firms tend to have fewer restrictions on a firm's resources and such power of autonomy arguments managerial overconfidence.

Prospect theory offers many additional considerations for overpayment distinct from those in behaviour finance theories. Given limited time and limited information in which to process the deal, bidders and targets tend to employ a relevant piece of price information for decision-making. Following studies that link corporate investment decisions and the firm's reference point price (Heath *et al*., 1999, George and Hwang, 2004, Huddart *et al*., 2009, Burghof and

[1] The tendency that people overestimate their ability to control events.

Prothmann, 2011, Baker *et al.*, 2012), the firm's 52-week highs were employed as reference points in this thesis, as they are frequently reported by financial media and more likely to create a deep impression in the investors' minds. Targets may presumably believe that a price relative to their 52-week high is a fair price as it reflects their best performance. According to prospect theory, people have a strong loss-aversion tendency. If losing the control of the firm is perceived as a mental loss for the target shareholders, an offer price that is closer to the reference point is more likely to compensate the feelings of such a loss, making the deal more acceptable. On the other hand, targets encouraged to use its 52-week high to negotiate a decent offer price with the bidder, as target shareholders believe the firm may well create value without it being acquired. Edward and Walkling (1985) regard offer premiums as the outcome of the bargaining process between the bidder and target managements, suggesting that bidders in a relatively weak position tend to pay high offer premiums, leading lower abnormal returns, while targets in a relative strong position can demand high offer premiums being translated into larger positive abnormal returns. Therefore, the use of the reference point reinforces the target's bargaining power in exchange for high M&A offer premiums.

Chapter 3 of this thesis examines the role of reference point effect in the U.K. market. The idea of Baker *et al*. (2012), who examined the role of the target 52-week high effect on the U.S. market, was put forward to the U.K. market. Unlike Baker *et al*. (2012), a sample containing both the domestic and cross-border bidders were taken into consideration in the United Kingdom. The reference point effect was expected to have a substantial impact on cross-border M&As into the U.K. for three proposed reasons. First, U.K. targets may find it easier to use their 52-week high to negotiate with the bidder given that targets are in the most competitive market where their bargaining power is more easily to be reinforced and thus being translated into higher offer premiums (Moeller and Schlingemann, 2005; Alexandridis *et al*., 2010).

Second, U.K. firms have a relatively strong corporate governance system where target managers are expected to be more likely to serve the best interests of their shareholders. In that case, target managers tend to use their 52-week high to seek higher offer premiums, which reconcile the view of their shareholders. Finally, it is expected a stronger tendency for cross-border bidders than domestic bidders in terms of looking at the target 52-week high as a reference point given that there is greater information uncertainty regarding cross-border bidders over domestic bidders.

Using a sample of 451 domestic acquisitions and 155 cross-border acquisitions into the U.K. between 1985 and 2014, a positive relationship between the target 52-week high and the offer premium was emerged. The reference point distinguishes the takeover motive of domestic bidders from that of cross-border bidders. It became evident that offer premiums driven by the target 52-week high lead to a negative market reaction for domestic bidders, suggesting evidence of overpayment. However, there is little evidence of overpayment for cross-border bidders paying according to the target 52-week high. The findings in this research are consistent with prospect theory.

Chapter 3 makes two distinct contributions to the M&A literature. First, this is the first examination of the role of the reference point in the context of cross-border M&As. This allows the researcher to investigate how bidders value targets under information uncertainty. Further, the reference point theory of M&As distinguishes the motive of domestic bidders from cross-border bidders acquiring U.K. public targets. Offer premiums paid based on the target reference point price have a negative impact on bidder announcement returns for the domestic M&A subsample while there is an insignificant impact on bidder announcement returns for the cross-border M&A subsample, indicating that shareholders tend to believe that managers of domestic bidders pay too much for the target based on the target 52-week high, while take those of the cross-border who pay according to the target 52-week high for granted.

Chapter 3 applies the idea of the reference point effect to the U.K. where targets have a strong bargaining position with an expectation that they are likely to employ the 52-week high as the reference point in the negotiation table. This chapter finds that the reference point reinforces the target's bargaining power in M&As, and important factors that enhance the reference point effect on M&As. However, it leaves a great deal to think about the role of the bidder reference point in the context of M&As in consideration of the bidder 52-week high is also an available item of information for the market to assess the value of the firm around the takeover announcement date. Whilst Chapter 3 finds that the target 52-week high is a reference point for how much the bidder should pay for the target, Chapter 4 studies the bidder 52-week high effect, which gives market information on how much the bidder could pay for the target. Bidder with a nearness 52-week high tend to create an image of strong profit-generating ability and richness in financial resources, whilst those whose current price deviates considerably from the 52-week high tend to experience many difficulties to finance a deal.

In addition, Baker *et al*. (2012) reason that bidders who pay according to the target 52-week high are confident in realising synergies above the same level of the target. However, these authors found that those bidders do not generate synergies. If they can time the market by selecting quality deals for the purpose of synergies integration, this leaves the researcher of this thesis to believe that focusing on the target 52-week high alone may not fully account for the reference point effect on M&As. Therefore, both the target and the bidder 52-week highs were taken into considerations and examined in Chapter 4, where a new proxy was developed by including both the target and the bidder reference points. If the market price reflects the view of the market investors to the firm's valuation, it should be suggested that a firm with the nearness 52-week high is likely to be overvalued based on the rationale that investors should be reluctant to bid up the price, fearing that the firm is already overvalued. In contrast, a firm whose current price deviates a long way from its 52-week high leads the market to believe that the firm is experiencing bad news and is thus undervalued. Therefore, prospect theory can accommodate many important implications of the misvaluation hypothesis.

Whilst behaviour finance theories explain value-destroying deals as bidders have a better than average illusion and overpay the target shareholders accordingly, Shleifer and Vishny (2003) proposed the misvaluation hypothesis that bidders overpay for the targets with the purpose of diluting overvalued stocks. This hypothesis rests upon the assumption that the market is inefficient whereas managers are rational, thus managers are able to exploit mispricing of the market. However, this motive is not observed by investors with short horizons, resulting in negative market reactions to the bid announcement. The theoretical model of the misvaluation hypothesis yields three important implications: first, overvalued firms tend to pay high offer premiums to the shareholders of a less overvalued firm. Second, overvalued firms prefer stocks as a means of finance for acquisitions as it accelerates the process of overvaluation dilution. Finally, offer premiums hedge against the risks of holding stocks in an overvalued market. Studies reveal that the rationale behind overpayment is that bidders are threatened by the danger of overvaluation, as addressed in the Jensen's work (2005).

Shleifer and Vishny's study (2003) fail to provide any rationale as to why targets would accept overvalued stocks given that they are as rational as bidders and their firm is not underperforming prior to an M&A deal. Rhodes-Kropf and Viswanathan (2004) complemented their view by arguing that both bidders and targets are rational and the reason for making mistakes by accepting too many overvalued stocks is that targets do not have access to private information about the bidder, resulting in large valuation errors due to an overestimation of synergies. Rhodes-Kropf *et al*. (2005), further relaxing the irrational target assumption, suggesting that targets will also make mistakes in valuing the deal when market-wide valuation is high. Dong *et al*. (2006), who employed the P/B and the P/V of both the bidder and target to examine what drives M&As, also provided supportive evidence that estimation biases of managers to the firm's valuation leads to M&As. They note that it is not the true market misvaluation of the firm but the view of managerial misvaluation drives M&As.

However, Di Guili (2013) challenges this view by proposing the measures for misvaluation. He found that a high MTBV could lead to predictions that the firm has better investment opportunity or the firm is significantly overvalued, leading the researcher to believe previous studies borrowed such valuation measure cannot fully account for the misvaluation hypothesis. So as to overcome the bias caused by the firm's fundamental characteristics, Chapter 4 of this thesis measured the misvaluation of the firms involved by constructing a new proxy, the relative reference point (RRP), which is the difference between the target and the bidder's reference points. The measure makes no assumption as to the true valuation of the firms but aims to explain the valuation errors driven by the market affecting M&As. It could be advisable that market should hold a similar view of the valuation of the two firms involved prior to the announcement date. The measure covers considerations of both the target and bidder sides. Since the market price is a reflection of the investors' view of the firm performance, the RRP thus directly reflects the market's perception of a firm's misvaluation. The measure built upon the reference point captures market reactions and eliminates estimation biases caused by a firm's fundamental characteristics.

Using a sample of 1,878 U.S. domestic public M&As between 1985 and 2014, it became apparent that the propensity for using stocks increases when the RRP increases, suggesting that the relatively more overvalued bidders tend to use stocks as a means of finance for acquisitions. In addition, the offer premium increases with the RRP, indicating relatively more overvalued bidders tend to pay higher offer premiums to the less overvalued targets. The RRP takes on a role of overpayment in the short term, reflected in negative market reactions. However, the long-term analysis indicates that offer premiums that are associated with acquisitions of higher RRP tend to generate less negative long-term returns than acquisitions of a lower RRP, suggesting that managers of more overvalued firms are able to time the market by looking at the RRP.

Chapter 4 provides three distinct contributions to the M&A literature. First, a new measure for misvaluation is proposed, based on market perception. The measure establishes a bilateral valuation framework where both the bidder and the target's misvaluation are considered. The measure also eliminates the biases caused by a firm's fundamental characteristics or any retrospective and forward-looking information since it reflects the latest market reaction. Secondly, we provide evidence that both experienced and less experienced investors tend to be affected by the reference point effect. However, they may interpret the reference point in different ways. An investor with a short-term horizon tends to contribute the offer premium paid to the target shareholders with the result of overpayment, whilst a bidder who pay offer premiums according to the RRP times the market, reflected in the less negative market. Finally, it is suggested that the RRP is an important indicator of the method of payment. Overvalued bidders who use stocks rather than cash as a means of finance for acquisitions tend to pay lower offer premiums. It was established that lower offer premiums are associated with cash instead of stock payments for relatively more undervalued targets. These results offer a new explanation for the method of payment hypothesis.

One important implication of the reference point is that people tend to seek risks when they experience loss relative to the reference point and adopt a risk aversion when they enjoy gains relative to this specific point. Chapter 5 of this thesis directly assessed this implication by using the bidder 52-week high as the reference point. Since the firm's 52-week high reflects the market reaction to the bidder's performance, the loss relative to a reference point price serves as a relevant piece of information that signals to the market that risky investment opportunities should be available. Managers who fail to utilise this will be blamed for not meeting the commitment of value-maximising the firm. Therefore, a decline in performance prompts managers to undertake risky M&As. Managers are also exposed to larger risks when they engage in a risky M&A deal, motivating them to rationalise their motive by taking market-anticipated risks and working hard to convince the market the performance will be boosted through their superior management skills in risky projects. It is expected a firm's current price that deviates greatly from its 52-week highest stock price leads managers to undertake M&As according to market anticipation. As a result, risky M&As would bring forth positive abnormal returns for the firm. Managers engaging in risky acquisitions are also exposed in stricter shareholder monitoring, requiring them to make greater efforts on deal negotiation, reflected in the lower offer premiums they pay for the target. In a further analysis, the quality of the decision that is based on market anticipation is assessed. Since the integration process of M&As requires time, it is suggested that assessing the short-term performance may not fully reflect the quality of a risky M&A decision. Therefore, the long-term performance of the deal is studied to observe whether bidder managers make great efforts to improve the deal quality.

M&As form is a good platform to test managerial risk-seeking behaviour. First, they are a major investment activity that could fundamentally alter the wealth status of the shareholders, since small magnitude of change in wealth status does not touch investors' risk appetizer (Brenner, 1983). Further, it is common for shareholders to compensate managers engaging in risky investment projects (Grinstein and Hribar, 2004; Graham *et al*. 2013). The feeling of loss, part of human nature, tends to motivate the manager to tolerate more risks and accordingly undertake risky M&As. Finally, M&As allow the researcher of this thesis to further explore whether managers can control risks with their skills and efforts. It was also found that risk-taking is distinguished from gambling insofar as it depends purely on probability.

Chapter 5 makes two main findings by studying a sample of 2,018 U.S. public acquisitions announced between 1985 and 2014. First, the bidder reference point and target risks are positively related, implying that when bidders perceive losses relating to the reference point they are likely to undertake risky investment projects. Second, bidders engaging in risky projects anticipated by the market tend to perform better, suggesting that managers who follow market-anticipated risks will be rewarded. Third, it was also established that risky M&As expose managers to strict shareholder monitoring, which motivates them to work hard.

Chapter 5 makes three distinct contributions to M&A literature. First, this is the first paper to test the reference point effect on managerial risk-taking behaviour in the M&A context. It is also suggested that human-related biases have a direct impact on investment behaviour. Second, the researcher contributes to behaviour finance literature by documenting the evidence of the reference point effect on both individual and institutional investors. Third, a contribution is made to M&A literature, affirming that taking risks does not necessarily lead to negative market reactions and taking risks according to market's anticipation is an important source of positive market reactions.

The remainder of this thesis is organised as follows: Chapter 2 provides a summary of relevant literature on M&A motives, M&A processes, M&A performance and prospect theory. Chapter 3 studies the reference point theory in domestic and cross-border M&As in the U.K. market. Chapter 4 examines the reference point effect on M&A misvaluations, while Chapter 5 assesses the reference point effect on managerial risk-taking behaviour. Chapter 6 concludes this thesis.

CHAPTER 2: LITERATURE REVIEW

2.1. M&A motives

Researchers on mergers and acquisitions (M&As)[2] focus on the causes and consequences. M&As are one of the major investment activities undertaken by firms to create wealth for shareholders, expand the size, or integrate resources for example. Prior studies have offered various explanations for M&A motives. So as to prescribe corresponding strategies for management following M&As, Trautwein (1990) recognised seven M&A motives, namely *efficiency theory*, *monopoly theory*, *valuation theory*, *empire-building theory, raider theory, process theory* and *disturbance theory*. Of these theories, he finds that the valuation theory, empire-building theory and process theory play a more active role in M&A motives than the efficiency theory and monopoly theory, whereas raider theory and disturbance theory have the least explanatory power. Despite this, his study implies that no single theory can fully account for an M&A motive.

Studies have also provided empirical evidence in explaining the M&A motives. Berkovitch and Narayanan (1993) were the first to test the fitness of the three major M&A motives: synergy, agency and hubris. The authors studied a sample of tender offers in the U.S. market between 1963 and 1988 and used the correlation between the gains of the target and the combination to examine M&A motives. They assumed that the positive correlation between gains of the target and the combination represented synergy, the negative correlation represented agency whilst the zero correlation represented hubris. Their study indicates that about 75 percent of M&As are motivated by synergy and the negative correlations are driven by agency, while hubris co-exists with synergy. Hodgkinson and Partington (2008) put forward their idea in an alternative market. They examined a sample of 529 successful M&A deals between 1984 and 1998 in the

[2] In this thesis, the terms 'takeovers' and 'mergers and acquisitions' were used interchangeably, 'mergers' and 'acquisitions' also refer to M&As in some circumstances unless they are specified in the correspondent sessions.

U.K. market and found that synergy was the most plausible M&A motive and there is also evidence for both agency and hubris. Raj and Forsyth (2003), who focused on the performance of hubris-infected bidder managers, noted significant loss on the bidder announcement returns, suggesting that one of the negative sources of bidder performance is managers' overestimation of M&A synergies.

Seth *et al*. (2000), who studied the bidders' motives in the context of cross-border M&As, affirm that synergy remains a primary motive for cross-border M&As. Studying 100 acquisitions of U.S. targets between 1981 and 1990, the authors found synergy is the dominating M&A motive for domestic M&As consistent with the findings of Berkovitch and Narayanan (1993). In addition, the total gains in cross-border M&As are 7.6 percent, which is similar to the figure achieved in the study conducted by Bradly *et al*. (1988)[3]. Seth *et al*. (2002) identified multiple sources of value creation and value destruction for cross-border M&As. Based on their sample, asset sharing, reverse internationalisation of valuable intangible assets and financial diversification are the main sources of value creation while risk reduction is the only source for value destruction. Their paper suggests that synergies play an essential role in cross-border M&As.

2.1.1. Synergies

The synergy hypothesis of M&As asserts that the value of combined firms after a merger is larger than the sum of the returns generated by the two separated firms. Bradley *et al*. (1983) found some support for this hypothesis, suggesting that M&As create synergies for the combined entity by reallocating the resources of the firms. Unlike the information hypothesis, which posits that managers have private information about the true value of the firm, authors

[3] Bradly *et al*. (1988) found a 7.4 percent increase of the combined firm in domestic M&A sample.

suggest that managers generate gains by exploring potential synergies via M&As, which is consistent with the synergy hypothesis. Bradly *et al*. (1988) investigated a sample of 236 successful tender offers in the period 1963 to 1984 and recorded an overall increase of 7.4 percent in the value of combined firms, providing additional support to the synergy hypothesis. Jensen and Ruback (1983), by reviewing prior studies, found that M&As on average generate gains, and targets benefit, whereas bidder firms at least do not lose.

A large body of M&A studies have summarised three main sources of synergies: operations, finances and management improvement. Devos *et al*. (2009) attribute synergies to an improvement of resources allocation. Using the value line forecasts to estimate synergy[4], the authors found that the average synergy for a sample of 246 large mergers increased the value of the combined entity to 10.03 percent. Of particular note, operating synergies take up 8.38 percent and financial synergies account for the remaining part. Hoberg and Phillips (2010) suggest that large synergies are obtained through acquisitions of targets whose products are different from bidder firms' rivals, suggesting that synergies are created by a product differentiation strategy that intensifies bidders' competitiveness and sets obstacles for their rivals, making them hard to imitate. Using a large unique patent-merger dataset between 1984 and 2006, Bena and Li (2014) found synergies to be created through innovation activities following M&As. Houston *et al*. (2001), who investigated a sample of the largest bank mergers between 1985 and 1996, noted that bank mergers create value for bidders. In particular, the authors identified the source of synergy in bank M&As as being mainly created from cost savings rather than revenue enhancement.

[4] In Devos *et al*. (2009), merger synergy was calculated as the forecasted incremental cash flows of the combined firms relative to the sum of the premerger forecasted cash flows of bidding and target firms.

Lang *et al*. (1989) explained synergy gains with the Q theory. Tobin's Q is defined as the ratio of a firm's market value to the replacement costs of its assets. Q ratio measures the firm's performance, and the well-performing firms are those with a high Q ratio whereas the poor-performing firms are those with a low Q ratio. Acquisitions involve a high Q bidder and a low Q target generating large total gains for the bidder, the target and the combined firm. The results imply that managers of a well-performing firm have abundant resources to improve the firm's performance whereas a poor-performing firm lacking investment opportunities is an ideal target for synergy exploitation. Servaes (1991) reported supportive evidence by applying Lang *et al*.'s idea (1989) to a larger sample with additional controls.

M&As play a disciplinary role with regard to managers who perform poorly. Jensen and Ruback (1983) indicate that the market for corporate control creates value for the firm. Managers compete for the rights to manage corporate resources, hence, poor management is removed while good management serves the best interests of the shareholders via M&As. Jensen and Ruback's view (1983) suggests that M&As enhance the firm's efficiency by removing an inefficiency management team. Palepu (1986) studied the inefficient management effect on the likelihood of the firm to be acquired, and measured an inefficient management team by means of average excess returns of the firm. His results show a negative relationship between firms that are likely to be the M&A target and inefficient management, which is significant at a 5% level. The conclusion of this inefficiency management hypothesis is that managers who fail to ensure the commitment of value-maximisation for the firm are likely to be replaced. Accordingly, Mitchell and Lehn (1990) found that firms whose managers perform poorly following a merger is likely to be acquired by another firm. Martin and McConnell (1991) affirmed high turnover rate for target managers following M&A completion and the performance of these firms is well below that of the industry average prior to the M&A. In a similar vein, Lehn and Zhao (2006), by studying 714 acquisitions during 1990 to 1998, found that 47% of top managers of bidder firms are dismissed within 5 years (including 16% due to takeovers). Therefore, takeover threats for managers tend to create synergy for the firm.

However, Agrawal and Jaffe (2003), who included a sample of over 2,000 M&As from 1926 to 1996, reported little evidence that inefficient firms will necessarily be acquired. Measuring the operating performance and stock market returns for the target firms, the authors revealed that takeover targets are not all those underperforming firms prior to the M&A announcement. In addition, targets do not underperform in the decade prior to M&A announcements regardless of whether the performance was measured with the firm's operating performance or stock market performance. Results are robust when the authors take account of the size of the firm, industry and past performance of the targets for the targets' operating returns, and the size, book-to-market value and past returns for the stock market performance. Results continue to hold when employing an alternative benchmark model to calculate targets' stock returns. The authors proposed two main reasons why their findings fail to support Palepu's inefficient management hypothesis (1986). First, the primary M&A motive is not to remove the inefficient management team in the sample, as there is only a small proportion of targets perform inefficiently prior to M&A announcement date. Second, their sample did not include disciplinary or attempted M&As that support the inefficient management hypothesis.

Jensen (1988) suggests that the market for corporate control brings forth economic benefits for shareholders, society and the corporate form of organisation. Moreover, takeovers bring about major changes fitting for the future development of firms. Such fundamental changes including new recruitment and resources, offer new top-managers opportunities, forsaking the old strategies and facilities that are no longer beneficial to the firm. Further, the market for corporate control effectively reallocates resources. Jensen (1988) indicates that major restructuring activities create economic efficiency due to the influences of political and economic conditions in the 1980s when many U.S. firms experienced revenue slowdown and used M&As to cope with market changes. The author holds that the pressures of managers' turnover and the political activity weaken M&A efficiency.

2.1.2. Agency problems

The firm is a separation of ownership and control, in which shareholders are the owners of the firm (i.e. the principal) and managers are the agent hired by shareholders to manage the firm (i.e. the agency). According to Jensen and Meckling (1976), this principal-agency relationship is a financing contract between shareholders and managers, in which managers are committed to maximising the wealth of shareholders. However, such a contract is violated when managers pursue their own interests at the expenses of their shareholders (i.e. agency problems).

M&A studies have found evidence of agency problems in firms with sizable free cash flows. Jensen (1986) suggests in the free cash flow hypothesis that managers of cash-rich firms tend to distribute the excess of cash in unnecessary investment projects rather than paying out to their shareholders. Harford (1999) provided empirical evidence in support of Jensen's view. Studying a large sample of U.S. M&As from 1950 to 1994, Harford found that managers of cash-rich firms engaging in M&As due to low managerial ownership is where agency problems are likely to occur. Cash-rich bidders receive negative market reactions and experience declines in operating performance following M&As.

Contrary to the free cash flow hypothesis, Gregory (2005), focusing on the long-term performance of U.K. market, noted that firms with abundant cash flows free of use outperform those possessing low free cash flows. The author argued that firms with low free cash flows are more likely to be financially constrained in the long term, and have difficulty in boosting its performance following a merger. Managers who hold large free cash flows and whose firms have a low Q ratio are likely to create value for the firm, in that the initial undervaluation tends to be corrected by the market in the long term. Likewise, Lin and Lin (2014), using a sample of Australia takeovers and measuring free cash flows with two proxies: excess cash holding and excess accounting cash flow[5], found that managers of cash-rich firms do not undertake value-destroying M&As.

Morck *et al*. (1990) found "bad managers"[6] who raise severe agency conflicts in M&As. Using a sample of 326 U.S. M&As from 1975 to 1987, the authors found evidence of agency problems through three types of value-destroying deals. First, agency problems are raised when managers act for the purposes of job security and risk reduction of their own stock holdings. As such, managers tend to undertake diversifying M&As associated with negative market reactions due to unfamiliarity with an unrelated industry. Further, it is also suggested that bidders are likely to overpay for high-growth targets to increase their personal benefits. Finally, firms performing poorly in the past are likely to initiate bad deals. Harford *et al*. (2012) found entrenched managers were less likely to pay for acquisitions with all-equity offers, avoiding creating larger block-holders that diminish their power in the firm. Their M&A selection avoids acquiring private targets that could create value for the firm[7], and more importantly, they overpay for targets whose synergy-generating ability is low.

[5] Excess accounting cash flow was defined as the ratio of earnings after interest paid, tax paid and dividend paid before depreciation to total assets.
[6] "Bad managers" here refers to those who do not serve the best interests of their shareholders.
[7] In Fuller *et al*. (2002), bidders' acquisitions of private firms tend to generate positive announcement returns while acquisitions of public firms generate negative announcement returns. Specifically, it is found that there is negative 1 percent announcement returns when targets are public firms and positive 2.1 percent when targets are private firms. In addition, Fuller *et al*. (2002) showed that offer premiums to private targets are lower than public targets, which is also consistent with the finding in a study of French M&As over the period of 1966 and 1982 by Eckbo and Longohr (1989).

Studies have shown one of the main sources for agency problems is the compensation rewarded to top managers engaging in M&As. Studying a large sample of U.S. M&As, Harford and Li (2007) found it was a great incentive for a bidder CEO to undertake an acquisition as CEOs' pay increases substantially after an acquisition regardless of the wealth of shareholders. This is also supported by Guest (2009) who studied a comprehensive U.K. sample between 1984 and 2001. He established that CEOs' salaries increase within a year after an acquisition even though takeovers destroy the firm's value.

Grinstein and Hribar (2004) revealed that it is managerial power that influences compensations but not the deal performance, offering little evidence that better M&A performance increases pay to the managers. Their study showed that 39% of companies reward their CEOs involved in a completed deal due to the efforts the CEOs made, where efforts of those in the important positions are easily to be seen. In contrast, Datta *et al*. (2001) and Falato (2008) found that CEOs' compensation is positively related to stock performance, indicating that compensation boosts the firm's performance, implying that there is low probability that compensation causes agency problems.

Studies have also documented that not only bidder managers but also target managers could cause agency problems, reflected in that target managers exchange private benefits such as compensation or positions in the bidder firms following a merger for lower M&A offer premiums. Analysing 311 large U.S. firms between 1995 and 1997, Hartzell *et al*. (2004) found that target managers are likely to persuade shareholders to give up their control of a firm when they are compensated with financial rewards or attractive positions in the bidder firms.

Likewise, Wulf (2004) in a sample of "mergers of equals"[8] in the U.S. market between 1991 and 1999 found that target managers exchange shared governance in the bidder firms for lower M&A offer premiums, which destroys the wealth of target shareholders, leading to 5.6 percent lower than average abnormal returns. However, Bargeron *et al*. (2010) argued that target managers' retention is not as the result of lower M&A premiums. Their findings contradict those of Hartzell *et al*. (2004) and Wulf (2004), indicating that bidders retain targets' managers who have skills and experience in the new combined firm to increase its value.

2.1.3. Behavioural finance theories

Behavioural finance has received a great deal of attention in M&As over the last three decades. There are two threads in the literature that link behavioural finance with M&As, according to a survey conducted by Baker and Wurgler (2012). The first thread of literature assumes that the market is efficient while the managers are less than fully rational, in that managers cannot benefit shareholders via M&As because there are no mispricing opportunities waiting to be explored., and the hubris management hypothesis and the managerial overconfidence hypothesis are the two of the most important hypotheses built upon this assumption. The second thread of literature assumes that the market is inefficient while the managers are fully rational, in that managers can explore market mispricing, and the over-reaction (or under-reaction) hypothesis and the market-timing hypothesis are the two of the most important hypotheses built upon this assumption.

[8] According to Wulf (2004), "mergers of equals" was defined as that the bidder firm and the target firm is similar in size.

2.1.3.1. Managerial overconfidence

Roll's study (1986) was the first on managerial hubris in the context of M&As. The author proposed his hubris management hypothesis as managers overpaying for targets due to an overestimation to their own profit-generating ability. By reviewing U.S. and U.K. studies, Roll (1986) identified overconfident managers and discussed them from three perspectives. First, bidder managers are subject to hubris bias, in that the firm's price falls after that a bid is announced or fails at a later stage. Second, hubris infects target managers, as a target firm's price increases by 7 percent on average when a bid is announced and falls significantly when the bid is withdrawn. Third, the performance of the combination entity is also affected by hubris as it earns significantly negative abnormal returns following a merger. The hubris management hypothesis provides evidence that an individual decision maker may not be rational, which answers the question of why managers tend to pay for a takeover target with a price that is higher than its market price.

Following hubris management hypothesis of Roll (1986), Hayward and Hambrick (1997), who studied a sample of 106 large U.S. acquisitions, found that bidder CEOs paying too much for large acquisitions is due to hubris bias. The authors identified three important sources of managerial hubris: the firm's recent performance, the recent media praise for CEOs' performance and the CEOs' self-importance. The authors suggest that any recent success of the firm would enhance the confidence of the bidder managers. As a result, they overpay for the targets. The media praise for CEOs also fosters CEOs' overconfidence in investment activities. Moreover, managers receiving with higher-than-average compensation and salary tend to feel important in major investment decisions, which will make them believe their abilities could improve the firm, thus overpaying for the targets. Similar to those of Roll (1986), Hayward and Hambrick found hubris results in losses on bidder abnormal returns.

Malmendier and Tate (2005) revealed CEO overconfidence in a sample of 477 publicly traded U.S. firms from 1980 to 1994. Measuring managerial overconfidence in the exercise of managerial options and CEO stock holdings, the authors found that overconfident CEOs tend to exercise their stock options at a later period and hold losers for a longer period. It is because that they are over-optimistic about their firm's prospects or have strong affiliation with their own stocks, which miss the correct market timing for investments. Besides, their study also revealed that CEOs whose firms have a higher investment to free cash flow ratio tend to undertake more investments, suggesting that firms with overconfident managers are likely to have sufficient internal funds. Using the same dataset as in the Malmendier and Tate's work (2005) and adopting some press-based proxies for managerial overconfidence, Malmendier and Tate (2008) found that the market reacts negatively to a bid announced by overconfident CEOs and affirmed that managerial overconfidence encourages more acquisitions since overconfident CEOs are more aggressive than non-overconfident CEOs. These two related studies lead the researcher to believe that small firms are less vulnerable to managerial overconfidence while large firms tend to make more value-destroying deals due to overconfidence.

Many studies have addressed the fundamental reason for managerial overconfidence. One thread in M&A studies attributes managerial overconfidence to the market's tendency to explore the past best performance of big firms. Rau and Vermaelen (1998) put forward the over-extrapolation hypothesis that the financial market and the managers tend to over-extrapolate the past performance of the bidder and react more positively to those with low book-to-market ratio (i.e. glamour firms) than firms with high book-to-market ratio (i.e. value firms). The market's reactions reinforce the confidence of the managers of glamour firms when undertaking M&As. In addition, the authors found glamour firms perform better than value firms in the short term as the market tends to reward firms with better past performance. Making adjustments for the size of the firm and book-to-market value to estimate the long-term performance of the bidder, the authors found that glamour bidders underperform value bidders. They interpreted this phenomenon as that short-term momentum created by the market's over-extrapolation leads to correspondent long-term reversals when the market can correct its initial reactions, and such a short-term momentum is stronger in glamour bidders than value bidders. Sudarsanam and Mahate (2003) found consistent results when putting forward Rau and Vermaelen's idea (1998) for the U.K. market. They employed the price-to-earnings ratio (P/E) and market-to-book value (MTBV) for glamour and value bidders and calculated shareholder returns with a range of benchmark models. Their findings suggest that a lower P/E bidder (a value bidder) outperforms a higher P/E bidder (a glamour bidder) and a lower MTBV firm outperforms a higher MTBV firm in the long term.

Another thread in relevant literature has largely attributed managerial overconfidence to managerial self-attribution bias. Attribution bias was first discussed in Heider's attribution theory (1958) in which suggests that people tend to make systematic errors and attempt to attribute those to external factors. Doukas and Petmezas (2007) tested this theory on an M&A testing ground. Studying a sample of 5,334 successful U.K. private acquisitions between 1980 and 2004, the authors recorded that bidders in the higher order acquisition[9] underperform those in the lower order acquisition. They describe this phenomenon as the self-attribution bias of managers who believe initial success is due to their own superior ability and so undertake more M&A deals, whilst managers attribute negative market reactions of the subsequent deals as bad luck. Billet and Qian (2008) provided some similar findings by focusing on the U.S. market.

[9] According to Doukas and Petmezas (2007), higher order acquisitions refer to bidders who undertake five or more deals within a three-year period.

After controlling for the order of the deal, their findings showed that the first bids have higher abnormal returns whilst the higher order bids generate negative abnormal returns. In addition, bidders who have experience of undertaking successful acquisitions before are likely to engage in more value-destroying M&A deals. It is suggested that bidder managers are cautious in their first bids but are affected by self-attribution bias when undertaking subsequent bids.

However, Aktas *et al*. (2009) explain the findings of Doukas and Petmezas (2007) and Billet and Qian (2008) as the learning hypothesis. They suggest that the negative returns to the bidder firm during the time of a bid announcement are a result of the learning behaviour of bidder managers. The authors reason that bidder managers who undertake multiple bids tend to learn lessons from the previous deal and become more risk-averse for subsequent deals, which leads to negative abnormal returns. This study links a positive relationship between market reactions and managerial risk-taking. It is worth noting that the learning hypothesis weakens in the case of a manager not being able to engage in multiple bids prior to the current bid during his or her professional career, hence some of them do not have a chance to learn from their experience, notably young managers.

In addition to the extrapolation hypothesis and the self-attribution bias, many additional studies have also explained causes and consequences of managerial overconfidence in the M&A context. Moeller *et al*. (2004) affirm that bidder size plays an important role in managerial overconfidence, suggesting that larger firms are likely to be overconfident as managers have great discretionary power over the firms, resulting in fewer obstacles allocating a firm’s resources. Since acquiring public firms is the quickest way of size expansion for a firm, managers of large firms are likely to overpay for public targets with high growth opportunities. Andreou *et al*. (2016) found a significant negative relationship between managerial overconfidence and the value creation of corporate diversification. Analysing a sample of diversification M&As, the authors found overconfident managers destroy firm value by 12.4 to 14.1 percent as opposed to rational managers do.

Despite the main stream of the literature that links managerial overconfidence and corporate investments, which suggests that managers who overestimate their own ability make value-destroying deals, a few papers note the bright side of managerial overconfidence. For example, Galasso and Simcoe (2010) found a positive relation between managerial overconfidence and a firm's innovative performance. Using a CEO stock-option exercise for managerial overconfidence consistent with that used by Malmendier and Tate (2005), the authors discovered that overconfident managers tend to boost the innovative performance of a firm, as overconfidence leads the managers to underestimate the probability of the failure of deals, encouraging them to pursue innovative activities. In addition, overconfident managers are likely to make significant changes in innovative strategies that make the firm stand out in a competitive environment, which is more pronounced in competitive industries. Hirshleifer *et al*. (2012) who measured managerial overconfidence with options and press-based proxies for a sample of U.S. CEOs during 1993 to 2003 also found that overconfidence drives managers to engage in riskier projects, greater investment in innovative activities and greater innovative activities, suggesting that overconfident managers are better innovators and more likely to be hired by high growth industries.

2.1.3.2. Investors' overreactions and underreactions

Debondt and Thaler (1985) postulate the overreaction hypothesis that news-oriented investors exhibit reactions driven by unexpected and dramatic news events, which lead to market fluctuations and make it predictable. Using the monthly data of U.S. stock returns, the authors uncovered evidence of inefficiency in a weak form market, thus proposing two testable hypotheses. First, price reverses follow extreme price movements that have occurred over the previous days. Second, such a price adjustment tends to be greater when the initial price movement is dramatic. Their study reveals that portfolios that have lower returns in the past 5 years outperform those have higher returns by 25 percent, suggesting that the market is sluggish to respond to fresh information and overreaction is due to mean-reversion.

Consistent with Debondt and Thaler (1985), Barberis and Vishny (1998) suggest that the overreaction or underreaction is due to investors' mistakes. When a company announces good news, the market tends to be over-optimistic about the firm's prospects, which pushes the firm's price to high levels. However, the price was revised when investors recognise the fundamental reason for the price boost was due to overreactions. In a similar vein, investors also revise their pessimism about loser stocks in the long term.

The overreaction hypothesis has been challenged by many researchers. Jordan and Pettengill (1990), who duplicated Debondt and Thaler's study (1985) in a different sample period, found that losers become winners but winners do not lose. In addition, Fama and French (1996) proposed a three-factor model to account for reversal of long-term returns as they argued size effect on a firm's abnormal returns, affirming that small firms are associated with higher risks, while large firms are associated with lower risks. It became evident that small firms are likely to generate higher returns than larger firms.

It is generally believed that evidence regarding the underration hypothesis is much robust than that regarding the overreaction hypothesis. Barberis and Vishny (1998) documented the mechanism for investors' underreactions. When a company performs well (badly) the market tends to raise (lower) its stock price and this will be further raised (lowered) when the performance of the firm is well supported by its earnings performance in a subsequent period, which often occurs in a short period of time (3 to 5 months) compared with the overreaction (3 to 5 years). Whilst theorists who suggest high risks are associated with high returns, Barberis and Vishny (1998) offered plausible explanations from a psychological perspective on how investors make mistakes when processing new information, suggesting that managers can formulate profitable investment strategies by taking full advantage of such mistakes. Edwards (1968) suggests that conservatism bias of investors, suggesting that underreaction is formed due to slow updating belief. In the light of this, Li and Yu (2012) found that conservative investors focus on the market 52-week high and historical high, affirming the investors attention hypothesis.

2.1.3.3. The misvaluation hypothesis

Shleifer and Vishny (2003) developed a model of M&As based on the assumption that managers are rational and the market is less than fully rational. The model explains *'who acquires whom, the choice of the medium of payment, the valuation consequences of mergers and merger waves'* (Shleifer and Vishny, 2003: 295). Their study focuses on the limitations of the neo-classical theory of M&As, which focuses on industry-specific shocks, and the effect of the method of payment on M&As, which is not clearly interpreted. In addition, reasons why cash-financed M&As generate long-term positive earnings while stock-financed M&As generate long-term negative earnings have not been well explained. So as to explore these reasons, their study presents a simple valuation model of M&As to explain the short- and long-term gains of the bidder. The model implies that the bidder can produce a positive synergy in the short term yet few synergies in the long term. Important implications drawn from this model are presented as follows:

Suppose the target firm is 0 and the bidder firm is 1. Stock volumes for firms 0 and 1 are K and K_1, and price per unit is Q and Q_1, and Q_1 being greater than Q. The price per unit for the combined equity is S, q is the long-term price. Bidders would pay a price for the target, denoted P. If synergies exist, P lies between Q and S (i.e. $Q<P<S$).

1. The combined market value is $S\ (K+K_1)-K_1Q_1-KQ$, which is the value of the new combined firms minus the value of each individual firms involved in an M&A deal.

2. The target value in the short term is $(P-Q)\ K$, suggesting that the offer price is over market value.

3. The bidder value is made up of two parts, one part is the gains the bidders earned as long as their pay is less than S, the other is the loss of value dilution of the bidder firm's capital, from Q_1 to S or $(S-P)\ K+(S-Q_1)\ K$.

4. Given that there is no long-term profit for the combined firm when acquisitions are funded with cash since the gains to the target firm is the loss on the bidder firm, the effect on the value of the target is $K\ (P-q)$, whereas the value of the bidder is $K\ (q-P)$.

5. For stock-financed acquisitions, suppose x is the ratio of deal value over combined firm value or $x = PK/S\ (K+K_1)$. In the long term, this share is $xq\ (K+K_1) = q\ (P/S)\ K$;

6. The net long-term gains to target shareholders in stock-financed acquisitions are $q\ (P/S)\ K-qK = qK\ (P/S-1)$, where qK is the stand-alone value of target in the long term, whereas for the bidder shareholders, it is $qK\ (1-P/S)$.

Shleifer and Vishny's misvaluation model (2003) indicates that bidders are those with a considerable valuation whereas targets are those with a low valuation. Further, the long-term effect of cash-financed acquisitions suggests that the target is undervalued whereas the net long-term effect of a stock deal generates a short-term loss and long-term gains, explaining why an overvalued bidder tends to use stocks as *'cheap currency'* to pay for targets. Moreover, there is a reverse effect between the bidder firm and the target firm, i.e. what the bidder loses is the target gains. Finally, the model reveals that both the target and the bidder firms could gain in the short term if there is synergy from the mergers.

Shleifer and Vishny (2003) also reason that M&As are a trade-off game between the bidder and the target, since they involve a high valuation bidder and a low valuation target based on the rationale that a low valuation firm may find it hard to create synergy through the acquisition of a high valuation firm. Their study suggests that a bidder buys a target to create long-term value whereas the target focuses on short-term gains; hence, targets voluntarily accept overvalued stocks for a cash-out purpose. All of these imply that bidder managers attempt to maximise the interest of shareholders through exploring the market's mispricing in an inefficient market (Shleifer and Vishny, 2003: 296).

Therefore, Shleifer and Vishny (2003) assume that bidder managers are rational whereas target managers are irrational as since they accept overvalued stocks. However, this view has been challenged by Rhodes-Kropf and Vismanthan. (2004) who contend that rational managers accept overvalued stocks by mistake. According to this study, target managers are misled when the market valuation is high, and accept overvalued stocks as they overestimate synergies. Further, Rhodes-Kropf *et al*. (2005) identified three types of specific valuation errors that drive merger waves. By decomposing the conventional MTBV proxy into three components: the firm-specific deviations from short-run industry pricing (firm-level misvaluation), sector-factor, short-run deviations from a firm's long-run mispricing (sector-level misvaluation), and long-run pricing to book (long-run growth opportunities), the authors found that high MTBV firms buy low MTBV firms, which is attributed to firm- and sector-level valuation errors. Firms of low long-run growth opportunities tend to buy firms with high long-run growth opportunities. Their study suggests a positive correlation between stock-financed acquisitions and market-wide valuation.

In this connection, Dong *et al*. (2006) affirm that the misvaluation hypothesis is in favour of high valuation periods. Analysing a sample of U.S. M&As from 1978 to 2000, the authors claim that evidence for the misvaluation hypothesis is more relevant for M&As after 1990 than before, whereas the evidence for the Q hypothesis is more relevant before 1990 than after. Their findings suggest that the misvaluation hypothesis reconciles the case that the market-wide valuation is high whereas the Q hypothesis is employed to explain how well-run bidders explore synergies from poorly-performed targets. In addition, the authors find that more overvalued bidders prefer to pay for targets with stocks rather than cash, choose mergers rather than tender offers, and pay higher offer premiums. Their results are consistent with those predicted by Shleifer and Vishny (2003).

Dong *et al*. (2006) investigated the effectiveness of the Q hypothesis and the misvaluation hypothesis in different sample periods but fail to address the concern as to whether bidders paying with overvalued stocks are being rational. According to Shleifer and Vishny (2003), bidders who use overvalued stocks as a means of payment for M&As receive negative market reaction in the short run, leading shareholders to believe that the firm does not generate synergies. Their real purpose of using overvalued stocks is to dilute overvaluation and create value for the firm, since holding stocks in an overvalued market incur risks for the firm (Jensen, 2005). In this respect, Ang and Cheng (2006) assessed the long-term performance of the bidder who pays for acquisitions with stocks. Studying a sample of completed stock-financed acquisitions, the authors find that bidders undertaking M&As with overvalued stocks perform better than those engaging in M&As but not using overvalued stocks. Their study indicates that not all M&As are driven by misvaluation, since their data show a small fraction of the stock-financed acquisitions involve an undervalued bidder, which contrasts with Savour and Lu's view (2009) in their assumption that all stock-financed acquisitions are misvaluation-driven.

The misvaluation hypothesis has been challenged by many studies. Firstly, in line with Ang and Cheng (2006), Fu *et al*. (2013) suggest that '*The existence of relative overvaluation between the bidder and the target is a necessary, but not a sufficient condition for the acquisition to benefit acquirer shareholders*', as their M&A sample shows that two-thirds of stock-financed acquisitions are motivated by a bidder firm's overvaluation. They suggest that bidder shareholders only benefit from overvalued stocks if low premiums are paid to the target shareholders. Using a sample of 1,319 stock-financed acquisitions between 1985 and 2006, the authors found that overvalued bidders do not outperform those firms in the control sample, reflected in significantly worse operating performance and worse stock returns five years following the M&As. By including corporate governance related proxies, their study reveals severe agency problems in an overvalued firm, indicating that acquisitions driven by misevaluation destroy a firm's value when the firm experiences agency problems.

Further, Eckbo *et al*. (2016) suggest that *'overvaluation reduces the all-stock payment propensity'*, which contradicts the idea of the misvaluation hypothesis. Using aggregate mutual fund flows as an instrumental variable of the pricing error, the authors indicate that the shock caused by mutual fund flows pushes up the market valuation but it does not increase the volume of stock-financed acquisitions. Their study challenges the view that managers use overvalued stocks to time the market. The authors find that bidders who pay with overvalued stocks for financing acquisitions tend to be small firms and non-dividend paying firms with low leverage, indicating that firms that are financially constrained avoid using cash as a means of payment for financing M&As.

This section has reviewed three broad types of M&A motives. According to these studies reviewed, there is no single theory that can fully address the M&A motive, since it varies significantly in any particular sample at any particular time, which calls for up-to-date evidence. Jensen and Ruback (1983), by reviewing a quantity of M&A research up to the 1980s, suggesting that the primary M&A motive is synergies, and the small role the human factors played on M&As weakened prior to 1990. This is also supported by a number of M&A research works (Bradley *et al*., 1983; Bradley *et al*., 1988; Jensen, 1988; Lang *et al*., 1989; Servaes, 1991), whilst Jensen (1986) indicates the agency problem of free cash flow where managers of cash-rich firms invest unwisely, and Roll (1986) suggests hubris-infected managers engage in value-destroying M&A deals. Shleifer and Vishny (2003) suggest that M&As are driven by the relative valuation of the two firms involved, indicating the role of managers' timing the market. Dong *et al*. (2006), who studied the misvaluation hypothesis and the Q hypothesis in the context of M&As, noted that synergy-driven acquisitions are more likely to be found prior to 1990 whereas the misvaluation-driven acquisitions are common after 1990.

2.2. M&A process

2.2.1. Selecting a target

Jemison and Sitkin (1986), who explored the M&A motive and M&A process, identified three important M&A motives for bidder management: strategic fit, organisational fit and acquisition process. The first two motives indicate that the acquisition should be financially or strategically fit for the firm's prospects, while the latter one indicates the essential role of M&A participants, including analysts and key managers, played during the course of M&As. In this line of thinking, human factors have a substantial impact on the M&A process.

The issue concerning "who buys whom" in the M&A context has been discussed for years. Takeover targets are largely predicted within the scope of the bidders' M&A motives. The synergy hypothesis predicts that the less efficient firms are likely to be a takeover target, as the bidder views target's price discounts as a source of synergies generation. Investigating the probability of takeover targets, Papelu (1986) proposed six hypotheses relating to "who buys whom", including the inefficient management hypothesis, the growth-resource mismatch hypothesis, the industry disturbance hypothesis, the size hypothesis, the market-to-book hypothesis and the price-earnings hypothesis, identifying that firms with an inefficient management, smaller size, mismatch between resource and growth opportunity[10] and high leverage ratio are probably the target firm in an M&A deal.

Brar *et al*. (2009) who examined the probability of takeover targets by extending Palepu's model (1986) with inclusions of price momentum, trading volume and a measure of market sentiment for a large sample of European and cross-border acquisitions found that takeover

[10] According to Palepu (1986), the mismatch between resource and growth opportunity refers to a rich resource with low growth opportunity or poor-resources with high growth opportunity.

targets are small, undervalued and less liquid relative to bidders. Their findings are in accordance with Palepu (1986). In addition, the authors suggest that takeover targets are those firms with low sales growth and strong short-term price momentum and their shares are actively traded prior to the announcement date, indicating that arbitrage around the M&A announcement date leads the price of the target to be hard to value. The authors also noted that takeover targets are those firms with incompetent managers, inducing other managers to explore the potential synergies through takeovers.

Jensen (1988) notes that managers who compete over the rights to control a firm's resources initiate M&As. Hence, M&As are a vehicle of integrating the bidder firms' and the target firms' resources, suggesting that poorly performing firms are likely to be acquired in M&As. Similarly, Mitchel and Lehn (1990) found that firms whose managers made value-destroying deals are likely to subsequently become takeover targets. Lang *et al*. (1989) and Servaes (1991) also provided supportive evidence that inefficient firms are likely to be takeover targets. Their findings suggest that acquisitions enhance value for the firm when they involve a high Q bidder and a low Q target. The Q hypothesis indicates that high Q bidders are easier to explore synergies from the poor-performing firms than from the well-performing firms through M&As.

Another line of literature suggests that it may not be the case that acquired firms are in a weak position prior to an M&A. Bradly *et al*. (1983) documented that targets are those '*sitting on the gold mine*', suggesting that targets hold excess cash, hence, they are attractive to firms experiencing financial constraints. Agrawal and Jeffe (2003) find direct evidence that targets do not underperform prior to M&A announcements, and their results continue to hold regardless of various measures employed to influence the firm's performance. Rhodes-Kropf and Robinson (2008) showed evidence of '*like buys like*', suggesting M&As involve a firm with similar prospects. Based on the relative bargaining power of the bidder and the target, their model suggests that bidders tend to acquire firms of a similar MTBV. Levis (2011) suggests that firms of high revenue growth opportunities but high operating costs are probable takeover targets whereas firms of lower growth opportunities but high cost efficiency are probable takeover bidders. Investigating a sample of newly-listed firms that become takeover targets shortly after their initial public offerings, De and Jindra (2012) noted firms that perform well in operations or in the stock market are likely to be acquired due to superior post-IPO performance.

Studies have addressed the issue concerning "who buys whom" from other angles. Massa and Zhang (2009) found M&As are driven by the popularity difference between the two firms involved. They identified *'cosmetic mergers'* where a less popular firm tends to buy a more popular firm. This investment style is more prevalent when the popularity difference [11] between the target and the bidder is significant. The popularity of an acquired firm creates a *'hole'* effect for a less popular firm, increasing the probability that the market will re-evaluate the bidder firm. Shleifer and Vishny (2003), however, suggest that the undervalued firm is probably the takeover target as it provides great scope for value dilution for the highly valued firm. If the primary M&A motive of the bidder is to eliminate any takeover threats, larger firms in the same industry as the bidders are the probable targets since they can quickly help expand the bidder firm's size and reinforce their competitiveness among the industry peers (Gorton *et al*., 2009). Indeed, Hoberg and Phillip (2010) showed that firms offering the bidder some hard-to-imitate assets are attractive takeover targets.

[11] The authors used data on the flows in mutual funds in different styles to construct a measure of popularity.

Not only bidders look for targets, but also targets actively search for bidders (i.e. target-initiated deals[12]). Studying a sample of over 3,800 U.S. public acquisitions between 1996 and 2009, Eckbo *et al*. (2014) found 45% of acquisitions in their M&A sample were initiated by targets. Their findings are also supported by Boone *et al*. (2007) who observed that about half of takeovers of 400 U.S. takeovers announced between 1989 and 1999 had been initiated by investment bankers hired by the target whose aim was to sell the firm. Masulis and Simsir (2015) suggest a large number of M&As deals announced between 1997 and 2006 are target-initiated: 237 as opposed to 408 bidder-initiated deals in their sample of 645 M&A deals. The authors documented that target financial or economic weakness, target financial constraints and economy-wide shocks were the key factors that determined target-initiated deals. The target-initiated deals that are not strategically or financially fit for bidders reinforce bidder's bargaining power, resulting in lower levels of offer premiums, target announcement returns and the deal value to EBITDA multiples of the target-initiated deals compared with the bidder-initiated deals (Masulis and Simsir, 2015).

2.2.2. Paying for a target

Paying for a target is of first-order importance in M&As, since how much a bidder pays for acquisitions directly determines the wealth distribution between the shareholders of the two firms involved. Though a high offer premium increases the likelihood of the deal success, it is at the expenses of the wealth of bidder shareholders. Because a low offer premium is hard to persuade the target to give up the firm given that target shareholders are loss-averse (Baker *et al*. 2012). However, the argument above leads the researcher to a question as to how much offer premiums are too much, as on-one can give an accurate figure of the valuation of the firm since valuing a target requires additional considerations regarding the decision makers. Two of

[12] Information on who initiates a deal is not identified in SDC database.

the most important factors influencing M&A valuation is how much M&A offer premiums the bidder pays for the target, and by what means the bidder is willing to pay. The following section reviews literature on the offer premium and the method of payment.

2.2.2.1. M&A offer premiums

Schwert (1996) explains offer premiums as the sum of the target price run-up and the mark-up.[13] The author found that final offer premiums increase with the pre-bid target stock price run-up while the price mark-up fails to explain a majority of offer premiums. His study measured the target price run-up with the target abnormal stock returns from 42 days to 1 day prior to the takeover announcement date relative to the abnormal stock returns during the announcement date, and offer premiums with target abnormal stock returns between 42 days prior to the takeover announcement date and 126 days after takeovers.[14] Analysing a sample of 1,814 U.S. mergers and tender offers between 1975 and 1991, the author established that for a one dollar increases in target price run-up would cost a bidder firm an extra 1.13 dollar. Similarly, Betton *et al*. (2008), who studied the relationship between the target price run-up and initial offer premiums, found that for a dollar increase in the price run-up increased the offer price by 0.8 dollars.

The minimum offer price equals the current market price of the target firm given that the firm's value is fairly estimated. It is commonly believed that the offer price should be higher than the market price of the target, otherwise the target will refuse the offer, arguing that it will bring forth synergies to the combined firm. However, in some cases firms are sold below market value or with negative offer premiums. Weitzel and Kling (2014) suggest that targets

[13] In other words, offer premiums were defined as the difference between abnormal returns and the price run-up.
[14] For those targets delisted before 126 days after takeovers, he used the day when they were delisted.

compensate bidders in the acquisitions on the rationale that they believe there will be post-merger synergies. Secondly, targets compensate bidders who agree to accept their overvalued shares, since small firms find it hard to justify overvaluation. Finally, targets who experience severe shortage in liquidity tend to sell firms with negative offer premiums.

However, in most cases, the offer premium is positive and underlines the overpayment hypothesis or the synergy hypothesis. If offer premiums are driven by wealth creation purpose, bidder firms gain positive abnormal returns around the announcement date (i.e. the synergy hypothesis). In agreement with this line of thinking, Antoniou *et al*. (2008) found that offer premiums and bidder returns are positively related in a sample of 396 U.K. public acquisitions announced between 1985 and 2004.

Evidence suggests lower offer premiums are paid to the target shareholders if the needs of target managers are met. Wulf (2004) suggests bidders who guarantee the retention of target managers in the combined firm tend to pay a lower offer premium for the target. Studying the relationship between offer premiums and the choices of payment method in a sample of 2,959 acquisitions between 1983 and 2004, Zhang (2009) found that offer premiums decrease when cash is paid as a result of increasing popularity of cash. Their findings suggest that cash payments increase the bargaining power of the bidder when negotiating with targets who have a strong cash preference. In this line of thinking, bidders, by offering what the target manager wants, save takeover costs.

The overpayment hypothesis suggests that bidders tend to overbid for the target if the offer premium is greater than expected synergies generated following the combined firm for a variety of reasons. Roll (1986) indicates that bidders who overestimate the synergies of a combined firm or over-optimistic about their own management skills tend to overpay for targets. Rhodes-Kropf and Viswanathan (2004) explained this as overestimation about the synergies increasing with valuation errors. Following this line of discussion in relevant literature, Hayward and Hambrick (1997) provided related support that hubris-infected managers tend to overpay for acquisitions. Investigating offer premiums for a sample of large U.S. M&A deals, the authors suggest that CEOs whose firms have performed well recently, who are praised by the media or have a high salary have strong sense of self-importance, which increase high offer premiums to the target shareholders. Antoniou *et al*. (2008) found overpayment for diversified M&A deals and attribute this phenomenon to over-optimistic CEOs stepping into an unrelated field. Baker *et al*. (2012) found confident bidders who pay according to the target 52-week high so as to successfully obtain an M&A deal, reasoning this as the reference point theory of an M&A. Since targets have a loss-aversion tendency, a price that is significantly lower than this reference point price will increase the probability of the deal being rejected by the target. The authors also measured the market reactions to the M&A pricing decisions that depend on the reference point, and found that the payment according to the target reference point was associated with negative market reactions, as the market regards this as overpayment.

Rather than studies relating overpayment to bidders' overconfidence or reference dependence bias, others explaining it with the bidders' rationality. Jensen (2005) suggests that bidders overbidding the target with overvalued equity is a measure to avoid the risks of holding those stocks in an overvalued market. The firm's value will be destroyed when the initial overvaluation is corrected by the market. This view is also supported by the prediction of Shleifer and Vishny's theoretical model (2003), suggesting that bidder managers attempting to dilute their overvaluation are likely to overpay for a less overvalued target. In order to reduce the risks of stocks being down-priced by the market, bidders offer high M&A premiums to smooth the M&A process. Evidence that managers do not pay high offer premiums to the target shareholders because of managerial irrationality is also supported by many additional studies (Dong *et al*., 2006; Fu *et al*., 2013).

Studies have related overpayment to agency problems. Specifically, bidders' overpayment is due to lucrative compensation paid to managers who initiate or complete M&A deals. Harford and Li (2007) and Guest (2009) suggest that CEOs engaging in an M&A deal are better off regardless of the quality of the deal. Since the primary purpose for the manager is to obtain rewards through M&As, they overpay for the target so as to smooth the M&A process. Jensen (1986) also indicates that managers of cash-rich firms tend to pay excessively for these ill-conceived investments.

It can therefore be concluded that offer premiums should bring forth positive abnormal returns to the bidder if they are in line with the synergy hypothesis, while negative abnormal returns will accrue to the bidder if they are explained with the overpayment hypothesis. In this pursuit, Diaz *et al*. (2009) identified a quadratic relationship between the offer premium and bidder abnormal returns, reasoning that the lower level of the offer premium represents its role of synergies whereas the higher level represents overpayment.

2.2.2.2. Method of payment hypotheses

The choices of payment methods are another important factor influencing M&A valuation. This section reviews four broad categories of explanations regarding the method of payment: *tax considerations*, *the signalling hypothesis*, *capital structure and corporate control* and *behavioural finance*, followed by relevant empirical evidence for each explanation.

2.2.2.2.1. Tax considerations

Studies have linked the method of payment with corporate taxes, suggesting that targets would demand high offer premiums when M&As were solely financed by cash. In accordance with capital gains taxes, there will be an immediate tax on capital gains for cash while tax on capital gains for stocks is deferred until gains are realised. Therefore, high offer premiums are associated with cash as a compensation for the targets. Wansley *et al*. (1983) who studied the tax effect on the choice of payment method found that target cumulative average abnormal returns (CAARs), measured with 41 trading day stock returns after M&As, are 33.54 percent when the means of payment for M&As is cash, but this figure nearly doubles when it is substituted with stock payments. Likewise, studying a sample of 204 pairs of mergers between 1977 and 1982, Huang and Walking (1987) reported CAARs for cash payments, stock payments and the combination of cash and stocks were 29.3 percent, 14.4 percent and 23.3 percent respectively.

By contrast, Franks *et al*. (1988) found that the presence of the all-cash offer premium effect was pronounced before capital gain taxes were introduced into the U.K. market, suggesting little evidence of the tax treatment effect on the method of payment. They examined a sample of 2,500 acquisitions in both the U.K. and the U.S. markets between 1955 and 1985 and found that U.K. firms had a much stronger cash preference than their U.S. counterparts. In addition, the period of 1965 to 1969 saw a significant decline in cash-financed acquisitions as compared with that in the period of 1960 to1964, before the capital tax gains law came into effect: 18.6 percent compared with 29.2 percent. Moreover, their study indicates that cash payments, though associated with higher offer premiums than stock payments, reap more benefits for long-term shareholders due to the valuation effect.

It can be argued that early studies that examined the tax treatment effect on the choice of payment methods based on the periods when the method of payment effect has received little attention. In this line of thinking, examining the tax treatment effect on the method of payment in a public U.S. acquisition sample between 1985 and 2004, Ismail and Krause (2010) provide the most up-to-date evidence that fails to detect the tax treatment effect on the method of payment. Their study reinforces Frank *et al*.'s findings (1988), suggesting the tax treatment effect has little impact of on the method of payment.

2.2.2.2.2. Signalling hypothesis

Another classic explanation for the choice of payment methods is the signalling hypothesis assuming that the market is transparent and there are no transaction costs and taxes, the method of payment choices should be irrelevant to finance an M&A deal. However, Myers and Majuf (1984) found evidence of information asymmetry, as managers know better than the market about the value of a firm, in that they are able to choose the right sources of financing for acquisitions. As such, stock payments signal to the market that the firm is overvalued and thus incur negative market reactions, whilst a cash payment indicates that the firm is undervalued, resulting in positive market reactions.

According to this literature, Travos (1987) found direct evidence that stock payments are associated with negative bidder announcement returns whereas a cash payment is associated with positive bidder announcement returns, claiming that stock payments convey bad news to the market whereas as cash payment conveys good news to the market. Using a sample of successful acquisitions between 1972 and 1982, the author examined a series of factors that had a substantial impact on bidder announcement returns highlighted in the prior M&A literature, including the method of payment, the offer premium, relative size and the type of mergers. Surprisingly, it is suggested that only the method of payment has a significant impact on bidder announcement returns, and stock payments are negatively related to bidder announcement returns, which is consistent with M&A literature.

Hansen (1987) regards stock payments as a risk-sharing agreement between the bidder and target firms. With high levels of information uncertainty, bidders are likely to be misled by the valuation of the target. So as to avoid overpayment, bidders are prone to pay for acquisitions with stocks, requiring the targets to share the downward risk of stock overvaluation, while cash is a clear cut between the bidder and the target and paying acquisitions with cash indicate undervalued bidders. His study underscores the central role of the risk relating to the method of payment, providing a rationale on why bidders choose stocks for acquisitions given that abnormal returns are lower than those paid with cash.

Fishman (1989) claims that cash payments played a pre-emptive role in M&As involving multiple bidders. He proposed a model of pre-emptive bidding, suggesting that cash payment signals to the target that the bidder's valuation is high whereas stock payments indicate the opposite case. The role that cash played in enhancing the advantages of the bidder was also addressed in Franks *et al.*'s U.K. study (1988). Cornu and Isakov (2000) found supportive evidence that cash offers deter competition, working better than debt or equity. Consistent with the signalling hypothesis, Cornu and Isakov (2000) reason that cash offers signal to the market a high-valuing bidder who is capable of managing the deal.

In the presence of information uncertainty, the market perceives stock payments as overvaluation by the bidder or that uncertainty regarding expected synergies increases with stock payments. As such, stock payments incur negative market reactions whereas cash payment brings forth positive market reactions. However, a number of studies have challenged this view, arguing that bidders do not underperform when financing an acquisition with stocks. Savor and Lu (2009) found that bidders who are able to complete an M&A deal with stocks would outperform those who fail to do so. Studying the joint effects of seasonal equity offerings (SEOs) and method of payment on bidder gains, Golubov *et al*. (2015) found stock-financed acquisitions are not the source of value-destruction of an M&A deal.

2.2.2.2.3. Capital structure and corporate control

The choices of payment methods also relate to a firm's capital structure decision. Pecking order theory suggests that firms prefer to use internal resources to fund investments and will not use external resources until their internal resources are exhausted. The method of payment is the means that the bidder chooses to pay for an acquisition, whereas the source of financing is what the bidder funds an acquisition. The means of the bidder uses to get the funds can be different from their payment decisions in M&As. Whilst conventional M&A studies considered the means of payment as the same as the source of financing, Martynova and Renneboog (2009) disentangled the effect of the source of takeover financing and the effect of the method of payment. According to their study, the source of financing includes purely internal funds, equity issues, debt issues and combinations of debt and equity issues. Acquisitions are paid with cash when the source of financing is purely internal funds and debt issues, and are paid with stocks when the sourcing of financing is equity issues, or a combination of equity and debt and cash. Analysing a sample of 1,361 completed acquisitions in 26 European countries[15], the authors found that acquisitions funded by internal sources underperformed those funded by debt issues.

[15] Their sample consists of both European domestic and intra-European cross-border acquisitions with both bidding firm and target firm from European countries or the U.K.

Pecking order theory is commonly violated in the context of M&As especially when bidders are financially constrained or distressed. Martin (1996) noted that one of the main reasons that a firm uses stocks as a means of payment for acquisitions is that the firm is in short of cash prior to the M&A announcement date. Jensen (1986) found supportive evidence that a large free cash flow motivates managers to use cash instead of stocks to finance an acquisition. Harford *et al*. (2009) indicate that firms that have a higher leverage ratio relative to targets tend to use equity as a means of payment for finance acquisitions while the lower leverage ratio firms tend to use debt-financed cash. Their study relates the method of payment to the capital structure of the firm. Firms in the face of larger risks of financial distress or bankruptcy are more cautionary about the change in their leverage, indicating an important role of risks played in the method of payment choices. In a similar vein, Alshwer *et al*. (2011) found financially constrained bidders tend to retain internal sources to maintain financial flexibility.

Other studies have related the method of payment choices to managerial control. Managers holding large stocks would have extensive control over the firm, in that they should be reluctant to offer stocks in order to maintain their control. Stulz (1988) suggests that managers attemping to protect their ownership of the firm avoid using stocks as a means of payment for acquisitions. Martin (1996) obtained results consistent with of those in Stulz’s work (1988). The results suggest a non-linear relationship between managerial ownership and the method of payment. Managers are insensitive about the method of payment when their ownership is low, while a high level of managerial ownership, between 5 and 15 percent, reduces the probability of acquisitions being paid for with stocks, as managers with large stock holdings avoid using stocks as this result in dilution of their control to over the firm. Similarly, Faccio and Masulis (2005), who investigated a sample of European M&As between 1997 and 2000, noted that cash is more likely to be used to fund acquisitions when the level of managerial ownership is between 20 and 60 percent. These authors also document that the probability of stock payments decreases when target firms have concentrated managerial ownership, since this creates new block holders threatening the firm control of bidder managers.

However, it is argued that neither the target nor the bidder managerial ownerships have an impact on the method of payment. Zhang (2001) examined the effect of managerial ownership on the method of payment in the U.K. market using a number of factors that have a significant impact on the method of payment, including the firm size, the financial policy of the bidder, returns of equity and the performance of the bidder.[16] Taking these controls into account, the ownerships of the two firms involved showed little impact resulting from the method of payment. The author concluded that there was little evidence of the managerial ownership effect on the method of payment, but he failed to explain the rationale behind this finding.

2.2.2.2.4. Behavioural finance

Studies have emphasised the role of managerial behaviour played in the method of payment choices. Shleifer and Vishny (2003) suggest that bidder managers choose an appropriate means of payment for acquisitions. By doing so, bidder managers utilise stocks in acquisitions when their firms are overvalued. Additionally, Vijh and Yang (2013) found small public targets were less vulnerable to overvalued stocks. Studying a large sample of U.S. public acquisitions between 1981 and 2004, the authors established a positive relationship between the target size and stock-financed acquisitions, suggesting that small targets leave bidders limited room to dilute overvaluation and acquiring small targets is associated with larger transaction costs and higher offer premiums than large targets. This suggests that the valuation of firms is an

[16] Zhang (2001) found that stocks were likely to be used for acquisitions when bidder firms were large and equity returns were higher (as bidding firms might believe their stocks are undervalued therefore paying for acquisitions with cash), while cash was likely to be employed for acquisitions when bidder firms paid higher dividends to their shareholders and the bidder firm performed better in the stock market.

important factor for managerial considerations regarding the method of payment choices. Once again, their evidence suggests rational managers link the method of payment to the valuation of the firm.

Rhodes-Kropf and Visvanathan (2004) also claim misvaluation drives all stock-financed acquisitions. Rhodes-Kropf *et al*. (2005) identified the three sources of valuation errors that drive stock-financed acquisitions. Of these, the firm- and sector-level valuation errors were the main explanatory factors. In support of this, Dong *et al*. (2006) found that stocks were likely to be used for acquisitions as the two firms involved had a high valuation. They measured the firms' valuations with P/B and P/V, which are based on managerial perceptions, reasoning that

'It could be argued that it is not actual misvaluation that influences takeovers, but merely an incorrect perception by managers that there is overvaluation. If managers believe that the price-to-book ratio is an indicator of misvaluation, they may make takeover decisions based on this measure.'

Dong *et al*. (2006:756)

Following this, Ben-David *et al*. (2015) used short interest as a measure for mispricing where short interest is a sophisticated investors' belief regarding a firm's misvaluation. The authors suggest that bidders engaging in stock-financed acquisitions have stronger short interest, which distinguishes the measure used for the real investment opportunities of the firm. The mechanism is that short-sellers tend to take (avoid) a short position in overvalued (undervalued) stocks. Further, their study suggested that firms in the top quintile of short interest are 54 percent more likely to engage in stock-financed acquisitions, which is consistent with the misvaluation hypothesis.

Studying the willingness of targets to accept overvalued stocks, Burch *et al*. (2012) found that institutions tend to accept or hold stocks with high valuation. It was found more than 56 percent of the institutions in their sample sell target stocks before the completion of an M&A or convert them to bidder stocks soon after that. Contradicting the view that targets accept overvalued stocks by mistake (Rhodes-Kropf and Visvanathan, 2004)[17], Burch *et al*. (2012) found that institutional shareholders time the market using highly valued stocks. Managers find it easier to use overvalued stocks to liquidate their holding position. They can sell stocks before the market downgrades the value of stocks. In addition, they presumably believe that highly valued firms are also well-performing firms or those with better investment opportunities. Hence, holding stocks in these firms can generate benefits in the future.

Studies that examine the misvaluation hypothesis largely borrow MTBV as a measure for mispricing, (Rhodes-Kropf and Visvanathan, 2005; Dong *et al*., 2006). However, Di Giuli (2013) argued that MTBV is problematic for misvaluation as it is a proxy for both mispricing and investment opportunities. Specifically, a firm that has better investment opportunity or is highly valued leads to the same prediction that its MTBV is high. This is even misleading in industries of high growth prospects. So as to disentangle the two effects, the author proposed a new measure for investment opportunities, which is the average ratio of capital expenditures over assets in the four years following the merger. The proxy is based on post-merger investments. Using this on a sample of 1,187 mergers between 1990 and 2005, the author found that one standard deviation increase in capital expenditure increases the probability of paying acquisitions with stocks rather than cash by 7.5 percent, suggesting that better investment opportunities lead bidders to increase stock payments for acquisitions.

[17] The mistake refers to an overestimation of the synergy or underestimation of the market-wide overvaluation.

Rather than the misvaluation hypothesis, which predicts cash as a means of payment for undervalued targets, the supply-driven explanation proposed by Zhang (2009) suggests that cash is likely to be used as a means of payment for acquisitions when the popularity of cash for target shareholders is high and target firms are less active and more constrained. Offering what the target shareholders want, bidders also reinforce their bargaining position in an M&A deal. It was found that cash paid to target shareholders with greater cash popularity is associated with lower offer premiums.

Additional factors also exhibit a significant impact on the method of payment include. First, the size of the firm relates to the method of payment. Dong *et al*. (2006) suggest that equity is more likely to be used for acquisitions involving large bidder and target firms. It can be interpreted as follows: bidders may find it hard to borrow large amount of cash to finance a large target and thus use stocks as a substitute (Martin, 1996; Moeller *et al*. 2004). Further, tender offers are more likely to be associated with cash payment whereas mergers are more likely to be associated with stock payments (Martin, 1996). In addition, cash is likely to finance hostile takeovers and generate higher abnormal returns for bidders (Schwert, 2000). In a cross-border M&A settlement, the legal environment differences across the countries also affect the method of payment (Martynova and Renneboog, 2009).

2.3. M&A performance

M&A performance is the consequence of M&As, which is one of the direct criteria that assess the success of an M&A deal. It is a well-documented fact that targets receive positive market reactions around the M&A announcement date, whereas bidders on average do not gain (Dodd and Ruback, 1977; Jensen and Ruback, 1983; Rau and Vermaelen, 1998; Fuller *et al*., 2002; Moeller *et al*., 2004; Alexandridis *et al*., 2013). As abnormal returns for short-term period may not fully capture the announcement effect of a takeover, studies have also assessed the long-term performance of the firm (Loughran and Vijh, 1997; Rau and Vermaelen, 1998; Agrawal and Jaffe, 2000), since it reflects the holding experience of the investors. Some studies have also assessed the operating performance of the firm in the post-merger period, which is an accounting-based approach (Healy *et al*., 1992; Ghosh, 2001; Andrade *et al*., 2001; Martynova *et al*., 2006). Overall, M&A performance is sensitive to the sample period examined[18], the sample criteria selected and the benchmark models employed to calculate abnormal returns of a firm.

A number of factors have had a significant impact on the abnormal returns of the firm, and been summarised into two broad categories: firm-specific characteristics and deal-specific characteristics. Studies that link the M&A performance of firms include those variables as standard controls, such as MTBV (Rau and Vermaelen, 1998; Sudarsanam and Mahate, 2003), the size of the firm (Asquith *et al*., 1983; Moeller *et al*., 2004; Alexandridis *et al*., 2013), the method of payment (Travos, 1987; Franks *et al*., 1988; Shleifer and Vishny, 2003), target status (Fuller *et al*., 2002; Antoniou *et al*., 2007), merger choices (Dodd and Ruback, 1977;

[18] There are six merger waves defined in the M&A literature (Martynova and Renneboog, 2008). The first merger wave was between 1890 and 1903, the second merger wave was between 1910 and 1929, the third merger wave was between 1950 and 1973, the fourth wave is between 1981 and 1989, the fifth wave was between 1993 and 2001, with the sixth merger starting in 2003.

Berkovitch and Khanna, 1991), deal attitude (Schwert, 2000; Martynova and Renneboog, 2006) and industry relatedness (Morck *et al*., 1990; Agrawal *et al*., 1992).

2.3.1. Short-term performance

Numerous studies have examined the abnormal returns for the bidder firm, target firm, and the combined firm with the event study. This approach has become dominated in analysing the abnormal returns of the firms since it was first adopted by Fama *et al*. (1969). According to Jensen and Ruback (1983), abnormal returns are the difference between the realised returns of the firm and the benchmark returns:

'Abnormal returns are measured by the difference between actual and expected stock returns. The expected stock return is measured conditional on a realised return on a market index to take account of the influence of market-wide events on the returns of individual securities.'

Jensen and Ruback (1983:6)

Early event studies measure abnormal returns of the firm around the effective date of merger. However, Dodd and Ruback (1977) argued that the price effect could be released prior to the announcement date, leading the price effect surrounding the completion date to be insignificant (Asquith, 1983). Martynova and Renneboog (2011) proposed the necessity of observing both the pre-announcement and post-announcement returns in an M&A study, since both are able to measure M&A performance of the firm. Specifically, pre-announcement returns could capture the information leakage, insider trading and market anticipation of an M&A deal while post-announcement returns could reflect market correction for investor sentiment, such that they over- or under-react to the M&A deal.

Martynova and Renneboog (2011) hold that M&A information is partially released prior to the M&A announcement date, suggesting that investors could learn about the bidder's objective of takeover, the target's attitude towards to the bid and so forth prior to the announcement date. As such, abnormal returns surrounding the announcement date of a merger may not be able to fully reflect the market reactions to an M&A bid. Following this view, Schwert (1996) measured investors' reaction to the M&A announcement with stock price change in a period of 42 trading days prior to the announcement date and the announcement date. Stock price change in the post-announcement period captures additional information that pre-announcement period fails to do, such as, the level of post-merger integration and the performance of successful and failed deals. However, it is difficult to assess the post-announcement effect separate from other effects that also lead to a change of stock price following a merger, such as financial or operational performance (Martynova and Renneboog, 2008). In spite of these factors, studies that examine the wealth creation from M&As have employed a relatively short event window holding that price change around the announcement date fully reflects M&A performance (Asquith, 1983; Dodd, 1980).

M&A studies have revealed appealing features of abnormal returns of firms by merger waves. It is well-established that M&As generally create value for the two firms involved prior to the fifth merger wave starting in 1993. Investigating the price change of the entire merger process between 1962 and 1976, Asquith (1983) found positive announcement returns for bidder and target firms regardless of deal outcomes. More specifically, targets enjoyed 6.2 percent two-day excess returns[19] for successful deals and this figure up to 7 percent for unsuccessful deals

[19] The two-day excess return is the sum of abnormal returns in the window one day prior to the takeover announcement date and the takeover announcement date.

while bidders enjoyed 0.2 percent two-day excess returns for successful deals and 0.5 percent for unsuccessful deals.

Reviewing thirteen studies examining abnormal returns of both bidders and targets between 1950s and 1980s, Jensen and Ruback (1983) found that targets gain from M&As, whereas bidders do not loss on average in abnormal returns around the announcement date. Of particular note, targets outperform bidders in the samples of successful and unsuccessful M&A deals, whereas bidders generally gain in successful M&A deals. In addition, bidder abnormal returns are high regardless of whether the merger choice is a tender offer or merger for successful M&A deals, and the two firms suffer small losses in abnormal returns for failed tender offers and mergers. Franks and Harris (1989), who conducted an out-of-sample test, reported target announcement returns in the range between 25 and 30 percent while bidders earn zero or modest gains based on a sample of 1,800 U.K. takeovers announced in the period of 1955 to 1985, consistent with those in the work of Jensen and Ruback (1983).

Studies have shown significantly positive bidder announcement returns prior to 1993. Analysing a sample of U.S. tender offers between 1958 and 1978, Dodd and Ruback (1977) found that bidders earned 2.83 percent abnormal returns in a period of the announcement date until 20 days following a takeover. Focusing on a similar sample period of Dodd and Ruback (1977), Franks *et al*. (1977) reported abnormal returns of 4.6 percent for U.K. bidders. Studying a comprehensive U.S. M&A sample, Schwert (1996) found both the two firms earn significantly positive announcement returns regardless of merger choice. Eckbo and Thorburn (2000), focusing on a sample consisting of both domestic and cross-border M&As between 1964 and 1983, found that abnormal returns to a U.S. bidder's acquisition of a Canadian firm were zero, whereas a Canadian bidder earned significantly positive in domestic M&As. Jensen

(1988) explained positive bidder abnormal returns as the effectiveness of the market for corporate control returns prior to 1990s when managers compete to improve the efficiency of the firm through M&As.

Whilst studies have found significantly negative bidder abnormal returns around the announcement date after the start of the fifth merger wave, identifying various sources of value destruction, such as agency problems, managerial overconfidence and market mispricing. Agency problems suggest that the value of the firm is likely to be transferred from a firm that is associated with severe conflicts of interests between the shareholder and the manager. Harford *et al*. (2012) found entrenched bidder managers engaging in a value-destroying M&A for fear of their stocks being diluted avoid using all equity, which in return destroys the firm's value. Moreover, entrenched managers avoid biding private targets that can potentially create value for the combined firm, and they overpay for public firms and firms of low synergies. Doukas and Petmezas (2007), who examined the effect of managerial overconfidence on bidder gains between 1980 and 2004, found that bidder announcement returns were lower for a higher order acquisition than a lower order acquisition, explaining this as the managerial self-attribution bias. Using a large sample of U.S. mergers between 1978 and 2000, Dong *et al*. (2006) found negative abnormal returns for overvalued bidders' acquisition of a less overvalued target. In such a case, bidder managers sacrifice the wealth of shareholders in the short term to protect the wealth of the shareholders in the long term, and this finding is also supported by Ang and Cheng (2006).

The sixth merger wave that started in 2003 witnessed some similar patterns of M&A performance as those in the fifth merger wave. Alexandridis *et al*. (2010) suggest that bidder abnormal returns decrease with the competitiveness of the takeover market. Studying a worldwide M&A sample consisting of M&As announced between 1990 and 2007, the authors suggest that bidders in the takeover competitive markets (i.e. U.S., U.K. and Canada) tend to overpay, resulting in loss in the announcement returns, whereas bidders beyond these three countries on average realise gains. Their study suggests that bidder abnormal returns vary significantly from market to market. In spite of lower offer premiums are paid for targets during the sixth merger wave than the fifth merger wave, bidders do not gain. Alexandridis *et al*. (2012) underlined this to free cash flow problem, suggesting that the firms undertaking M&As in the sixth merger wave tend to have lower valuation and higher cash balances than those in the fifth merger wave, indicating that cash payment dominates stock payments in this period.

2.3.2. Long-term performance

2.3.2.1. Stock performance

A large body of M&A research has documented significant negative bidder abnormal returns in the long-term up to a five-year period following a merger (Asquith, 1983; Jensen and Rubuck, 1983; Agrawal *et al*., 1992; Loughran and Vijh, 1997; Rau and Vermaelen, 1998; Franks and Harris, 1989) [20]. Asquith (1983), examining the bidder's performance in the post-acquisition up to 240 trading days following a takeover announcement date, reported a dramatic decline in bidder abnormal returns compared with those on the outcome date of a merger. Specifically, bidder abnormal returns decreased by 1.9 percent in the 100 days and by 7.2 percent in the 240 days following the date of the deal outcome. Jensen and Ruback (1983) reported negative bidder abnormal returns of -5.5 percent in the year following a merger and noted that the result is unsettling as it indicates market inefficiency. They further suggested this finding as the market's overestimation of the synergies accompanying a merger. Ruback (1988) late accepted

[20] Despite these studies, Higson and Elliott (1998) reported zero abnormal returns in the three years following a merger to the U.K. bidders between 1975 and 1990. In addition, equal-weighted abnormal returns to bidders were found to be insignificant while bidders whose abnormal returns were calculated with the value-weighted returns were positive and small.

the result that significant negative abnormal returns to bidders over the two years following a merger as a fact. The notion that the market is inefficient has been supported by many additional studies in favour of negative bidder long-term abnormal returns. Agrawal *et al*. (1992), among other researchers, also reported negative bidder abnormal returns of -10 percent over five years after a merger and their results continue to hold after controlling for size effect and beta risk in various benchmark models.

Agrawal and Jaffe (2000), citing the work of Agrawal *et al*. (1992), attribute underperformance as a *'post-merger performance puzzle'*. The authors outlined the method of payment and the performance extrapolation hypotheses to this underperformance puzzle. The former hypothesis indicates that when equity is used, the bidder is likely to be overvalued, and when cash is used, the bidder is undervalued. Since the overvaluation will be corrected by the market in the long term, stock-financed acquisitions are associated with negative market reactions, while cash-financed acquisitions generate positive market reactions. The performance extrapolation hypothesis indicates that the market overestimates the firms with high MTBV, which creates a strong momentum around the takeover announcement date and leads to a strong long-term reversal. Thus, Agrawal and Jaffe's findings (2000) are consistent with those of Rau and Vermaelen (1998). In a similar vein, Gregory (1997), who examined the relationship between long-term abnormal returns and the free cash flow of a firm in the U.K. market, noted that firms with high Q and low free cash flow are overvalued and underperform in the market in the long term.

Another explanation for bidders' underperformance in the long term is the neglect of the post-merger integration process. Hansen (1987) indicates larger potential revaluation loss is associated with the greater relative size of the target to the bidder. Moeller *et al*. (2004) suggest that large deals require more diligent work by bidders, and they are associated with considerable integration costs that lead to downward synergies. Despite their study not directly addressing the long-term performance of the bidders, managers of a larger firm are likely to be hubris-infected due to extensive managerial autonomy in the firm, causing more negative announcement returns. Likewise, Antoniou *et al*. (2008) re-addressed the loss in the long-term abnormal returns as the neglect of post-merger integration in a sample of U.K. public acquisitions.

Others attribute bidders' underperformance in the post-merger period to misspecifications of the benchmark models employed. Franks *et al*. (1991), who tested a sample of 399 U.S. takeovers between 1975 and 1984, suggested underperformance is measurement errors of the models. The authors use multiple benchmark models in assessing the long-term performance of the bidder and find insignificant abnormal returns, and the results are significantly different depending on which portfolio is used: the equally- or value-weighted. Moreover, the authors claim that long-term abnormal returns are largely dependent upon the relative size of the target and the bidder, the method of payment, and the models employed. Barber and Lyon (1997) also addressed bad model problems. They proposed multifactor models instead of a single model to avoid mean-variance inefficiencies, and control firms of similar size and MTBV to calculate long-term abnormal returns within five years following a merger. Their approaches showed well-specified test statistics.

2.3.2.2. Operating performance

Researchers also measure bidder long-term performance using operating performance by assessing the firm's performance from its fundamentals, avoiding measurement errors from the benchmark models based on an efficiency market. (Healy *et al*., 1992; Barber and Lyon, 1996;

Ghosh, 2001; Andrade *et al*., 2001; Martynova *et al*., 2006). According to Powell and Stark (2005), previous M&A studies for assessing a firm's operating performance following a merger were prepared from three perspectives: the measures, the deflator choices[21] and benchmark models. Barber and Lyon (1996) suggest the important roles that firm size and pre-announcement performance played in operating performance, showing test statistics well when controlling for these two factors in the matched firm sample.

Studies commonly employ cash flows as a proxy to assess a firm's operating performance following a merger (Healy *et al*., 1992; Barber and Lyon, 1996), as other accounting-based measures are likely to be manipulated after takeovers (Powell and Stark, 2005). Healy *et al*. (1992), examining a sample of 50 largest U.S. publicly industrial mergers completed between 1979 and mid-1984 and using operating cash flows and asset productivity as proxies for operating performance, found strong operating improvements following a merger. In a further analysis, the authors found a positive relationship between abnormal returns and operating cash flow performance of the bidder, implying that the market can predict the operating performance of the firm.

Likewise, Switzer (1996) in his study focusing on a relative large sample size finds firms' operating performance improved following a merger, regardless of the firm's size, relatedness of the two firms and bidder leverage. Linn and Switzer (2001) also provide evidence in support of the existence of improvement in a post-merger performance. According to their study, cash payment is associated with significantly greater change in operating performance than stock payments. Their results indicate that bidders use cash as they have private information about

[21] Powell and Stark (2005) have reviewed a series of studies relating to the techniques used in scaling the accounting measures.

the potential synergies to be realised in the long term, reflected in an improvement of operating performance.

However, Ghosh (2001) challenges the findings of Healy *et al*. (1992) by arguing that such an improvement in operating performance is due to the fact that firms engaging in acquisitions are larger firms compared with their industry peers. In most cases, large firms enjoy superior performance, thus examining the operating performance of the firm exists bias when including large firms. To combat this concern, the author uses firms matched on size and performance as a benchmark to account for pre-performance of the bidder and compares the operating performance of the firm before and after mergers with the matched firm sample. His study shows little evidence that operating cash flow performance improves following a merger.

Many additional studies borrowing different operating measures have shown a decline to operating performance following a merger (Mueller, 1980; Clark and Ofek, 1994; Fu *et al*., 2013[22]). Mueller (1980) observed a decrease of operating performance measured with ROE, sales growth rate and total asset growth rate. Clark and Ofek (1994), studying a sample of M&As with financially distressed targets and using earnings before interests, taxes and depreciation (EBITD) as a proxy[23] for operating performance also document a decline in operating performance.

Using different accounting-based measures for the firm's operating performance, Gugler *et al*. (2003) reported mixed results in a sample of worldwide M&As announced between 1981 and 1998. More specifically, measuring operating performance with Profit/Assets, the authors were

[22] Fu *et al*. (2013) detected the operating performance by focusing on a test for an implication of the misvaluation hypothesis of Shleifer and Vishny (2003), which is whether the long-term performance of the stock bidders improves when they use overvalued stocks as a means of payment for acquisitions.
[23] His study scaled EBITD with revenues, which is EBITD/Revenues.

able to show an improvement in operating performance while the results decreased when measured with Sales/Assets. Similarly, Martynova and Renneboog (2006) used four different accounting-based measures to detect the operating performance for a sample of European and U.K. M&As between 1997 and 2001. Controlling for industry, size and pre-takeover performance in the matched firm sample, the authors showed that the previous significant decrease in operating performance tends to be insignificant. In addition, the authors indicate when the intercept model (or the regression-based model) was applied, the profitability tended to be significantly positive and when the change model used the profitability tends to decrease. Once again, their studies indicated that a firm’s long-term operating performance was sensitive to the factors controlled and benchmark models employed.

2.3.3. Factors influencing M&A performance

2.3.3.1. The method of payment

The performance of the firms involved in an M&A deal are dependent upon a number of factors examined in M&A literature (Datta *et al*., 1992; King *et al*., 2004; Eckbo, 2009), and the method of payment has been widely studied in this regard. A review of the method of payment hypotheses was presented in the 2.2.4 section of this thesis.

There is unanimous agreement among researchers that cash payment outperforms stock payments in the short term. Studying a sample of U.S. acquisitions in the period of 1980 to 2001, Moeller *et al*. (2004) reported 1.38 percent bidder abnormal returns for acquisitions were financed by cash, which is higher than stocks (0.15%). Martynova and Renneboog (2006), who employed an 11-day window to calculate the bidder cumulative abnormal returns in a sample of E.U. acquisitions, also reported quite similar results. In their study, though stock-financed acquisitions can generate positive abnormal returns to bidders, they are significantly lower than the returns on cash payment, 11.1 percent as opposed to 20.17 percent.

Similar results were reported in the M&A studies that focus on the bidders' long-term abnormal returns. Loughran and Vijh (1997) examining 947 acquisitions in the period 1970 to 1989 noted that stock-financed mergers significantly underperformed cash-financed tender offers in the five years following a merger, -25 percent as opposed to 65 percent. These authors provided two proposed reasons in support of this finding. First, it was found that M&As that are paid in cash are also tender offers that replace inefficient management and thus improve a firm's value. Secondly, bidders pay with stocks if the stocks are overvalued, leading to a decline in value after market correction. In this vein, Bouwman *et al*. (2003), examining a sample of U.S. acquisitions between 1979 and 1998 and using a two-year period following the acquisition, reported negative excess returns of 7.03 percent for all stock-financed mergers whereas there were insignificant excess returns of -1.76 percent for their cash counterparts. Analysing bidders' long-term abnormal returns in a three-year period following an acquisition in a U.S. sample between 1984 and 2001, Ang and Cheng (2006) reported negative excess returns of -12.45 percent for all-stock financed acquisitions, the result the authors explained with the misvaluation hypothesis. Sudarsanam and Mahate (2003), focusing the U.K. market, reported significantly negative abnormal returns for stock-financed acquisitions in the period 2 to 36 months following an acquisition regardless of the level of the price to bidders' earnings ratio.

Researchers have addressed the effect of the payment method on the firm's performance by different M&A subsamples. Bouwman *et al*. (2003), who examined bidder abnormal returns by merger choice, indicated that abnormal returns to bidders were lower for acquisitions financed by stocks compared with those financed by cash, the result is more significant for the merger subsample than the tender offer subsample. In a sample of U.S. acquisitions between 1979 and 1998 and to calculate bidder abnormal returns with a 3-day window, the authors demonstrated insignificant positive abnormal returns for a sample of tender offers financed by cash and stocks: 0.36 percent and -0.62 percent, while for those mergers, bidders enjoy significantly positive abnormal returns for cash-financed acquisitions (0.88%) and significantly negative abnormal returns for stock-financed acquisitions (-0.79%).

Whilst numerous M&A studies documenting evidence show that cash payment generates positive abnormal returns and stock payments generate negative abnormal returns for bidders, Chang (1998) reported significantly negative bidder abnormal returns for stock-financed public acquisitions (-2.46%), but insignificantly negative bidder abnormal returns for cash-financed public acquisitions (-0.02%). However, these results are reversed when targets are private firms (i.e. unlisted firms). In particular, bidder abnormal returns for stock-financed private acquisitions are significantly positive (2.64%) whereas cash-financed private acquisitions are insignificantly positive (0.09%). This author provided three hypotheses to underline this finding: the limited competition hypothesis, the monitoring hypothesis and the information hypothesis. The limited competition hypothesis indicates that positive bidder abnormal returns are due to the high probability of underpayment given weak competition for private acquisitions. The monitoring hypothesis indicates outstanding performance achieved by bidders using stocks for private acquisitions, as paying with stocks creates new block holders that motivate the firm's performance. The information asymmetry hypothesis indicates that the market may re-evaluate the bidder's valuation and reacts positively to the bid announcement based on the rationale that private targets value stocks with caution. This finding is also supported by Draper and Paudyal (2006) who have examined the U.K. takeover market where a large majority of deals involve a private target firm.

2.3.3.2. Target status

Target status plays an important role in explaining bidder announcement returns. In most cases, a private target is an illiquid firm, motivating the bidder to restore price discounts through takeovers. Furthermore, a private target has a weak bargaining position, which reduces M&A offer premiums. Studying a sample of 3,135 acquisitions between 1990 and 2000 and using a 5-day window for CARs, Fuller *et al*. (2002) found significantly positive returns were created for bidder firms. When looking into subsamples according to target status, the authors noted that bidder announcement returns were -1.0 percent when the target was a publicly-listed firm, 2.1 percent when the target was a privately-held firm and 2.8 percent when the target was a subsidiary. Results are similar to Moeller *et al*.'s work (2007) employing a 3-day window for CARs. Moller *et al*. (2007) studied a sample of 4,322 U.S. acquisitions announced between 1980 and 2002 and found that for all stock-financed acquisitions, the value of the bidder declined by 2.3 percent when the target was a public firm, whereas it increased by 3.4 percent when the target was a private firm. Their results are also supported by Conn *et al*. (2005) who reported significantly loss in bidder abnormal returns in acquisitions involving a public target when analysing a sample of U.K. M&As between 1984 and 2000.

Contradicting this line of studies, Bradley and Sundaram (2004) show that private firms decrease the wealth effect of the bidder. Analysing a sample of over 12,000 U.S. acquisitions between 1990 and 2000 and measuring abnormal returns in a window of 1 day and 24 days after the M&A announcement date, the authors found that bidder announcement returns were significantly negative (-10.09%). In particular, all-stock payments decreased the value of the bidder firm by 6.35 percent for public acquisitions, whereas a decrease of 14 percent was noted for private acquisitions. It can be argued that private firms are associated with high risks as their information is less transparent than public firms, hampering synergy estimation of the target firm.

2.3.3.3. Merger relatedness

Unrelated acquisitions[24] refer to the two firms involved in an M&A deal being from different industries. Researchers have not reached a consensus on whether diversifying acquisitions improves the value of a firm. Datta *et al*. (1992) in a review study identified the wealth of shareholders in a related acquisition was created through a transfer of core skills, economies of scale, economies of scope and the value enhancement from the market power. The wealth of shareholders in an unrelated acquisition is created through risk diversification, cheaper access to capital, and value enhancement resulting from operational efficiency.

Morck *et al*. (1990) found diversified acquisitions are associated with lower bidder abnormal returns, reasoning that there was a lack of experience when managers step into an unrelated field. In support of this, Berger and Ofek (1995), by comparing the stand-alone value of the firm and the market value of the firm in a diversified M&A deal, find that the market value of the firm following a diversified acquisition was on average between 13 percent and 15 percent loss in abnormal returns. Denis *et al*. (2002) claimed that neither global diversification strategy nor industrial diversification strategy can create value for the firm. Contradicting this thread of literature, Comment and Jarrell (1995) noted that corporate diversification increased the wealth of shareholders in 1980s, identifying that diversification strategy as enhancing the firm's value through economies of scale.

[24] Also known as diversified or conglomerate acquisitions.

2.3.3.4. Merger attitudes

The attitude of a merger can be broadly split into two, namely, solicited (friendly) and unsolicited (hostile). A hostile deal refers to a deal opposed by the board of the target management. Servaes (1991) reports loss in bidder announcement returns of hostile deals, reasoning that the hostile bid results in high offer premiums or an increase of the probability that a deal will fail. And in either case, bidders receive negative market reactions. In contrast, friendly bids create value for both the bidder and the target firms, according to Morck *et al*. (1988).

Schwert (2000) wrote that *"the distinction between hostile and friendly offers is largely a reflection of negotiation strategy"* and *"hostile takeovers mean different things to different people",* implying that hostile takeovers do not reveal useful information to the market. The author finds little evidence of the relationship between bidder announcement returns and hostile deals based on the SDC data. The findings support the view that target managers opposing hostile bids either because they are entrenched or because they use it as a bargaining strategy, which contradicts Lang *et al*.'s view (1989) that target managers opposing hostile takeovers signals to the market that their firm is well managed and creates value for the combined firm.

2.3.3.5. Merger choice

The choice of an acquisition includes tender offers and mergers. Tender offers are a share purchase directly proposed to target shareholders, whereas mergers involve a negotiation between the boards of the two firms involved. There are two advantages to initiating an acquisition with tender offers, rather than mergers. First, tender offers avoid lengthy negotiation processes. Golubov *et al*. (2012) indicate that the speed of deal completion for tender offer is greater than that of the merger. They found that tender offers are approximately

55 days shorter than mergers in a sample of completed bids: 1,650 completed deals out of a 1,836 M&A sample. Secondly, initiating tender offers does not need the prior approval or a contract with the target management (Betton *et al*., 2008), reducing bidder managers' efforts.

However, tender offers are relatively costly for bidders. Offenberg and Pirinsky (2015), by analysing a sample of hand-collected U.S. acquisitions announced between 2007 and 2012, found that tender offers were associated with higher offer premiums than mergers since tender offers may indicate the market that targets would generate large synergies for the combined firm. In this sense, the authors should expect a positive relationship between tender offers and bidder gains. However, they do not provide direct evidence in support of this implication. Instead, they find that tender offers incur negative bidder abnormal returns, as bidders initiating a tender offer are regarded as bad news. Moeller *et al*. (2004) support their view with positive bidder abnormal returns associated with tender in a sample of completed U.S. acquisitions[25]. The finding is more appealing for tender offers involving a larger bidder than a smaller bidder (Offenberg and Pirinsky, 2015). It can be concluded that tender offers, though costly, reduce the speed of the M&A process that turns out to be effective for M&As.

It is expected the use of tender offers increase the firms' M&A performance. Jensen and Ruback (1983) indicate that tender offers are associated with higher bidder and target announcement returns than those of mergers. They reported 29 percent of abnormal returns to target shareholders in tender offers compared with 16 percent to mergers, and 4 percent in tender offers compared with zero gains in mergers. Franks and Harris (1989) reported 24 percent abnormal returns in the month of the announcement date to the target shareholders,

[25] Offenberg and Pirinsky (2015) suggest that tender offers are more likely to be associated the deal is completed than mergers.

which are significantly higher than those recorded in tender offers (14.8%). Bidders also enjoy high abnormal returns in tender offers, reporting a positive 1.2 percent abnormal returns in tender offers, higher than those in other offers (-3.6%).

Many additional studies have provided explanations of the fact that abnormal returns in tender offers are higher than those of mergers. Bradley *et al*. (1988) suggest positive target returns in tender offers are a result of increased competitiveness of the market, reasoning that the introduction of the William Act in 1968 is the main driving force. However, this view has been challenged by Franks and Harris (1989), who found positive returns to the U.K. targets both before and after 1968. Martin (1996) and Dong *et al*. (2006) suggest that tender offers are likely to be those acquisitions financed by cash that conveys the market good news. Kohers *et al*. (2007) suggest bidders' propensity for using tender offers is larger in the cases where targets are defensive and there are multiple bidders. This line of studies suggests that bidders can better explore synergies when proposing tender offers.

2.3.3.6. Size and relative size

The size of each firm involved in an M&A deal is also an important factor influencing M&A performance of the firm. Agrawal *et al*. (1992) were the first to account for the size of the firm when examining the bidder long-term abnormal returns, as there are a large number of large firms in their sample. Further to this, Moeller *et al*. (2004) find bidder size is a key factor in explaining bidder's performance. These authors examined the relationship between bidder size and firm performance in the M&As and find that managers of large bidders tend to destroy more of the firm's value than their smaller counterparts, reasoning that managers of large firms who do not have any restrictions regarding using the firm's resources potentially dissipate these resources in M&As. Evidence that bidder size and bidder gains are negatively correlated is also supported in prior M&A studies (Eckbo and Thorburn, 2000; Moeller *et al*., 2005).

In addition, target size is also a crucial factor in assessing M&A performance. Analysing a sample of 3,691 U.S. mergers between 1990 and 2007, Alexandridis *et al*. (2013) find a negative relationship between target size and bidder gains. In particular, announcement returns to large targets were 2.37 percent lower than small targets and bidder announcement returns decrease by 1.1 percent for every standard deviation increases in target size. The authors explain this as post-merger integration problem of large deals, as they are complex, hence, they are hard to create value for the firm. According this theme in the literature, relative size as well as the size of the two firms are essential in examining M&A performance of the firm and should therefore be included (Agrawal *et al*., 1992; Loderer and Martin, 1992).[26]

Relative size is the deal value scaled by the bidder value, which captures the materiality of the deal decision to the bidder. A larger ratio indicates that the M&A decision is relatively more important to the bidder. Relative size measures the value of the two firms involved in an M&A deal, exhibiting a substantial impact on M&A outcomes. Asquith *et al*. (1983), by examining the effect of relative size of the target and bidder on bidder gains, noted a very small target firm relative to the bidder does not increase the value for the bidder. While a target firm whose size is about half of the bidder generates 1.8% higher abnormal returns for the bidder than the target whose size is only one-tenth of the bidder. In line with this, Jarrell and Poulsen (1989) argue that a small target relative to the bidder may fail to raise the market's attention, leading to insignificant market reactions to the bid announcement, which is supported by Loderer and Martin (1990) who include private acquisitions in their M&A sample.

[26] These authors adjust for size of the firm in assessing a firm's long-term stock returns.

2.3.3.7. Market-to-book ratio

Market-to-book ratio (MTBV) reflects the firm's prospects, which is also a crucial factor in assessing M&A performance of the firm. In a core paper, Rau and Vermaelen (1998) find that the post-merger performance of the glamour bidder (i.e. firms with higher MTBV) is significantly worse than that of the value bidder (i.e. firms with lower MTBV) regardless of the choices of mergers and payment methods. The authors attempt to justify this finding with three hypotheses: the performance extrapolation hypothesis, the method of payment hypothesis and the Earnings Per Share (EPS) myopia hypothesis.

Analyzing a comprehensive U.S. acquisition comprising 3,169 mergers and 348 tender offers between 1980 and 1991, Rau and Vermaelen (1998) found that glamour bidders underperform value bidders in a three-year period following acquisitions. Their study showed that bidders in mergers underperformed their match firms significantly by 4 percent while bidders in tender offers enjoyed positive abnormal returns of 9 percent. These results suggest that the market tends to over-extrapolate the past performance of the glamour firms. The market believes that firms with high MTBV tend to have high past stock returns and high growth in cash flows and earnings, leading to an overestimation of the firms' performance around the announcement date. It is suggested that the market belief to the firm's performance enhances managerial confidence and result in an overpayment, which leads to the same prediction of the hubris management hypothesis. In addition, the authors revealed that glamour bidders prefer stocks to cash as a means of payment for acquisitions, as stocks are overvalued by the market in the presence of the market's over-extrapolation bias. In the long term, market correction to overvalued stocks downgrades the price, leading to negative abnormal returns. However, their results do not provide any additional support for the prediction that the EPS is an important determinant for the glamour bidders' underperformance.

Sudarsanam and Mahate (2003) provide similar findings when examining a sample of successful U.K. acquisitions between 1983 and 1995. They used two proxies for glamour/value stocks: price-to-earnings ratio (PER) and MTBV and assessed the firm's performance with various benchmark models. Their results showed that the value bidders outperformed the glamour bidders over three years in the post-merger period, arguing that underperformance in the long term is due to the fact that the U.K. market forbids the market to over-extrapolate the firm's past performance.

Pachare (2010) explains the extrapolation phenomenon with the level of market power that a firm possesses. He proposes that higher market power possessed by the firm relative to its industry peers is associated with a stronger positive investors' belief in the firm's prospects. Their study indicates that firms with high market power tends to increase the market's over-extrapolation, leading a stronger short-term momentum followed by stronger long-term reversals.

On the whole, the studies cited above show that MTBV should be included in assessing the M&A performance of the firm for both the short and long terms. Fama and French (1993), criticizing the work of Agrawal *et al*. (1992), who do not adjust for MTBV while assessing the firm's M&A performance suggest that MTBV is able to capture a large proportion of the average stock returns for the firm. Therefore, it is essential to include MTBV in an M&A study.

2.4. Prospect theory

Kahneman and Tversky (1979) were the first to propose prospect theory, which is a descriptive theory of decision-making under risks. Such a decision-choice model decipts an S-shaped value function, showing concave for gains and convex for losses. There is a *diminishing sensitivity* in the loss and gain domains, and such a trend in loss domain is much steeper than in gain loss. This leads to an implication that given an equal change in these two domains people tend to be more sensitive to losses rather than gains, i.e. *loss-aversion tendency*. Since people care about the loss more than the gain, they tend to be risk-seeking when experiencing losses and risk-averse when enjoying gains. However, gauging gain and loss is subjective. The expected expected utility[27] theory (i.e. EUT) judges people's feelings about the gain and loss with a zero value, the positive outcome is described as a gain, whereas the negative outcome is regarded as a loss. And the theory uses weighted average of outcomes to measure the expected value of the choice.[28]

One of the leading features of prospect theory is that the gain and loss is determined by a specific value point, termed as the *reference-dependence bias*. Even though the outcome is postive, it can be regarded as a mental loss if it is below the expectation. In addition, unlike EUT, which potrays the outcome of a decision, prospect theory puts much more emphasis on a decision-making process, since it outlines how the change of the value affects the outcome of a decision. Prospect theory has been widely applied to address various fields of study over the decades. Barberis (2013) summarised three important implications of prospect theory: *diminishing sensitivity*, *loss-aversion tendency* and *reference dependence*, and these were derived from two types of evidence: human-related experiments and empirical evidence.

[27] The utility is the value placed on outcome.
[28] According to the EUT, The expected value of the choice is sum of the product of the probability and outcome values of each probability.

A number of studies document empirical evidence in support of prospect theory. Northcraft and Neale (1987) conducted an experiment on the estimates of house price. They found that the experienced house agents estimate house prices in relation to a random house-listing price. Loughran and Ritter (2002), using the discontinuity analysis, found that current CEOs raise new equity in accordance with the share price at the time they started to charge the firm. Shefrin and Statman (1985) observed that investors tend to sell winner stocks too early and keep the loser stocks too long. In a similar vein, Odean (1998), by studying the detailed trading records of 10,000 accounts from 1987 to 1993, which were collected from a large discount of brokerage house, found that individual investors were less likely to sell loser stocks to realise paper loss, indicating that the loss-aversion is a prevalent feature in the stock market.

2.4.1. Diminishing sensitivity

Kahneman and Tversky (1979) suggest diminishing sensitivities in both the loss and gain domains. According to their experiment, subjects tend to be more sensitive when the temperature changes from 3 degrees to 6 degrees than if it changes from 13 degrees to 16 degrees. This assumption also applies to the monetary situation where a loss of $10 has more impact on a person with $100 than on a person with $1000. It is suggested that the change of the value affects people's feelings rather than the final states. Finally, the experiment also documented that people have a loss-aversion tendency insofar as they are reluctant to realise losses relative to the reference point. It has been explained that experiencing pain makes a greater impression than experiencing pleasure.

2.4.2. Reference dependence

A key distinguishing feature between prospect theory and expected utility theory is the reference-dependence. Prospect theory describes gains and losses on a bias of a given specific point, which serves as the benchmark. Kahneman (2003) maintained that prospect theory captures the decision-making process whilst the expected utility theory simply reflects an outcome of the decision-making process, failing to address the effect of the change of the value on people's feelings. The reference-dependence preference also predicts that decision-makers' personal judgements are subjective to an established level of reference, and they are satisfied when returns are higher than the reference point and dissatisfied when the returns are lower.

Tversky and Kahneman (1974) conducted a series of human-subject experiments, affirming that the estimates of participants are influenced by a random number in case of uncertainty. Subjects were allocated in different groups and asked the percentage of African countries in the United Nations. With insufficient information about this unfamiliar area, subjects randomly estimated a number in relation to the arbitrary number provided by the experiment. The median estimates for the percentage of African countries in the United Nations were 10 for the group given the number of 25, and 65 for the group given the number of 45. Therefore, Tversky and Kahneman identified the reference point effect on the decision-making process.

2.4.3. Loss-aversion tendency

Loss-aversion theory posits that investors generally have a tendency to not be willing to realise loss (Kahneman and Tversky 1979), where the loss is relative to a reference point. In addition, Tversky and Kahneman (1992) indicate a diminishing sensitivity suggesting the utility for returns diminish in both gain and loss domains. The loss-aversion tendency has entered trading behaviour as a disposition effect. Prior studies have put forward loss aversion theory in different fields of finance. Using a realised gain and lose model, Barberis and Xiong (2009) indicate the disposition effect to describe investors' trading behaviour. Mehra and Prescott

(1985) and Benartzi and Thaler (1995) suggest that the disposition effect should provide an explanation for the equity premium puzzle.[29]

2.4.4. Prospect theory and M&As

Baker *et al*. (2012) were the first to put forward the idea of applying reference point theory to M&As. Studying a comprehensive sample of U.S. public acquisitions, the authors found that the reference point price measured with the target 52-week high, has a substantial impact on M&A participants' decisions-making process. Their study indicates that the target 52-week high serves as bargaining power for the target who negotiates with the bidder. Since the value of the firm is hard to estimate and lacking time in which to process the information, target shareholders tend to believe the target 52-week is their firm's fair value and approve the deals if offer price is paid according to this reference point price. Target managers who avoid being accused of failure to meet the commitment to the firm attempt to justify the offer price with this reference point price. This is similar to bidders who have to justify how much they should pay for the targets to obtain the deal. According to Baker *et al*. (2012), the bidder may reason that *'if the target was valued at a certain level just a few months ago, shouldn't we, with our ability to realise synergies, value it near or above the same level?'*, implying that the M&A pricing decisions made is not only influenced by the reference point but also by the managerial overconfidence, since bidders do not have any solid evidence regarding the target's value.

Baker *et al*'s study (2012) showed that the target 52-week high is significantly positively related to the offer premium and bidders receive negative market reactions around the takeover announcement date when paying for acquisitions based on the target 52-week high. The authors

[29] Benartzi and Thaler (1995), building on the study of Mehra and Prescott (1985), proposed the myopia loss-aversion as a solution to the equity premium puzzle.

reason that targets are less likely to give up firms unless the offer premium can compensate their mental loss, measured relative to a reference point price. The bidder whose aim is to successfully obtain the deal is likely to pay a price relative to the target 52-week high to avoid the loss-aversion of the target. According to the analysis of Baker *et al*. (2012) regarding the relationship between deal success and the target 52-week high, it was found that paying according to the target reference point increases the likelihood of deal succeeding. While, on the other hand, bidder shareholders find a price relative to the target 52-week high as an overpayment, since high offer premiums transfer their wealth to that of the target shareholders and lead the managers hard to recover following the transaction, thus negatively react to the bid announcement. Their findings are consistent with implications of prospect theory.

Following Baker *et al*'s idea (2012), Chira and Madura (2015) focused on takeover probability and the reference point effect. Chira and Madura (2015) suggest that bidders should also assess their value according to the bidder reference points, finding that optimistic managers who are more likely to acquire their firms (i.e. a management buyout) than the outsiders when the firm's price is low relative to the 52-week high. In addition, their study documented that a firm with the nearness 52-week high is probably the bidder, whereas a firm with the farness 52-week high is probably the target in an M&A deal, indicating the role of the firm's 52-week high played as the firm's bargaining power.

CHAPTER 3: REFERENCE POINT THEORY ON CROSS-BORDER AND DOMESTIC M&A DEALS: U.K. EVIDENCE

Abstract

There is no consensus on how much a target is worth except there are perceptions of the manager and the market to the firm's valuation. This chapter examines the reference point theory of M&As, a behavioural finance theory that aims to explain what determines the decision of M&A pricing. The researcher put forward Baker *et al*.'s idea (2012) of finding a strong reference point effect on various key aspects of U.S. M&As in the U.K. market, where the reference point effect is expected to have stronger explanatory power for offer premiums and the market reactions due to the unique features of this market. In this chapter, the reference point effect was used to analyse offer premiums and bidder announcement returns of a sample of 155 cross-border and 451 domestic acquisitions into the United Kingdom. Using the target firm's 52-week high as the reference price, an overall significantly positive relationship between the reference price and offer premiums was established. In addition, a reference point distinguishes the takeover motives of domestic bidders from cross-border bidders. It was established that offer premiums driven by the target 52-week high lead to negative market reactions for domestic bidders, suggesting evidence of overpayment. However, there is little evidence of overpayment in cross-border bidders who pay in accordance with the target 52-week high. The findings of this chapter are consistent with prospect theory.

3.1. Introduction

"Necessity never made a good bargain."

Benjamin Franklin

Valuating a target firm is a difficult task for bidders. A sizable stream of M&A research has explained the price that a bidder offers for the target from various perspectives of the bidder firm, such as the synergy hypothesis and the overpayment hypothesis (Moeller *et al.*, 2004; Alexandridis *et al.*, 2012). Under the synergy hypothesis, offer premiums can be viewed as an exchange of the expected synergies following acquisitions (Antoniou, *et al*., 2008), while under the overpayment hypothesis, offer premiums are a result of overpayments, which are largely because of managerial overconfidence (Hayward and Hambrick, 1997; Malmendier and Tate, 2005).

The price that the bidder offers to the target is an outcome of the negotiation between the boards of the target and the bidder, and such a price involves the perception of the managerial view of the firm's valuation. Since how large the M&A offer premiums are paid for the target determines the wealth distribution between the target and the bidder shareholders, an offer cannot be made without an agreement between the two firms involved. With this in mind, analysing takeover motives from either the bidder or the target side alone does not fully account for the rationale behind the offer price.

In this chapter, the reference point theory of M&As was established to explain the offer price. The theory was first developed by Kahneman and Tversky (1979), depicting how people make decisions under risks. Putting this in the context of M&As, the theory sheds light on how managers make major investment decisions facing complex situations. Apart from those behaviour finance theories that explain M&A motives from the outcome of the deal, prospect theory allows use to directly observe the managerial decision-making process of the offer premium.

Edmister and Walkling (1985) suggest that the offer premium reflects the bargaining power of the management teams of the target and the bidder, implying that valuing a firm requires a series of cognitive biases of the management team of the bidder and the target. Due to the complexity of the M&A activity, the offer premium cannot be set precisely. Therefore, addressing the M&A valuation effect requires further investigation from the perspective of managerial cognitive biases.

The reference point effect is an important implication of prospect theory developed by Kahneman and Tversky (1979), affirming that people have a pre-determined piece of information in mind and gauge losses and gains according to it, and people's feelings about the loss and gain tend to diminish according to the reference point. They are more sensitive to the value that is nearer the reference point than far from it (i.e. diminishing sensitivities). In addition, prospect theory posits that people are generally loss-aversion, in that they are not willing to realise loss relative to the reference point they have settled upon. The implications of the reference point theory have been highlighted in psychological research (Tversky and Kahneman, 1974) and also applied in financial and economic research (Shefrin and Statman, 1985; Odean, 1998; Barberis and Xiong, 2009).

A firm's 52-week high is publicly available information and serves as a salient reference price in previous literature (Heath *et al.*, 1999; Huddart, *et al.*, 2009; Burghof and Prothmann, 2011; Baker *et al.*, 2012). In Tversky and Kahneman (1974), people tend to rely heavily on a single piece of information while making decisions. The 52-week high has been widely reported by some financial media, which shapes investors' impression. In addition, investors are likely to be influenced while lacking information. Burghof and Prothmann (2011) suggest that the 52-week high effect is more pronounced when there is high level of information uncertainty.

Baker *et al*. (2012) proposed the reference point theory for M&As, examining how target valuation could alter the offer premium. These authors were the first to put forward the idea of applying the reference point effect on an M&A testing ground. The theory explains the offer premium from a psychological perspective from both the bidder and the target sides. The authors indicate that the reference point measured by the target 52-week high is positively related to the offer premium. They find that bidders tend to offer a price for their targets relative to the target 52-week high, which suggests that both targets and bidders are influenced by the reference dependence bias (i.e. the reference point effect). In addition, it was found that the market tends to react negatively to the bidder announcement when the offer price is paid according to the target 52-week high, which implies that the target 52-week high is employed to reinforce the bargaining position of the target during the course of the deal negotiation. If a high offer price destroys the wealth of bidder shareholders, why bidders pay in accordance with the target 52-week high. On the other hand, what facilities the target in using the reference point requires further examination.

This chapter provides further evidence in relation to the reference point effect on the offer premium the U.K. market. The reference point effect in a comprehensive public acquisition sample of both U.K. domestic bidders and cross-border bidders into U.K. public targets will be investigated. A comprehensive public acquisition sample of both domestic and cross-border will enable assessment of the role of the reference point effect plays in a different setting outside U.S. market. Previous studies show the level of bidding competition is more intensive in the U.K. takeover market than any other takeover market in the world (Moeller and Schlingemann, 2005). Alexandridis *et al.* (2010) found that higher level of competition is accompanied by positive target announcement returns, higher offer premiums and negative bidder announcement returns. Their findings suggest that public targets in a more competitive market have relatively greater bargaining power in M&A activity, and are likely to translate it into higher offer premiums based on their 52-week high. Targets in such an environment are more likely to use a reference point price to negotiate for a possible high price from the bidder. Therefore, the researcher hypothesises that the reference point theory for M&As is pronounced in the U.K. market, which is also competitive.

The researcher contributes to this thread of literature by directly examining the role of reference point theory in the setting of cross-border M&As of U.K. targets. Erel *et al.* (2012) and Uysal *et al*. (2008) affirm that the likelihood of acquisitions increases when the target nation is closer to the bidder nation, which suggests geographical distance impedes information transmission in matters of investments. Domestic bidders are supposed to have informational advantages over cross-border bidders due to the sophisticated local networks. Therefore, it is expected that cross-border bidders lacking information about their targets are more likely to put more weight behind publicly accessible information such as the target 52-week high. Therefore, bidders might have to offer a premium based on the target 52-week high.[30]

[30] Croci *et al.* (2012) provided an alternative explanation regarding information asymmetry and offer premiums, arguing that bidders with favourable asymmetry information tend to offer higher premiums. Bidders can therefore be expected to regard the target 52-week high as its potential profit-generating ability, and offer high premiums when the target 52-week high supports the favourable asymmetry information they might have.

Furthermore, strong investor protection in the U.K. market could potentially reinforce the reference point effect. Under the shareholder-oriented legislation environment, U.K. target managers are unlikely to pursue private benefits at shareholders' expense (Armour and Skeel, 2007). Wulf (2004), however, found U.S. evidence that agency conflicts between the target manager and the shareholder result in low offer premiums as target managers accept cheap offers associated with larger personal benefits. Therefore, the reference point effect should be more pronounced in markets with stronger investor protection than those without. In this pursuit, the U.K. market also provides an ideal testing ground for the reference point theory.

Accounting for the majority of the deals in the European countries, the U.K. takeover market is the second largest market in the world (Faccio and Masulis, 2005; Croci *et al.*, 2010; Gugler *et al.*, 2012).[31] Recent decades have seen a rapid growth of cross-border bidders' acquisitions of U.K. public targets. Many additional studies focus on the cross-border M&As into the U.K. market. Danbolt (1995) attributes the U.K. takeover boom in the late 1980s to the growth of cross-border acquisitions. Following his study, Gregory and O'Donohoe (2014) analysed 119 cross-border bidders into the United Kingdom over the period 1990-2005, where the cross-border acquisitions took up to 41% of their U.K. public acquisition sample.

[31] By studying comprehensive European acquisitions announced between 1997 and 2000, Faccio and Masulis (2005) reported a large proportion of deals involving U.K. bidders (65.3%) and U.K. targets (47.0%). Croci *et al.* (2010) indicate that U.K. takeover market is an active takeover market which accounts for 65% of mergers in Europe. By studying the U.K. completed mergers during the fifth merger wave, Gugler *et al.* (2012) found that the U.K. experiences a similar takeover trend compared with the United States. In the U.K. M&A market, the overall transaction value reached $360 million in 2000. At the same time, the total transaction value for the M&A market in other major European countries was $260 million.

Given the strong investor protection in the U.K. market, cross-border M&As directed at U.K. targets provide a natural hedge against any economic and political instability for the bidder. To the best knowledge of this researcher, this is the first study using a cross-border M&A sample to test the reference point theory of M&As in the U.K. market. The findings of this chapter imply that stronger investor protection enhances the target bargaining power, increasing the probability of the target requires higher offer premiums from the bidder based on the target 52-week high.

The results of this chapter are consistent with the implications of prospect theory. This chapter yields two main findings. First, it became apparent that the target 52-week high is significantly positive relative to the offer premiums, suggesting that an offer price linked to the target 52-week high is perceived as a reference point for the target shareholders in both domestic and cross-border M&As. With the prospect theory framework, targets are generally loss-aversion, in that they are reluctant to accept an offer that is significantly below the reference point, hence pushing their managers to negotiate for higher offer premiums. Targets find it easier to require high offer premiums from the cross-border bidders than from the domestic bidders. However, it was found that bidders no longer pay based on the target 52-week high when the current price deviates greatly from it. It is possible that the target's current price is less likely to reflect its best performance in the recent past, leading bidders to walk away. Our results therefore imply that bidders are bounded by rationality.[32]

Secondly, the market reacts negatively to the bid announcement in the sample consisting of both domestic and cross-border M&As, which suggests that the market views an offer price based on the

[32] Despite the fact that bidders make decisions based on the superficial information they possess they have rationality of preventing things from going wrong.

target 52-week high as an overpayment. While investigating the role of the reference point effect in these two subsamples and using the target 52-week high as an instrumental variable of the offer premium, it was established that the offer premium driven by the reference point effect does not make any greater difference to the bidder announcement returns under the 2SLS estimator than by OLS in the cross-border M&A sample. It does, however, lead to more negative bidder announcement returns under 2SLS in the domestic M&A sample. These results show in the case of domestic bidders who offer a price according to the target 52-week high tends to be perceived as overpayment, whereas the market has already taken the reference point effect into consideration for bidders making cross-border M&As.

Two distinct contributions have been made to M&A literature. First, to the best of the researcher's knowledge, this is the first study to test the reference point effect using cross-border M&A sample. The cross-border M&A sample was used as a control sample for the domestic M&A sample to investigate the reference point effect in a setting where there exists larger information disadvantages. It is expected that the reference point effect more pronounced among cross-border bidders given they have a less sophisticated information networking than their domestic counterparts. Therefore, the reference point theory helps explain how bidders value targets in an environment of information uncertainty.

Second, the reference point theory distinguishes the motive of domestic bidders from cross-border bidders acquiring U.K. public targets. The offer premium based on the reference point has a significantly negative impact on domestic bidders' announcement returns yet an insignificant impact on cross-border bidders' announcement returns. It can be argued that shareholders of domestic bidders may believe that managers pay too much for the target, based on the target 52-week high, and thus react negatively to the bidder announcement, whilst those of cross-border bidders may take the target 52-week high for granted.

The remainder of this chapter is organised as follows: Section 2 provides a literature review related to the offer premium, prospect theory, and cross-border acquisitions. Section 3 develops hypotheses with regard to the reference point effect. Section 4 summarises our data and presents the methodology used in this chapter. Section 5 analyses our results. Section 6 concludes this chapter.

3.2. Literature review

3.2.1. Cross-border M&As in the U.K.

The level of cross-border acquisitions in the U.K. has grown rapidly over the past three decades. Danbolt (1995) held that the U.K. takeover boom during the 1990s was largely because of the increase of cross-border acquisitions. His study documents that cross-border acquisitions into the U.K. accounted for 58% of the total value of this market in 1990. Erel *et al.* (2012) conducted a study into a sample of 56,978 cross-border acquisitions in 48 countries between 1990 and 2007, taking up one third of worldwide acquisitions. It was found that the volume of cross-border acquisitions increased from 2002 to 2007, reaching to 45% of all M&A activities up to 2007. Of particular note, U.K. targets were engaged in 6,753 cross-border acquisitions.

The level of U.K. M&A activity has turned the market into an active takeover market. Faccio and Masulis (2005) in a sample of European M&As over the period of 1997 to 2000 reported that a 47% of acquisitions involved U.K. targets. Consistent with their study, Croci *et al.* (2010) found that the level of U.K. M&As took up 65% of takeover activities in Europe between 1990 and 2005, suggesting that U.K. is the most active takeover market in Europe. Moeller and Schlingemann (2005) argue that the U.K. takeover market was even more active than the U.S. for its strong shareholder right protection and strict legislative environment. Alexandridis *et al.* (2010) ascribe the activity of the U.K. takeover market to intense competition. Their study shows that the number of competing bids in the U.K. was more than that in the United States.

Research has identified the motives of cross-border acquisitions. For example, Danbolt (2004) noted that cross-border acquisitions may not be simply driven by value maximisation as to the same degree as domestic acquisitions. Instead, bidder managers are prone to increase their power, status and salary through cross-border acquisitions. Doukas (1995) and Doukas and Travlos (1988) argue that cross-border acquisitions play a value-enhancing role as they integrate the imperfect capital markets across countries, while Erel *et al.* (2012) noted that cross-border acquisitions were driven by the high quality of governance standards. Their worldwide evidence shows that in countries with a higher quality of corporate governance, accounting standards have stronger shareholder protection for the combined entities. Rossi and Volpin (2004) provided some similar findings, showing that the volume of M&A activity is significantly larger in countries with better accounting standards and stronger shareholder protection. Their findings imply that cross-border acquisitions act as a tool for a country with a substandard legislative environment to access a country with a better legal environment.

One particular U.K. study by Danbolt (2004) identified the international risk diversification hypothesis as the most plausible explanation regarding the motive of cross-border acquisitions in the the U.K. compared with the market access hypothesis and the exchange rate hypothesis. Based on a sample of 514 domestic and 116 cross-border acquisitions in the U.K. setting over the period between 1986 and 1991, Danbolt found that targets gained significantly higher abnormal returns in the cross-border acquisitions than in the domestic acquisitions. In addition, his study shows that geographical distance between the bidder country and the target country affects the wealth effect of the target shareholder. The target abnormal returns were found to be significantly higher when bidders are based outside the U.K. market. However, his results were not robust when different event windows were employed in his study.

Despite the fact that substantial research has identified the benefits brought by cross-border acquisitions, valuing a target is a more difficult task for cross-border bidder managers than for domestic bidder managers given different accounting standards, cultures and a large amount of asymmetric information country by country. Danbolt (2004) noted that cross-border bidders were prone to pay higher offer premiums for their targets due to the size of valuation error caused by these differences between countries.

Uysal *et al.* (2008) in their study of the relationship between geography and bidder returns in the U.S. context found that bidders tended to gain higher returns when acquiring a closer rather than a farther target, which is because of the information advantage obtained from geographical proximity. The authors argue that information is likely to be coded, transmitted, and interpreted in a nearer country rather than a more distant one. In addition, local managers are likely to obtain information through their social networks.

By studying an international cross-border acquisition sample, Erel *et al.* (2012) found the likelihood of acquisitions increases when a bidder country is closer to its target country. Their results show significantly positive coefficients of geographical proximity at a 1% level to explain the bidder returns. Together, bidders engaging in cross-border acquisitions may encounter information barriers that potentially cost the bidder and benefit the target.

3.2.2. The reference point effect on the U.K.

While most work has focused on the U.S. market, it is interesting to explore the reference point effect on cross-border acquisitions in the U.K. public targets. First, the high level of competitiveness in the U.K. market entitles its targets to greater bargaining power, which makes the reference point effect pronounced. Danbolt (2004) affirm that the cross-border target effect means that U.K. targets are outperformed in cross-border acquisitions rather than in domestic counterparts due to risk diversification. In line with his work, Alexandridis *et al.* (2010), by investigating a sample of global M&A activity over the period of 1990 and 2007, found that the level of competition increases with target abnormal returns and the offer premium, and decreases with bidder abnormal returns. Their results show that when the market is more competitive, targets are more likely to translate their bargaining power into benefits. It is generally believed that cross-border bidders have less information advantage than domestic bidders, which reduces their bargaining power over their targets. With this in mind, U.K. targets are more likely to ask for an offer price based on a reference price favouring their shareholders from cross-border bidders than domestic bidders.

Secondly, less severe of agency conflicts between the manager and the shareholder in the U.K. could potentially enhance the reference point effect. Although it is generally believed that the corporate governance system in the U.K. is consistent with the U.S. (La Porta *et al*. 2000), yet the U.K. has a better corporate governance system in relation to M&As compared with the US. Armour and Skeel (2007) in their review of U.S. and U.K. takeover regulations conclude that the U.K. has self-regulation takeover regulations which are strongly orientated towards the shareholder' interests, whereas the U.S. law system entitles managers to absolute discretionary power over the firms. In addition, in the context of takeover defences the authors suggest that the U.K. takeover code implicitly bans any "frustrating actions" against their shareholders, which is different from the United States. Thus, takeover regulations in the U.K. can potentially reduce the conflicts of interests between the manager and the shareholder. The bargaining power of target managers is enhanced under more stringent regulations and target managers can require higher offer premiums from outward bidder managers in M&As.

The corporate governance system is firmly rooted in the legal environment of a country. Research has established some contradictory findings in relation to the divergence of the legal environment effect on shareholder valuation in cross-border acquisitions. Moeller and Schlingemann (2005) analysed bidders' acquisitions of the worldwide targets over the period of 1985 and 1995 and found that bidders tend to pay higher offer premiums to targets with weaker legal environment compared with the United States. Thus, targets with more information asymmetry and poorer corporate governance system tend to accept lower offer premiums, which leaves the bidders opportunities to explore the benefits.[33]

[33] Addressing the U.K. market, Antoniou *et al*. (2008) noted that the lower offer premium does not benefit bidders. However, their study does not include cross-border acquisitions.

Hagendorff *et al.* (2008), analysing the bidder returns of financial firms between 1996 and 2004 in the context of the U.S. and Europe, found that target countries with a weaker legal environment are more likely to accept fewer offer premiums. Unlike Moeller and Schlingemann (2005), Hagendorff *et al.* (2008) argued that information asymmetry and severe agency problems lead to a decrease in the offer premium.

Martynova and Renneboog (2008) studied a sample of listed bidders' acquisitions of both listed and unlisted targets in Europe during the fifth M&A wave. They revealed bidders obtain positive returns when acquiring targets regardless of their legal environment. They ascribed targets in stronger legal environment compared with bidders to the bootstrapping effect that bidders have incentives to get access to better corporate governance system. Based on their study, targets in a strict legal environment are expected to have greater bargaining power than those in a less strict legal environment.

On the whole, studies have highlighted how the legal environment impacts the bargaining power of both the bidder and the target in the context of M&As. However, results are mostly driven in the U.S. or the European sample in different sample periods (Moeller and Schlingemann, 2005; Hagendorff *et al.*, 2008, Martynova and Renneboog, 2008). Little has been done relating to the issue of the U.K. market. Given that the U.K. is a more active and competitive market than that of any other country in the world due to the stringent shareholder protection and legal environment (Moeller and Schlingemann, 2005; Alexandridis *et al.*, 2010), target managers are entitled to greater bargaining power and tend to demand higher offer premiums accordingly. Bidders from countries with relatively a weak legal environment compared with the U.K. are more likely to pay higher offer premiums in exchange for stronger shareholder protection. With a higher level of information asymmetry, bidders are more likely to be misled by the value of the target, thus valuing targets based on readily available information. Results regarding the reference point effect being more pronounced on cross-border M&As.

3.2.3. The target 52-week high as a reference point price

Over the years, attention has focused on a firm's 52-week high as a reference price. The 52-week high is widely reported by a range of media on a daily basis, such as the *Wall Street Journal*, *Yahoo Finance*, *Financial Times*, or the *South China Morning Post*, leading investors to gain full access to information and may use it to assess the firm's performance.

Prior research has identified the 52-week high's salient role as the reference point in the decision-making processes. Baker *et al*. (2012) applied the reference point theory in a comprehensive sample of U.S. public acquisitions, documenting that the reference price measured with the target 52-week high had a substantial impact on M&A decisions-making process. The target 52-week high is found to be significantly positively related to the offer premium and bidders receive a negative market reaction around the takeover announcement date when paying for acquisitions based on the target 52-week high. The authors explained it with the reference point theory, reasoning that targets are less likely to give up firms unless the offer premium can compensate target shareholders' mental loss relative to the reference price. Their statement implies the reason that bidders pay in accordance with the target 52-week high is to avoid target shareholders' loss-aversion, and thus increase the likelihood of deal completion. It was found that shareholders negatively react to the bid announcement since they believe paying based on the target 52-week high is too high. Baker *et al*'s findings (2012) are consistent with the implications of prospect theory.

The 52-week high is significant in explaining investors' behaviour in a variety of studies. Heath *et al.* (1999), for example, found a relationship between individual stock option exercise decisions and the reference point. Their study includes stock option exercise decisions made by over 50,000 employees at seven publicly traded corporations and finds that the number of employee stock option exercise activities nearly doubles when the stock price exceeds the maximum price of the previous year. The authors reason that individual investors have a reference price relative to the maximum stock price when exercising stock options.

Huddart *et al.* (2009) provided evidence in a large sample that there is high trading volume around the past price extremes. Using the weekly observations of 2,000 firms spanning 24 years from 1982 to 2006, the authors found that the past price extremes are significantly related to the trading volume at the 1% level. The results continue to hold after controlling for a series of variables that have significant impact on the trading volume addressed in earlier studies. The authors attribute the salience of the past price extremes to bounded rationality and attention hypotheses that individual investors tend to rely heavily on past price extremes, since they are limited in obtaining and analysing information. Their study complements evidence that the 52-week high has a strong effect on the trading decisions of the investor.

In a similar vein, Burghof and Prothmann (2011) suggest that the 52-week high effect can be explained by the anchoring bias hypothesis, affirming that the 52-week high has strong predictive power when there is a high level of information uncertainty. Investors can obtain profits under a greater level of information uncertainty by focusing on the 52-week high strategy. Their results indicate significant reference point effect on the trading behaviour of the investor.

The use of a certain piece of information as a reference point has been well documented in Tversky and Kahneman's work (1974). It has been well known that human minds are likely to focus on a single event and overlook other events that lead to different consequences when making decisions. Their concept has been put forwarded into various studies and the firm’s 52 week high has been widely adopted as a reference point candidate for its simplicity. Following these studies, the investor’s decisions in conjunction with the firm’s 52-week high were measured.

Following Tversky and Kahneman’s work (1974), Rau and Vermaelen (1998) suggest the over-extrapolation hypothesis indicating that investors put considerable weight behind the past performance of the firm and attribute a higher expectation to the firm’s M&A performance when it achieves a decent past performance, whilst they may underreact to a firm with a worse past performance. Their study suggests that investors have a tendency to make predictions by exploring the firm’s past performance. Based on the assumption that the market is not efficient, investors’ biases on the past price information are likely to come into play in estimating the firm’s future performance.

3.2.4. M&A offer premiums

M&A offer premiums are an important factor that have received great deal of attention from shareholders, as it directly determines how the value of the deal is distributed between the bidder and the target shareholders. Bidders who pay high offer premiums for the target firms tend to signal to their short-horizon shareholders that the firm is hard to generate wealth in the short run even though it is possible for the firm to create value in the long term. On the other hand, target shareholders benefit from high offer premiums. With this in mind, a higher offer premium is generally associated with negative market reactions to the bidder firms but with positive market reactions to the target firms. Prior literature on the offer premium has largely focused on the two completing hypotheses: the synergy and the overpayment hypotheses. The synergy hypothesis tends to rationalise the motive of bidders paying for the target firm as being to create value for the firm, suggesting that managers serve the best interests of their shareholders should finding positive NPV projects, and premiums paid for a target are in exchange for potential earnings to be created by a combined entity. The overpayment hypothesis suggests that bidders are overconfident or the agency problems of the firm are severe, leading managers to offer the target higher premiums in exchange for the control of the target firm.

To justify the motive of offer premiums, Berkovitch and Narayanan (1993) tested three hypotheses of M&A motives in a U.S. study. Their work provided a way of distinguishing synergy from overpayment by looking at the correlation between target and total gains. It is suggested that correlation should be positive if the bid is solely driven by synergy but negative if the bid is solely driven by agency problem, and zero if the bid is solely driven by hubris. Their results indicate that synergy and agency problem primarily explain the motives of U.S. M&As, with which Hodgkinson and Partington (2008), agreed in their study of a sample of U.K. M&As over both the short- and long-term windows, finding that bids are largely motivated by synergy and hubris, and that there is weak evidence of agency-motivated bids.

Re-addressing the offer premium in the U.K. market, Antoniou *et al.* (2008) found that the synergy hypothesis has more explanatory power than the overpayment hypothesis. Their study is based on a sample of 396 successful U.K. public acquisitions between 1985 and 2004. The authors divide the bidder sample into the higher, medium, and lower offer premium sub-portfolios, and conduct both the short- and long-term analysis for each sub-portfolio. It was found that the short-term combined abnormal returns (i.e. synergy) were positively correlated with the offer premium, and the long-term abnormal returns to bidders did not show any significant differences between the higher and the lower offer premium sub-portfolios. It is therefore suggested that synergy is a more plausible motive than overpayment in explaining the offer premium in the United Kingdom.

Another area of literature addresses the offer premium with the overpayment hypothesis. In earlier research, Roll (1986) found that hubris-infected managers are engaged in value-destroying bids. Reviewing a series of U.S. and U.K. studies, the author concludes that managers are accused of overpaying targets. They tend to believe that they have better-than-average skills which lead them to dominate the market. As a matter of fact, neither the bidder nor the target managers can make correct predictions as to a firm's performance around the takeover announcement date. Their results show that the combined entity generates significantly negative abnormal returns following acquisitions, reasoning that managers are irrational and the market is efficient, thus managers are unable to explore mispricing of the market and thus overpaying for their targets due to an overestimation of the expected synergies.

In the light of this, Hayward and Hambrick (1997) investigated a sample of 106 large acquisitions and found evidence of hubris-infected CEOs. These authors focused on large acquisitions representing important decisions for the firms, tending to expose their CEOs to extensive risks. Their study shows that bidders who achieve a decent performance in the recent past receive praise from the media, together with higher salaries from their firms, which become the most important factors leading them to believe that they are important in the firm. Thus, they are affected by hubris while making major investment decisions. Their study suggests that the bidder’s recent performance, the recent media praise for the CEOs, the CEO’s self-importance, and the composite index of these three factors are positively correlated with the size of the offer premium, incurring negative market reaction. Hayward and Hambrick's findings (1997) suggest that higher offer premiums are paid by hubris-infected CEOs.

Using a comprehensive sample of U.S. M&As over the period of 1980-2001, Moeller *et al.* (2004) established a positive relationship between the offer premium and the value of the bidder firm. The authors provided various plausible reasons to explain why larger bidders tend to overpay for their targets than their smaller bidders. First, larger firms generally have less concerned ownership than smaller firms, leading to a weaker link in the interests between the manager and the shareholder. Secondly, managers in a large firm are likely to be more overconfident as they are able to allocate resources more easily, without any obstacles. Thirdly, larger firms are more constrained in finding growth opportunities than smaller firms, thus managers are more likely to dissipate resources in unnecessary projects, which destroy the wealth of their shareholders. Their findings indicate that bidder managers of a larger firm, due to greater autonomy, are likely to be more overconfident than those of a smaller firm.

However, Alexandridis *et al*. (2013) found little evidence that value-destroying acquisitions are caused by large M&A offer premiums to the target shareholders and reason that the negative source of the firm's value is the neglect of the M&A integration process. They find an overall negative relationship between the target size and the offer premium. Their study reported that the mean (median) premium for the larger target is 38% (32%), whereas the mean (median) premium for the smaller target is 54% (45%). Though a lower offer premium is paid to the larger target, it does not create value for the firm. The authors assert that larger targets are value destroying for bidders, due to bidders' neglect of the target post-merger integration.

Incorporating both the synergy and overpayment hypotheses into the M&A study and using the quadric model for a sample of 49 banking industry M&As between 1995 and 2004, Díaz *et al.* (2009) found both the synergy hypothesis and the overpayment hypothesis come into play in their M&A sample. More specifically, the authors suggest a non-linear relationship between the offer premium and bidder abnormal returns. The lower level of the offer premium paid to the target shareholders tends to create synergies for the firm, whilst the value of the combined entity is destroyed when the offer premium further increases. Based on these results, the authors suggest the synergy hypothesis is able to explain the lower level of the offer premium and the overpayment hypothesis is able to explain the higher level.

Many additional studies have largely explained the offer premium in relation to these two competing hypotheses. Bowman and Richards (2013) suggest that a higher offer premium is used in exchange for the market power of the bidder, which generates synergy following acquisitions. Soegiharto (2009) in his study of 3184 mergers between 1990 and 2010 finds no evidence that CEO hubris affects the offer premium. By studying 81 European banking M&A over the period of 1994 to 2000, Diaz and Azofra (2009) found that bidders tend to pay more for targets that have attractive characteristics, such as it is larger size and has a decent recent performance. These authors argue that managers can have substantial private benefits when acquiring another bank successfully, indicating that agency problems are a source of overpayment. By contrast, Kim *et al.* (2011) argued that the offer premium is to reflect upon the bank managers' willingness for future growth. In that case, there are no conflicts of interests between the manager and the shareholder and the primary purpose of paying M&A offer premiums is to exchange for the control of the target firm.

3.2.5. Reference point price and the offer premium

Prospect theory offers new insights into the M&A offer premiums. It addresses the fact that prices offered to the target shareholders not only originate from market reaction but also provides many additional considerations to explain the behaviour of the main M&A participant. It differs from those behavioural finance explanations relating to deal synergies and provides access to the market looking at the negotiation process of the two firms. Since the offer premium is the outcome of negotiation between the boards of the two firms involved, it reflects how the two firms think about the deal during the course of the negotiation. Given a lack of information to observe the negotiation process of the two firms, a high offer premium may signal to the market that the takeover target tends to dominate the negotiation table and it is able to demand a price favouring their shareholders. Bidders, on the other hand, will defend their position by providing market evidence that the target has the potential to create synergies following an M&A deal, thus rationalising the M&A offer premiums. How much a bidder firm should offer for the target firm is far too complex, whilst a single salient piece of public information is more likely to impress the investors' minds. By borrowing this, the bidder tends to rationalise his/her motive for paying for the target and avoids being blamed on the market.

Baker *et al*. (2012) found that bidders tend to offer the target a price that is based on the target 52-week high, indicating that bidders believe that they can beat the target 52-week high and thus create synergies. However, their results show that the offer premium driven by the target 52-week high is negatively related to the bidder announcement returns. The authors studied the role of the target 52-week high plays in M&As. By doing so, they examined the OLS regression results for the bidder announcement returns on the offer premium and compare these with the 2SLS regression results for the bidder announcement on the offer premium, where the target 52-week high is used as an instrumental variable of the offer premium. Baker *et al.* expect less negative or even positive market reactions to bidders under the 2SLS compared with those by the OLS if the target 52-week high reflects higher synergies and a more negative or a less positive bidder announcement returns if the target 52-week high indicates overpayment.

Baker *et al*. (2012) suggest the role of the target 52-week high is an overpayment. Specifically, the coefficient of the offer premium predicted by the OLS estimator is -0.040, suggesting that an increase of 10% for the offer premium leads to a 0.4% decrease in the bidder announcement returns, while using the target 52-week high as an instrumental variable of the offer premium. So, when using the 2SLS estimator, the coefficient for the offer premium becomes -0.245, suggesting that the target 52-week high leads to more negative bidder announcement returns. Their results indicate that the market believes the bidders' offer to the target, whose current price is far below its 52-week high, is an overpayment whereas the bidder may believe such a target leaves the firm more room for synergy creation. Therefore, the manager and the shareholder tend to interpret this certain piece of price information differently.

3.3. Hypothesis development

According to prospect theory, people tend to gauge gains and losses relative to a reference point, and are unwilling to realise mental loss relative to this particular point. Since valuing a target is a difficult task in M&As, the 52-week high is likely to be used for its simplicity. Burghof and Prothmann (2011) suggest the use of a reference price increases with the level of information uncertainty. Moreover, the 52-week high reflects a firm's recent best performance which provides predictions for the future performance (George and Hwang, 2004). Finally, based on some experimental evidence from Tversky and Kahneman (1974) and Kahneman and Tversky's works (1979), investors tend to rely on a piece of information while deciding an atmosphere of risk and uncertainty. In the meantime, the 52-week high as a reference price has been drawing the attention of the investor through a massive report by the financial media.

The use of the reference point can be explained by the psychological influence of both the bidder and the target. Target shareholders may find it hard to gauge managerial performance in M&A activity, since they do not know for how much exactly their firm should be sold. Lacking information and time in which to process the information related to the deal, target shareholders are likely to estimate their firm based on a straightforward relevant price measure, such as the 52-week high. With a strong loss-aversion tendency, they are not willing to see their firm, sold at a price significantly below their 52-week high.

The psychological influence among the target shareholders has a substantial impact on the decision-making processes of their manager. If the target manager sells a firm at a price far below the 52-week high without a rational motive, the shareholders must blame their managers by arguing that they would have been better off if they had not sold the firm. Managers thus may incur legal risks. The magnitude of the premium received by the target manager can be seen as a judgement of whether or not the manager aims to protect the wealth of their shareholders. It has been shown that U.K. has a high quality of corporate governance system, which leads to less severe conflicts of interests between the managers and the shareholders. In this stringent legal environment and shareholder protection, the wealth of the target shareholders is the first priority. Target managers would bargain for the premium based on the 52-week high, which is a visible price for the market. Baker *et al*. (2012) indicate that bidders tend to pay a price based on the target 52-week high if it is closer to the target current price, arguing that it might be a true reflection of the real performance of the target. Together, a positive correlation between offer premiums and the reference price measured by the target 52-week high in the U.K. market is expected.

H1a: There is a positive correlation between offer premiums and the reference price in the U.K. market.

According to Erel *et al.* (2012) and Uysal *et al.* (2008), cross-border bidders have greater disadvantages in gathering information than domestic bidders due to geographical distance. As the level of information asymmetry increases, cross-border bidders are less likely to accurately estimate the true value of the target, whereas domestic bidders tend to collect exclusive information from their local social networks. In such a case, cross-border bidders are more likely to measure firm valuation based on the target 52-week high.

In addition, a more competitive market environment tends to increase target bargaining power, thus enhancing the reference point effect. Targets may find it easier to negotiate the offer premium based on their 52-week high with the cross-border bidders than with the domestic bidders. In Edmister and Walkling (1985), the offer premium is the outcome of negotiation. In the light of this, targets could require higher premiums when they have greater bargaining power. Therefore, a stronger reference point effect on cross-border acquisitions toward U.K. targets is expected.

H1b: There is a positive correlation between offer premiums and the reference price when cross-border bidders acquire U.K. targets.

Moeller *et al.* (2004) suggest that overpayment increases the wealth of the target shareholder and decreases the wealth of the bidder shareholder. The target 52-week high is perceived as the recent best performance of the firm. Bidder managers are expected to possibly a lower price so as to increase the wealth of their shareholders. Bidder shareholders may simply believe their managers pay too much if their payment is based on the target recent best performance. It is generally believed that an overpayment leads to a negative market reaction since bidder shareholders may believe such premiums paid to the target are hard to recover following acquisitions. There, bidders' performance around the announcement date are expected to be negatively correlated to the offer premium when deals are made with regard to the reference price.

H2: Bidder short-run performance is negatively correlated to offer premiums when deals are made with regard to the reference price.

3.4. Data and methodology

3.4.1. Data

The initial sample contained 4,324 acquisitions of U.K. public firms announced between January 1, 1985, and December 31, 2014, extracted from Thomson One Mergers and Acquisitions Database. The Database contains deal-related information, including the deal number, the DataStream Code of the firm, which is used to match a firm's accounting data from DataStream, the transaction value, the shares percentage acquired by the bidder during the course of the transaction and share percentage the bidder owned after the transaction, which will aid in determining whether a firm's control has been transferred in a transaction, the payment method, deal choice, deal type, deal attitude, SIC code of the firm from which it can be judged whether or not the deal is diversified.

The sample involved 3,078 U.K. domestic acquisitions and 1,246 cross-border acquisitions into the United Kingdom. Deals with a missing offer premium has been cleaned, yielding 1,826 acquisitions. Observations with missing value of bidder 5-day CARs around the announcement date were excluded, which left a sample of 1,435 acquisitions.[34] Acquisitions with the information of payment method were required, which left a sample of 1,212 acquisitions. Variables of both bidder and target firm characteristics used in the regressions were not a missing value, which resulted in a final sample of 606 acquisitions, with 451 domestic acquisitions and 155 cross-border acquisitions.

[34] The sample size reduces mostly because of bidders from countries without stock market returns, which is in line with Erel *et al.* (2012).

Table 3.1 depicts the summary statistics for a sample of 606 public acquisitions studied in this chapter. The mean value for the deal was $606.4 million. Of these 606 acquisitions, 380 were all-cash acquisitions, 108 were all-stock acquisitions. There were 292 diversified acquisitions, 25 hostile acquisitions, and 408 tender offers in the sample.

Figure 3.1 plots a time-series of number of deals for the full sample, the U.K. domestic sample, and the cross-border sample. Overall, the sample period analysed covered the fifth and the sixth merger waves, from 1993 to 1999, and started from 2003, respectively. The number of deals for the three samples share a similar trend over the sample period. The number of deals increased throughout the 1990s, and peaked in 1999. They started to increase from 2003 after a sharp decrease in 2000, the year the stock market crashed. The number of deals increased for several years from 2003 and 2006 before they declined in 2007.

Figure 3.2 plots the time-series of total deal value for the full sample, the U.K. domestic sample, and the cross-border sample. The overall trend of the total deal value is consistent with that reported in *Figure 3.1*. Interestingly, the overall trend of the total deal value of the cross-border acquisitions has changed more dramatically than that of the domestic deals, and is larger than that of the domestic sample in certain periods, such as 1999 to 2000, 2005 to 2007, and 2012 to 2013.

Table 3.2 shows the distribution of bidder nations. The sample consists of bidders from 13 countries. Amongst them, a large majority are U.K. bidders, taking up 74.42% of the full sample. Of 451 cross-border acquisitions, 67 acquisitions involve U.S. bidders who dominate foreign bidders in the cross-border acquisition sample, taking up 43.22%. These results may imply that U.S. firms who share the same language and have a similar cultural background to the U.K. firms are more likely to undertake an acquisition of a U.K. target.

The thesis defines the offer premium (the target 52-week high) as the logarithmic term difference between the offer price (the target's highest stock price over 335 calendar days ending 30 days prior to the announcement date) and target stock price 30 days prior to the announcement date.[35] The measure of offer premiums reflects the target expected gains during M&As, a concept which has been widely used in related literature (Betton *et al.*, 2009, Eckbo, 2009).[36]

A histogram of the difference between the offer premium and the target 52-week high, as shown in *Figure 3.3.* The *x*-axis is in the range of -500% to 500%, and the *y*-axis shows the density. The shape of the histogram indicates the extent to which the target 52-week high approaches the offer premium within the sample.

The reference point effect on offer premiums was studied by controlling for a series of deal, bidder, and target characteristics, as reported in *Table 3.3.* Edmister and Walkling (1985) documented that cash payments are associated with higher offer premiums compared with stock payments, since targets require higher offer premiums to compensate for the tax expense generated by capital gains. Faccio and Masulis (2005) suggest that diversified mergers lead to greater uncertainty about bidder

[35] Offer Premiums = log (Offer Price$_{i,t}$) – log (Stock Price$_{i,t-30}$). Target 52-week high = log (Target 52-week Highest Stock Price$_{i,t-30}$) – log (Stock Price$_{i,t-30}$). The next trading day's stock price was used when an offer was announced at a weekend. The logarithmic term was used to counter the positive skewness bias of offer prices.

[36] Prior research measures offer premiums with target abnormal returns (Schwert, 1996) questioned by Eckbo (2009). The results are robust when a wide range of measures used for offer premiums, including target abnormal returns similar to Schwert's approach and the target's price in a week and 3 months before the announcement date.

value, which implies that targets should be reluctant to accept risky offers unless higher offer premiums are offered in compensation. A positive relationship between offer premiums and hostile acquisitions is expected, since bidder managers pay higher offer premiums to persuade target managers to accept an offer that may risk their professional career following a takeover. Bradley *et al.* (1988) suggest that tender offers are associated with higher offer premiums since payment for the manager goes to the shareholder.

Relative size is the deal value divided by the bidder market value. The market value (MV) is defined as the current share price multiplied by the number of ordinary shares, expressed in the logarithmic form. The market-to-book value (MTBV) is defined as the market value of the ordinary (common) equity divided by the balance sheet of ordinary (common) equity in the company. Target volatility is the standard deviation of target daily returns over the 335 calendar days ending 30 days prior to the announcement. Run-ups are the pre-bid run-up prices calculated from 365 calendar days prior to the takeover announcement date to seven calendar days before the takeover announcement date [-365, -7]. All continuous data were winsorised at 1% and 99% levels to eliminate the outlier effect that both extremely small or larger figures bias our results.

Relative size is defined as deal value divided by bidder's market value, which measures the deal scale. Previous research has highlighted a significant impact of the size effect on the offer premium (Asquith *et al.*, 1983; Dong *et al*., 2006). Firm size was measured as logarithmic term of market value of firms. The mean value for firm size in the sample is larger for bidders than targets, 6.588 to 4.894, suggesting that takeover bidders are generally stronger than their targets. This result is consistent with prior M&A literature (Fuller *et al*., 2002; Moeller *et al*., 2004). A positive relationship between the offer premium and bidder size, and a negative relationship between the offer premium and target size are expected. According to Moeller *et al.* (2004), larger bidders tend to pay more for targets as they are concerned with fewer restrictions in utilising the firm's resources and thus become overconfident. Alexandridis *et al*. (2013) suggest a robust negative relationship between the offer premium and target size, implying that bidders' acquisitions of a larger target are followed by a more complex process for synergy creation, leading bidders to pay for targets with lower offer premiums in exchange for expected synergies.

Firm's growth opportunities were measured with market-to-book value (MTBV), which is consistent with Rau and Vermaelen (1998). A higher MTBV indicates that the firm has a better investment opportunity, whilst a firm with a lower MTBV suggests that the firm is short of investment opportunities. Mean (median) bidder market-to-book value for the sample is on average higher than that of the target, which suggests acquisitions involve a higher growth opportunities bidder and a lower growth opportunities target. This is also predicted by the Q hypothesis of M&As (Lang, Stulz, and Walkling 1989). A higher Q bidder is more likely to create synergies through acquiring a lower Q target, thus it is willing to pay higher offer premiums for the targets. It is expected that offer premiums are positively correlated to the bidder MTBV and are negatively correlated to the target MTBV. A similar prediction can be made when the MTBV is a proxy for the firm's valuation as per Dong *et al*.'s work (2006). Thus, a high MTBV firm indicates that the firm is likely to be perceived as a more overvalued firm whilst a low MTBV firm suggests the firm is likely to be perceived as undervalued. It should be expected that a higher MTBV bidder in an attempt to dilute their overvaluation tend to offer higher offer premiums to acquire a firm that is potentially being undervalued (i.e. the lower MTBV targets). Therefore, in both cases, the offer premium is positively (negatively) related to the bidder (the target) MTBV.

Pre-takeover price run-ups of both the bidder and the target (RunUps) were also controlled for while analysing the reference point effect on the offer premium. Schwert (1996) found that the target price run-ups increase the takeover costs of the bidder, indicating a dollar increases in target price run-up leads to an increase of 1.13 dollars for the offer premium. It is suggested that the price run-ups are a result of the market-wide valuation, leading the researcher to control for both the bidder and target price run-ups. A mean (median) price run-up for the bidder is higher than that for the target. In addition, the chapter accounts for the target volatility (Volatility) using the standard deviation of target daily returns for the 335 calendar days ending 30 days prior to the announcement date. Volatility of the firm represents the information asymmetry of the firm. A firm with high information asymmetry tends to signal to the market that the firm is associated with high risks. Therefore, it can be expected that the bidder tends to pay a higher offer premium when the true position of the target firm is hard to justify.

The reference point effect on bidder announcement returns has been investigated by controlling for a set of deal and bidder characteristics, since these factors have significant impacts on bidder announcement returns, which are documented in prior M&A literature (Travlos, 1987; Rau and Vermaelen, 1998; Alexandridis *et al.*, 2010). More specifically, the method of payment for acquisition (i.e. whether a means of payment for finance an acquisition is purely financed by stocks, or cash), deal relatedness (i.e. whether or not the two firms involved in an acquisition is in the same industry), deal type (i.e. tender offer or merger) and deal attitude (i.e. whether the deal is unsolicited) were also accounted for. As to bidder characteristics, bidder size, bidder growth opportunities and bidder pre-takeover period price run-ups were also taken into consideration.

Table 3.4 reports the mean value of a list of variables for two samples studied in this chapter: the cross-border and the domestic acquisitions. The mean offer premium paid by the cross-border bidder is 34.7%, which is significantly higher than that paid by the domestic bidder (27.6%), with a mean difference of 7.1% at 1% significance level. There is no significantly difference for bidder abnormal returns calculated by either the market-adjusted model or the market model. The mean value for the target 52-week high is 27.7% for the cross-border acquisition sample, which is 4.4% higher than for domestic acquisitions, suggesting that the reference point effect is more pronounced in the cross-border acquisition sample than in the domestic acquisition sample. The cross-border bidder is found to be stronger than the domestic bidder, reflected in significantly larger MV and higher MTBV than those of the cross-border acquisition sample, suggesting that cross-border bidders who are more disadvantageous in terms of information than domestic bidders should be strong enough to overcome information asymmetry. The statistics further indicate that the information asymmetry for the cross-border bidders tends to be larger than for their domestic counterparts.

3.4.2. Methodology

3.4.2.1. Piecewise linear regression and local polynomial smooth procedure

A non-linear relation between the offer premium and the target 52-week high is expected, based on the shape of the value function proposed by prospect theory. According to prospect theory, targets have a reference point in mind when selling the firms. Target shareholders may feel loss about the deal their managers make when they receive a price that is lower than their 52-week high. This loss-aversion occurs when targets lose the control of the firm. They may argue that the firm can perform at a level similar to their 52-week high if their managers had not accepted the offer. Therefore, bidders should take this into consideration and offer a price that is similar to the target 52-week high to compensate the target's mental feeling about the loss of control of the firm.

The OLS estimator was not applied in this context as it is a linear model assuming that the offer premiums consistently increase with the target 52-week high. However, it is not the case as bidders may walk away if the target's current price is hard to capture its 52-week high price. Therefore, the piecewise linear regression was employed to examine the relationship between the offer premium and the target 52-week high. The piecewise linear function is a function of different linear segments, and does not require an assumption of the shape of the data, which facilitates the analysis. It is worth noting that bidders may not be able to offer a price to the target, whose current price is unlikely to reflect their 52-week high. Bidders who pay according to such a 52-week high may find it hard to rationalise the M&A motive to their shareholders. In addition, the marginal pain of the target decreases when mental loss increases, leading additional costs according to the target reference point to be reductant. Therefore, bidders may push up a price to acquire a target with a price closer to the reference price and may not be willing to pay higher offer premiums for a target with a significantly lower current price than the reference price. This suggests a consideration of diminishing sensitivities, which is one implication of the prospect theory, while building the model to study the reference point effect on the offer premium. The value function suggests that in both loss and gain domains, marginal considerations tend to diminish relative to a reference point.

Though the quadratic function has been widely used in estimating the non-linear relationship, Gould (1993) argue that the quadratic estimator has a reverse effect, which makes the slope hard to be determined. The author suggests that the piecewise linear function outperforms both the linear function and quadratic function in fitting the true shape of observations. Morck *et al.* (1988) conducted a piecewise linear function to examine the relationship between management ownership and the firm's market value.

The local polynomial estimator will be employed, such a technique is to take the average of several neighbourhood points and smooths the chart. Avery (2013) suggests that a local polynomial estimator is the best linear smoother for point estimation. As depicted in Figure 3.4, the offer premium increases with the target 52-week high, and this relationship can be observed clearly in three linear segments with different slopes. The lower linear segment lies below 30% of the target 52-week high, the middle linear segment is in the range of 30% and 70% of the target 52-week high, and the upper linear segment is above 70% of the target 52-week high. [37] The piecewise linear function is presented in the following, where the coefficient is the change in slope from the preceding group.

$$f(1) = \min\left(52weekhigh_{i,t-30}, 0.3\right) \tag{3.1}$$

$$f(2) = \max\left(0, \min\left(52weekhigh_{i,t-30} - 0.3, 0.4\right)\right) \tag{3.2}$$

$$f(3) = \max\left(52weekhigh_{i,t-30} - 0.7, 0\right) \tag{3.3}$$

[37] The F-test and the Chow test were performed to examine the break points for the three target 52-week high segments and the results show that the three segments are significantly different.

$$OfferPremiums_{i,t} = \alpha + \beta_1 f(1) + \beta_2 f(2) + \beta_3 f(3) + \varepsilon_{i,t} \tag{3.4}$$

where $52weekhigh_{i,t-30}$ is defined as the logarithmic term difference between the target's highest stock price over 335 calendar days ending 30 days prior to the announcement date and the target stock price 30 days prior to the announcement date. $f(1)$ through $f(3)$ are the transformation of the target 52-week high, the sum of $f(1)$ through $f(3)$ is equal to the target 52-week high. β_1, β_2 and β_3 are the coefficients for each linear segment, which represent the slopes of each segment.

3.4.2.2. Short-term event study

Short-term event study is a statistical tool for empirical research, and captures the market reaction around the announcement date of M&As. Franks and Harris (1989) suggest that changes in stock market should be fully captured in the several days around takeover announcement dates. Following Brown and Warner (1985) who suggest that the standard procedures are well-specified and have indicative power on firm performance, the daily stock returns with the short-term event study is examined.

3.4.2.2.1. Market-adjusted model

Brown and Warner's standard short-term event study (1985) was used to calculate the CARs for the bidder and the target in the five-day window (-2, 2) around the announcement date. The share returns from the daily share price were calculated as follows:

$$R_{i,t} = \ln P_{i,t} - \ln P_{i,t-1} \tag{3.5}$$

where $R_{i,t}$ is the daily normal return of the firm *i* on day *t*, $P_{i,t}$ denotes the share price of firm *i* on day *t*, and $P_{i,t-1}$ denotes the firm's share price lagged by a day.

$$R_{m,t} = \ln P_{m,t} - \ln P_{m,t-1} \tag{3.6}$$

where $R_{m,t}$ relates to the daily normal return of the firm *i* while $P_{m,t}$ and $P_{m,t-1}$ refer to the stock price of the firm on day *t* and lagged by a day, *t-1*. The FTSE All-Share Index was used to proxy for the value-weighted market index in the United Kingdom. The total market country index was used for the other countries, which is defined as "TOTMK" plus "Country Code" in Datastream. For example, US market index is "TOTMKUS". The difference in the logarithm of the price was used performed to capture the compound effect of the share price (Fama *et al.*, 1969, Brown and Warner, 1985). The abnormal returns was calculated with the market-adjusted model:

$$AR_{i,t} = R_{i,t} - R_{m,t} \tag{3.7}$$

where $R_{i,t}$ denotes the return of firm *i* on day *t* and $R_{m,t}$ denotes the value-weighted market index return of firm *i* on day *t*. The market-adjusted model assumes that $\alpha = 0$ and $\beta = 1$ in our sample. The abnormal returns (i.e. ARs) are summed to yield the CARs for the firm over the five-day window (-2, 2) around the announcement date as follows:

$$CAR_{i,t} = \sum_{i=0}^{n} AR_{i,t} \tag{3.8}$$

The market-adjusted model, as one of the main standard event methodologies, is widely employed to measure firm takeover performance around the announcement date (Dong *et al*., 2006, Guo and Petmezas, 2012). The model is believed to be particularly appropriate to assess the *ARs* of the firm, as the model takes the market wide influence on the individual firm into consideration. We use market-adjusted model to calculate CARs three and five days around the takeover announcement date.[38] The 5-day CARs are reported as our main results while the 3-day CARs are used as a robustness test.

In order to assess the mean difference of CARs for the subsamples of domestic and cross-border M&A deals, we employ *t*-statistics which is according to Seiler (2004). It allows the researcher to investigate whether there are any distinguished characteristics of each portfolio CARs. The formula is presented as follows:

$$t = \frac{\overline{AR_T}}{\sigma(AR_T)/\sqrt{n}} \tag{3.9}$$

where $\overline{AR_T}$ denotes to the sample mean and as noted by Lyon *et al*. (1999:173), $\sigma(AR_T)$ denotes to the cross-sectional sample standard deviation for the sample of n firms.

3.4.2.2.2. Market Model

M&A literature also suggests abundant methods to be available to detect the short-term abnormal returns. The market model was used as an alternative short-term event method to calculate the firms'

[38] See also Fuller *et al.* (2002) and Faccio and Masulis (2005).

announcement returns, which is following Eckbo *et al.* (2016), who used the market model for a U.S. study, and Gregory (1997), who used this method for a U.K. study. The model is specified as follow:

$$R_{it} = \alpha + \beta_1 R_{mt} + \varepsilon_{it} \tag{3.10}$$

where R_{it} denotes holding period returns for firm *i* in the period *t*, R_{mt} denotes the value-weighted market index. Similar to the market-adjust model, the FTSE All-Share Index was employed as a proxy for the U.K. and total market country index was used for the other countries, which is defined as "TOTMK" plus "Country Code" in DataStream, as described in the methodology session of market-adjusted model. ε_{it} denotes the error term. The market model parameters were estimated over the window from 261 to 28 trading days prior to the announcement date [-261,-28], and calculate CARs in both 3-day and 5-day event windows, and reported as robustness tests.

3.4.2.3. Multivariate analysis

The multivariate regression was used to examine the effect of offer premiums and the reference point on firms' short-run performance. According to Draper and Paudyal (2008), multivariate analysis is superior in analysing the causation relation between the market reaction and related variables.

$$CAR_{i,t} = \alpha + \sum_{i=1}^{N} \beta_i X_{i,t} + \varepsilon_{i,t} \tag{3.11}$$

where $CAR_{i,t}$ denotes the short-run CAR of firm *i* on day *t*, $\sum_{i=1}^{N} \beta_i X_{i,t}$ denotes all the explanatory variables in the model, and $\varepsilon_{i,t}$ denotes the error term.

3.4.2.4. Two Stage Least Squares (2SLS)

A 2SLS estimator was constructed to test the effect of offer premiums on bidder performance around the announcement date using the target 52-week high as an instrumental variable (IV). The use of IV is to control endogenous variable. In this chapter, the regression of the offer premium on bidders CARs was suspected with endogeneity issues. If the market views an offer price based on the reference point as an overpayment, there are more negative market reactions generated by the 2SLS estimator than the OLS estimator, and if the market views an offer price based on the reference point as synergies, there are more positive market reactions generated the 2SLS estimator than the OLS estimator. With the target 52-week high, the chain response of the offer premium to the bidder announcement returns was able to examine. The use of the target 52-week high as an instrumental variable is based on the theory of the offer premium. Larcker and Rusticus (2010), in their study regarding the use of instrumental variables, suggest that instrument variables are eventually justified by the theory. Equations of the two stages of the 2SLS estimator were presented as follows:

First stage:

$$OfferPremiums_{i,t} = \alpha + \beta_1 52weekhigh_{i,t} + \varepsilon_{i,t} \tag{3.12}$$

Second Stage:

$$CAR_{i,t} = \alpha + \beta_1 OfferPremiums_{i,t} + \sum_{i=1}^{N} \beta_i x_{i,t} + \varepsilon_{i,t} \tag{3.13}$$

where $OfferPremiums_{i,t}$ in the first stage regression were calculated as the logarithmic term difference between the offer price and target stock price 30 days prior to the announcement date. $OfferPremiums_{i,t}$, presented in the second stage, were the fitted value obtained from the first stage regression. $52weekhigh_{i,t}$ is the target reference point, which is defined as the logarithmic term difference between the target's highest stock price over 335 calendar days ending 30 days prior to the announcement date and target's stock price 30 days prior to the announcement date. The fitted value from the first stage regression was obtained and used to replace the offer premiums in the second stage regression. The target 52-week high is used as an instrumental variable of offer premiums as it reflects the target performance, which is uncorrelated with bidder announcement returns and strongly correlated with the offer premium.

The validity tests of the use of IV by performing Hausman test as well as the first-stage *F*-test were conducted. The null hypothesis of Hausman test is that OLS has no measurement error or OLS estimates are efficiency. The null hypothesis of the first-stage *F*-test suggests that there is no relation between the endogenous variable and the instrumental variable (or there is no weak instrument problem). According to Stock *et al.* (2002), the sampling distribution is generally nonnormal when weak instrument problems exists, which lead to an unreliable estimation. Therefore, the first-stage *F* test was employed to combat this problem, Stock *et al.* indicate the first-stage *F*-statistics should be large enough to reject the null hypothesis.

3.5. Empirical results

3.5.1. The reference point effect on the offer premium

In this session, the piecewise linear regression of the offer premium on the reference point effect will be conducted. Based on the prediction of prospect theory value function, our hypothesis proposes that *there is a positive correlation between offer premiums and the reference price in the U.K. market*. The main variable of interest to be investigated is the target 52-week high. Other variables that have important impacts on the offer premium according to the M&A literature were controlled for in the regressions.

The researcher first examines the correlation between the offer premium and the target 52-week high with kernel density graph. As reported in *Figure 3.3*, the offer premium is highly correlated to the target 52-week high. In most cases, offer premiums are paid around the target 52-week high, suggesting that the reference point effect is pronounced in the sample.

Based on the diminishing sensitivity, it was expected that the offer premium tends to be more relevant to the target 52-week high in the lower 52-week high level for the rationale that the target's current price is likely to reflect its recent best performance, leading the bidder to believe that it is possible to generate synergies following an M&A deal, while the offer premium is less relevant to the target 52-week high in the higher 52-week high level, implying that the bidder may walk away when the target's current price is unlikely to reflect its recent best performance.

Figure 3.4 supports our prediction by portraying a non-linear relationship between the target 52-week high and offer premiums. The function predicts that targets have less marginal consideration about loss. As noted earlier in the methodology section, the first linear segment lies below 30% of the target 52-week high (i.e. Low52-week high), the second linear segment lies between 30% and 70% of the target 52-week high (i.e. Mid52-week high), the third linear segment lies above 70% of the target 52-week high (i.e. High52-week high).

Table 3.5 shows a positive relationship between the offer premium and the target 52-week high, which supports our hypothesis *H1a*. Specification (1) shows that a 10% increase of the target 52-week high leads to an increase of 2.08% of the offer premium (coefficient = 0.208, t = 5.180). As we expected earlier, the offer premium is less relevant to the target 52-week high when the level of the target 52-week high is high or the current price is unrealistically far below the target 52-week high. Thus, it leads us to study the reference point effect on the offer premium in the three different segments predicted in the piecewise linear regression: the low target 52-week high, the mid target 52-week high and the high target 52-week high. Specification (2) reports the target 52-week high on the offer premium without any other control variables. It can be seen that the fitness of the specification is only 5.5%, which means the model might not be well-specified. Three different sets of variables in the specifications (3) to (5) were taken into accounted. Specifically, the deal and target characteristics were controlled in specification (3), deal and bidder characteristics were controlled for in specification (4).

Specification (5) of this table shows the main results for the reference point effect on the offer premiums. The offer premium is less relevant to the target 52-week high when the level of the target 52-week high increases. The offer premium increases by 4.33% for a 10% increase in the low level of the target 52-week high, and increases by a 2.05% for a 10% increase in the middle level of the target 52-week high, whereas the high level of the target 52-week high is insignificantly related to the offer premium.[39] Results obtained in this table suggest that bidders pay according to the target 52-week high. However, they are rationally limited when the target 52-week high is unable to provide any rationale motive for a higher price. In that case, bidders may find it hard to pay according to the

[39] Our results are also consistent when controlling for the firm's leverage and year-, industry-, and firm-fixed effects.

target 52-week high, which could create wealth for their shareholders when the target's current price deviates unrealistically far from the target 52-week high. The results obtained in this table can be also interpreted within the prospect theory framework: while the price that deviates more from the reference point tends to decrease the marginal considerations about the loss of the target (if the target views selling the firm as a loss), leading higher M&A offer premiums are reductant for the bidder. By doing so, bidders tend to be reluctant to pay offer premiums according to the target 52-week high when the target 52-week high is high. The results are more pronounced compared with the U.S. findings of Baker *et al.* (2012).

The results reconcile several predictions of prospect theory. People have reference-dependence bias in that their decision on the offer premium is based on a salient piece of price information. Specifically, the offer price is found to be set based on the target 52-week high. Bidders use the target's recent best performance as a reference price to suggest that the primary M&A motive for the bidder is synergy generation, since targets whose reference point price is closer to their current performance is likely to convince bidders to pay according to their reference prices.

The results are also in line with the diminishing sensitivity of prospect theory. It can be seen that the lower level of the target 52-week high has more substantial impacts on the offer premium than the higher levels. Bidder managers in the lower segment of the target 52-week high tend to believe acquiring targets whose current price deviates greatly from the reference price is likely to leave more room for synergy exploration and thus pay generous for targets than the scenario when the target's current price is closer to the reference price. While in the higher segments of the target 52-week high, bidder managers tend to believe the target 52-week high is unable to deliver real support for the true performance of the target, leaving the reference point effect on the offer premium less relevant. This is in line Baker *et al*'s view (2012) that bidders are cautious about those targets, whose current price deviates greatly from the 52-week high, since they are more likely associated with bankruptcy risks, violating the reference point effect. It is also possible that target managers are unable to bargain a higher offer premium based on a high level of reference points.

Further, investors generally have a loss-aversion tendency, and such losses are gauged in relation to the reference point. Based on these results, bidders pay a price related to the target 52-week high to compensate for target shareholders' mental loss when giving up the control of the firm. Target shareholders, whose firm's current price is close to the 52-week high, may presumably believe that the firm would be better off if it was not acquired. In that case, bidders have to compensate the targets' loss with an offer premium.

In addition to those explanations above in relation to prospect theory, it is expected that the stronger legal environment and shareholder protection in the U.K. market than any other market may result in a stronger reference point effect. One possible explanation is that in a market where the interests of target managers and shareholders are closely aligned, managers are less likely to conduct any frustrated actions against their shareholders. Thus, target managers are likely to reinforce their bargaining power in M&As.[40]

[40] The effect of corporate governance on the firm's bargaining power is a recommendation for future research highlighted in the Chapter 6 of this thesis.

It is worth noting that that the variable *Cross Border* is positively related to the offer premium, reported in *Table 3.5*. *Cross Border* is a binary variable, taking value of 1 if acquisitions are undertaken by cross-border bidders and 0 otherwise. Our results are in accord with the view of Rossi and Volpin (2004) that stronger shareholder protection results in lower costs of capital favouring the intense competition environment, increasing offer premiums. According to Edmister and Walkling (1985), the offer premium represents the bargaining power of negotiators. In the U.K. settlement, cross-border bidders have less bargaining power than domestic bidders engaging in acquisitions, resulting in larger M&A offer premiums.

According to this prediction, the reference point effect will be further tested by cross-border acquisition and domestic acquisition subsamples. It is proposed that *there is a positive correlation between offer premiums and the reference price when cross-border bidders acquire U.K. targets*. Targets with greater bargaining power are more likely to use the reference point to require a higher offer premium.

Table 3.6 shows a slightly stronger reference point effect on the offer premium for the cross-border acquisition subsample than for the domestic acquisition subsample. Several possible explanations for this finding are offered. First, it is suggested that geographical difference creates greater information barriers for cross-border bidders than for domestic bidders, which weakens cross-border bidders' bargaining position. With less information about the target, cross-border bidders are likely to estimate the target value with more relevant and easily obtainable information such as the target 52-week high.

Further, it can be argued that one of the main takeover motives for cross-border bidders is to access the foreign capital market to integrate their resources, and obtain strong shareholder protection when bidders from a country with relatively weaker shareholder protection than the target country. With this in mind, cross-border bidders are likely to be influenced by the target 52-week high. According to Alexandridis *et al*. (2013), acquiring large targets is a complex task which requires considerable information, while it is impossible to assess the firm value given limited time and information. Thus, valuing targets based on its target 52-week high simplify the acquisition process, giving cross-border bidders quick access to the U.K. market. It is quite common that cross-border bidders are relatively those large companies, as they should be strong enough to overcome barriers. According to Moeller *et al.* (2004), managers from large companies have easier access to the firm's resources, making them more likely to overpay for targets.

Information disadvantages arising from geography weaken bidder bargaining position. Compared with Baker *et al*.'s work (2012) focusing on the reference point effect on U.S. domestic M&A deals, results obtained in this chapter show that the target 52-week high has greater predictability for offer premiums for both cross-border and domestic acquisitions in the United Kingdom. Cross-border and domestic bidders tend to have similar bargaining power, as reflected in the coefficients of the target 52-week high. However, the size effect distinguishes the two subsamples. Bidder size is more significant for domestic acquisitions than for cross-border acquisitions, suggesting that domestic bidders tend to be more consistent with the hubris hypothesis cited in Moeller *et al*.'s work (2004), affirming that a larger firm is likely to be more overconfident than that of a smaller firm. The further analysis aims to explore why cross-border bidders tend to pay similar M&A premiums relative to the target 52-week high as domestic bidders.

In *Table 3.6*, the offer premium is positively related to the relative size, bidder size, the pre-bid target run-up price and hostile mergers. It is also found that the offer premium is negatively related to target size, target MTBV, target stock volatility, all-stock financed acquisitions and all-cash financed acquisitions. These results are consistent with prior research (Schwert, 2000; Betton *et al*., 2008; Eckbo, 2009). It is worth noting that the size of the bidder and target play an important role in offer premiums. A larger bidder tends to pay generously for a smaller target, consistent with the findings of Moeller *et al.* (2004) and Alexandridis *et al*. (2013). Contrary to the tax implication hypothesis, it is suggested that the offer premium is negatively related to all-cash acquisitions, as reported in specification (4). It can be interpreted as follows: cash is the greatest liquidity asset that can instantly meet the target's demands, thus the use of cash increases the bidder's bargaining power, reducing offer premiums.

To ensure that the model used here does not suffer from a mulitcollinearity problem, i.e. the main variable has enough explanatory power to the dependent variable, a test of variance inflation factor (VIF) is employed. The test assumes that there is no correlation between the regressors when the VIF value falls below 10. The presence of a multicollinearility problem in the model though does not reduce the predictability of the model as a whole, however it increases the variance of the model, making the model unstable, and reduces the accuracy of each individual variable included in the regressions. The results obtained show little evidence of multicollinearity problems.[41]

[41] It was found that the mean value for VIF is 1.75, and there is no VIF value beyond 4. The highest VIF value is 3.32, which is the bidder MV, the second highest VIF value is 2.94, which is the target MV. The chapter reports the main results of VIF test but omits the table for the sake of brevity.

3.5.2. The reference point effect on bidder announcement returns

This section examines the reference point effect on bidder announcement returns. A 2SLS regression using the target 52-week high as an instrumental variable will be conducted. The rationale of using the target 52-week high as an instrumental variable is because the offer premium is not a clean measure, as it either represents the synergy or an overpayment. Hence, in order to discover the role of the reference point effect on CARs, the 2SLS estimator is used. If the offer premium (driven by the reference point effect) in the 2SLS leads to fewer announcement returns for the bidder than in the OLS, the reference point plays a role of overpayment, otherwise, the reference point indicates the role of synergies. It is proposed that *bidder short-run performance is negatively correlated to offer premiums when deals are made with regard to the reference price*.

Table 3.7 shows that bidder announcement returns are either insignificantly or significantly negatively related to the offer premium in different subsamples, as reported in specifications (1), (3), and (5) respectively. It appeared that cross-border bidders pay higher offer premiums but outperform domestic bidders. An acquisition of a U.K. target is good news to shareholders of cross-border bidders who might believe that their rights to be protected in a more stringent legal environment, and thus react positively to the bid announcement.

It is expected that the target 52-week high increases the offer premium, which further decreases the bidder announcement returns. The Hausman test shows a *p*-value of 0.0004, suggesting that the 2SLS estimator is more efficiency than the OLS estimator. The first-stage *F*-test shows a *p*-value of 0.0000[42], indicating that the target 52-week high is a valid instrumental variable for the offer premium. A more

[42] See Stock *et al.* (2002) for a survey of weak instrument problems.

negative relationship between bidder announcement returns and the offer premium became apparent when using the target 52-week high as an instrumental variable compared with those without using the target 52-week high as an instrumental variable, as shown in specifications (2) to (1), (4) to (3), and (6) to (5) respectively. The market reacts more negatively to a bid announcement when bidders pay based on the target reference price, suggesting that the reference price indicates an overpayment in the U.K. M&As.[43]

These results are in line with prior M&A research. According to Rossi and Volpin (2004) and Moeller and Schlingemann (2005), it is expected that the strength of shareholder protection in the U.K. would weaken the bargaining power of cross-border bidders, thus using the target 52-week high is more likely to receive shareholders' consent. The sample was divided into cross-border and domestic acquisition subsamples, as reported in specifications (2) and (3), and it was found that the target 52-week high driven offer premiums were significantly negative related to announcement returns of domestic bidders, and were not significantly related to those of cross-border bidders,[44] suggesting that shareholders of cross-border bidders acquiesce more easily with the target 52-week high as the reference price. This chapter also provides additional support to the work of Kuipers *et al.* (2009), who found that cross-border bidders in pursuit of stronger shareholder protection in the U.K. will pay higher offer premiums as compensation. Further, the bidder size for cross-border acquisitions is more negatively related to bidder announcement returns, which is consistent with the findings of Rau and Vermaelen (1998) that small bidders tend to be more cautious than the large bidders. Taken together,

[43] Similar conclusions can be drawn by using the market model in a window of 261 to 28 trading days prior to the takeover announcement date. The results are reported in *Table 3.9*.

[44] The obtained results of this chapter are robust to bidder announcement returns calculated with the market model.

cross-border bidders who have less bargaining power might have to pay higher premiums according to the target 52-week high.

3.6. Robustness checks

3.6.1. The target 52-week high as a reference point

In this subsection, robustness results are provided for the target 52-week high as a reference point by first employing other price measures related to the target 52-weeks: the target 52-week minimum and the target 52-week mean. Moreover, the target monthly returns prior to the takeover announcement date are utilised the expectation that the bidder may also extrapolate the past performance of the target.

Results on regressions of the offer premium on the reference point are robustness after checking for different price measures related to the target 52-weeks. The target 52-week minimum and the target 52-week mean were taken into consideration besides the target 52-week high in terms of the reference point price, as reported in *Table 3.8*. Huddart *et al.* (2009) provided an overall review with regard to the reference price using both 52-week highs and 52-week lows. In a similar way, the target 52-week mean is also considered as the reference price. It is generally believed that the target 52-week prices tend to attract a great deal of investors' attention, making more conservative investors likely to focus on the firm's mean value over 52 weeks prior to the announcement date since it reflects the firm's performance in a certain period of time rather than a snapshot price. The results show that the target 52-week high remains strong after checking for those proposed reference point price measures.

In addition, robustness checks were carried out by including the target past returns prior to the takeover announcement date when studying the reference point effect on the offer premium (see *Table*

3.9). According to Rau and Vermaelen's extrapolation hypothesis (1998), market investors tend to forecast a firm's prospects based on its past returns, creating a strong performance momentum around a bid announcement for those with best past performance. Therefore, targets' past returns of each month were taken into consideration, reflecting the firm's returns over the past months, which are more likely be a proxy for the market perception of the firm's valuation than a single item of price information (i.e. the target 52-week high). The extrapolation effect on the offer premium was studied by including the target past returns up to 12 months prior to the takeover announcement date. In particular, specification (2) controls for the target monthly returns for the recent three months prior to the takeover announcement date, specification (3) controls for the target monthly returns for the recent six months prior to the takeover announcement date, and specification (4) controls for the target monthly returns up to a year prior to the takeover announcement date. It was found that the offer premium is positively related to the target 52-week high. Once again, our results show that the target 52-week high is a proper measure for the reference point in an M&A deal.

3.6.2. The reference point effect on the offer premium by market conditions

In addition, the reference point effect on the offer premium by the market wide valuation was examined. Investors' have a rationale that bidders may under- or over-react to a target's valuation when the market valuation fluctuates. The sample periods are classified into High-, Low- and Neutral-valuation markets according to Bouwman *et al*.'s method (2009). Results of T*able 3.10* show that the reference point effect is strong when the market-wide valuation is either high or low. It can be interpreted that a high market valuation is likely to push the target's current price closer to the 52-week high, making bidders to believe that they can outperform the target's recent performance. While a low market valuation makes the bidder to believe that, the target 52-week high is a true indicator for the target's performance given that no other factors drive the firm's value beyond or below its fundamental value. Moreover, it was found that cross-border acquisitions tend to pay higher offer premiums when the market valuation is high, implying that the high market wide valuation increases information asymmetry and thus reinforces the target's bargaining position over cross-border bidders.

3.6.3. The reference point effect on the offer premium across different subsamples

The reference point effect on the offer premium was studied by different nations with the expectation that bidders whose nation was farthest away compared with that of the U.K. firms would tend to have greater information barriers and be more likely to rely on the target 52-week high. In addition, the reference point effect on the offer premiums in different M&A subsamples was analysed: the payment method for the M&A deals, whether or not the deal is diversified and whether the deal involves a negotiation between the boards of the two firms (i.e. tender offers and mergers).

A target's bargaining position is likely to be reinforced when the distance involved between the two firms' home countries is large. The M&A sample was divided into two subsamples, the one includes acquisitions comprising U.K. bidders, the other comprising acquisitions involving U.S. bidders, farthest away compared with other cross-border bidders (see *Table 3.11*). It can be seen that the offer premium increases by approximately 6% in the U.S. bidders compared with 4% in the U.K. domestic bidders. Greater distance between the two nations impedes the transaction, making the bidder more likely to look at the target reference point. The results obtained in this table are consistent with those of Erel *et al.* (2012) and Uysal *et al.* (2008), finding that geographical distance plays a role in information dissemination.[45]

The reference point effect on offer premiums across different subsamples by deal information was also tested. The reference point effect on the offer premium being tested by the method of payment (see *Table 3.12*), by whether or not the deal is diversified reported in (see *Table 3.13*), and the type of merger reported in (see *Table 3.14*). Taken together, the results show that the target 52-week high as a proxy for the reference point effect is very pronounced in different subsamples, and has a substantial impact on the offer premium in different M&A subsamples.

3.6.4. The reference point effect on bidder announcement returns

Table 3.15 tabulates results on regressions of the offer premium on the bidder announcement returns and with the target 52-week high as an instrumental variable of the offer premium. Instead of using the market-adjust model to calculate the firm's abnormal returns around the announcement date, the market model is also used. The market model parameters were estimated based on an event window from 261 to 28 trading days prior to the announcement date, i.e. [-261,-28]. The results obtained from the market model are consistent with those by the market-adjusted model. More specifically, a 10% increase in the reference point driven offer premium decreased the bidder announcement returns by 1.83% in the full M&A sample. While dividing it into two subsamples, the reference point effect leads to more negative bidder announcement returns for domestic bidders than for cross-border bidders.

[45] It can be argued that the information asymmetry are relatively low due to culture similarity between the two countries. However, the sample included in this chapter is small, which is likely to result in bias in the results. Further investigation by including more observations needs to be done to explain whether the culture or the distance between the countries matter the bargaining power. We leave it to the future research, since the focus of this chapter is to test the target reference point effect on the firm's valuation.

In addition, bidder abnormal returns in a 3-day window around the takeover announcement date were examined using both market-adjusted model and market model. The reference point effect on bidder 3-day announcement returns calculated with the market-adjusted model is reported in *Table 3.16*, and results with the market model are reported in *Table 3.17*, which are consistent with the main results reported in *Table 3.7*.

3.7. Conclusion

In this chapter, the reference point theory of M&As in the U.K. context has been examined. It was found that the reference price measured by the target 52-week high is significantly positively related to the offer premium. The reference point effect plays an important role in valuing the target firm. Both the bidder and the target have reference-dependence bias, but the rationales behind using the reference point need to be clarified in terms of different parties. Targets with greater bargaining power are likely to use the reference point to ask for more offer premiums. It can be argued that bidders paying according to the reference point in favour of targets is either because of the overconfidence or because of information barriers. However, it is evident that the reference point effect is no longer sensitive to bidders when the target's current price deviated greatly from its reference price (or the high level of the target 52-week high).

Further, the sample was extended to cross-border acquisitions and it was found that the reference point effect is more pronounced to the cross-border acquisition subsample than to the domestic acquisition subsample. It can be interpreted as follows: targets have greater bargaining power over cross-border bidders than over domestic bidders, and they are likely to translate it into higher offer premiums. Cross-border bidders may find it difficult in overcoming information barriers and might have to pay an offer price based on the reference point. They might as well actively pay based on the target 52-week high, the reason of being to reinforce their competitiveness to enter the United Kingdom.

Finally, bidders paying based on the reference point receive negative market reactions, since shareholders tend to believe that the managers are paying too much, thereby destroying their wealth. The finding also suggests that bidder shareholders are pessimistic about their own profit-generating ability. Together, results obtained in this chapter are consistent with the predictions of prospect theory.

Table 3.1: Summary statistics for M&A sample

This table reports summary statistics for a sample of M&As announced between 1985 and 2014. The number *N* is the number of deals per year. The third and fourth columns are the mean and the median of the deal value respectively, reported in million U.S. dollars. The fifth and sixth columns present the method of payment information. Number of stock only (number of cash only) is defined as the method of payment is 100% by stock (cash). The number of diversified acquisitions, hostile acquisitions and tender offers are reported from the seventh to ninth columns. "Diversification" refers to diversified deals in which the primary two Standard Industry Classification codes are different between bidders and targets. "Hostile" refers to hostile bids. "Tender" refers to tender offers.

Year	N	Deal Value ($mil)		No. of	No. of	No. of	No. of	No. of
		Mean	Median	Cash Only	Stock Only	Diversified	Hostile	Tender
1985	1	16.10	16.10	1	-	1	-	-
1986	1	14.00	14.00	1	-	1	-	-
1987	9	283.07	223.10	6	2	5	1	3
1988	10	135.52	72.36	8	-	5	-	4
1989	10	650.56	34.37	9	-	7	1	3
1990	3	225.56	115.07	2	-	1	-	1
1991	19	294.68	87.39	12	1	15	3	10
1992	8	248.12	31.89	4	2	7	1	4
1993	11	38.71	27.08	6	1	5	1	7
1994	21	160.01	42.18	15	3	8	2	10
1995	23	358.74	41.67	18	-	8	2	9
1996	20	644.40	133.14	10	6	14	1	11
1997	33	356.98	60.41	24	6	14	1	25
1998	56	655.03	78.95	34	14	21	1	40
1999	65	943.50	121.28	32	12	37	2	53
2000	58	533.48	153.60	37	12	28	3	47
2001	25	907.36	77.90	15	3	11	-	19
2002	20	946.02	24.98	14	4	3	-	19
2003	17	595.35	123.59	10	4	4	-	13
2004	22	461.28	120.23	12	7	13	-	16
2005	35	1037.71	330.44	20	7	19	2	25
2006	21	1082.69	210.80	12	4	10	2	19
2007	34	724.03	47.57	23	5	15	-	23
2008	13	376.26	55.36	10	1	7	1	11
2009	11	676.23	94.18	5	4	6	-	10
2010	26	315.46	22.95	19	3	15	-	9
2011	7	221.69	182.65	4	2	3	1	4
2012	13	444.14	64.08	10	2	4	-	6
2013	7	817.49	98.24	3	1	3	-	5
2014	7	570.73	83.14	4	2	2	-	2
Total	606	606.40	85.19	380	108	292	25	408

Table 3.2: Distribution of bidder nations

This table presents the number of acquisitions and percentage of the number of acquisitions by bidder nations. The summary statistic are based on a sample of 606 public acquisitions toward U.K. public targets announced between 1985 and 2014. Bidders are publicly listed firms in their domestic stock markets.

Bidder Nation	Number of acquisitions	Percentage
Australia	5	0.83
Canada	9	1.49
France	13	2.15
Germany	16	2.64
Hong Kong	5	0.83
Ireland-Rep	4	0.66
Italy	5	0.83
Japan	9	1.49
Netherlands	7	1.16
South Africa	7	1.16
Switzerland	8	1.32
United Kingdom	451	74.42
United States	67	11.06
Total	606	100.00

Table 3.3: Summary statistics for variables

This table presents the means, medians, and standard deviations of the variables. Panel A presents dependent variables used in the regressions. Offer premiums are defined as the logarithmic term difference between the offer price and the target stock price 30 days prior to the takeover announcement. Bidder 5-day CARs are bidder 5-day announcement returns calculated by the market-adjusted model. Panel B presents independent variables, our main variable the target 52-week high is defined as the logarithmic term difference between the target highest stock price over 335 calendar days ending 30 days prior to the announcement and the target stock price 30 days prior to the announcement. Deal characteristics, including the method of payment, deal attitude, type of deals, cross-border deals and relative size. Here stock, cash, diversification, hostile, tender offer and cross-border are dummy variable, taking value of 1 if acquisitions are 100% stocks, 100% cash, diversified merger, hostile merger, tender offer, and cross-border acquisitions, and 0 otherwise. Relative size is the deal value divided by the bidder market value. The market value (MV) is defined as the current share price multiplied by number of ordinary shares, expressed in logarithmic form. The market-to-book value (MTBV) is defined as the market value of the ordinary (common) equity divided by the balance sheet of ordinary (common) equity in the company. Target volatility is the standard deviation of target daily returns over the 335 calendar days ending 30 days prior to the announcement. Run-ups are the pre-bid run-up prices calculated from 365 calendar days prior to the takeover announcement date to seven calendar days before takeover announcement date [-365, -7]. Accounting variables were collected one month prior to the announcement date, and continues variables were winsorised at the 1% and 99% levels.

Panel A: Dependent Variables			
	Mean	Median	Std Dev
Offer Premiums	0.294	0.263	0.206
Bidder 5-day CARs	-0.002	-0.003	0.070
Panel B: Independent Variables			
Target 52-week High	0.244	0.185	0.226
Deal Characteristics			
Stock	0.178	-	0.383
Cash	0.627	-	0.484
Diversification	0.482	-	0.500
Hostile	0.041	-	0.199
Tender	0.673	-	0.469
Cross Border	0.256	-	0.437
Relative Size	0.353	0.150	0.549
Bidder Characteristics			
Bidder ln(MV)	6.588	6.625	2.190
Bidder MTBV	2.490	1.760	4.617
Bidder RunUps	0.088	0.028	0.423
Target Characteristics			
Target ln(MV)	4.894	4.760	1.846
Target MTBV	2.471	1.575	4.063
Target RunUps	-0.013	0.005	0.382
Target Volatility	0.022	0.020	0.012
Number of Observations	606		

Table 3.4: Summary statistics for variables by cross-border and domestic subsamples

This table presents the means of variables by U.K. domestic and cross-border acquisition sample. The first column shows the mean value of variables in cross-border acquisitions. The second column shows the mean value of variables in U.K. domestic acquisitions. Differential is the mean difference between the cross-border and the U.K. domestic. The *t*-statistics are reported in parentheses and calculated using the *t*-test and the Wilcoxon rank-sum test for the difference between the cross-border sample and the U.K. domestic sample. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively.

	Cross-Border	U.K.	Differetial (Cross-Border-U.K.)
Offer Premiums	0.347***	0.276***	0.071***
	(19.492)	(29.799)	(3.743)
Bidder 5-day CARma	-0.006	-0.001	-0.005
	(-1.115)	(-0.328)	(-0.719)
Bidder 5-day CARmm	-0.010*	-0.003	-0.007
	(-1.800)	(-0.824)	(-1.096)
Target 52-week High	0.277***	0.233***	0.044**
	(13.763)	(22.783)	(2.100)
Relative Size	0.211***	0.401***	-0.190***
	(8.531)	(14.140)	(-3.756)
Bidder ln(MV)	8.010***	6.100***	1.910***
	(58.203)	(60.994)	(10.121)
Bidder MTBV	3.191***	2.250***	0.941**
	(13.000)	(9.511)	(2.197)
Bidder RunUps	0.089**	0.087***	0.002
	(2.474)	(4.463)	(0.048)
Target ln(MV)	5.538***	4.673***	0.865***
	(39.692)	(54.172)	(5.135)
Target MTBV	2.761***	2.372***	0.389
	(8.647)	(12.307)	(1.029)
Target RunUps	0.005	-0.020	0.025
	(0.146)	(-1.153)	(0.696)
Target Volatility	0.025***	0.022***	0.003***
	(24.188)	(37.340)	(2.883)
Number of Observations	155	451	

Table 3.5: The piecewise linear regressions of offer premiums on the target 52-week high

$$OfferPremiums_{i,t} = \alpha + \beta_1 \min\left(52wh_{i,t-30}, 0.3\right) + \beta_2 \max\left(0, \min\left(52wh_{i,t-30} - 0.3, 0.4\right)\right) + \beta_3 \max\left(52wh_{i,t-30} - 0.7, 0\right) + \varepsilon_{i,t}$$

This table reports piecewise linear regression results for offer premiums on *52WeekHigh*, controlling for various deal and firm characteristics. We document three individual target reference point (i.e. *52WeekHigh*) levels: Low52wh (0-30%), Mid52wh (30%-70%), High52wh (70% or above). Colum (1) reports the relation between the offer premium and the target 52-week high, column (2) reports the relation between offer premiums and the three individual levels about the *52WeekHigh*, column (3) controls for target and deal characteristics, column (4) controls for the bidder and deal characteristics, column (5) controls for bidder, target and deal characteristics. Variable definitions are as in the notes of Table 3.3. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively, is reported alongside the coefficients.

	(1)		(2)		(3)		(4)		(5)	
Offer premiums	Coef.	*t*-stat.	Coef.	*t*-stat.	Coef.	*t*-stat.	Coef.	*t*-stat.	Coef.	*t*-stat.
52wh	0.208***	(5.180)								
Low52wh			0.322***	(3.618)	0.440***	(4.800)	0.326***	(3.692)	0.433***	(4.912)
Mid52wh			0.122	(1.057)	0.221**	(1.985)	0.139	(1.217)	0.205*	(1.807)
High52wh			0.150	(0.451)	0.178	(0.549)	0.001	(0.002)	0.089	(0.260)
Stock					-0.071***	(-2.933)	-0.063**	(-2.476)	-0.079***	(-3.380)
Cash					-0.077***	(-3.461)	-0.052**	(-2.283)	-0.075***	(-3.522)
Diversification					0.010	(0.669)	0.018	(1.179)	-0.005	(-0.342)
Hostile					0.080*	(1.781)	0.047	(1.028)	0.084**	(2.048)
Tender					0.065***	(3.509)	0.070***	(3.812)	0.028	(1.486)
Cross Border					0.085***	(4.258)	0.049**	(2.256)	0.046**	(2.294)
Relative Size					-0.030*	(-1.831)	-0.023	(-1.318)	0.045**	(2.375)
Target ln(MV)					-0.023***	(-4.785)			-0.060***	(-7.869)
Target MTBV					-0.002	(-1.275)			-0.004**	(-2.417)
Target RunUps					0.112***	(3.638)			0.087***	(2.704)
Target Volatility					-2.553***	(-3.641)			-2.926***	(-4.238)
Bidder ln(MV)							0.006	(1.361)	0.045***	(6.337)
Bidder MTBV							0.001	(0.513)	0.002	(1.179)
Bidder RunUps							0.044**	(2.013)	0.025	(1.187)
Constant	0.244***	(21.468)	0.229***	(16.271)	0.375***	(7.906)	0.164***	(3.430)	0.284***	(5.986)
N	606		606		606		606		606	
R^2	0.052		0.055		0.185		0.138		0.260	

Table 3.6: The piecewise linear regression of offer premiums on the target 52-week high of cross-border and domestic acquisitions into the United Kingdom

This table reports the piecewise linear regression results for offer premiums on the target reference point of both domestic and cross-border acquisitions into the U.K. market. It was documented three individual target reference point levels: *Low52wh* (0-30%), *Mid52wh* (30%-70%), and *High52wh* (70% and above). Column (1) reports the results for cross-border acquisitions. Column (2) reports the results for U.K. domestic acquisitions. Variable definitions are as in the notes of Table 3.3. Equation is presented in the note of Table 3.5. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively, is reported alongside the coefficients.

Offer Premiums	(1)		(2)	
	Cross-Border		U.K. Domestic	
Low52wk	0.480***	(2.779)	0.404***	(4.191)
Mid52wk	0.402	(1.600)	0.093	(0.768)
High52wk	-0.149	(-0.226)	0.186	(0.469)
Stock	-0.151**	(-2.110)	-0.072***	(-2.963)
Cash	-0.063	(-1.241)	-0.077***	(-3.285)
Diversification	-0.010	(-0.310)	-0.002	(-0.097)
Hostile	-0.021	(-0.358)	0.157***	(2.748)
Tender	0.072*	(1.931)	0.008	(0.377)
Relative Size	0.130*	(1.682)	0.047**	(2.451)
Target ln(MV)	-0.044**	(-2.202)	-0.069***	(-8.700)
Target MTBV	-0.004	(-1.402)	-0.004**	(-2.232)
Target RunUps	0.138**	(2.518)	0.050	(1.370)
Target Volatility	-3.049*	(-1.967)	-2.894***	(-3.576)
Bidder ln(MV)	0.024	(1.388)	0.054***	(7.266)
Bidder MTBV	0.015***	(2.651)	0.001	(0.666)
Bidder RunUps	0.023	(0.531)	0.024	(1.014)
Constant	0.317***	(2.701)	0.291***	(5.562)
N	155		451	
R^2	0.286		0.274	

Table 3.7: The OLS regression of bidder announcement returns on offer premiums

First stage:

$$OfferPremiums_{i,t} = \alpha + \beta_1 52weekhigh_{i,t} + \varepsilon_{i,t}$$

Second Stage:

$$CAR_{i,t} = \alpha + \beta_1 OfferPremiums_{i,t} + \sum_{i=1}^{N} \beta_i x_{i,t} + \varepsilon_{i,t}$$

This table presents both OLS and 2SLS regression results of bidder market-adjusted model 5-day announcement returns (CAR5) on the offer premium. The target 52-week high is used as an instrumental variable of the offer premium. We report the regressions for both cross-border and domestic acquisitions into the United Kingdom. Hausman test and first-stage *F*-test are reported below the table. Variable definitions are as in the notes of Table 3.3. Details of the methodology were presented in the Methodology Section of this Chapter. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
CAR5	Full Sample		Cross Border		U.K. Domestic	
	OLS	IV	OLS	IV	OLS	IV
Offer Premiums	-0.019	-0.207***	0.015	-0.134	-0.036**	-0.258***
	(-1.360)	(-3.268)	(0.587)	(-1.454)	(-2.095)	(-2.634)
Stock	0.007	-0.003	0.003	-0.012	0.008	-0.005
	(0.807)	(-0.291)	(0.106)	(-0.430)	(0.762)	(-0.408)
Cash	0.026***	0.017*	0.001	-0.007	0.030***	0.016
	(3.506)	(1.892)	(0.048)	(-0.346)	(3.509)	(1.351)
Diversification	-0.012**	-0.008	0.003	0.005	-0.014**	-0.009
	(-2.151)	(-1.225)	(0.311)	(0.431)	(-2.144)	(-1.119)
Hostile	0.003	0.017	-0.003	-0.008	0.008	0.038
	(0.177)	(1.010)	(-0.148)	(-0.368)	(0.421)	(1.436)
Tender	0.002	0.016*	-0.001	0.015	0.003	0.016
	(0.345)	(1.864)	(-0.047)	(0.935)	(0.465)	(1.542)
Relative Size	-0.012**	-0.019***	0.017	0.019	-0.014**	-0.022***
	(-2.142)	(-2.667)	(0.907)	(0.905)	(-2.230)	(-2.666)
Bidder ln(MV)	-0.005***	-0.004***	-0.008**	-0.010**	-0.004**	-0.003
	(-3.848)	(-2.629)	(-2.324)	(-2.540)	(-2.508)	(-1.577)
Bidder MTBV	0.001	0.001	0.000	0.002	0.001	0.001
	(0.962)	(1.297)	(0.170)	(1.013)	(0.938)	(0.820)
Bidder RunUps	-0.015**	-0.008	-0.017	-0.012	-0.016**	-0.010
	(-2.173)	(-0.971)	(-1.341)	(-0.827)	(-2.007)	(-1.043)
Constant	0.029**	0.074***	0.046	0.106*	0.025	0.082***
	(2.128)	(3.465)	(1.199)	(1.903)	(1.635)	(2.691)
N	606	606	155	155	451	451
R^2	0.079	.	0.074	.	0.105	.
Hausman test	$X^2 = 12.57$ ($p = 0.0004$)					
First-stage *F* test	$X^2 = 13.23$ ($p = 0.0000$)					

Table 3.8: Robustness test: Controlling for other relevant price measures
This table presents the piecewise regression results for offer premiums on the target 52-week high, controlling for other price measures that might be used as the reference point prices. Column (1) reports the relation between offer premiums and the target 52-week high. Column (2) reports the results by controlling for the target 52-week minimum (52wMin), which is the target lowest stock prices over the recent 52 weeks, which is measured as logarithmic term difference between target lowest stock price over 335 calendar days ending 30 days prior to the announcement date and the target stock price 30 days prior to the announcement date, column (3) reports the results by controlling for the target 52-week mean (52wMean), which with a similar measure to the target 52-week high and 52-week minimum. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively.

Offer Premiums	Other Price Measures		
	(1)	(2)	(3)
Low52wh	0.322***	0.313***	0.265**
	(3.618)	(3.224)	(2.394)
Mid52wh	0.122	0.122	0.092
	(1.057)	(1.053)	(0.766)
High52wh	0.150	0.150	0.109
	(0.451)	(0.448)	(0.326)
52wMin		0.010	
		(0.310)	
52wMean			0.055
			(0.890)
Constant	0.229***	0.234***	0.243***
	(16.271)	(10.507)	(11.747)
N	606	606	606
R^2	0.055	0.056	0.057

Table 3.9: Robustness test: Controlling for target past returns

This table presents the piecewise regression results for offer premiums on the target 52-week high, controlling for other price measures that used as the reference points. Column (1) reports the regression results by controlling for segments of the target 52-week high, which is the target highest stock price over 335 calendar days ending 30 days prior to the announcement date and the target stock price 30 days prior to the announcement date, column (2) reports the results by controlling for the target past returns in one, two and three months prior to the takeover announcement date, column (3) controls for the target past returns up to 6 months prior to the takeover announcement date, column (4) controls for the target past returns up to one year prior to the takeover announcement date. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively.

Offer Premiums	(1)	(2)	(3)	(4)
Low52wk	0.322***	0.325***	0.336***	0.298**
	(3.618)	(3.413)	(3.376)	(2.388)
Mid52wk	0.122	0.104	0.115	0.114
	(1.057)	(0.868)	(0.941)	(0.742)
High52wk	0.150	0.150	0.164	-0.206
	(0.451)	(0.452)	(0.428)	(-0.392)
Target return $_{t-1}$		0.038	0.034	0.005
		(0.540)	(0.467)	(0.065)
Target return $_{t-2}$		-0.078	-0.065	-0.108
		(-1.012)	(-0.803)	(-1.101)
Target return $_{t-3}$		0.036	0.016	0.027
		(0.509)	(0.217)	(0.286)
Target return $_{t-4}$			0.103	0.094
			(1.288)	(0.884)
Target return $_{t-5}$			-0.070	-0.055
			(-0.813)	(-0.486)
Target return $_{t-6}$			-0.111	-0.082
			(-1.341)	(-0.710)
Target return $_{t-7}$				-0.103
				(-1.040)
Target return $_{t-8}$				-0.140
				(-1.422)
Target return $_{t-9}$				-0.112
				(-1.314)
Target return $_{t-10}$				0.091
				(1.050)
Target return $_{t-11}$				-0.132
				(-1.309)
Target return $_{t-12}$				-0.121
				(-1.355)
Constant	0.229***	0.229***	0.229***	0.236***
	(16.271)	(14.332)	(13.818)	(10.927)
N	606	602	573	418
R^2	0.055	0.059	0.066	0.070

Table 3.10: Robustness test: Reference point effect on offer premiums by market-wide valuation
This table presents the piecewise regression results for offer premiums on the target 52-week high by market valuation. High Market is a dummy variable, taking a value of 1 if takeover months in the top 25% above past 5-year average de-trended P/E of the UK market or market valuation is high, 0 otherwise. Specifications (1)-(3) report the results when market-wide valuation is high (i.e. High), low (i.e. Low) and neutral (i.e. Neutral) respectively. Details of this methodology were presented in methodology section of the Chapter 4. Other variable definitions are as in the notes of Table 3.3. Equation is presented in the note of Table 3.5. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively, is reported alongside the coefficients.

	(1) High		(2) Low		(3) Neutral	
Offer premiums	Coef.	*t*-stat.	Coef.	*t*-stat.	Coef.	*t*-stat.
Low52wh	0.494***	(4.322)	0.761***	(2.704)	0.119	(0.725)
Mid52wh	0.181	(1.156)	0.136	(0.517)	0.431*	(1.709)
High52wh	0.297	(0.683)	-0.245	(-0.365)	-0.669	(-0.818)
Stock	-0.042	(-1.417)	-0.066	(-1.063)	-0.164***	(-3.354)
Cash	-0.021	(-0.784)	-0.079	(-1.492)	-0.162***	(-3.843)
Diversification	0.005	(0.235)	0.035	(0.951)	-0.053*	(-1.772)
Hostile	0.065	(1.339)	-0.032	(-0.308)	0.112*	(1.807)
Tender	0.029	(1.136)	0.045	(1.041)	0.017	(0.465)
Cross Border	0.049*	(1.954)	0.068	(1.410)	0.000	(0.004)
Relative Size	0.080***	(3.260)	0.058	(1.013)	0.030	(1.199)
Target ln(MV)	-0.073***	(-7.514)	-0.038**	(-2.063)	-0.070***	(-4.785)
Target MTBV	-0.006**	(-2.589)	0.004	(0.856)	-0.006	(-1.183)
Target RunUps	0.098**	(2.397)	0.071	(0.864)	0.071	(1.189)
Target Volatility	-2.925***	(-3.026)	-3.282***	(-2.988)	-2.505	(-1.407)
Bidder ln(MV)	0.055***	(5.833)	0.030**	(2.197)	0.060***	(4.093)
Bidder MTBV	0.000	(0.037)	0.001	(0.207)	0.006*	(1.882)
Bidder RunUps	0.042	(1.587)	-0.041	(-1.172)	0.041	(0.883)
Constant	0.227***	(4.113)	0.184*	(1.820)	0.383***	(3.326)
N	300		110		196	
R^2	0.324		0.291		0.319	

Table 3.11: Robustness test: U.K. and U.S. bidder subsamples

This table reports the piecewise linear regression results for offer premiums on *52WeekHigh* of both U.K. and U.S. bidders' acquisitions of U.K. targets. We document three individual target *52WeekHigh* levels: *Low52wh* (0-30%), *Mid52wh* (30%-70%), and *High52wh* (70% and above). Column (1) reports the results for U.K. domestic acquisitions. Column (2) reports the results for U.S. bidders' acquisitions of U.K. targets. Variable definitions are as in the notes of Table 3.3. Equation is presented in the note of Table 3.5. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively, is reported alongside the coefficients.

Offer premiums	(1) U.K. Domestic		(2) Cross-Border Subsample (U.S. bidders)	
	Coef.	*t*-stat.	Coef.	*t*-stat.
Low52wk	0.404***	(4.191)	0.593**	(2.488)
Mid52wk	0.093	(0.768)	0.376	(0.943)
High52wk	0.186	(0.469)	-0.661	(-0.633)
Stock	-0.072***	(-2.963)	-0.296**	(-2.547)
Cash	-0.077***	(-3.285)	-0.096	(-0.861)
Diversification	-0.002	(-0.097)	-0.032	(-0.537)
Hostile	0.157***	(2.748)	-0.149	(-1.446)
Tender	0.008	(0.377)	0.141***	(2.773)
Relative Size	0.047**	(2.451)	0.242	(1.158)
Target ln(MV)	-0.069***	(-8.700)	-0.053*	(-1.976)
Target MTBV	-0.004**	(-2.232)	-0.009	(-0.986)
Target RunUps	0.050	(1.370)	0.166	(1.585)
Target Volatility	-2.894***	(-3.576)	-6.084***	(-2.822)
Bidder ln(MV)	0.054***	(7.266)	0.047	(1.442)
Bidder MTBV	0.001	(0.666)	0.025**	(2.141)
Bidder RunUps	0.024	(1.014)	0.003	(0.046)
Constant	0.291***	(5.562)	0.239	(1.045)
N	451		67	
R^2	0.274		0.453	

Table 3.12: Robustness test: Reference point effect on offer premiums by the method of payment
This table presents the piecewise linear regression results of offer premiums on the target 52-week high in different payment method subsamples. Column (1) includes acquisitions that are purely financed by Cash, column (2) includes those that are purely financed by stocks and column (3) includes those financed by a mixture of cash and stocks. Other control variable definitions are as in the notes of Table 3.3. Equation is presented in the note of Table 3.5. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively, is reported alongside the coefficients.

	(1)		(2)		(3)	
Offer premiums	Cash		Stocks		Mixed	
	Coef.	*t*-stat.	Coef.	*t*-stat.	Coef.	*t*-stat.
Low52wh	0.420***	(3.557)	0.397**	(2.138)	0.378*	(1.774)
Mid52wh	0.248	(1.490)	0.150	(0.688)	0.348*	(1.666)
High52wh	0.319	(0.661)	0.292	(0.432)	-0.891	(-1.557)
Diversification	0.016	(0.786)	-0.060*	(-1.784)	0.015	(0.459)
Hostile	-0.006	(-0.094)	0.278***	(3.813)	0.169***	(2.801)
Tender	0.055**	(2.496)	-0.053	(-1.188)	-0.063	(-1.021)
Cross Border	0.045*	(1.912)	0.016	(0.245)	0.022	(0.433)
Relative Size	0.056*	(1.829)	0.061	(1.505)	0.102**	(2.324)
Target ln(MV)	-0.049***	(-5.431)	-0.087***	(-3.812)	-0.114***	(-4.953)
Target MTBV	-0.005**	(-2.428)	0.001	(0.106)	-0.004	(-1.100)
Target RunUps	0.092**	(2.329)	0.063	(0.889)	0.151**	(2.042)
Target Volatility	-3.632***	(-4.064)	-1.707	(-1.318)	-1.280	(-0.605)
Bidder ln(MV)	0.041***	(5.060)	0.052**	(2.305)	0.100***	(4.415)
Bidder MTBV	0.004	(1.544)	0.000	(0.011)	0.002	(0.750)
Bidder RunUps	0.018	(0.582)	0.055	(1.486)	-0.082	(-1.480)
Constant	0.172***	(3.332)	0.334***	(4.129)	0.222*	(1.835)
N	380		108		118	
R^2	0.269		0.350		0.341	

Table 3.13: Robustness test: Reference point effect on offer premiums for diversified and undiversified M&A deals

This table presents the piecewise linear regression results of offer premiums on the target 52-week high in different payment method subsamples. Column (1) includes only diversified acquisitions (i.e. Diversificiation), column (2) includes only undiversified acquisitions (i.e. Relatedness). Other control variable definitions are as in the notes of Table 3.3. Equation is presented in the note of Table 3.5. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively, is reported alongside the coefficients.

Offer premiums	(1) Diversification		(2) Relatedness	
	Coef.	*t*-stat.	Coef.	*t*-stat.
Low52wh	0.468***	(3.515)	0.377***	(3.155)
Mid52wh	0.187	(1.261)	0.261	(1.551)
High52wh	0.168	(0.393)	-0.115	(-0.213)
Stock	-0.097***	(-3.032)	-0.064*	(-1.891)
Cash	-0.061**	(-2.003)	-0.079**	(-2.587)
Hostile	0.041	(1.028)	0.123	(1.592)
Tender	0.019	(0.727)	0.034	(1.309)
Cross Border	0.023	(0.843)	0.063**	(2.155)
Relative Size	0.027	(1.039)	0.053*	(1.961)
Target ln(MV)	-0.046***	(-3.970)	-0.071***	(-6.489)
Target MTBV	-0.002	(-0.759)	-0.007***	(-2.734)
Target RunUps	0.072	(1.581)	0.107**	(2.393)
Target Volatility	-2.444***	(-2.595)	-3.757***	(-3.538)
Bidder ln(MV)	0.037***	(3.662)	0.051***	(4.731)
Bidder MTBV	0.002	(0.837)	0.002	(0.700)
Bidder RunUps	0.008	(0.237)	0.035	(1.280)
Constant	0.264***	(4.323)	0.321***	(4.576)
N	292		314	
R^2	0.200		0.323	

Table 3.14: Robustness test: Reference point effect on offer premiums for tender offers and mergers
This table presents the piecewise linear regression results of offer premiums on the target 52-week high in different payment method subsamples. Column (1) includes only tender offers (i.e. Tender), column (2) includes only mergers (i.e.Merger). Other control variable definitions are as in the notes of Table 3.3. Equation is presented in the note of Table 3.5. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively, is reported alongside the coefficients.

Offer premiums	(1) Tender		(2) Merger	
	Coef.	*t*-stat.	Coef.	*t*-stat.
Low52wh	0.410***	(4.167)	0.402**	(2.389)
Mid52wh	0.218*	(1.718)	0.151	(0.670)
High52wh	-0.295	(-0.809)	0.846	(1.143)
Stock	-0.086***	(-3.557)	-0.122*	(-1.693)
Cash	-0.070***	(-3.307)	-0.103	(-1.497)
Diversification	-0.021	(-1.162)	0.035	(1.108)
Hostile	0.078*	(1.793)	0.113***	(2.925)
Cross Border	0.059**	(2.482)	-0.000	(-0.005)
Relative Size	0.047**	(2.296)	0.186**	(2.393)
Target ln(MV)	-0.070***	(-7.117)	-0.053***	(-4.546)
Target MTBV	-0.003	(-1.209)	-0.006**	(-2.479)
Target RunUps	0.051	(1.374)	0.147***	(2.710)
Target Volatility	-3.034***	(-3.916)	-2.193	(-1.478)
Bidder ln(MV)	0.051***	(5.689)	0.043***	(3.950)
Bidder MTBV	0.001	(0.763)	0.003	(0.683)
Bidder RunUps	0.025	(1.023)	-0.007	(-0.179)
Constant	0.330***	(7.075)	0.250**	(2.312)
N	408		198	
R^2	0.280		0.247	

Table 3.15: Robustness test: Market model for 5-day CARs

This table presents both OLS and 2SLS regression results of bidder market model 5-day announcement returns (CAR5mm) on the offer premium. We estimate market model parameters over the window from 261 to 28 trading days prior to the announcement date [-261,-28]. The target 52-week high is used as an instrument. We report the regressions for both cross-border and domestic acquisitions into the United Kingdom. Hausman test and first-stage *F*-test are reported below the table. Variable definitions are as in the notes of Table 3.3. The 2SLS equation is presented in the note of Table 3.7. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
CAR5mm	Full Sample		Cross-Border Bidders		U.K. Bidders	
	OLS	IV	OLS	IV	OLS	IV
Offer Premiums	-0.016	-0.183***	0.022	-0.152	-0.036**	-0.210**
	(-1.155)	(-2.982)	(0.866)	(-1.551)	(-2.135)	(-2.302)
Stock	0.005	-0.004	-0.003	-0.021	0.006	-0.004
	(0.575)	(-0.393)	(-0.139)	(-0.689)	(0.597)	(-0.352)
Cash	0.027***	0.019**	0.008	-0.002	0.030***	0.019*
	(3.573)	(2.103)	(0.399)	(-0.089)	(3.544)	(1.707)
Diversification	-0.011*	-0.007	-0.002	0.000	-0.011*	-0.007
	(-1.950)	(-1.145)	(-0.162)	(0.029)	(-1.730)	(-0.958)
Hostile	0.003	0.016	-0.003	-0.009	0.010	0.033
	(0.207)	(0.967)	(-0.147)	(-0.389)	(0.500)	(1.337)
Tender	-0.001	0.011	-0.005	0.013	0.000	0.010
	(-0.171)	(1.343)	(-0.421)	(0.769)	(0.036)	(1.041)
Relative Size	-0.012**	-0.018***	0.016	0.019	-0.014**	-0.020***
	(-2.118)	(-2.618)	(0.844)	(0.838)	(-2.283)	(-2.657)
Bidder ln(MV)	-0.006***	-0.005***	-0.009***	-0.012***	-0.004***	-0.004*
	(-4.267)	(-3.130)	(-2.625)	(-2.793)	(-2.708)	(-1.945)
Bidder MTBV	0.001	0.001	0.001	0.004	0.001	0.001
	(1.164)	(1.457)	(0.550)	(1.383)	(1.048)	(0.958)
Bidder RunUps	-0.040***	-0.033***	-0.036***	-0.030*	-0.043***	-0.039***
	(-5.934)	(-4.321)	(-2.709)	(-1.924)	(-5.527)	(-4.274)
Constant	0.032**	0.072***	0.050	0.120**	0.028*	0.072**
	(2.407)	(3.501)	(1.258)	(2.030)	(1.850)	(2.554)
N	606	606	155	155	451	451
R^2	0.134	.	0.123	.	0.161	.
Hausman test	X^2 = 10.02 (*p*=0.0016)					
First-stage *F* test	X^2= 13.23 (*p*= 0.0000)					

Table 3.16: Robustness test: Market-adjusted model for 3-day CARs
This table presents both OLS and 2SLS regression results of bidder market-adjusted model 3-day announcement returns (CAR3ma) on the offer premium. The target 52-week high is used as an instrument. We report the regressions for both cross-border and domestic acquisitions into the United Kingdom. Hausman test and first-stage *F*-test are reported below the table. Variable definitions are as in the notes of Table 3.3. The 2SLS equation is presented in the note of Table 3.7. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
CAR3ma	Full Sample		Cross Border Bidders		U.K. Bidders	
	OLS	IV	OLS	IV	OLS	IV
Offer Premiums	-0.017	-0.175***	0.017	-0.105	-0.031**	-0.220**
	(-1.304)	(-3.191)	(0.899)	(-1.332)	(-2.131)	(-2.578)
Stock	0.009	0.000	0.006	-0.006	0.009	-0.002
	(0.993)	(0.029)	(0.211)	(-0.248)	(0.966)	(-0.139)
Cash	0.028***	0.020**	0.010	0.003	0.031***	0.019*
	(3.809)	(2.557)	(0.469)	(0.171)	(3.912)	(1.811)
Diversification	-0.010**	-0.007	0.006	0.007	-0.014**	-0.009
	(-2.096)	(-1.215)	(0.666)	(0.699)	(-2.357)	(-1.343)
Hostile	0.002	0.014	0.001	-0.003	0.006	0.031
	(0.185)	(0.968)	(0.077)	(-0.169)	(0.396)	(1.355)
Tender	0.004	0.015**	-0.003	0.010	0.007	0.017*
	(0.721)	(2.110)	(-0.233)	(0.743)	(1.069)	(1.926)
Relative Size	-0.008	-0.013**	0.012	0.013	-0.009	-0.015**
	(-1.195)	(-2.133)	(0.493)	(0.731)	(-1.383)	(-2.180)
Bidder ln(MV)	-0.003**	-0.002	-0.004*	-0.006*	-0.002	-0.001
	(-2.424)	(-1.526)	(-1.720)	(-1.841)	(-1.338)	(-0.693)
Bidder MTBV	0.000	0.001	0.000	0.002	0.000	0.000
	(0.579)	(1.002)	(0.078)	(0.927)	(0.566)	(0.532)
Bidder RunUps	-0.013	-0.007	-0.016	-0.012	-0.013	-0.008
	(-1.582)	(-1.025)	(-1.100)	(-0.973)	(-1.389)	(-0.951)
Constant	0.009	0.047**	0.014	0.063	0.006	0.055**
	(0.780)	(2.541)	(0.384)	(1.316)	(0.505)	(2.063)
N	606	606	155	155	451	451
R^2	0.075	.	0.055	.	0.102	.
Hausman test	X^2 = 7.02 (*p*=0.0083)					
First-stage *F* test	X^2= 6.41 (*p*= 0.0003)					

Table 3.17: Robustness test: Market model for 3-day CARs

This table presents both OLS and 2SLS regression results of bidder market model 3-day announcement returns (CAR3mm) on the offer premium. We estimate market model parameters over the window from 261 to 28 trading days prior to the announcement date [-261,-28]. The target 52-week high is used as an instrument. We report the regressions for both cross-border and domestic acquisitions into the United Kingdom. Hausman test and first-stage *F* test are reported below the table. Variable definitions are as in the notes of Table 3.3. The 2SLS equation is presented in the note of Table 3.7. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
CAR3mm	Full Sample		Cross Border Bidders		U.K. Bidders	
	OLS	IV	OLS	IV	OLS	IV
Offer Premiums	-0.015	-0.151***	0.026	-0.119	-0.033**	-0.173**
	(-1.133)	(-2.848)	(1.482)	(-1.437)	(-2.207)	(-2.184)
Stock	0.007	-0.001	0.002	-0.013	0.007	-0.001
	(0.768)	(-0.066)	(0.065)	(-0.494)	(0.766)	(-0.073)
Cash	0.027***	0.021***	0.012	0.004	0.030***	0.021**
	(3.829)	(2.731)	(0.629)	(0.231)	(3.930)	(2.233)
Diversification	-0.010**	-0.007	0.001	0.003	-0.012**	-0.009
	(-2.078)	(-1.315)	(0.129)	(0.270)	(-2.094)	(-1.353)
Hostile	0.002	0.013	0.004	-0.001	0.005	0.024
	(0.220)	(0.899)	(0.264)	(-0.071)	(0.348)	(1.112)
Tender	0.002	0.011	-0.005	0.010	0.004	0.012
	(0.315)	(1.636)	(-0.431)	(0.723)	(0.652)	(1.422)
Relative Size	-0.009	-0.013**	0.008	0.010	-0.010	-0.015**
	(-1.355)	(-2.297)	(0.357)	(0.538)	(-1.542)	(-2.257)
Bidder ln(MV)	-0.004***	-0.003**	-0.006**	-0.008**	-0.002	-0.002
	(-3.042)	(-2.150)	(-2.101)	(-2.229)	(-1.584)	(-1.056)
Bidder MTBV	0.001	0.001	0.001	0.003	0.000	0.000
	(0.902)	(1.283)	(0.452)	(1.432)	(0.762)	(0.745)
Bidder RunUps	-0.026***	-0.021***	-0.026*	-0.021	-0.027***	-0.024***
	(-3.154)	(-3.138)	(-1.741)	(-1.646)	(-2.921)	(-3.012)
Constant	0.014	0.047***	0.018	0.077	0.011	0.047*
	(1.285)	(2.628)	(0.515)	(1.536)	(0.866)	(1.889)
N	606	606	155	155	451	451
R^2	0.108	.	0.093	.	0.135	.
Hausman test	$X^2 = 3.96$ (*p*=0.0471)					
First-stage *F* test	X^2= 6.41 (*p*= 0.0003)					

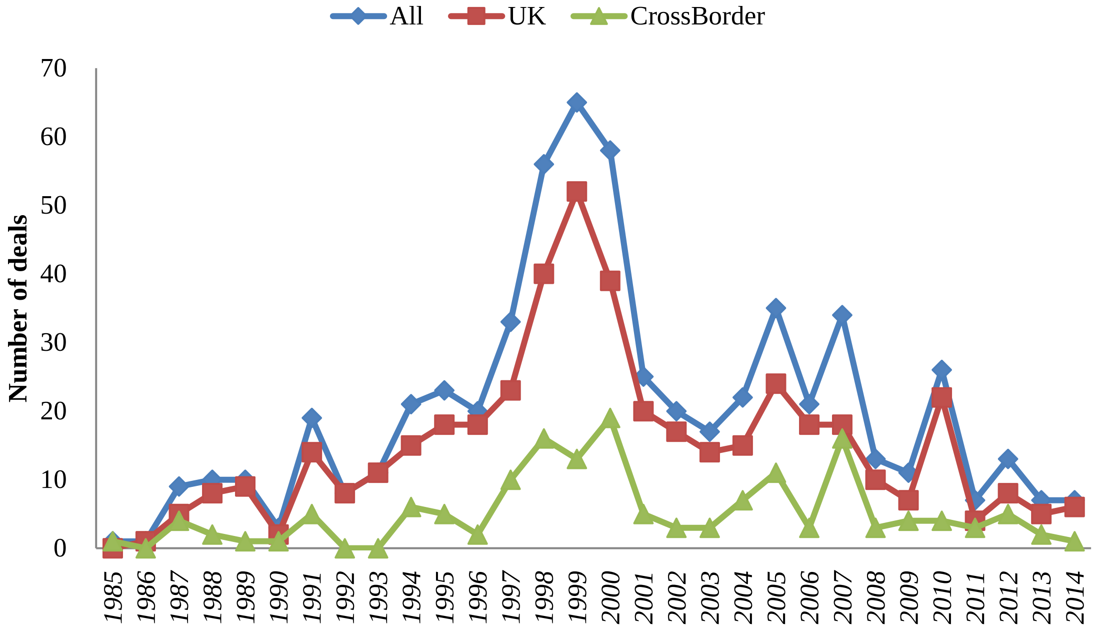

Figure 3.1: Distribution of number of deals by bidders
This figure plots the time-series distribution of the number of deals for the full sample, the U.K. domestic sample, and the CrossBorder sample. The U.K. domestic sample contains U.K. public bidders acquire U.K. public targets; The Cross-Border sample contains those foreign public bidders acquire U.K. public targets. Y-axis indicates the number of deals, X-axis represents year, spanning from 1985 to 2014.

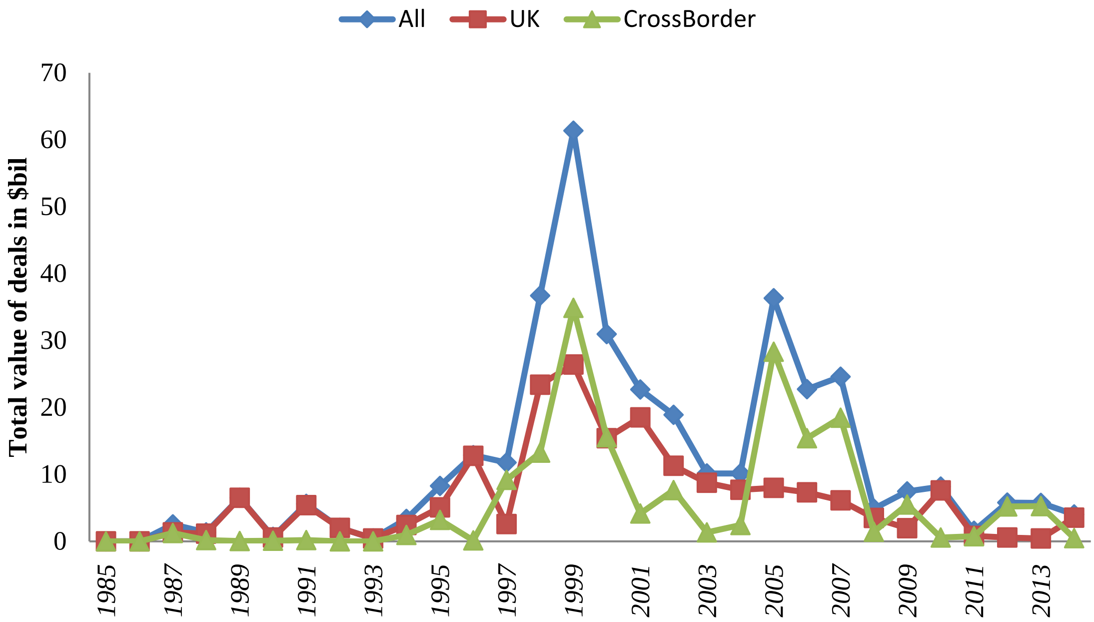

Figure 3.2: Distribution of value of deals by bidder types
This figure plots the time-series distribution of the total value of deals for the full sample, the U.K. domestic sample, and the CrossBorder sample. The U.K. domestic sample contains U.K. public bidders acquire U.K. public targets; The CrossBorder sample contains those foreign public bidders acquire U.K. public targets. Y-axis indicates the value of deals in billion U.S. dollars, X-axis represents year, spanning from 1985 to 2014.

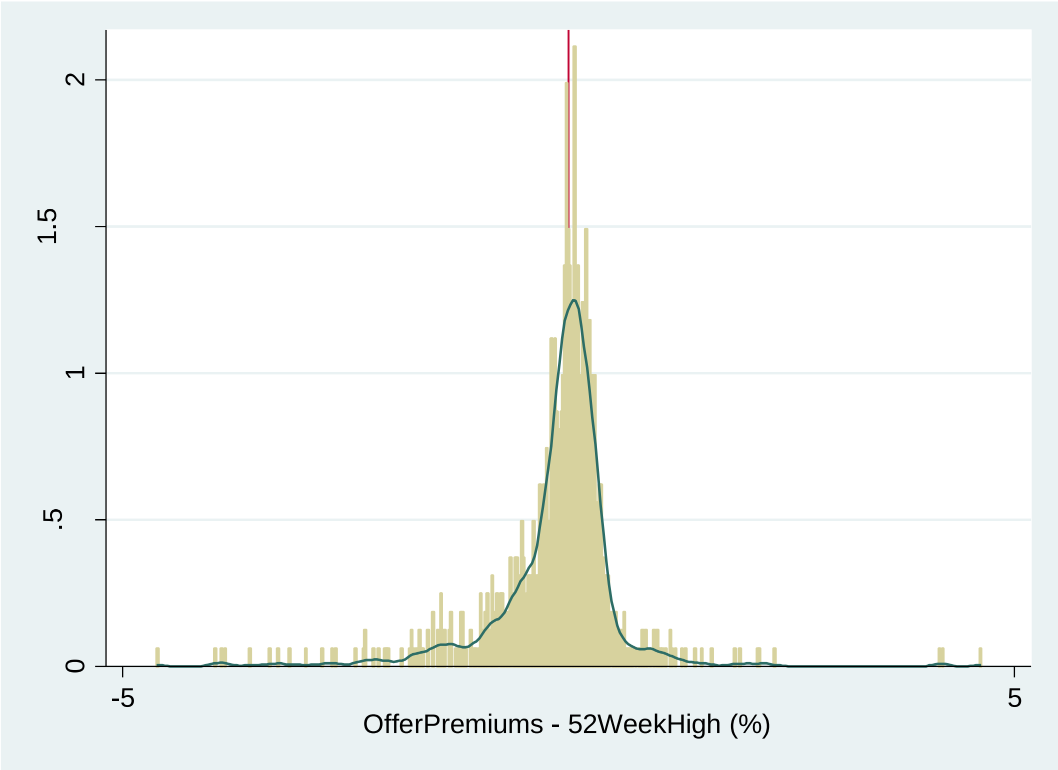

Figure 3.3: Offer premiums relative to the target 52-week high
This figure presents the density of the difference between offer premiums and the target 52-week high, where *Offer Premiums* is the logarithmic term difference between the offer price and the target stock price 30 days prior to the takeover announcement and *52WeekHigh* is the logarithmic term difference between the target's highest stock prices over the 335 calendars ending 30 days prior to the announcement date and the target stock price 30 days prior to the announcement date.

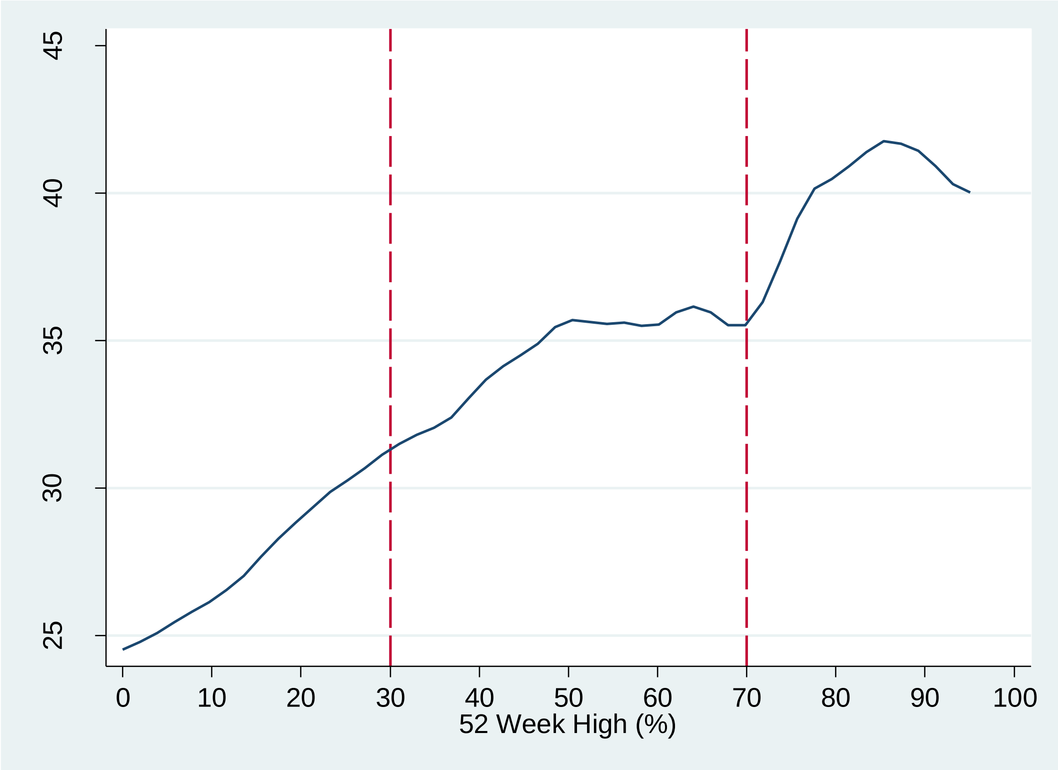

Figure 3.4: Nonlinear relation between offer premiums and the target 52-week high
This figure presents the nonlinear effect of the target 52-week high on offer premiums, where *Offer Premiums* is the logarithmic term difference between the offer price and the target stock price 30 days prior to the takeover announcement and *52WeekHigh* is the logarithmic term difference between the target highest stock price over the 335 calendars ending 30 days prior to the announcement date and the target stock price 30 days prior to the announcement date. We use local polynomial regression to smooth scatter plots, and set our sample where both offer premiums and the target 52-week high are larger than 0, and less than 100%.

CHAPTER 4: RELATIVE REFERENCE PRICES AND M&A MISVALUATIONS

Abstract

This chapter examines the misvaluation hypothesis using a relative reference point (RRP) in the M&A market. The reference point is the deviation of a firm's current stock price from its 52-week high, which reflects investors' perception of the firm's valuation. The market perceives the firm to be overvalued when its current price is close to the 52-week high and to be undervalued when the current price falls below its 52-week high significantly. The RRP indicates the extent to which the bidder is more overvalued relative to the target. The sign of bidders' overvaluation is revealed especially if bidders pay takeover targets with stocks and with higher offer premiums. It was found that the RRP accommodates the implications with respect to the misvaluation hypothesis. The results of this chapter show that bidders prefer stock payments when the RRP increases, indicating that bidders are overvalued and use their stocks to accelerate the process of overvaluation dilution. It became clear that the RRP is positively related to the offer premium, suggesting that a relatively more overvalued bidder tends to overpay for the target for the purpose of diluting overvaluation. With regard to the relationship between the RRP and M&A outcomes, it became apparent that the RRP is found to be positively related to target announcement returns, and is negatively related to the bidder announcement returns. It also became apparent that the RRP is positively related to the stock bidders' long-term abnormal returns. This result shows evidence of bidders' rationality, eliminating concerns about paying according to the RRP results in underperformance. Thus, the results are consistent with the predictions of the misvaluation hypothesis and reference point theory.

4.1. Introduction

"Why could the typical investor expect any better success in trying to buy at low levels and sell at high levels than in trying to forecast what the market is going to do? Because if he does the former he acts only after the market has moved down into buying levels or up into selling levels. His role is not that of a prophet but of a businessman seizing clearly evident investment opportunities. He is not trying to be smarter than his fellow investors but simply trying to be less irrational than the mass of speculators who insist on buying after the market advances and selling after it goes down. If the market persists in behaving foolishly, all he seems to need is ordinary common sense in order to exploit its foolishness."

Benjamin Graham (1949: 31)

The misvaluation hypothesis explains an important motive of merger and acquisition (M&A) activities. The theoretical model of Shleifer and Vishny (2003) predicts that the stock market drives M&As. Overvalued bidders who serve the long-term interests of the shareholders will dilute overvaluation through stock-financed acquisitions, as using stocks would accelerate such a dilution process. The misvaluation hypothesis holds that bidders are rational whereas the market is irrational,[46] which violates the efficiency market hypothesis and differs from what Roll's (1986) hubris management predicts. Following Shleifer and Vishny (2003), Dong *et al*. (2006) provided direct evidence that bidders overpay for targets as long as bidders are overvalued relative to targets. Ang and Cheng (2006), who investigated the long-term performance of stock bidders, found a positive

[46] Shleifer and Vishny (2003) suggest that bidders are rational as they could time the market and use overvalued stocks as a means of payment for acquisitions rather than holding them until they are corrected in the market. Bidders would pay a price that is lower than the estimated synergy created by the combination of firms. The model assumes a target and a bidder with stock volumes K and K_1 respectively, price per unit Q and Q_1 (where $Q_1>Q$) and price per unit for the combined equity S. As synergies can be achieved when $S(K+K_1)-(KQ+K_1Q_1)>0$ the bidders would pay a price P to gain synergies as long as it lies between Q and S, or $Q<P<S$.

relationship between overvalued stocks and long-term performance. Rhodes-Kropf and Viswanathan (2004) provided a behavioural model suggesting that fully rational individuals make mistakes as they tend to overestimate synergies, especially when market-wide valuation is high (Rhodes-Kropf *et al*., 2005).

Conventional misvaluation measures face three major challenges. First, the measures relating to a firm's fundamental value cause estimation biases. Different firms could measure their assets in different accounting approaches, such as adopting fair value and historical cost approaches vary across the firms, which lead to variation of the firm's fundamental value. Companies are also found to manipulate accounting figures to raise the firm's value, which is especially prevalent prior to the financial crisis period. Secondly, existent misvaluation measures are mainly based on historical or forward-looking information, such as price-to-book value (P/B), price-to-residual income value (P/V) and earnings per share (EPS), which are less likely to reflect the latest status of the firm. Thirdly, the frequently used ratio of MTBV is a proxy for both mispricing and investment opportunities of the firm. According to Di Giuli (2013)[47], firms with better investment opportunities should also increase the practice of using stocks in acquisitions, leading to the same prediction as the misvaluation hypothesis.

This chapter constructs a novel misvaluation measure: the relative reference point (RRP), which is derived from the reference point effect[48]. Baker *et al*. (2012) defined the target reference point as the

[47] Di Giuli (2013) proposed some post-merger investment-related proxies to disentangle the effects of mispricing and investment opportunities.

[48] Kahneman and Tversky (1979) proposed that with the reference point effect that people rely heavily on a single salient piece of information while making decisions. Prior research has highlighted the 52-week high as a reference price (Kliger and Kudryavtsev, 2008; Barberis and Xiong, 2009).

deviation of a target's current stock price from its 52-week high.[49] Following this, the bidder reference point in this chapter is defined as the deviation of a bidder's current stock price from its 52-week high, reflecting the extent to which the bidder is overvalued. It is argued that the firm's 52-week high offers the market an insight that the firm is overvalued, given that a firm's 52-week high is the outcome of a series of good news occurred in the past, the price will move toward to the firm's fundamental value once the price momentum disappears. When a firm's current price is close to its highest stock price over the year prior to takeover announcement, it suggests that the firm is still strong in price momentum and should be reluctant to push up the price on the rationale that the firm is already overvalued, whilst if a firm's current price falls significantly below the 52-week high, substantiating the market's belief that the 52-week high is a sign of overvaluation. Based on this, the RRP is defined as the difference between the target and the bidder reference points, indicating the extent to which the bidder is relatively more overvalued than the target (i.e. the relatively more overvalued bidders).[50]

Baker *et al*. (2012) realised that the offer premium is positively related to the target reference point, as the target uses its reference point to reinforce the bargaining position and demand high offer premiums in an M&A deal, especially when the current price deviates significantly from its 52-week high.[51] On the other hand, bidders paying offer premiums based on the target 52-week high would argue that they can outperform the target's recent high and could generate synergies for the combined firm following an M&A deal. In order to achieve the deal, bidders tend to pay for the target according

[49] Their paper used' the target reference point' and 'the target 52-week high' interchangeably. In this chapter, the reference point refers to the difference between the firm's highest stock price over the period of 52 weeks prior to the M&A announcement (52-week high) and the firm's current price at the M&A announcement date. Such an approach makes this reference point easier to interpret.

[50] The construction of RRP is presented in the methodology section of this chapter.

[51] They found a nonlinear relationship between the offer premium and the target 52-week high. In each segment, the offer premium increases with the target 52-week high.

to its 52-week high. Their data support this view, finding that an offer price paid according to the target 52-week high increase the deal success rate.

However, the idea of investigating the target 52-week high effect on the offer premium can explain the negotiation process between the management teams of the two firms and how the firm is priced. Baker *et al*. (2012) failed to reveal the bidders' M&A motive as one cannot tell whether the proposed offer price is a result of strangeness of the bargaining power of the target or any other considerations of bidders. Their paper shows that bidders who believe that paying for acquisitions according to the target 52-week high can generate wealth for shareholders. As a matter of fact, it destroys their wealth, reflected in negative bidders' announcement returns. Negative market reactions have been found when bidders paying for acquisitions according to the target reference point results from overpayment. Unlike those market investors, who are less experienced or lacking of information about the firms, bidder managers can have more information about target's value, and thus their M&A pricing decisions should not be based on a single price number. It leads us to the question of whether bidders have a similar view with the market with respect to the reference point. Specifically, the market might believe that the target 52-week high represents a sign of poor performance when the target's current price falls below the 52-week high significantly, since it is less likely to rebound to the 52-week high, whereas bidders paying for takeover targets according to the target reference point might believe that the target is currently undervalued. It is evident that assessing a firm's short-term performance does not enable direct observation. Rather than short-selling the target's stocks, bidders paying offer premiums according to the target reference point have confidence in managing the deal afterwards. Therefore, it can be argued that offer premiums based on the reference point are to guarantee acceptance of the deal.

Another important question is whether the market also takes a look at the bidder reference point for a similar reason to that for the target reference point, as this is also readily available to the public. Simple intuition suggests that the market believes the bidder 52-week high is a highly relevant piece of price information about the target value and treats it as a reference point, just like the target 52-week high. The bidder reference point offers bidder managers an insight into how much they are able to pay for the target. The bidder believes that the target 52-week high reflects the firm's potential profit-generating ability, and pays M&A offer premiums based on this, with the incentive of restoring targets' price discounts. On the other hand, target managers regard the bidder reference point as how much in offer premiums they can possibly negotiate for when selling the firm. Baker *et al*. (2012) found that targets demand high offer premiums based on the target 52-week high, relying on the assumption that targets are not overvalued, otherwise they may be less likely to sell the firm for a higher offer premium if they are undervalued. Therefore, the RRP reflects the market perception of a firms' valuation. The proxy explains relative valuations from the market angle, eliminating concerns about any biases of a firm's fundamental value.

Since both the target and the bidder reference point have a value in explaining how M&As are structured, solely investigating the target reference point or the bidder reference point does not fully account for the reference point effect on the M&A valuation. It should be expected that the market will look at the bidder reference point believing that bidders whose current price is close to the 52-week high are likely to create value given that they have performed well recently. This could also reinforce the bargaining power of the bidders in an M&A deal, resulting in a lower offer premium paid for the target, similar to Chira and Madura's view (2015). In this situation, when bidders pay for targets with a high offer premium, this would lead the market to believe that there is an overpayment.

However, according to the misvaluation hypothesis, managers could time the market by paying with overvalued stocks for acquisitions. If the RRP is a suitable representation for relative valuations, bidders looking at reference points of the two firms involved are actually going to time the market. If this is the case, it remains largely unexplored why bidders rely on their reference point while paying for the target, given better understanding about the firm.

The RRP is able to capture the market perception of the misvaluation of the two firms involved in an M&A deal. Unlike Dong *et al*. (2006) and Rhodes-Kropf and Viswanathan (2004) who provide a different view of bidder and target's misvaluation,[52] this researcher provides direct evidence that the reference point should unify the investors' view on the misvaluation of the two firms involved. George and Hwang (2004) find misvaluation is driven by investors' reactions. Lacking private information, investors are reluctant to bid up a stock price when it is close to the 52-week high, based on the rationale that it is previous good news that has driven a firm's value beyond its fundamental value, leading them to believe that a firm maybe overvalued. In contrast, investors should also be reluctant to sell stocks of a firm whose price is far below the 52-week high, as this indicates that the firm maybe undervalued. Extending their argument in the context of M&As, it becomes possible that managers are theoretically highly committed in creating long-term value for the firm instead of enjoying short-term profits from possible mispricing phenomena. Rather than Dong *et al*. (2006) who used the difference between bidder's and target's P/B and P/V as proxies for the relative valuations between the two firms, which are based on the firms' fundamental value and argued that there is no actual misvaluation but rather a managerial perception of misvaluation, the case of possible misvaluation

[52] Dong *et al*. (2006) proposed price-to-book value and price-to-residual income value for bidder misvaluation whereas Rhodes-Kropf and Viswanathan (2004) proposed a misvaluation measure based on an assumption that targets are rational, and they overestimate merger synergies when valuation errors are sizable.

with the RRP from a market perspective is examined.

To the best of this researcher's knowledge, this is the first paper to examine the role of the bidder reference point in the context of M&A valuation. Following Baker *et al*. (2012), who proposed the target reference point to explain how much bidders should pay for the acquisition target, it is suggested that the bidder reference point would lead bidders to consider how much they are able to pay for the acquisition target. Bidders who have performed poorly recently may find it difficult to provide any rationale to pay the target with high offer premiums, while bidders whose stock price is close to its 52-week high should be regarded as rich in financing resources, and thus dominate the negotiation table, resulting in a low offer premium. It is much easier for them to persuade their shareholders that the firm is stable and they can manage the deal well afterwards. In addition, in order to boost a firm's value and retain the market's confidence in the firm, bidders should initiate an M&A bid by sticking to the reference point, a way the market can judge, while remaining silent when the firm's price is close to the 52-week high tends to be very risky for the firm's prospects. Barberis and Xiong (2009) suggest that investors tend to sell stocks whose value has recently risen. Grinblatt and Kelaharju (2001) and Huddart *et al*. (2009) report large abnormal sales' volumes around the 52-week high.

Another reason that bidders look at their own reference point is simply because bidder reference point is an important component for managers to time the market. It is expected that managers can exploit mispricing, as in the prior M&A literature that bidders are likely to pay with stocks for acquisitions when they are overvalued (Ang and Cheng, 2006; Dong *et al*., 2006). However, the proxies used in their papers for misvaluation do not accurately reflect the information such as a firm's prospects and managerial effectiveness, whilst the stock price is a relatively more comprehensive information.[53] Therefore, it is suggested that the RRP, indicating the extent to which the market's misperception of the firm's valuation, should provide similar findings as those predicted in the misvaluation hypothesis.

The RRP also signals to the target firm what price it could potentially negotiate with the bidder. If targets believe, using the reference point, that they are overvalued, they would find it even harder to justify this (overvaluation) given that they tend to be generally smaller and lack better investment opportunities than bidders. This leads them to accept even more overvalued stocks for liquidity purposes. In addition, an increase in the RRP also leads the target shareholders to believe that takeover bidders are more attractive as it is more likely for the bidder to hit its reference price again more than the target does. Hence, they might perceive that selling their firm to a well-run bidder would be more likely to create value. According to Burch *et al*. (2012), targets tend to reserve bidders' overvalued stocks, maintaining that highly-valued bidders perform well or have better investment opportunities. Therefore, stocks of the relatively more overvalued bidders are more attractive to targets.

Using M&As to investigate the relationship between the RRP and M&As is of great interest mainly for two reasons. First, the RRP is a direct misvaluation measure that captures the market's perception of the firm's valuation, avoiding biases caused by a firm's fundamental characteristics (Lin *et al*., 2011). M&As serving as a major corporate investment activity draw a great deal of investors' attention. With limited information and limited time in which to process that information, investors are likely to make decisions based on the most current market perceptions of a firm's valuation,

[53] The existence of mispricing in the short term has been confirmed even if the market is efficient, such as investors' underreaction (Debondt and Thaler, 1985).

making the RRP a suitable valuation proxy for this testing ground. Secondly, the RRP will facilitate the M&A process. Bidders can identify the relative overvaluation through the RRP, as an increase of the RRP would potentially drive a relatively more overvalued bidder to dilute overvaluation through acquisitions.

Analysing a sample of 1,878 U.S. domestic public acquisitions announced between 1985 and 2014 and using the RRP to test the predictions of the misvaluation hypothesis, it was found that the propensity to use stocks as a means of payment for acquisitions increases with the RRP, which is more pronounced when market-wide valuation is high. The results of this chapter are robust after applying additional controls. Moreover, the relatively more overvalued bidders tend to pay higher offer premiums. The results continue to hold after endogeneity checks that may become necessary due to omitted variable biases. Finally, multivariate analysis results show that the RRP plays a role in bidders' overpayment in the short term. However, it became evident that higher offer premiums paid by the relatively more overvalued bidders are translated into less negative abnormal returns in the long term, suggesting that bidders who pay for acquisitions according to the RRP protect the wealth of shareholders. Overall, the findings in this chapter are consistent with the predictions of the misvaluation hypothesis and reference point theory.

This chapter makes three distinct contributions to the literature. Firstly, it explains the misvaluation hypothesis from the perspective of the reference point. A dynamic valuation framework with the RRP is developed, based on market perception of a firm's valuation. The RRP overcomes the effect of market-wide valuation for an individual firm, as the two firms involved experience the same market conditions. A firm's current price that is close to its 52-week highest point is more likely to be driven by market-wide conditions (sentiment) and therefore associated with larger market valuation errors, increasing the probability of the firm being overvalued. Using the RRP, it is possible to examine how the valuation difference of the deviation of the two firms drives M&As. Hence, the bar is raised to the market level, eliminating estimation biases arising from the use of a firm's fundamental value. Furthermore, the RRP is easily observable, which encourages investors to use it as a valuation benchmark. The Results of This chapter suggest that the RRP is able to accommodate the implications of the misvaluation hypothesis.

Secondly, the chapter provides direct evidence that more experienced investors behave similarly to less experienced investors in major corporate investment decisions. However, the market and managers may interpret the reference point effect differently as the market looks at the offer premium paid according to the RRP as a result of overpayment by hubris-infected bidders, while bidders paying for acquisitions according to the RRP is as a result of timing the market. The results indicate the less negative long-term abnormal returns for the relatively more overvalued stock bidders compared with the relatively less overvalued (or more undervalued) stock bidders.

Thirdly, this chapter offers a new insight into the method of payment hypothesis. It is suggested that the sign of relative overvaluation is well identified by the RRP, which relaxes the assumptions of irrational targets (Shleifer and Vishny, 2003) and valuation error misled targets (Rhodes-Kropf and Viswanathan, 2004) related to the target's motive of accepting overvalued stocks,[54] as both bidders and targets can identify any relative overvaluation in an M&A deal. Bidders paying stocks instead of

[54] Common assumptions on whether the target will accept the overvalued stocks suggest that targets either have a cash-out purpose (Shleifer and Vishny, 2003) or are misled by the market perception (Rhodes-Kropf and Viswanathan, 2004).

cash for a larger RRP acquisition reduce offer premiums while paying cash in a lower RRP acquisition reduce offer premiums compared with the case of the higher RRP acquisitions. Hence, the RRP justifies the method of payment choice.

The remainder of this chapter is organised as follows: Section 2 provides a range of literature that is related to the misvaluation hypothesis and reference point theory of M&As. Section 3 designs hypotheses with regard to the relations between RRP and the method of payment, offer premiums and M&A outcomes in the short and long runs. Section 4 summarises the data and presents the methodologies. Section 5 analyses the empirical results. Section 6 conducts further robustness checks regarding the role of the RRP played in the M&A surveyed. Section 7 concludes the chapter.

4.2. Literature review

4.2.1. The misvaluation hypothesis

Shleifer and Vishny (2003) developed a theoretical model of M&As based on the assumption that the market is inefficient whereas managers are rational. With the assumption of the misvaluation hypothesis, managers are able to explore the market's mispricing given that firms are not fairly valued. The authors suggest relative valuations of the two firms involved in an M&A deal as an important factor explaining why M&As are initiated, the method of payment choice for financing M&As, and the valuation consequences of the M&A wave. Their theoretical model predicts that bidders sacrifice the short-term benefits in exchange for the firm's long-term value. Overall, the model has raised two important implications to be investigated: the method of payment choice and the long-term performance of the combined firm.

The misvaluation hypothesis is related to the method of payment hypothesis. It suggests that the method of payment choices would reflect bidders' M&A motive. Bidders who offer targets with stocks have long-term horizons, in that they aim to create value instead of reaping mispricing benefits in the short run. Shleifer and Vishny (2003) suggest that the net long-term effect of stock deals would generate short-term losses but long-term 'gains'. Though stock-financed acquisitions bring forth negative returns to the bidder in the long run, those acquisitions benefit bidders who pay with stocks that were significantly overvalued prior to any acquisitions. As noted by Shleifer and Vishny (2003: 301), *'returns are just not as negative as they would have been without the acquisition',* which suggests that overvalued stocks used as a means of payment for acquisitions are treated as a cushion for the collapse of the stocks in the long run. In this respect, a firm's value is enhanced with overvalued stocks even though there are negative long-term returns.

Moreover, the misvaluation hypothesis suggests that the method of payment clarifies the market important information about a firm's value. It is generally believed that bidders who pay targets with stocks would signal to the market that their firms are overvalued or their firms are relatively more overvalued than the targets, whilst targets paid with cash are perceived to be undervalued relative to their fundamental value. This is also consistent with the signalling hypothesis of Myers and Majluf (1984). The major difference between the two hypotheses regarding the method of payment is that the signaling hypothesis assumes that investors are asymmetrically informed in that they do not have private information about the other firm and pay with stocks to deal with uncertainty, whereas the misvaluation hypothesis relaxes this assumption and posits that the primary motive of paying with stocks is that managers try to time the market and aim to create value for the firm. Therefore, the misvaluation hypothesis interprets the long-run reason for the bidder to finance an M&A deal, reasoning that managers who pay with overvalued stocks try to time the market.

The theoretical model of misvaluation hypothesis has given rise to many important implications. First, the issue on whether all-stock acquisitions are driven by misvaluation has raised doubts. Savor and Lu (2009) imply that all stock acquisitions are driven by misvaluation, assuming that managers try to time the market by paying for targets with overvalued stocks and highly valued bidders have the greatest incentive to undertake an acquisition. Their study focuses on long-term performance of stock bidders and finds that though stock acquisitions destroy the firm value, stock bidders of successful deals outperform those who fail to complete an M&A deal. Analysing a sample of 12,578 U.S. mergers between 1962 and 2000, the authors found that stock acquisitions generate long-term negative abnormal returns for a firm. Despite this, the mean difference of buy-and-hold abnormal returns between successful deals and unsuccessful deals increase from 13.6% to 31.2% over the three years following an acquisition,[55] suggesting that stock acquisitions are a result of managers timing the market. In contrast, Fu *et al*. (2013) find evidence that not all stock acquisitions are driven by misvaluation. Among 1,319 stock-financed acquisitions studied in their sample, one third is not motivated by stock overvaluation, which is neither relative to its fundamental value nor relative to the target valuation. Eckbo *et al*. (2016) documented more direct evidence contradicting the notion that stock acquisitions are market-driven. Investigating a sample of 4,919 merger bids between 1980 and 2008, the authors found that bidders paying with stocks as a means of payment for acquisitions tend to be small firms and with low leverage, implying that the reason for bidders to pay with stocks is that the firm is financially constrained and limited in free cash flows. In addition, stock acquisitions

[55] BHARs were calculated with the market-adjusted model. Their paper shows a similar trend when BHARs were calculated with the calendar-time portfolio model.

are more likely to occur in high-tech industries and when target and bidder are in geographical proximity, suggesting the reason for targets to accept stocks is because that they have information about the true position of the bidder, eliminating the concern of information asymmetry.

The second concern relating to the misvaluation hypothesis is whether bidders paying with overvalued stocks could create value for the firm. Shleifer and Vishny (2003) suggest that the long-run reason for the bidders to use stocks is to create value for the firm as holding stocks in an overvalued market will collapse the firm’s value when the market incorporates information and downgrades the value accordingly. With this in mind, bidders are rational. Consistent with this prediction, Ang and Cheng (2006) found that the long-term performance of stock bidders and overvaluation are positively correlated. Analysing a sample of over 3,000 mergers between 1981 and 2001, the authors found significantly positive abnormal returns for stock bidders in the estimation period of one day prior to the takeover announcement date and three years following merger completion. The results continue to hold compared with those drawn from the control group that contains similarly overvalued firms who do not undertake an acquisition. The result shows that overvalued bidders outperform those similarly overvalued non-acquirers.

Lin *et al*. (2011) explain underperformance as long-run reversal of initial overvaluation rather than an overpayment. Their quartile analysis results of buy-and-hold abnormal return by bidder’ P/V show that overvalued bidders underperform their undervalued counterparts in the long run over three years following an acquisition. Their results are robust in the situation where the offer premium and other relevant variables were taken into consideration in the multivariate regression of BHARs on bidder P/V. The rationale of controlling for the offer premium is that bidders with high P/V are also those paying high M&A offer premiums, leading to the same prediction that overpayment results in underperformance. In order to capture the net effect of the market correction on the firm overvaluation, the authors used multivariate regressions to control for the offer premium after univariate analysis. In addition, their data show that the average offer premium for the most overvalued bidders are insignificantly different from the least overvalued bidders, 56.21% and 53.64% respectively, thus weakening evidence that overpayment triggers underperformance in the long run.

Fu *et al*. (2012) argued that long-term underperformance is due to overpayment. They found that overvalued firms tend to pay too much for acquisitions and attribute this to the weakness of the corporate governance structure of a firm. The authors measure post-merger performance of the firm with both the market-based approach as well as the accounting-based approach. Using the accounting-based approach is based on the rationale that the initial overvaluation of the firm will be corrected regardless of the occurrence of an acquisition. This may not be captured by conventional market-based approaches. The authors thus assessed the firm's long run performance with the firm's ROA, which is a proxy for firm's operational performance rather than the market reaction, taking managerial effectiveness into account. Overall, both approaches indicate negative long-term synergies for the firms whose corporate governance structure is of inferior quality.

Since the long-term benefits of an acquisition are nearly zero as predicted by the misvaluation model,[56] leading to a question as to why target managers are willing to accept bidders' overvalued stocks. Shleifer and Vishny (2003) interpreted this as target's short-horizons. With this in mind, targets tend to voluntarily accept overvalued stocks to raise the liquidity of the firm or simply trade

[56] Given the fact that value creation for the bidder, in return, damages the target in the long run.

them after acquisitions for a cash-out purpose. Another explanation is that this matter is attributed to the agency problems of the target firms where managers are offered with lucrative benefits, such as good pay or being retained in the top position of the bidder firm following acquisitions, leading them to give up control of the firm.

However, the assumption of short-horizon targets has been questioned by a number of M&A studies. Rhodes-Kropf and Viswanathan (2004) suggest a rational target model whereby rational targets should not be willing to accept overvalued stocks, as they clearly know about the danger of holding stocks in an overvalued market. The authors suggest that both target and bidder managers are well-informed about their own firms but they lack private information about the other firm. Such private information of the firm tells managers whether the other firm is undervalued or overvalued but cannot tell managers what drives such misvaluation. A rational target is able to assess the synergies of the merger and decide not to accept overvalued stocks so as to prevent the value of the firm from being damaged. However, the view is distorted during the periods when market-wide valuation is high. As it is explained by Rhodes-Kropf and Viswanathan (2004), *'the rational target correctly filters on average but underestimates the market wide effect when the market is overvalued and over estimates the effect when the market is undervalued.'* Thus, an overestimation of synergy positively correlates with valuation errors. Despite target managers being rational, they may find it hard to distinguish synergies from misvaluation without knowing what drives misvaluation. Their data indicate that stock-financed acquisitions are prevalent during high market-wide valuation periods when rational targets tend to make mistakes by wrongly accepting bidders' overvalued stocks.

Following this, Rhodes-Kropf *et al*. (2005) suggest that rational targets tend to accept overvalued stocks when valuation errors mislead their estimation on synergies. The authors find the volume of stock acquisitions and valuation errors are positively correlated. These authors use regression techniques to break the market-to-book ratio (M/B), the conventional misvaluation measure, into three individual components: the firm-specific misvaluation, the sector-wide misvaluation and the long-run value to book which captures long-run growth opportunities. Their data suggest that the firm-specific level and the sector-level are the most important factors driving misvaluation. More specifically, bidders on average have higher firm-specific errors than targets, which is on average 60%. Misvaluation can reconcile about 15% of merger activity at the industry level. Rhodes-Kropf *et al.*'s study (2005) shows that low long-run value-to-book firms buy high long-run value-to-book firms, suggesting that low growth opportunities firms acquire high growth opportunities firms. Overall, misvaluation-driven mergers are as a result of valuation errors, contradicting to what the misvaluation hypothesis assumes.

Likewise, Di Guili (2013) finds rational targets, suggesting that target managers care about the quality of mergers rather than private benefits. In this regard, stocks are associated with better investment opportunities. So as to distinguish the effects of misvaluation and growth opportunities, the author proposes a new proxy for investment opportunities of the firm and finds there is positive correlation between stock payment and the firm's prospects. Following this line of literature, Vermaelen and Xu (2014) explained rational targets with capital structure theory. They found that rational target managers are likely to accept overvalued stocks as they believe bidders paying with stocks will reach an optimal capital structure. They proposed a prediction model regarding the method of payment, which predicts that the bidder pays cash when the market expects cash payment. If bidders pay cash when the model predicts stocks, the long-term abnormal returns will be positive based on the rationale that the market under-reacts to the firm. Whilst bidders pay with stocks as the market predicted, their long-term abnormal returns will be negative, assuming that the market can identify the motive for financing an M&A is overvaluation. The prediction model explains 89% of Vermaelen and Xu's M&A sample (2014). It indicates that cash can generate positive long-term abnormal returns on the condition that the market recommends stocks, whereas bidders should pay cash when the model predicts cash, indicating that target managers are rational in that they would not accept overvalued stocks without a reasonable explanation.

The misvaluation hypothesis explains *who buys whom* and *the medium of payment*. Dong *et al*. (2006) conducted a thoroughly investigation into the relationship to these predictions. The authors analysed pre-takeover valuation of targets and bidders by using the firms' market price-to-book value of equity (P/B), and market price-to-residual income (P/V). This latter misvaluation measure has been largely ignored by previous studies. Their sample consists of 3,732 U.S. acquisitions announced between 1978 and 2000. Their study suggests that these two misvaluation measures are highly correlated but P/B tends to have more explanatory power over the misvaluation hypothesis than P/V on the rationale that managers are becoming more familiar with P/B than P/V. According to Dong *et al*. (2006), P denotes the market value of the firm while both B and V denote the firm's fundamental value. Thus, the essence of these two misvaluation proxies indicates the extent to which a firm's market value deviates from its fundamental value. The difference between B and V is that, the former measures the firm's book value whilst the latter contains analysts' forecasting information. Therefore, P/B is a proxy for the firms' growth opportunities or managerial effectiveness, which is used to investigate the Q hypothesis, whilst P/V is more likely a pure proxy for misvaluation in this context given that the measure reflects expectations of analysts' forecasts about the firm's future performance. However, it is argued that analysts' forecasts may not accurately reflect the information about the firm's prospects and managerial effectiveness. Therefore, the authors propose to include both P/B and P/V to investigate the misvaluation hypothesis.

Dong *et al*.'s study (2006) focuses on the relationship between the valuations of both the bidder and the target and many aspects of M&As, including the method of payment, M&A offer premiums, M&A outcomes and a wide range of deal characteristics. The sample includes 2,922 successful and 810 unsuccessful takeover bids announced between 1978 and 2000, and filters out those M&A deals whose transaction value was less than $10 millions, eliminating concerns about small deals confounding the result.[57] Dong *et al*.'s data show that bidders are generally those with a higher valuation whereas targets are those with a lower valuation, reflected in higher P/B and P/V of bidders opposed to targets. Once again, a higher valuation firm is more likely be the takeover bidder than a lower valuation firm, which is consistent with the prediction in Shleifer and Vishny's theoretical model (2003). Stock-financed takeover bids show significantly higher valuation of the bidder and the target than cash-financed takeover bids. Of particular note, the mean valuation differential between the bidder and the target are highly significant in the two misvaluation measures in the stock-financed acquisition subsample, whilst P/B has more explanatory power than P/V in explaining the difference in bidder-target valuation in the cash-financed acquisition subsample. With respect to M&A outcomes, the authors noted that bidders with higher P/B tend to pay targets with higher M&A offer premiums, which are associated with negative market reactions to the bidder and positive market reactions to the target.

[57] The authors also winsorised P/B and P/V of the firms at 1% and 99% levels for a similar reason.

Their study proposes two different proxies for misvaluation and find some rather mixed results when relating to a wide range of takeover characteristics. The authors found that cash bidders are also relatively more overvalued than targets. The misvaluation effect triggers bidder managers' incentives of exploring mispricing targets. As a result, rather than paying targets with stocks, bidders who are more overvalued would also pay cash to the undervalued targets. This argument complements stock-market driven acquisitions, reasoning that either cash or stocks may be used when the bidders' M&A motive is to dilute overvaluation. The authors also note that these proxies for misvaluation are a reflection of the managers' perceptions of a firm's valuation rather than the true position of the firms, explaining relative valuations from a behavioural finance perspective. Despite that, the study has thoroughly investigated the misvaluation hypothesis and provides empirical evidence relating to what the theoretical model of misvaluation had proposed, failing to provide any rationale as to why target managers accept overvalued stocks. It remains unclear whether target managers accept bidders' stocks believing that bidders with high P/B or P/V are those with good past performance and thus are able to create synergies for the combined firm.

With this in mind, Rhodes-Kropf and Viswanathan (2004) and Rhodes-Kropf *et al*. (2005) proposed that targets accept overvalued stocks is because they are misled by valuation errors. Whilst Burch *et al*. (2012) suggest that targets prefer to hold highly valued stocks as they believe those firms are normally well-run and have better prospects, implying that targets can identify the sign of overvaluation and voluntarily accept those highly valued stocks. Their findings are consistent with the prediction of the Q hypothesis. By accepting those highly overvalued stocks, targets could liquidate their holding position.

Many additional studies have proposed various proxies for misvaluation, which challenge the conventional misvaluation measures. For example, Ben-David *et al*. (2015), who used short interest as a proxy for misvaluation, reflecting investors' under- and over-reactions to the firm's valuations. The authors found that stock bidders have higher short interests relative to targets. The use of short interest as a measure for misvaluation isolates the effect of growth opportunities which may lead to the same prediction that stocks are likely to be used as a means of payment for M&As. Ben-David *et al*.'s results are consistent with the misvaluation hypothesis. Di Guili (2013) challenges MTBV by arguing that it represents both the misvaluation and growth opportunities of a firm. It is generally believed that firms with a high MTBV may be a result of overvaluation or better investment opportunities. So as to distinguish the effects of misvaluation and investment opportunities, the author develops a new measure for investment opportunity, which is based on post-merger investment. Analysing a sample of 1,187 mergers announced between 1990 and 2005 and using the average ratio of capital expenditures over assets in the four years following the merger as a proxy for the firms' investment opportunities, the author finds that the propensity for using stocks increases with the post-merger investment ratio. His study indicates that the firm's market value relative to its fundamental value is a problematic proxy for misvaluation and likely to bias the predictions of the misvaluation hypothesis.

4.2.2. Reference point theory of M&As

The reference point is an essential implication of Kahneman and Tversky's prospect theory (1979). It portrays the concept that people' s feelings about the gain and the loss are judged relative to a particular reference point, which is normally the current position of a subject, the status quo or the aspiration level, as opposed to a reference point. Reference points distinguish prospect theory from the traditional expected utility theory that emphasise the final outcome of the wealth level but fails to account for the decision-making process.

The reference point theory is rooted in Tversky and Kahneman's anchoring and adjustment mechanism (1974) suggesting that people tend to rely heavily on a piece of salient but perhaps largely irrelevant information at an initial stage of the decision-making process and adjust the final estimates when new information is incorporated. This psychological phenomenon refers to the belief formation process. Many implications of prospect theory are largely built upon the reference point theory. There exists a loss-aversion tendency, given an equal-size of loss or gain, the feelings about the loss are more pronounced than those about the gain (Kahneman and Tversky, 1979), and there also exists a diminishing sensitivity that the feelings about the gain and loss are more pronounced in the scenario where the outcome is close rather than distant in relation to the reference point (Tversky and Kahneman, 1992).

The reference point theory interprets how people make decisions under the situation where considerable information uncertainty exists. Baker *et al*. (2012) were the first to relate this theory to the M&A pricing decision. They noted that the use of the target 52-week high as the reference price lies in two proposed reasons. First, the firm's 52-week high is frequently reported by the financial media, which reinforces the investors' formation process to utility realisation. Secondly, Baker *et al.* justify the rationale behind the use of the target 52-week high from the psychological and practical points of views of both the target and the bidder firms.[58]

[58] The researcher discussed the main findings of their paper in the previous Chapters.

The authors also document evidence of the reference point effect on the market. When assessing the deal outcome, the authors found that there are high offer premiums to targets who negotiate bidders with their 52-week highs, whilst bidders receive negative market reactions, indicating that the offer price driven by reference price is due to an overpayment. On the whole, Baker *et al.*'s study (2012) suggests an evident reference point phenomenon for both the individual and the institutional investors.

Chira and Madura (2015) extended Baker *et al*.'s work (2012) by interpreting the role of reference point prices as the bargaining power of the firm. Chira and Madura focused on the relationship between takeover possibility and the reference points of the two firms involved. Similar Baker *et al*.'s work (2012), Chira and Madura measured the reference point as the deviation of the firms' 52-week highest stock price from their current prices. The study assumes that the firms have greater bargaining power when its current price is closer to, rather than distant from, its highest stock price over the year. There results show that firms are likely to be takeover bidders when they have less distance between their current price and the highest price over the year, indicating that a bidder's great bargaining power leads to a greater incentive of undertaking acquisitions. Moreover, it was found that firms are less attractive to unaffiliated firms when the distance between the reference price and the current price is large, arguing that the firm whose price deviates considerably from its 52-week high tends to resist the deal unless a high price is offered in compensation. And because of this, bidders will abandon the deal.

The authors suggest that both the target and the bidder will assess the firm value with their own reference points. By examining the relationship between deal completion and the firms' reference points, the authors argue that targets with a low stock price relative to their 52-week highs may perceive themselves as undervalued, resulting in strong deal resistance. Bidders will pursue the deal by paying for takeover targets with stocks whose price is high relative to their 52-week highs, given that bidders perceive their firms to be overvalued. However, their study fails to provide any rationale on why bidders would look at their own reference points since they have more information about their firm than other investors in the market. In addition, the study argues that the deal is likely to be completed when the price distance between the firm's 52-week high and the current price is small for both the target and the bidder, relying on the explanation that psychological barriers between the two firms are low.

Many additional studies have indicated an important role the firm's reference point price plays on investors' trading strategies. George and Hwang (2004) used a firm's 52-week high as the reference point price and found evidence of reference dependence bias in the stock market. They note that investors view the price that is close to its 52-week high price as good news and the price that has a great distance its 52-week high as bad news. The mechanism is that investors are unwilling to bid up a price when it is close to the 52-week high and should be reluctant to press down a price when it is a long way below the 52-week high. This reasoning suggests that investors have a tendency to make decisions based on a reference point price, which is the firm's 52-week high. The salient evidence of reference dependence is also supported by the findings of Grinblatt and Kelaharju (2001) who investigated the Finnish stock market. They used a firm's historical high as a reference point price and found that investors avoid selling (buying) stocks whose value is far below (close) to the historical high. Huddart *et al.* (2009) observed the phenomenon of abnormal sales' volume around the 52-week high based on a sample of 2,000 firms over 24 years.

Shefrin and Statman (1985) put forward the disposition effect that investors tend to sell winner stocks too soon and hold loser stock too long, which is in favour of prospect theory. Barberies and Xiong (2009) also documented evidence of loss-aversion based on a large sample of activities by individual investors. These authors show investors' greater propensity for selling stocks whose value has risen recently and buying those whose value has been downgraded recently. According to a survey of reference point theory (Olsen, 1997), it often occurs that the reference point effect is evident among both individual and institutional investors, which implies that reference dependence bias is human nature when facing uncertainty.

Bidder and target managers look at the reference point of the firms because they know the mark*et al*so has a reference-dependence bias. In this case, bidder managers can justify the motive for M&A offer premiums paid for the target. Targets demand offer premiums around the target 52-week high to avoid being blamed for selling the firm with a low valuation. Though Baker *et al*. (2012) showed that offer premiums are positively related to the target 52-week high, it is less likely for the researcher to know the whole reason for the bidders' M&A motive without considerations about the bidder's side. For example, bidders are overconfident as they would argue that paying for targets based on their 52-week highs can create synergies. It may also be the case that bidders are in a relatively weaker bargaining position to targets because of information asymmetry, indicating that offer premiums relative to the target 52-week high are due to target's strong bargaining power. This chapter puts forward Baker *et al*.'s idea (2012) by adding the role of the bidder reference point, and explores how M&A activity is structured, based on the reference point of the two firms involved.

4.3. Hypothesis development

Shleifer and Vishny's misvaluation hypothesis (2003) indicates that bidders have a direct incentive to use stocks as means of payment to finance an M&A deal when they are overvalued. It is the case that overvaluation is a managerial perception as noted by Dong *et al*. (2006). The market has a tendency to assess the firm value based on the reference point price, as predicted by reference point theory of M&A (Baker *et al*., 2012). Managers whose aim is to time the market will also consider this and eliminate such overvaluation concerns through M&As. Bidders are likely to be those with a stable performance relative to targets, drawing its current price closer to the 52-week high, rather than the case of the target. This gives rise three possible situations when the firm's value has recently moved toward to its 52-week high. If bidders are fairly estimated, nearness to the 52-week high price indicates bidder's strong bargaining power. The market believes that the firm is strong in making profits for the combined firm, and as a result, bidders would pay fewer offer premiums. The second scenario is that bidders are possibly undervalued even though there is nearness to the 52-week high price given that the firm's growth opportunities may be underestimated. The arrival of the information at a later stage will push the firm's price to a new 52-week high. If so, bidders would possibly pay for targets with cash rather than undervalued stocks. The third scenario is that bidders are overvalued with nearness to the 52-week high price. If it is the case, bidders are likely to pay for a target with stocks, aiming at diluting overvaluation and creating firm value in the long run. Furthermore, eliminating overvaluation requires additional costs, which result in a high offer price in excess of the target's current value.

The RRP eliminates any of these concerns on the bidders' value, as it reflects the extent to which the bidder is relatively more overvalued than the target from the market perspective. This proxy investigates the valuation at the market level rather than at the firm level, which is the misperception of the firm's valuation created by those investors lacking private information about the firm. If managers can time the market, M&As are a valuation game. It should be suggested that bidders should dilute their valuations as long as they are relatively more overvalued than the target. One important sign of this overvaluation is that bidders choose stocks as a means of payment for finance M&As, since holding stocks in an overvalued market will destroy the wealth of long-term shareholders. Therefore, the probability of using stocks for payment purposes increases in line with movements in the RRP leading to our first testable hypothesis of

H1: There is a positive correlation between the RRP and the likelihood of using stocks as a means of payment in M&As.

Shleifer and Vishny (2003) predicted that bidders' overvaluation will be diluted through acquiring an undervalued (or less overvalued) firm. Dong *et al*. (2006) proposed P/B and P/V as proxies for misvaluation, which is the firm's market value relative to its fundamental value. Dong *et al*.'s findings imply that diluting overvaluation remains a priority objective for bidder managers regardless of the method of payment used for finance M&As. It might be the case that cash bidders are also overvalued, in that overvaluation drives acquisitions. According to this argument, bidders make a takeover bid with cash rather than not bidding at all. Thus, bidders can profit from acquisitions by using stocks when they are relatively more overvalued and using cash when targets are undervalued. This reasoning implies that M&As result from bidder managers timing the market.

Relative bidder-target valuations were measured with RRP, capturing the market perception of a firm's valuation and also giving consideration of the valuation of the two firms involved. Since both target and bidder managers will assess their firms' value according to the reference point (Chira and Madura, 2015), they can identify the signs of relative valuations. Thus, bidders would pay offer premiums in exchange for the control of the target firm. Targets would demand high offer premiums based on this relative valuation, as they can also identify any misvaluation reflected in the RRP. They would resist the deal unless high offer premiums were offered in compensation. Based on the above argument, it was tested that

H2: M&A offer premiums correlates positively with the RRP.

Finally, bidders with a relatively smaller changes related to the firm's 52-week high (with a price that is close to its 52-week high) are expected to have a stronger bargaining position, leading to low offer premiums being paid to the target. Thus, a high offer premium would offer shareholders a straightforward sense that there is an overpayment, thus reacting negatively to the bid announcement. On the other hand, this researcher argues that M&As serve as a value enhancement opportunity for the target firm as shareholders would expect that targets with a relatively higher reference point would have a higher probability of profiting through acquisitions. Therefore, our last testable hypothesis is

H3: Bidder (Target) short-term performance correlates negatively (positively) with the RRP.

4.4. Data and methodology

4.4.1. Data

The initial sample covers 36,506 U.S. domestic public acquisitions announced between January 1, 1985, and December 31, 2014, as provided by Thomson One. Stock price was collected from CRSP, and a series of standard accounting variables were collected from COMPUSTAT. Accounting variables were required to be available for the fiscal year end prior to the announcement date are required. Public acquisitions refer to the two firms involved being publicly traded U.S. firms (listed on NYSE/AMEX/NASDAQ).[59] Once deals that were classified as recapitalizations, repurchases, self-tender offers and rumors according to Thomson One were excluded, it was left with 11,615 observations.[60] The offer premium is not a missing value, which further reduces the number of observations to 5,450. The stock price for the calculation of the bidder and the target 3-day CARs were required to be available, which left with 4,630 observations. The payment method information to be available in Thomson One, which left the chapter with 4,290 observations. It yielded 2,156 observations after excluding all bidder variables with a missing value, and has a final sample of 1,878 observations after excluding all target variables with a missing value.[61]

The RRP effect on the probability of using stocks as a means of payment for acquisitions was analysed by controlling for a series of deal, bidder and target characteristics, which are standard control variables highlighted in M&A literature. Bidder size is expected to be negatively related to the stock-financed acquisition. Faccio and Masulis (2005) suggest that larger bidders have higher credit facilities, which reduces the probability for using stocks. The firm's growth opportunities were measured with MTBV. Higher MTBV bidders tend to use more stocks in acquisitions, in that they

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[59] Firms should have an available stock price to calculate the 52-week high.

[60] By doing these, acquisitions in which the bidder and the target is the same firm were eliminated, on the rationale that the difference between the target and the bidder reference points cannot be distinguished (e.g. self-tender offers), and acquisitions in which the target actively searches for the bidder were also excluded, since those deals violate the reference point effect.

[61] All variables that have a missing value and were used in the regressions were excluded, following a summary of the acquisition sample and variables.

reserve cash to fund new investment projects (Rhodes–Kropf *et al*., 2005; Dong *et al*., 2006). The firm's profitability was measured with the return-on-asset ratio (ROA). It should be suggested that firms with higher profitability are more likely to use retained earnings held in cash rather than stocks as it reduces costs of financing. Target characteristics were also accounted for, since stocks are more likely to be used to mitigate the target risk (Hansen, 1987). In this respect, the propensity for using stocks is greater when targets' risks increase, such as large size, with a high MTBV and a low ROA.

Following Officer (2004), information asymmetry is measured by calculating the standard deviation of returns. Hansen (1987) suggests that stocks are more likely to be used when level of information uncertainty increases. Leverage is defined as debt-to-equity ratio (D/E). Vermaelen and Xu (2014) suggest that over-levered bidders who justify stock financing in terms of moving to an optimal capital structure lead to an increase of overvalued stocks for acquisitions. Whereas targets with high leverage should be reluctant to receive such stocks. Liquidity is defined as cash flow-to-equity ratio (CF/E). Higher liquidity firms are more likely to be less financially constrained firms, which result in the method of payment for acquisitions is cash rather than stocks. Inclusions of capital structure related variables in the regressions would allow us to disentangle the effects of firm's capital structure decision and misvaluation on stock-financed acquisitions.

In a further analysis, the RRP effect on the offer premium was analysed. Different categories of variables were controlled in line with the work of Eckbo (2009). Specifically, firm size was measured with logarithm of market valuation (MV). According to the hubris management hypothesis (Roll, 1986), larger bidders tend to pay generously for smaller targets. The firm's profitability was measured with ROA. Agency theory suggests that poor-performing bidders tend to dissipate firms' resources and overpay for the target, whereas well-performing firms are attractive to bidders (Schwert, 2000). The firm's growth opportunities were measured with MTBV. Rau and Vermaelen (1998) suggest the extrapolation hypothesis that glamour bidders are less cautionary than value bidders about the target valuation, leading to higher offer premiums. Harford (1999) suggests that the target MTBV links with the managerial takeover motive since bidders are more aggressive in exploring synergies from the lower MTBV target. Stock volatility were calculated with standard deviation of returns over 335 calendar days ending 30 calendar days prior to the announcement date. All regressions include year and industry effect.

The M&A sample was matched to firms' characteristics collected from COMPUSTAT, and to stock price information collected from CRSP. By doing this, all relevant information was presented in one data file for the purpose of conducting analyses. MV is defined as the product of market price and outstanding shares (CRSP: SHROUT*PRC). "Relative Size" is defined as the deal value divided by bidder MV. ROA is return-on-asset ratio, defined as net income (Compustat: NI) divided by total asset (Compustat: AT). MTBV is market-to-book value, defined as the market value of equity to the book value of equity, where book value of equity is total shareholders' equity (Compustat: SEQ) plus deferred taxes and investment tax credit (Compustat: TXDITC) minus the preferred stock redemption value (Compustat: PSTKRV). Capital structure related variables were also included in the regressions of the probability for using stocks on RRP. Leverage was measured by debt-to-equity ratio, defined as total long-term debt (Compustat: DITT) divided by the book value of equity. CF/E is cash flow-to-equity ratio, defined as income before extraordinary items (Compustat: IBC) plus depreciation and amortization (Compustat: DPC) minus cash dividends (Compustat: DV).

4.4.2. Summary statistics

Table 4.1 reports a summary of the acquisition sample. Stock-financed acquisitions are those refers to acquisitions that are 100% financed by stocks. Cash-financed acquisitions are those refers to acquisitions that are 100% financed by cash. "Mix" refers to acquisitions that are neither all stock-financed nor all cash-financed acquisitions. "Completed" refers to completed deals in the sample period investigated in our chapter. "Tender" denotes tender offers, referring to deals that are proposed directly to shareholders. This opposes to mergers, which made through negotiation of the management teams of the two firms involved. "Hostile" denotes to hostile bids, portraying deal attitude. "Diversification" refers to diversified deals in which the primary two Standard Industry Classification codes are different between bidders and targets.

The average transaction value for 1,878 M&A deals in the sample is 1.54 billion US dollars. Of 1,878 acquisitions, 608 all stock-financed acquisitions, 726 all cash-financed acquisitions and 539 mixed acquisitions.[62] There were 702 diversifying acquisitions, as opposed to 1,176 relatedness deals, and 1,597 successful acquisitions compared with 277 unsuccessful deals.[63] There were a small proportion of tender offers and hostile acquisitions, 380 and 134 respectively.

Table 4.2 reports summary statistics for variables. Panel A presents the dependent variables used in OLS regressions, including offer premiums, the bidder and the target 3-day CARs calculated using the market model. The mean value for offer premiums is 31%. It is suggested that bidders have to pay on average over 30% in excess of the target's market price to gain the firm control. The mean value

[62] The method of payment information for five acquisitions is defined as "Others" in Thomson One.

[63] There were 1,874 deals with information about deal status based on Thomson One.

for bidder CARs is lower than target CARs, 22.2% over -1.1%. Panel B presents the main variables of interests. The mean value for the bidder reference point is lower than the target reference point, 29.4% to 41.2%, which suggests that bidders on average are relatively more overvalued. The mean value for RRP is 11.8%. Panel C presents all control variables. Bidders are on average larger than targets, 7.50 as opposed to 5.21. Bidders have better investment opportunities than targets, 3.99 compared to 2.69. The profitability for bidders is higher than for targets, 2.9% over -4.9%, reflected in ROA. Overall, firms with larger size, higher profit-generating ability and better investment are likely the takeover bidders whereas those with smaller size, lower profitability, and lack of investment opportunities are likely the takeover targets. The summary statistics are generally consistent with prior M&A literature (Fuller *et al*., 2002; Moeller *et al*., 2004).

4.4.3. Methodology

4.4.3.1. Relative reference point (RRP) and offer premiums

Reference point (RP) refers to what extent the current price deviates from its 52-week highest price. The 52-week highest price is a highly relevant piece of price information that shapes investors' minds to the firm's prospects. Lacking information and time availability to process the deal information, the market would naturally borrow this to compare with the current price. Hence, the firm's 52-week highest price is the market reflection of the firm's best performance. According to George and Hwang (2004), the 52-week highest price is the outcome of a series of good news that occurred in the past that drives the firm's market value beyond its fundamental value. Thus, the 52-week high is largely related to the market's perception of the firm's valuation. A lower reference point would indicate that the firm is still in the momentum of the "good news" effect, leading firms to be more overvalued. In contrast, a higher reference point indicates that the good news effect is less relevant, leading firms to be less overvalued. Therefore, a target reference point (TRP), larger relative to the bidder reference point (BRP), sending a signal of market-wide perception regarding the target firm being less overvalued than the bidder firm. Furthermore, the extent to which the bidder is more overvalued than the target is measured with the relative reference point (RRP). Therefore, the market misperception of firm's valuation tends to reduce when a lower reference point firm mergers with a relatively higher reference point firm. The data also show that TRP is on average larger than BRP.[64] Formulas for RP, RRP and offer premiums were illustrated as follows:

$$RP_i = \log(52WeekHigh_{i,t-30}) - \log(StockPrice_{i,t-30}) \tag{4.1}$$

$$RRP_i = TRP_i - BRP_i \tag{4.2}$$

$$OfferPremiums_{i,t} = \log\left(OfferPrice_{i,t}\right) - \log\left(TStockPrice_{i,t-30}\right) \tag{4.3}$$

where RP_i denotes the reference point of each firm *i*. The bidder (target) reference point is defined as the logarithmic term difference between the bidder's (target's) highest stock price over 335 calendar days ending 30 days prior to the announcement date and bidder's (target's) stock price 30 days prior to the announcement date.[65] RRP_i denotes relative reference point which is defined as the target reference point (TRP_i) and the bidder reference point (BRP_i). Offer premiums were calculated as the

[64] The difference between the target reference point and the bidder reference were used, attempting to obtain a positive value, making the coefficients easier to interpret. According to the prediction, a less overvalued target should have a higher reference point whereas a more overvalued bidder should have a lower reference point. The descriptive statistics also show that, on average, the target reference point is larger than the bidder reference point: 0.412 and 0.294.

[65] Using the firm's stock price 30 days prior to the announcement date tends to mitigate the market reactions released due to information leakage.

logarithmic term difference between the offer price ($OfferPrice_{i,t}$) and target stock price 30 days prior to the announcement date ($TStockPrice_{i,t-30}$).

As this chapter examines the effect of a relative valuation between the two firms involved on an M&As transaction but not the extent to which the firm's market value deviates from its true value, the use of the RRP allows the researcher to establish a bilateral valuation framework where it is the valuation deviation of the two firms influences the market perception. The market-wide valuation would potentially drive the firm's market value away from its fundamental value (Rhodes-Kropf and Viswanathan, 2004). By doing so, it can account for the influence of market swings, as the RRP is a relative valuation measure allowing the researcher to observe a new equilibrium of the firms' valuation.

4.4.3.2. Logistic regressions

Logistic model refers to that dependent variable is categorical. The dependent variable of binominal logistic model takes two values. This model was employed to study whether acquisitions are purely financed by stocks or other means of finance, taking value of 1 and 0 respectively. While the dependent variable of multinomial logistic model takes more than two values. The model was employed to study the magnitude change in the RRP causes the likelihood of the acquisitions are financed by stocks rather than cash or the mix payment. Both binomial and multinomial logistic models were employed in this chapter. Binominal logistic regression was used to examine the RRP effect on the probability of using stocks. The logistic coefficients were transferred into marginal effect (ME) at sample means, which provide consistent interpretation of OLS estimates. In addition, multinomial logistic regression was used to examine the RRP effect on the probability of using stocks rather than other means of payment as a robustness check. The model was specified as follows:

$$P(Stock_{i,t}) = Pl(\alpha + \beta_1 RRP_i + \sum_{i=1}^{N} \beta_i X_{i,t} + \varepsilon_{i,t}) \tag{4.4}$$

$$Q(Stock_{i,t}) = 1 - P(Stock_{i,t}) = Pl(-\alpha - \beta_1 RRP_i - \sum_{i=1}^{N} \beta_i X_{i,t} - \varepsilon_{i,t}) \tag{4.5}$$

where Pl represents the possibility function, the main variable of interest to be investigated is RRP_i. X_i denotes control variables in relation to the payment choices for M&A deals. (4.4) and (4.5) combined yield the behavior of the logistic function, as follows:

$$Pl^{'}(\alpha + \beta_1 RRP_i + \sum_{i=1}^{N} \beta_i X_{i,t} + \varepsilon_{i,t}) = P(Stock_{i,t})\ \ Q(Stock_{i,t})\beta \tag{4.6}$$

The function represents the derivative in respect of the $RRP_{i,t}$.

4.4.3.3. Classification of high-, neutral- and low-valuation markets

Rhodes-Kropf and Viswanathan (2004) suggest stock-financed acquisitions are positively correlated with market-wide valuation. Following Bouwman *et al.*'s approach (2009), market valuation periods were classified using the price-earnings (P/E) ratio of the market index (S&P 500) and monthly data. Firstly, the market P/E ratio was de-trended by removing the best straight line fit (OLS) from the P/E of the month in question and the five preceding years. Secondly, each calendar month was classified into high- (low-) market valuation groups if the de-trended market P/E ratio of that month was above (below) the five-year average. Then, the months were ranked according to the de-trended market P/E ratio. Months in the top 25% of the above average group were classified as high-market valuation months, months in the bottom 25% of the below average group were classified as low-market valuation months, the remaining months being classified as neutral-market valuation months. Thus, half of the months were classified as neutral-market valuation and the other half contains months of both high- and low-market valuation. The idea of de-trending market valuation is to remove the upwards trend because the most recent acquisitions generally have a higher market valuation than the past due to market inflation.

4.4.3.4. Short-term method

Following Eckbo *et al.*'s market model (2016), firms' announcement returns were calculated as follows:

$$R_{i,t} = \alpha + \beta_1 R_{m,t} + \varepsilon_{i,t} \tag{4.7}$$

where $R_{i,t}$ denotes holding period returns (CRSP: RET) for firm *i* in the period *t*, $R_{m,t}$ denotes value-weighted market returns including dividends (CRSP: VWRETD), $\varepsilon_{i,t}$ denotes the error term. We estimate market model parameters over the window from 261 to 28 trading days prior to the announcement date [-261, -28], and use a 3-day event window [-1, 1].

4.4.3.5. Long-term method

4.4.3.5.1. Market-adjusted model

Following Loughran and Vijh (1997), the firm's long-term performance was calculated with the market-adjusted buy-and-hold abnormal returns (BHARs). And 36-month BHARs were presented with the following equation:

$$BHAR_{i,t} = \prod_{t=1}^{T}(1+R_{i,t}) - \prod_{t=1}^{T}(1+R_{index,t}) \tag{4.8}$$

where, $R_{i,t}$ is the arithmetic returns for firm *i* on day and $R_{index,t}$ is the arithmetic return for the market index on day *t*.

4.4.3.5.2. Size-adjusted model

Fama (1998) claims that the use of different long-term methodological approaches can generate different results. He suggests the efficient market hypothesis that financial anomalies are chance results due to the market misinterpretation of the information, such as under or over-reactions. They are largely contributed to the bad-model problems. Fama (1998) suggests that the long-term return anomalies tend to disappear with reasonable change in a way they measured. In the light of this, the size-adjusted model was employed to assess bidders' long-term abnormal returns. Lyon *et al*. (1999) suggest that the use of this methodological approach can yield well-specific test statistics as it alleviates the new listing and rebalancing biases. Following Lyon *et al*'s work (1999), BHARs were measured by constructing reference portfolios based on all firms listed in NYSE. Specifically, size-adjusted ARs were calculated as follows:

$$BHAR_{i,t} = \prod_{t=0}^{T}(1+R_{i,t}) - 1 - R_{pt} \tag{4.9}$$

where R_{pt} relates to reference portfolio return and calculated as follows:

$$R_{pt} = \sum_{j=1}^{n} \frac{\prod_{t=0}^{T}(1+R_{j,t})-1}{n} \tag{4.10}$$

where $R_{j,t}$ relates to simple return on the firm *j* at time *t*, and *n* denotes to the number of firms.

4.4.3.5.3. Bootstrapped t-statistics

Fama (1998) challenges the statistics for the univariate test of BHARs under conventional methodological approaches. He argues positive-skewness problems that may not yield well-specified *t*-statistics. In the light of this, a bootstrapped *t*-statistic and the non-parametric Wilcoxon rank-sum test were used to estimate the differentials for BHAR ranks. The skewness-adjusted *t*-test is presented as follows:

$$T = \sqrt{N}\left[S + \frac{1}{3}\lambda S^2 + \frac{1}{6N}\lambda\right] \tag{4.11}$$

where

$$S = \frac{\overline{BHAR}(T_{1,}T_2)}{\sigma_{BHAR}} \tag{4.12}$$

and

$$\lambda = \frac{\sum_{i=2}^{n}\left[\left(BHAR_{i(T_1,T_2)}\right)-\left(\overline{BHAR}_{(T_1,T_2)}\right)\right]^3}{N\sigma^3_{BHAR}} \tag{4.13}$$

where σ_{BHAR} relates to the standard deviation of *BHAR* by conventional models.

4.4.3.6. Multivariate analysis

Multivariate analysis is employed to examine the relevant factors explaining the market reaction. According to Draper and Paudyal (2008), multivariate analysis is superior in analyzing the causation relationship between the market reaction and related variables. The multivariate framework is presented as follows:

$$CAR_{(-1,+1)} = \alpha + \sum_{i=1}^{N}\beta_i X_i + \varepsilon_i \tag{4.14}$$

where X_i denotes variables related to market reactions. The main variable of interest to be investigated is RRP, which is the difference between the target and bidder reference points. The multivariate framework controls for a series of deal and firm characteristics that have significant impacts on market reactions in standard M&A literature (Alexandridis *et al.*, 2010; Asquith *et al.*, 1983).

4.5. Empirical results

In this section, empirical results are reported and discussions being provided in relation to the RRP effect on the method of payment, offer premiums and bidder performance in the short and long runs.

According to misvaluation hypothesis, overvalued bidders tend to time the market by paying significantly high offer premiums to target shareholders and utilising their overvalued stocks. Despite wealth being destroyed in the short run, the hypothesis predicts that rational bidders expecting to create firm value in the long run. Following these predictions, logistic regressions of stock-financed acquisition on the RRP were first conducted. Second, how offer premiums change according to RRP is investigated. Our third main regressions examined the role of offer premiums plays on firms' announcement returns. Specifically, the 2SLS technique is used to examine how announcement returns of a firm change according to the RRP driven offer premiums. Finally, the post-merger period performance of stock bidders is examined with univariate analysis by RRP ranking.

4.5.1. The RRP effect on the probability of using stocks

Table 4.3 reports a positive relationship between the RRP and the likelihood of using stocks for financing M&As. The sign and significance level of the RRP do not change significantly after information asymmetry has been included, as well as capital structure related variables of both the bidder and the target.[66] Specification (4) of *Table 4.3* shows the main results, a one unit increase in the RRP lead to about 10.4 percentage points increase of stock payments ($p = 0.001$), as interpreted by marginal effect. In addition, an increase of MTBV results in an increase in the likelihood of the use of stocks, suggesting that bidders tend to pay with stocks when they have better investment opportunities on the reasoning that cash is likely to be retained for future investment. This is consistent with Dong *et al.*'s view (2006) and that of Di Guili (2013). The results obtained show that bidders who are small, with lower profitability and high debt are likely to pay with stocks, as they are generally financially constrained which limits their cash borrowing. This is consistent with Eckbo *et*

[66] Our results do not change significantly after considering the firm-fixed effect.

al.'s findings (2016).

The main results suggest that the relatively more overvalued bidders are likely to pay with stocks, which is consistent with the misvaluation hypothesis and also reconciles the predictions of the reference point theory of M&As. Bidders whose price is close to their 52-week high would give targets a chance of selling out overvalued shares for profits following acquisitions, which is consistent with Burch *et al*.'s view (2012) that targets tend to accept overvalued stocks because that bidders can generate profits in the future. Alternatively, targets would demand more stocks from bidders when targets can identify overvaluation, which is in line with Vijh and Yang's view (2014). When the market news has driven the target firm's current value away from its fundamentals, bidders have the incentive to exploit the target price discounts. With the reference-dependence bias, bidders also assess the M&A valuation by focusing on the RRP, arguing that if a target's price falls greatly below its 52-week high than that of their firms, would offer bidders greater potential for overvaluation dilution.[67]

Table 4.4 reports the RRP effect on the probability of using stocks under different market conditions. Rhodes-Kropf and Viswanathan (2004) suggest that stock-financed acquisitions are positively correlated with high market-wide valuation. This is because that the overestimation of synergies increases with valuation errors. Consistent with this view, it is found that the RRP effect is more pronounced when market valuation errors are sizable. As explained by the marginal effect in Table 4.4, for every one unit increase in the RRP would lead to an increase of about 15.3 percentage points

[67] It can be argued that when the target current price is significantly lower than its 52-week high, the target may experience risks of bankruptcy. It is believed that bidders would be cautious about this and may not focus on the target 52-week high. However, these individual cases were not considered in this thesis, as there is only limited number of deals in this M&A sample.

when the market-wide valuation is high and an increase of about 10.9 percentage points when the market-wide valuation is neutral, whereas the RRP effect on market condition is insignificant in the subsample of low market-wide valuation.

4.5.2. The RRP effect on the offer premium

The view that investors' perception is captured by the reference point effect has been examined. It remains interesting to explore the RRP effect on offer premiums. Baker *et al*. (2012) show that the market would look at the firm's reference point and may perceive that an offer price is a result of bidder's overconfidence, given limited information and limited time in which to process the deal. It is less likely that the reference point effect plays a similar role for the bidders who have more information about the firm and seems less likely to justify a firm's valuation according to a single number.

The first four specifications of *Table 4.5* use different categories of control variables.[68] The sign and significance level of the RRP do not change significantly compared with what is reported in the specification (5), which is the main specification. The RRP is positive and significant at the 1% level (coefficient 0.089, t = 4.501), showing that a 10% increase in the RRP is associated with an approximately 0.9% increase in offer premiums. The signs and significance levels of the control variables are generally consistent with prior M&A studies (Moeller *et al*., 2004; Alexandridis *et al*., 2013). The results obtained by the author suggest that the relatively more overvalued bidders overpay

[68] Specification (1) reports the relationship between offer premiums and the reference point, specification (2) controlled for deal characteristics, specification (3) controlled for deal and bidder characteristics, specification (4) controlled for deal and target characteristics, specification (5) controlled for all variables. All specifications accounted for year and industry dummies.

for the target according to the RRP, which is consistent with the reference point theory of M&A. The joint bidder and target reference point effect has an impact on target pricing. It can be interpreted as follows: bidders who risk being perceived as overvalued have to pay for targets according to the target reference point to obtain the deal before revising market perceptions, since lower than the target reference point would decrease the probability of deal success (Baker *et al*., 2012). Moreover, when the bidder's price is close to the 52-week high, managers may find it hard to justify, and will suffer significant losses in the long run either because of overvaluation to be corrected in the market (Jensen, 2005) or their stocks are to be aggressively sold at around the high market value of the firm (Barberis and Xiong, 2009). Hence, bidders would pay heavily to revise the market's misperception. On the other hand, targets also demand offer premiums based on the bidder reference point, as a lower bidder reference point might lead targets to believe that bidders are able to afford a higher offer premium.

Given that acquisitions were largely driven by operating synergies and agency problems before 1990, and by misvaluation after 1990 (Shleifer and Vishny, 2003; Dong *et al*., 2006), time-distribution tests whose results are reported in *Table 4.6* were carried out. The sample period in this chapter divides into three based on M&A merger waves. Before 1990, 1990 to 2000 and post 2000. The sample period covers the high valuation trends when investors' perception to firms' misvaluation is high, such as the stock market bubble between 2000 and 2002, and the housing bubble and credit crisis between 2007 and 2009. It should also be suggested that the misvaluation hypothesis is more likely to explain acquisitions after 1990 than before 1990 when the primary M&A motive is synergies. The results yield similar results to our predictions. By extending the sample period of Dong *et al*. (2006), it was found that RRP plays an important role during large valuation trends. The sample period divides into two: from 2001 to 2007 and 2008 to 2014, in order to investigate how RRP explains the offer premiums before and after 2008 financial crisis, as reported in *Table 4.7*. The results obtained indicate that for every 10% increase in the RRP an increase of 0.94% in the period of 2001 and 2007 would occur, this figure more than double during the period of 2008 to 2014. Misvaluation tends to be larger after financial crisis. Once again, the results the research obtained show that the relative overvaluation drives M&A overpayment. Unlike Rhodes-Kropf and Viswanathan (2004), who found a positive correlation between stock-financed acquisitions and merger waves and argue that rational targets make mistakes by accepting overvalued stocks during high valuation periods, up-to-date evidence is provided here suggesting that premiums increase with valuation errors. This also rationalises the bidder's motive for overpayment, as high offer premiums area form of compensation for the target's willingness to accept overvalued stocks.

However, it is important to be aware of the fact that not all acquisitions involve a bidder that is relatively more overvalued than the target, as reflected in the RRP. The proxy is used to investigate whether the primary M&A motive is overvaluation from the market perspective. Bidders are relatively more overvalued if their current price shows smaller changes relative to the reference point price as opposed to those of the targets (i.e. RRP>0), and they are relatively undervalued if the changes are larger relative to the reference point price compared with those changes of targets (i.e. RRP<0). If the RRP is a suitable proxy for misvaluation, it should accommodate the predictions of the misvaluation hypothesis. Based on this, higher RRP acquisitions associated with higher offer premiums and target announcement returns, and lower bidder announcement returns than lower RRP acquisitions, should be expected.

The sample was divided into two subsamples according to the RRP. First, the univariate analysis

Results of T*able 4.8* are presented. The results show a majority of deals are RRP driven: 1,155 as opposed to 723. Panel A indicates that acquisitions are carried with significantly larger offer premiums when bidders are relatively more overvalued than the opposite case, the mean difference for the offer premium is 5% and at the 1% significance level. Our results suggest overvalued bidders are likely to pay with high offer premiums for the undervalued or less overvalued targets. Managerial priority in takeovers is to dilute overvaluation. Because of this, they believe the deal may not be accepted until high offer premiums paid to targets who can also identify bidders' motive through RRP. In Panel B, both the two subsamples show significantly negative bidder announcement returns. The relatively more overvalued bidders perform significantly worse than the relatively more undervalued bidders. With respect to target announcement returns, both relatively more undervalued and more overvalued targets receive high market reactions, which is significantly different from 0. In particular, the mean difference for target announcement returns is about 5%, suggesting that targets involved in high RRP acquisitions can demand high offer premiums based on RRP, which is translated into higher announcement returns.

Panel D of this table reports univariate analysis results for the offer premium by the method of payment in the two RRP subgroups. The results obtained are consistent with the prediction of the misvaluation hypothesis that overvalued stocks are used as cheap currency. Specifically, all cash-financed acquisitions carry higher offer premiums when bidders are relatively more overvalued than relatively more undervalued bidders, as the result shows a mean difference of 8.5%, which is at 1% significance level. Moreover, all stock-financed acquisitions carry lower offer premiums than all cash-financed acquisitions when bidders are relatively more overvalued. Combined, relatively more overvalued bidders tend to avoid using cash, as it will increase bidders' takeover costs. Our results indicate that the method of payment indicates clear sign that managers time the market.

Following univariate analyses, multivariate analyses of the offer premium on RRP in two different RRP subsamples were conducted, as reported in *Table 4.9*. Specification (1) shows the offer premium increases 1.64% for every 10% increase of RRP when the bidders are relatively more overvalued. The results are not significant in the comparable analysis. Our results show bidders to be perceived as relatively more overvalued are more likely to pay for targets with high offer premiums for the purpose of revising the market misperception. Our results also show that larger bidders generously pay for smaller targets, which is consistent with the findings of Moller *et al*. (2004).

4.5.3. Do bidders who focus on the RRP overpay for the target?

The RRP was used as an instrument variable of the offer premium when examining the role of overpayment. Baker *et al*. (2012) suggest the offer premium is not a clean measure since it can represent both overpayment and synergies. 2SLS enables the investigation of the chain responses of the RRP effect on the offer premium, and the offer premium effect on firm's announcement returns. If the RRP plays a role in overpayment, it should be expected that the offer premium using 2SLS estimates should yield more negative (positive) bidder (target) announcement returns compared with those using OLS estimates.

In *Table 4.10*, the offer premium with 2SLS estimates generates more negative (positive) bidder (target) CARs compared with that with OLS estimates, shown in specifications (1) and (2), and (3) and (4) respectively.[69] The results are consistent with Baker *et al*. (2012) who studied the reference point effect on M&A outcomes in a sample of M&As between 1984 and 2007. The results are also in line with the reference point theory of M&As. The market would presumably believe that the chance of price rebounds tends to increase when the bidder's current stock price is close to the 52-week high. During the time when a bid is announced, the market reacts negatively to it as this may indicate that bidders are unable to deliver real support to the firm's performance and they are likely to undertake bad acquisitions to maintain the overvaluation (Jensen, 2005).

4.5.4. Do all stock-financed acquisitions driven by the RRP protect the wealth of long-term shareholders?

Thus far, the proposition that relatively more overvalued bidders are more likely to use stocks as a means of payment and tend to pay significantly higher offer premiums using the new misvaluation measure of the RRP has been examined. Now the issue of whether or not bidders focusing on RRP protect long-term shareholders' interest will be investigated. According to the misvaluation hypothesis, bidders who dilute overvaluation with stocks attempt to protect the wealth of long-term shareholders. Thus, it should be reasonable to expect that bidders making an offer price based on the RRP. In Panel A of *Table 4.11*, the sample was limited to acquisitions that are 100% financed by stocks only and the sample was ranked into four quartiles according to the RRP, each presenting 152 observations.[70] The aim was to examine whether overpayment leads to underperformance. By doing so, the offer premiums and long-term performance under the market-adjusted model for each correspondent quartile were estimated. The fourth quartile (i.e. the highest quartile) includes

[69] The Hausman test and *F*-test results show that coefficients generated by 2SLS regression are more consistent with those generated by OLS regression, as reported at the end of *Table 4.10*.

[70] Of the 608 all stock-financed acquisitions, 402 fall into the group in which bidders are relatively more overvalued.

acquisitions involving relatively more overvalued bidders whereas the other quartiles include acquisitions involving relatively less overvalued or more undervalued bidders.

It was also found that stock-financed acquisitions generate negative long-term returns, which are consistent with the M&A literature (Loughran and Vijh, 1997; Rau and Vermaelen, 1998). Bidders in the highest quartile pay the highest offer premiums compared with those of other quartiles. In spite of this, the mean difference of offer premiums between the relative more overvalued bidders and undervalued bidders is 9.9% at 1% significance level and the mean difference for long-term abnormal returns of stock bidders is 18.7% at 10% significance level, indicating that relatively more overvalued bidders outperform their undervalued counterparts. Combined, this researcher's results suggest that bidders paying high offer premiums according to the RRP are able to protect the wealth of long-term shareholders. These results are consistent with Ang and Cheng (2006) who found that the long-term performance of stock bidders and overvaluation are positively related. However, the researcher's findings contradict to those of Lin *et al*. (2011). Their paper classified bidder valuation by the ratio of price-to-fundamental value (P/V) with higher P/V indicating a more overvalued bidder, and found that bidders who have the highest P/V generate a significant negative market performance for short term and long term within three years following M&As as compared with those bidders in the other P/V quartiles.

For the purpose of robustness checks, the long-term performance of stock bidders with the size-adjusted model was also examined, and stock bidders were divided into three ranks according to the RRP, as shown in Panel B of the table. This researcher's results show that the relatively more overvalued bidders tend to pay 36% offer premiums for targets, which is significantly 6.6% higher than those paid by relatively more undervalued bidders. It is also evident that the long-term performance of those paying significantly higher offer premiums is better. The results are quite similar to those presented in Panel A of the table.

4.6. Robustness checks

4.6.1. Endogeneity issues

OLS can be subject to endogeneity issues arising from omitted variable biases in this chapter, as the RRP maybe correlated with firms' mismanagement or mispricing which cannot be observed or the possibility that the market perception is likely the be an accurate reflection of the firm's valuation. If the market could accurately estimate the value of the firm, the managers should have no chance to time the market by means of the RRP. However, this tends to be unrealistic as the misvaluation hypothesis proposes. In this case, in this paper it is suggested that the market's 52-week high and the bidder's and target's 65-week high can be used as instrumental variables given that they are indirectly related to offer premiums but can affect offer premiums through the RRP. The market's 52-week high is an ideal instrumental variable as it is uncorrelated with a firm's mismanagement. It is suggested that the bidder's and the target's 65-week highs are used as instrumental variables in line with the extrapolation hypothesis that indicates that market perception is influenced by firms' past performance. Using a longer horizon is of less relevance in terms of the market perception of a firm's valuation. A 2SLS estimator was therefore performed, with the market 52-week high and the bidder and the target 65-week high as instrumental variables.

According to the results obtained, shown in *Table 4.12,* the OLS is preferred over the 2SLS.[71] This is because the market 52-week high reflects the market-wide valuation instead of the firm-specific valuation which is believed to be an important source of valuation error (Rhodes-Kropf *et al*., 2005). The results indicate that the OLS is likely to dominate the 2SLS. In addition to this, a correlation matrix was performed, as reported in *Table 4.13*. The obtained results show little evidence of econometric problems, such as multicollinearity issues.

4.6.2. The effect of the RRP on the probability of using stocks

Results of a series of robustness checks examining the RRP effect on the probability of using stocks are reported in *Table 4.14*. Shleifer and Vishny (2003) predicted that bidders use stocks when they are relatively more overvalued. The M&A sample in this chapter was divided into two sub-groups: the relatively more overvalued bidders (i.e. RRP>0), and the relatively more undervalued bidders (i.e. RRP<0).[72] The results obtained suggest that the RRP effect on the probability of using stocks is solely driven by the relatively more overvalued bidders. It was found that, when the bidders are relatively more overvalued, every one unit increases in the RRP increases the propensity for using stocks for acquisitions by 16.4 percentage points, whereas there is little evidence that the relatively more undervalued bidders use stocks for acquisitions. Table 4.15 reports that the probability of using stocks rather than other means of payment is also large when the RRP increases. As seen, stocks are more likely to be used as a means of payment for acquisitions compared with the method of payment as

[71] Specifically, the Hausman test shows a *p*-value of 0.6414, indicating there are no endogeneity issues in the regression. Moreover, the test of over-identifying restrictions further rejects the null hypothesis that there is no relation between the instruments and the error term (p = 0.0000).

[72] 1,742 observations in regressions were recorded. Of these observations, 1,103 fall into the group in which bidders are relatively more overvalued and 639 fall into the group in which bidders are relatively more undervalued. 50 observations were dropped due to multicollinearity problems in the industries.

cash and a mixture of stocks and cash respectively. [73] The results of additional controls are consistent with the main results of this chapter presented in *Table 4.3*.

4.6.3. The effect of the RRP on the offer premium

This section reports the results of subsample robustness tests relating to the RRP effect on the offer premium. The sample was divided into subsamples according to the method of payment, deal type, deal choice and deal status in *Table 4.16* to *4.19* respectively, and control variables are the same as those in *Table 4.5*. *Table 4.16* reports a positive relationship between the RRP and the offer premiums by different methods of payment subsamples. The offer premium is larger when paying with cash than stocks, which is consistent with the univariate analysis results presented in Panel D of *Table 4.8*. It is worth noting that in stock-financed subsample, bidders tend to pay generously for those with a higher ROA, implying that bidders tend to select firms with strong profit-generating ability, likely to create value for the combined firm. The results obtained show that bidders are likely to pay with large offer premiums regardless of the method of payment choices. *Table 4.17* reports that an increase in the distance of the RRP increases the offer premium regardless of deal types. Signs and significance levels for additional controls are quite similar between the two subsamples. In *Table 4.18*, the offer premium for merger subsamples is larger than for tender offers. It can be argued that a negotiation process between the two firms involved may incorporate more private information about the firms, leading the RRP to be well interpreted. In that case, bidders can more easily justify their M&A motives as well as the target value with target managers rather than shareholders, thus resulting in lower offer premiums. The sample used also includes a small proportion of unsuccessful deals as opposed to

[73] Our results continue to hold by replacing the binary variable with a continuous variable. This allows us to observe how the RRP affects the proportion of stocks used in the payment structure. We omitted this table for the sake of brevity.

successful deals. In *Table 4.19*, the RRP effect is strong for both subsamples.[74] On the whole, the results indicate that the RRP have a strong effect on offer premiums.

4.6.4. Do bidders who focus on RRP overpay for the target? Testing with the market-adjusted model

So as to avoid measurement error due to the model employed for the firms' announcement returns in analysing the role of the RRP played M&As, the market-adjusted model was used to calculate the firms' announcement returns, as reported in *Table 4.20*. These results are consistent with those in the market model. Specification (1) reported that bidders' CARs decrease by 1.4% for a one percent increase in the offer premium, which is slightly higher than those predicted by the market model (-1.8%). On the other hand, specification (3) indicated that targets' CARs increase by 46.9% for every one percent increase in the offer premium, which is as the same as that predicted by the market model. A 2SLS estimator was also conducted using the RRP as an instrumental variable of the offer premium in the regression of CARs on the offer premium, with a similar reason has been explained in the main regression analysis. Including the RRP effect in the 2SLS, the results show a more positive bidder CARs and more negative target CARs as compared with those under OLS. Once again, paying according to the RRP impresses the investors' minds that the deal is overpaid.

4.7. Conclusion

This chapter has investigated the misvaluation hypothesis using the reference point theory of M&As. A bilateral valuation framework with RRP has been built, and results are consistent with what the misvaluation hypothesis of Shleifer and Vishny (2003) predicts.

[74] This was used as a robustness test rather than to interpret the RRP effect as the reason for deal completion, as what determines a deal completion is complex.

The target and the bidder reference points have been added into the M&A platform and have found that the propensity for paying for acquisitions with stocks is greater when the RRP increases, this trend being more pronounced when the market misperception of a firm's valuation is high. The results obtained are consistent with those of Rhodes-Kropf *et al*. (2005). Moreover, the offer premium increases with RRP, leading to more negative bidder (positive target) announcement returns. The results indicate that RRP plays an overpayment role. In a quartile analysis for a sample of all stock-financed acquisitions, it can be found that the relatively more overvalued bidders who pay highest offer premiums compared with those in other quartiles generate less negative long-term abnormal returns, suggesting that bidders time the market while focusing on the RRP.

Several contributions have been made to behavioural finance and M&A literature. First, a simply way of structuring M&A through the RRP was built, which reflects the most current market reactions to a firm's valuations. This valuation measure is straightforward in terms of observing the difference between bidder and target overvaluation. The market tends to react to bidders' announcements negatively, as there is a high offer premium paid according to the RRP. Secondly, it has been found that the RRP directs the method of payment choices, as a relatively more overvalued bidder tends to reduce offer premiums when financing an acquisition with stocks rather than with cash. Thirdly, it has also been revealed that bidders who have more information about the firm are also subject to the reference point effect. However, this does not mean that bidders are irrational, rather, the findings show that higher offer premiums according to the RRP would mitigate negative market reactions in the long term, suggesting that focusing on the RRP is a bidder's way of thinking weighed towards the interests of the long-term shareholders. Overall, the results of this chapter suggest that managers are able to time the market through the RRP, which is consistent with the misvaluation hypothesis.

Table 4.1: Summary statistics for M&A sample

This table reports summary statistics for 1,878 U.S. domestic public deals announced between 1985 and 2014. The number *N* denotes the number of deals per year. The third and fourth columns present the mean and median of deal value. The fifth to seventh columns present the method of payment. Here "Stock" ("Cash") refers to all-stock (all-cash) acquisitions. "Mix" refers to acquisitions that are neither all stock-financed nor all cash-financed acquisitions. "Completed" refers to completed deals (i.e. successful deals), of which there are 1,874 with information relating to deal status. "Tender" refers to tender offers. "Hostile" refers to hostile bids. "Diversified" refers to diversified deals in which the primary two Standard Industry Classification codes are different between bidders and targets.

Year	N	Deal Value ($mils)		Payment Method			Completed		Tender		Hostile		Diversified	
		Mean	Median	Cash	Stock	Mix	Y	N	Y	N	Y	N	Y	N
1985	5	243.86	53.00	3	1	1	3	2	-	5	1	4	2	3
1986	21	129.04	41.70	18	1	2	18	3	7	14	1	20	15	6
1987	34	254.60	47.25	18	6	8	30	3	6	28	5	29	17	17
1988	30	381.53	68.92	15	8	7	24	6	11	19	6	24	16	14
1989	24	114.04	30.49	11	10	3	17	6	4	20	1	23	18	6
1990	23	579.03	29.38	12	7	4	18	5	5	18	3	20	10	13
1991	23	172.38	26.82	7	14	1	19	3	3	20	-	23	14	9
1992	21	155.46	51.44	6	13	2	17	4	1	20	2	19	12	9
1993	45	519.07	114.00	14	18	12	33	12	7	38	5	40	20	25
1994	61	222.95	74.12	23	30	8	46	14	9	52	7	54	18	43
1995	98	538.98	74.91	27	53	18	84	14	14	84	6	92	38	60
1996	95	684.53	138.25	31	40	24	80	15	18	77	9	86	36	59
1997	130	645.10	232.11	19	62	49	113	17	19	111	3	127	46	84
1998	138	1208.89	140.12	36	54	47	126	12	27	111	3	135	47	91
1999	164	1513.65	305.42	61	58	45	134	30	41	123	14	150	68	96
2000	136	2286.88	378.34	35	68	33	119	17	32	104	8	128	49	87
2001	109	1115.01	146.89	33	40	36	94	15	27	82	4	105	38	71
2002	49	1784.72	268.90	20	14	15	44	5	16	33	4	45	18	31
2003	71	807.01	130.82	27	18	26	65	6	19	52	5	66	19	52
2004	66	2859.54	479.02	25	16	25	60	6	6	60	3	63	22	44
2005	66	2874.25	500.75	29	13	24	60	6	7	59	5	61	24	42
2006	75	1838.00	563.07	40	12	23	65	10	6	69	4	71	29	46
2007	60	1478.29	792.51	39	6	15	53	7	12	48	2	58	18	42
2008	57	2208.95	234.26	35	6	16	40	17	14	43	10	47	17	40
2009	44	3498.35	496.88	17	8	19	41	3	16	28	-	44	18	26
2010	56	1884.97	572.72	33	9	14	47	9	16	40	5	51	15	41
2011	41	2691.37	611.62	16	8	17	28	13	8	33	9	32	13	28
2012	38	1385.71	622.51	26	1	11	37	1	10	28	-	38	17	21
2013	44	1997.05	1139.09	28	5	11	39	5	9	35	3	41	12	32
2014	54	6908.66	1662.39	22	9	23	43	11	10	44	6	48	16	38
Total	1878	1540.29	227.49	726	608	539	1597	277	380	1498	134	1744	702	1176

Table 4.2: Summary statistics for variables

This table reports the number, mean, median and standard deviation of variables used in the regressions. Panel A presents the main dependent variables. Firms' 3-day CARs are calculated with the market model, with parameters estimated between 261 and 28 trading days prior to the announcement date. Offer premiums are defined as the logarithmic term difference between offer price and target stock price 30 calendar days prior to the announcement date. Panel B presents the main variables of interest. The reference point is defined as the logarithmic term difference between a firm's highest stock price over 335 calendar days ending 30 days prior to the announcement date and the price ending 30 days prior to the announcement date. RRP is defined as the difference between the target and the bidder reference point. Panel C presents control variables. Deal characteristics are noted as Table 1. "Relative Size" is defined as the deal value divided by bidder MV, where bidder MV is defined as the product of market price and outstanding shares (CRSP: SHROUT*PRC). ROA is return-on-asset ratio, defined as net income (Compustat: NI) divided by total asset (Compustat:AT). MTBV is market-to-book value, defined as the market value of equity to the book value of equity, where book value of equity is total shareholders' equity (Compustat: SEQ) plus deferred taxes and investment tax credit (Compustat: TXDITC) minus the preferred stock redemption value (Compustat: PSTKRV). Volatility is the standard deviation of daily returns over the 335 calendar days ending 30 days prior to the announcement date. CF/E is cash flow-to-equity ratio, defined as income before extraordinary items (Compustat: IBC) plus depreciation and amortization (Compustat: DPC) minus cash dividends (Compustat: DV), and leverage is measured by debt-to-equity ratio, defined as total long-term debt (Compustat: DITT) divided by the book value of equity. All accounting variables were in the fiscal year end before the announcement date, and continuous variables are winsorised at the 1% and 99% level.

Variables	N	Mean	Median	Std. Dev.
Panel A: Main Dependent Variables				
Offer Premiums	1878	0.310	0.292	0.282
Bidder 3-day CARs	1878	-0.011	-0.007	0.073
Target 3-day CARs	1878	0.222	0.176	0.240
Panel B: Main Variables of Interest				
Bidder Reference Point	1878	0.294	0.157	0.351
Target Reference Point	1878	0.412	0.255	0.455
RRP	1878	0.118	0.055	0.420
Panel C: Other Variables: deal, bidder, and target characteristics				
Cash	1878	0.387	-	0.487
Stock	1878	0.324	-	0.468
Hostile	1878	0.071	-	0.257
Tender	1878	0.202	-	0.402
Diversification	1878	0.374	-	0.484
Relative Size	1878	0.401	0.191	0.555
Bidder lnMV	1878	7.500	7.443	2.159
Bidder MTBV	1878	3.991	2.632	6.269
Bidder ROA	1878	0.026	0.047	0.138
Bidder Volatility	1878	0.029	0.025	0.017
Bidder Leverage	1872	0.661	0.330	1.194
Bidder CF/E	1804	0.161	0.180	0.316
Target lnMV	1878	5.212	5.133	1.839
Target MTBV	1878	2.691	1.797	4.300
Target ROA	1878	-0.049	0.024	0.241
Target Volatility	1878	0.041	0.035	0.022
Target Leverage	1870	0.619	0.140	1.621

Table 4.3: The effect of the RRP on the probability of using stocks

This table reports binomial logistic regression for all-stock acquisitions on RRP. Dependent variable is "Stock", which is a dummy variable, taking a value of 1 if acquisitions are 100% financed with stocks, 0 otherwise. Variable definitions are as in the notes to Table 4.2. *P*-value is reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, ** and * respectively, is reported alongside marginal effects. We transfer coefficients into marginal effect (ME), evaluated at the sample means of the independent variables.

	(1)			(2)			(3)			(4)		
Stock	Coef.	*p*-value	ME	Coef.	*p*-value	ME	Coef.	*p*-value	ME	Coef.	*p*-value	ME
RRP	0.567***	(0.000)	0.103	0.605***	(0.000)	0.110	0.531***	(0.001)	0.097	0.570***	(0.001)	0.104
Hostile	-0.777**	(0.014)	-0.141	-0.742**	(0.019)	-0.135	-0.721**	(0.022)	-0.132	-0.670**	(0.033)	-0.123
Tender	-2.441***	(0.000)	-0.443	-2.402***	(0.000)	-0.436	-2.563***	(0.000)	-0.468	-2.502***	(0.000)	-0.458
Diversification	0.146	(0.266)	0.027	0.124	(0.349)	0.023	0.146	(0.280)	0.027	0.120	(0.378)	0.022
RelativeSize	-0.611***	(0.000)	-0.111	-0.662***	(0.000)	-0.120	-0.561***	(0.000)	-0.102	-0.606***	(0.000)	-0.111
Bidder lnMV	-0.379***	(0.000)	-0.069	-0.290***	(0.000)	-0.053	-0.402***	(0.000)	-0.073	-0.314***	(0.000)	-0.057
Bidder MTBV	0.048***	(0.000)	0.009	0.036***	(0.001)	0.007	0.060***	(0.000)	0.011	0.048***	(0.000)	0.009
Bidder ROA	-2.063***	(0.000)	-0.375	-0.914*	(0.088)	-0.166	-2.464***	(0.000)	-0.450	-1.407**	(0.030)	-0.257
Target lnMV	0.315***	(0.000)	0.057	0.350***	(0.000)	0.063	0.348***	(0.000)	0.064	0.375***	(0.000)	0.069
Target MTBV	0.051***	(0.001)	0.009	0.041***	(0.006)	0.008	0.063***	(0.000)	0.012	0.055***	(0.001)	0.010
Target ROA	0.087	(0.762)	0.016	0.371	(0.231)	0.067	0.009	(0.977)	0.002	0.218	(0.492)	0.040
Target Volatility				5.118	(0.253)	0.928				3.773	(0.423)	0.690
Bidder Volatility				32.029***	(0.000)	5.809				30.994***	(0.000)	5.670
Bidder Leverage							-0.232***	(0.001)	-0.042	-0.211***	(0.002)	-0.039
Target Leverage							-0.126***	(0.003)	-0.023	-0.121***	(0.005)	-0.022
Bidder CF/E							0.213	(0.403)	0.039	0.233	(0.386)	0.043
Year	Yes			Yes			Yes			Yes		
Industry	Yes			Yes			Yes			Yes		
Constant	0.324	(0.577)		-1.480**	(0.032)		0.592	(0.360)		-1.130	(0.132)	
N	1878			1878			1792			1792		
Pseudo R^2	0.272			0.287			0.291			0.303		

Table 4.4: The effect of the RRP on the probability of using stocks under different market-wide valuations

This table reports binomial logistic regression for all-stock acquisitions on RRP by different market conditions. Dependent variable is "Stock", which is a binary variable, taking value of 1 if acquisitions are financed with 100% stocks, 0 otherwise. High Market is a dummy variable, taking a value of 1 if takeover months in the top 25% above past 5-year average de-trended P/E of the market index (S&P 500) or market valuation is high, 0 otherwise. Specifications (1)-(3) report the results when market-wide valuation is high, low and neutral respectively. Due to the availability of the P/E of the market index, we were able to determine 1733 observations with valid market-wide valuation data, 666 for high valuation periods, 434 for low valuation periods, and 633 for neutral valuation periods. Variable definitions are as in the notes to Table 4.2. *P*-value is reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, ** and * respectively, is reported alongside marginal effects. We transfer coefficients into marginal effect (ME), evaluated at the sample means of the independent variables.

Table 4.4. *(continued)*

Stock	(1) High			(2) Low			(3) Neutral		
	Coef.	*p*-value	ME	Coef.	*p*-value	ME	Coef.	*p*-value	ME
RRP	0.758***	(0.002)	0.153	1.021	(0.113)	0.059	0.510*	(0.057)	0.109
Hostile	-0.317	(0.462)	-0.064	-1.043	(0.199)	-0.060	-0.723	(0.332)	-0.155
Tender	-2.339***	(0.000)	-0.473	-1.195**	(0.042)	-0.069	-4.251***	(0.000)	-0.910
Diversification	0.797***	(0.001)	0.161	-0.165	(0.676)	-0.010	-0.060	(0.792)	-0.013
RelativeSize	-0.968***	(0.000)	-0.196	-0.847	(0.121)	-0.049	-0.307	(0.238)	-0.066
Bidder lnMV	-0.377***	(0.000)	-0.076	-0.809***	(0.000)	-0.047	-0.141	(0.162)	-0.030
Bidder MTBV	0.052***	(0.002)	0.011	0.060	(0.181)	0.003	0.038	(0.109)	0.008
Bidder ROA	-2.376***	(0.009)	-0.481	-1.664	(0.453)	-0.096	-2.797*	(0.071)	-0.599
Target lnMV	0.600***	(0.000)	0.121	0.696**	(0.014)	0.040	0.170	(0.161)	0.036
Target MTBV	0.062**	(0.016)	0.013	-0.004	(0.936)	0.000	0.063**	(0.049)	0.014
Target ROA	-0.154	(0.764)	-0.031	0.069	(0.938)	0.004	0.699	(0.219)	0.150
Target Volatility	8.929	(0.254)	1.808	-1.335	(0.952)	-0.077	-1.354	(0.866)	-0.290
Bidder Volatility	15.449	(0.144)	3.127	35.750	(0.140)	2.068	51.081***	(0.000)	10.936
Bidder Leverage	-0.306***	(0.002)	-0.062	-0.219	(0.304)	-0.013	-0.169	(0.150)	-0.036
Target Leverage	-0.129*	(0.090)	-0.026	-0.089	(0.350)	-0.005	-0.203**	(0.013)	-0.043
Bidder CF/E	0.096	(0.791)	0.019	-0.634	(0.359)	-0.037	2.044***	(0.001)	0.438
Year	Yes			Yes			Yes		
Industry	Yes			Yes			Yes		
Constant	-2.916**	(0.033)		-0.057	(0.974)		0.044	(0.976)	
N	666			434			633		
Pseudo R^2	0.345			0.268			0.333		

Table 4.5: The effect of the RRP on offer premiums

This table reports the ordinary least square (OLS) regression results for offer premiums on the RRP, controlling for a series of deal and firm characteristics. Specification (1) reports the relationship between offer premiums and the reference point effect, specification (2) controls for deal characteristics, specification (3) controls for deal and bidder characteristics, specification (4) controls for deal and target characteristics, specification (5) controls for all variables. Variable definitions are as in the notes to Table 4.2. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, **and * respectively, is reported alongside coefficients.

Offer Premiums	(1)		(2)		(3)		(4)		(5)	
	Coef.	*t*-stat.	Coef.	*t*-stat.	Coef.	*t*-stat.	Coef.	*t*-stat.	Coef.	*t*-stat.
RRP	0.101***	(5.099)	0.105***	(5.311)	0.110***	(5.575)	0.098***	(4.846)	0.089***	(4.501)
Hostile			0.008	(0.367)	0.002	(0.105)	0.015	(0.698)	0.032	(1.563)
Tender			0.075***	(4.744)	0.074***	(4.695)	0.080***	(5.098)	0.075***	(5.006)
Diversification			0.006	(0.433)	0.004	(0.284)	0.005	(0.369)	-0.017	(-1.256)
Stock			-0.024	(-1.336)	-0.019	(-0.991)	-0.026	(-1.392)	-0.003	(-0.184)
Cash			-0.009	(-0.565)	-0.004	(-0.227)	-0.019	(-1.123)	-0.031*	(-1.917)
RelativeSize					0.020	(1.537)	0.021*	(1.744)	0.116***	(7.263)
Bidder ROA					0.090	(1.262)			0.019	(0.269)
Bidder MTBV					-0.000	(-0.222)			-0.000	(-0.010)
Bidder lnMV					0.006	(1.506)			0.056***	(9.627)
Bidder Volatility					0.570	(0.819)			0.768	(1.047)
Target ROA							0.119***	(2.810)	0.141***	(3.347)
Target MTBV							-0.001	(-0.806)	-0.001	(-0.878)
Target lnMV							-0.030***	(-6.512)	-0.078***	(-11.703)
Target Volatility							-0.035	(-0.065)	-0.315	(-0.537)
Constant	0.212***	(3.291)	0.182***	(2.744)	0.116	(1.535)	0.334***	(4.388)	0.150*	(1.896)
Year	Yes		Yes		Yes		Yes		Yes	
Industry	Yes		Yes		Yes		Yes		Yes	
N	1878		1878		1878		1878		1878	
adj. R^2	0.077		0.088		0.089		0.116		0.169	

Table 4.6: The effect of the RRP on offer premiums over time

This table reports the OLS regression results for offer premiums on the RRP by time periods. We divided our sample into different time periods. Specification (1)-(3) report results before 1990, 1990 to 2000, and after 2000 respectively. Variable definitions are as in the notes to Table 4.2. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, **and * respectively, is reported alongside coefficients.

	(1)		(2)		(3)	
Offer Premiums	1985-1989		1990-2000		2001-2014	
	Coef.	*t*-stat.	Coef.	*t*-stat.	Coef.	*t*-stat.
RRP	-0.058	(-0.773)	0.062**	(2.392)	0.125***	(3.858)
Hostile	-0.049	(-0.463)	0.044	(1.476)	0.031	(1.038)
Tender	0.191***	(2.750)	0.109***	(4.668)	0.048**	(2.152)
Diversification	-0.021	(-0.395)	-0.003	(-0.149)	-0.024	(-1.255)
Stock	0.078	(0.931)	-0.002	(-0.076)	-0.039	(-1.353)
Cash	0.037	(0.564)	-0.084***	(-3.258)	0.006	(0.268)
RelativeSize	0.064	(1.413)	0.133***	(5.774)	0.092***	(3.355)
Bidder ROA	0.623**	(2.306)	-0.010	(-0.104)	-0.005	(-0.044)
Bidder MTBV	0.001	(0.273)	-0.001	(-0.432)	0.001	(0.848)
Bidder lnMV	0.028	(1.544)	0.058***	(6.615)	0.049***	(5.472)
Bidder Volatility	-4.431	(-1.110)	0.534	(0.535)	0.733	(0.611)
Target ROA	0.157	(0.911)	0.188***	(2.996)	0.121**	(1.979)
Target MTBV	-0.004	(-0.378)	-0.000	(-0.040)	-0.003	(-1.577)
Target lnMV	-0.032	(-1.508)	-0.079***	(-7.832)	-0.074***	(-7.090)
Target Volatility	1.856	(0.774)	-0.330	(-0.415)	0.093	(0.098)
Constant	-0.413**	(-2.600)	0.087	(0.860)	0.301***	(3.104)
Year	Yes		Yes		Yes	
Industry	Yes		Yes		Yes	
N	114		934		830	
adj. R^2	0.190		0.176		0.184	

Table 4.7: The effect of the RRP on offer premiums by valuation periods
This table reports the OLS regression results for offer premiums on the RRP before and after the 2008 financial crisis. The sample was divided into two subsamples: between 2000 and 2007 and between 2008 and 2014, i.e. financial crisis period, presented in specification (4) and (5) respectively. Variable definitions are as in the notes to Table 4.2. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, **and * respectively, is reported alongside coefficients.

Offer Premiums	(1) 2001-2007		(2) 2008-2014	
	Coef.	*t*-stat.	Coef.	*t*-stat.
RRP	0.094**	(2.293)	0.192***	(3.655)
Hostile	0.089**	(2.245)	-0.003	(-0.073)
Tender	0.017	(0.539)	0.080**	(2.514)
Diversification	-0.046*	(-1.772)	0.010	(0.306)
Stock	-0.005	(-0.142)	-0.081*	(-1.854)
Cash	0.023	(0.784)	0.004	(0.138)
RelativeSize	0.069*	(1.892)	0.121***	(2.981)
Bidder ROA	-0.083	(-0.694)	0.300	(1.273)
Bidder MTBV	0.001	(0.462)	0.003	(1.059)
Bidder lnMV	0.037***	(3.633)	0.059***	(3.631)
Bidder Volatility	0.424	(0.279)	0.799	(0.375)
Target ROA	0.151**	(2.176)	0.011	(0.097)
Target MTBV	0.001	(0.238)	-0.006**	(-2.322)
Target lnMV	-0.067***	(-5.149)	-0.076***	(-4.427)
Target Volatility	-0.192	(-0.140)	-0.026	(-0.024)
Constant	0.285**	(2.369)	0.102	(0.685)
Year	Yes		Yes	
Industry	Yes		Yes	
N	496		334	
adj. R^2	0.190		0.375	

Table 4.8: Univariate analysis by different RRP groups

This table reports univariate analysis results for the offer premium, the bidder and the target's CAR3 calculated with market model. We divide our sample into those RRP less than 0, which is the bidder is relatively more undervalued than the target and those RRP larger than 0, which is the bidder is relatively more overvalued than the target. Panel A reports the univariate analysis results for the offer premium. Panel B reports the univariate analysis results for the bidder CAR3. Panel C reports the univariate analysis results for the target CAR3. Panel D reports univariate analysis for the offer premium by the method of payment. Here "Cash" represents that acquisitions are 100% financed with cash. "Stock" represents acquisitions that are 100% financed by stocks. Specifications (3) and (4) report offer premiums of 100% cash-financed acquisitions at RRP>0 and RRP<0 groups. Specifications (3) and (4) report offer premiums of 100% stock-financed acquisitions at RRP>0 and RRP<0 groups. The mean value, *t*-statistics, and the number of observations for the offer premium, the bidder and the target 3-day abnormal returns around the announcement date are reported in each Panel. The mean difference of *t*-tests is reported at the end of each Panel. *T*-statistics are reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, ** and * respectively.

Panel A: Univariate analysis for the offer premium

	Offer Premiums	*t*-stat.	N
(1) RRP<0	0.279***	(30.20)	723
(2) RRP>0	0.329***	(37.26)	1,155
Mean difference (2)-(1)	0.050***	(-3.79)	

Panel B: Univariate analysis for the bidder CAR3

	Bidder CAR3mm	*t*-stat.	N
(1) RRP<0	-0.006**	(-2.27)	723
(2) RRP>0	-0.014***	(-6.37)	1,155
Mean difference (2)-(1)	-0.008**	(-.2.28)	

Panel C: Univariate analysis for the target CAR3

	Target CAR3mm	*t*-stat.	N
(1) RRP<0	0.191***	(23.81)	723
(2) RRP>0	0.240***	(32.34)	1,155
Mean difference (2)-(1)	0.049***	(4.33)	

Panel D: Univariate analysis for the offer premium by the method of payment at different RRP subgroups

	(1)	(2)	(3)	(4)	Mean difference			
	RRP>0	RRP<0	RRP>0	RRP<0	(1)-(2)	(3)-(4)	(1)-(3)	(2)-(4)
	Cash		Stock					
Offer Premiums (%)	35.25***	26.75***	31.33***	29.22***	8.50***	2.11	3.92*	-2.47
t-stat	(25.18)	(20.90)	(19.07)	(14.51)	(4.24)	(0.80)	(1.88)	(-1.08)
N	435	291	402	206	724	608	837	497

Table 4.9: OLS regressions of offer premiums on the RRP: By RRP subsamples
This table reports OLS regression results for the offer premium on RRP. We divide the sample according to the RRP. Column (1) presents the results for the offer premium on RRP when the bidder is relatively more overvalued than the target, column (2) presents the results for the offer premium on RRP when the bidder is relatively undervalued than the target. Variable definitions are as in the notes to Table 4.2. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, **and * respectively, is reported alongside coefficients.

Offer Premiums	(1) RRP>0		(2) RRP<0	
	Coef.	*t*-stat.	Coef.	*t*-stat.
RRP	0.164***	(4.766)	-0.005	(-0.112)
Hostile	0.003	(0.105)	0.063**	(1.968)
Tender	0.090***	(4.317)	0.055***	(2.724)
Diversification	0.009	(0.483)	-0.058***	(-2.923)
Stock	-0.004	(-0.170)	0.004	(0.159)
Cash	-0.024	(-1.080)	-0.036	(-1.548)
RelativeSize	0.128***	(5.132)	0.104***	(5.109)
Bidder ROA	-0.050	(-0.577)	0.103	(0.881)
Bidder MTBV	0.002	(1.258)	-0.002	(-1.129)
Bidder lnMV	0.051***	(6.456)	0.059***	(6.943)
Bidder Volatility	-0.763	(-0.750)	2.070*	(1.875)
Target ROA	0.168***	(3.439)	0.115	(1.467)
Target MTBV	-0.002	(-0.900)	0.000	(0.119)
Target lnMV	-0.079***	(-8.750)	-0.073***	(-7.066)
Target Volatility	-0.390	(-0.535)	-0.756	(-0.736)
Constant	0.060	(0.574)	0.012	(0.078)
Year	Yes		Yes	
Industry	Yes		Yes	
N	1155		723	
R^2	0.220		0.214	

Table 4.10: Do bidder focusing on the RRP overpay for the target?

This table reports the OLS regression and 2SLS regression results for both bidder and target 3-day CARs on offer premiums. The dependent variable for specifications (1) and (2) is the bidder CAR3 and for specifications (3) and (4) is the target CAR3, where CAR3 is calculated with the market model. The parameters are estimated in the window [-261,-28]. Specifications (2) and (4) reports the results of 2SLS regression using the RRP as an instrument variable of offer premiums. Variable definitions are as in the notes to Table 4.2. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, **and * respectively. The results of the Hausman test and *F*-test were reported at the lower part of the table.

	(1)	(2)	(3)	(4)
	Bidder CAR3		*Target CAR3*	
	OLS	IV	OLS	IV
Offer Premiums	-0.018***	-0.090***	0.469***	0.765***
	(-2.807)	(-2.626)	(20.499)	(6.597)
Hostile	-0.002	-0.002	-0.000	-0.003
	(-0.324)	(-0.317)	(-0.028)	(-0.153)
Tender	0.009**	0.017***	0.041***	0.010
	(2.376)	(2.888)	(3.102)	(0.533)
Diversification	0.003	0.003	0.004	0.004
	(0.805)	(0.867)	(0.375)	(0.373)
Stock	-0.011**	-0.010**	-0.045***	-0.045***
	(-2.326)	(-2.155)	(-3.952)	(-3.512)
Cash	0.021***	0.021***	0.031***	0.037***
	(5.245)	(4.555)	(2.615)	(2.857)
RelativeSize	-0.005	-0.005	-0.050***	-0.052***
	(-1.116)	(-1.311)	(-6.136)	(-5.505)
Bidder lnMV	-0.003***	-0.003***		
	(-3.916)	(-3.230)		
Bidder MTBV	-0.000	-0.000		
	(-0.972)	(-0.901)		
Bidder ROA	0.041**	0.040***		
	(2.186)	(2.998)		
Target lnMV			-0.002	0.006
			(-0.866)	(1.447)
Target MTBV			-0.002**	-0.002
			(-2.228)	(-1.640)
Target ROA			-0.012	-0.017
			(-0.469)	(-0.800)
Constant	0.015*	0.032***	0.106***	-0.027
	(1.843)	(2.706)	(5.578)	(-0.483)
N	1878	1878	1878	1878
adj. R^2	0.060	.	0.374	.
Hausman test	X^2=4.8934	(p=0.0271)	X^2=7.9056	(p=0.0050)
F-test	X^2=60.2985	(p=0.0000)	X^2=42.9958	(p=0.0000)

Table 4.11: Do all stock-financed acquisitions driven by the RRP protect the wealth of long-term shareholders?
Panel A of this table reports the univariate analysis results of both the offer premium and the firms' 36-month market-adjusted buy-and-hold abnormal returns (BHAR36ma) by RRP quartiles. The sample only consists of 100% stock-financed acquisitions. Each quartile is assigned a rank from 1 to 4. Rank 1 represents bidders that are relatively more undervalued than their targets (i.e. RRP<0), and rank 4 represents bidders that are relatively more overvalued than their targets (i.e. RRP>0). Panel B of this table reports the univariate analysis results of both the offer premium and the firms' 36-month size-adjusted buy-and-hold abnormal returns (BHAR36sa) by the RRP. We divided the RRP into three levels, the bottom one third or rank 1 refers to bidders are relatively more undervalued, while the top one third or rank 3 refers to bidders are relatively more overvalued, the middle accounts for the remaining observations. We reported mean value, *t*-statistics and the number of the offer premium at each rank. BHAR36ma and BHAR36sa are winsorised at the 1% and 99% level. We performed bootstrap estimation of sampling distribution of BHAR36ma and BHAR36sa at 1000 replications, and report mean value, *p*-value and the number of BHAR36ma and BHAR36sa of each rank. The mean difference of *t*-tests is reported at the end of the table. *T*-statistics (or *p*-value) are reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, ** and * respectively.

Panel A: Market-adjusted BHARs by RRP quartiles						
All stock-financed acquisitions	Offer Premiums	*t*-stat.	N	BHAR36ma	*p*-value	N
1 (RRP<0)	0.296***	(12.12)	152	-0.348***	(0.000)	137
2	0.251***	(11.74)	152	-0.221**	(0.017)	144
3	0.283***	(12.02)	152	-0.198**	(0.025)	145
4 (RRP>0)	0.395***	(13.86)	152	-0.161*	(0.093)	147
Mean difference 4-1	0.099***	(2.63)		0.187*	(0.079)	
Panel B: Size-adjusted BHARs by RRP						
All stock-financed acquisitions	Offer Premiums	*t*-stat.	N	BHAR36sa	*p*-value	N
1	0.294***	(14.53)	201	-0.400***	(0.003)	158
2	0.262***	(13.04)	201	-0.206**	(0.040)	180
3 (RRP>0)	0.360***	(15.29)	206	-0.253***	(0.001)	174
Mean difference 3-1	0.066**	(2.11)		0.147*	(0.073)	

Table 4.12: Endogeneity issues

This table reports the RRP effect on the offer premium by controlling for endogeneity issues. Results from an OLS regression and a 2SLS regression are presented in this table. The RRP is treated as an endogenous variable, and the market 52 week high, with the bidder and the target 65 week-high treated as instrumental variables. We first obtain the fitted value from the regression of the RRP on the instrument variables and then replace the RRP with the fitted value. Results are reported in the "IV" Column. The market 52-week high is defined as the logarithmic term difference between the highest total market value (CRSP: TOTVAL) over the 335 calendar days ending 30 days prior to the announcement date and the total market value 30 days prior to the announcement date. The bidder (the target) 65 week-high is 427 calendar days ending 30 days prior to the announcement date and the stock price 30 days prior to the announcement date. Variable definitions are as in the notes to Table 4.2. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, ** and * respectively, is reported alongside coefficients. The results of the Hausman test and the over-identifying restrictions test are reported in the lower part of the table.

Offer Premiums	OLS		IV	
	Coef.	*t*-stat.	Coef.	*t*-stat.
RRP	0.089***	(4.501)	0.085***	(4.853)
Hostile	0.032	(1.563)	0.032	(1.312)
Tender	0.075***	(5.006)	0.075***	(4.518)
Diversification	-0.017	(-1.256)	-0.017	(-1.280)
Stock	-0.003	(-0.184)	-0.003	(-0.179)
Cash	-0.031*	(-1.917)	-0.031*	(-1.856)
RelativeSize	0.116***	(7.263)	0.116***	(7.719)
Bidder ROA	0.019	(0.269)	0.018	(0.337)
Bidder MTBV	-0.000	(-0.010)	-0.000	(-0.005)
Bidder lnMV	0.056***	(9.627)	0.056***	(10.282)
Bidder Volatility	0.768	(1.047)	0.744	(1.110)
Target ROA	0.141***	(3.347)	0.140***	(4.545)
Target MTBV	-0.001	(-0.878)	-0.001	(-0.883)
Target lnMV	-0.078***	(-11.703)	-0.078***	(-12.472)
Target Volatility	-0.315	(-0.537)	-0.291	(-0.624)
N	1878		1878	
adj. R^2	0.169		0.169	
Hausman test	0.2170	(p=0.6414)		
Over-identifying restrictions (Sargan test)	26.8164	(p=0.0000)		

Table 4.13: Variables correlation matrix

This table reports pairwise Pearson correlation of the variables used in the regression of offer premiums on the RRP. Variable definitions are as in the notes to Table 4.2.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.RRP	1.0000														
2.Hostile	-0.0450	1.0000													
3.Tender	-0.0199	0.1333	1.0000												
4.Diversification	-0.0072	-0.0175	0.0245	1.0000											
5.Stock	0.0957	-0.1122	-0.2918	-0.0289	1.0000										
6.Cash	-0.0355	0.0518	0.3323	0.1144	-0.5493	1.0000									
7.RelativeSize	-0.0939	0.2082	-0.0710	-0.1175	0.0101	-0.2716	1.0000								
8.Bidder ROA	-0.0898	0.0096	0.0884	0.0969	-0.1875	0.1732	-0.1187	1.0000							
9.Bidder MTBV	0.0092	-0.0661	-0.0459	-0.0099	0.1511	-0.0770	-0.0789	0.1448	1.0000						
10.Bidder lnMV	-0.0465	-0.0500	0.0938	0.0764	-0.1840	0.1811	-0.3759	0.3133	0.2044	1.0000					
11.Bidder Volatility	0.0667	-0.0353	-0.0688	-0.0681	0.3333	-0.2574	0.1446	-0.4836	0.1110	-0.4176	1.0000				
12.Target ROA	-0.2785	0.0618	0.0088	0.0286	-0.0651	0.0106	0.1003	0.2997	-0.0042	0.0912	-0.2870	1.0000			
13.Target MTBV	-0.1282	-0.0369	-0.0187	0.0093	0.1246	-0.0714	-0.0517	0.0379	0.1840	0.1591	0.0662	0.0426	1.0000		
14.Target lnMV	-0.2091	0.1085	-0.0051	-0.0844	-0.0961	-0.0757	0.1873	0.1755	0.1153	0.6213	-0.3167	0.3045	0.1913	1.0000	
15.Target Volatility	0.3084	-0.1088	-0.0072	0.0382	0.2321	-0.0760	-0.1515	-0.2704	0.0929	-0.2373	0.6290	-0.4696	0.0385	-0.5106	1.0000

Table 4.14: Robustness check: the RRP effect on the probability of using stocks

This table reports logistic regression results of the probability of using stocks on RRP effect. Dependent variable is "Stock", which is a dummy variable, taking a value of 1 if acquisitions are 100% financed with stocks, 0 otherwise. Column (1) reports regression results for all-stock financed acquisitions on the RRP for the acquisition sample that the bidder is relatively more overvalued than the target or RRP>0, column (2) reports regression results for all-stock financed acquisitions on RRP for the acquisition sample that the bidder is relatively more undervalued than the target or RRP<0. We control all other variables the same with Table 4.3. There are 50 observations missing due to multicollinearity problem with the year, so that we are left with 1,742 observations, 1,103 for RRP>0 group, and 639 for RRP<0 group. Variable definitions are as in the notes to Table 4.2. *P*-value is reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, ** and * respectively, is reported alongside marginal effects. We transfer coefficients into marginal effect (ME), evaluated at the sample means of the independent variables.

Binomial Logistic Regression *Stock*	(1) RRP>0			(2) RRP<0		
	Coef.	*p*-value	ME	Coef.	*p*-value	ME
RRP	0.831***	(0.003)	0.164	-0.232	(0.611)	-0.035
Hostile	-0.471	(0.235)	-0.093	-1.544**	(0.019)	-0.233
Tender	-2.291***	(0.000)	-0.453	-3.799***	(0.000)	-0.573
Diversification	0.204	(0.237)	0.040	-0.082	(0.752)	-0.012
RelativeSize	-0.991***	(0.000)	-0.196	0.006	(0.982)	0.001
Bidder lnMV	-0.431***	(0.000)	-0.085	-0.103	(0.319)	-0.016
Bidder MTBV	0.036**	(0.031)	0.007	0.074***	(0.000)	0.011
Bidder ROA	-0.879	(0.273)	-0.174	-2.627**	(0.026)	-0.396
Target lnMV	0.497***	(0.000)	0.098	0.169	(0.162)	0.025
Target MTBV	0.039*	(0.090)	0.008	0.087***	(0.003)	0.013
Target ROA	0.144	(0.704)	0.029	-0.192	(0.803)	-0.029
Target Volatility	-3.052	(0.606)	-0.604	14.092	(0.142)	2.124
Bidder Volatility	33.483***	(0.000)	6.621	36.743***	(0.002)	5.538
Bidder Leverage	-0.144	(0.124)	-0.028	-0.276***	(0.007)	-0.042
Target Leverage	-0.151**	(0.016)	-0.030	-0.099	(0.175)	-0.015
Bidder CF/E	0.330	(0.338)	0.065	0.342	(0.428)	0.052
Year	Yes			Yes		
Industry	Yes			Yes		
Constant	-1.226	(0.237)		-1.744	(0.171)	
N	1103			639		
Pseudo R^2	0.316			0.350		

Table 4.15: Robustness test: The effect of the RRP on the probability of using stocks: Between payment methods

This table reports multinomial logistic regression results for Stock versus Cash and Stock versus Mixed on the RRP by different RRP groups. Specifically, RRP>0 represents bidders that are relatively more overvalued than their targets, and RRP<0 represents bidders that are relatively more undervalued than their targets. "Stock" refers to acquisitions that are 100% financed by stocks. "Cash" refers to acquisitions that are 100% financed with cash. "Mixed" refers to acquisitions that are neither 100% cash financed nor 100% stocks financed. There were 5 missing observations that are defined as "Other" in terms of the method of payment in Thomson One. For both columns, we control for 15 variables as shown in the specification (4) of Table 4.3. Variable definitions are as in the notes to Table 4.2. *P*-value is reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, **, and * respectively.

Multinomial Logistic Regression	(1) *Stock Versus Cash*		(2) *Stock Versus Mix*	
	Coef.	*p*-value	Coef.	*p*-value
RRP	0.728***	(0.000)	0.425**	(0.017)
Hostile	-0.943***	(0.006)	-0.516	(0.126)
Tender	-3.045***	(0.000)	-1.831***	(0.000)
Diversification	-0.010	(0.947)	0.262*	(0.096)
RelativeSize	0.428	(0.143)	-0.852***	(0.000)
Bidder lnMV	-0.281***	(0.000)	-0.228***	(0.000)
Bidder MTBV	0.058***	(0.001)	0.042***	(0.002)
Bidder ROA	-1.768**	(0.031)	-1.294*	(0.077)
Target lnMV	0.471***	(0.000)	0.190**	(0.015)
Target MTBV	0.059***	(0.003)	0.050***	(0.007)
Target ROA	0.053	(0.887)	0.324	(0.369)
Target Volatility	2.528	(0.651)	4.395	(0.410)
Bidder Volatility	48.423***	(0.000)	19.221**	(0.010)
Bidder Leverage	-0.181**	(0.024)	-0.215***	(0.002)
Target Leverage	-0.042	(0.451)	-0.156***	(0.001)
Bidder CF/E	-0.044	(0.885)	0.361	(0.239)
Year	-2.097**	(0.018)	0.541	(0.494)
Industry	Yes		Yes	
Constant	Yes		Yes	
N				
Pseudo R^2				

Table 4.16: Robustness test: The effect of the RRP on offer premiums: By payment methods

This table reports OLS regression results for the offer premium on the RRP. We divided our M&A sample in three subsamples according to payment methods. Column (1) reports the regression results for the acquisition sample that is 100% financed by stocks, column (2) reports the regression results for the acquisition sample that is 100% financed by cash, column (3) reports the regression results for the acquisition sample that is paid with a mixture of stocks and cash. There are 5 missing observations that are defined as "Other" in terms of the method of payment in Thomson One. For both columns, we control for 15 variables as shown in the specification (4) of Table 4.3. Variable definitions are as in the notes to Table 4.2. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, **, and * respectively.

	(1)		(2)		(3)	
Offer Premiums	Stock		Cash		Mix	
	Coef.	*t*-stat.	Coef.	*t*-stat.	Coef.	*t*-stat.
RRP	0.071**	(2.239)	0.113***	(3.674)	0.089**	(2.303)
Hostile	-0.011	(-0.184)	0.038	(1.107)	0.001	(0.030)
Tender	0.073	(1.053)	0.070***	(3.549)	0.098***	(3.434)
Diversification	-0.014	(-0.508)	-0.009	(-0.467)	-0.030	(-1.243)
RelativeSize	0.176***	(4.397)	0.133***	(5.699)	0.097***	(3.389)
Bidder ROA	-0.120	(-1.152)	0.303**	(2.301)	0.004	(0.034)
Bidder MTBV	-0.000	(-0.042)	-0.003	(-1.529)	0.003	(1.414)
Bidder lnMV	0.075***	(5.786)	0.038***	(5.027)	0.064***	(4.762)
Bidder Volatility	0.170	(0.138)	-0.673	(-0.505)	1.864	(1.392)
Target ROA	0.223***	(3.516)	0.064	(0.940)	0.073	(0.800)
Target MTBV	0.000	(0.145)	-0.004	(-1.142)	-0.004	(-1.490)
Target lnMV	-0.091***	(-6.627)	-0.073***	(-7.326)	-0.087***	(-6.206)
Target Volatility	0.541	(0.551)	0.026	(0.034)	-2.314*	(-1.761)
Constant	-0.537***	(-3.799)	0.155	(1.322)	0.020	(0.138)
Year	Yes		Yes		Yes	
Industry	Yes		Yes		Yes	
N	608		726		539	
adj. R^2	0.146		0.223		0.218	

Table 4.18: Robustness test: The effect of the RRP on offer premiums: By deal types

This table reports OLS regression results for the offer premium on the RRP. We divided our M&A sample in two subsamples according to industry relatedness of the two firms involved. Where we define the "Diversification" to which the primary two Standard Industry Classification (SIC) codes are different between bidders and targets. Column (1) reports the regression results for the diversified acquisition sample, column (2) reports the regression results for the undiversified acquisition sample. For both columns, we control for 15 variables as shown in the specification (4) of Table 4.3. Variable definitions are as in the notes to Table 4.2. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, **, and * respectively.

	(1)		(2)	
Offer Premiums	Diversified deals		Undiversified deals	
	Coef.	*t*-stat.	Coef.	*t*-stat.
RRP	0.127***	(4.066)	0.067**	(2.566)
Hostile	0.023	(0.657)	0.034	(1.254)
Tender	0.062**	(2.471)	0.090***	(4.555)
Stock	-0.016	(-0.500)	-0.002	(-0.081)
Cash	-0.035	(-1.259)	-0.039*	(-1.917)
RelativeSize	0.136***	(4.795)	0.115***	(5.611)
Bidder ROA	-0.050	(-0.316)	0.019	(0.236)
Bidder MTBV	0.003	(1.277)	-0.001	(-0.620)
Bidder lnMV	0.047***	(5.384)	0.066***	(7.924)
Bidder Volatility	-0.658	(-0.479)	1.414	(1.561)
Target ROA	0.136**	(2.016)	0.138**	(2.472)
Target MTBV	-0.002	(-0.657)	-0.001	(-0.774)
Target lnMV	-0.082***	(-7.785)	-0.080***	(-8.938)
Target Volatility	-0.063	(-0.067)	-0.679	(-0.872)
Constant	0.046	(0.386)	0.034	(0.327)
Year	Yes		Yes	
Industry	Yes		Yes	
N	702		1176	
adj. R^2	0.159		0.173	

Table 4.18: Robustness test: The effect of the RRP on offer premiums: By deal choice
This table reports OLS regression results for the offer premium on the RRP. We divided our M&A sample in two subsamples according to deal choice or whether the deal is defined as tender offer according to Thomson One. Column (1) reports the regression results for the tender offers, column (2) reports the regression results for mergers. For both columns, we control for 15 variables as shown in the Specification (4) of Table 4.3. Variable definitions are as in the notes to Table 4.2. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, **, and * respectively.

Offer Premiums	(1) Tender		(2) Merger	
	Coef.	*t*-stat.	Coef.	*t*-stat.
RRP	0.148***	(4.107)	0.078***	(3.464)
Hostile	0.007	(0.190)	0.041	(1.505)
Diversification	-0.052**	(-2.044)	-0.007	(-0.478)
Stock	-0.011	(-0.190)	0.005	(0.282)
Cash	-0.076**	(-2.578)	-0.020	(-1.020)
RelativeSize	0.150***	(4.668)	0.108***	(5.862)
Bidder ROA	0.056	(0.489)	-0.007	(-0.091)
Bidder MTBV	-0.005	(-1.172)	0.001	(0.440)
Bidder lnMV	0.070***	(5.518)	0.052***	(7.675)
Bidder Volatility	4.638***	(3.126)	0.028	(0.033)
Target ROA	0.066	(0.757)	0.167***	(3.512)
Target MTBV	-0.002	(-0.800)	-0.001	(-0.543)
Target lnMV	-0.081***	(-5.372)	-0.077***	(-10.246)
Target Volatility	-0.350	(-0.349)	-0.232	(-0.344)
Constant	0.325***	(2.764)	0.155	(1.430)
Year	Yes		Yes	
Industry	Yes		Yes	
N	380		1498	
adj. R^2	0.224		0.144	

Table 4.19: Robustness test: The effect of the RRP on offer premiums: By deal completion

This table reports OLS regression results for the offer premium on the RRP. The M&A sample was divided in two subsamples according to whether the deal is completed during the sample time period studied. Column (1) reports the regression results for the completed deals or successful deals, column (2) reports the regression results for deals that are failed to complete or unsuccessful deals. For both columns, we control for 15 variables as shown in the specification (4) of Table 4.3. Variable definitions are as in the notes to Table 4.2. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, **, and * respectively.

	(1)		(2)	
Offer Premiums	Successful deals		Unsuccessful deals	
	Coef.	*t*-stat.	Coef.	*t*-stat.
RRP	0.081***	(3.921)	0.119**	(2.347)
Hostile	0.021	(0.517)	0.092***	(2.693)
Tender	0.066***	(4.013)	0.100**	(2.560)
Diversification	-0.015	(-1.007)	0.022	(0.609)
Stock	0.010	(0.515)	-0.017	(-0.375)
Cash	-0.033*	(-1.842)	0.014	(0.311)
RelativeSize	0.130***	(7.074)	0.134***	(3.422)
Bidder ROA	0.024	(0.320)	-0.295	(-1.512)
Bidder MTBV	-0.001	(-0.441)	0.005	(1.482)
Bidder lnMV	0.052***	(8.597)	0.102***	(4.315)
Bidder Volatility	0.391	(0.462)	1.543	(1.091)
Target ROA	0.125***	(2.658)	0.291***	(2.830)
Target MTBV	-0.001	(-0.534)	-0.004	(-0.842)
Target lnMV	-0.076***	(-10.891)	-0.118***	(-4.747)
Target Volatility	-0.263	(-0.402)	-0.685	(-0.515)
Constant	0.022	(0.240)	-0.158	(-1.015)
Year	Yes		Yes	
Industry	Yes		Yes	
N	1597		277	
adj. R^2	0.164		0.238	

Table 4.20: Robustness test: market-adjusted model
This table reports the OLS regression and 2SLS regression results for both bidder and target 3-day CARs on offer premiums. The dependent variable for specifications (1) and (2) is the bidder CAR3 and for specifications (3) and (4) is the target CAR3, where CAR3 is calculated with the market-adjusted model. Specifications (2) and (4) reports the results of 2SLS regression using RRP as an instrument variable of offer premiums. Variable definitions are as in the notes to Table 4.2. Robustness *t*-statistics are reported in parentheses. Statistical significance at the 1%, 5% and 10% levels is denoted ***, **and * respectively. We report the results of the Hausman test and F-test at the lower part of the table.

	(1)	(2)	(3)	(4)
	Bidder CAR3		*Target CAR3*	
	OLS	IV	OLS	IV
Offer Premiums	-0.014**	-0.070**	0.469***	0.688***
	(-2.167)	(-2.078)	(20.616)	(6.173)
Hostile	-0.002	-0.002	-0.002	-0.004
	(-0.385)	(-0.366)	(-0.127)	(-0.218)
Tender	0.008**	0.014**	0.040***	0.017
	(2.102)	(2.471)	(3.022)	(0.970)
Diversification	0.003	0.003	0.003	0.003
	(0.764)	(0.817)	(0.305)	(0.312)
Stock	-0.010**	-0.009**	-0.046***	-0.046***
	(-2.139)	(-2.047)	(-4.023)	(-3.727)
Cash	0.020***	0.020***	0.030***	0.035***
	(5.066)	(4.504)	(2.581)	(2.793)
RelativeSize	-0.005	-0.005	-0.051***	-0.053***
	(-1.207)	(-1.485)	(-6.259)	(-5.780)
Bidder lnMV	-0.003***	-0.003***		
	(-3.693)	(-3.074)		
Bidder MTBV	-0.000	-0.000		
	(-0.345)	(-0.186)		
Bidder ROA	0.034*	0.033**		
	(1.877)	(2.550)		
Target lnMV			-0.002	0.004
			(-0.827)	(1.001)
Target MTBV			-0.002*	-0.002
			(-1.757)	(-1.372)
Target ROA			-0.008	-0.011
			(-0.298)	(-0.557)
Constant	0.013*	0.027**	0.107***	0.008
	(1.666)	(2.297)	(5.604)	(0.153)
N	1878	1878	1878	1878
adj. R^2	0.050	.	0.374	.
Hausman test	X^2=2.9735	(*p*=0.0848)	X^2=4.3522	(*p*=0.0371)
F-test	X^2=60.2985	(*p*=0.0000)	X^2=42.9958	(*p*=0.0000)

CHAPTER 5: MARKET ANTICIPATION AND MERGER DECISIONS

Abstract

This chapter examines the market anticipation effect on M&A decisions and outcomes. Prospect theory predicts sequential risk-taking actions by decision-makers when facing losses. This implication was applied in the M&A context, which is a firm's major corporate investment decision. The market anticipates managers making investment decisions according to its risk tolerance, hence maintaining confidence in the firm (i.e. market anticipation effect). Managers follow this anticipation to rationalise the M&A motive. The magnitude of losses was measured with the bidder reference price, which is the distance between the firm's 52-week high and its current stock price, illustrating the market perception of a firm's performance. Investors holding bidders' stocks whose value is in significant decline relative to the reference price tend to believe risky projects should be available to the firm and if managers fail to engage in them, this will destroy the market confidence. Market anticipation increases managerial incentive to perform well in the face of performance decline and triggers a risk-taking appetiser. The level of riskiness of investment decisions was measured with the target firm-specific risk. The principal findings in this chapter are presented as follows: it was found that the riskiness of managerial decisions is anticipated by the market and this explains the choice of takeover targets. Managers who make decisions based upon market anticipation will receive positive market reactions. Market-anticipated risks may expose managers to great shareholder monitoring, pushing them to work hard to justify the M&A motive. Specifically, managers tend to exhibit great efforts in deal negotiation, reflected in the lower offer premiums they pay for the target, indicating that managers are cautious in the face of losses. The quality of their decisions according to the reference point proves to be value creation, reflected in positive long-term performance. Findings of this chapter suggest that the reference point effect has predictability for target selection.

5.1. Introduction

"Pain, I have already had occasion to observe, is, in almost all cases, a more pungent sensation than the opposite and correspondent pleasure. The one, almost always, depresses us much more below the ordinary, or what may be called the natural state of our happiness, than the other ever raises us above it."

Adam Smith (1759: 176-177)

One of the most well-documented phenomena of investors' behaviour is that people tend to take risks subsequent to follow losses relative to a reference point, predicted in Kahneman and Tversky's prospect theory (1979). According to this, the market should be reluctant to realise losses relative to a reference point, with the anticipation that future gains can be realised through subsequent firms' risk-taking decisions. In this chapter, this implication is examined in the context of M&As, which is a firm's major investment decisions. Market anticipation was measured with the bidder reference point, the extent to which a bidder's current price deviates from its 52-week high price. Evidence that the market tends to gauge gains and losses relative to a salient piece of price information is also documented in many studies relating to behavioural finance and M&A literature (Odean, 1998; Kumer *et al*., 2015; Schneider and Spalt, 2015)[75]. Risk magnitude of merger and acquisition (M&A) decisions was measured with target firm-specific risk similar to that employed by Kumar (2009).[76]

[75] Using the firm's 52-week high as the reference price is not new. Huddart *et al*. (2009) identified abnormal trading volumes around the 52-week high. Burghof and Prothmann (2011) and Li and Yu (2012) found that abnormal trading volumes around the 52-week high reflects investor attitude towards market news and uncertainty information. Baker *et al*. (2012) suggest that bidders assess the target with the target 52-week high. Consistently, the reference price was applied to the bidder. It reflects the extent to which the loss relative to an aspiration level that the market is unwilling to realise, which triggers expectations of the firm's risk-taking decision.

[76] The construction of target firm-specific risk is presented in the methodology section of this chapter.

Whether market anticipation has predictability for corporate investment decisions was investigated, and the effect of market-anticipated risks on M&A outcomes was examined. The expectation was to be able to assess whether managers minimise a firm's value by taking market-anticipated risks.

Explanations regarding why losses trigger managerial willingness of risk-taking are put forward from the psychological view and provided with empirical evidence relating to the stock market and M&As. France (1902) explains that people take risks when they encounter losses. He documented a wide range of historical facts as well as the psychological origin of humans, revealing that the incentive to take risks is people's deepest instincts of tasting the joy of life. Further to this, Kahneman and Tversky (1979) developed a model portraying the relationship between risk and choice, suggesting that people are loss-aversion and tend to engage in risky decisions in an attempt to compensate losses. Odean (1998) documents direct evidence in the stock market that investors are reluctant to realise paper losses, holding the belief that future gains should be generated.

Kumar (2009) suggests investors' preference for stocks with a lottery feature, which is more pronounced for those in a lottery-favourable environment and with low incomes. The author noted that investors are likely to exaggerate a small chance of a large gain. As a result, they choose stocks with high idiosyncratic volatility, high idiosyncratic skewness and lower stock price (i.e. lottery-like stocks). Studies suggest that investors who play games of chance are in the hope that their current wealth will be improved, indicating that investment decisions are motivated by current losses. Barber and Odean (2008) noted that investors' trading decisions are based on the focus of their attention. Both individual and institutional investors will choose eye-grabbing stocks. In this connection, Yu and Li (2011) and Bhootra and Hur (2013) attribute investors' attention to the reference point effect that trading strategy is driven by a firm's peak prices. Similarly, Gamble and Johnson (2014) claimed that investors gauge their losses and gains relative to prior stock returns and increase their portfolio risks following losses. Kumar *et al*. (2015) use prior stock market reactions as reference points and find that losses reflected in prior stock market reactions drive the firm to take on risky targets.

Many additional studies have also documented salient evidence that losses drive a firm's risk-taking decisions. Edmans *et al*. (2012) suggest current underperformance relative to an aspiration level increases managerial pressure relative to their peers which pushes the manager to take on risky projects. In a similar vein, Morrow *et al*. (2007) reported that managers feel great pressure when their firm's current performance is far below the market expectations, leading their attempts at value creation through M&A activities. Kim *et al*. (2011) documented evidence of desperate managers whose aim is to grow their firm through M&As when the firm's performance falls greatly below the market expectations. Gorton *et al*. (2009) proposed a theory of mergers relating to firm size, arguing that firms whose current performance is poor are associated with great pressures, which motivates managers to start a race for firm size through M&A activities to eliminate threats of being taken over.[77]

The magnitude of loss of the firm was measured with the bidder reference price, i.e. a price deviation of a firm's current price from its highest stock price occuring in a one-year window preceding the takeover announcement date. This gives the market insight into how the firm is currently performing relative to the 52-week high, which is a salient reference price that shapes investors' minds regarding

[77] In support of this, Dickerson *et al*. (2003) noted that attack, through acquisitions, is the best way to eliminate takeover threats.

change in a firm's profitability. Thus, this measure reflects the magnitude of loss of a firm. Investors may lose confidence in the firm when this loss is large, inducing their managers to take on risky projects that could fundamentally change their current wealth status, or blame them for not working hard. Following Kumar (2009) and Schneider and Splat (2015), the riskiness of the M&A decisions was measured with target firm-specific risks, which are more easily to be assessed by the market. Large firm-level risks also expose managers to great shareholder monitoring, motivating the firm to work hard.

Prior studies have provided supportive evidence as to why a firm tends to make decisions based on a single piece of information though in truth that they have a full access to the information about their own firms. Brandenburger and Polak (1996) suggest that the manager is concerned about the market and tend to make decisions that the market wants to see. Thus, it should be suggested that managers should make M&A decision according to the market anticipation. Sacheti *et al*. (2016) argued that the manager whose decisions follow market anticipation is attempting to avoid the market's short-term criticisms. Similarly, Kau *et al*. (2008) found that firms listen to the market, in that they cancel investment decisions if there are negative market reactions.[78]

Using M&As as a platform to explore the reference point effect on major corporate investment decisions has three main reasons. First, M&A outcomes will alter a firm's status and change the wealth of shareholders. Brenner (1983) indicates that a primary motive of risk-taking is to fundamentally change the relative position in the distribution of wealth. A firm will be blamed for

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[78] Luo (2005) and Chikh and Filbien (2011), applying this in different markets, found a consistent view with that of Kau *et al*. (2008).

not making sufficient effort for their shareholders when it fails to undertake the investments the market expects. Secondly, the fact that the shareholder motivates the firm to increase risks is common in the CEOs' M&A compensation literature. For instance, Grinstein and Hribar (2004) find risk-taking managers are compensated with lucrative compensation packages. Graham *et al*. (2013) suggest that shareholders are likely to hire managers with risk-taking incentives to avoid costly incentive pay. M&As allow investigation of whether firms' major investment decisions made upon market anticipation receive market recognition. Third, the researcher further explored whether managers can control risks through skills and efforts, which allows observers to distinguish risk-taking from stock market gambling, which purely depends on probability (Kumar, 2009).

This chapter has two main motivations. First, it provides novel insights into the debate on managerial risk-taking incentives. Previous studies have found that risk-taking incentives are driven by managerial overconfidence or agency problems and yield contradictory results with respect to bidder performance. Whilst Malmendiar and Tate (2008) claimed that overconfident managers who tolerate large risks tend to destroy the wealth of shareholders, Croci and Petmezas (2015) indicated that managerial risk-taking incentive creates value for the firm. Another line of literature links managerial risk-taking attitudes with CEOs' M&A compensation. Datta *et al*. (2001) indicate that high pay-performance creates managerial value-maximising incentives. However, this view is challenged by Sanders and Hambrick (2007) who suggest that an increase in risk-taking does not necessarily enhance firm value. This research investigates the risk-taking motive with reference point theory, which explains M&A decisions from human nature response (France, 1902). It was expected that a firm will follow the market anticipation following losses, and managers should rationalise their risk-taking incentive to avoid the market criticism. Thus, market perception has a substantial impact on M&A decisions.

Secondly, only a few papers link the reference point to target risks. For example, Kumar *et al*. (2015) use stock market reaction to a prior acquisition as the reference point. The authors find that prior market reaction loss induces a firm to acquire risky targets. However, how the decision of prior acquisition influences the current M&A decision remains largely controversial (Billett and Qian, 2008; Aktas *et al*., 2009)[79]. Moreover, Kumar *et al*. employed target stock volatility as a proxy for M&A riskiness. However, it measures the total risk of the market and the firm, making it hard to distinguish the effect of firm-specific risk from the effect of the market-wide risk.[80] To combat these issues, in this chapter, the bidder 52-week high is used as the reference point, which is a more direct measure for current market reaction. Schneider and Spalt (2015), who applied Kumar's idea (2009) of employing the measure for stock riskiness to the target firm, found a negative relationship between target risks and bidder performance. They ascribe this to a managerial gambling preference. However, Schneider and Spalt fail to answer whether such risk-taking has a rational motive. If the market believes that there are risky projects available to a firm while managers do not take any actions, this will lead to the investors' belief that managers have a quiet life by entrenching themselves and destroying the firm's value (Bertrand and Mullainathan, 2003). On the other hand, when M&A decisions are made in relative to market anticipation, the market tends to create an image that the firm

[79] Aktas *et al*. (2009) found the learning hypothesis that managers tend to adjust their behaviour according to the previous acquisition while Billett and Qian (2008) suggest the self-attribution hypothesis that initial success generates overconfident managers who tend to engage in more acquisitions, which generates lower shareholder wealth.

[80] Often the market tends to react more significantly to the firm-level news than the market news. Firm-specific risks can be driven by any news relating to the firm level. For example, CEO turnovers, or earnings announcement, which are more sensitive to outside investors.

is strong, or the firm strives hard to protect shareholders' wealth, thus enhancing its confidence in the firm's prospects. Croci and Petmezas (2015) suggest that managers with risk-taking incentives tend to select better quality acquisitions. In addition, March and Shapira (1987) indicate that risk-taking is an essential part of the managerial role. Based on these arguments, bidder performance is expected to improve when risk-taking is undertaken with market consent.

Using a sample of 2,018 U.S. public acquisitions announced between 1985 and 2014, a positive relationship between riskiness of M&A decision and the bidder reference point was established, suggesting an important role of played by market anticipation in corporate investment decisions. The results of this chapter continue to hold after a series of tests. Further, it was found that bidders' announcement returns increase with market-anticipated risks, implying that the market will push the manager to work hard. Further investigation shows that managers who are exposed to observable risks tend to exhibit greater efforts on deal negotiation and attempting to signal to the market that they are good managers, which is consistent with Harford *et al*. (2012) and Bertrand and Mullainathan (2003).[81]

Several contributions have been made to previous literature. This is the first paper, to our knowledge, investigates the reference point effect on managerial risk-taking incentives in the context of M&As. It is shown that humans' psychological bias has a direct impact on corporate investment decisions. This study focuses on the M&A motives of firms who have announced an M&A deal, which allows making the distinction between the performance of bidders who undertake M&As with market

[81] Their studies find that entrenched managers tend to have safe lives and attempt to avoid being monitored, which leads to overpayment. It is expected that managers making risky decisions will signal to the market that the interests of the manager and the shareholder are closely linked.

anticipation and those without, eliminating any concerns that excessive risks are due to managerial overconfidence and agency problems. It is expected that those M&A motives are followed by negative market reactions because the market does not anticipate the firm to do so. This chapter contributes to behavioural finance literature by directly documenting that not only individual investors but also institutional investors are influenced by the reference point effect while making decisions in uncertainty. Further, it offers new insights to the existing literature regarding managerial risk-taking incentives. It was found that market-anticipated risks have a significant impact on M&A decisions, attributable to one of the important sources of bidder performance improvement.

The remainder of this chapter is organised as follows: Section 2 summaries relevant literature. Section 3 designs hypotheses. Section 4 summarises the data and presents methodologies. Section 5 examines the reference point effect on M&A decisions, and the relationship between market-anticipated risks and bidder performance. Section 6 conducts a series of robustness checks. Section 7 concludes the chapter.

5.2. Literature review

5.2.1. Reference point theory and gambling

France (1902) documents a wide range of interesting facts relating to the history of gambling across the world and provides experimental evidence explaining the motivation of people engaging in gambling activities. He concludes that it is human nature to get involved in games of chance and gambling. People have a gambling spirit and believe in luck. With regard to the human gambling spirit, France affirms that people tend not to leave the table while a big risky game is in progress. The human gambling spirit implies that humans naturally explore uncertain events and their attention tends to be intense when information is highly uncertain. He explained luck with the fact that gamblers believe that if they lose in the first half of the game, they will eventually win back in the second half. This implies that people tend to align games of chance with an exaggerated feeling for their skills. Such a stimulated mental intention drives people not to think wisely but to rely on the gambling impulse.

Kahneman and Tversky (1979) developed prospect theory with an S-shape model portraying the relationship between risk and choice. It suggests that people seek risk when the current status is below their aspiration level. They are more sensitive to feelings about loss than gains given that the slope in the loss domain is much steeper than that in the gain. Due to the fact that people are loss-averse, they have a great incentive to compensate their losses through risk-taking decisions. The model ascribes the reason for gambling to people's strong tendency to loss-aversion.

Kumar (2009), following this line of literature, investigates the stock market and finds evidence that stock-purchasing decisions of individual investors are loss driven. According to the author, individual investors have a tendency to buy lottery-type stocks. The lottery-type stocks are those with a combination of high idiosyncratic volatility and skewness, and a low price. When idiosyncratic volatility is high, investors may overestimate the chance of extreme events occurred in the past would appear in the future. When idiosyncratic skewness is high, investors may overestimate the probability of making huge gains by investing less. The lower price reduces the costs of participation, giving investors an illusion of control. When a panel data set, collected from a large U.S. brokerage house, was analysed containing trading positions of individual investors between 1991 and 1996, the author revealed that investors' preference for lottery-type stocks increased when economic conditions became worse or their income was low. Their data also show that low-income investors underperform the market, indicating that gambling preference is associated with worse performance. Their study reflects investors' gambling spirit in investors' trading strategy in the stock market.

However, it may be argued that the reason for underperformance is not simply the investors' risk-taking behaviour since the investors with a lower income could also be less experienced individuals who are not able to manage the risk of their portfolios in the stock market. In this case, they might take too many unexpected risks. Borna and Lowery (1987) define this as *'pure gambling'* in which people have no control over the outcome of the events but rely heavily on the probability of the outcome. These authors noted another form of gambling where people's skills have an impact on the outcome of gambling,[82] implying that acquisitions belong to this form of gambling since managers with superior skills can better manage the risks.

Rather than Kumar (2009), who investigated the gambling spirit of less experienced investors in the stock market, Schneider and Spalt (2015) focused on the motivation of gambling for institutional investors undertaking M&A activities. Following Kumar's work (2009), Schneider and Spalt measured target riskiness with its idiosyncratic volatility, which captures the overall risk of the M&A decisions. Using a sample of public U.S. M&As between 1987 and 2008, the authors found that risky firms are likely to be acquired, showing the strong gambling preference of bidder managers. Further, they suggest that bidders who acquire risky targets destroy the wealth of shareholders and the value of firm reflected in both short and long runs, concluding that the propensity for managerial gambling

[82] For example, Borna and Lowery (1987) further illustrate that one's good knowledge of horse may result in successful horse-race betting, while rolling a dice is pure gambling in which depends on probability.

leads to value-destroying deals. However, their results can be interpreted that managers who gamble by means of M&As do not offer the market a rational motive given the lack of the current status of the bidder. Based on this argument, it cannot be determined whether a firm listens to the market and acquire targets accordingly. Investors might falsely believe that the M&A motive is simply because their managers *'go with their guts'* and do not coincide with the market reaction, thus bidders receive negative market reactions.

5.2.2. Reference point theory and risk-taking

Kahneman and Tversky (1979) suggest that people are aggressive when facing losses, as they believe there is a chance to break even, whilst people are risk-averse when the possible outcome of the decision is positive. March and Shapira (1987) provided supportive evidence that managers tend to avoid losses when their performance meets or exceeds market expectations. Their survey summarises many studies that link managerial risk perspectives and market expectations. It reveals that some managers interviewed believe that risk-taking is in an essential role of managers and the satisfaction of success is obtained from the degree of risks taken. While experiencing a decline in performance, managerial risk-taking incentive tends to be greater. A majority of managers, according to their surveyed study, believe that their skills can reduce risks.

Studies also provide empirical evidence supporting the view that managers take risks when facing performance decline. Morrow *et al.* (2007) investigated firms' strategies in the situation where a firm is unable to meet market expectations. Their study suggests that managers whose firms currently underperform the market are associated with mounting pressures from their investors whose aim is to achieve the aspired performance levels. This motivates managers to take actions in an attempt to turn around the table. Morrow *et al.*'s data show that acquisitions can create value for the firm, reasoning that the market expects that the firms to manage risks with better management skills in integrating existing resources with new resources. They also noted that firms facing a decline in performance may decline further when taking actions that have no effect on performance, implying that the firm may perform even worse in the face of a decline in performance when it fails to persuade the market.

Likewise, Kim *et al*. (2011) found managers are subject to the pressure of firm's growth when facing a decline in stock market performance. The decline in performance indicates a lack of growth for the firm, which motivates the firm to gain organisational recovery via M&As. By doing so, managers tend to pay high offer premiums to achieve the deal. Their study interprets their results with reference point theory of M&A. Kim *et al*. indicate the driving force of overpayment is because of firms' tendency to evaluate their current performance relative to their historical performance and their peers' performance. When they currently perform below these performance levels, they become risk-takers, paying high offer premiums. However, firms that currently perform well will be aligned with market expectation that the firm will hit a similar level of growth in the future, and thus managers are not willing to engage in acquisitions that often destroy the wealth of shareholders.

Edmans *et al*. (2012) also assert that firms that engage in M&As is because they are under great pressure from their industry peers. Gorton *et al*. (2009) proposed a theory of mergers that links the M&A motive with takeover threat, suggesting a firm that makes a takeover decisions does so to eliminate takeover threats. This finding is appealing for medium-size firms of the industry in their sample. The primary reason for firms engaging in unprofitable acquisitions is to eliminate takeover threats and thus maintain control of the firm. If a firm's primary motive is to complete takeovers to eliminate any pressure or takeover threats from the same industry, they are likely to choose takeovers that are easier to complete and firms that potentially bring forth higher returns. Following this argument, Ferreira and Laux (2007) found firms with larger idiosyncratic risk have fewer anti-takeover defences, thus, implying that firms that lack of takeover resistance are suitable takeover targets. In addition, those firms have higher levels of private information flow and information about future earnings in stock prices, which increase attractiveness for those under great pressures.

Earlier studies indicate that firms' salient historical prices are often reference point prices that the market uses to assess the firms' performances. Baker *et al*. (2012) proposed the target 52-week high as a reference point price in M&A pricing decisions. Target shareholders are less likely to forsake control of the firm when an offer price received is significantly lower than the reference point price. They judge their managerial performance during M&As according to their expectations, implying that those failing to meet their performance expectations will incur criticism and even face the risk of shareholder litigation.

Li and Yu (2013) attributed their findings that investors make decisions based on the salient news of the market to investors' attention hypothesis, proposing two proxies for investors' attentions: the market 52-week high and the historical high. Specifically, the current market price relative to the market 52-week high is used as a proxy for investors' under-reaction on the assumption that sporadic news leads conservative investors to under-react either to good or bad news as they are not fully incorporated in the market. Whilst the current market price relative to the historical high is used as a proxy for investors' over-reaction, reasoning that a series of good or bad news accumulate great deal of market attention, investors who make decisions according to the market historical high are over-react. Li and Yu’s data cover the average index of the Dow Jones between 1928 and 2009 and define the market 52-week high as a ratio of the current Dow index and its 52-week high, and the historical high as a ratio of the current Dow index and its historical high. Their findings show that investors whose attention is based on the historical high are associated with negative market returns in the future, whilst those whose attention is based on the 52-week high are associated with positive market returns, in that both over and under-reactions are eventually corrected by the market. Their study suggests that investors are attention-driven, making stock market predictable.

Bhootra and Hur (2013) suggest the recent effect, indicating that investors tend to have much more attention on the events occurred in the recent past than in the distant past. They proposed a proxy for investors’ recent effect based on the timing of the 52-week high, i.e. the number of days since the date of the 52-week high arrived. Bhootra and Hur’ s study documents the evidence of investors’ attention-driven performance, indicating that firms whose 52-week high occurred in the recent past outperform those whose 52-week high occurred in the distant past. In particular, Bhootra and Hur’ s findings show that the top 10% of the stocks whose 52-week high occurred in the recent past outperform the bottom 10% of the stocks whose 52-week high arrived in the further distance in monthly average returns by 0.7%. Investors create a strong momentum of profitability for the stocks that have achieved their best performance recently. On average, profits created by investors’ attention are twice as large for stocks that attain peaks recently than a long time previously. On the whole, their study indicates that recent events are likely to associate much more of investors’ emphasis, implying that a firm whose performance has recently reached its peak might less likely to initiate a takeover for the reason that takeovers destroy the wealth of the bidder shareholders.

Many additional studies also suggest the important role of the reference point effect on risk-taking actions and employ various reference point candidates. Kumar *et al*. (2015) used the stock market reactions to a previous acquisition as a reference point for the decision of the current acquisition. The authors proposed two competing hypotheses relating to the relationship between risk-taking and choices to examine the decision-making process: reference point effect and the house money effect. The former indicates that people take risks when facing losses, while the latter suggests that people take risks when facing gains. Analysing a sample of 823 acquisitions between 1990 and 2006, Kumar *et al*. found that firms increase M&A riskiness with both the abnormal dollar gains from the takeover announcement of a prior acquisition and the abnormal dollar losses, suggesting both theories play a role in risk-taking. Their data show that loss-aversion driven risk-taking is associated with weak negative market reactions to the current acquisition, while risk-taking followed by gains has an insignificant impact on M&A performance. Their study documents evidence that managers take on risky projects according to market reactions. However, their study measures target riskiness with target stock return volatility, which includes both the market overall risk and firm-specific risk. This proxy is problematic, as it cannot be distinguished whether risk-taking is driven by firm-specific or market overall risks. If the market overall risk is large, investors may believe that risk-taking is necessary and engaging any projects may as well associate with large risks, making investors feel no difference to M&As.

Meanwhile, Gamble and Johnson (2014) found evidence suggesting that investors increase their risk tolerance following losses. Their study focused on individual investors' trading strategy in the stock market. Their sample consists of 78,000 households between 1991 and 1996, which were collected from a large discount brokerage firm in the United States. Investors tend to exit the market when they experience large gains or losses in the first six months of the year, whilst those remaining in the market tend to lower (increase) their risks subsequently follow gains (losses), which is explained by the disposition effect.

5.2.3. Risk-taking and M&A outcomes

The relationship between managerial risk-taking attitude and value creation is far less clear according to March and Shapira (1987) who affirm that risk attitudes vary significantly among different individual managers. Earlier M&A studies provide rather unambiguous results regarding the relationship between the firm's risk-taking attitudes and M&A performance. A thread of literature suggests that a firm's risk-taking incentive and M&A outcomes are negatively related, stating the reason for this is agency conflicts between the managers and the shareholders (Grinstein and Hribar, 2004; Sanders and Hambrick, 2007; Graham *et al*., 2012) or managerial overconfidence (Malmendier and Tate, 2005; 2008).

Graham *et al*. (2012) focused on the relationship between managerial risk-taking attitudes and corporate investment actions and measured a CEO's risk profile with a series of survey questions. The authors established that approximately 10% of the top managers interviewed are risk-averse, whilst a majority of managers display considerable risk-taking attitude and are likely to engage in value-destroying deals. Moreover, due to the high level of risk tolerance, managers are optimistic, leading to a great use of short-term debt to finance M&As. Their study also suggests that the firm is more willing to recruit risk-taking managers on behalf for their decision-making, as recruiting risk-averse managers make compensations that motivates costly managerial risk-taking incentive. These findings imply that it is that shareholders expect their managers to be risk-taking but not too optimistic.

Likewise, Grinstein and Hribar (2004), who investigated the compensation effect on managerial risk-taking incentive in a sample of 327 M&A deals between 1993 and 1999, noted that 39% of companies reward their managers who complete the deal. This leads the researcher to believe that the managerial incentive of value-maximising tends to reduce if the structure of compensation[83] motivates the managers to take reductant risks. It is also noted that managers in pursuit of high compensations overpay for the targets (Shleifer and Vishny, 1988).

Malmendier and Tate (2008) found overconfident managers are more likely to engage in risky acquisitions than their non-overconfident counterparts. Their M&A sample consists of 477 large publicly traded U.S. firms of Forbes 500 from 1980 to 1994. The study measured CEO overconfidence with option-based measures, showing that overconfident bidders lower the wealth of shareholders for 75 basis points as opposed to rational bidders. The authors indicate that compared with non-overconfident CEOs, overconfident CEOs are less likely to create value via M&As. Specifically, they are more likely to conduct diversifying acquisitions associated with negative abnormal returns, as overconfident managers overestimate their skills in an unfamiliar area of industry. In addition, overconfident managers tend to engage in more acquisitions, indicating that they underestimate the risks of acquisitions.

Other literature finds contrasting evidence that a managerial risk-taking attitude leads to positive M&A outcomes. Croci and Petmezas (2015) studied the relationship between CEO risk perspectives and M&A decisions in a sample of 2,056 bidders engaged in 9,789 acquisitions over the period 1997

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[83] In this regard, Datta *et al*. (2001) found that managers of high equity-based compensation firms tend to take value-enhancing M&A projects. Their study shows compensation motivates risk-taking managers to create value for the firm.

to 2011 and measured managerial risk perspectives with vega and delta. In their study, vega refers to CEO wealth to stock return volatility while delta refers to CEO wealth to stock price following the studies of Guay (1999) and Core and Guay (2002). Their findings also show that bidder announcement returns increase with vega at the 5% significance level, which suggests little evidence that risks driven by overconfidence destroy the wealth of shareholders. Rather, managers with great risk-taking incentive enhance the wealth of shareholders. The authors conclude that managers with a high level of risk-taking tend to select quality deals. Likewise, Gervais *et al*. (2011) found that overconfident managers have a high-risk profile, making shareholders' convexity of the pay-performance incentive redundant. Their study suggests that overconfidence serves as a solution that reduces managerial risk aversion, thus saving the firm's investment costs. According to their study, shareholders expect their managers to be risk-taking, while the firm performs significantly lower than their level of expectation and it will reward managerial risk-taking behaviour with compensation. As such, shareholders might believe that their interests are aligned with the managers if they take on risky projects on their behalf.

Moeller (2015), who investigated approximately 25,000 companies over a 20-year period that involved in over 265,000 M&A transactions, also found a positive relationship between risky strategies and a firm's performance. He noted that *'M&A is now a well-exploited strategy. The opportunities have therefore shrunk and risk-free deals are unlikely to yield the desired results. In the current environment, portfolio managers therefore have to take risks.'* This indicates that, in current investment environment, managers can hardly perform well without engaging in risky M&As.

Harford *et al*. (2012) found that risk-averse managers generate negative market reactions. Studying a sample of 1,905 M&As made by U.S. public bidders between 1990 and 2005, the authors find that entrenched managers who avoid being monitored by block holders tend to use cash instead of stocks to finance M&As, and moreover they select public targets and overpay for the takeover targets. Their study compares risk-averse managers to those who make value-destroying deals for fear of losing their jobs. Bertrand and Mullainathan (2003) proposed the quiet life hypothesis, whereby entrenched managers are risk-averse.

Many additional studies have attributed the reason for risk-taking actions driving a firm's positive performance to the fact that managers are able to take risks that the market anticipates, as the market tends also to be risk-taking when facing losses. Managers do what the market anticipates can achieve a better performance, since it creates an insight in the market that the firm is confident in turning around its performance, and it is more importantly, the interests of the managers and the shareholders are closely aligned. Certain literature suggests the listening propensity of managers who make decisions according to market reactions. Brandenburger and Polak (1996) asserted that managers tend to make decisions that the market thinks it is right rather than their belief that it is for the interests of the firm, reasoning that *'the stock market has opinions as to what choices firms should make'*. In this case, managers make decisions according to the market reactions rather than private information they have. Sacheti *et al*. (2016) illustrated this with a cricket game by investigating how cricket players make decisions when facing social pressure. The cricket captains do not make optimal decisions that can maximise the probability of winning when they are subject to external pressure. Similarly, Sacheti *et al*. suggest that managers who make decisions based on the market anticipation are attempting to avoid criticisms by the market.

Following this trains of ideas in relevant literature, studies document evidence that managers make decisions in favour of the market anticipation (Luo, 2005; Kau *et al*., 2008; Chikh and Filbien, 2011), as managers only complete the deal associated with positive market reactions. It is generally believed that a firm is a financing contract between the managers and shareholders, in that the managers are hired by shareholders, and should make major investment decisions that are highly committed to completing the transactions. Managers who serve the best interests of their shareholders should award by the market. On the other hand, managers should exhibit sufficient effort to prove they are good managers, thus secure their jobs (Lehn and Zhao, 2006). When a firm experiences losses in performance, it should become more aggressively to persuade the market that they can reverse the situation. Risky deals attract great deal of market attention, pushing the firm to work diligently. Therefore, it is expected that one of the positive sources of abnormal returns generated from M&As, based on the rationale that the manager and the market have a common belief to the firm's prospects.

This chapter uses the bidder reference point as a proxy for the market anticipation, which is a deivation of the bidder's current price from its 52-week high, reflecting the change in market reaction relative to the bidder's best performance achieved over the past year prior to the takeover annoucement. If bidder's current price is significantly discounted from the reference point price, shareholders suffer mental losses, which motivate the managers to take more risks. On the other hand, the role of the reference point effect rationalises managerial risk-taking behaviour. Managers who conduct M&As according to the level of risks that the market anticipates leads the market to believe that their interests are closely aligned with those of the managers, as managers are also exposed to the strict shareholders' monitoring by taking on risky projects. While the market reacts negatively to those taking unexpected risks, such as managerial overconfidence or agency problems. It is also suggested that the market shows negative reactions to those remaining salient (i.e. entrenched managers) when they are expected to take an action. This researcher measures riskiness of M&As with target firm-specific risks in line with the Schneider and Spalt (2015). This research also focuses on the performance of the firm whose actions are in favour of its shareholders. Not only is the short-term performance investigated but also the long-term, since it should be possible to observe the quality of decisions over a longer period of time.

5.3. Hypotheses development

Tversky and Kahneman (1974) indicate a silent piece of information shapes people's minds and is used as a reference point for decision-making. Kahneman and Tversky (1979) applied their idea to the loss-averse tendency, suggesting that mental losses are gauged by the reference point. People become aggressive when their expectation deviates greatly from the reference point. Odean (1998) put forward prospect theory in the stock market , documenting evidence that investors are reluctant to realise loss, thus they retain losers too long in the belief that future gains can be realised through risky projects. Based on this argument, shareholders holding the firm's stocks expect the current losses to be turned round by managers. This author predicts that market reactions to a firm's current status relative to the time when the 52-week high arrives are perceived as a loss, which requires the firm to respond to the market that the firm is striving to achieve profitability. It is generally believed that M&As are the easiest solution to boost a firm's performance when it faces a decline in performance as noted in the work of Morrow *et al*. (2007) and Kim *et al*. (2011), however, M&As, on average, do not benefit bidder shareholders, based on the assumptions that managers take too many unexpected risks that destroy the wealth of their shareholders (Malmentier and Tate, 2008), or manager avoid taking expected risks for job security (Bertrand and Mullainathan, 2003; Harford *et* *al*., 2012). By contrast, when managers are cautious about the M&A motive and the take risks as the market anticipates, they reveal to the market that there is no misalignment of interests between the shareholders and the managers. The reference point price reflects the market's risk-taking profile, giving managers an insight into how many risks the firm should take to rationalise its M&A motive. This author measures the loss magnitude of M&A decisions with target firm-specific risks and expect that they are increased with perceived loss measured by the bidder reference point. Based on the reference point effect, this research suggests that there exists a level of risks the market is willing for the firm to take. When the market feels loss, the firm is anticipated to gain by taking on risky projects. This leads the first testable hypothesis of this chapter,

H1: There is a positive relationship between the bidder reference point and target risks.

The firm under pressures is prone to listen to the market (Luo, 2005; Kau *et al*., 2008). When engaging in risky projects, managers show that they are working hard for the shareholders instead of enjoying safe lives when the firm's performance is declining (Bertrand and Mullainathan, 2003). Their risky actions also attract greater market attention, leading to great managerial incentive to making profits for the shareholders. Barber and Odean (2008) suggest the attention-grabbing hypothesis that investors tend to buy eye-catching stocks. France (1902) explains this phenomenon as the human nature to resolve uncertainty. For instance, people may find it difficult to leave the table when risky bets are placed unless the outcome appears. Therefore, it should be expected that managers so as to prove themselves as "good managers" will take levels of risks that the market can tolerate and manage the deal afterwards to gain market recognition.

H2: Market-anticipated risks are positively associated with bidder announcement returns.

According to Morrow *et al*. (2007) and Kim *et al*. (2011), M&A deals are an important way of value enhancing for managers when the firm experiences a decline to performance. The pressure triggers managerial risk-taking incentive. In the meanwhile, managers work hard in an attempt to calm down the market's panic. They should judge how many risks should be taken based on the market anticipation measured with the bidder reference point. Unlike overconfident managers who overpay for the takeover targets, those taking anticipated risks creates the market an image of smart and diligent managers. By substantiating this market belief, managers reduce offer premiums and integrate the firm's resources following a merger. Therefore, this leads the last testable hypothesis of this chapter that,

H3: Managers making decisions according to market-anticipated risks work hard.

5.4. Data and methodology

5.4.1. Data

A sample of 36,506 U.S. public acquisitions announced between Jan 1, 1985 and December 31, 2014 was collected from Thomson One. This database contains all deal information used in this chapter. Deals defined as repurchases according to Thomson One were excluded, which was left with a sample of 13,482 acquisitions. Acquisitions are material decisions to bidders only if their outcomes can change shareholders' fundamental wealth. Based on this criteria, bidders were required to acquire at least 50% of the target shares during the transactions, which yields 11,043 acquisitions. The deal sample was matched with COMPUSTAT and CRSP. The former database contains the firm's accounting information and the latter one includes all stock price information. Both bidder and target stock price studied were not a missing value in CRSP, as they are used to calculate target idiosyncratic volatility, and bidder announcement returns, which yields 5,640 acquisitions. The method of payment information is not missing, resulting in 5,297 acquisitions. All accounting variables used in the regressions were required to be available at the fiscal year end prior to the announcement date in COMPUSTAT. Both bidder and target market value (MV), return-on-asset (ROA), market-to-book value (M/B), leverage measured with debt-to-equity ratio (D/E) and relative size measured with deal value divided by the bidder MV, were not with a missing value. It was left with 2,278 acquisitions after excluding all bidder variables with a missing value, and result in a final sample of 2,018 acquisitions after excluding all target variables with a missing value.

The reference point effect on M&A decisions was studied by controlling a number of deal and bidder characteristics. Bidder size is expected to be positively related to target risks, as larger bidders tend to have greater ability to absorb risks. Firm's growth opportunities were measured with M/B. It is generally believed that greater opportunities are associated with higher risks. Firm's profitability was measured with ROA. It should be expected that the lower ROA bidders tend to be more aggressive and take more risks than their higher counterparts. Leverage was measured with D/E, reflecting risks in capital structure. Lower D/E firms are capable in taking more risks than their higher counterparts (Uysal, 2011). Small targets with lower profitability and growth opportunities tend to be risky, since they may need more of bidders' efforts in integration process. At the deal level, the methods of payment, deal types and deal attitude that have a significant impact on M&A decisions addressed in the M&A literature were taken into consideration (Croci and Petmezas, 2015; Schneider and Spalt, 2015).

A summary statistics for the M&A deal sample was presented in *Table 5.1*. Of 2,018 acquisitions, 773 were all-cash financed acquisitions, 632 were all-stock financed acquisitions, and 581 were mixed acquisitions (financed with a mixture of cash and stocks).[84] There was a relative smaller proportion of tender offers as opposed to mergers: 530 and 1,488, hostile acquisitions (129) and diversified acquisitions (661), and there is a larger proportion of successful acquisitions as compared with unsuccessful acquisitions: 1593 and 398.

A summary statistics for variables used in regressions was presented in *Table 5.2*, with variable definitions are as in the note of this table. As seen, bidders are generally larger, with higher profitability and greater growth opportunities than targets. In public acquisitions, bidders are those with larger size and greater power than targets, so that they are capable of managing the deals following a merger. These findings are consistent with previous M&A studies (Moeller *et al*., 2004; Rau and Vermaelen, 1998).

In *Table 5.3*, the whole sample was divided into risky and less risky acquisition subsamples according to the riskiness level of the target firm, the definition of which is by Kumar (2009). The mean, median and statistical differences between the two subsamples was presented in this table. Kumar (2009) suggests that firms with a lower price and higher firm-specific risks display higher levels of risks, increasing the riskiness of M&A decisions (Schneider and Spalt, 2015). Similarly, risky acquisitions refer to those with a target whose idiosyncratic volatility is above the median value of the sample, and whose price is below the median value of the sample (i.e. target price), while less risky

[84] The method of payment for 32 acquisitions is defined as “other” according to Thomson One.

acquisitions refer to the opposite. As seen, bidders engaging in risky acquisitions have a larger deviation of the current price from the 52-week high price than those engaging in less risky acquisitions: 0.423 to 0.172, implying that firms perceived as losses are likely to increase risks in the major investments. Risky acquisitions involve a smaller bidder with lower ROA, growth opportunities, and leverage. One possible explanation for this is that small bidders are more vulnerable, which push managers to eliminate threats through risk-taking activity (Gorton *et al*., 2009). The statistics also reveal that bidders in the risky acquisition subsample are likely to control risks by choosing a smaller target than those in the less risky acquisition subsample, based on the rationale that those smaller targets are less overvalued.

5.4.2. Methodology

5.4.2.1. Target risks and the bidder 52-week high

Target idiosyncratic volatility was measured with standard deviation of residuals computed from a Fama and French 5-factor model using daily returns from the period of 6 months to 1 month prior to the announcement date. Fama-French 5-factor returns were collected from the French's website. Compared with a 3-factor model, the 5-factor model controls for additional profitability and investment factors that have an substantial impact on major investment decisions (Fama and French, 2015),[85] which is presented as follows:

$$R_i - R_f = \alpha + \beta_1(R_m - R_f) + \beta_2 SMB + \beta_3 HML + \beta_4 RMW + \beta_5 CMA + \varepsilon_i \tag{5.1}$$

[85] Schneider and Spalt (2015) used a Fama-French 3-factor model, whereas Kumer (2009) used the 4-factor model to obtain idiosyncratic volatility. The results obtained in this chapter are similar when calculating target idiosyncratic volatility with these two models.

where R_i relates to the individual firm returns, R_f relates to risk-free returns, relates to returns on value-weighted (VW) market portfolio, SMB HML RMW CMA relate to returns on diversified portfolios of small stocks minus big stocks, high B/M stocks minus low B/M stocks, strong profitability stocks minus weak profitability stocks, and stocks of low investment firms minus stocks of high investment firms, respectively. ε_i relates to the residuals of the model.

Target idiosyncratic volatility was then calculated with the standard deviation of ε_i, denotes iv_i in equation (2).

$$iv_i = \sqrt{\frac{\sum_{i=1}^{n} \varepsilon_i^2}{N}} \tag{5.2}$$

Finally, target risks are a dummy variable, taking value of 1 if the target is above the median value of its idiosyncratic volatility and below the median value of its price ending 30 days prior to the announcement date, whereas the price was expressed in a logarithmic term. Kumar (2009) indicates stocks with high idiosyncratic volatility indicate that extreme returns occurred in the past are highly likely occur again, and "cheap bets" are more attractive to investors with the risk-taking incentives. Therefore, M&A decisions are risky if the target displays a higher level of idiosyncratic volatility and a lower level of price.

The main variable of interest to be assessed is the bidder reference point (BRP), which is constructed as follows:

$$BRP_i = \ln 52weekhighprice_{i,t} - \ln Stockprice_{i,t-30} \tag{5.3}$$

where the BRP_i is defined as logarithmic term differences between the bidder highest stock price over 335 calendar days ending 30 days prior to the announcement date and the price ending 30 days prior to the announcement date. Scaling the bidder price on 30 days prior to takeover announcement eliminates any concerns regarding price information leakage around the announcement date biases the actual stock price.

5.4.2.2. Short-term method

Bidder announcement returns were calculated with the market model, with parameters were estimated over a period 261 up to 28 trading days prior to the takeover announcement date and a 3-day event window is used.

$$R_{it} = \alpha + \beta_1 R_{mt} + \varepsilon_{it} \tag{5.4}$$

where R_{it} denotes holding period returns (CRSP: RET) for firm *i* in the period *t*, R_{mt} denotes value-weighted market returns including dividends (CRSP: VWRETD), ε_{it} denotes the error term.

5.4.2.3. Long-term method

Following Loughran and Vijh (1997) , the firm’s long-term performance was calculated with the market-adjusted buy-and-hold abnormal returns (BHARs). It should be expected that the outcome of decisions to be only assessed in the long term. A firm’s 36-month BHARs were calculated with the following equation:

$$BHAR_{it} = \prod_{t=1}^{T}(1+R_{it}) - \prod_{t=1}^{T}(1+R_{index,t}) \tag{5.5}$$

where R_{it} denotes arithmetic returns for firm *i* on day *t*. $R_{index,t}$ denotes the arithmetic return for the market index on day *t*. Bootstrapping test was employed to deal with skewness, and the details of this test was presented in the methodology section of the Chapter 4.

5.4.2.4. Multivariate analysis

Multivariate analysis was used to examine the relevant factors that have impacts on bidder announcement returns (Draper and Paudyal, 2008), which is presented as follows:

$$CAR_{(-1,+1)} = \alpha + \beta_1 BRP_i + \sum_{i=1}^{N}\beta_i X_i + \varepsilon_i \tag{5.6}$$

$$BHAR_{(+1,+36)} = \alpha + \beta_1 BRP_i + \sum_{i=1}^{N}\beta_i X_i + \varepsilon_i \tag{5.7}$$

where $CAR_{(-1,+1)}$ relate to bidder cumulative returns of a day prior to and a day after the announcement date, $BHAR_{(+1,+36)}$ refer to market-adjusted buy-and-hold abnormal returns up to 36 months following acquisitions. The main variable to be assessed is the BRP. X_i relate to a series of control variables that have a significant impact on bidder announcement returns in M&A literature (Moeller *et al*., 2004; Alexandridis *et al*., 2013).

5.5. Empirical results

5.5.1. Does market anticipation affect M&A decisions?

Table 5.4 presents the logistic regression model of the market anticipation on managerial investment decisions. The results this researcher obtained show a positive relationship between the BRP and target risks. Specifically, specification (5) shows that the BRP coefficient is positive and significant at 1% level (coefficient 1.259, p = 0.000). This coefficient was translated into marginal effect, and presented alongside Specification (5), yielding similar interpretation of OLS regression. It is therefore interpreted as that for every 10% increase in the BRP increases a 2.2% likelihood of the firm choosing a risky target rather than a less risky target. The signs of control variables are generally consistent with the earlier predictions of this chapter. The goodness-of-fit tests show that logistic regression model has no specification errors (p = 0.890).[86] The principal results continue to hold when accounting for different sets of control variables, including deal, bidder and target characteristics, as reported from specifications (1) to (4) respectively, and all regressions control for year and industry effects.[87]

The results for specification (5) indicate that the firm makes major corporate investment decisions according to market-anticipated risks, which is interpreted with the reference point theory of M&As. Specifically, the market tends to treat the firm 52-week high price as bidder's potential profitability and feel mental losses when its current price is significantly deviated from this aspiration level. This increases their risk tolerance and pushes the firm to take risks. According to what the prospect theory predicts (Shefrin and Statman, 1985; Odean, 1998), investors holding losers would presumably

[86] The null hypothesis posits that the model has no specification error. The test results lead us not to reject the null hypothesis.

[87] Our results are also consistent when controlling for firm-fixed effect.

believe that the firm can generate future profitability via embarking on risky projects. If the firm responds to the market correctly, the market confirms the belief that the firm works in favour of shareholders' interests. On the other hand, managers are also subject to take more risks especially the firm's performance is temporarily depressed (Kim *et al*., 2013). The reference point enables the firm to justify their risk-taking behaviour without bearing market's blame (Sacheti *et al*., 2016). The firm will also take risks to maintain the confidence of shareholders. The firm persuades shareholders that current losses will be realised through decisions the market anticipates. Findings can be also interpreted as the disciplinary effect of takeover: acquiring risky targets will also expose managers to shareholder monitoring, which threatens managers' job security when they perform below the market's anticipation (Lehn and Zhao, 2006). By following the market's anticipation, managers can release pressure from making major investment decisions.

5.5.2. Do market-anticipated risks create value?

Thus far, the author has examined that M&A decisions are influenced by what the market has anticipated. In this section, there follows an investigation of the bidder performance whether the firm takes risks that the market anticipates. There are a variety of sources driving the manager to take unanticipated risks, such as managerial overconfidence (Malmendier and Tate, 2008) or agency problems (Grinstein and Hribar, 2004), which may mask the true effect of risks on bidders' M&A performance. It is expected that if the firm that takes risks with a rational motive will be rewarded by the market. So as to disentangle the effect of expected risks from the unexpected risks, an interaction variable using target risks and the bidder reference point was contructed, with the expectation that targets risks positively related to bidders' announcement returns on the condition that the firm takes risks according to what the market anticipates.

Table 5.5 presents OLS regressions of bidder announcement returns. Specifications (1) and (2) show the effects of target risks and the bidder reference point on bidder announcement returns, respectively. It emerged that either target risks or the BRP alone does not have an impact on bidder announcement returns. While specification (3) shows a significantly positive relationship between the joint effect of target risks and the bidder reference point on bidder announcement returns, suggesting that target risks can predict bidder's performance when a bidder's decision is made according to the market anticipation. In addition, the results indicate that either target risks or the bidder reference point tend to decrease bidder announcement returns. On the whole, the findings are consistent with the prediction that firms taking risks observed by the market will receive positive market reactions.

5.5.3. What is the source of bidder performance improvement?

Since the manager is also exposed to the strict shareholders' monitoring when taking risks that the market can observe. Managers will attempt to prove themselves as "good managers" in order to avoid market disappointment (Luo, 2005). According to this, it is believed that managers wish their efforts to be easily seen by the market. In this case, there is an expectation that managers will exhibit great efforts on deal negotiation, reflected in offer premiums they pay for the target, in that the offer premium determines the wealth distribution of the shareholders.

Table 5.6 presents results of OLS regressions of offer premiums. As seen, specification (3) of this table shows that both target risks and the bidder reference point will increase offer premiums. Bidders may find targets with greater uncertainty are hard to value or currently underperformed bidders have less bargaining power and pay hefty offer premiums to target shareholders accordingly. However, the joint effect of target risks and the bidder reference point decreases offer premiums significantly (coefficient -0.0856, p = 0.000). These findings are consistent with our hypothesis suggesting that managers will have a direct incentive to decrease offer premiums to show negotiation skills or efforts to the market. The findings of this table suggest that the primary M&A motive of managers to deal with pressures of a decline in performance is to content their shareholders.

5.5.4. Do market-anticipated risks push the firm to work hard?

It cannot be expected that the market can fully understand the firm's decisions in the short run, as uncertainty prevents the market from assessing the quality of decisions until they are gradually resolved in the long term. This leads the research to investigate the market-anticipated risks effect on the firm's long-term performance.

Results of *Table 5.7* report that either target risks or the bidder reference point is positively associated with the long-term performance, presented in specifications (1) and (2). It should be expected that target risks are influenced by the bidder reference point as the firm makes decisions based on the market. As such, an interactive term between target risks and the bidder reference point was constructed, and presented in specification (3). Results show that effects of these two independent variables on bidder's long-term performance diminish when including an interaction variable between target risks and the bidder reference point. The joint effect of target risks and the bidder reference point increases with bidder's long-term performance. These findings suggest that each individual factor partially explains bidder's long-term performance and has a substantial impact on each other. The firm gains positive market reactions in the long term when the firm enhances the confidence of shareholders. Furthermore, it is suggested that managers will be rewarded when their efforts are recognised.

5.6. Robustness checks

5.6.1. Various reference point candidates based on firm level.

The robustness checks in this chapter analysed the reference point effect on target risks using a series of other reference points addressed in previous literature, as presented in Panel A of *Table 5.8*. First, the firm's historical high was used as a reference point, with the expectation that bidder historical high plays a role in firm's corporate investment decision-making. A firm's historical high reflects investors' attentions over a longer period of time relative to the 52-week high, and is regarded as a reference point candidate for conservative investors (Li and Yu, 2012). Results in specification (1) show a positive relationship between bidder historical high and target risks, suggesting that conservatism investors also expect the firm to take risks when it faces a decline in performance. Secondly, a recent ratio was employed as a proxy for investors' attention, which measures risk-taking timing for the market and the measure is similar to Bhootra and Hur (2013). The measure is constructed as 1 minus the number of days since the firm's 52-week highest stock price arrives divided by 365 days. Larger of the ratio indicates that the 52-week high arrives more recently. It should be expected that events occurred in the recent past are more attractive to the market than occurred in the far distant. If this is the case, the firm should be reluctant to embark on risky acquisitions when the firm's best performance recently arrives than in the far distant, since the best performance arrives more recently will likely to compensate market's feelings about loss and increase the attitude of risk aversion. Our results are consistent with the prediction and presented in specification (2). Thirdly, the prior market reaction was used as a reference point, taking value of 1 if prior market reaction is negative, and 0 if it is positive. If managerial risk-taking is driven by the market, current market reaction to losses will induce the firm to take on risky projects. Results in specification (3) show that prior market losses trigger risk-taking behaviour. Finally, it is expected that managers are more risk averse than their shareholders as Kumar (2009) suggested. Using prior ROA relative to current ROA of a firm as a reference point, taking value of 1 if current ROA is lower than that of the last year, 0 otherwise. It became apparent that ROA has no predictability for risk-taking, as presented in specification (4). It can be interpreted as follows: managers are insensitive to current fundamental loss; instead, they make decisions heavily upon market reactions. Overall, it was found that the bidder 52-week high has the greatest predictability for risk-taking after controlling for all relevant reference point candidates, as presented in specification (5).

Results of *Table 5.9* show other reference points that influence managerial risk-taking incentives. First, the market 52-week high was used as a reference point candidate. Baker *et al*. (2012) suggest that the market returns are an important influential factor for the firm 52-week high. The firm's overall risk-profile changes according to the market condition. If the market risk is high, both the market and the firm may believe that risk-taking is granted. Results of specification (1) show that the market 52-week high is positively related to target risks, at 10% significance level. Secondly, peer pressure was used as a proxy, which reflects the firms' pressure from their industry peers. An increase in peers' pressure increases a firm's risk-taking incentive. According to Edmans *et al*. (2012), managers whose firms currently underperform, compared with their peers in the same industry, tend to have considerable pressures that trigger them to take more risks. Following this, a measurement of peer pressure was constructed using the logarithmic term differences between the bidder 52-week high and the 52-week high of the industry medians, depicting the extent to which a firm's performance below that of the industry's median, taking value of 1 if the firm performs below the industry 52-week high median, 0 otherwise. It is expected that managers feel pressures from their industry peers when their firms perform significantly lower than the industry median. As seen, specification (2) shows a positive relationship between peer pressure and target risks. Once again, the significance and sign of the bidder 52-week high does not change when including both the market 52-week high and peer pressure in specification (3), suggesting that the bidder 52-week high is a competent reference point candidate being used to anticipate the firm's following investment decisions.

5.6.2. Subsample tests

The results are robust in different subsamples by the methods of payment, deal types, whether the deal is diversified and whether the deal is successful, as presented in *Table 5.10*. However, it was noted that the reference point effect is not pronounced among all-stock financed acquisition and diversified acquisition subsamples. One possible explanation for this is that all-stock financed acquisitions have those financially constrained bidders whose investment opportunities are limited (Eckbo *et al*., 2016), while acquiring diversified targets may create obstacles for shareholders, as it is hard for the market to judge whether the firm is able to manage in an unfamiliar area of industry.

5.6.3. Alternative proxies for target risks

Following Schneider and Spalt (2015), M&A riskiness was also measured with the target idiosyncratic risk and conducted with an OLS regression of target idiosyncratic risk on the bidder reference point. Results of specification (1) of *Table 5.11* measures target risks with total volatility, which is employed by Kumar *et al*. (2015). Specification (2) measures target risks whose residuals were obtained from the market model. Specification (3) measures target risks whose residuals were obtained from Fama-French 4-factor model, which is consistent with the measure of Kumar (2009). It was evident that there is a positive relationship between the bidder reference point and target risks.

In addition, the residuals obtained from the market model and the 4-factor model do not vary significantly when used for target risks.

5.6.4. Risk-taking and M&A performance

Results that the market-anticipated risks taken by the firm increase bidders' short- and long-term abnormal returns continue to hold by different estimation models or window periods selected. *Table 5.12* reports the relationship between bidder announcement returns and the market-anticipated risks. The first three specifications measure bidder announcement returns with the market model and uses a 5-day window while the last three specifications measure bidder announcement returns with the market-adjusted model with a 3-day window. A positive relationship was found between bidder announcement returns and the market-anticipated risks, as reflected in specifications (3) and (6) respectively. Once again, the results show that the firm takes risks according to the market's anticipation gain rewards. *Table 5.13* shows the relationship between the long-term performance and the market-anticipated risks. 12- and 24-month windows were used as robustness checks for the 36-month window of BHARs. The results obtained in this table show that the market-anticipated risks are positively related with bidders' long-term performance, which are consistent with the results reported in *Table 5.7*.

5.7. Conclusion

In this chapter, this researcher investigates how market anticipation influences firms' M&A decisions, and the effect of market-anticipated risks on M&A outcomes. It became evident that perceived loss measured by the extent to which the deviation of the current price to the firm 52-week high price triggers managerial risk-taking incentives. Market-anticipated risks lead to positive bidder announcement returns, which can be interpreted as managerial great efforts on deal negotiation. Managers who take risks according to the market risk perspective will increase the managerial incentive of proving themselves good decision-makers. By doing so, managers work smart and diligent, reflected in lower offer premiums they pay for the targets and positive market reactions in the long term.

This chapter contributes to managerial risk-taking incentives and behavioural finance literature. It was found that the risk-taking preference of individual investors can be transferred to that of institutional investors through M&As. The market anticipates firm's next move, and the firm's market decision should be rationalised by shareholders. It became apparent that the market anticipation is a practice for the firm to follow in order to gain positive market reactions. In addition, though it is hard to explain whether risk-taking incentive gains market recognition, managers taking risks according to the market anticipation serves one of the important sources for positive market reactions.

Table 5.1: Summary statistics for M&A sample

This table reports summary statistics for 2018 U.S. domestic public acquisitions announced between 1985 and 2014. The number *N* denotes the number of deals per year. The third and fourth columns present mean and median of deal value. The fifth to the seventh columns present the method of payment. Here "Stock" refers to all-stock acquisitions. "Cash" refers to all-cash acquisitions. "Mix" refers to acquisitions that neither all-stocks nor all-cash acquisitions. "Tender" refers to tender offers. "Diversified" refers to diversified deals in which the primary two Standard Industry Classification codes are different between bidders and targets. "Hostile" refers to hostile deals. "Successful" refers to whether deals are completed during the sample period, there are 1991 deals with information about deal status.

Year	N	Deal Value ($ mil)		Payment Methods			Tender		Diversified		Hostile		Successful	
		Mean	Median	Cash	Stock	Mix	Yes	No	Yes	No	Yes	No	Yes	No
1985	15	325.85	30.80	6	3	2	9	6	2	13	1	14	6	3
1986	21	225.92	61.20	14	2	3	12	9	9	12	1	20	15	3
1987	33	690.41	66.00	15	7	10	12	21	14	19	5	28	27	4
1988	40	986.62	116.10	18	11	10	20	20	12	28	6	34	23	15
1989	38	209.58	86.95	21	11	6	11	27	14	24	1	37	26	8
1990	29	481.63	21.60	15	8	5	11	18	9	20	3	26	20	8
1991	37	102.29	26.82	9	18	4	13	24	15	22	-	37	26	8
1992	21	136.98	40.26	6	12	2	5	16	8	13	2	19	14	6
1993	45	515.02	93.60	14	16	14	10	35	18	27	5	40	30	14
1994	52	260.96	86.95	13	30	8	10	42	14	38	7	45	37	14
1995	92	572.47	88.67	17	54	19	15	77	36	56	6	86	73	16
1996	89	726.33	157.54	19	44	26	20	69	30	59	6	83	74	15
1997	133	633.15	217.88	23	60	50	24	109	46	87	3	130	111	22
1998	141	1186.73	140.99	35	56	49	31	110	44	97	3	138	126	15
1999	163	1505.82	304.21	58	58	46	45	118	67	96	14	149	131	32
2000	137	2388.55	352.84	30	69	37	31	106	49	88	6	131	113	24
2001	115	1052.84	111.58	35	42	38	26	89	39	76	5	110	96	19
2002	52	1665.40	222.40	22	13	17	14	38	17	35	4	48	47	5
2003	77	755.08	126.23	32	17	28	23	54	19	58	5	72	67	10
2004	72	2678.95	438.18	29	17	26	9	63	22	50	3	69	64	8
2005	75	2535.13	327.64	36	13	26	16	59	26	49	5	70	61	14
2006	88	2444.81	509.29	49	14	25	16	72	31	57	4	84	72	16
2007	67	1319.47	686.22	44	6	17	21	46	17	50	2	65	51	16
2008	63	1990.04	230.27	39	7	16	24	39	13	50	10	53	39	24
2009	53	2912.25	268.89	18	13	20	19	34	17	36	-	53	47	6
2010	61	1719.53	440.71	35	9	14	18	43	14	47	5	56	47	14
2011	48	2334.53	546.40	21	8	18	13	35	12	36	9	39	28	20
2012	43	1258.88	606.27	29	3	11	12	31	19	24	-	43	40	3
2013	54	1703.16	781.04	38	3	11	20	34	13	41	3	51	38	16
2014	64	5140.02	1224.41	33	8	23	20	44	15	49	5	59	44	20
Total	2018	1488.04	210.11	773	632	581	530	1488	661	1357	129	1889	1593	398

Table 5.2: Summary statistics for variables

This table presents the numbers, means, medians, and standard deviations of variables. Target idiosyncratic volatility is defined as the standard deviation of the residuals computed from a Fama-French 5 factor model using daily returns from the period of 6 months to 1 month prior to the announcement date. Target price is target stock price ending 30 days prior to the announcement date, expressed in logarithmic term. Bidder 52-week high is defined as logarithmic term difference between the bidder highest stock price over 335 calendar days ending 30 days prior to the announcement date and the price ending 30 days prior to the announcement date. Bidder 3-day CARs are bidder cumulative abnormal returns 3 days around the announcement date calculated with market model, whose parameters are estimated using the period of 261 days to 28 days prior to the announcement date. BHAR36ma refers to 36-month market-adjusted buy-and-hold abnormal returns. Deal characteristics include stock, cash, diversification, hostile, and tender offer which are dummy variables, taking value of 1 if acquisitions are 100% financed with stocks, 100% financed with cash, diversified merger, hostile merger, and tender offer, and 0 otherwise. Deal value is raw value taken from Thomson One. "Relative Size" is defined as deal value divided by bidder MV. Firm characteristics include both bidder and target firm characteristics. MV is defined as the product of market price and outstanding shares (CRSP: SHROUT*PRC), expressed in logarithmic form. MTBV is market-to-book value, defined as market equity to book equity, where book equity is total shareholders' equity (Compustat: SEQ) plus deferred taxes and investment tax credit (Compustat: TXDITC) minus the preferred stock redemption value (Compustat: PSTKRV). ROA is return-on-asset ratio, defined as net income (Compustat: NI) divided by total asset (Compustat: AT). Leverage is measured by debt-to-equity ratio, defined as total long-term debt (Compustat: DITT) divided by book equity. Other variables are those mainly used in robustness checks. Offer premiums are defined as logarithmic term difference between offer price and target price ending 30 days prior to the announcement date. Bidder historical high is defined as logarithmic term difference between bidder highest stock price ending 30 days prior to the announcement date and the price ending 30 days prior to the announcement date. Recency ratio is defined as 1 minus the number of days divided by 365 days. Market 52-week high is defined as the logarithmic term difference between the highest total market value (CRSP: TOTVAL) over the 335 calendar days ending 30 days prior to the announcement date and the total market value 30 days prior to the announcement date. Peer pressure is defined as the difference between the bidder 52-week high and the bidder 52-week high of the industry median. Prior market loss is a dummy variable, taking value of 1 if the firm's market returns calculated from 365 calendar days before announcement date to 28 calendar days before takeover announcement date is positive, 0 otherwise. Prior ROA loss is a dummy variable, taking value of 1 if the firm's current year's ROA is less than the past year, 0 otherwise. All accounting variables were at the fiscal year prior to the announcement date, and continuous variables are winsorised at the 1% and 99% level.

Table 5.2. *(continued)*

Variable	Mean	Median	N
Main variables			
Target idiosyncratic volatility	0.040	0.033	2018
Target stock price	2.253	2.409	2018
Bidder 52-week high	0.308	0.165	2018
Bidder CAR3	-0.005	-0.005	2018
Bidder BHAR36m	-0.075	-0.159	1867
Offer premiums	0.304	0.286	1869
Deal characteristics			
Deal value	1488.040	210.113	2018
Cash	0.383	-	2018
Stock	0.313	-	2018
Hostile	0.064	-	2018
Tender	0.263	-	2018
Diversification	0.328	-	2018
Relative size	0.429	0.214	2018
Bidder characteristics			
Bidder MV	7.227	7.200	2018
Bidder M/B	3.989	2.536	2018
Bidder ROA	0.018	0.046	2018
Bidder leverage	0.638	0.314	2018
Target characteristics			
Target MV	5.173	5.080	2018
Target M/B	2.649	1.767	2018
Target ROA	-0.053	0.024	2018
Target leverage	0.622	0.151	2018
Other variables			
Bidder historical high	0.919	0.711	2018
Bidder recency ratio	0.564	0.613	2018
Market 52-week high	0.062	0.025	2018
Peer pressure	0.114	-0.022	2018
Prior market loss	0.379	-	2018
Prior ROA loss	0.457	-	2018

Table 5.3: Risky and less risky acquisition sample

This table presents summary statistics for two subsamples by the median value of target idiosyncratic volatility and target price ending 30 days prior to the announcement date, expressed in logarithmic term. "Risky acquisitions" refer to targets that are above the median value of their idiosyncratic volatility and below the median value of their stock price, whereas "Less risky acquisitions" indicate the opposite. Means and medians of the two subsamples are reported, the number of observations are reported at the lower part of the table. Median values of dummy variables are omitted as they do not have any statistical meaning. Variable definitions are as in the notes of Table 5.2. Statistical tests for differences in means, and medians between the two samples are presented. *P*-value is reported in parentheses. Statistical significance at the 1% level, 5% level, 10% level, denoted ***, **, and * respectively.

Variables	(1) Risky acquisitions			(2) Less risky acquisitions			Difference (1)-(2)	
	Mean	Median	N	Mean	Median	N	Mean *p*-value	Median *p*-value
Bidder 52-week high	0.465	0.308	746	0.216	0.120	1272	0.000	0.000
Bidder CAR3	-0.004	-0.007	746	-0.006	-0.004	1272	0.553	0.765
Bidder BHAR36ma	-0.069	-0.280	699	-0.079	-0.114	1168	0.813	0.001
Offer premiums	0.383	0.400	661	0.262	0.258	1208	0.000	0.000
Bidder size	6.132	5.896	746	7.870	7.824	1272	0.000	0.000
Bidder M/B	3.581	2.450	746	4.228	2.607	1272	0.027	0.001
Bidder ROA	-0.025	0.039	746	0.043	0.049	1272	0.000	0.000
Bidder leverage	0.506	0.173	746	0.714	0.398	1272	0.001	0.000
Target size	3.609	3.580	746	6.090	5.986	1272	0.000	0.000
Target M/B	1.912	1.229	746	3.082	2.076	1272	0.000	0.000
Target ROA	-0.168	-0.045	746	0.015	0.040	1272	0.000	0.000
Target leverage	0.523	0.043	746	0.679	0.241	1272	0.039	0.000
Hostile	0.047	-	746	0.074	-	1272	0.017	-
Tender	0.252	-	746	0.269	-	1272	0.406	-
Diversification	0.362	-	746	0.307	-	1272	0.012	-
Stock	0.389	-	746	0.269	-	1272	0.000	-
Cash	0.355	-	746	0.399	-	1272	0.049	-
Relative size	0.372	0.182	746	0.462	0.234	1272	0.001	0.000

Table 5.4: Reference point effect on M&A decisions

This table presents results of logistic regressions of target risk on bidder 52-week high. Dependent variable is a dummy variable, taking value of 1 if targets that are above the median value of their idiosyncratic volatility and below the median value of their stock price ending 30 days prior to the announcement date. Specifications (1) to (4) present results with different sets of variables, including deal, bidder and target characteristics respectively, and specification (5) controls for all of these variables. All regressions include year and industry effect whose coefficients are omitted. Variable definitions are as in the notes of Table 5.2. *P*-value is reported in parentheses, marginal effect for specification (5) is reported alongside coefficients. Goodness-of-fit test is reported at the lower part of the table. Statistical significance at the 1% level, 5% level, 10% level, denoted ***, **, and * respectively.

Dep. var. Target risks	(1)	(2)	(3)	(4)	(5)	
Bidder 52-week high	1.602***	1.673***	1.273***	1.237***	1.259***	0.223
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
Hostile		-0.350	-0.221	0.171	0.183	0.032
		(0.122)	(0.372)	(0.567)	(0.540)	
Tender		-0.149	-0.428***	-0.031	0.021	0.004
		(0.273)	(0.007)	(0.865)	(0.907)	
Diversification		0.225**	0.584***	0.251	0.175	0.031
		(0.045)	(0.000)	(0.116)	(0.292)	
Stock		0.066	-0.248	-0.020	0.030	0.005
		(0.643)	(0.116)	(0.920)	(0.885)	
Cash		0.115	0.009	-0.525***	-0.553***	-0.098
		(0.430)	(0.958)	(0.008)	(0.006)	
Relative size		-0.313***	-1.365***	-0.053	0.150	0.027
		(0.004)	(0.000)	(0.748)	(0.461)	
Bidder MV			-0.559***		0.107*	0.019
			(0.000)		(0.062)	
Bidder M/B			-0.011		-0.007	-0.001
			(0.253)		(0.528)	
Bidder ROA			-0.768*		-0.034	-0.006
			(0.093)		(0.954)	
Bidder leverage			0.027		-0.006	-0.001
			(0.617)		(0.937)	
Target MV				-1.406***	-1.501***	-0.266
				(0.000)	(0.000)	
Target M/B				-0.045**	-0.043**	-0.008
				(0.023)	(0.031)	
Target ROA				-2.376***	-2.290***	-0.406
				(0.000)	(0.000)	
Target leverage				0.046	0.046	0.008
				(0.356)	(0.352)	
Year & Industry	Y	Y	Y	Y	Y	
Constant	-2.496***	-2.441***	2.550***	5.997***	5.698***	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
N	2018	2018	2018	2018	2018	
Pseudo R^2	0.162	0.171	0.301	0.517	0.518	
Pearson chi (2)	X^2=1885.56	(p = 0.890)				

Table 5.5: OLS regressions of bidder CARs on market-anticipated risks
This table presents results of OLS regressions of bidder announcement returns on target risk. We include an interaction variable between target risk and bidder 52-week high in specification (3). Variable definitions are as in the notes of Table 5.2. *P*-value is reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively.

Bidder CAR3	(1)	(2)	(3)
Target risks	-0.0024		-0.0148***
	(0.553)		(0.003)
Bidder 52-week high		0.0044	-0.0180**
		(0.485)	(0.042)
Target risks*Bidder 52-week high			0.0373***
			(0.002)
Hostile	-0.0104*	-0.0103*	-0.0106*
	(0.086)	(0.088)	(0.078)
Tender	0.0153***	0.0151***	0.0151***
	(0.000)	(0.000)	(0.000)
Diversification	0.0010	0.0007	0.0012
	(0.778)	(0.855)	(0.742)
Stock	-0.0082*	-0.0085*	-0.0077
	(0.095)	(0.081)	(0.114)
Cash	0.0298***	0.0298***	0.0296***
	(0.000)	(0.000)	(0.000)
Relative size	-0.0025	-0.0021	-0.0033
	(0.599)	(0.652)	(0.492)
Bidder MV	-0.0055***	-0.0051***	-0.0054***
	(0.000)	(0.000)	(0.000)
Bidder M/B	-0.0004	-0.0004	-0.0003
	(0.319)	(0.299)	(0.371)
Bidder ROA	0.0435**	0.0464***	0.0506***
	(0.012)	(0.007)	(0.003)
Bidder leverage	0.0011	0.0012	0.0010
	(0.448)	(0.407)	(0.502)
Constant	0.0238***	0.0191**	0.0273***
	(0.008)	(0.025)	(0.003)
N	2018	2018	2018
R^2	0.092	0.092	0.098

Table 5.6: Whether market-anticipated risks increase offer premiums?
This table presents results of OLS regressions of offer premiums on market anticipation driven risks. Offer premiums are defined as the logarithmic difference between the offer price and the target price 30 days prior to the takeover announcement date, which is the same as Baker *et al*. (2012). Bidder 52-week high is the bidder reference point (BRP), target risks is the dummy variable, taking value of 1 if targets are above the median value of their idiosyncratic volatility and below the median value of their stock price, 0 otherwise. The first regression presents results of offer premiums on target risk, the second regression presents results of offer premiums on bidder 52-week high, and the third regression presents results of offer premiums on market anticipation driven risks, which is an interaction variable between target risk and bidder 52-week high. Control variables in this panel are as the same as those in specification (5) of Table 5.4. Variable definitions are as in the notes of Table 5.2. *P*-value is reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively.

Offer premiums	(1)	(2)	(3)
Target risks	0.0615***		0.0803***
	(0.000)		(0.000)
Bidder 52-week high		0.0544**	0.0958***
		(0.016)	(0.000)
Target risks*Bidder 52-week high			-0.0856**
			(0.041)
Hostile	0.0379*	0.0398*	0.0383*
	(0.076)	(0.064)	(0.072)
Tender	0.0747***	0.0727***	0.0711***
	(0.000)	(0.000)	(0.000)
Diversification	-0.0227*	-0.0227*	-0.0228*
	(0.094)	(0.096)	(0.092)
Stock	0.0138	0.0110	0.0087
	(0.435)	(0.534)	(0.622)
Cash	-0.0265	-0.0296*	-0.0259
	(0.104)	(0.069)	(0.111)
Relative size	0.1499***	0.1491***	0.1477***
	(0.000)	(0.000)	(0.000)
Bidder MV	0.0736***	0.0752***	0.0736***
	(0.000)	(0.000)	(0.000)
Bidder M/B	0.0013	0.0012	0.0011
	(0.346)	(0.398)	(0.415)
Bidder ROA	-0.1001	-0.0892	-0.0951
	(0.124)	(0.170)	(0.149)
Bidder leverage	-0.0061	-0.0056	-0.0051
	(0.268)	(0.318)	(0.354)
Target MV	-0.0883***	-0.0967***	-0.0874***
	(0.000)	(0.000)	(0.000)
Target M/B	-0.0000	-0.0003	-0.0003
	(0.986)	(0.871)	(0.862)
Target ROA	0.1388***	0.1277***	0.1397***
	(0.001)	(0.002)	(0.001)
Target leverage	-0.0072*	-0.0077*	-0.0071
	(0.098)	(0.080)	(0.103)
Constant	0.1425***	0.1834***	0.1206***
	(0.000)	(0.000)	(0.001)
N	1869	1869	1869
R^2	0.163	0.162	0.169

Table 5.7: Do market-anticipated risks push the firm to work hard?
This table presents results of OLS regression of bidder BHARs on target risk. BHARs are calculated with the market-adjusted model. We include an interaction variable between target risk and bidder 52-week high in specification (3). Variable definitions are as in the notes of Table 5.2. *P*-value is reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively.

BHAR36m	(1)	(2)	(3)
Target risks	0.1078**		-0.0310
	(0.025)		(0.621)
Bidder 52-week high		0.1900***	-0.0513
		(0.006)	(0.491)
Target risks*Bidder 52-week high			0.3571***
			(0.004)
Hostile	0.1262	0.1230	0.1200
	(0.172)	(0.180)	(0.188)
Tender	0.0405	0.0229	0.0308
	(0.387)	(0.622)	(0.507)
Diversification	-0.0789*	-0.0716*	-0.0788**
	(0.050)	(0.070)	(0.050)
Stock	-0.1631***	-0.1730***	-0.1655***
	(0.003)	(0.002)	(0.002)
Cash	-0.0016	0.0001	-0.0014
	(0.973)	(0.998)	(0.977)
Relative size	0.0684	0.0446	0.0557
	(0.162)	(0.351)	(0.262)
Bidder MV	0.0220**	0.0164*	0.0232**
	(0.034)	(0.093)	(0.023)
Bidder M/B	-0.0118***	-0.0120***	-0.0117***
	(0.000)	(0.000)	(0.000)
Bidder ROA	0.5056***	0.5511***	0.6084***
	(0.001)	(0.000)	(0.000)
Bidder leverage	0.0139	0.0160	0.0160
	(0.394)	(0.331)	(0.332)
Constant	-0.2137**	-0.1769*	-0.2090**
	(0.030)	(0.053)	(0.034)
N	1867	1867	1867
R^2	0.038	0.042	0.048

Table 5.8: Robustness tests: Various reference candidates in relation to the firm level

This table presents results of logistic regressions of target risk on selected reference point candidates. Dependent variable is a dummy variable, taking value of 1 if targets are above the median values of their idiosyncratic volatility and below the median value of their stock price ending 30 days prior to the announcement date, 0 otherwise. Control variables are the same as those in specification (5) of Table 5.3. Bidder historical high refers to the extent to which the current stock price deviated from the firm's highest stock price, measured with logarithmic term difference between the firm's historical high and its current price. We collected all U.S. listed firms whose stock price between 1958 and 2014 based on data availability. Bidder recency ratio is defined as the days since the firm's 52-week high arrives, measured with 1 minus the number of days since the firm's 52-week highest stock price arrives divided by 365 days. Prior market loss and prior ROA loss is dummy variables, taking value of 1 if the firm's market reaction (ROA) is lower than that of the past year, 0 otherwise. Specification (1) presents results of target risks on bidder historical high. Specification (2) presents results of target risks on bidder recency ratio. Specification (3) presents results of target risks on bidder prior market loss. Specification (4) presents results of target risks on bidder ROA loss. Specification (5) presents results of target risks on bidder 52-week high (BRP), controlling for those reference point candidates as well as those standard variables highlighted in the M&A literature. Control variables in each regression are the same as those in specification (5) of Table 5.4. Variable definitions are as in the notes of Table 5.2. *P*-value is reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively.

Table 5.8. *(continued)*

Logit model. Target risks	(1)	(2)	(3)	(4)	(5)
Bidder historical high	0.434***				0.197
	(0.000)				(0.115)
Bidder recency ratio		-0.694***			-0.011
		(0.002)			(0.969)
Prior market loss			0.464***		0.154
			(0.003)		(0.411)
Prior ROA loss				0.104	0.075
				(0.468)	(0.608)
Bidder 52-week high					0.997***
					(0.000)
Hostile	0.263	0.225	0.194	0.169	0.218
	(0.400)	(0.464)	(0.525)	(0.591)	(0.468)
Tender	0.015	0.081	0.092	0.103	0.002
	(0.933)	(0.655)	(0.612)	(0.572)	(0.992)
Diversification	0.127	0.176	0.167	0.179	0.150
	(0.439)	(0.282)	(0.309)	(0.277)	(0.364)
Stock	0.088	0.041	0.104	0.078	0.054
	(0.669)	(0.844)	(0.614)	(0.703)	(0.795)
Cash	-0.557***	-0.611***	-0.581***	-0.555***	-0.570***
	(0.005)	(0.003)	(0.004)	(0.005)	(0.005)
RelativeSize	0.163	0.183	0.195	0.189	0.155
	(0.418)	(0.349)	(0.324)	(0.336)	(0.448)
Bidder MV	0.105*	0.111*	0.110**	0.092	0.115**
	(0.063)	(0.050)	(0.049)	(0.100)	(0.047)
Bidder M/B	-0.003	-0.004	-0.002	-0.008	-0.003
	(0.824)	(0.710)	(0.864)	(0.466)	(0.781)
Bidder ROA	0.255	-0.228	-0.194	-0.079	0.154
	(0.646)	(0.679)	(0.725)	(0.888)	(0.794)
Bidder Leverage	-0.014	-0.020	-0.031	-0.024	-0.010
	(0.851)	(0.794)	(0.676)	(0.746)	(0.898)
Target MV	-1.495***	-1.506***	-1.507***	-1.490***	-1.509***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Target M/B	-0.040**	-0.042**	-0.045**	-0.046**	-0.039**
	(0.034)	(0.038)	(0.027)	(0.020)	(0.044)
Target ROA	-2.267***	-2.400***	-2.408***	-2.486***	-2.210***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Target Leverage	0.048	0.048	0.055	0.056	0.044
	(0.334)	(0.347)	(0.291)	(0.275)	(0.378)
Year	Y	Y	Y	Y	Y
Industry	Y	Y	Y	Y	Y
Constant	5.697***	6.431***	5.842***	6.086***	5.467***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	2018	2018	2018	2018	2018
pseudo R^2	0.512	0.510	0.509	0.506	0.520

Table 5.9: Robustness test: Do the market returns or peer pressures play a role in the firm's risk-taking?
This table presents results of logistic regressions of target risk on other variables that have influence on risk preferences. Dependent variable is a dummy variable, taking value of 1 if targets are above the median values of their idiosyncratic volatility and below the median value of their stock price ending 30 days prior to the announcement date, 0 otherwise. Market 52-week high is defined as logarithmic term difference between the market index 52-week high and the market index 30 days prior to the takeover announcement date. Peer pressure reflects the extent to which the individual firm's 52-week high deviated from the industry 52-week high median. It is a dummy variable, taking value of 1 if the firm's 52-week high lower than the industry's 52-week high median, 0 otherwise. Specification (1) report results of target risks on the market 52-week high. Specification (2) reports results of target risks on the firm's peer pressure. Specification (3) report target risks on the bidder reference point which is the bidder 52-week high, controlling for both the market 52-week high and the industry's pressure. All specifications control for a series of standard variables highlighted in the prior M&A literature, which are the same as those presented in specification (5) of Table 5.4. Variable definitions are as in the notes of Table 5.2. *P*-value is reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively.

Table 5.9. *(Continued)*

Logit model. Target risks	(1)	(2)	(3)
Market 52-week high	2.060*		0.329
	(0.086)		(0.786)
Peer pressure		0.622***	0.079
		(0.000)	(0.700)
Bidder 52-week high			1.167***
			(0.000)
Hostile	0.201	0.188	0.188
	(0.522)	(0.534)	(0.529)
Tender	0.107	0.085	0.026
	(0.553)	(0.638)	(0.886)
Diversification	0.191	0.185	0.178
	(0.244)	(0.264)	(0.283)
Stock	0.077	0.022	0.026
	(0.706)	(0.914)	(0.901)
Cash	-0.566***	-0.581***	-0.559***
	(0.004)	(0.004)	(0.005)
RelativeSize	0.181	0.199	0.153
	(0.352)	(0.314)	(0.452)
Bidder MV	0.088	0.118**	0.108*
	(0.113)	(0.040)	(0.062)
Bidder M/B	-0.007	-0.007	-0.007
	(0.520)	(0.519)	(0.535)
Bidder ROA	-0.154	-0.201	-0.051
	(0.781)	(0.721)	(0.931)
Bidder Leverage	-0.026	-0.009	-0.006
	(0.724)	(0.901)	(0.935)
Target MV	-1.490***	-1.496***	-1.501***
	(0.000)	(0.000)	(0.000)
Target M/B	-0.045**	-0.045**	-0.043**
	(0.027)	(0.022)	(0.032)
Target ROA	-2.478***	-2.320***	-2.283***
	(0.000)	(0.000)	(0.000)
Target Leverage	0.052	0.047	0.045
	(0.310)	(0.342)	(0.364)
Year	Y	Y	Y
Industry	Y	Y	Y
Constant	6.136***	5.651***	5.669***
	(0.000)	(0.000)	(0.000)
N	2018	2018	2018
pseudo R^2	0.507	0.512	0.518

Table 5.10: Robustness test: Subsample tests
This table presents results of logistic regression of target riskiness on bidder 52-week high by different deal samples. We partition the whole sample by the method of payment, whether the deal is a tender offer, whether the deal is diversified, and whether the deal is successful. Control variables are as the same as those in specification (5) of Table 5.4, and suppressed for the sake of brevity. Variable definitions are as in the notes of Table 5.2. *P*-value is reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively.

Logit model. Target risks	Payment methods			Tender offer	
	Cash	Stock	Mix	Yes	No
Bidder 52-week high	2.012***	0.467	2.118***	2.470***	0.909***
	(0.000)	(0.279)	(0.000)	(0.000)	(0.003)
Controls	Y	Y	Y	Y	Y
Constant	5.981***	8.711***	3.877	7.185***	5.985***
	(0.000)	(0.000)	(0.162)	(0.000)	(0.000)
N	718	629	556	509	1482
Pseudo R^2	0.540	0.544	0.585	0.561	0.534
	Diversification		Successful		
	Yes	No	Yes	No	
Bidder 52-week high	0.620	1.641***	1.129***	2.312***	
	(0.247)	(0.000)	(0.000)	(0.002)	
Controls	Y	Y	Y	Y	
Constant	5.474***	6.285***	6.063***	7.688***	
	(0.000)	(0.000)	(0.000)	(0.000)	
N	659	1357	1587	395	
Pseudo R^2	0.520	0.545	0.524	0.606	

Table 5.11: Robustness test: OLS regressions of target idiosyncratic risk on the bidder reference point
This table presents results of OLS regression of target idiosyncratic risks (TIR) on the bidder 52-week high (BRP), where target idiosyncratic risks are obtained from different estimation model used in the literature. The dependent variable of the first specification is total volatility of the target, which is the standard deviation of the target's stock returns in the period of 1 month and 6 months prior to the takeover announcement date. Target idiosyncratic risks of specification (2) are calculated with the residuals obtained by the market model (MM_TIR). Target idiosyncratic risks of specification (3) are calculated with the residuals from Fama-French 4 factor model (FF4factor_TIR). Variable definitions are as in the notes of Table 5.2. All regressions include the year and industry dummies. *P*-value is reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively.

OLS regressions	(1)	(2)	(3)
	Total Volatility	MM_TIR	FF4factor_TIR
BRP	0.009***	0.010***	0.010***
	(0.000)	(0.000)	(0.000)
Hostile	-0.002*	-0.003**	-0.003**
	(0.086)	(0.017)	(0.020)
Tender	-0.001	-0.001	-0.001
	(0.150)	(0.121)	(0.126)
Diversification	0.000	0.000	0.000
	(0.667)	(0.674)	(0.657)
Stock	0.003***	0.002**	0.002**
	(0.003)	(0.050)	(0.049)
Cash	-0.002*	-0.002**	-0.003***
	(0.059)	(0.011)	(0.010)
RelativeSize	0.001	0.000	0.001
	(0.557)	(0.578)	(0.564)
Bidder MV	0.001***	0.001**	0.001**
	(0.007)	(0.026)	(0.026)
Bidder M/B	0.000***	0.000***	0.000***
	(0.002)	(0.001)	(0.001)
Bidder ROA	-0.013***	-0.010***	-0.010***
	(0.000)	(0.008)	(0.008)
Bidder Leverage	0.000	-0.000	-0.000
	(0.988)	(0.474)	(0.463)
Target MV	-0.005***	-0.006***	-0.006***
	(0.000)	(0.000)	(0.000)
Target M/B	0.000***	0.000*	0.000*
	(0.009)	(0.079)	(0.087)
Target ROA	-0.022***	-0.024***	-0.024***
	(0.000)	(0.000)	(0.000)
Target Leverage	-0.000	-0.000	-0.000
	(0.980)	(0.789)	(0.812)
Year	Y	Y	Y
Industry	Y	Y	Y
Constant	0.041***	0.046***	0.046***
	(0.000)	(0.000)	(0.000)
N	2018	2018	2018
R^2	0.610	0.599	0.599

Table 5.12: Robustness test: OLS regressions of bidder CARs on market-anticipated risks

This table reports the results of OLS regressions of bidder announcement returns on the market's anticipated risks. We measure the market's anticipated risks with an interactive term between target risks and the bidder reference point (BRP). The first three specifications measure the relation between bidder cumulative abnormal returns on 5 days around the announcement date and calculated with the market model (CAR5mm) while the last three specifications reflect the relation between bidder cumulative abnormal returns on 3 days around the announcement date and calculated with the market-adjusted model (CAR3ma). Variable definitions are as in the notes of Table 5.2. *P*-value is reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively.

OLS regressions	(1)	(2)	(3)	(4)	(5)	(6)
	Bidder CAR5mm			Bidder CAR3ma		
Target risks	0.0015		-0.0134**	-0.0028		-0.0111**
	(0.740)		(0.017)	(0.485)		(0.026)
BRP		0.0106	-0.0155		-0.0013	-0.0177**
		(0.150)	(0.115)		(0.837)	(0.041)
Target risks*BRP			0.0418***			0.0275**
			(0.003)			(0.021)
Hostile	-0.0120*	-0.0120*	-0.0123*	-0.0109*	-0.0109*	-0.0111*
	(0.080)	(0.083)	(0.076)	(0.070)	(0.071)	(0.065)
Tender	0.0190***	0.0184***	0.0186***	0.0140***	0.0142***	0.0142***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Diversification	-0.0003	-0.0004	-0.0002	0.0007	0.0004	0.0008
	(0.934)	(0.915)	(0.968)	(0.854)	(0.912)	(0.824)
Stock	-0.0103*	-0.0110**	-0.0100*	-0.0078	-0.0078	-0.0071
	(0.062)	(0.045)	(0.065)	(0.108)	(0.108)	(0.138)
Cash	0.0259***	0.0259***	0.0256***	0.0290***	0.0291***	0.0289***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
RelativeSize	-0.0069	-0.0073	-0.0079	-0.0032	-0.0026	-0.0035
	(0.187)	(0.153)	(0.127)	(0.513)	(0.581)	(0.468)
Bidder MV	-0.0062***	-0.0060***	-0.0061***	-0.0054***	-0.0052***	-0.0054***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Bidder M/B	-0.0008*	-0.0008*	-0.0008*	-0.0001	-0.0001	-0.0000
	(0.074)	(0.066)	(0.088)	(0.828)	(0.823)	(0.901)
Bidder ROA	0.0623***	0.0668***	0.0721***	0.0375**	0.0378**	0.0409**
	(0.002)	(0.001)	(0.000)	(0.026)	(0.024)	(0.015)
Bidder Leverage	0.0023	0.0024	0.0022	0.0007	0.0007	0.0005
	(0.179)	(0.154)	(0.193)	(0.655)	(0.642)	(0.728)
Constant	0.0305***	0.0272***	0.0332***	0.0257***	0.0232***	0.0294***
	(0.002)	(0.005)	(0.001)	(0.004)	(0.006)	(0.001)
N	2017	2017	2017	2018	2018	2018
R^2	0.091	0.092	0.098	0.083	0.083	0.086

Table 5.13: Robustness test: OLS regressions of BHARs on market-anticipated risks

This table reports the results of OLS regressions of bidder buy-and-hold abnormal returns (BHARs) on the market's anticipated risks. BHARs are calculated with the market-adjusted model. Dependent variable of the first three specifications is BHARs over 12 months after the completion of a merger (BHAR12ma), while dependent variable of the last three specifications is BHARs over 24 months after the completion of a merger (BHAR24ma). Variable definitions are as in the notes of Table 5.2. *P*-value is reported in parentheses. Statistical significance at the 1% level, 5% level, and 10% level, denoted ***, ** and * respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	BHAR12ma			BHAR24ma		
Target risks	0.0387		-0.0113	0.0489		-0.0143
	(0.149)		(0.742)	(0.196)		(0.767)
BRP		0.0244	-0.0820*		0.0522	-0.0729
		(0.525)	(0.071)		(0.273)	(0.224)
Target risks*BRP			0.1565**			0.1843**
			(0.032)			(0.045)
Hostile	-0.0301	-0.0309	-0.0322	0.0571	0.0560	0.0544
	(0.497)	(0.486)	(0.469)	(0.348)	(0.359)	(0.372)
Tender	0.0137	0.0102	0.0138	0.0241	0.0183	0.0225
	(0.597)	(0.692)	(0.592)	(0.515)	(0.620)	(0.543)
Diversification	-0.0420*	-0.0383*	-0.0417*	-0.0466	-0.0425	-0.0464
	(0.064)	(0.088)	(0.066)	(0.143)	(0.177)	(0.145)
Stock	-0.0404	-0.0411	-0.0378	-0.0931**	-0.0954**	-0.0915**
	(0.188)	(0.183)	(0.220)	(0.024)	(0.021)	(0.028)
Cash	0.0085	0.0087	0.0080	0.0077	0.0081	0.0073
	(0.744)	(0.739)	(0.758)	(0.835)	(0.826)	(0.842)
RelativeSize	0.0181	0.0099	0.0152	0.0393	0.0287	0.0348
	(0.531)	(0.724)	(0.602)	(0.309)	(0.441)	(0.372)
Bidder MV	0.0091	0.0060	0.0092	0.0195**	0.0161**	0.0198**
	(0.114)	(0.278)	(0.111)	(0.015)	(0.037)	(0.014)
Bidder M/B	-0.0039*	-0.0039*	-0.0037*	-0.0122***	-0.0122***	-0.0120***
	(0.055)	(0.056)	(0.065)	(0.000)	(0.000)	(0.000)
Bidder ROA	0.2911***	0.2888***	0.3145***	0.4589***	0.4651***	0.4951***
	(0.004)	(0.003)	(0.001)	(0.000)	(0.000)	(0.000)
Bidder Leverage	-0.0022	-0.0023	-0.0023	0.0122	0.0125	0.0125
	(0.830)	(0.821)	(0.821)	(0.326)	(0.321)	(0.320)
Constant	-0.0886	-0.0561	-0.0724	-0.1835**	-0.1517**	-0.1700**
	(0.126)	(0.305)	(0.220)	(0.021)	(0.042)	(0.035)
N	1867	1867	1867	1867	1867	1867
R^2	0.018	0.018	0.022	0.040	0.040	0.043

CHAPTER 6: CONCLUSIONS

6.1. Main findings

This thesis has investigated the reference point effect on M&As. The thesis allows the researcher to assess investors' major investment decision-making processes in condition of risks. The thesis uses the firms' 52-week highs as reference points since they are frequently reported by the media that shape investors' minds, used by M&A participants to assess the M&A motive and performance. This thesis has contributed to M&A literature by enhancing this new strand of behavioural finance theory of M&As. It has become evident that firms' 52-week highs are as important indications for the firm's bargaining power, managerial market-timing, and risk-taking.

The reference point theory has been investigated into many key aspects of M&As in this thesis. First, the target 52-week high effect was first applied in the U.K. setting, it was found that the reference point effect reinforces the target firm's bargaining power in the scenarios where the takeover market is more competitive and bidders endure extensive information barriers. Secondly, both the bidder and the target reference prices were revealed to give important indications of the firm's valuation to the market and the manager alike. The reference point theory accommodates implications of Shleifer and Vishny's misvaluation hypothesis (2003), suggesting that bidder managers can time the market with the reference points. Thirdly, direct evidence was produced that the bidder reference price reflects the market risk appetiser, which is transferrable when bidder managers make M&A decisions according to market-anticipated risks. Besides, it was established that the reference point theory has strong explanatory value on many key aspects of M&As.

Chapter 3 has investigated a sample of 451 domestic and 155 cross-border public M&As in the United Kingdom, affirming that the target reference point plays an essential role in bargaining power. The results obtained in this chapter are consistent with Baker *et al.*'s U.S. findings (2012). It is suggested that the U.K. target is much easier to reinforce the bargaining power with its reference price, based on the rationale that the market is competitive compared with the United States. Unlike U.S. firms, whose corporate governance system is manager-oriented, U.K. firms have a shareholders-oriented corporate governance system where the reference point effect is stronger since managerial decisions are likely to rely on the reference point to convince their shareholders that interests of the two sides are closely aligned.

According to these predictions, Chapter 3 has found a positive relationship between the target reference price and offer premiums, suggesting that the reference point effect is translated into a strong bargaining power of the target for high M&A offer premiums. Further analyses of the market reactions to bidders whose payment according to the target reference point show evidence of overpayment among domestic bidders, whereas there is little evidence of overpayment among cross-border bidders, suggesting that the market takes foreign bidders' M&A offer premiums according to the target reference point for granted, unlike those paid by domestic bidders. Two possible explanations were advisable for this finding. First, domestic bidders are believed to have a more sophisticated networking than foreign bidders, meaning that they should have more private information to assess the value of the target firm to reduce M&A offer premiums, but paying according to the target reference price gives the market an indication that domestic bidders maybe overconfident. Secondly, it is believed that cross-border bidders in order to enter a more competitive market to protect their shareholders' rights tend to have a relatively weak bargaining position, thus offering a price in favour of the target.

Chapter 3 has made two distinct contributions to the reference point theory of M&As. First, scenarios where the reference point effect was enhanced were found. The reference point effect is strong in a more competitive market, as compared the findings of this chapter with those of the United States. The reference point is pronounced in the case of bidders lacking private information about the target. Secondly, the reference point theory is used to distinguish the M&A motives between cross-border and domestic bidders. The market regards domestic bidders' offer premiums according to the target reference point as an overpayment, whilst supporting that of cross-border bidders whose offer premiums rely on the target reference point.

Chapter 4 has thoroughly explored the reference point theory in M&A misvaluation. The reference point prices of the two firms involved were taken into considerations. A proxy of the relative reference point (RRP) was constructed to explain how bidders time the market. The results indicate that stocks are 1.04% more likely to be used for every 10% increase in the RRP, suggesting that bidders use stocks to dilute overvaluation when there is a sign of it according to the RRP. The findings also show that for a 10% increase in the RRP lead to an increase of M&A offer premiums by approximately 0.9%, suggesting that the sign of relative valuation make takeovers costly. Despite paying according to the RRP incurring negative announcement returns, offer premiums are positively related to the long-run performance of the stock bidders, indicating the RRP facilities market-timing.

Chapter 4 has made three contributions to M&A literature. First, it reconciles the misvaluation hypothesis with the reference point theory of M&As. A new proxy was proposed, based on the market perception of a firm's valuation, to explain M&A misvaluation. The idea of using the RRP for misvaluation eliminates any concerns arising from the biases caused by a firm's fundamentals. Secondly, direct evidence is offered showing that not only the market but also the managers are subject to reference-dependence bias. But they were found to treat the reference point differently, as the market reacts negatively to bid announcements holding that bidders who pay according to the RRP are paying too much, whilst managers are concerned themselves with the interests of the shareholders in the long run. By looking at the RRP, bidders recognise the relatively more overvalued stocks and in exchange for less negative long-run performance. Thirdly, the RRP justifies the rationale of payment method choices. Lower M&A offer premiums are associated with cases where bidders pay with stocks instead of cash for larger RRP acquisitions, and conversely bidders paying with cash for a lower RRP acquisition than for a higher RRP acquisition.

Chapter 5 has examined the role of the bidder reference point in the managerial risk-taking behaviour. One of the most important implications of the reference point is that people have a strong tendency to avoid loss. This implication was tested in the M&A context and the bidder reference point was proposed, which represents the extent to which a bidder's current price deviates from the bidder 52-week high, capturing the market anticipation for a firm's investment decisions. A significantly decline in performance relative to the bidder 52-week high motivates a great risk appetizer for the market, which also motivates the firm to take on risky projects so as to recover the loss. The measurement of target risks follows the proxy of Kumar (2009). It became clear that bidder managers select targets according to the market-anticipated risks and are rewarded by the market.

Specifically, Chapter 5 has found a positive relationship between the riskiness of an M&A decision and the bidder reference point, suggesting that the market anticipates the M&A decision. A positive relationship between bidder announcement returns and the market-anticipated risks was emerged, showing that bidders listening to the market would justify their M&A motives. It is also believed that bidders taking anticipated risks expose themselves to shareholders' monitoring, pushing them to exhibit sufficient effort observed by the market. The finding was verified by studying the bidder reference point effect on M&A offer premiums and the bidder long-term performance. Offer premiums were found to be significantly lower when M&A decisions are based on the market-anticipated risks, suggesting that managers who link their interests with those of their shareholders exhibit great efforts in negotiation. Further, the market-anticipated risks are positively related with long-term performance, suggesting that managers in the face of loss have a strong incentive to prove themselves good managers to avoid the risk of being replaced and so they work harder to integrate the firm's resources.

Chapter 5 has made two distinct contributions to previous literature. First, it uses the reference point theory to address managerial risk-taking behaviour in the M&A context. Managers take risks according to the bidder reference point, suggesting that the stock market serves as a risk transfer mechanism. Secondly, the market-anticipated risks were distinguished from unanticipated risks (i.e. risks driven by managerial overconfidence and agency problems), resulting in negative market reactions. Managers undertaking M&As are able to justify their motives by following the market-anticipated risks, and receive positive market reactions accordingly. It is clear that decisions made upon the market-anticipated risks improve a firm's M&A performance.

On the whole, this thesis has enhanced Baker *et al.*'s findings (2012) and explored reference point theory of M&A in a number of ways. The principal findings of this thesis suggest that the target 52-week high represents a role of the target's bargaining power. When applying the reference point theory to the misvaluation hypothesis of M&As, the joint effects of the target and bidder reference point allow an assessment of the way of managers timing the market. Despite taking too many unanticipated risks in M&As end up value-destroying to the firm according to eariler M&A literature, Chapter 5 indicates that managers can rationalise their risk-taking incentive by focusing on the bidder reference point, and performing this practise with caution and efforts can improve the firm's M&A performance.

The main findings of this thesis show that both institutional and individual investors are subject to reference-dependence bias, suggesting that it is a natural human nature response to make risky decisions in accordance with the reference point. However, managers and the market may value a firm differently even with the same information, as one of the main findings suggested in Chapter 4. Findings in Chapter 3 suggest that M&As are not only a bargaining game between the management teams of the two firms, but also a trade-off game between the managers and the shareholders in a firm. It is proposed that managers should always give a thought for the market when making major investment decisions. As Chapter 5 suggested, M&A decisions made based on the market's anticipation convince shareholders that the firm works hard to protect the value of the firm, suggesting that managers would do whatever the market thinks right in the face of loss in firm's performance.

6.2. Implications, limitations and recommendations for future research

Although the research was fruitful in finding results regarding the reference point effect on M&As, it is subject to a number of limitations, implying some proposals for future research. First, due to data availability, Chapter 3 has a small fraction of cross-border acquisitions in the U.K. market. Therefore, the reference point effect should be explored further by extending the sample into a worldwide cross-border acquisition sample. Further research should take into account some macro-economic factors, such as total trading volumes, and stock markets of the two countries whose firms are involved in the cross-border acquisition. Firms in a country with relatively strong in trading and high in stock market quality are more easily to reinforce the bargaining power, which is in line with Erel *et al*. (2012). It remains unexplored whether such macro-economic factors make bidders to be less likely to focus on the target 52-week high, given the possibility that target shareholders are also willing to sell the firm to a relatively strong market regardless of the reference point effect. Meanwhile, the fact that the reference point effect is enhanced in a setting where the corporate governance system is strong is taken for granted in this thesis. However, it should be noted that firms' corporate governance quality varies significantly, which requires inclusion of some corporate governance related proxies in the firm level.

Secondly, Chapter 5 has employed a number of reference point candidates highlighted in previous literature as robustness tests for the bidder 52-week high. The regressions gave a simple indication that the firm 52-week high is the most suitable reference point effect. It should be expected that managers consider various reference point candidates, which requires the researcher to construct a composite index of reference points, including the firm-, the market-, and the sector-levels. By doing so, one should assign a weight for relevant reference point candidate, similar to an approach used by Hayward and Hambrick (1997), who constructed a composite index for the hubris management. In addition, this thesis only looks at public acquisitions since only publicly-listed firms have available 52-week high. However, it is worth noting that private acquisitions in which bidders encounter higher levels of information asymmetry should be a more suitable testing ground for the reference point effect. Although it is hard to find the reference point in private targets, it is proposed that efforts should be made to explore the reference point price of the bidder, for example, the unique characteristics of the bidders have undertaken many private acquisitions in the past.

Finally, Chapter 5 has focused on the risk-taking incentive from the perspective of the market. The risk tolerance of the manager should also be taken into consideration. The consequence is the question whether the firm that made a failed deal in the past is likely to take on a risky deal, as opposed to one that have made a successful deal. In other words, the completion status of the prior deal may be employed as a reference point for a current M&A decision. Though Chapter 5 suggests that market-anticipated risks improve a firm's M&A performance, it remains unexplored that the market-unanticipated risks effect on the firm's M&A performance by including managerial overconfidence and corporate governance related proxies. This Chapter also draws several implications for practitioners. Managers should be concerned about stock market signals while making major investment decisions, since the market will inform the firm how many risks it is willing the firm to take. Managers who do not listen to the market will be judged as overconfidence or irresponsibility. The researcher shows that taking risks does not necessarily lead to bad outcomes if that they are justifiable. Though quantifying risk magnitude is not an easy task according to March and Shapira's view (1987), this researcher indicates a possible timing for managerial investment decisions, which is largely explained in the framework of the reference point theory of M&As.

Overall, the idea of using a firm's reference points should also be applied in certain areas where managers have an opportunity to time the market, such as SEOs, equity issuance, and in the settings where the levels of information asymmetry are high.

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