Three Essays on Mergers and Acquisitions:
Negative Premium, Failed Mergers,
and Deal Quality Implications of Medium of Exchange

by

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Abstract

Mergers and acquisitions (M&A) are important economic events. They not only transform firms and industries but also have significant wealth implications for shareholders. In the past decade, investment in merger and acquisition activity has reached unprecedented levels, and the increase in M&A activity and the economic significance of this form of corporate restructuring provide the fundamental motivation for the study of the antecedents and consequences of mergers and acquisitions. In particular, this thesis is motivated by three areas within the M&A literature that demand further research, and it intends to address these gaps in the literature in three separate but interrelated essays. The results from the first essay provides evidence that while target firm's financial distress and overvaluation permit the bidder to offer a negative acquisition premium, it is the combination of the negative market reaction to the negative premium bid (resulting in a convergence of the target's stock price to bid price) and high block ownership (resulting in lower share liquidity) that lead target shareholders to prefer the negative premium bid over selling at market prices. The second essay investigates the issue of long-run post-acquisition underperformance, and contributes evidence to the literature that target firms in terminated deals not only outperform their own pre-acquisition performance but also outperform financial and operating performance of targets in completed deals. The third essay investigates the issue medium of exchange choice (i.e., cash or stock) under conditions of asymmetric information. This third essay reports evidence that the information content of announcement returns of bidding firms in stock financed deals is associated with the bidder valuation and the quality of the combination, but only the quality of the combination for cash bidders. The three essays, though investigating different aspects of the construction of the acquisition bid, each identify that the deal construction (e.g., deal consideration, medium of exchange) and deal outcomes (e.g., failure or success) is a key determinant of post-combination outcomes, both in terms of financial and operating performance.

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CHAPTER 1

Thesis Introduction

Mergers and acquisitions (M&A) are important economic events -- they not only transform firms and industries but also have significant wealth implications for shareholders. In the past decade, investment in merger and acquisition activity has reached unprecedented levels. Figure 1.1 displays a number of measures of annual merger activity. Table 1.1 summarizes deal statistics of U.S. M&A activity over four periods that correspond to peaks and troughs in Figure 1.1.

In Figure 1.1, the total value of M&A activity and the total value of M&A transactions, standardized by U.S. GDP, increases over the observation period but does so episodically, which corresponds with the merger wave literature (Mitchell and Mulherin, 1996; Harford, 2005). The statistics in Table 1.1 emphasize this result. The total value of U.S. M&A activity increases from \$84.49 billion per year in the 1989-1994 period to \$351.68 billion per year during the 2008-2013 period. Total value of M&A scaled by GDP increased from 2.44% to 4.31% during the period. The volume of M&A activity also moves in waves with the number of completed deals increasing over the 1995-2001 period, then decreasing and remaining steady from 2002 onwards. However, the number of terminated deals declined over time, from 209 per year in the 1989-1994 period to 85 per year in the 2008-2013 period. The average transaction value also increases steadily overtime as does the premium paid to target shareholders though there is significantly more variance in the average premium over the 1989-2013 period. Together these results point to

mergers and acquisitions being of substantial and increasing economic significance to the U.S. economy over the past two decades.

Table 1.1: U.S. M&A deal statistics, 1989-2013

	<u>1989-1994</u>	<u>1995-2001</u>	<u>2002-2007</u>	<u>2008-2013</u>
Total transaction value (bln\$, annually)	\$84.49	\$244.31	\$315.55	\$351.68
Total transaction value / GDP (annually)	2.44%	9.35%	6.26%	4.31%
Number of transactions (annually)	2,867	5,073	3,421	2,771
Number of completed transactions (annually)	1,896	3,724	2,530	1,896
Number of withdrawn transactions (annually)	209	214	134	85
Premium (%)	24.70%	35.28%	44.32%	50.75%
% Cash deals	87.18%	84.47%	85.35%	88.04%
% Friendly	51.15%	64.60%	69.28%	64.11%
% Deals with competing bids	0.33%	0.29%	0.42%	0.31%
% Tender offer	3.04%	2.63%	2.22%	2.26%

The increase in M&A activity and the economic significance of this form of corporate restructuring provide the fundamental motivation for the study of the antecedents and consequences of mergers and acquisitions. Matching the continued growth of mergers and acquisitions is a growing body of academic work on this form of corporate restructuring. While M&A activity has attracted a great deal of attention and garnered a substantial amount of research, there are many unresolved questions. Reviews of the M&A literature, including Agrawal and Jaffe (1999), Andrade, et al. (2001), King, et al. (2004), Stahl and Voight (2004), Haleblan, et al. (2009), agree that the M&A research is incomplete in some way. In their meta-analysis of the M&A literature, King, et al. (2004) conclude: “our results indicate that post-acquisition performance is moderated by variables unspecified in existing research” (p. 188). Despite the large amount of M&A studies, many questions remain, and this thesis seeks to advance new knowledge to the M&A literature that will help resolve these questions. Specifically, this thesis is motivated by three areas within the M&A literature that demand further research, and it intends to address these gaps in the literature in three separate but interrelated essays.

Figure 1.1: Value, volume, and average deal statistics of U.S. M&A, 1989-2013

The first essay examines the issue of shareholders of a firm targeted by an acquisition, accepting a price for their shares that is below its prevailing market value. Theoretical and empirical work on merger premia agree that on average, merger premia are positive -- that is, the price paid for a target is higher than the market value of the target's assets. For example, Andrade, et al. (2001) report median premia ranging from 34.5% to 47.2% over the 1973-1998 period. However, data obtained from SDC indicates that over the 1989-2013 period, 2,388 completed deals involving U.S., publicly-traded targets in which shareholders were paid a negative premium, a price below the market value of the target. Though a handful of papers have documented evidence of a discount paid to targets of privately-held firms (Chang, 1998) or discounts accepted for sale of subsidiaries (Officer, 2007), the phenomenon of a negative premium accepted by publicly-held targets has been entirely overlooked in the literature. The case of a negative premium price paid to publicly traded targets is different from the sale of subsidiaries or private firms, since there is a market for the shares of the publicly-traded target, and target firm shareholders being offered a negative premium should prefer a market sale over a sale to the bidding firm. This essay poses two related questions: What accounts for this phenomenon? Under what conditions are shareholders of target firms willing to accept a negative premium? This essay provides the literature with the first evidence of the negative acquisition premium phenomenon in the case of the publicly traded target, and the evidence presented in this thesis suggests that while target firm's financial distress and overvaluation permit the bidder to offer a negative acquisition premium, it is the combination of the negative market reaction to the negative premium bid (resulting in a convergence of the target's stock price to bid price) and high block ownership (resulting in lower share liquidity) that lead target shareholders to prefer the negative premium bid over selling at market prices. In the sub-sample of stock financed deals

involving large blockholders of the target firm, the target firm identifies value-enhancing deals, and given the long-run value accretive prospects of negative premium stock deals, the target shareholders are willing to accept a discount on market prices in order to participate in the combination. Therefore, not only does a bidder in a stock financed, negative premium deal acquire a target below market prices, but it also extracts value from the target following acquisition through operational improvements, an outcome not accurately priced by the market. These findings provide first insight into a unique set of acquisitions that have characteristics and post-acquisition performance that differs from the typical acquisition, which lends further insight into the diversity among M&A transactions.

The second essay investigates the issue of long-run post-acquisition underperformance. The M&A research has yet to resolve the anomaly of persistent long-run underperformance of the combined firm. The bulk of the literature on the long-run performance of mergers and acquisitions (for example, Agrawal, et al. (1992), Rau and Vermaelen (1998)), and Moeller, et al. (2003)), concludes that long-run performance is negative following a merger. This outcome, coupled with the observation of increases in M&A activity over time, is unsettling because counter to their popularity, acquisitions do not guarantee value creation for shareholders of the newly-combined firm. If in general, mergers destroy value, firms involved in a terminated merger, who thereby successfully avoid a value-destroying merger, may outperform those firms involved in completed mergers. The phenomenon of terminated mergers has stands to offer insight into the anomaly of long-run underperformance of completed mergers. This study contributes strong evidence to the literature that target firms in terminated deals not only outperform their own pre-acquisition performance but also outperform financial and operating performance of targets in completed deals. These results provide support for the hypothesis that

target shareholders are better off without the deal because they have avoided a value-destroying combination. The evidence also supports the *takeover threat hypothesis*, which contends that the threat of takeover, even if the deal is not completed, will induce target managers to pursue value-enhancing activities in order to avoid a future takeover. The outcome for bidding firms in terminated mergers is much different. Bidders involved in terminated deals perform worse following deal termination than those in completed deals, which implies that bidder shareholders are better off with the deal. Bidding firms do not exhibit improvements in operating performance relative to pre-termination levels, and bidding firms in terminated deals do not outperform bidding firms in completed deals. There are exceptions to this outcome. In bidder terminated deals and also for deals involving high levels of stock financing, the bidding firm makes improvements relative to pre-acquisition levels and relative to bidders in completed deals.

The third essay investigates the issue medium of exchange choice (i.e., cash or stock) under conditions of asymmetric information. Previous work in this area contends that the medium of exchange offered reveals information about the true values of the parties' assets (Myers and Majluf, 1984; Hansen, 1987). Hansen (1987) contends that a bidder's choice between cash and stock is an attempt to alleviate the trade-attenuating effects of adverse selection under two-sided asymmetric information. Cash payments are used to signal undervaluation of bidding firm assets and stock payments signal overvaluation. This explanation (the *misvaluation hypothesis*) has dominated this area of research. The medium of exchange literature has suggested, but not directly tested, a third possible signal: the bidder and target have private information regarding the likelihood of the realization of future gain that may follow the merger; thus, the medium of exchange choice may be a signal of the quality of deal. In this third essay, it is hypothesized that payment with shares is not only a guarantee against a possible

valuation mistake of the target, but it also allows the splitting of the future gains ensuing from the acquisition and the risks between parties. A partial or full payment of shares allows the bidding shareholders to spread the risk and uncertainties of the value of the acquired firm and future gains by transforming target shareholders into a shareholder of the newly-merged firm. The less certain a bidder is of future gains, the more likely a bidder will opt to split the risks of future gains with target shareholders. Thus, the medium of exchange is related to the quality of the combination, quality that could materialize through future acquisition gains and/or synergies. This hypothesis is termed the *deal quality hypothesis*. This study builds upon previous work on the medium of exchange choice by putting the *deal quality hypothesis* to test in order to disentangle the deal quality signal from the misvaluation signal documented in the literature. The study reports evidence that the information content of announcement returns of bidding firms in stock financed deals is associated with the *misvaluation* and *deal quality hypotheses*, but only the *deal quality hypothesis* for cash bidders. The analysis of realized deal quality following deal consummation produces similar results. Cash financed deals exhibit higher post-acquisition financial performance than stock financed deals, and analysis of post-acquisition operating performance provides the same result. To disentangle the deal quality signal from the misvaluation signal, a number of cross-sectional analyses are carried out. The evidence presented in this paper supports the contention that cash, as the medium of exchange in an M&A transaction, provides a signal of high deal quality, and when a bidder selects stock as the medium of exchange, it is a signal of low deal quality *and* a signal of bidder overvaluation.

The remainder of this thesis is organized as follows. The following three chapters are comprised of the three essays. For each essay, the introduction is presented, and a comprehensive review the relevant literature follows. In the next section, the thesis draws on the literature

reviewed to postulate the essays' hypotheses. Next, summaries of the data, sample construction, and methodology are provided. Results of the empirical analysis are then presented, and the final section of each essay offers concluding remarks. The final chapter provides an overall summary of this thesis.

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CHAPTER 2

Essay 1: Leaving money on the table? Negative premia on public acquisition targets

Abstract

A negative acquisition premium involves a price paid for a target firm that is below its prevailing market value. Over the 1989-2013 period, 3.7% of all U.S. domestic deals involved target shareholders accepting a negative premium, and the average negative premium received by this group of targets is -15.25%. The purpose of this study is to explore why and under what conditions shareholders of target firms are willing to accept a negative premium. This study finds that while target firm financial distress and external borrowing constraints permit the bidder to offer a negative acquisition premium, it is the combination of a decline in target stock price and high target firm block ownership, and therefore lower target share liquidity, that lead target shareholders to prefer the negative premium bid over selling at market prices. Evidence indicates that in stock financed deals involving a small negative premium, large target shareholders are able to identify value-enhancing deals and are willing to accept a discount on market prices in order to participate in a combination with a bidder that will result in synergistic gains. The market does not efficiently price this profitable outcome.

2.1 Introduction

The purchase of one firm by another typically involves an acquisition premium: a price that exceeds the market value of the target firm. In the past decade, some of the most pricey deals include Abbott Laboratories/Advanced Medical Optics in 2009 (218.8% premium), AT&T/Centennial Communications in 2008 (138.8% premium), and Johnson&Johnson/Mentor Corp in 2008 (105.0% premium). Researchers agree that acquisition premia are on average positive and large. Andrade, et al. (2001), for example, report that U.S. median premia range from 34.5% to 47.2% over the 1973-1998 period.

A positive premium is not, however, a guaranteed outcome of a mergers and acquisition (M&A) transaction. In 2013, for example, Intrexon Corp acquired Medistem Inc for 31.35% less

than market value. An initial *SDC Platinum* search of all transactions involving U.S., publicly-held targets over the period 1989-2013 results in 2,388 completed deals in which target shareholders were paid a negative premium (a price below the market value of the target), and these deals represent 3.7% of all domestic U.S. deals during this period. The average negative acquisition premium received by the population of targets accepting a negative premium bid is -15.25%, whereas the average positive premium is 56.16%. Remarkably, most negative premium deals are successful, with only 7% being terminated, when the termination rate of positive premium deals is 29.5%. In the cases of a successful negative acquisition premium deal, shareholders of the target firm accepted an acquisition price below the market value of their shares, which begs the question, why would a rational investor sell shares to another company for a price lower than what could be obtained on the open market?

The importance of and need for research on acquisition premia is underscored by previous work that shows that the size of premia may be inversely related to both short-term performance (Varaiya and Ferris, 1987; Sirower, 1997) and long-term performance (Hayward and Hambrick, 1997; Sirower, 1997). Studies have identified a discount paid to targets of privately-held firms (Chang, 1998) or discounts accepted for sale of subsidiaries (Schlingemann, et al, 2002; Officer, 2007). The phenomenon of the negative acquisition premium accepted by publicly traded firms is distinct from the cases of privately-held firms and subsidiaries, since in these cases, there is no active and liquid market that might facilitate the transfer of these assets and furthermore, the pricing of these assets.

Given that target shareholders should be able to sell shares to the market rather than at the discounted price offered by the bidder, the making and acceptance of an offer below the market value of the target (i.e., a negative acquisition premium) defies extant theoretical predictions and

empirical results on the positive premia involved in deal construction. The presence and persistence of a negative premium demands scrutiny. In this essay, two related questions are posed. What conditions permit a bidder to offer a negative acquisition premium price? And, more puzzling is the question: under what conditions are shareholders of target firms willing to accept a negative premium? While a handful of studies of premia paid for publicly-listed targets (Officer, 2007; Schwert, 1996) have observed negative premia in their sample, the negative premium on a publicly-held target as a unique phenomenon has been entirely overlooked in the literature. An exception is a concurrent unpublished working paper by Weitzel and Kling (2014) that develops theoretical predictions on the determinants of acquisition premia, including negative acquisition premia. Weitzel and Kling (2014) make important inroads to understanding the negative premia phenomenon, but there are important limitations of their study that this essay remedies. First, Weitzel and Kling (2014) treat negative premium, very low premium, and positive premium deals as a homogenous group, sharing the same set of determinants, but in this study, it is hypothesized, with supporting empirical evidence, that negative premium deals are substantively different than positive premium deals and must therefore be evaluated as such. Second, the key hypothesis of their paper, the ‘hidden earnouts’ hypothesis, is associated with stock deals only, but 22% of negative premium deals are paid with all cash and even more are paid with a large percentage of cash, so Weitzel and Kling’s (2014) theory is limited in explanatory power. The ‘hidden earnouts’ hypothesis posits why target shareholders in stock deals might accept a negative premium, but no hypothesis is offered to describe the conditions under which targets in cash deals would accept a negative premium over a market sale. This study hypothesizes and provides empirical support for such conditions. And third, the methodological design of Weitzel and Kling (2014) lacks a counterfactual for the observed

negative premium, and it is not clear what the premium would have been in the absence of the conditions that permitted the offer and the acceptance of the negative premium price. This study provides two direct counterfactuals for the sample of negative premium deals: a matched sample of positive premium deals and a matched sample of rivals not engaged in acquisition activity.

This study measures and empirically assesses the negative acquisition premia and the pre-bid conditions that permit a negative acquisition premium bid to be made and, more importantly, the conditions that compel target shareholders to accept negative premium bids. The hypotheses are developed in a contractual setting: the conditions that permit an offer and the conditions under which target shareholders accept an offer. The *asset illiquidity hypothesis* is developed to explain the pre-bid conditions under which a negative premium bid may be made by a bidder. Should a target firm suffer from severe financial distress, the target firm is in immediate need of liquidity, which can be provided by an acquiring firm via acquisition. This type of merger is similar to Almeida et al.'s (2011) 'liquidity merger', where acquisitions of distressed firms are motivated by liquidity needs of target firms and not necessarily operational synergies. Following the takeover, the bidding firm's liquid assets will be deployed to relieve immediate financial distress, and by providing liquidity to the financially-constrained target firm through an acquisition by permitting access to its own liquid assets (in other words, the bidding firm subsidizes the illiquidity of target assets with the liquidity of its own assets), the bidder may negotiate substantial compensation which acts to drive the purchase price below the market value of target assets (Shleifer and Vishny, 1992; Clark and Ofek, 1994; Officer, 2007). Following Shleifer and Vishny (1992), the likelihood of a negative premium is exacerbated when there is no (or low) bidder competition for target assets, when bidder and target are unrelated, when target assets are intangible, and during recessionary periods. The negative premium deal is therefore

similar to fire-sales, where the price paid for the assets as well as prevailing market prices are below the assets in best use (Eckbo and Thorburn, 2008; Coval and Stafford, 2007; Ang and Mauck, 2011). Negative premium deals differ from fire-sales in that negative premium deals are not automatic as is often the case in fire-sale bankruptcy system. Furthermore, a negative premium offer involves a price paid for target shares that is *lower* than prevailing market prices, but in fire-sales, there is no alternative for sale of shares since in fire-sales, since the shares of firms in fire-sale are often suspended or cease to trade (Eckbo, 2009; Eckbo and Thorburn, 2008).

An important question still remains on the contracting of the negative premium deal: why would the target shareholders not liquidate on the open market instead of selling to the bidder at a lower price? Drawing on the shareholder ownership structure literature, the *ownership concentration hypothesis* supposes that a concentrated ownership structure constrains the liquidity of blockholders of target shares and leads blockholders to view the negative premium offer more attractive than a market sale (Jacoby and Zheng, 2010; Brockman and Yan, 2009; Heflin and Shaw, 2000). If block shareholders go to the market to sell their large stake (instead of selling to the acquirer at a discount), block holders will need to divide share blocks for sale, and each subsequent sale will cause the target's stock price to fall, resulting in a lower subsequent price for the next block sale, similar to the piecemeal liquidation in fire-sales that result in deep discounts (Eckbo and Thorburn, 2008). Exacerbating this outcome is the announcement of the negative premium, which is likely to accompany a decrease in share price as small shareholders act opportunistically by selling at prevailing market prices. It may also be that target firm shareholders are selling in response to a signal of target firm overvaluation elicited from the bid price. In light of the dim prospects of selling share blocks on the market,

blockholders will view the negative premium as more attractive. Furthermore, research on blockholders (e.g., Holderness and Sheehan, 2000; Barclay et al, 2001) shows that most blockholders are involved or at least influential in managerial decisions, so blockholders may persuade managers to support the negative premium bid, an outcome favored by this group of shareholders. In the case of a stock financed deal, target shareholders become owners of the newly combined firm and therefore have a stake in the performance of the combined firm following acquisition. In this case, it may be that target blockholders are not compelled to accept the deal but instead are eager to accept it if the combination of the target and bidder is a synergistic one, leading to a positive, post-acquisition performance. Having evaluated a stock financed deal as accretive, blockholders may be willing to accept a discount in order to partake in a combination that will result in synergistic gains, and this proposed outcome is termed the *selection hypothesis*.¹

The test sample for this study includes completed takeovers involving a negative premium that were announced between 1989 and 2013, and two control samples are constructed: a matched sample of positive premium targets and a matched sample of non-targets. Analysis of initial offer conditions provides evidence that relative to both positive premium targets and non-targets, targets accepting a negative premium are more likely to be in financial distress and to have higher ownership concentration. Furthermore, those negative premium acquisitions of distressed targets are more likely to involve lower bidder competition and to face external borrowing constraints. The share price reaction at announcement of targets accepting a negative premium is negative, while positive premium targets earn significantly positive abnormal returns. Cross-sectional analysis of acquisition premia provides further evidence that negative premium targets are associated with financial distress, high levels of block ownership, and on

¹ The selection hypothesis is similar in nature to Weitzel and Kling's (2014) hidden earnout hypothesis.

average, negative premium targets are unrelated to bidders and have high asset intangibility. The negative acquisition premium of distressed targets is lower when external sources of debt financing are constrained and when bidder and target operate in different industries. Analysis of market reaction to acquisition announcement shows that the share price of negative premium targets declines by approximately 10%, suggestive of a sell-off by some shareholders, and it is likely that the sell-off is caused by small shareholders exiting their position. By tracking the price path of the target's share price relative to the bid price, it is observed that the announcement of the negative premium bid initiates a price decline that results in a convergence of the market price towards the offer price, leaving a spread of approximately 2.5% only days following announcement of the acquisition.

To investigate if high levels of block ownership among negative premium targets compel owners to sell shares to the bidder instead of the market, an event study of abnormal target share liquidity is performed, where share liquidity is proxied by share turnover. The results show that targets exhibit lower abnormal turnover than positive premium targets, and lower abnormal turnover commences close to announcement day ($\approx \text{day}=-1$), suggesting that announcement of a negative premium offer effectively locks in target investors holding blocks of shares. Moreover, a series of OLS regressions indicate that the concentrated ownership of negative premium targets is associated with the abnormal share illiquidity. Overall, the evidence suggests that blockholders, motivated by share illiquidity and market/offer price convergence, prefer to sell shares to the negative premium bidders instead of selling to the market. In the long-run (5 years) following acquisition, negative premium targets outperform the matched set of positive premium targets, in terms of profitability and productivity. Cross-sectional analyses of long-run, *ex post* performance indicates that it is the sub-set of stock financed deals that exhibit long-run

outperformance, which lends support to the *selection hypothesis*. Large shareholders of target firms receiving negative premium stock financed offers are able to identify deals that create value over the long-run and are willing to accept the negative premium to capture long-run gains, since in stock financed deals, target shareholders will become owners of the combined firm.

The remainder of this essay is structured as follows. In section 2, a brief review of the literature on premium determinants in a contractual setting is presented, which provides the foundation for the hypotheses developed in section 3. Section 4 presents sample construction and methodology. Results of the empirical analyses are presented in section 5 and concluding remarks are offered in section 6.

2.2 Negative Acquisition Premium

Acquisition premia are generally defined as the difference in the market price of target assets prior to takeover announcement and the purchase price paid to acquire the target. The premia are “major statements by acquiring managers of how much additional value they can extract from the target firm” (Hayward and Hambrick, 1997, p.103). Empirical evidence provides a general consensus that target firm shareholders earn significant positive abnormal returns, while acquiring firms gain little, nothing, or actually earn negative abnormal returns upon announcement (e.g., Andrade, et al. (2001), Martynova and Renneboog (2008), and Eckbo (2009)). Nevertheless, Andrade, et al. (2001) point out that premia have been steadily increasing over time with median premia being 29.9%, 40.1%, and 47.8% over the 1973-1979, 1980-1989, and 1990-1998 periods, respectively. Similarly, Eckbo (2009) reports that from 1973-1989, average premia on initial bids were 44.5% from 1990-2002. Thus over time, positive premia

persist even as the literature continues to documents little, no, or even negative gains to acquiring firm shareholders.

A sub-set of the M&A literature has focused on acquisition premium as a product of a contract between the acquiring firm and acquisition target, and this growing body of literature has sought to describe and measure the forces involved in premium determination (Ayers et al., 2003; Flanagan and O'Shaughnessy, 2003; Alexandridis et al., 2013; de la Bruslerie, 2013). A successful takeover is a contractual agreement in which both parties find enough interest to agree on an offer. The basis for this approach is that the key variables of the contract (e.g., bid premium, medium of exchange, timing, managerial compensation) are jointly determined and agreed upon as a package. Within this contractual framework, the decisions made by both target and acquiring firms at the time of a merger are driven by conflicting goals so that the former would try to maximize the level of the premium, whereas the latter would try to minimize it while still enticing target shareholders (and managers) to accept the purchase. The setting of the initial bid premium is similarly described by some as supply of and demand for target shares, with the premium being the resultant equilibrium of the underlying deal conditions (Slusky and Caves, 1991; Walkling and Edmister, 1985).

A number of additional factors complicate the price-setting process. The initial offer premium might be set by the acquiring firm to encourage entrenched target boards to accept the offer (Hirshleifer and Thakor, 1994), or it may be used to preempt a competing bid (Fishman, 1989). The takeover premium level is often linked to the ownership structure of the target. For example, the high bargaining power of a large blockholder may compel acquirers to offer higher bids (Stulz, 1988). Moreover, acquiring management hubris might result in significantly inflated premia (Roll, 1986). Others cite transaction characteristics (*e.g.*, medium of exchange, deal size,

etc.) and environmental factors (*e.g.*, merger waves, investor protection) as impacting the level of premium offered by the bidder. The factors identified by extant literature as determinants of initial bid premium -- bidder, target, and deal characteristics -- are summarized in Figure 2.1. Depending on the context of the deal, the conditions of the contract may favor the bidding or target firm, which then impacts the price of the deal. If the conditions are not in favor of the target, the bidder may be able to purchase the target below a premium of a comparable transaction. However, such conditions cannot explain why target firm shareholders accept a negative premium.

Figure 2.1: Determinants of positive acquisition premium

Figure 2.2 displays the number of deals involving a negative premium per year (in blue) and the average percentage premium per year (in orange). Over the 1989-2013 period, the average negative premium does not vary significantly (with a standard deviation of 3.13%), but the number of negative premium deals varies substantially, and at first glance, it seems that it varies in a cyclical manner. From 1991 to 1998, the number of negative premium deals trends upwards, and from 1998 to 2006, the number trends downwards. In the following period from 2007 to 2008, the number of negative premium deals increases again, following by declines 2009

and onwards. The highest number of negative premium deals occurs in 1996 (205 deals with an average negative acquisition premium of -11%) while the lowest number occurs in 2013 (23 deals with an average negative premium of -9.36% million).² The observed cycle of the negative premium coincides with that of merger wave cycles (in this thesis' Figure 1.1) in general, which suggests that negative premium mergers may increase in prevalence over the upcoming decade. The average premium received by negative premium target shareholders over this same period is a notable -15.25% on an average deal value of 343.5378 million (US). Andrade, et al. (2001) report median premium of all M&As of 36% over a similar period.

Figure 2.2: Preliminary evidence on negative premium acquisitions, 1989-2013

The acceptance of a negative premium offer is suggestive of a unique setting in which the consideration offered and accepted by target shareholders is less than the market value of the

² Given the varying frequency of negative premium transactions over the period of observation (1989-2013), all cross-sectional regressions include time trend variables.

target firm's assets. The presence of an offer below the market value of the target (i.e., a negative premium) defies extant theoretical predictions as target shareholders should be able to sell their shares on the open market instead of accepting a discount on their ownership position. What accounts for this phenomenon? Why and under what contractual conditions are shareholders of target firms willing to accept a negative premium?

2.3 Hypothesis Development

2.3.1 *Asset illiquidity hypothesis*

A firm may be in financial distress if it experiences difficulty meeting debt obligations, whether due to internal liquidity restrictions or trouble accessing liquidity from external capital markets. If a firm experiences operating or financial difficulties, it can pursue several courses of action. A distressed firm might voluntarily restructure its operations (John et al., 1992; Donaldson, 1990), the firm may restructure under the protection of bankruptcy court (Weiss, 1990), or the firm may privately restructure its debt (Gilson et al., 1990). A distressed firm may also seek out a merger in order to access the liquidity necessary to restructure (Shleifer and Vishny, 1992; Clark and Ofek, 1994).

In a contractual setting of an acquisition transaction, the bargaining power can shift towards the buyer if the selling firm is in financial distress and in dire need of a liquidity injection. In the fire-sale literature, this scenario is examined within the context of debt capacity. Williamson (1998) contends that redeployable assets are highly liquid and are good candidates for debt financing because creditors can easily sell assets if mismanaged by inefficient management. Shleifer and Vishny (1992) develop a theory that describes the pricing of illiquid assets, arguing that illiquid assets “fetch prices below values in best use when liquidated” (p.

1344). The authors posit that the most likely buyer of the distressed firm's assets is one within the same industry, but if the reason for the target's financial distress is an industry-wide shock, intra-industry buyers are likely facing similar liquidity issues and are therefore unable to raise the funds necessary to finance the transaction. Shleifer and Vishny (1992) therefore assert that the bidder of illiquid assets is most likely an "industry outsider" who will "face significant costs of acquiring and managing the assets" (p. 1344). The resultant price offered to target shareholders may be significantly lower than the market value of the firm. Shleifer and Vishny's (1992) theory assumes that the severe underpricing of distressed assets will be amplified in recessionary periods, which is corroborated by evidence presented by Eckbo and Thorburn (2008) for fire-sales. There is a distinction in the pricing of assets in a firesale versus in an acquisition of a distressed target. In the latter case, the sale is not mandated as is often the case in fire-sale bankruptcy system, and also, the negative premium deal involves a price paid that is *lower* than market prices but in a fire-sale, no market price exists. Pulvino (1998) shows that financially distressed airlines receive lower prices than financially healthy airlines when selling used aircraft and that financially distressed airlines are more likely to sell to firms outside the aviation industry during market downturns. Pulvino's (1998) evidence is corroborated by Kruse (2002). Moreover, Officer (2007) observes that discounts on the price of unlisted subsidiaries average from 15-30% relative to comparable publicly-traded targets, but the discounts observed are still above the market value of assets. Officer (2007) finds evidence that the discount is associated with parent firms of the unlisted subsidiary seeking liquidity, and discounts on unlisted targets are high during times of illiquid debt markets. Eckbo and Thorburn (2008) study fire-sales in Sweden and report evidence of a fire-sale discount and furthermore, observe the determinants of the fire-sale discount to be industry-wide liquidity and financial distress. In addition, they report

evidence of fire-sale discounts leading to piecemeal liquidation, and the discount does not exist if the firm is being acquired as a going concern or when the acquirer is an industry outsider.

Schleifer and Vishny's (1992) theory is extended by Clark and Ofek (1994) who suggest that premia paid to shareholders of distressed targets might be higher if there is more to gain from combining the operations of a distressed target with an acquirer and might be lower if distressed targets have less bargaining power in the takeover process due to their weak condition or if there is less competition for the financially-distressed targets.³ An explanation of the existence of a negative premium on a publicly-traded target may be that the demand conditions for target specific assets are impacted by the liquidity of the target's assets. The target firm may be in financial distress and is in great need of liquidity, and by providing liquidity to the target financially-constrained firm through an acquisition, the bidder may require substantial compensation which acts to drive the purchase price below the market value of target assets (Shleifer and Vishny, 1992; Clark and Ofek, 1994; Officer, 2007). Empirical evidence reported by Pulvino (1998) and Clark and Ofek (1994) provides some evidence of this contention. The above discussion leads to the following:

H1: (Asset illiquidity hypothesis) A publicly-listed target will be offered a negative acquisition premium when the target is in financial distress prior to the bid.

The acquirer captures the negative premium in purchasing the financially-distressed target, and the magnitude of the negative premium may be moderated by several second-order conditions. The availability of liquidity from external capital markets, which is an alternative for the financially-distressed target to alleviate financial constraints, can exacerbate or attenuate the degree of negative premium. If a firm is in financial distress, the acquirer's provision of liquidity

³ While Clark and Ofek (1994) do not make the distinction, there is a hierarchy in the conditions upon which the price financially distressed assets will decrease. The first order condition of a negative premium is financial distress, and the second order condition is the lack of bidder competition which can intensify the likelihood that the financially-distressed target will accept a negative premium.

is relatively more valuable when external sources of liquidity (debt and equity markets) are likewise constrained. In this case, the target's ability to negotiate is diminished by their need for a sale (Shleifer and Vishny, 1992) and their inability to obtain liquidity externally (Officer, 2007). Thus, a secondary condition of financial distress is the alternative sources of liquidity, which leads to the following hypothesis:

H2a: An illiquid, publicly-listed target is more likely to be offered a negative acquisition premium when external sources of liquidity are constrained.

The presence of competing bids is a significant determinant of a positive bid premium. Previous research presented by Walkling and Edminster (1985), Bradley, et al. (1988) and Jarrell and Poulsen (1989) suggests that bid premia increase in the degree of competition in the market for corporate control. In general, the greater the number of competing buyers of a product, the greater the bargaining strength of the seller (Porter, 1980), and in a takeover setting, as the number of bidding firms increases, the greater is the expected value of the highest bid and therefore, the greater the bid premium (Varaiya, 1988). Shleifer and Vishny's (1992) theory of asset liquidity speaks to the degree of information asymmetry involved in unrelated transactions. If both target and bidder are in similar industries, the bidder is likely to be better equipped to value target assets. If the bidder is an industry outsider, there is substantial information asymmetry, and there is a high risk of overbidding (Liebeskind, 1996). If an adverse selection problem arises, bidders may discount their offers to reflect the probability that the target will turn out to be a lemon (Akerlof, 1970). The winner's curse problem predicts a similar outcome: if the bidder is aware of the uncertainty associated with its valuation of the target, it will reduce the offer price. If a target's assets are difficult to value and the firm is financially constrained, the target may be more likely to receive a negative premium.

Therefore, there is a two-pronged extension of Shleifer and Vishny's (1992) theory of asset liquidity that provides for second order conditions of an illiquid target. First, in purchasing a financially-distressed firm, there is a high risk associated with the bidder turning the target firm into a profitable one (Clark and Ofek, 1994), so the number of bidders interested in assuming this risk is low. The degree of bidder competition in this type of sale will, therefore, be lower, which reduces the demand for the target's assets. Second, if an unrelated firm enters into a bid for a distressed target and the bidding firm is aware of adverse selection, the lack of related bidder competition and high information asymmetry may increase the probability of a negative premium offer. Moreover, the more intangible the target's assets, the higher the degree of information asymmetry, which again, increases the likelihood of a negative premium offer to a firm in financial distress.⁴ The preceding discussion leads to the proposal of the secondary conditions of financial distress:

H2b: An illiquid, publicly-listed target will more likely be offered a negative acquisition premium when there is low or no bidder competition for target assets.

H2c: An illiquid, publicly-listed target will more likely be offered a negative acquisition premium when the bidder competes in a different industry than the target.

H2d: An illiquid, publicly-listed target will more likely be offered a negative acquisition premium when the target's assets are largely intangible and difficult to value.

2.3.2 Ownership concentration hypothesis and selection hypothesis

The *asset illiquidity hypothesis* provides explanations as to why the price offered by the bidder may fall below market value. The question still remains: why would the rational investor accept a negative premium offer over selling to market at the higher market price? It would be

⁴ Transaction cost economics provides a similar explanation of unrelated firm pairs and asset intangibility. Riordan and Williamson (1985) argue that the more specific the asset is to the operation at hand, the more difficult it is to price that particular asset, since the market for that asset is much less liquid. Furthermore, there may be additional costs associated with transferring assets of high specificity to alternative uses, thereby reducing the price paid by acquiring firms for target assets.

more profitable for the shareholder to sell to the market instead of the acquirer, but the existence of the accepted negative premium deals indicates that shareholders indeed select the negative premium offer over selling to the market at a higher price. Evidently, there is some factor(s) that prevents the investor from achieving a market sale. Two hypotheses are developed here that propose conditions under which a negative premium offer is accepted by target shareholders of a financially distressed firm. The *ownership concentration hypothesis* argues that if the financially distressed target firm has a concentrated ownership, the liquidity of target shares reduces substantially and therefore blockholders are better off accepting the negative premium offer over selling on the open market.⁵ The *selection hypothesis* contends that in a stock financed offer in which the target shareholders become shareholders of the combined firm, the blockholders of a financially-distressed target may accept a negative acquisition premium if they view the combined firm as one that will create value. While the *ownership concentration hypothesis* may apply to both cash and stock financed deals, the *selection hypothesis* applies only to stock financed deals, since in stock financed deals, the target firm shareholders become shareholders of the combined firm and therefore have a stake in the performance of the combined firm.

Counter to traditional finance theory, concentrated ownership structures are prevalent in the U.S. and play an increasingly important role in capital markets. Holderness (2009), for example, reports that 96% of U.S. firms have blockholders, and these blockholders hold an average 39% of the common stock. Dlugosz, et al. (2006) find that 75% of all firm-year observations from 1996-2001 in the U.S. have blockholders that own at least 10% of the firms' equity, and Morck (2007) reports similar findings. Jacoby and Zheng (2010), Brockman and Yan (2009), and Heflin and Shaw (2000) are among the few researchers that have examined the

⁵ I follow prior literature (e.g., Dlugosz, et al. (2006) and Brockman, et al. (2009)) to define blockholders as shareholders who hold 5% or more of a firm's shares.

impact of block ownership on share liquidity, and all report that block ownership adversely impacts the firm's market liquidity by reducing trading activity. Heflin and Shaw (2000) argue that in firms with a concentrated ownership, blockholders have access to private information, and therefore, their trading increases the adverse selection risk of market makers. In turn, market makers are forced to increase the bid-ask spreads for the stock and trade less, thereby reducing share liquidity (Glosten and Milgrom, 1985; Easley and O'Hara, 1987, 1992). Bolton and Von Thadden (1998) offer an alternative explanation. They suggest that in firms with higher ownership concentration, the number of shareholders who can trade the stock is smaller, which effectively reduces market capitalization, and this, in turn, diminishes the share's liquidity. Both arguments, however, contend that ownership dispersion is negatively associated with share liquidity.

Following the literature on share ownership structure, I submit the *ownership concentration hypothesis* that posits that a concentrated ownership structure constrains the liquidity of target shares. If blockholders go to the market where its shares are relatively illiquid to sell their large stake (instead of selling to the acquirer at a discount), it is likely that share blocks will be divided for sale, and each subsequent sale will cause the target's stock price to fall, resulting in a lower ensuing price for the next block sale, similar to a piecemeal fire-sale (Eckbo and Thorburn, 2009). The average sale price achieved by blockholders may be lower than the negative premium price, making a sale to the negative premium bidder more attractive than a market sale. There is substantial evidence that suggests that blockholders can and do influence managerial decision-making (Holderness and Sheehan, 2000; Barclay *et al.*, 2001), so given that blockholders of a financially distressed firm may view the negative premium price as the more favorable outcome, this influential group of shareholders are likely to urge managers to

accept this option. The offer conditions described by the *asset illiquidity hypothesis*, where the target firm is in financial distress, must predicate the *ownership concentration hypothesis*, since there must be some impetus for shareholders to liquidate their position. Otherwise, shareholders of a target firm receiving a negative acquisition premium offer will simply decline the bid. The *ownership concentration hypothesis* is therefore proposed as follows:

H5: (Ownership concentration hypothesis) A publicly-listed target that is in financial distress will accept a negative acquisition premium when the target has a highly concentrated ownership structure.

It may be, however, that target blockholders are not compelled to accept the deal but instead, are eager to accept if the combination of the target and bidder is a synergistic one, leading to positive, post-acquisition performance. A number of papers have looked at the direct impact of ownership structure on firm performance. McConnell and Servaes (1990), for instance, find that the percent of block ownership is positively related to a firm's Tobin's q . Similarly, Nesbitt (1994), Del Guercio and Hawkins (1999), and Cornett, et al. (2007) report a positive relation between block ownership and various measures of firm performance. However, Agrawal and Knoeber (1996), Karpoff, et al. (1996), Duggal and Millar (1999) and Faccio and Lasfer (2000) find no such significant relation. Thus, the impact of block ownership on firm performance is still unclear, but the balance of evidence is in favor of a positive association. The rationale for a positive relationship is that due to the high cost of monitoring, only large shareholders can achieve sufficient benefits to have an incentive to monitor (Grossman and Hart, 1980; Shleifer and Vishny, 1986). Moreover, large institutional investors have the opportunity, resources, and ability to monitor, discipline, and influence managers. Corporate monitoring by

large shareholders can result in managers focusing more on corporate performance and less on opportunistic or self-serving behavior.⁶

Similar to Golubov et al.'s (2012) 'better merger' hypothesis, where larger bidders and bidders with top-tier investment bankers are able to recognize quality combinations, target firm blockholders, especially institutional owners, are sophisticated investors with access to monitoring resources, and this group of shareholders may be able to identify a promising deal. Furthermore, Aktas, et al. (2010) document that the willingness of the target to sell is associated with lower premia.⁷ Therefore, should the deal be interpreted by blockholders as value-enhancing for the target firm in the long-run, they may persuade target management to accept the deal. This outcome pertains only to those deals involving stock-financing as in these cases, target shareholders become owners of the newly combined firm and therefore have a stake in the performance of the combined firm following acquisition. Having identified a value-enhancing deal, blockholders may be willing to accept a discount in order to partake in a combination that will result in synergistic gains. Similar to the *ownership concentration hypothesis*, if the firm is solvent, prudent managers will resist the deal, but if the firm is in financial distress, it will consider a negative acquisition premium. The *selection hypothesis* offers, however, only a partial explanation of premium acceptance, since the hypothesis applies only to those deals financed with stock. The balance of the literature on the acquisition of distressed firms shows that takeovers can facilitate efficient redeployment of target assets, resulting in significant operational improvements (Meier et al., 2014; Faelten and Vitkova, 2014; Hotchkiss and Moerland, 1998),

⁶ Alternatively, the short-term hypothesis, proposed by Jarrell, et al. (1985), suggests that blockholders, and more specifically, institutional owners, are incapable of monitoring managers due to their passivity and myopic goals. This hypothesis argues that institutional investors are passive investors who are more likely to sell their positions in poorly performing firms than to expend their resources in monitoring and improving performance. It is further argued that many institutional investors take a myopic view of their investments, guided solely by the short-term portfolio performance goals.

⁷ Aktas, et al. (2010) argue that when the target firm is the initiator of the deal, it signals a clear willingness of the target to sell, which weakens its bargaining position during negotiations with the bidding firm.

though Clark and Ofek (1994) report the opposite. The preceding discussion leads to the following hypothesis:

H6: (Selection hypothesis) A publicly-listed target that is in financial distress will accept a negative acquisition premium, stock financed offer when the target has a highly concentrated ownership structure who are willing to accept the discounted price to participate in a value-creating deal.

2.4 Sample Construction and Construct Measurement

The purpose of this study is to shed light on the conditions that lead to a target accepting a negative premium, and the primary sample of this study therefore consists of parties involved in a transaction in which the target accepted a negative premium. The test sample of this study includes completed takeovers involving negative premia that were announced between 1989 and 2013, which permit for analysis of negative premia over various merger wave periods. The initial list of acquirers and targets (as well as various deal characteristics) are obtained from the *SDC Platinum Mergers and Acquisitions* database. The initial search has been subjected to the following sample filters:

1. Completed deals.
2. The bidder and the target are U.S. public firms.
3. The premium calculated by SDC (4WEEKPREM, a metric based on target valuation 4 weeks prior to bid announcement) is negative.^{8,9}

⁸ The M&A literature (including, Keown and Pinkerton (1981), Barclay and Warner (1993), Schwert (1996), among others) has shown that anticipation of an acquisition attracts informed trading, which can cause a high run-up in the target stock price prior to an announced acquisition bid. The price of the target firm 4 weeks prior to acquisition announcement serves as the primary sample in order to avoid including the price-run up in the calculation of premia.

⁹ In addition to the premium calculated on the target market valuation four days prior to announcement, samples of parties to a negative acquisition are constructed for negative premia based on target valuations one week and one day prior to announcement.

4. The deal is not classified as a going private transaction, leveraged buyout, liquidation, privatization, repurchase, reverse takeover, or restructuring.
5. The bidder obtains control of the target (more than 50%) as a result of the transaction.
6. The target is covered in the *Datastream* database with sufficient data to calculate pre-acquisition financial conditions and announcement period returns.
7. The transaction value is at least \$1M and represents at least 5% of bidder market capitalization measured 30 days prior to the announcement of the deal.¹⁰

Once the filters are applied, the resultant test sample consists of 457 targets that accepted a negative premium during the study period (1989-2013). A matched control sample of comparable target-bidder combinations that did not involve a negative premium was then constructed, with matching based on bidder-target relatedness, target industry, and deal size (DePamphilis, 2009). The purpose of the comparable transaction analysis is to provide a counterfactual to the target-bidder pairs that involved a negative premium, which allows for comparing the anatomy of a transaction involving a negative premium (firm characteristics, transaction conditions, and market reaction) versus a typical transaction, which is one that involves a positive premium. In addition, a secondary control sample of industry rivals not involved in M&A activity was constructed in order to control for the influence of industry wide factors (Barber and Lyon, 1996). This study therefore involves three samples: primary sample of targets accepting a negative premium (“NP”, N=457), control sample of matched comparable targets accepting a positive premium (“PP”, N=457), and a control sample of matched rivals not

¹⁰ The employment of this screen is standard in the literature (for example, Chemmanur, et al. (2009), Savor and Lu (2009), Di Giuli (2013)). This screen ensures that the proposed deal has a material impact on the acquirer’s future performance.

involved in an M&A (“NP Rivals”, N=457 and “PP Rivals”, N=457).¹¹ In addition to the identities of the involved parties, transaction data were obtained from *SDC Platinum*. *SDC Platinum* also provides the *Datastream* identifier, which is used to cross-reference the two databases. From *Datastream*, short-run financial and pre-acquisition operating performance data was collected. To identify which party initiated the deal, *Factiva* is used to evaluate press releases at the time of acquisition announcement.

Table 2.1 presents annual deal statistics for the negative premium and positive premium targets. The statistics show that the average negative premium deal has a bid premium of -20.8%, and 39% of negative premium deals are paid for with all cash and 48% with all stock. About half of the negative premium deals involved related bidder/target pairs, and 15% of the deals involved competing bidder.

Table 2.2 provides summary firm statistics (in Panel A) and transaction statistics (in Panel B) for the test and control samples at the time of acquisition announcement. The summary statistics indicate that negative premium targets are smaller than positive premium targets (by total sales, total costs, and number of employees) but larger than rivals (by total assets). Panel A also shows that targets that accept negative premia are less profitable, have lower growth than both control groups. Negative premium targets, however, are more productive than matched rivals with productivity measured as the ratio of revenue to number of employees. Concordant with Eisdorfer (2005), negative premium targets have higher beta values than the controls group. At announcement, negative premium targets have lower financial leverage than rivals but lower liquidity levels, which suggest that, on average, targets accepting negative premia are in financial

¹¹ The construction of a sample of terminated negative premium deals would have provided a useful control for the completed negative premium deal, but termination rates among negative premium deals is very low (about 7%), so the sample of terminated negative premium deal is small (n=29).

Table 2.1: Premia of sample firms, 1989-2013

This table contains time-series statistics of the sample firms (negative premium targets (NP) and positive premium targets (PP)) across the sample period, 1989-2013.

<i>Panel A: Sample of negative premium targets (NP), 4 week acquisition premium</i>							
	<u>Average %</u>		<u>Average deal</u>			<u>%</u>	<u>% deals w/</u>
	<u>Premium</u>	<u>No. of deals</u>	<u>value (\$mil)</u>	<u>% cash deals</u>	<u>% stock deals</u>	<u>related</u>	<u>competing bids</u>
1989-1994	-23.820	76	301.894	34.231	46.828	42.172	30.565
1995-2001	-20.854	210	841.942	22.879	60.682	56.688	16.757
2002-2007	-17.006	116	954.995	49.761	42.804	43.433	11.568
2008-2013	-21.648	55	652.927	50.538	39.481	61.563	4.048
1989-2013	-20.833	457	694.099	38.693	47.978	51.193	15.775
1989	-17.550	8	266.258	25.000	62.500	37.500	25.000
1990	-25.654	15	147.560	60.000	24.445	46.667	13.333
1991	-30.199	14	318.005	56.841	27.261	21.429	35.714
1992	-25.775	14	216.824	14.286	52.801	50.000	28.571
1993	-16.218	12	477.654	24.448	46.466	66.667	50.000
1994	-27.521	13	385.061	24.811	67.497	30.769	30.769
1995	-21.989	16	44.602	18.750	63.284	62.500	31.250
1996	-25.141	16	93.250	31.250	47.929	50.000	18.750
1997	-18.491	25	1097.745	24.364	52.683	60.000	28.000
1998	-15.041	39	388.684	19.845	62.982	61.538	12.821
1999	-21.083	36	815.108	20.873	62.548	52.778	5.556
2000	-20.441	38	2760.737	31.829	63.175	50.000	18.421
2001	-23.792	40	693.465	13.243	72.176	60.000	2.500
2002	-18.848	26	1244.126	33.330	61.758	50.000	7.692
2003	-24.748	10	410.504	43.553	40.143	40.000	30.000
2004	-14.905	32	917.297	55.590	40.341	50.000	6.250
2005	-18.452	18	341.234	45.992	50.500	27.778	11.111
2006	-12.152	11	1328.607	57.542	33.367	45.455	9.091
2007	-12.932	19	1488.202	62.561	30.717	47.368	5.263
2008	-25.822	14	1671.127	16.550	72.108	78.571	14.286
2009	-19.030	9	1309.413	33.683	56.659	44.444	0.000
2010	-30.756	10	298.412	28.531	36.982	60.000	10.000
2011	-17.726	11	485.647	54.545	41.053	36.364	0.000
2012	-26.780	5	6.514	100.000	0.000	100.000	0.000
2013	-9.772	6	146.452	69.917	30.083	50.000	0.000
<i>Panel B: Matched sample of positive premium targets (PP), 4 week acquisition premium</i>							
	<u>Average %</u>		<u>Average deal</u>			<u>%</u>	<u>% deals w/</u>
	<u>Premium</u>	<u>No. of deals</u>	<u>value (\$mil)</u>	<u>% cash deals</u>	<u>% stock deals</u>	<u>related</u>	<u>competing bids</u>
1989-1994	16.633	82	138.385	47.555	22.148	39.6	4.6
1995-2001	15.623	183	250.026	50.323	24.519	43.5	0.0
2002-2007	17.416	115	230.810	63.564	13.673	46.6	0.9
2008-2013	9.571	77	383.146	59.075	20.868	58.2	2.4
1989-2013	14.843	457	250.569	54.937	20.471	46.8	1.9
1989	25.500	14	114.335	74.429	0.000	28.6	7.1
1990	36.842	13	166.191	61.474	11.071	38.5	7.7
1991	9.103	13	99.136	30.769	24.863	46.2	0.0
1992	5.972	13	122.822	38.462	38.462	61.5	0.0
1993	18.368	8	243.929	50.000	12.500	25.0	12.5
1994	4.011	21	83.896	30.196	45.995	38.1	0.0
1995	14.842	29	45.070	53.270	22.897	34.5	0.0
1996	16.963	26	104.265	39.495	27.990	30.8	0.0
1997	11.102	22	70.779	51.131	30.687	45.5	0.0
1998	16.049	19	64.163	49.449	21.603	42.1	0.0
1999	10.180	37	754.756	74.026	12.879	51.4	0.0
2000	18.677	24	311.275	38.898	36.489	50.0	0.0
2001	21.544	26	399.872	45.989	19.090	50.0	0.0
2002	39.834	16	161.115	59.598	16.351	37.5	0.0
2003	13.838	24	577.797	55.808	15.202	50.0	0.0
2004	17.598	18	235.526	58.334	16.667	38.9	0.0
2005	10.874	21	133.179	66.192	9.010	47.6	0.0
2006	11.840	18	138.724	62.545	15.207	50.0	5.6
2007	10.513	18	138.521	78.905	9.604	55.6	0.0
2008	6.066	7	92.206	85.714	14.286	42.9	0.0
2009	17.294	14	282.547	47.737	23.171	50.0	7.1
2010	21.416	14	462.897	53.085	32.629	64.3	7.1
2011	-2.697	10	1183.472	50.000	20.000	70.0	0.0
2012	7.541	19	43.139	60.526	7.895	52.6	0.0
2013	7.808	13	234.613	57.389	27.226	69.2	0.0

Table 2.2: Sample summary statistics

This table contains descriptive statistics of the sample firms (negative premium targets (NP) and positive premium targets (PP) targets) and matched samples (rivals of negative premium targets (NP rivals) and rivals of positive premium targets (PP rivals)). The data are as of the year of acquisition announcement. Columns 1 and 2 display the median and mean statistics for the targets involving negative and positive premium bids respectively, and Columns 3 and 4 display the median and mean statistics for the matched rivals. The last three Columns, (1-2), (1-3), and (2-4), show the results of the test of difference in median and means. The t-statistic and z-statistic are used to measure statistical significance of the difference in mean and median tests respectively. The symbols ***, ** and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Firm statistics (at time of acquisition announcement)							
	(1)	(2)	(3)	(4)	(1-2)	(1-3)	(2-4)
	NP	PP	NP Rival	PP Rival			
	Median	Median	Median	Median	z-stat	z-stat	z-stat
	Mean	Mean	Mean	Mean	t-stat	t-stat	t-stat
Total assets (\$mil)	194211.00	234528.00	169150.00	335233.00	-0.417	2.029**	-0.694
	1794186.01	1483211.34	1449079.74	1805141.30	0.670	0.867	-0.842
Sales (\$mil)	124193.00	135868.50	93766.00	186546.00	-0.981	1.050	-1.235
	609433.72	915671.60	658736.23	772241.22	-1.830*	-0.378	0.880
Total costs (\$mil)	57853.50	77237.00	62701.00	114106.00	-1.934*	-0.057	-0.992
	352526.62	699455.10	428611.12	489507.83	-2.363**	-0.739	1.578
Number of employees	517.00	770.00	557.00	1085.00	-1.486	0.085	-1.733*
	2979.46	3514.84	3900.16	4445.35	-0.742	-1.216	-1.169
ROA	0.01	0.01	0.01	0.02	-1.836*	-2.986***	-2.276**
	-0.09	-0.07	-0.09	-0.01	-0.506	0.050	-2.147**
ROE	0.05	0.07	0.39	0.45	-0.810	-14.840***	-13.892***
	0.08	-0.01	0.34	0.42	1.329	-4.536***	-12.257***
EPS growth	0.04	0.06	0.07	0.08	-1.382	-0.901	0.764
	0.15	0.34	0.20	0.21	-2.172**	-0.737	1.618
Asset turnover	0.58	0.75	0.69	0.82	-0.885	-1.293	-1.347
	0.88	0.93	1.03	0.98	-0.605	-1.928**	-0.706
Revenue per employee	193.74	185.75	174.64	182.79	-0.171	1.538	1.098
	355.17	413.10	294.06	290.35	-0.986	1.779*	2.263**
Total costs per employee	93.54	87.41	93.60	93.24	0.887	0.416	-0.922
	196.60	182.66	183.70	157.49	0.379	0.395	0.899
Earnings volatility	0.24	0.25	0.22	0.20	0.057	0.856	1.156
	0.59	0.41	4.21	1.30	1.396	-1.425	-1.520
Beta	0.53	0.42	0.38	0.42	1.608	2.713***	1.214
	0.64	0.55	0.50	0.44	1.906*	3.093***	2.390**
Tobin's q	1.66	1.77	1.72	1.60	0.487	0.393	0.296
	2.58	2.25	2.71	2.28	1.534	-0.447	-0.169
Current ratio	1.88	2.03	1.83	1.82	-1.008	1.048	1.405
	2.69	2.99	2.91	2.74	-1.042	-0.759	0.727
D/E	0.47	0.59	0.65	0.61	-1.266	-3.056***	-0.794
	1.01	0.95	1.32	1.01	0.398	-1.799*	-0.470
ICR	1.26	2.86	2.61	3.90	-3.759***	-4.502***	-2.198**
	-13.95	29.78	16.27	23.25	-3.687***	-4.426***	0.559
Z-score	1.38	1.69	1.92	1.98	-1.851*	-4.399***	-2.856***
	1.55	1.94	3.19	2.13	-2.012**	-5.572***	-1.147
Block ownership	0.36	0.12	0.17	0.17	6.414***	6.115***	6.970***
	30.00	7.00	8.00	15.00	5.275***	4.513***	3.452***
N	457	457	457	457			
Panel B: Transaction statistics							
	(1)	(2)	(1-2)				
	NP	PP					
	Median	Median	z-stat				
	Mean	Mean	t-stat				
Relative size to bidder	0.23	0.25	-0.990				
	0.41	1.34	-2.564***				
Transaction value (\$mil)	76.10	85.75	-1.130				
	855.02	962.05	-0.431				
% Competing bidder	0.00	0.00	-0.904				
	0.02	0.03	-0.904				
% Cash offer	0.22	0.30	-3.357***				
	0.28	0.39	-3.376***				
% Stock offer	0.40	0.22	5.548***				
	0.42	0.25	5.641***				
% Friendly offer	1.00	1.00	0.733				
	0.97	0.89	4.789***				
% Target initiated	0.00	0.00	0.814				
	0.11	0.10	1.684*				
N	457	457					

distress. Finally, these firms have substantially higher levels of block ownership (median of 36%) than positive premium targets (median of 12%) and matched rivals (median of 17%). Panel B provides transaction summary statistics, and it shows that negative premium targets are typically smaller, relative to the bidders, their deals involve less cash offers (and more stock offers), and are more likely to be friendly acquisitions. Of note is that negative premium deals are more often initiated by the target firm, versus positive premium deals, a difference that is statistically significant at 10%. This result indicates a clear signal of the target's willingness to sell, which weakens its bargaining position during the negotiation of acquisition premium (Aktas, et al., 2010).

Table 2.3 provides a breakdown of negative premium targets by industry *SIC*. It is clear from this table that there is an industry concentration effect. Approximately 65% of the test sample firms operate in 15 industries, with the highest representation coming from *SIC6021* (Commercial Banks, Bank Holding Companies), *SIC7379* (Business Services), *SIC1311* (Oil and Gas; Petroleum Refining), *SIC7372* (Prepackaged Software), and *SIC3634* (Electronic and Electrical Equipment).

To test the *asset illiquidity*, *ownership concentration*, and *selection hypotheses*, a number of constructs require measurement. Table 2.4 summarizes this study's key constructs and the measures for each, which draw on extant empirical work. The metric employed to proxy this study's most central construct, negative acquisition premium, follows the bulk of the literature (e.g., Cotter and Zenner (1994), Ayers, et al. (2003), Alexandridis, et al. (2012), among others) that measures the premium as acquisition price per share paid to target shareholders less the target's stock price 4 weeks prior to the acquisition announcement, deflated by the target's stock

Table 2.3: Industry classification of sample firms

This table contains data on the industry in which the negative premium target operates, by SIC code.

<u>SIC</u>	<u>Industry description</u>	<u># of targets</u>
6021	Commercial Banks, Bank Holding Companies	48
7379	Business Services	47
1311	Oil and Gas; Petroleum Refining	24
7372	Prepackaged Software	21
3634	Electronic and Electrical Equipment	20
3841	Measuring, Medical, Photo Equipment; Clocks	18
6798	Investment & Commodity Firms,Dealers,Exchanges	18
2835	Drugs	17
6035	Savings and Loans, Mutual Savings Banks	16
3578	Computer and Office Equipment	14
4899	Telecommunications	14
6321	Insurance	13
5945	Miscellaneous Retail Trade	12
8093	Health Services	12
3669	Communications Equipment	11
4832	Radio and Television Broadcasting Stations	9
5065	Wholesale Trade-Durable Goods	9
7819	Motion Picture Production and Distribution	9
2711	Printing, Publishing, and Allied Services	8
4911	Electric, Gas, and Water Distribution	8
3317	Metal and Metal Products	7
4213	Transportation and Shipping (except air)	7
181	Agriculture, Forestry, and Fishing	5
2083	Food and Kindred Products	5
2329	Textile and Apparel Products	5
3052	Rubber and Miscellaneous Plastic Products	5
5621	Retail Trade-General Merchandise and Apparel	5
5812	Retail Trade-Eating and Drinking Places	5
6159	Credit Institutions	5
6512	Real Estate; Mortgage Bankers and Brokers	5
7011	Hotels and Casinos	5
1041	Mining	4
2821	Chemicals and Allied Products	4
3714	Transportation Equipment	4
4953	Sanitary Services	4
5122	Wholesale Trade-Nondurable Goods	4
5499	Retail Trade-Food Stores	4
5712	Retail Trade-Home Furnishings	4
7941	Amusement and Recreation Services	4
3594	Machinery	3
7319	Advertising Services	3
1541	Construction Firms	2
2448	Wood Products, Furniture, and Fixtures	2
8361	Social Services	2
3144	Leather and Leather Products	1
3728	Aerospace and Aircraft	1
3949	Miscellaneous Manufacturing	1
4512	Air Transportation and Shipping	1
7514	Repair Services	1
8299	Educational Services	1
Total		457

price 4 weeks prior to the acquisition announcement. Keown and Pinkerton (1981), Barclay and Warner (1993), and Schwert (1996), among others, have shown that anticipation of an acquisition attracts informed trading, which can cause a run-up in the target stock price prior to an announced acquisition bid, and therefore, the price of the target firm 4 weeks prior to

acquisition announcement is the primary premium metric in order to avoid including the price-run up in the calculation of premia.

For robustness, three secondary measures of premium are employed: a premium calculated on the market valuation of the target one week, one day prior to the announcement of the acquisition, and a cumulative abnormal return around the time of acquisition announcement (-126, minimum of +253 or date of delisting) (Schwert, 2000).¹² Table 2.5 summarizes the bid premium statistics for the samples of targets that accepted negative and positive premia. To control for other factors that impact the price-setting process, a number of target, acquirer, and transaction characteristics identified in the literature as determinants of premium are included in this analysis.

Table 2.4: Construct measurement

This table contains information on how the key constructs in this study are measured.

Construct	Proposed metric(s)	Informing study/studies
Bid premium	Premium, 4 week prior to bid (from SDC)	Officer (2007); Alexandridis, et al. (2012)
	Premium, 1 week prior to bid (from SDC)	
	Premium, 1 day prior to bid (from SDC)	
	Target CAR (-120,min(delist,+126) window around the deal announcement	Schwert (2000)
Financial distress prior to bid	Cash/Assets	Officer (2007)
	Current ratio	
	Altman's z-score	
Ownership concentration	Percentage of shareholders who hold 5% or more of a firm's shares	Dlugosz, et al.(2006); Brockman, et al.(2009)

An alternative explanation of a negative acquisition premium bid is possible: a negative premium may be a reflection of an error in the market valuation of target assets. If the current price of the target is overvalued, a negative acquisition premium may instead be a reflection of the intrinsic value of the target's assets and synergies. To control for an error in the market's

¹² Though not presented here, analysis of correlation of the measures of premia indicates that each exhibit positive, non-zero correlations, which provides some evidence of consistence across measures of the premia construct.

Table 2.5: Bid premium statistics

This table contains descriptive statistics of the premium paid in deals involving negative and positive premia. The t-statistic and z-statistic are used to measure statistical significance of the mean and median statistics. The symbols ***, ** and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Negative Premium		Positive Premium	
	<u>Median</u> <u>(z-stat)</u>	<u>Mean</u> <u>(t-stat)</u>	<u>Median</u> <u>(z-stat)</u>	<u>Mean</u> <u>(t-stat)</u>
4 Week Bid Premium	-0.111 -2.507***	-0.204 -2.930***	0.201 2.542***	0.300 1.810*
1 Week Bid Premium	-0.059 -2.207**	-0.116 -2.408**	0.163 2.477**	0.266 1.779*
1 Day Bid Premium	-0.060 -2.192**	-0.106 -2.342**	0.133 2.422**	0.234 1.741*
CAR(-126, min(253, delist))	-0.072 -2.117**	-0.221 -2.360**	0.089 2.103**	0.039 1.045
N		457		457

valuation, this essay's analysis includes an estimation of an error of market valuation, relative to an estimation of the intrinsic value of the target firm, denoted here as " VE ". This study follows the literature in the application of the residual income model, originally proposed by Ohlson (1990) and used subsequently in a number of studies, including D'Mello and Shroff (2000), Jindra (2000), and Chemmanur, et al. (2009). This study follows an estimation procedure similar to D'Mello and Shroff (2000) that employs Ohlson's (1990) model, where the misvaluation, or valuation error (VE) is estimated as follows:

$$VE = \ln(P_0 / V_0) \quad (1)$$

where P_0 is the acquirer's closing share price on the day before the acquisition announcement and V_0 is the intrinsic value of the acquirer's shares conditional on insiders' private information at the time of the acquisition (calculated in Equation (16)),

$$V_0 = B_0 + \frac{EPS_1 - r \times B_0}{1+r} + \frac{EPS_2 - r \times B_2}{(1+r)^2} + TV \quad (2)$$

and

$$TV = \frac{(EPS_2 - r \times B_1) + (EPS_3 - r \times B_2)}{2 \times (1+r)^2 \times r} \quad (3)$$

where B_0 is the book value of equity at the end of the fiscal year in which the acquisition was announced divided by the number of shares outstanding; EPS_t is the income before

extraordinary items divided by the number of shares outstanding; and r is the required rate of return on the acquirer's equity; and TV is the terminal value (as calculated in Equation (3)). Following Chemmanur, et al. (2009), the required rate of return is measured using a firm-specific rate of return, obtained from the single factor market-model, with beta calculated using data from the estimation period employed (i.e., [-241,-40]) to estimate short-run abnormal returns. The terminal value, TV , is calculated as an average of residual earnings in years 2 and 3, thereby reducing the possibility of unusual performance in year 3, which can significantly distort the terminal value, TV , in Equation (3). Ohlson's (1990) residual income model described here by Equations (2) and (3), contends that firm value is the summation of book value and discounted future earnings in excess of a normal return on book value. Thus, firm value depends on the stock variable (book value) and the flow variables that relate to the future value to be created by the combined firm (D'Mello and Shroff, 2000).

2.5 Empirical Analysis

2.5.1 Preliminary analysis of hypotheses

The *asset illiquidity hypothesis* contends that a publicly-listed target will accept a negative premium when the target is in financial distress prior to the bid. To provide an initial test of this hypothesis, the financial condition of negative premium targets relative to control groups (positive premium targets and matched sample of rivals) is tracked over the three years prior to acquisition announcement. Table 2.6 presents the median and mean difference testing results for measures of financial distress (Interest Coverage Ratio, Cash/Assets, Current Ratio, Interest Coverage Ratio, Altman's z-score, D/E, and Debt and Equity Market Liquidity).

Table 2.6: Univariate tests of financial distress

This table contains the results of the univariate analysis of financial health of sample firms (negative premium targets (NP) and positive premium targets (PP) targets) and matched samples (rivals of negative premium targets (NP rivals) and rivals of positive premium targets (PP rivals)). The data are as of the year of acquisition announcement ($t=0$), the year prior to announcement ($t=-1$), and two years prior to announcement ($t=-2$). The t-statistic and z-statistic are used to measure statistical significance of the difference in mean and median tests respectively. The symbols ***, ** and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(1-2)	(3)	(4)	(3-4)	(1-3)	(5)	(6)	(5-6)
	NP Target Median Mean	NP Rival Median Mean	z-stat t-stat	PP Target Median Mean	PP Rival Median Mean	z-stat t-stat	z-stat t-stat	Ind.Adj NP Target (1-2) Median Mean	Ind.Adj PP Target (3-4) Median Mean	z-stat t-stat
(t = 0yr)										
Cash/Assets	0.017	0.020	-1.06	0.037	0.024	0.57	-0.18	0.007	0.024	-1.89*
	0.068	0.118	-2.30**	0.098	0.086	0.45	-0.68	0.003	0.106	-2.38**
Current ratio	1.790	1.911	-1.07	2.045	1.913	0.18	-0.05	0.056	0.056	-0.10
	3.075	3.106	-0.09	2.469	2.554	-0.32	1.53	-0.672	0.758	-1.93*
ICR	2.540	1.260	3.50***	2.690	4.040	-2.60***	-3.28***	-1.810	-1.250	-2.49**
	-1.345	-24.070	2.32**	15.629	11.621	0.45	-3.35***	-11.915	44.081	-3.80***
Z-score	1.752	1.349	2.77***	1.491	2.183	-2.95***	0.98	-0.459	-0.162	1.43
	1.573	1.445	0.41	1.644	2.111	-2.05**	-0.49	-0.487	-0.170	-0.61
D/E	0.688	0.472	2.80***	0.631	0.575	0.72	1.75	-0.104	-0.074	-1.04
	1.371	1.169	0.76	1.079	1.058	0.11	0.32	-0.373	0.343	-1.66*
DebtMkt liquidity	2.962			2.983			-2.26**			
	2.958			2.967			-2.49**			
EquityMkt liquidity	1.362			1.447			0.08			
	1.375			1.402			0.53			
(t = -1yr)										
Cash/Assets	0.020	0.014	1.85*	0.036	0.018	1.83*	-0.45	0.008	0.032	-1.69*
	0.118	0.063	2.41**	0.117	0.076	1.60	0.05	0.001	0.084	-2.55***
Current ratio	1.911	1.821	1.40	1.997	1.817	1.06	-0.20	0.172	0.056	-0.20
	3.105	2.902	0.61	2.902	2.606	0.99	0.56	-0.327	0.812	-2.06**
ICR	1.260	2.410	-3.47***	2.830	3.765	-1.78*	-3.42***	-1.680	-1.895	-1.23
	-18.510	10.587	-2.78***	48.160	29.500	0.70	-2.69***	-23.536	33.982	-3.16***
Z-score	1.358	1.712	-2.72***	1.743	1.880	-1.72*	-1.66*	-0.285	-0.118	-1.80*
	1.491	2.480	-3.44***	1.358	1.892	-2.92***	0.60	-1.469	-0.014	-3.25***
D/E	0.472	0.650	-3.14	0.594	0.621	-0.84	-1.22	-0.089	0.005	-1.44
	1.169	1.500	-1.32	1.012	1.127	-0.70	0.73	0.185	0.010	0.52
DebtMkt liquidity	2.952			2.952			-2.26**			
	2.939			2.947			-2.49**			
EquityMkt liquidity	1.447			1.398			0.03			
	1.421			1.396			0.38			
(t = -2yr)										
Cash/Assets	0.033	0.017	2.08**	0.033	0.017	2.35**	-0.59	0.008	0.012	0.01
	0.125	0.069	2.61***	0.140	0.072	2.98***	-0.61	0.015	0.041	-0.49
Current ratio	1.786	1.832	1.02	1.821	1.908	-0.38	0.30	0.275	0.002	0.78
	3.012	2.539	1.64	3.029	2.608	1.23	-0.04	0.183	0.997	-1.44
ICR	2.050	2.355	-2.29**	2.900	3.240	-1.13	-2.33**	-0.860	-1.490	0.03
	-3.614	30.544	-2.09**	-3.651	4.287	-0.72	0.00	-46.803	-6.516	-1.69*
Z-score	1.433	1.559	-0.98	1.820	1.941	-1.51	-2.48**	-0.077	-0.068	-0.68
	1.352	1.510	-0.70	1.809	1.954	-0.85	-2.41**	-0.487	0.780	-2.28**
D/E	0.457	0.635	-2.85***	0.606	0.591	-0.57	-1.30	-0.089	0.020	-1.50
	0.990	1.232	-1.23	1.149	1.208	-0.29	-0.81	-0.029	0.349	-0.89
DebtMkt liquidity	2.944			2.944			-2.26**			
	2.921			2.927			-2.49**			
EquityMkt liquidity	1.544			1.447			0.03			
	1.435			1.420			0.38			

The results in the final two Columns of Table 2.6 (which adjust for industry-wide factors¹³) show that on average, targets accepting a negative premium offers were in financial distress during the 3 years prior to acquisition; however, the most severe financial distress period is the year prior to acquisition, on an industry-adjusted basis. During that year, the negative premium target exhibited lower levels of liquidity (Cash/Assets, Current Ratio, Interest Coverage Ratio) than positive premium targets, providing *prima facie* evidence in favour of the *asset illiquidity hypothesis*. Additionally, Table 2.6 shows that debt market liquidity is constrained during the 3 years prior to acquisition, so alternative sources of liquidity (at least in the form of debt) are limited for the financially distressed target. If need for liquidity is indeed a determinant of the negative acquisition premium, it follows that the bidder offering a negative premium has the necessary levels of liquidity to assist the financially distressed target.

Table 2.7 displays short- and long-term liquidity statistics of bidders offering negative premium, relative to those of positive acquisition premia. The results indicate very little difference between the short term liquidity of bidders, but long-term liquidity statistics do differ. Negative premium bidders are characterized by lower D/E ratios than positive premium bidders, suggesting that there may be excess debt capacity available to these bidders, which might be used to provide a liquidity injection to the distressed target. In sum, the univariate analysis presented in Tables 2.6 and 2.7 provide initial evidence in support of the *asset illiquidity hypothesis* that negative premium targets are likely to be in financial distress and the bidder is offering a source of liquidity for the distressed target.

¹³ Industry-adjusted measures are calculated by finding the difference between the test sample observation and the matched sample observation. For example, the industry adjusted measures for the negative premium target is calculated as [negative premium target observation - matched rival of negative premium target observation].

Table 2.7: Bidder liquidity

This table contains the results of the analysis of bidder liquidity. The data are as of the year of acquisition announcement. The t-statistic and z-statistic are used to measure statistical significance of the difference in mean and median tests respectively. The symbols ***, ** and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	<u>Cash/Assets</u>	<u>Current ratio</u>	<u>Interest coverage ratio</u>	<u>Z-score</u>	<u>D/E</u>	<u>Gross margin</u>	<u>Operating margin</u>
(1)							
Negative premium bidder							
Median	0.026	1.594	4.147	1.766	0.495	0.431	0.111
Mean	0.125	2.267	46.175	2.025	0.789	0.468	0.081
(2)							
Positive premium bidder							
Median	0.025	1.704	4.954	1.725	0.599	0.372	0.111
Mean	0.081	2.181	20.045	0.358	1.202	0.434	-0.011
(1-2)							
z-statistic	0.492	-0.930	-1.253	1.080	-2.097**	1.206	-0.091
t-statistic	1.676*	0.411	0.998	1.690*	-2.726***	1.248	1.157

2.5.2 Analysis of offer conditions

It has been argued in this essay that the offer conditions that permit a bidder to offer a premium below the market value of the target are significantly different from those that result in positive premia, and preliminary evidence provides support for this conjecture. A multinomial logistic regression analysis is employed to test for differences among targets as it permits an examination of the differences among the test and the two control samples while, at the same time, controlling for the effects of other firm characteristics such as total assets and leverage. The negative premium deals is coded as 1, positive premium deals as 2, and firms not involved in acquisition activity as 3. A multinomial logistic model specifies the probability, P_{ij} , that firm i will belong to group j as a function of the firm's pre-acquisition characteristics, X_i . The multinomial logistic regression model is specified as follows (Equation (4)):

$$PR(Y_{ij} = j) = \frac{\exp(\beta_j X_i)}{1 + \sum_{k=1}^J \exp(\beta_k X_i)} \quad (4)$$

where β_j is a vector of parameters to be estimated. The parameters of the model are estimated using the maximum likelihood method.

In order to directly compare targets accepting negative premia with those accepting positive premia, a series of binary logistic regressions is performed, in addition to the multinomial model. The general binary specification takes the following form:

$$Prob(Form\ of\ Premium=1) = \alpha_1 + \beta_{1i}X_1 + \beta_{2i}X_2 + \varepsilon_i \quad (5)$$

where *Form of Premium* is a binary variable that takes the value of one if the offer involves a negative premium and zero otherwise. The vector X_1 contains target characteristics outlined in Table 2.4. The vector X_2 includes firm, transaction, and industry controls. A number of interactions are included to capture the conditions associated with the hypotheses.

The results of the probability modelling are presented in Panel A (Equation (4)) and Panel B (Equation (5)) of Table 2.8. Regressions 1 and 2 of the multinomial specification provides evidence that relative to both controls samples (positive premium targets and non-targets), negative premium targets are more likely to be in financial distress (*ICR*) and to have a higher ownership concentration (*BlockOwn*). These results lend further support for the *asset illiquidity* and *ownership concentration hypotheses*, and the binary specification Panel B of Table 2.8 provides additional support while controlling for transaction characteristics and industry effects, showing that relative to premium targets, negative premium targets are more likely to be in financial distress (*ICR*). When these firms are in financial distress, a negative premium is more likely when there is lower bidder competition (*NoBidderComp*ICR*) and when there are external borrowing constraints (*Debtmarketliquidity*ICR*). The results also show that negative premium deals are more likely to be initiated by the target firm, which serves to weaken the target's bargaining position in premium negotiation (Aktas, et al., 2010). The coefficient of the profitability variable (*ROA*) is positive and significant, which is seemingly counterintuitive, since the target firms accepting a negative premium are more likely to be in financial distress.

Table 2.8: Logistic analysis of offer conditions

This table contains the results of a multinomial and binary logistic regression that compares the three samples (negative premium target firms, positive premium target firms, and matched non-targets). In Panel A, multinomial model results are presented. In Regression 1 of Panel A, matched non-target firms are used as the benchmark sample to compare with negative premium targets and positive premium targets. In Regression 2 of Panel B, positive premium targets serve as the benchmark. Panel B provides the binary logistic regression results that compare negative and positive premium targets, after adjusting for industry. The symbols ***, **, and * represent significance at 1%, 5%, and 10% respectively.

<i>Panel A: Multinomial regression model (raw data)</i>								
	Regression 1: Base outcome = non-targets				Regression 2: Base outcome = positive premium targets			
	Negative premium targets (relative to non-targets)		Positive premium targets (relative to non-targets)		Negative premium targets (relative to positive premium targets)		Non-targets (relative to positive premium targets)	
	β_i	z-stat	β_i	z-stat	β_i	z-stat	β_i	z-stat
ICR	-0.010	-2.380**	0.000	0.380	-0.010	-2.430**	0.000	-0.380
BlockOwn	0.436	3.960***	-0.003	-0.110	0.439	4.080***	0.003	0.110
Assetintangibility	-0.155	-1.020	0.095	0.640	-0.250	-1.430	-0.095	-0.640
LogTA	0.238	3.070***	0.104	1.400	0.134	1.580	-0.104	-1.400
ROA	0.254	0.550	-0.039	-0.350	0.294	0.690	0.039	0.350
D/E	-0.085	-1.120	0.161	2.900***	-0.246	-3.180***	-0.161	-2.900***
ValuationError	0.067	1.980**	0.240	4.870***	0.308	5.840***	-0.240	-4.870***
Intercept	-10.214	-4.900***	-1.261	-1.790*	-8.953	-4.380***	1.261	1.790*
							Pseudo R ²	18.410%
							Wald χ^2	128.250
							p-value	0.000***
							N	1828
<i>Panel B: Logistic regression model (industry-adjusted data)</i>								
Negative premium targets, Ind.Adj. (1) versus Positive premium targets, Ind.Adj. (0)								
	β_i	z-stat						
ICR	-0.044	-1.750*						
BlockOwn	0.262	7.430***						
Unrelated	-0.631	-1.270						
TargetInitiated	1.953	2.110**						
NoBidderComp	1.505	1.751*						
Assetintangibility	-0.071	-0.110						
Debtmarketliquidity	-3.759	-1.810*						
Equitymarketliquidity	0.213	0.210						
Unrelated*ICR	0.002	0.940						
NoBidderComp*ICR	0.016	2.270**						
Debtmarketliquidity*ICR	-0.018	-1.940*						
Equitymarketliquidity*ICR	-0.006	-1.470						
Assetintangibility*ICR	-0.001	-0.420						
LogTA	-0.466	-2.090**						
ROA	0.326	2.610***						
D/E	-0.013	-0.090						
ValuationError	1.960	3.060***						
LogTA_Bidder	-1.145	-3.350***						
ToeHold	1.005	2.150**					Pseudo R ²	90.050%
TenderOffer	-2.816	-2.970***					Wald χ^2	155.890
CashOffer	-5.812	-3.900***					p-value	0.000***
Intercept	-7.232	-0.600					N	914

Research, however, has shown that some firms in financial distress recover, while others continue to decline and ultimately fail (Flagg, et al., 1991). The negative premium targets are in financial distress but exhibit profitability, which suggests that these firms may be recovering,

while still suffering from issues of short-term illiquidity. The acquiring firm plays the role of a provider of liquidity (as is observed in Table 2.7) and selects particular firms in financial distress that are exhibiting signs of recovery, an argument consistent with the findings of Meier and Servaes (2014) on the selection of distressed targets of acquisition.

2.5.3 Analysis of negative premium

2.5.3.1 *Market reaction*

The *asset illiquidity hypothesis* postulates that a financially-distressed target may accept a negative acquisition premium when the target needs the liquidity that can be supplied by the acquirer. Though target shareholders accept a purchase price less than market value, the announcement of acquisition with a negative premium may be viewed positively by shareholders, as the target lacks alternatives to obtain the liquidity needed and may otherwise face bankruptcy or fire-sale. Providing support for this conjecture, Clark and Ofek's (1994) study of the acquisition of financially-distressed targets reports a mean target cumulative abnormal returns over the acquisition announcement period $[-5,1]$ of 24.6%, significant at 1%. Clark and Ofek (1994) also report that, on average, bidders of illiquid targets are not able to successfully restructure the financially-distressed target, which suggests that the purchase of a distressed target is a highly risky venture, a risk that might account for the observed negative premium in the purchase of the sample publicly-traded targets. Indeed, Clark and Ofek (1994) report announcement returns of bidders of financially distressed assets of -1.4%, though the mean is not statistically significant, similar to those reported by several M&A literature reviews (e.g., Jensen and Ruback (1983) and Andrade, et al. (2001)).

Given Clark and Ofek's (1994) observations, the bidder's announcement period abnormal returns are expected to be insignificant or negative. Alternatively, information embedded in the

announcement of a negative premium bid suggests that the target's current stock price is overvalued and the bidder is offering a price that reflects the intrinsic value of the target and synergies. In this scenario, a negative market reaction may follow a negative premium bid as the market interprets the bid as a signal of target overvaluation. The *ownership concentration hypothesis* proposes an alternative market reaction. Should target share ownership be concentrated and illiquid, blockholders are unlikely to efficiently liquidate shares on the open market. Dispersed shareholders, however, may view negative premium announcement negatively, since the sale of a smaller lot of shares does not require the same levels of liquidity as blockholders. The sale of minority holders' stake upon the announcement of the negative acquisition premium may be sufficient to affect negative abnormal returns around the announcement date, since the sell-off is induced by the announcement of the negative premium bid. The *selection hypothesis* suggests a positive market reaction for the sub-set of stock-financed deals, since the market, along with block shareholders, would view the stock-financed deal as a value-enhancing one. This outcome does not apply to a cash-financed deal, however, since target shareholders in a cash-financed deal have no stake in the combined firm's post-acquisition performance. A short-run analysis of the target returns thus contributes to the exploration of the anatomy of the negative acquisition premium by providing insight into market interpretation of the offer.

To capture the bidder and target's abnormal returns at announcement, an event-study technique is employed to capture the abnormal daily returns, and two approaches are used to measure statistical significance: parametric (*t*-statistic) and non-parametric tests (Corrado rank, Corrado (1989)) of abnormal returns, which are calculated as follows:

$$t - statistic = \frac{CAR_{t1,t2}}{[\sigma_{t1,t2}]/\sqrt{N}} \quad (6)$$

where $CAR_{t1,t2}$ are the cumulative abnormal returns calculated over the window $[t1,t2]$ and $\sigma_{t1,t2}$ is the standard deviation of the observed cumulative abnormal returns, and

$$non - parametric\ test\ statistic = \frac{[\frac{1}{N} \sum_{i=1}^N (Z_{it} - \frac{E_{it}-1}{2})]}{\sigma_Z} \quad (7)$$

where Z_{it} denotes the rank of the excess return ε_{it} in a time series of E_{it} excess returns and σ_Z is the standard deviation of excess returns.

The CAPM (Fama and MacBeth, 1973), Fama and French's 3-Factor model (Fama and French, 1992), and Fama and French's 3-Factor model with Carhart's momentum factor (Carhart, 1997) are used to benchmark expected performance. The estimation period for expected daily returns of sample test firms (negative premium targets) and control firm (positive premium targets) is $[-241, -41]$ days, and the cumulative abnormal returns are calculated for the windows $[-1,1]$, $[-5,5]$, $[-10,10]$, $[-20,20]$, and $[-40,40]$ days. This analysis is also performed on the bidders offering negative acquisition premia, relative to those offering positive acquisition premia.

Table 2.9 displays the analysis of target and bidder announcement returns. Panels A and B display the event study results on negative premium targets and positive premium targets, respectively. The negative premium targets exhibit significantly negative abnormal returns around announcement, across benchmarks employed. This observation is markedly different from the experience of positive premium targets, which exhibit significantly positive abnormal returns, consistent with extant literature (e.g., Andrade, et al. (2001)). The depression in negative premium target market prices suggests a sell-off of target shares upon the announcement of the negative premium, likely by shareholders taking advantage of a market price that exceeds the offer price or responding to a signal of overvaluation. However, the negative cumulative abnormal returns experienced by the negative premium targets are not extreme, with maximum

negative returns averaging around -10% over the [-40,40] window with the CAPM benchmark, which suggests that there is sell-off by target shareholders upon announcement is not severe.

Table 2.9: Event study of announcement returns

This table presents the abnormal returns accruing to target and bidding firms in negative and positive premium deals. Panels A, B, C, and D show the cumulative abnormal returns (CARs) for negative premium targets, positive premium targets, negative premium bidders, and positive premium bidders, respectively. The *t*-statistics are in parentheses, and the symbols ***, ** and * indicate significance at the 1%, 5% and 10% level, respectively.

Panel A: Negative premium targets

	3 Factor + MOM			3 Factor			CAPM		
	<u>CAR</u>	<u>t-stat</u>	<u>Corrado rank</u>	<u>CAR</u>	<u>t-stat</u>	<u>Corrado rank</u>	<u>CAR</u>	<u>t-stat</u>	<u>Corrado rank</u>
[-1, 1]	0.003	0.37	1.46	0.004	1.11	1.48	0.001	0.17	1.27
[-5, 5]	-0.002	-0.18	2.27**	0.000	-0.04	2.52***	-0.010	-1.06	1.74*
[-10, 10]	-0.026	-2.30**	2.10**	-0.019	-1.86*	2.30**	-0.035	-3.43***	1.95*
[-20, 20]	-0.059	-4.20***	4.02***	-0.047	-3.36***	4.18***	-0.080	-6.48***	3.95***
[-40, 40]	-0.057	-3.25***	7.63***	-0.044	-2.23**	7.78***	-0.103	-6.70***	7.83***

Panel B: Positive premium targets

	3 Factor + MOM			3 Factor			CAPM		
	<u>CAR</u>	<u>t-stat</u>	<u>Corrado rank</u>	<u>CAR</u>	<u>t-stat</u>	<u>Corrado rank</u>	<u>CAR</u>	<u>t-stat</u>	<u>Corrado rank</u>
[-1, 1]	0.121	10.91***	8.22***	0.122	10.85***	8.10***	0.121	10.78***	8.19***
[-5, 5]	0.145	11.47***	6.16***	0.146	11.56***	6.10***	0.139	11.16***	6.35***
[-10, 10]	0.146	10.29***	4.54***	0.149	10.67***	4.56***	0.134	9.64***	4.64***
[-20, 20]	0.157	8.76***	3.41***	0.163	9.51***	3.62***	0.136	7.72***	3.96***
[-40, 40]	0.164	7.66***	0.45	0.177	8.93***	0.95	0.121	5.89***	1.42

Panel C: Negative premium bidders

	3 Factor + MOM			3 Factor			CAPM		
	<u>CAR</u>	<u>t-stat</u>	<u>Corrado rank</u>	<u>CAR</u>	<u>t-stat</u>	<u>Corrado rank</u>	<u>CAR</u>	<u>t-stat</u>	<u>Corrado rank</u>
[-1, 1]	0.006	0.95	0.17	0.006	0.96	-0.19	0.005	0.68	-0.14
[-5, 5]	0.012	1.32	0.84	0.013	1.64	1.02	0.005	0.64	0.64
[-10, 10]	0.008	0.64	0.91	0.016	1.41	1.28	0.003	0.30	0.83
[-20, 20]	-0.012	-0.75	-0.40	0.004	0.30	0.13	-0.021	-1.55	-0.42
[-40, 40]	-0.036	-1.64	2.71***	-0.008	-0.40	3.20***	-0.047	-2.69***	2.69***

Panel D: Positive premium bidders

	3 Factor + MOM			3 Factor			CAPM		
	<u>CAR</u>	<u>t-stat</u>	<u>Corrado rank</u>	<u>CAR</u>	<u>t-stat</u>	<u>Corrado rank</u>	<u>CAR</u>	<u>t-stat</u>	<u>Corrado rank</u>
[-1, 1]	-0.008	-1.59	-1.73*	-0.005	-1.14	-1.34	-0.004	-0.94	-1.33
[-5, 5]	-0.004	-0.54	-1.92*	0.000	0.02	-2.12**	0.005	0.82	-1.25
[-10, 10]	-0.011	-0.98	-2.99***	-0.003	-0.28	-3.03***	0.005	0.55	-2.25**
[-20, 20]	-0.033	-2.26**	-4.50***	-0.018	-1.50	-4.61***	-0.005	-0.41	-3.85***
[-40, 40]	-0.023	-0.86	-6.34***	-0.009	-0.39	-6.86***	0.010	0.52	-6.11***

Panels C and D of Table 2.9 show the abnormal returns for bidding firms offering negative and positive premium bids, respectively. Negative premium bidders, in Panel D, exhibit statistically significant negative abnormal returns only in the longest window of observation,

[-40,40], while no abnormal returns are found in other windows. Positive premium bidders, however, exhibit negative abnormal returns around all windows of observation, a finding consistent with previous research (e.g., Andrade, et al. (2001)). Therefore, the evidence suggests that the market perceives positive and negative premium bids (from the perspective of the bidding firm) differently, viewing the prospect of a negative premium bid less negatively than positive premium bids, which follows the inverse relationship between premia and short-term performance (Varaiya and Ferris, 1987; Sirower, 1997).

The evidence presented in Table 2.9 shows that returns of negative premium targets are negative around the time of bid announcement. In the more common acquisition type, positive premium transactions, the market interprets the bid price as an indication of the true value of the target, and market participants respond accordingly, buying shares, resulting in an upward movement of the target's stock price. The price path of the target firm's stock following the announcement of a bid is indicative of the probability of merger completion (Asquith, 1983). If the outcome of the transaction is certain, the market efficiently prices the information and the price of the target nears the bid price.¹⁴ In the case of a transaction involving a negative acquisition premium certain to complete, the price would decline and approach the negative premium bid, as market participants interpret the negative premium bid as a signal of target overvaluation. While a decline in stock price of negative premium targets has been observed in Table 2.9, Table 2.10 presents the daily price path as a function of the bid price. The daily market-to-bid price spread in market price and offer price is measured as the difference between the daily market price and offer price (calculated 4 weeks prior to announcement so as to avoid

¹⁴ While the price of the target in a 'certain' deal may approach the bid price, there are factors that prevent the target stock price from responding to the bid, resulting in the market price converging with the bid price. Compensation for time value of money until deal completion, liquidity premia, or uncertainty of deal completion, for instance, may constrain perfect price convergence.

Table 2.10: Daily market price relative to offer price

This table presents the daily price path for negative premium (NP) and positive premium (PP) targets around the time of announcement (from $t=-10$ to $t=+10$). The daily price spread is calculated as the difference between the daily market price and offer price, standardized by the offer price.

the effect of price run-up), standardized by the offer price, and this calculation is performed for both negative and positive premium targets.

The price path of positive premium targets follow expectations, with prices rising significantly at the time of acquisition announcements, with the market-to-bid price spread at $t=-10$ of -17.6% very quickly being eliminated as market prices respond to the bid price and approach offer price, resulting in an average spread of approximately -3% between market and offer price at $day=10$. For negative premium targets, the price path in Table 2.10 is less dramatic¹⁵, but it follows expectations as the price spread prior to the bid announcement ($day = -10$, 7.54%) narrows shortly following bid announcement ($day=10$, 2.36%), as market participants respond to the signal of market overvaluation of target shares. Given the choice between a sale to the market or sale to the bidder (ten days following bid announcement), the sale to market is more attractive by a margin of approximately 2%.

2.5.3.2 Cross-sectional analysis of negative acquisition premium

The hypotheses presented in this essay contend that pre-bid conditions induce target shareholders to accept a negative premium. OLS is utilized to estimate the pre-bid conditions that impact premia, and the model is represented in Equation (8):

$$Bid\ Premium = \alpha_i + \beta_{2i}X_1 + \beta_{3i}X_2 + \varepsilon_2 \quad (8)$$

where *Bid Premium* is the acquisition premium, and four measures of acquisition premium are used: 4 weeks prior to announcement (Regression 1), 1 week prior to announcement (Regression 2), 1 day prior to announcement (Regression 3), and $CAR[-126, \min(253, delist)]$ (Regression 4).

¹⁵ The daily price path of the negative premium target's stock at the time of bid announcement suggests that the market responds different to a negative premium bid than the typical bid involving a positive premium, as the movement in the 3 days around announcement ($day = -1, 0, +1$) is larger in magnitude for positive premium targets. Negative premium bids account for 3.7% of total deals during the observed period, so it is an uncommon occurrence. The smaller magnitude in the negative premium target price response may be explained by the uncertainty of market participants as to the interpretation of the negative premium bid.

The vector X_1 contains pre-bid conditions outlined in Table 2.4 and the vector X_2 contains firm and industry control variables. The model is run independently on the sample of negative acquisition premium targets ('NP') and the sample of positive premium targets ('PP'), and the coefficients of the separate regressions are compared using the z -statistic. For this OLS regression, the White heteroscedasticity adjusted error is used to calculate test statistics.

The results of the cross-sectional analysis are presented in Table 2.11. In Regressions 1 and 2, the coefficient of the variable ICR is positive and significant in the negative acquisition premium regressions, but negative, though not significant, in the positive premium regressions. This results provides additional support for the *asset illiquidity hypothesis*, that target financial distress is associated with lower acquisition premia in negative premium deals. In the interaction of the financial distress variable (ICR) with the secondary conditions of the *asset illiquidity hypothesis* (debt market liquidity, equity market liquidity, degree of relatedness and asset intangibility), the difference between the negative premium and positive premium target widens. The $ICR*BidderComp$ coefficient for the negative premium regressions is consistently positive and significant in Regressions 2, 3, and 4, whereas the coefficients are negative and significant in all positive premium regressions. The negative premium targets in financial distress with low bidder competition are associated with lower premium, but in the case of targets achieving positive acquisition premia, the financial health is negatively associated with bid premia, and this relationship is becomes statistically significant in all regressions in the presence of bidder competition.

In Regressions 1, 3, and 4, the secondary condition of debt market liquidity (*Debtmarketliquidity*) is positive and significant in the negative premium regressions, which suggests that when debt markets are illiquid, the negative premium is lower, a result consistent

with Officer (2007). The coefficient of *ICR*Debtmarketliquidity* is not significant in any regression for the positive premium targets. Table 2.11 also shows that the liquidity of equity markets (*Equitymarketliquidity*) does not impact the premium obtained by either sample. The interaction of *ICR*Related* identifies another clear distinction between the negative and positive premium targets. In the negative premium Regressions 1 and 2, the coefficient is positive and significant, which provides support for Shleifer and Vishny's (1992) hypothesis that a buyer not familiar with the assets in financial distress will place a greater discount on those assets. The opposite result is observed for the sample of positive premium targets, where the coefficient of *ICR*Related* is negative but only statistically significant in Regression 4. Similar results are observed for the *ICR*Assetintangibility* coefficients. The valuation error (*VE*) coefficient is negative across all regressions, both negative and positive samples, but it is not statistically significant.

The coefficients of variable *BlockOwn*, which captures the degree of ownership concentration among shareholders, is negative and significant in all four negative premium regressions and positive and significant in all four positive premium regressions, which reveals a marked difference in the role of the blockholder in negative premium deals versus positive premium deals. In negative premium deals, the higher the ownership concentration, the lower the premium obtained, which supports contention that a concentrated ownership structure is associated with negative premium, and this result suggests that concentrated ownership, in fact, amplifies the magnitude of negative acquisition premium. The case of the positive premium indicates that blockholders act to secure higher premium, since a target firm with high shareholder control would ensure managers negotiate in their interests and extract higher

Table 2.11: Cross-sectional analysis of bid premia

This table contains the results OLS cross-sectional regressions on the four measures of bid premium. The regressions are run separately for the negative premium (NP) and positive premium (PP) samples. The Column $\beta_{i,NP}-\beta_{i,PP}$ provides the z -statistics for a test of difference in the coefficients in the negative premium (NP) and positive premium (PP) regressions. The variable ICR is the interest coverage ratio, BlockOwn is the percentage of shareholders who hold 5% or more of a firm's shares, TargetInitiated is a dummy variable that takes on a value of 1 if the acquisition was initiated by the target firm and 0 otherwise, Debtmarketliquidity is the log(commercial and industrial loans > \$1m), Equitymarketliquidity is the IPO volume, Related is a dummy variable that takes on a value of 1 when target and bidder are related and 0 otherwise, BidderComp is a dummy variable that takes on a value of 1 when there is more than one bidder and 0 otherwise, AssetIntangibility is a dummy variable that takes on a value of 1 when target operates in a high technology industry and 0 otherwise, Related is a dummy variable that takes on a value of 1 if the bidder and target share the same SIC code and 0 otherwise, VE is the valuation error according to Ohlson's model. Control variables in the regression include firm (TA, ROA), transaction (ToeHold, TenderOffer, CashOffer), industry (6021Dummy, 7379Dummy, 1311Dummy), and time trend (T1Dummy, T2Dummy, T3Dummy, and T4Dummy) variables. The t -statistic and z -statistic are used to measure statistical significance, and the symbols ***, ** and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	Regression 1: Premium, 4 Weeks Prior to Announcement					Regression 2: Premium, 1 Week Prior to Announcement				
	NP transactions		PP Transactions		$\beta_{i,NP}-\beta_{i,PP}$	NP transactions		PP Transactions		$\beta_{i,NP}-\beta_{i,PP}$
	β_i	t -stat	β_i	t -stat		β_i	t -stat	β_i	t -stat	
ICR	0.0200	2.09**	-0.0042	-0.87	2.91***	0.0326	2.25**	-0.0066	-1.53	5.13***
BidderComp	0.0002	1.61	0.0041	2.61***	-2.48**	0.0002	2.63***	0.0031	1.80*	-1.65*
Debtmarketliquidity	0.1733	0.56	0.0665	1.08	0.24	0.2272	0.60	0.0476	1.60	0.37
Equitymarketliquidity	-0.0270	-0.48	-0.0137	-0.16	-0.13	-0.0760	-1.04	-0.0273	-0.32	-0.43
Related	0.0465	2.20**	0.0002	0.01	1.13	0.0223	0.80	-0.0035	-0.11	0.60
Assetintangibility	-0.0287	-0.92	0.0401	0.70	-1.06	-0.1006	-2.29**	0.0281	0.54	-1.88*
ICR*BidderComp	0.0005	0.49	-0.0028	-4.18***	2.86***	0.0020	3.06***	-0.0029	-2.42**	6.13***
ICR*Debtmarketliquidity	0.0018	2.28**	-0.0004	-0.30	0.39	0.0039	1.52	-0.0010	-0.85	1.00
ICR*Equitymarketliquidity	-0.0005	-0.19	-0.0003	-0.39	-0.43	0.0002	0.47	-0.0006	-0.98	1.09
ICR*Related	0.0002	1.55	-0.0010	-1.19	1.94*	0.0004	2.03**	-0.0010	-1.26	2.36**
ICR*Assetintangibility	-0.0001	-0.65	0.0001	0.46	-0.69	-0.0001	-0.84	0.0002	1.05	-1.34
VE	-0.0073	-0.93	-0.0263	-0.94	0.65	-0.0065	-0.72	-0.0203	-0.88	0.55
BlockOwn	-0.0111	-2.13**	0.0046	1.89*	-2.99***	-0.0067	-1.67*	0.0031	0.59	-1.83*
TargetInitiated	-0.07456	-1.60	-0.0413	-1.17	1.23	-0.0862	-0.99	-0.0588	-1.28	1.07
LogTA	-0.0029	-0.44	0.0103	0.76	-0.87	-0.0038	-0.43	-0.0008	-0.06	-0.20
ROA	0.0031	0.58	0.0086	4.22***	-0.96	0.0067	1.16	0.0070	3.26***	-0.06
logTA_Bidder	0.0331	2.12**	-0.0262	-0.63	1.34	0.0120	0.63	-0.0043	-0.11	0.38
ToeHold	-0.0529	-1.64	0.0969	1.26	-1.80*	-0.0327	-0.81	0.1039	1.52	-1.72*
TenderOffer	0.1165	2.25**	0.0965	1.59	0.25	0.0198	0.30	0.0628	1.43	-0.54
Cash	-0.0360	-0.45	0.0308	0.70	-0.73	0.0057	0.06	0.0419	1.08	-0.36
6021Dummy	-0.1429	-1.01	-0.2112	-1.79	0.37	-0.1621	-0.85	-0.1201	-0.75	-0.17
7379Dummy	0.0319	0.76	-0.1606	-3.02***	2.85***	0.0218	0.45	-0.1243	-2.99***	2.29**
1311Dummy	-0.0479	-0.80	-0.0726	-0.93	0.25	-0.0415	-0.55	-0.1274	-1.90*	0.85
T1Dummy	-0.0949	-0.92	0.1039	0.90	-1.28	0.0872	0.70	0.0937	0.86	-0.04
T2Dummy	-0.0403	-0.55	0.1732	1.92*	-1.83*	0.1215	1.40	0.1502	1.88*	-0.24
T3Dummy	-0.0359	-0.57	0.0626	0.92	-1.06	0.0983	1.30	0.0586	0.91	0.40
T4Dummy	-0.0212	-0.33	-0.0633	-1.06	0.48	0.0609	0.83	-0.0033	-0.06	0.69
Intercept	0.2192	0.22	-1.6860	-1.61	1.31	-0.8433	-0.68	-1.2431	-1.26	0.25
R ²	0.1596		0.0919			0.1669		0.0792		
F-statistic	122.640		45.256			105.565		32.685		
p-value	0.000***		0.000***			0.000***		0.000***		
N	457		457			457		457		

Table 2.11 (continued): Cross-sectional analysis of bid premia

	Regression 3: Premium, 1 Day Prior to Announcement					Regression 4: Premium, CAR(-126, min(253, delist))				
	NP transactions		PP Transactions		$\beta_{i,NP}-\beta_{i,PP}$	NP transactions		PP Transactions		$\beta_{i,NP}-\beta_{i,PP}$
	β_i	<i>t-stat</i>	β_i	<i>t-stat</i>		β_i	<i>t-stat</i>	β_i	<i>t-stat</i>	
ICR	0.0112	1.92*	-0.0039	-0.98	1.43	0.0171	1.79*	-0.0067	-0.53	2.67***
BidderComp	0.0002	2.50***	0.0017	1.87*	-0.75	0.0005	3.32***	0.0011	2.43**	-0.23
Debtmarketliquidity	0.4025	1.01	0.3777	1.35	0.05	0.4984	0.65	0.0906	1.12	0.33
Equitymarketliquidity	-0.0995	-1.31	-0.0453	-0.58	-0.50	0.1527	1.08	0.1786	0.76	-0.09
Related	0.0163	0.56	-0.0064	-0.22	0.55	0.0661	1.11	-0.1146	-1.28	1.68*
Assetintangibility	-0.0740	-1.65*	0.0317	0.69	-1.66*	-0.0757	-1.14	-0.1042	-0.77	0.19
ICR*BidderComp	0.0027	2.32**	-0.0022	-3.08***	4.02***	0.0179	9.76***	-0.0023	-2.61***	9.93***
ICR*Debtmarketliquidity	0.0024	1.75*	-0.0005	-0.41	1.48	0.0024	1.99**	0.0024	0.66	0.01
ICR*Equitymarketliquidity	0.0011	1.26	-0.0003	-0.57	1.36	0.0026	1.09	0.0016	1.03	2.04**
ICR*Related	0.0006	2.23**	-0.0042	-0.65	2.32**	0.0007	1.02	-0.0007	-1.83*	1.60
ICR*Assetintangibility	0.0003	1.04	0.0001	0.83	0.52	-0.0092	-2.06**	0.0009	0.02	-1.45
VE	-0.0044	-0.53	-0.0162	-0.79	0.54	-0.0341	-0.68	-0.0226	-0.44	-0.16
BlockOwn	-0.0177	-2.33**	0.0032	1.74*	-9.19***	-0.0508	-2.32**	0.0082	1.72*	-9.26***
TargetInitiated	-0.05851	-1.04	-0.0334	-0.76	1.53	-0.1091	-1.27	-0.0701	-1.06	0.96
LogTA	-0.0001	-0.01	0.0001	0.01	-0.01	-0.0540	-2.28**	-0.0168	-0.48	-0.88
ROA	0.0047	0.75	0.0053	3.06***	-0.09	-0.0035	-0.32	0.0045	0.92	-0.67
logTA_Bidder	0.0104	0.50	-0.0032	-0.09	0.32	0.0941	2.24**	-0.1296	-1.66*	2.52***
ToeHold	-0.0172	-0.40	0.0775	1.16	-1.19	0.0348	0.46	-0.1181	-0.75	0.87
TenderOffer	0.0647	0.95	0.0601	1.40	0.06	0.3610	2.92***	0.1533	1.56	1.32
Cash	0.0589	0.52	0.0625	1.71*	-0.03	0.3181	1.62	-0.0344	-0.32	1.57
6021Dummy	-0.0918	-0.69	-0.0330	-0.16	-0.24	-0.2035	-0.47	0.2105	1.13	-0.88
7379Dummy	0.1319	1.80	-0.1065	-2.60***	2.84***	0.0188	0.17	0.3932	2.91***	-2.15**
1311Dummy	-0.0171	-0.23	-0.1230	-1.97**	1.09	0.1332	1.36	0.1615	0.86	-0.13
T1Dummy	0.1864	1.42	0.0758	0.78	0.68	-0.1184	-0.45	0.3467	1.01	-1.08
T2Dummy	0.2077	2.31**	0.1473	2.09**	0.53	-0.2970	-1.52	0.1044	0.41	-1.26
T3Dummy	0.1649	2.12**	0.0581	1.02	1.11	-0.1893	-1.25	-0.0864	-0.45	-0.42
T4Dummy	0.1480	1.94*	0.0101	0.19	1.49	-0.5495	-3.60***	0.0209	0.16	-2.86***
Intercept	-1.3610	-1.04	-0.8939	-0.99	-0.29	-2.0220	-0.83	-2.7286	-0.90	0.18
R ²	0.0949		0.0815			0.1187		0.0515		
F-statistic	75.565		13.5340			80.654		24.073		
p-value	0.000***		0.015**			0.000***		0.000***		
N	457		457			457		457		

premium. This result is consistent with Moeller (2005) who reports a positive association between target share ownership structure and bid premia.

Overall, the evidence from the cross-sectional analysis presented in Table 2.11 lends strong support for the *asset illiquidity* and *ownership concentration hypotheses*. Moreover, the results provide a clear indication that the determinants of the negative acquisition premium are clearly different than those associated with a positive premium.

2.5.4 Ownership concentration and target share liquidity

The evidence presented thus far suggests that the conditions that permit a bidder to offer a negative acquisition premium include target financial distress and target overvaluation. However,

the analyses presented here have yet to speak to the conditions under which target shareholders would *accept* a negative premium offer. Drawing on the blockholder literature, the *ownership concentration hypothesis* contends that liquidity constraints of large ownership positions limit the ability of targets shareholders (particularly blockholders) to complete a market sale, and consequently, blockholders of such targets prefer a sale to the bidder over a sale to the market. The price path documented in Table 2.10 suggests that upon announcement, the market price of the target declines and approaches the negative premium bid price, so in ten days following announcement, there is little difference between the market price and offer price, with a market-to-bid price spread of 2.36%. Faced with liquidity constraints associated with its large ownership stake, it is therefore, even more likely that the blockholder will prefer the negative premium bid over selling to market.

Levels of block ownership documented in Table 2.2 provide clear evidence that negative premium targets, on average, have higher ownership concentration (average of 30% held by blockholders) relative to both matched positive premium targets (12%) and matched industry rivals (17%). In order to put the *ownership concentration hypothesis* to test, two lines of inquiry are proposed: what are the liquidity conditions facing target shareholders at the time of the announcement and is abnormal liquidity at announcement date associated with ownership concentration?

To investigate the liquidity conditions at acquisition announcement, an event study on liquidity is employed, and Chae's (2005) study of the impact of anticipated and unanticipated events on liquidity informs this analysis. Liquidity is measured by the *LogTurnover* and abnormal liquidity is measured by the difference between *LogTurnover* (Equation 9) during the

Table 2.12: Abnormal liquidity at announcement

This table contains the results of abnormal liquidity, using daily abnormal share turnover around the time of announcement (from $t=-10$ to $t=+10$). Column (1) and (2) provides the results for negative premium and positive premium targets, respectively. Column (1-2) provides the results of difference test between negative and positive premium. The table also provides the average share turnover over the periods $[-10,-1]$, $[0,10]$, $[-5,5]$, and $[-1,1]$. The t-statistic and z-statistic are used to measure statistical significance of the abnormal liquidity statistics, and the t-statistic and z-statistic are used to measure statistical significance of the difference in mean and median tests respectively. The symbols ***, ** and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	(1)		(2)		(1-2)	
	<u>Negative premium</u>		<u>Positive premium</u>		<u>Difference in average abnormal turnover</u>	
<u>Day</u>	<u>targets</u>	<u>t-statistic</u>	<u>targets</u>	<u>t-statistic</u>	<u>turnover</u>	<u>t-statistic</u>
-10	0.052	0.68	0.077	2.92***	-2.871	-0.59
-9	0.111	1.44	0.081	3.24***	-3.126	0.71
-8	0.065	0.82	0.063	2.49**	-2.424	0.04
-7	0.071	0.90	0.087	3.49***	-3.418	-0.38
-6	0.075	0.98	0.108	4.22***	-4.148	-0.79
-5	0.080	1.06	0.058	2.15**	-2.074	0.51
-4	0.111	1.49	0.078	2.98***	-2.873	0.78
-3	0.064	0.81	0.080	3.01***	-2.947	-0.37
-2	0.103	1.43	0.141	5.87***	-5.764	-1.95*
-1	0.183	2.40**	0.206	7.88***	-7.694	-3.55***
0	0.824	8.41***	1.041	28.11***	-27.283	-3.92***
1	0.764	8.94***	0.973	30.45***	-29.691	-4.33***
2	0.540	6.42***	0.695	24.20***	-23.662	-3.37***
3	0.422	4.98***	0.540	19.02***	-18.602	-2.57***
4	0.322	3.88***	0.538	19.71***	-19.388	-4.81***
5	0.279	3.27***	0.493	18.33***	-18.050	-4.73***
6	0.318	4.25***	0.413	16.24***	-15.923	-2.34**
7	0.238	3.04***	0.393	15.54***	-15.300	-3.68***
8	0.231	3.03***	0.387	14.16***	-13.934	-3.60***
9	0.172	2.17**	0.343	12.71***	-12.537	-3.92***
10	0.189	2.47**	0.322	12.75***	-12.558	-3.19***
<u>Average</u>						
$[-10,-1]$	0.091	1.201	0.098	3.825***	-3.734	-0.560
$[0,10]$	0.391	4.624***	0.558	19.202***	-18.812	-3.678***
$[-10,10]$	0.248	2.994***	0.339	11.880***	-11.632	-2.193**
$[-5,5]$	0.336	3.917***	0.440	14.702***	-14.366	-2.574***
$[-1,1]$	0.590	6.586***	0.740	22.146***	-21.556	-3.930***
N	457		457			

Column (1) of Table 2.12 displays the daily abnormal liquidity as well as the average abnormal liquidity estimated over several windows. There is evidence of positive abnormal liquidity among negative premium targets from the day prior to announcement until the end of the test window, 10 days following announcement. Similarly, positive premium targets exhibit positive abnormal liquidity across the entire test period $[-10,10]$, with markedly higher levels of abnormal turnover than that observed among negative premium targets. When directly compared (see Column (1-2) in Table 2.12), the abnormal liquidity of positive premium targets is indeed significantly higher than that of negative premium targets. This result suggests that after

Table 2.13: Cross-sectional analysis of average abnormal turnover

This table contains the results OLS regressions on abnormal liquidity. The variable of interest is BlockOwn X NPDummy. The variable NPDummy takes on a value of 1 if the deal involved a negative acquisition premium and 0 otherwise, and BlockOwn is the percentage of shareholders who hold 5% or more of a firm's shares. Control variables in the regression include firm (TA, ROA), transaction (ToeHold, TenderOffer, CashOffer), industry (6021Dummy, 7379Dummy, 1311Dummy, 7372Dummy, and 3634Dummy), and time trend (T1Dummy, T2Dummy, T3Dummy, and T4Dummy) variables. The *t*-statistic and *z*-statistic are used to measure statistical significance, and the symbols ***, ** and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	<u>Regression 1:</u> <u>AAT (-10,10)</u>		<u>Regression 2:</u> <u>AAT (-5,5)</u>		<u>Regression 3:</u> <u>AAT (-1,1)</u>	
	β_i	<u>t-statistic</u>	β_i	<u>t-statistic</u>	β_i	<u>t-statistic</u>
BlockOwn*NPDummy	-0.059	-9.623***	-0.021	-4.328***	-0.007	-3.362***
ROA	-0.021	-1.055	-0.012	-0.779	-0.005	-0.631
D/E	0.019	1.696*	0.008	1.006	0.007	1.765*
LogTA	0.042	1.706*	0.034	1.617	0.015	1.627
logTA_Bidder	0.096	0.710	0.083	0.670	0.016	0.296
ToeHold	-0.033	-0.128	-0.160	-0.730	-0.197	-1.854
TenderOffer	0.762	1.706*	0.529	1.538	0.276	1.666*
Cash	0.132	0.463	0.249	1.075	0.130	1.183
Dummy6021	-0.039	-0.118	-0.303	-1.006	-0.040	-0.237
Dummy7379	1.286	1.075	0.953	0.592	0.479	0.749
Dummy1311	0.132	0.148	-0.275	-0.493	-0.041	-0.168
Dummy7372	-0.385	-0.779	-0.727	-1.607	-0.100	-0.463
Dummy3634	10.906	2.455**	5.414	5.186***	0.174	1.094
T1Dummy	-0.287	-0.532	-0.375	-0.956	-0.143	-0.897
T2Dummy	-0.443	-0.966	-0.116	-0.335	-0.031	-0.227
T3Dummy	-0.447	-0.947	-0.149	-0.414	-0.019	-0.128
T4Dummy	-0.068	-0.138	-0.088	-0.237	0.001	0.010
Intercept	6.182	7.474***	4.197	5.393***	2.237	6.251***
R ²	13.7%		13.6%		12.5%	
F-statistic	145.542		35.486		25.991	
p-value	0.000***		0.000***		0.000***	
N	914		914		914	

controlling for liquidity effects of acquisition announcements in general, negative premium target shareholders face relatively adverse liquidity conditions, with lower levels of share liquidity commencing at approximately one day prior to announcement.

A final link in the test of the *ownership concentration hypothesis* is to investigate whether abnormal liquidity at announcement is associated with the ownership structure of the target firm. Given that negative premium targets are characterized by higher levels of block ownership, it is necessary to investigate whether the concentrated ownership indeed acts to restrict share liquidity. To examine this proposition, an OLS regression of ownership concentration on average

abnormal liquidity (over several windows of observation) is run, in the form of Equation (11) and the results of the analysis are presented in Table 2.13.

$$\text{Avg. Ab. Turnover} = f(\text{BlockOwn} * \text{NPDummy}, \text{Firm Controls}, \text{Industry Controls}, \text{Transaction Controls}) \quad (11)$$

The evidence is compelling: across three different windows of observation, block ownership is negatively associated with abnormal liquidity among negative premium targets (*BlockOwn*NPDummy*), with all coefficients significant at less than 1%. Therefore, should a negative premium target be characterized by high ownership concentration, it will likely also face substantial declines in liquidity at announcement of the negative premium bid.

The tests of the *ownership concentration hypothesis* provide strong evidence in support of the argument that high levels of block ownership reduce share liquidity at announcement of a negative premium bid. Evidence presented in this essay also shows that the daily market-to-bid price spread prior to the bid announcement (day=-10, spread=7.54%) narrows shortly following bid announcement (by day=+10, spread=2.36%), so a sale of target shares by target shareholders in the public market is more attractive than the negative premium price by a margin of approximately 2%. The negative premium bid therefore initiates a sell-off of target shares that then results in a decline in stock price towards the bid price. The target firm blockholders may still prefer to sell to market, but if they do so in a setting of restricted liquidity, the sale will be done in a piecemeal fashion instead of selling the entire block in one transaction. With each subsequent sale depressing the price even further, it is likely that the average price secured in a market sale of a block will be lower than the price associated with the negative premium bid. Together these results provide evidence of a setting in which block shareholders may favor the negative premium bid over selling piecemeal to the market. While financial distress may result in

a negative premium offer, it is the decline in stock price prompted by the negative premium bid, target ownership concentration, and target share liquidity constraints that compel target shareholders to accept the negative premium.

2.5.5 Post-acquisition performance of negative premium targets

To evaluate the success of target restructuring, the post-acquisition operating performance of target firms is tracked over five years following acquisition, relative to: (i) pre-acquisition performance, (ii) matched targets of positive premium targets and (iii) matched rivals of non-acquisition targets. The sample size of the negative and positive premium target subsamples declines following acquisition because only a sub-set of the targets continue to report independently following acquisition ($N^*_{NP} = 73$ and $N^*_{PP} = 120$). Difference testing on a number of firm characteristics (total assets, number of employees, D/E, and ROA) demonstrates that the sub-samples of negative and positive premium targets that continue to report independently are not significantly different from the full sample, and thus, the sub-sample of targets that report financials independently following acquisition is considered to be representative of the full sample. The subsample of negative and positive premium targets' operating performance is evaluated along three dimensions that capture operating performance: profitability (ROA and operating margin), productivity (Revenue/Employee), and efficiency (COGS/Employee).

The results of the univariate analysis are reported in Table 2.14. Columns (1) and (2) of this table show that relative to pre-acquisition performance, both profitability and productivity of negative premium targets improves though costs per employee increases substantially. When post-acquisition performance of targets of negative premium is compared with that of its rivals (in Column (2-6)), negative premium targets seem to underperform on profitability and efficiency measures but outperform rivals on productivity. However relative to positive premium

targets (in Column (2-4)), negative premium targets outperform along measures of profitability and productivity and show no statistically significant difference in efficiency, a result consistent with findings that premium size is inversely related to long-run performance of the combined firm (Hayward and Hambrick, 1997; Sirower, 1997).

The final Column ((2-6)-(4-8)) provides a comparison of target samples after adjusting for industry, and the results provide strong evidence that even after controlling for industry, negative premium targets outperform positive premium targets on measures of profitability and productivity though there is no significant difference in efficiency. Thus, the univariate results suggest that negative premium bidders are, in fact, able to restructure targets and extract value, relative to positive premium bidder/target combinations, a result consistent with previous work on distressed firms by Bruton, et al. (1994) and Hotchkiss and Mooradian (1997)) but inconsistent with evidence presented by Clark and Ofek (1994). A financially distressed target presents an opportunity for bidders to realize value that is not necessarily available in the acquisition of non-distressed targets. Financial distress may be a result of inferior market share or inadequate economies of scope, which may be achieved through a horizontal acquisition (Chatterjee, 1986; Hitt et al., 1993; Bruton et al., 1994). It may not be a lack of resource combination but instead that the management of the distressed firm is not employing assets efficiently. In this case, the financially distressed firm may require a change in management to improve asset allocation and an acquisition facilitates such a change (Bibeault, 1982; Bruton, et al, 1994; Hotchkiss and Mooradian, 1997). Thus, the potential value derived from restructuring of financially-distressed target firms, as observed in negative premium target firms in this essay,

Table 2.14: Univariate analysis of post-acquisition performance

This table contains the results of the univariate analysis of the post-acquisition performance of negative premium (NP) and positive premium (PP) targets, along with performance of matched rivals over the 5 years following acquisition. financial health of sample firms (negative premium targets (NP) and positive premium targets (PP) targets) and matched samples of rivals of negative premium targets (NP rivals). The t-statistic and z-statistic are used to measure statistical significance of the difference in mean and median tests respectively. The symbols ***, ** and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

	Sample of negative premium targets (NP)			Sample of positive premium targets (PP)			Matched sample of rivals (NPRivals)			NP post-acquisition performance, relative to rivals	NP post-acquisition performance, relative to PP	NP performance, relative to PP (industry-adjusted)
	(1)	(2)	(2-1)	(3)	(4)	(4-3)	(5)	(6)	(6-5)	(2-6)	(2-4)	
	Pre	Post	Post-Pre	Pre	Post	Post-Pre	Pre	Post	Post-Pre	z-stat	z-stat	z-stat
	median	median	z-stat	median	median	z-stat	median	median	z-stat	t-stat	t-stat	t-stat
ROA	0.005	0.010	-19.13***	0.009	0.004	-17.27***	0.015	0.011	-5.26***	-3.35***	17.89***	8.99***
	-0.050	-0.137	-9.35***	-0.051	-0.216	-6.22***	-0.091	-2.341	-1.62	1.59	3.03***	1.67*
OpMarg	1.472	1.577	19.56***	1.460	1.314	-17.47***	0.032	0.023	-1.31	27.21***	25.06***	23.57***
	1.924	2.661	3.42***	1.226	0.479	-3.11***	-0.839	-5.896	-1.63	2.77***	12.66***	2.60***
Rev/Emp	170.986	176.732	17.97***	174.721	196.734	15.63***	169.982	172.161	0.85	0.74	-0.31	6.42***
	342.867	394.956	2.01**	346.381	350.661	0.17	297.397	386.929	2.59***	0.27	2.82***	1.92*
COGS/Emp	85.080	106.887	20.84***	85.064	97.892	18.52***	84.299	106.769	6.57***	19.57***	0.77	4.32***
	204.748	259.295	2.76***	239.042	289.925	1.77*	172.619	202.911	1.43	3.51***	-1.56	0.64
N*	454	73		454	120		457	457				

* N reduces significantly as many targets cease to report independently from acquirer following acquisition.

is likely associated with the materialization of the benefits of expanding market power, reducing costs, or improving the management of the distressed assets.

The *selection hypothesis* proposed in this essay argues that blockholders in stock financed deals may be willing to accept a negative premium if the deal will be value-enhancing for target shareholders in the long-run. Given that this hypothesis applies to only stock-financed deals, it is considered a sub-sample analysis. A cross-sectional analysis of industry-adjusted, post-operating performance (Panel A of Table 2.15) directly tests the *selection hypothesis*. The first variable of interest is the interaction term, *StockDummy*BlockOwn*NPDummy*, and it captures the association between post-acquisition performance and ownership concentration in negative premium, stock financed deals. The second variable of interest, *BidPremium*StockDummy*BlockOwn*NPDummy*, is the same as the first but conditioned on the size of the negative acquisition premium, since the smaller the negative bid premium, the more likely a blockholder is to forgo a market sale in order to participate in the combination.

The results presented in Panel A of Table 2.15 show that acquisition premia (*BidPremium*) are negatively associated with long-run operating performance measures, a result that adds further support to the inverse relationship between acquisition premia and long-run performance. Also in line with extant literature, the post-acquisition profitability and efficiency of targets increases in the level of block ownership (*BlockOwn*). While the *NPDummy* is only statistically associated with operating improvements following acquisition, but rather, it is those target firms with high block ownership being offered a smaller discount on market prices that are significant in the productivity regression (revenue per employee), it is the interaction terms involving *NPDummy* that reveal the characteristics of the negative premium deals that are associated with the operating improvements observed in Table 2.14. The most compelling result

Table 2.15: Cross-sectional analysis of post-acquisition performance

This table contains the results OLS regressions on post-acquisition performance (profitability (ROA, Operating margin), productivity (Revenue per employee), and efficiency (costs per employee)). The variable NPDummy takes on a value of 1 if the deal involved a negative acquisition premium and 0 otherwise, BlockOwn is the percentage of shareholders who hold 5% or more of a firm's shares, and StockDummy takes on a value of 1 if the deal is all stock and 0 otherwise. The variable BidPremium is the Premium, 4 week prior to bid. Control variables in the regression include pre-bid conditions (preROAtarget, preROAbidder, preICRtarget, and preICRbidder) and firm (TA, TA²) variables. The *t*-statistic and *z*-statistic are used to measure statistical significance, and the symbols ***, ** and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	Ind. Adj. Post ROA	t-stat	Ind. Adj. Post OpMargin	t-stat	Ind. Adj. Post Log(Rev/Emp)	t-stat	Ind. Adj. Post Log(COGS/Emp)	t-stat
<i>Panel A: Cross-sectional analysis of post-acquisition operating performance</i>								
BidPremium	-0.65	-1.66*	-0.907	-1.77*	-0.032	-1.35	-0.052	-0.73
BlockOwn	0.492	1.85*	0.622	1.03	0.125	1.5	-0.045	-1.74*
StockDummy	-1.499	-1.11	-0.374	-1.34	0.025	0.49	0.029	1.88*
StockDummy*BlockOwn	0.464	0.97	0.525	1.05	0.117	1.39	-0.02	-0.95
BidPremium*StockDummy*BlockOwn	-0.62	-1.29	-0.701	-1.4	-0.156	-1.4	0.027	1.26
NPDummy	1.954	1.57	1.928	0.62	0.317	3.46***	-0.042	-0.96
BidPremium*NPDummy	-1.986	-0.87	-0.51	-0.72	-0.084	-1.42	0.017	0.16
BlockOwn*NPDummy	1.527	1.78*	0.534	1.72*	0.116	0.44	-0.099	-1.89*
StockDummy*BlockOwn*NPDummy	2.568	0.96	1.183	1.35	0.425	1.29	-0.109	-0.92
BidPremium*StockDummy*BlockOwn*NPDummy	1.582	2.58***	0.174	2.17**	1.391	1.68*	-0.595	-2.25**
preROAtarget	0.055	0.37	2.457	1.02	-0.085	-2.15**	-0.01	-0.47
preROAbidder	-0.695	-1.21	0.607	0.33	0.078	2.88***	0.025	1.53
preICRtarget	-0.725	-2.93***	-4.299	-1.71*	0.028	0.67	0.012	0.64
preICRbidder	-1.266	-1.51	5.576	0.8	0.239	0.52	0.168	1.22
LogTA	-0.013	-0.59	0.012	0.52	-0.017	-0.96	-0.037	-0.25
LogTA ²	-0.001	-0.7	-0.001	-0.2	0.001	1.31	0.004	0.6
Intercept	0.427	0.83	1.692	1.53	2.078	3.67***	1.863	2.46**
R ²	17.80%		12.75%		6.52%		3.27%	
F-statistic	3.89		6.16		3.55		2.95	
p-value	0.000***		0.000***		0.000***		0.000***	
N*	193		193		193		193	
<i>Panel B: Market pricing of post-acquisition operating performance into bidding firm share price</i>								
CAR	-0.037	-0.18	-1.354	1.08	0.016	0.27	-0.091	-1.07
CAR*NPDummy	0.937	0.78	0.475	1.22	0.009	0.1	0.067	1.22
BidPremium*StockDummy*BlockOwn*NPDummy	-2.629	-0.37	1.932	0.79	0.092	0.19	-0.406	-1.23
CAR*BidPremium*StockDummy*BlockOwn*NPDummy	14.397	1.5	0.325	0.87	-2.551	-0.76	-1.149	-1.23
preROAtarget	0.348	1.18	0.144	1.22	-0.101	-2.59***	-0.004	-0.2
preROAbidder	-0.443	-1.11	0.99	0.5	0.059	2.21**	0.031	1.84*
preICRtarget	0.738	3.18***	4.134	1.67*	0.035	0.77	0.015	0.82
preICRbidder	-2.949	-1.46	-2.295	-0.51	0.811	1.97**	0.165	1.28
LogTA	0	-1.16	0	0.79	0	-0.76	0	-0.71
LogTA ²	0.001	1.12	0.002	1.2	0	0.38	0	1.16
Intercept	1.117	1.33	4.466	2.10**	1.967	2.05**	1.912	1.78*
R ²	0.11%		0.81%		3.21%		1.89%	
F-statistic	3.45		3.12		2.45		1.91	
p-value	0.000***		0.001***		0.007***		0.041**	
N*	193		193		193		193	

* N reduces significantly as many targets cease to report independently from acquirer following acquisition.

is the coefficient associated with negative premium, stock financed deals, where block ownership

is high and the negative premium is not large, is statistically and economically significant across

all four regressions. The results indicate that not all negative premium deals are successfully restructured by the bidding firm. The results provide strong support for the *selection hypothesis*. Presented with an attractive stock financed deal that offers a small negative premium, blockholders seem to correctly identify a value-enhancing deal and take the deal even in the presence of an offer price below that of prevailing market prices, results that are similar to Golubov et al.'s (2012) 'better merger' hypothesis. Stock financed, negative premium deals therefore represent a highly lucrative form of acquisition for the bidding firm. From the view of the bidding firm, a bidder acquiring a target with a negative premium offer not only achieves a discount on market prices but also extracts value from the target following acquisition.

The earlier results presented on the event study of announcement returns (in Table 2.9) suggest that negative premium targets and bidders both experience negative abnormal returns. Panel B of Table 2.15 presents the results of a cross-sectional analysis of these announcement returns to determine if the market prices in the favourable outcome of the sub-set of negative premium deals observed in Panel A. Cross-sectional analysis of bidder announcement returns provides no evidence that the market is able to price the subsequent operating performance improvements, not on the entire sample, on the negative premium sample, nor on the sub-sample of negative premium targets that enjoy operational improvements observed in Panel A. The result highlights market inefficiency, since the improvements are not incorporated in the bidder's price upon announcement.

2.6 Conclusions

The objective of this study has been to explore the anatomy of negative acquisition premium transactions, and specifically to address the question: why and under what contractual

conditions are shareholders of target firms willing to accept a negative premium? While studies have identified a discount paid to targets of privately-held firms (Chang, 1998) or discounts accepted for sale of subsidiaries (Officer, 2007), the phenomenon of a negative premium on publicly-held target has received no attention in the literature. Because target shareholders should be able to sell shares at market prices instead of at a bid price that is lower than the market price, negative acquisition premium offer defies extant theoretical predictions and empirical results on the positive premia involved in deal construction. Thus, the presence and persistence of a negative premium requires investigation. In this essay, several hypotheses are developed and tested that explain the conditions under which a negative acquisition premium is offered and accepted by target shareholders.

This essay provides the first evidence of the negative acquisition premium phenomenon, and the evidence presented here suggests that while target firm's financial distress and overvaluation permit the bidder to offer a negative acquisition premium, it is the combination of the market reaction to the negative premium bid (resulting in a convergence of the target's stock price to bid price) and high block ownership (therefore lower share liquidity) that lead target shareholders to prefer the negative premium bid over selling at market prices. Evidence from additional analyses on stock financed deals shows large shareholders are able to identify a value-enhancing deal and are willing to accept a discount on market prices in order to participate in a combination that will result in synergistic gains. Therefore, not only does a bidder in a stock financed, negative premium deal acquire a target below market prices, but it also extracts value from the target following acquisition, an outcome not accurately priced by the market.

These findings provide first insight into a unique sub-set of acquisitions that have characteristics and post-acquisition performance different from the typical acquisition, which lends further insight into the diversity among M&A transactions.

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CHAPTER 3

Essay 2: Is merger failure good news for shareholders?

Abstract

While mergers and acquisitions are a common corporate event, they appear to provide, at best, mixed long-run performance, and at worst, significant value destruction. If evidence suggests that mergers do not benefit shareholders, then ‘bad’ news of merger termination is actually ‘good’ news because based on the evidence, if the merger had succeeded, shareholders would have suffered value destruction. Using a large sample of U.S. mergers and acquisitions, I present evidence showing that merger failure is good news for target shareholders in general and only good news for bidding firm shareholders when the deal is either terminated by the bidder or is financed with high levels of stock, or a combination thereof. The medium of exchange and the initiating party of termination are significant determinants of terminated targets’ long-run financial performance, with bidder-terminated, stock financed deal associated with lower post-acquisition long-run returns of the targeted firm.

3.1 Introduction

Global mergers and acquisitions have reached unprecedented levels in recent years (Barkema and Schijven, 2008). While a highly popular form of corporate development, mergers and acquisitions appear to provide, at best, mixed long-run performance, and at worst, significant value destruction. Several studies (e.g., Jensen and Ruback (1983), Jarrell, et al. (1988), Andrade, et al. (2001), Martynova and Renneboog (2008), Eckbo (2009), among others) find value destruction for bidding shareholders around the announcement of the merger, and long-run evidence on stock returns (e.g., Asquith (1983), Loughran and Vijh (1997), Rau and Vermaelen (1998), and Moeller, et al. (2003)) and operating performance (e.g., Ravenscraft and Scherer (1987), Herman and Lowenstein (1988)) indicates that in general, the combined firm underperforms expectations. In addition to academic studies, a number of professional studies (e.g., McKinsey & Company (2004), Mercer Management Consulting (1998)) report similar

outcomes across mergers. In Schoenberg's (2006) survey of managers involved in mergers and acquisitions, managers of acquiring firms report that 56% of completed acquisitions are considered successful when compared against original objectives. A number of studies, including Agrawal, et al. (1992), Coopers and Lybrand (1996), and Lang and Stulz (1994), report that mergers underperform for a number reasons, including overestimation of synergies, integration problems, and poor strategy.

Thus contrary to their popularity, acquisitions do not guarantee value creation for shareholders of the newly combined firm. If there is substantial evidence that mergers do not benefit shareholders, then news of merger termination is actually 'good' news because based on the evidence, if the merger had succeeded, shareholders would have suffered significant value destruction. This essay investigates the question: if mergers destroy value, do firms involved in a terminated merger outperform post-termination? For the targeted firm in terminated acquisitions, most studies of long-run financial stock performance (including Asquith, et al. (1983) and Pound (1986)) produce evidence of positive abnormal returns when the merger is terminated. However, most studies on unsuccessful bidder (e.g., Taffler and Holl (1991) and Parkinson and Dobbins (1993)) show that no abnormal returns are earned upon merger termination.

Few studies have investigated the real economic impact of merger termination on the targeted and unsuccessful bidding firm operations. Most notably and most closely related to this study is Holl and Pickering (1988) and Taffler and Holl (1991), who both investigate the long-run operating performance of targeted firms and unsuccessful bidders of terminated mergers. There are however a number of limitations with both studies. First, both studies evaluate small samples of mergers during the 1965-1975 period, thereby reducing the generalizability of the results to more recent merger activity, as it has been shown that recent merger waves differ

substantially from those during the 1960s and 1970s (Martynova and Renneboog, 2008). The merger wave of the 1960s and 1970s can be characterized by diversifying mergers in which takeovers were motivated by firms seeking to build conglomerates. The takeover waves during the 1980s and 1990s differed substantially in motivation, with mergers in the 1980s being efficiency-seeking break-ups, hostile takeovers, and going-private transactions and mergers in the 1990s being motivated by economic globalization, technological advancements, and deregulation. The most recent wave since mid-2003 has been characterized by international industry consolidation, with friendly acquisitions dominating. This recent wave may generate different outcomes from the conglomeration wave of the 60s and 70s, since the cross-border acquisitions have shown to involve superior post-acquisition performance relative to purely domestic transactions (Otchere and Ip, 2006). Furthermore, evidence indicates that conglomerates are less likely to extract value because top managers of the combined firm are not equipped with specialized, industry-specific expertise (Lang and Stulz, 1994; Berger and Ofek, 1995). Given different motivations, the nature of M&A combinations and accordant performance of those combinations may differ in each merger wave. Furthermore, the methodologies applied in both Holl and Pickering (1988) and Taffler and Holl (1991) are limited by simplicity in that both involve univariate analysis and no cross-sectional analysis. As a result, these studies do not control for variance across time, industry, and firms. It may, therefore, be that the cross-sectional variability of the observed post-acquisition performance is not associated with the acquisition but instead explained by target firm characteristics (as in Moeller, et al. (2004)) or by industry characteristics (as in Mitchell and Mulherin (1996)).

In this essay, several hypotheses are developed that explain post-termination performance of target firms and unsuccessful bidders involved in a terminated merger. For the targeted firm in

an incomplete merger, three hypotheses are presented. First, given that underperformance is documented by both academic (e.g., Agrawal, et al. (1992)) and professional studies (e.g., McKinsey & Company (1990)), the likelihood of post-acquisition value destruction is high for shareholders of firms targeted in stock financed deals. If value destruction is high in completed mergers, it follows then that a targeted firm of a terminated merger will outperform a targeted firm of a completed merger. Theoretical and empirical literature point to a secondary channel through which target shareholders might benefit from merger termination. Chiplin and Wright (1987) suggest that the threat of takeover, even if the deal is not completed, may be just as effective to induce target managers to improve efficiency as an actual deal. The takeover attempt acts as a catalyst that compels the managers to restructure the firm such that the targeted firm of a terminated merger improves performance, relative to its pre-termination performance. A third outcome for the targeted firm is possible: target management may veto the merger in order to further entrench their position at the expense of target shareholders, as there is a high probability that incumbent managers will lose their positions following merger consummation (Karpoff, et al., 1996). Thus, the termination of a takeover bid may lead to increased managerial entrenchment, and accordingly, the targeted firm will exhibit no improvements (or even underperformance) following the termination of the merger, as managers become more entrenched and their goals become less aligned with those of shareholders.

Two hypotheses are advanced to explain the post-termination performance of the unsuccessful bidder. Similar to the case of shareholders of targeted firms in terminated mergers, the shareholders of bidders in terminated deals should view the announcement of a merger as bad news as the literature highlights a general outcome of merger underperformance. Hence, merger termination should be viewed by bidding shareholders positively as they have avoided

participating in a value-destroying venture, and relative to bidding firms in successful mergers, an unsuccessful bidder in a terminated merger will outperform. In addition to outperforming those bidders in completed mergers, the literature suggests that bidding firms in terminated deals may even outperform their pre-bid performance, since the unsuccessful bid may reveal information about the bidding firm to the market. Both Pickering (1983) and Holl and Pickering (1988) find that prior to announcement, bidders in terminated deals are financially weaker than their target of acquisition, and even more, Pickering (1983) reports that many of the bidders in terminated deals become takeover targets themselves. Together, these results suggest that a terminated bid may expose the bidding firm's weakness in the takeover market and send a signal of the ineffectiveness of the bidding firm's management team. Under threat of takeover, an unsuccessful bidding firm in a terminated merger is expected to outperform its pre-bid termination performance.¹⁶ This view therefore proposes a disciplinary effect from the market for corporate control that compels bidding firms to improve performance in order to reduce the likelihood of future bids on their own assets which also acts to protect management's jobs (Wong and O'Sullivan, 2001).

This study investigates these hypotheses by examining a large sample of U.S. target and bidder pairs involved in incomplete mergers. Two performance benchmarks are employed: a matched sample of completed mergers and a matched sample of industry rivals. Event study analysis and cross-sectional regression analysis are used to document long-run financial and operating performance and compare the documented performance to the control sample of completed transactions.

¹⁶ There is an alternative explanation of a bidder's post-termination performance. Instead of improving performance, a bidder may pursue another target in order to mark their own inefficiencies. In this study, bidders who do not engage in subsequent mergers are studied, and therefore, this alternative explanation is not explored.

There is strong evidence presented in this essay that in the long-run, target firms in terminated deals outperform both pre-acquisition performance and stock and operating performance of targets in completed deals. Even more, the observed outperformance is priced into the target's stock returns following the termination announcement. These results provide support for the hypothesis that in general, target shareholders are better off without the deal because they have avoided a value-destroying venture. The evidence also supports the *takeover threat hypothesis*, that the mere threat of takeover, even if the deal is not completed, will induce target managers to pursue value-enhancing activities in order to avoid a future takeover. Conversely, bidding firms do not exhibit significant improvements in operating performance relative to pre-termination levels, and those in terminated deals do not outperform the stock market or operating performance of bidding firms in completed deals. Cross-sectional analysis of long-run, post-termination performance shows that there are exceptions to this result. Bidding firms in terminated deals see operating improvements relative to pre-acquisition levels when the bidding firm terminates the deal, which supports the hypothesis that bidding firm managers respond to a failed deal with their own operational improvements. Also, bidding firms in terminated deals improve performance relative to bidders in completed deals, when the bidder terminates the deal and when the deal involves high levels of stock financing. There is mixed evidence, however, that the post-termination performance of the bidding firm is priced into firm's stock price following the termination announcement.

The remainder of this essay is structured as follows. In 3.2 of this essay, an extensive survey of the literature on performance effects of completed and incomplete mergers is performed, which provides the foundation for the hypotheses proposed in 3.3. Section 3.4 presents the sample construction strategy, and Section 3.5 outlines the study's methodology. The

results of the analysis are reported in Section 1.6, and concluding remarks are provided in section 3.7.

3.2 Literature Review

3.2.1 The profitability of completed mergers

Motivating this study is the apparent long-run underperformance of mergers, which suggests that target and bidding shareholders may be better off without the merger. Therefore, before evaluating the literature on incomplete M&A transactions, the results of the expansive literature that evaluates the performance of completed mergers are first summarized, which will provide a foil against which the experience of incomplete mergers can be evaluated.

3.2.1.1 Theoretical perspectives

The theoretical work on mergers and acquisitions has identified a number of factors that motivate an M&A transaction, and broadly speaking, there are two primary motives for corporate mergers, both of which provide for opposing expectations of the performance of the combined firm. The first is the neoclassical economics explanation, which views a merger as a rational choice (Coase, 1960). It suggests that mergers are motivated by expected synergies or efficiency-enhancing reasons, with the principal motive being to create value for shareholders (see, for example, Weston, et al. (2004)). By gaining control of target resources, the acquiring firm can exploit specialized resources, which might involve economies of scale, production techniques, complementary resources, increased market power, or efficient redeployment of assets, thereby implementing a higher-valued strategy (Bradley, Desai, and Kim, 1983). This view of mergers, however, does not directly describe the incentives that induce such changes, but one argument derived from the property rights literature is that ownership-based incentives allow managers to

share in the value created by the merger thereby aligning shareholder and managerial interests (Grossman and Hart, 1986).

The merger literature describes a second motive of mergers where value maximization is not the primary objective. Under this view, non-value maximizing mergers arise from acquiring firm managers pursuing their own interests over the interests of shareholders. The personal interests of managers can manifest themselves in several forms, such as empire-building, growth in asset size, or real asset diversification. The literature shows that firm size is a fundamental determinant of executive compensation (Baker, et al., 1988; Jensen and Murphy 1990), and therefore, managers have strong incentives to make acquisitions that increase firm size, even if value destruction ensues. Likewise, acquiring firm managers benefit from mergers that provide less risky cash flows through diversification, as their job security is enhanced when the likelihood of financial distress is reduced. Among others, Jensen and Meckling (1976), Williamson (1985), Shleifer and Vishny (1989), and Morck, et al. (1988) argue that mergers motivated by managers' self-interests do not necessarily create value, and may even destroy value if these choices reduce asset efficiency. Also associated with irrational choice is Roll's (1986) 'hubris theory', which contends that managers of bidding firms may pursue acquisitions because of mistaken or inflated estimates of their ability to realize acquisition synergies. As with mergers motivated by managers' pursuit of personal interests, if scarce resources are used up in financing the merger that has inflated synergy expectations without sufficient returns for their use, then post-acquisition performance will suffer. While acquiring firm managers may use the takeovers to pursue their own interests, the market for corporate control serves as a mechanism of corporate governance which induces an alignment of manager and shareholder interests. Should a manager fail to meet shareholder expectations, other firms view inefficient

management as an opportunity to purchase the firm at a discount and create value by replacing inefficient managers with efficient ones.

Therefore from a theoretical perspective, it is not clear whether mergers will create value through increases in post-acquisition performance. Should a merger be motivated by rational aims, then one would expect value creation, but should a merger be motivated by self-interest or hubris, then value creation is uncertain. These propositions have received significant attention in the literature, with studies attempting to capture the impact of mergers on the shareholder, others investigating the market's reaction to mergers, while others evaluate the subsequent post-acquisition performance. In the following sections, the empirical work on the wealth effects at merger announcement and the post-acquisition performance of mergers is summarized.

3.2.1.2 Wealth effects at announcement

“The most statistically reliable evidence on whether mergers create value for shareholders comes from traditional short-window event studies, where the average abnormal stock market reaction at merger announcement is used as a gauge of value creation or destruction” (Andrade, et al., 2001, p. 109). Short-run wealth returns are important because under efficient market theory, announcement returns reflect the market's expectations of future acquisition gains. A number of surveys of the merger literature – Jensen and Ruback (1983), Jarrell, et al. (1988), Andrade, et al. (2001), Martynova and Renneboog (2008), and Eckbo (2009) – agree that at the announcement of the bid, value is created for the target and acquiring shareholders combined, with the majority of the gains accruing to target shareholders. Studies show that cumulative abnormal returns (CARs) differ significantly based on deal characteristics, for example, higher CARs in hostile versus friendly mergers (e.g., Servaes (1991)) and high CARs in cash versus stock financed mergers (e.g., Franks, et al. (1989)).

The evidence on the outcome for the acquiring firm shareholders alone is mixed. There is one group of studies that find significantly negative returns in the range of -1% to -3%; a second group find significantly positive returns in the range of 1% to 7%; and a third group reports no significant abnormal returns. On average, however, the evidence suggests that bidder CARs during the bid announcement period are indistinguishable from zero. According to Martynova and Renneboog's (2008) survey of literature investigating the short-term wealth effects of mergers during the 1990s, the results are split almost evenly between positive and negative returns. A number of determinants of the wealth effects of the bidding firm have been identified, including the type of acquisition (e.g., Servaes (1991)), means of payment (e.g., Goergen and Renneboog (2004)), and acquisition strategy (e.g., Martynova, et al. 2006).

Overall, the research agrees that shareholders of target firms attain the bulk of the wealth created in the period of the bid announcement, with the bidding shareholders earning insignificant abnormal returns. Given that target shareholders earn large positive abnormal returns and the bidders' shareholders do not (on average) lose, takeovers are expected to increase the combined market value of the merging firms' assets.

3.2.1.3 Long-run financial performance

The short-term CARs summarized above should reflect the expectations of future acquisition gains and should therefore be correlated with long-run performance of the combined firm. While early studies of mergers focused on announcement returns, some examine the long-term profitability of the combined firm. Langetieg (1978), Asquith, et al. (1983), and Magenheimer and Mueller (1988) all report significant negative abnormal returns over 1-3 years following the merger. In their review of the literature, Jensen and Ruback (1983) state: "These post-outcome negative abnormal returns are unsettling because they are inconsistent with market efficiency and

suggest that changes in stock prices during takeovers overestimate the future efficiency gains from mergers” (p.20).

Not surprising, then, are the plethora of studies that seek to measure and explain the anomaly observed by early studies. Most of the long-term studies based on US data conclude that acquiring firms exhibit significant negative abnormal returns over a one to three year period after the merger. For example, Agrawal, et al. (1992) reports that acquiring firm stockholders suffer a loss of about 10% over the five-year, post-merger period, a result robust to firm size effect and beta estimation problems. Also, Loughran and Vijh (1997) estimate long-term abnormal returns for stock and cash acquisitions over the period 1970-1989. They find that acquiring firms using stock financing have abnormal returns of -24.2% over the five-year period after the merger, whereas those that finance their acquisition with cash realize an abnormal return of 18.5%. These results are echoed by many others, including Rau and Vermaelen (1998), Moeller, et al. (2003), and Andre, et al. (2003).

However, methodological concerns and conflicting evidence question the conclusion of merger long-run underperformance. Fama (1998) and Mitchell and Stafford (2000) contend that many studies reporting long-run merger underperformance employ different methodological approaches (event-time vs. calendar-time approach) and include diverse explanatory factors (such as payment methods, merger, or tender offer). Mitchell and Stafford (2000) estimate long-term abnormal returns that are robust to the most common statistical problems, including cross-sectional dependence, and they report that the long-term abnormal returns of the combined firm were found not to be statistically significant. In fact, several studies do not find any evidence of long-run underperformance. For example, using a multifactor benchmark, Franks, et al. (1991) do not report significant underperformance over three years after the acquisition, and similar

results are reported by Andre, et al. (2004) and Dutta and Jog (2009) who study Canadian mergers. Notwithstanding such arguments and empirical evidence, the abundance of evidence pointing to negative long-term underperformance remains a controversial outcome.

3.2.1.4 Long-run operating performance

To overcome the inability of long-run event studies of stock returns “to determine whether takeovers create real economic gains,” a strand of the M&A literature has focused on the changes in operating performance that follow the merger of two firms (Healey et al., 1994, p. 136). However, similar to the outcome of studies on the post-acquisition financial performance of merged firms, there is mixed evidence on the operating performance of the merged entity. Two notable studies reporting declines in performance are Ravenscraft and Scherer (1987) and Herman and Lowenstein (1988). Using line of business data of 471 tender offers between 1950 and 1977, Ravenscraft and Scherer (1987) provide evidence of a decline in post-takeover operating income. Herman and Lowenstein (1988) also report a decline in return on equity for a sample of hostile acquisitions between 1975 and 1983. Professional studies by McKinsey & Company (2004), Mercer Management Consulting (1998), and Business Week (1995) document similar declines in operating performance following merger completion.

Healy, et al. (1992) examine post-merger operating performance for the 50 largest mergers between 1979 and 1984. Using an industry median adjusted operating cash flow measure scaled by the market value of total net assets, they observe significant improvements in operating cash flow returns. These results are corroborated by a number of subsequent studies, including Switzer (1996), Ramaswamy and Waagelein (2003) and Manson, et al. (2000). However, Ghosh (2001) shows that the Healy, et al. (1992) measure of operating performance is likely to be upwardly biased when an industry benchmark is used. Ghosh (2001) reports that the

size and cash flow performance declines for his sample; whereas the measure by Healy, et al. (1992) shows an increase when used on the same sample. Likewise, Cheng and Leung (2004) find no significant performance changes for their sample of Hong Kong mergers.

Martynova and Renneboog (2008) report that of the 26 studies of post-acquisition operating performance, 14 report declines in operating performance, 7 show insignificant changes, and 5 provide evidence of a positive increase. Thus, the weight of the evidence is in support of the negative effect school that predicts an underperformance (or no incremental performance) outcome, an unsettling result for a bidder making such an expensive investment.

3.2.1.5 Reasons for long-run underperformance

There is likely not just one factor that results in the underperformance of the combined firm, but several commonly reasons why some mergers and acquisitions fail to meet expectations: overpayment (overestimation of synergies), slow pace of merger integration, and a poor strategy.

3.2.1.5.1 Overestimation of synergies

If the bidder overestimates synergies, the bidder overpays for the target, which increases the hurdle rate required to earn the cost of capital. Agrawal, et al. (1992) survey 22 papers on long-run post-merger performance, and they report that acquirers tend to overestimate synergies and overpay most often when the target is a high-growth, glamour stock and the bidder bases synergy estimation on past performance. Agrawal's (1992) finding is echoed by a number of subsequent studies, including McKinsey & Company (2004), Cao (2008), Boston Consulting Group (2003), and Harper and Schneider (2004).

3.2.1.5.2 Integration problems

A number of studies point to ineffective integration as another reason for merger underperformance (Business Week, 1995; Coopers and Lybrand, 1996). A global study of 100

acquisitions by Andersen Consulting (1999) finds that integration must be done quickly in order to generate financial returns and to minimize employee turnover and customer attrition. Employee and corporate turnover present significant integration challenges as turnover causes disruption, reduces morale, and may even represent a loss in value, especially in knowledge intensive firms (Lord and Ranft, 2000). Other integration challenges include customer attrition (Bekier, et al., 2001) and the merger of cultural differences (Carleton and Lineberry, 2004).

3.2.1.5.3 Poor strategy

Another commonly cited reason why mergers fail is the strategy that drives the combination. Literature suggests that mergers and acquisitions driven by conglomerate aim are less likely to extract value because top managers of the combined firm are not equipped with specialized industry-specific expertise necessary to maximize firm value. A number of studies (including Lang and Stulz (1994) and Berger and Ofek (1995)) document a significant diversification discount applied to firms pursuing a conglomerate strategy. Alternatively, bidding firm management may be pursuing the merger to satisfy their own empire-building aims (Jensen, 1986), and the combined firm is a product of the agglomeration of assets by rent-seeking managers.

3.2.2 Incomplete mergers: theory and evidence

The theoretical implication of long-run merger underperformance is coupled with a serious practical implication: if mergers do not, on average, create value, then both acquiring and target firm shareholders are better off without the merger. Despite the sizeable literature that attempts to understand long-run merger underperformance, the controversy remains. A small set of literature has sought to contribute to a resolution by investigating merger consequences via analysis of an alternate outcome - when a merger is not completed. The incidence of incomplete

mergers is significant. Holl and Kyriazis (1996) find that 25.2% of bids were not completed during the 1980s, while Wong and O’Sullivan (1998) estimate a bid incompleteness rate of 18.7% between 1989 and 1995.

A deal may not complete for a variety of reasons, including regulatory intervention, successful defense from managers, or withdrawal from the bidder. The literature on incomplete mergers posits that the form of an incomplete deal is informative of post-termination performance. This study will follow the literature in classifying deals as being terminated by the bidding firm, by the target firm, by both firms (i.e., mutual termination), and a deal terminated for exogenous reasons (i.e., antitrust complaints). The literature on incomplete mergers has

Table 3.1: Theoretical perspectives

This table contains the existing theoretical literature developed to explain the post-termination performance of the parties involved in a terminated acquisition bid.

	<u>Theoretical perspective</u>	<u>Key studies</u>
Targeted firm	<i>Efficient investment hypothesis</i> : (i) acquiring firms may be pursuing the acquisition for non-value maximizing reasons, and if target managers are able to identify and defend such offers, the shareholders of the targeted firm are better off without the deal OR (ii) if the terminated merger is not defended by target, the target will forgo synergies from the deal, and therefore, the targeted firm will exhibit negative abnormal performance relative to expected performance should it had merged	Coase (1965)
	<i>Takeover threat hypothesis</i> : the threat of takeover, even if the deal is not completed, may be just as effective to induce target managers to improve efficiency as an actual deal	Jensen and Warner (1988) Chiplin and Wright (1987)
	<i>Entrenchment hypothesis</i> : management's veto may also be used as a method for entrenching incumbent managers at the expense of target shareholders, because there is a high probability that incumbent managers will lose their positions as a consequence of a successful takeover	Karpoff, et al. (1996) Hartzell, et al. (2004)
Unsuccessful bidder	<i>Efficient investment hypothesis</i> : the bidder withdraws the bid because the bid process reveals information about the target that causes the bidding firm to re-evaluate the profitability of the merger	Coase (1965)
	<i>Takeover threat hypothesis</i> : the threat of takeover, even if the deal is not completed, may be just as effective to induce bidding managers to improve efficiency as an actual deal	Jensen and Warner (1988) Chiplin and Wright (1987) Wong and O’Sullivan (2001)

developed in parallel with the literature on completed mergers. Of the studies that investigate incomplete mergers, there are some that consider the targeted and bidding firms’ wealth effects upon termination (e.g., Dodd and Ruback (1977), Chang and Suk (1998)), while others evaluate

the long-run effects of deal termination and the determinants thereof (e.g., Asquith, et al. (1983), Taffler and Holl (1991)).

In this section, the small set of literature on incomplete mergers is summarized, beginning with theories explaining post-merger performance, then moving onto the empirical work that evaluates the wealth effects upon termination, the long-run financial and operating performance, and the determinants of long-run performance following termination.

3.2.2.1 Theoretical perspectives

There is very little direct theoretical work that provides insight into the post-termination performance of firms involved in incomplete mergers. However, insights can be garnered from agency and corporate governance literature. The theoretical explanations of post-merger performance differ by the perspective of the involved party. The separate theoretical predictions from the target and bidding firm's perspectives are reviewed, which are summarized in Table 3.1.

3.2.2.1.1 Targeted firm: theoretical propositions

Assuming the neoclassical economics' view of takeovers, one would expect management of the targeted firm to evaluate a proposed merger by its net present value, and managers will accept when positive and will reject when negative. As Denis and McConnell (2003) point out, the 'dark side' of the market for corporate control means that acquiring firms may be pursuing the acquisition for non-value maximizing reasons. In a stock financed offer, target shareholders will become owners of the combined firm if the deal is successful, and if target managers are able to

identify and defend such non-value-maximizing offers, the shareholders of the targeted firm are better off without the deal.¹⁷ This outcome is referred to as the *efficient investment hypothesis*.

Jensen and Warner (1988) suggest that an acquisition (complete or not) can signal to the market that the target is being managed inefficiently, and in this particular type of acquisition, it is likely that removal of inefficient management will be involved.^{18,19} As Chiplin and Wright (1987) argue, the threat of takeover, even if the deal is not completed, may be just as effective to induce target managers to improve efficiency as an actual deal. If there is inefficient management prior to acquisition and internal governance mechanisms are sufficiently strong, the threat of takeover may even induce managerial turnover even if the bid is not successful. Thus, there may be a disciplinary effect on non-value maximizing target management in the event of an incomplete bid, and this predicted outcome is referred to in this essay as the *takeover threat hypothesis*. Observations made in Pickering's (1983) qualitative study indicate that following the cancellation of a deal, target firms initiate changes in management or asset use in an effort to improve operating performance. This evidence is echoed by Denis's (1990) empirical study, which finds that following the termination of a deal, the targeted firm makes significant capital, voting, and strategy changes subsequent to bid defense. Also, Agrawal and Walking (1994)

¹⁷ When a target firm cancels a merger, it may be to pursue other offers and thereby to maximize shareholder wealth. This study, however, seeks to capture the long-run performance of cancelled mergers, and thus, the discussion and investigation is limited to 'clean' incomplete mergers – targets and bidders that are not party to a subsequent acquisition.

¹⁸ In addition to the removal of inefficient target management, there are a number of factors that may motivate an acquirer to make an offer (a diversification strategy, hubris, or even purchasing an undervalued target). In the event that other factors motivate the mergers, the outcome may differ. For example, if the merger was motivated by a diversification strategy and the initial reaction to the announcement of the merger was positive, the termination of the deal will be followed by a negative reaction. Alternatively, a merger announcement may involve a negative reaction if the merger is motivated by hubris, and upon termination, the negative reaction is likely to be reversed.

¹⁹ A number of studies have found that target firms experience higher than average turnover of top managers (Krug and Hegarty, 1997; Walsh, 1989), and evidence suggests that target management turnover is higher when the acquirer is foreign, when target managers perceive significant culture disparities, and when the bid is hostile (Krug and Hegarty, 1997). Jensen and Warner's (1988) argument is therefore more applicable in these particular conditions.

observe that following the termination of a bid of an underperforming targeted firm, the executive compensation package shrinks, which the authors attribute to the disciplinary effect of the market for corporate control. Ryngaert and Scholten (2010) show that target managers that defeated takeover bids did not become more entrenched. In Safieddine and Titman's (1999) study of 328 targets of incomplete takeovers from 1982 to 1991, targets increase their leverage ratios but also reduce capital expenditures, sell assets, reduce employment, increase focus, and realize cash flows and share prices that outperform benchmarks in the five years following the incomplete bid.

Though target shareholders vote to approve (or reject) merger proposals recommended by management, they do not have the opportunity to vote for proposals rejected by management. In the spirit of the *efficient investment hypothesis*, the veto power over a merger may be used efficiently to ensure that a merger bid is adequate (see Franks and Mayer, 1996). However, the veto may also be used as a method for entrenching incumbent managers at the expense of target shareholders because there is a high probability that incumbent managers will lose their positions as a consequence of a successful takeover (see Karpoff, et al. (1996)). Defended bids, therefore, present a situation where the interests of the target managers may not coincide with the interests of target shareholders, an outcome that is referred to in this essay as the *entrenchment hypothesis*. The *entrenchment hypothesis* is consistent with Hartzell et al.'s (2004) argument that in the takeover market of the 1990s, management has acted in its own interest by using its bargaining power to extract better personal deals at the expense of higher takeover premiums. It follows then that should the defense of a takeover bid involve increased managerial entrenchment, the targeted firm will likely exhibit declines in performance following the

incomplete merger, and the shareholders of the targeted firm would have been better off if the bid had been successful.

3.2.2.1.2 Unsuccessful bidding firm: theoretical propositions

Backing out of a previously announced acquisition may either benefit or hurt shareholders of the bidding firm. The neoclassical economics view prescribes that if the bidder withdraws the bid, it does so because the initial deal reveals information about the target that causes the bidding firm to re-evaluate the profitability of the merger, accordant with the *efficient investment hypothesis*.

If bidding firm managers are motivated by non-value maximizing aims, such as empire-building, the merger is not likely to be a positive NPV investment (Jensen, 1986). Wong and O'Sullivan (2001) contend that an incomplete deal may signal inefficiency of the bidding firm's management who attempt to improve poor performance by acquiring a profitable target to bolster the bidder's poor performance. Thus, the failure of a bid "exposes the bidder's inherent weakness and the bidder is consequently disciplined by the takeover market," and again, the disciplinary effect of the market for corporate control compels bidding firms to improve performance in order to reduce the likelihood of future bids on their own assets which also acts to protect management's jobs (Wong and O'Sullivan, 2001, p.174). These predictions are in line with the *takeover threat hypothesis*. In support of this hypothesis, both Pickering (1983) and Holl and Pickering (1988) find that prior to announcement, bidders in terminated deals are financially weaker than their target of acquisition, and furthermore, Pickering (1983) reports that many of the bidders in terminated deals become takeover targets themselves.

3.2.2.2 *Wealth effects at the announcement of merger termination*

Given efficient markets, one would expect that the announcement of a merger termination would reverse the value effects observed at the announcement of the merger; however, some early

studies of incomplete mergers that examine the short-term wealth effects around the time of merger termination suggest a permanent revaluation effect. These studies are summarized in Table 3.2.

3.2.2.2.1 Targeted firms: wealth effects at termination

In their empirical analysis of 386 tender offers from 1973-1976, Dodd and Ruback (1977) evaluate stock market reaction of bidding and target firms to tender offers, both successful and unsuccessful. The authors report that firms that are the targets of unsuccessful tender offers experience significant and permanent increases in their share prices. They attribute the effects to information revelation on the inefficiency of target management prior to the bid, which can be leveraged by owners to realize value gains. Bradley (1980) finds the same in his sample of 258 cash tender offers and also discovers that the permanent revaluation of the target shares exceeds the per share premium of the rejected bid. Studying 151 merger proposals from 1970-1977, Dodd (1980) also finds that target shareholders of incomplete mergers experience permanent increases, and these findings are delineated into the initiator of the bid termination. When the termination is initiated by the target, the target shares retain their bid gains, and when the termination is initiated by the bidding firm, the value of the target shares revert back to their pre-bid levels. However, Chang and Suk (1998) examine 279 failed mergers from 1982-90 around merger terminations and report insignificant abnormal returns when the target initiates the termination.

There is some evidence that contradicts the finding of a permanent target revaluation upon termination. Both Bradley, et al. (1983) and Davidson, et al. (1989) find that for incomplete mergers, the revaluation effect found by Dodd (1980) dissipates when target firms are not involved in subsequent mergers, and persists only for those that are involved in subsequent

Table 3.2: Summary of evidence of wealth effects at termination

This table contains a summary of the evidence of the impact of acquisition termination on the associated parties around the time of acquisition. (+) denotes positive returns, (-) denotes negative returns, and (0) denotes no abnormal returns.

Study	Sample and study period	Target returns at termination announcement	Bidding firm returns at termination announcement	*Conditions
Dodd and Ruback (1977)	172 takeover bids from 1958-1976	(+) Targets of unsuccessful tender offers experience significant and permanent increases in their share prices	(0) Bidders do not earn significant returns	
Bradley (1980)	258 cash tender offers from 1962-1977	(+) Permanent revaluation of the target shares exceeds the per share premium of the rejected bid	(-) Unsuccessful bidders earn negative abnormal returns at termination	
Dodd (1980)	151 takeover bids from 1970-1977	(+)* When the termination is initiated by the target, target shares retain their bid gains, and when the termination is initiated by the bidding firm, the value of the target shares revert back to their pre-bid levels	(+) Bidder firms earn small positive withdrawal returns	Terminating party
Asquith et al.(1983)	302 takeover bids from 1962-1976	(-) Targets involved in an unsuccessful bid earn negative CARs around termination	(0) Bidder returns at termination are insignificant	
Bradley, Desai, and Kim (1983)	371 takeover bids from 1958-1980	(+) The revaluation effect found by Dodd (1980) dissipates when target firms are not involved in subsequent mergers, and persists for those that are involved in subsequent mergers	(-) Find negative abnormal returns for bidding firms around the announcements of incomplete tender offers	
Jarrell (1985)	103 takeover bids from 1962-1978	(0)* Targets that defeat the bid lose all the takeover gains and revert to pre-bid levels	n/a	Terminating party
Franks, Harris and Mayer (1986)	86 takeovers bids from 1963-1985	(-) Report statistically significant target wealth losses when a takeover bid fails	(0) Deal termination has no impact on bidding shareholders	
Ruback (1988)	33 targets of unsuccessful bids from 1962-1980	(-) Report statistically significant target wealth losses when a takeover bid fails	n/a	
Davidson III, et al. (1989)	163 unsuccessful bids from 1976-1985	(+0)* The revaluation effect found by Dodd (1980) dissipates when target firms are not involved in subsequent mergers, and persists for those that are involved in subsequent mergers	(-) Find negative and significant returns when the bidder cancels the deal	Subsequent acquisition activity Terminating party
Dennis (1990)	49 takeover bids from 1980-1987	(+) Target shareholders benefit from takeover bids regardless of the outcome	n/a	
Limmack (1991)	448 successful bids and 81 unsuccessful bids from 1977-1986	(+) Permanent revaluation of the target shares exceeds the per share premium of the rejected bid	n/a	
Sullivan et al.(1994)		(+)* Reports significantly higher returns for target shareholders after termination of cash offers than after termination of stock offers	n/a	Medium of exchange
Chang and Suk (1998)	279 failed mergers from 1982-1990	(0)* Insignificant abnormal returns when the target initiates the termination	(+) Reports positive excess returns for bidders offering stock and negative excess returns for bidders offering cash	Terminating party Medium of exchange
Safieddine and Titman (1999)	573 targets of unsuccessful takeovers from 1982-1991	(-)* Targets terminating attempted takeovers suffer negative excess returns of 5.14% around the announcement date of the termination	n/a	Terminating party
Andrade, Mitchell, and Stafford (2001)	4300 takeover bids from 1973-1999	(-) Report statistically significant target wealth losses when a takeover bid fails	n/a	

Savor and Lu (2009)	1,773 (1,050 stock and 723 cash) completed and 355 (187 stock and 168 cash) incomplete deals from 1978-2003	n/a	(-)*	Unsuccessful stock bidders significantly underperform successful ones, and failure to consummate is costlier for richly priced firms, and the unrealized acquirer-target combination would have earned higher returns	Valuation of bidder
Jacobsen (2014)	525 incomplete takeover bids from 1990- 2007	n/a	(0)*	Bidder termination returns are -0.1% and not statistically significant when CEO quality is low	CEO quality

mergers, suggesting that the revaluation is associated with future mergers and not the revaluation of the target's stand-alone assets.

3.2.2.2.2 Unsuccessful bidders: wealth effects at termination

Evidence of wealth effects upon announcement of merger termination is equally uncertain from the bidder's perspective. On the one hand, Dodd (1980) finds that bidder firms earn small but positive returns at the announcement of termination, and Chang and Suk (1998) examine 279 failed mergers from 1982-90 around merger terminations, reporting positive excess returns for bidders offering stock and negative excess returns for bidders offering cash, each significant at 10%. Likewise, Savor and Lu's (2009) recent study of whether stock financed mergers create value employs a control sample of 355 (187 stock and 168 cash) incomplete deals and reports evidence that termination announcement returns are positive for stock financed deals and insignificant for cash financed deals.

On the other hand, Asquith, et al. (1983) find that bidder returns at termination are insignificant and concludes that "there is no new information released on the outcome date" (p. 73). Recently, Jacobsen (2014) reports evidence that bidder termination returns are -0.1% and not statistically significant, concluding that "overall, there is no conclusive evidence that withdrawal returns are informative" (p. 57). Then, there is Bradley (1980) and Bradley, et al.

(1983) who report negative abnormal returns for bidding firms around the announcements of incomplete tender offers during the 1970s. Davidson, et al. (1989) find negative and significant returns when the bidder cancels the deal, concluding that bidding firms lose when they initiate the termination.

Overall, the evidence on the short-run wealth effects of merger terminations remains inconclusive from both the targeted and unsuccessful bidding firms' perspectives. Thus, it is not clear whether the market expects positive, negative, or abnormal short-run post-termination performance for either party. To provide some clarity to this issue, the extant work on long-run financial and operating performance that follows the merger termination is reviewed.

3.2.2.3 Long-run financial performance

Only a handful of studies evaluate the long-run post-termination financial performance of targeted and unsuccessful bidders. The sum of the evidence points to an uncertain post-termination future for shareholders of targeted firms, and a bleak one for shareholders of unsuccessful bidders.

This study improves upon these studies by investigating the long-run financial performance of both target and bidding firms in terminated deals, while also documenting the operating performance of the parties of a terminated deal. Furthermore, previous studies of financial performance use data that span the 1950s to 1990s, and this study uses current information, which is important because the outcome of mergers is different across merger waves. Martynova and Renneboog (2008) observe that merger waves differ substantially from those during the 1960s and 1970s. The merger wave of the 1960s and 1970s can be described as diversifying mergers, largely motivated by firms seeking to build conglomerates. Conversely, the takeover waves during the 1980s and 1990s were efficiency-seeking break-ups, hostile

Table 3.3: Summary of the evidence on post-termination long-term, financial performance

This table contains a summary of the evidence of the impact of acquisition termination on targeted firm and bidding firm long-run financial performance following acquisition. (+) denotes positive returns, (-) denotes negative returns, and (0) denotes no abnormal financial performance.

<u>Study</u>	<u>Sample and study period</u>	<u>Targeted post-termination financial performance</u>	<u>Unsuccessful bidding firm's post-termination financial performance</u>	<u>*Conditions</u>
Dodd and Ruback (1977)	172 takeover bids from 1958-1976	(0) Targets of terminated bids earn insignificant returns for five years after the bid	(0) Bidders of terminated bids earn insignificant returns for five years after the bid	
Asquith et al.(1983)	302 takeover bids from 1962-1976	(-) Targets of terminated bids earn negative returns for 240 days after the termination	(-) Bidders of terminated bids earn negative returns for 240 days after the termination	
Pound (1986)	50 incomplete takeovers from 1974-1985	(-) Within two years of merger termination, target shareholders are 30% worse off if the bid had been successful	n/a	
Holl and Pickering (1988)	50 incomplete takeovers from 1965-1975	(+) Targets that successfully resist merger exhibit positive abnormal performance 1-3 years following termination	(+) Bidders of terminated bids earn positive abnormal for 1-3 years after the termination	
Taffler and Holl (1991)	55 incomplete takeovers from 1977-1981	(0) Targeted firms do not exhibit abnormal financial performance in 3 years following the bid	(0) Unsuccessful bidders do not exhibit abnormal financial performance in 3 years following the bid	
Parkinson and Dobbins (1993)	77 takeover bids from 1975-1984	(+) Targeted firms exhibit positive abnormal returns in 2 years following termination	(0) No evidence of abnormal financial performance in 2 years following bid termination	
Safieddine and Titman (1999)	573 targets of unsuccessful takeovers from 1982-1991	(+)* Targets that increase their leverage ratios the most reduce capital expenditures, sell assets, reduce employment, increase focus, and realize cash flows and share prices that outperform their benchmarks in the five years following the failed takeover	n/a	Post-termination leverage changes
Savor and Lu (2009)	1,773 (1,050 stock and 723 cash) completed and 355 (187 stock and 168 cash) incomplete deals from 1978-2003	n/a	(-) Over 1 year following termination, the mean abnormal return of failed acquirers is 13.6% lower than that of successful acquirers, and this differential grows to 22.2% for a 2-year horizon and 31.2% for a 3-year horizon.	Medium of exchange Bidder valuation

takeovers, and going-private transactions. Mergers in the 1990s were motivated by economic globalization, technological advancements, and deregulation. The most recent wave since mid-2003 has been characterized by international industry consolidation and global expansion aims. Though both characterized by expansion of firm boundaries, the recent merger wave is likely to generate different outcomes from the conglomeration wave of the 60s and 70s. Literature has documented that cross-border acquisitions involve superior post-acquisition performance relative to purely domestic transactions (Otchere and Ip, 2006). Even more, evidence indicates that

conglomerates are less likely to extract value because top managers of the combined firm are not equipped with specialized, industry-specific expertise (Lang and Stulz, 1994; Berger and Ofek, 1995). Given different motivations, the nature of M&A combinations and accordant performance of those combinations may differ in each merger wave. Therefore, investigation of post-termination outcomes in the most current merger wave is a necessary investigation.

The summary of the existing literature on long-run financial performance is divided into the evidence on the long-run post-termination financial performance targeted and bidding firms. See Table 3.3 for a summary of the long-run financial performance of parties of incomplete mergers.

3.2.2.3.1 Targeted firms: long-run financial performance

The research on targeted firms' post-termination financial performance is dated, with most evidence coming from studies of mergers occurring before 1985. This set of studies produce mixed results tilted in favor of a positive outcome for targeted firms of incomplete mergers. For one, Asquith, et al. (1983) and Pound (1986) both report that target shareholders are worse off with the termination. Asquith, et al. (1983) finds that following termination, targeted shareholders earn negative abnormal returns for 240 days following termination. Pound (1986) evaluates the long-run financial performance of 50 incomplete takeovers from 1974-1985 and reports that within two years of merger termination, target shareholders are 30% worse off than if the bid had been successful. However, Dodd and Ruback (1977) and Taffler and Holl (1991) find no evidence of abnormal long-run financial performance among a sample of firms targeted in an incomplete bid. In their study of 55 incomplete takeovers from 1977-1981, Taffler and Holl (1991) track the performance of targeted firms and report no abnormal financial performance in the three years following bid termination.

In addition, there are two studies – Holl and Pickering (1988) and Parkinson and Dobbins (1993) – that report evidence suggesting that targeted shareholders are better off with the termination of the merger. Holl and Pickering (1988) and Parkinson and Dobbins (1993) report that targets of terminated mergers earn significantly positive abnormal returns 3 and 2 years following termination, respectively. Focusing on the interplay of incomplete takeovers, leverage changes, and managerial entrenchment, Safieddine and Titman (1999) evaluate the financial performance of 573 targets of unsuccessful takeovers from 1982-1991, reporting that targets that increase their leverage ratios the most reduce capital expenditures, sell assets, reduce employment, increase focus, and realize cash flows and share prices that outperform their benchmarks in the five years following the failed takeover. Altogether, the studies on the long-run financial performance of targeted firms provide inconclusive results, with evidence favoring a positive outcome for target shareholders. This essay will help resolve the inconsistency among the results by evaluating the determinants of the cross-section of the observed financial performance of targeted firms as well as observing the post-termination operating performance of targeted firms, which will provide insight into the sources of the financial performance.

3.2.2.3.2 Unsuccessful bidders: long-run financial performance

Even fewer (from this review, only six) studies evaluate the long-run financial impact of termination on the unsuccessful bidder. Unlike the evidence on the targeted firm's experience, this evidence is tilted towards a negative outcome for the shareholders of unsuccessful bidders. Of the six studies, only Holl and Pickering (1988) report evidence that bidders of terminated bids earn positive abnormal returns for 1-3 years after the termination.

The common thread among the remaining studies is a finding of post-termination performance indistinguishable from zero. Dodd and Ruback (1977) study 172 takeover bids from

1958-1976 and bidders of terminated bids earn insignificant returns for five years after the bid. Likewise, Taffler and Holl (1991) and Parkinson and Dobbins (1993) report insignificant abnormal returns the 3 and 2 years following bid termination, respectively. In two distinct sampling periods, both Asquith, et al. (1983) and Savor and Lu (2009) report evidence of underperformance. Asquith, et al. (1983) report that during 1962-1976 bidders of terminated bids earn negative returns for 240 days after the termination, and Savor and Lu (2009) find that during 1978-2003, the mean abnormal return of failed acquirers is 13.6% lower than that of successful acquirers in the first year following termination, and this differential grows to 22.2% for a 2-year horizon and 31.2% for a 3-year horizon. Considering the evidence on long-run abnormal returns, the fate of the unsuccessful bidder seems to be an unprofitable one.

3.2.2.4 Long-run operating performance

There is very little research that evaluates the impact of merger termination on the targeted firm and unsuccessful bidder operational performance. Of the review of the existing empirical literature, there are only three, Holl and Pickering (1988), Taffler and Holl (1991), and Safieddine and Titman (1999), that cover terminated mergers over various periods during 1965-1991. Table 3.4 summarizes the findings of the three studies.

Holl and Pickering (1998) employ discriminant analysis in their study of 50 cases of terminated mergers in the UK from 1965 to 1975, and the variables employed to describe firms' operating performance include size, growth, return on equity, return on assets, retention ratio, and liquidity. Terminated mergers are matched with completed mergers by year, size and SIC grouping of the targeted firm. The discriminant analysis provides evidence that targeted firms in incomplete mergers are not significantly different from targets involved in completed mergers.

Table 3.4: Summary of the evidence on post-termination long-term, operating performance

This table contains a summary of the evidence of the impact of acquisition termination on targeted firm and bidding firm long-run operating performance following acquisition. (+) denotes positive returns, (-) denotes negative returns, and (0) denotes no abnormal performance.

<u>Study</u>	<u>Sample and study period</u>	<u>Targeted post-termination operating performance</u>	<u>Unsuccessful bidding firm's post-termination operating performance</u>	<u>*Conditions</u>
Holl and Pickering (1988)	50 incomplete takeovers from 1965-1975	(+) Targets exhibit higher growth over the subsequent 1-3 years than those that made acquisitions	(0) Bidders do not show significant improvement in profitability or growth over the 1-3 years following bid termination than those that made acquisitions	
Taffler and Holl (1991)	55 incomplete takeovers from 1977-1981	(0) Target companies showed no significant improvement in operating performance	(0) Bidding firms showed no significant improvement in operating performance	
Safieddine and Titman (1999)	573 targets of unsuccessful takeovers from 1982-1991	(+)* Targets that increase their leverage ratios the most reduce capital expenditures, sell assets, reduce employment, increase focus, and realize cash flows and share prices that outperform their benchmarks in the five years following the failed takeover	n/a	Post-termination leverage changes

The analysis of bidders of incomplete mergers indicates that unsuccessful bidders exhibit lower growth and liquidity but higher return on equity before acquisition. When Holl and Pickering (1988) compare the unsuccessful bidder's post-termination operating performance with that of successful bidders, they find that unsuccessful bidders do not show significant improvement in profitability or growth over the 1-3 years following bid termination relative to those that made acquisitions. Overall, the authors conclude that new information revealed during the takeover contest serves to align objectives of bidding managers with the shareholders but do not result in post-termination performance superior to successful bidders.

In a subsequent study similar to Holl and Pickering (1988), Taffler and Holl (1991) study 55 incomplete takeovers in the UK from 1977 to 1981. The authors again use discriminant analysis but in this study, they employ Taffler's (1984) single 'performance analysis score' (PAS

score) that captures various aspects of operating performance in one metric, which serves to simultaneously measure profitability and balance sheet strength. The metric ranges from 1-100 with 100 being highest performance score. Like Holl and Pickering (1988), Taffler and Holl (1991) match terminated mergers to completed mergers by year, size and SIC grouping of the targeted firm. The authors only compare the test and matched control sample during the year of the bid. During the bid year, the average PA-score of 52.7 for targeted firms in incomplete mergers is not statistically different from the successful targets' average score of 48.1. However, the average PA-score for unsuccessful bidders in incomplete mergers of 39.4 is statistically different from the successful bidders' average score of 51.5 at 1%. Taffler and Holl (1991) also compare the PA-score for the targeted and bidding firms in incomplete mergers before and after the bid termination, and they report no statistically significant difference for either group. The authors conclude: "The picture that is emerging from our analysis suggests that the discipline exercised by [the market for corporate control] is, at best, very limited indeed" (p. 278), which contradicts the conclusion made by Holl and Pickering (1988).

Though Holl and Pickering (1988) and Taffler and Holl (1991) make progress towards capturing the real economic consequences of merger termination, there are a number of methodological concerns that detract from the strength of their results. First, both papers use only accounting data, but the existing literature on completed mergers argues that the use of accounting data results in distortions through discretionary elements in reported earnings (Healy et al., 1992).²⁰ Second, though matching is done according to suggested guidelines by Barber and Lyon (1996), Taffler and Holl (1991) do not provide evidence on the long-run abnormal

²⁰ To avoid accounting induced biases, Healy, et al. (1992) proposes an accrual based cash flow return measure of operating performance, which removes the distorting effects of the accounting choice for mergers and of the method of payment from bottom line accounting earnings in order to enable cross-sectional and time series comparisons.

operating performance of the test samples. The difference testing of the pre- and post-termination period in Taffler and Holl's (1991) while useful, are only observed values, unadjusted for expectations typical to an event study (Kothari and Warner, 1995). Third, the studies do not control for firm or transaction characteristics, which prior research have reported to be significantly explanatory variables of performance variability.

A later study by Safieddine and Titman (1999) provides a more comprehensive analysis of post-termination operating performance, though they only investigate the operating performance of the targeted firm and not the unsuccessful bidder. In their study, the operating performance of 573 targets of unsuccessful takeovers from 1982-1991 is evaluated over several windows in years, [-1,1], [-1,2], [-1,3], [-1,4] and [-1,5]. Operating performance is measured by cash flow to book value and cash flow to sales, and a performance benchmark is constructed by Barber and Lyon's (1996) prescriptions. In their univariate analysis, Safieddine and Titman (1999) find no statistically significant differences in matched-adjusted operating performance for all periods and metrics observed. This study contributes considerably to the literature on the long-run operating effects of terminated mergers, but it does not analyze the impact of the termination on the shareholders of the unsuccessful bidder.

3.3 Development of Hypotheses

The literature on long-run performance of mergers suggests that financial (e.g., Agrawal, et al. (1992)) and operating (e.g., Ravenscraft and Scherer (1987)) underperformance is a common merger outcome. If a merger is likely to destroy value for shareholders of the combined firm, then shareholders would be better off without the merger. In this essay, it is submitted that merger termination, while seemingly bad news, could be good news for shareholders, and in this

section, this hypothesis is developed from the perspective of both the bidding and target shareholders.

3.3.1 Targeted firm

In a cash deal, the roles of the two parties are clear: the acquiring firm is the buyer and the targeted firm is the seller, and the relationship ends following the transaction. In a stock deal, the targeted firm will own equity in the newly combined firm and therefore has significant interest in the performance of the combined firm. Therefore, this study focuses stock financed offers because the targeted firm in a deal involving stock has an interest in the value-creating prospects of the combined firm.

Given the documented result of merger underperformance by both academic (e.g., Agrawal, et al. (1992)) and professional studies (e.g., McKinsey & Company (1990)), shareholders of firms targeted in stock financed deals will view the news of a merger with skepticism as the likelihood of value destruction is high. Thus, merger termination may be good news for target shareholders because the firm will no longer participate in a value-destroying activity. Given that target firms have avoided what is on average a value-destroying venture, it may be surmised then that the long-run performance of a target following deal termination will be significantly better than that of a target involved in a completed merger:

H1: (Target efficient investment hypothesis) A targeted firm in a terminated merger will outperform a targeted firm of a completed merger.

This efficiency view of the termination decision therefore views that target firm managers are making value-maximizing decisions or that internal corporate governance structures are sufficiently strong to ensure that managers are, in fact, making efficient decisions on behalf of shareholders. Literature on the efficiency of managerial decision-making provides clear evidence that managerial and shareholder interests are misaligned (e.g., Andrade, et al., 2001), and

furthermore, literature indicates that boards as an internal governance mechanism are ineffective in minimizing the resultant agency costs of misalignment (e.g., Jog and Dutta, 2004). The corporate governance literature therefore reduces the likelihood that the *efficient investment hypothesis* of target firms will be able to explain post-termination performance.

Theoretical and empirical literature point to a secondary channel through which target shareholders benefit from merger termination. Chiplin and Wright (1987) suggest that the threat of takeover, even if the deal is not completed, may be just as effective to induce target managers to improve efficiency as an actual deal. If internal governance mechanisms are sufficiently strong, the threat of takeover may even induce managerial turnover even if the bid is not successful. Thus, there may be a disciplinary effect on non-value maximizing target management in the event of an incomplete bid. This predicted outcome is the *takeover threat hypothesis*. Given the threat of takeover, the targeted firm of a terminated merger will outperform, relative a pre-bid termination performance (H2), which leads to the following hypothesis:

H2: (Takeover threat hypothesis) A targeted firm in a terminated merger will outperform its pre-bid termination performance.

Inherent to the *takeover threat hypothesis* is the assumption the target firms are poor performers prior to acquisition, and it is that performance that motivates the acquisition, but Agrawal and Jaffe (2003) provide strong evidence that target firms are not underperformers, on both stock and operating performance. In addition, the improvement in managerial decision making is presumed to be motivated by management's desire to protect their position within the target firm, since merger completion is most often accompanied by managerial turnover (Martin and McConnell, 1991). Research (e.g., Stein, 1988) indicates that managers of targeted firms are myopic in their response to takeover bids, and so it is not clear how long the discipline of the market for corporate control will persist in aligning the interests of managers and shareholders.

Another outcome following merger termination is possible: target management may veto the merger in order to entrench incumbent managers at the expense of the shareholders because there is a high probability that incumbent managers will lose their positions as a consequence of a successful takeover (see Karpoff, et al., 1996). This predicted outcome is the *entrenchment hypothesis*. Thus, the termination of a takeover bid may lead to increased managerial entrenchment, and it follows that the targeted firm will exhibit no change (or even declines) in performance following the incomplete merger as managers become more entrenched and their goals become less aligned with those of shareholders, a result consistent with corporate governance literature. The literature on antitakeover amendments also provides evidence in support of the outcome defined by the *entrenchment hypothesis*. It has been hypothesized that antitakeover amendments are adopted because incumbent management seeks job protection at stockholders' expense, and DeAngelo (1983) and Akhile and Madura (1996) provide evidence that these amendments are best explained as a device for managerial entrenchment. Similar to the adoption of antitakeover amendments, the rejection of takeover bids may be done with aim protecting management's position, without the aim of making any subsequent improvements subsequent to defending the deal. The preceding discussion leads to the *entrenchment hypothesis*:

H3: (Entrenchment hypothesis) A targeted firm in a terminated merger will not underperform its pre-bid termination performance.

While the *entrenchment hypothesis* (H3) involves an outcome that differs from the *takeover threat hypothesis* (H2), it is difficult to distinguish between the two, since the null hypothesis for each is the other's alternative. The theoretical underpinnings differ: the *takeover hypothesis* views the termination of the bid as facilitating the manifestation of the discipline of

the market for corporate control, but the *entrenchment hypothesis* views the termination of the bid as an obstacle for the market for corporate control's discipline.

3.3.2 Unsuccessful bidding firm

Similar to the case of shareholders of target firms in terminated mergers, the shareholders of bidders in terminated deals should view the announcement of a merger as bad news as the literature highlights a general outcome of merger underperformance.²¹ Merger termination should be viewed by bidding shareholders positively as they have avoided participating in a value-destroying venture. Therefore, relative to bidding firms in successful mergers, it is expected the bidders in terminated mergers will outperform:

H4: (Bidder efficient investment hypothesis) Bidders in terminated mergers will outperform bidders in completed mergers.

In addition to outperforming those bidders in completed mergers, the literature suggests that bidding firms in terminated deals may even outperform their pre-bid performance. It is suggested by Pickering (1983) and Holl and Pickering (1988) that the unsuccessful bid may reveal information about the bidding firm to the market. Both studies provide evidence that prior to announcement, bidders in terminated deals are financially weaker than their target of acquisition, and furthermore, Pickering (1983) reports that many of the bidders in terminated deals become takeover targets themselves. It is argued by authors that a terminated bid may expose the bidding firm's weakness in the takeover market and send a signal of the inefficiency of the bidding firm's management team, making the bidder firm a target for takeover, itself. Under threat of takeover, an unsuccessful bidding firm in a terminated merger is expected to

²¹ For shareholders of bidding firms in terminated deals, this outcome applies equally in stock and cash financed deals.

outperform its pre-bid termination performance.²² This view therefore proposes a disciplinary effect from the market for corporate control that compels bidding firms to improve performance in order to reduce the likelihood of future bids on their own assets which also acts to protect management's jobs (Wong and O'Sullivan, 2001). The preceding paragraph leads to the following:

H5: (Takeover threat hypothesis) The post-bid termination performance of bidders in terminated mergers will be better than their pre-bid termination performance.

3.4 Sample Construction

The objective of this essay is to test whether firms in terminated mergers perform well in the post-termination period. Thus, the primary sample of this paper is targets and bidders involved in terminated bids. Successful targets and bidders present a natural counterfactual for the long-run financial and operating performance because industry and size-matched successful bidders represent how terminated mergers *would* have performed had the transaction had completed. Therefore, in addition to parties to incomplete mergers, a control sample of parties involved in consummated mergers was created. This study constructs an additional benchmark of post-termination performance consisting of rivals of parties to incomplete mergers that were not involved in any takeover activity. The industry benchmark is used to control for industry effects.

3.4.1 Primary sample: targeted firms and unsuccessful bidders

The primary test sample consists of unsuccessful takeovers that were announced between 1980 and 2010, which allows for the observation of firm performance over the five years following merger termination. The initial list of acquirers and targets (as well as various deal

²² There is an alternative explanation of a bidder's post-termination performance. Instead of improving performance, a bidder may pursue another target in order to mark their own inefficiencies. In this study, bidders who do not engage in subsequent mergers are studies, and therefore, this alternative explanation is not explored.

characteristics) come from the *SDC Platinum Mergers and Acquisitions* database. The initial search is subjected to the following restrictions:

1. Merger is listed as incomplete.
2. The bidder and the target are US public firms.
3. For the sample of targets, the offer involves at least 10% stock as the medium of exchange.²³
4. The deal is not classified as a bankruptcy acquisition, going private transaction, leveraged buyout, liquidation, privatization, repurchase, reverse takeover, or restructuring.
5. The bidder intends to obtain control of the target (more than 50%) as a result of the transaction.
6. The bidder and target are covered in *Datastream* database with sufficient data to calculate announcement period returns.
7. The transaction value is at least \$1M and represents at least 5% of bidder market capitalization measured 30 days prior to the announcement of the deal.²⁴

The resultant test sample consists of 358 target/bidder pairs. When a target firm cancels a merger, it could be that it wants to pursue other offers and thereby to maximize shareholder wealth. This study seeks to capture the long-run performance of cancelled mergers, and thus, incomplete mergers must be ‘clean’ in that they involve targets and bidders that are not party to a subsequent acquisition. This sample is divided into four types of transactions: deals withdrawn by the bidder, deals defended or withdrawn by the target, mutually-terminated deals, and deals that are exogenously incomplete (i.e., deals that are not terminated by the bidding firm or

²³ This criterion is to ensure that target shareholders would have owned some portion of the combined firm if the merger had been successful. If the deal had been a cash deal, the target shareholders are not owners of the combined firm post-acquisition, and therefore, do not have any stake in the post-acquisition performance of the combined firm. Research (Thomsen et al, 2006) indicates that when ownership blocks are larger than 10%, the blockholders have a significant impact on, and therefore a significant stake in, firm performance.

²⁴ The employment of this screen is standard in the literature (for example, Chemmanur, et al. (2009), Savor and Lu (2009), Di Giuli (2013)). This screen ensures that the proposed deal has a material impact on the acquirer’s future performance.

targeted firm, but instead are terminated by some exogenous source, for instance, by a regulatory body). *Factiva* is used to determine why each incomplete deal did not close.

3.4.2 Performance benchmarks

In order to extract abnormal performance from observed financial operating performance, three benchmarks are employed: the performance of matched successful mergers, the performance of matched-industry peers of the targeted firm and unsuccessful bidder, and the pre-bid performance of the targeted firm and the unsuccessful bidder.

3.4.2.1 Successful mergers

The bidders of successful mergers represent a proxy for how the completed bids would have performed had they managed to consummate their transactions. This sample is collected using the same criteria presented above, save for the restriction that the acquisition is not completed. Following the methods employed in Holl and Pickering (1988) and Taffler and Holl (1991), bidder and target pairs are matched by firm characteristics by industry, past performance, and also, total assets if more than one firm provides a match.²⁵ The matched sample of completed mergers also consists of 358 target/bidder pairs. While the matching provides for a deal match, there may be significant differences in the attributes of the target and bidding firms in completed and terminated deals (as is observed in this study's descriptive statistics in Table 3.6, along with an outcome similar to that observed by Savor and Lu (2009)). The matching criteria, however, and the resultant control sample make inroads in providing for a test sample counterfactual.

²⁵ Matching follows the propositions of Barber and Lyon (1996) who simulate event studies in order to obtain a long-run operating performance event study design that optimizes the power of the results. Barber and Lyon (1996) report that the most important design element is benchmark matching, and the authors argue that matching based on past performance and industry SICs provides for the most powerful tests.

3.4.2.2 Industry benchmark

The performance of targeted firms and unsuccessful bidders is also evaluated against industry peers, which provides insight into the industry-adjusted performance of parties in an incomplete bid. Therefore, a secondary control sample of rivals of targets and bidders of terminated deals is constructed, with firms matched by industry, past performance, and also, total assets if more than one firm is a match.

3.4.2.3 Pre-bid performance

A third performance benchmark is the targeted firm and unsuccessful bidder's pre-termination performance. Relative to pre-termination performance, the *takeover threat hypothesis* (*H2* and *H5*) predicts post-termination outperformance and the *entrenchment hypothesis* (*H3*) predicts post-termination underperformance, and thus, the benchmark of pre-termination performance permits the testing of this study's *H2*, *H3*, and *H5*.

3.4.3 Data sources

In addition to the identities of the involved parties, transaction data is obtained from *SDC Platinum*. This source also provides the *Datastream* identifier, which is used to cross-reference the two databases. From *Datastream*, short- and long-term financial and operating performance data is collected. *Factiva* is used to identify the party terminating the merger.

3.5 Methodology

This study seeks to evaluate the long-run impact on shareholders of firms involved in an unsuccessful merger. Therefore, the methodology that this essay employs draws on several earlier studies of post-event (acquisition and termination) performance, namely, Loughran and Vijh (1997), Healy, et al. (1992), Safieddine and Titman (1999), and Ghosh (2001), among

others. To test this study's hypotheses, the long-run financial and operating abnormal performance of parties to a terminated bid is measured and compared. To evaluate the market's perception of the termination at the time of announcement, the bid announcement and termination announcement returns are documented. Key constructs, associated metrics, and related literature are summarized in Table 3.5.²⁶

Table 3.5: Study construct measurement

This table contains information on how the key constructs in this study are measured. It also includes the studies that inform the use of the particular measures.

<u>Construct</u>	<u>Metric(s)</u>	<u>Symbol</u>	<u>Informing study/studies</u>
Short-run wealth effects	Daily cumulative abnormal returns	CARs	Kothari and Warner (1995) Corrado (1989)
Long-run financial performance	Monthly cumulative abnormal returns Monthly buy and hold abnormal returns	CARs BHARs	Kothari and Warner (1995) Ang and Zhang (2015)
Long-run operating performance	Profitability (ROA), growth (revenue growth, Tobin's q), efficiency (total costs to total assets)	ROA, TC/TA, $g_{Revenue}$ Growth, Tobin's q	Barber and Lyon (1996)
<u>Cross-sectional regression controls:</u>			
1. Initiator of merger termination	Dummy variable that equals 1 if the bidder terminated the deal, and zero otherwise	BidderTerm	Chang and Suk (1998) Safieddine and Titman (1999)
	Dummy variable that equals 1 if the target terminated the deal, and zero otherwise	TargetTerm	
	Dummy variable that equals 1 if the deal is exogenously terminated, and zero otherwise	ExoTerm	
2. Medium of exchange	Dummy variable that equals 1 if the deal is all stock or heavily stock financing, and zero otherwise	StockDummy	Chang and Suk (1998) Savor and Lu (2009)
3. Interaction of (1) and (2)	Interaction of initiator of termination and medium of exchange		Chang and Suk (1998) Savor and Lu (2009)
4. Deal attitude	Dummy variable that equals 1 if the deal is friendly, and zero otherwise	Friendly	Burkart and Panunzi (2006) Ryngaert and Scholten (2010)
5. Effect of leverage	Long-term debt-to-equity ratio	D/E	Safieddine and Titman (1999)
6. Industry relatedness	Dummy variable that equals 1 if the targeted firm and unsuccessful bidder share the same SIC code, and zero otherwise	Related	Kruse, et al. (2002) Ghosh (2001)
7. Relative size of the target	Target total assets / bidder total assets, pre-bid announcement	LogRelativeSize	Linn and Switzer (2001) Switzer (1996)
8. Bidder competition	Dummy variables that equals 1 if the deal involved more than one bidder and zero otherwise	MultipleBidders	

²⁶ Officer (2007) finds that target shareholders in deals with termination fees benefit from higher completion rates, which he attributes to termination fees serving as efficient contracting devices. It would have been useful to include termination fees (or break-up fees) as a control variable in this study, but the data on termination fees are limited, so this variable is dropped from the analysis.

The analysis performed in this study will substantially augment knowledge on the long-run effects of merger termination. Previous studies similar to this study by Holl and Pickering (1988) and Taffler and Holl (1991) evaluate small samples of mergers during the 1965-1975 period, which limits the generalizability of the results to more recent merger activity, especially since recent merger waves have been shown to differ substantially from those during the 1960s and 1970s (Martynova and Renneboog, 2008). Furthermore, the methodology used in both Holl and Pickering (1988) and Taffler and Holl (1991) is overly simple in that both involve univariate analysis and no cross-sectional analysis, and therefore, these studies do not control for variance across time, industry, and firms.

3.5.1 Announcement returns

The market's reaction to the termination announcement reveals information on the market's expectations of the *ex post* performance of the targeted firm and unsuccessful bidder. The traditional event-study technique is used to capture the abnormal daily returns, and two approaches are employed to measure statistical significance: parametric and non-parametric tests of abnormal returns.

3.5.1.1 *Abnormal announcement returns*

To capture abnormal returns, traditional event study, presented by Kothari and Warner (2005), is used. Three sets of benchmarks are employed to evaluate abnormal returns: pre-acquisition returns, peer returns, and expected returns calculated using CAPM, Fama and French 3 factor model, and the Fama and French model augmented with the momentum factor. Abnormal returns are cumulated (CARs) over [-1,1], [-5,5], [-10,10], and [-20,20] windows. Abnormal returns are calculated at announcement ('ACAR') and termination ('TCAR'). Should the window of

observation of announcement and termination overlap, the observation is dropped from the analysis as the termination returns may be contaminated by announcement returns.

3.5.1.2 Parametric tests of abnormal returns

The parametric test statistics for the cumulative abnormal residual method is described by Equation (12):

$$t - statistic = \frac{CAR_{t1,t2}}{[\sigma_{t1,t2}]/\sqrt{N}} \quad (12)$$

where $CAR_{t1,t2}$ are the cumulative abnormal returns calculated over the window $[t1,t2]$ and $\sigma_{t1,t2}$ is the standard deviation of the observed cumulative abnormal returns.

3.5.1.3 Non-parametric test of abnormal returns

The preceding parametric test is the dominant approach to event-study analysis. There is a powerful non-parametric alternative that has the advantage of not requiring an assumption of returns distribution. Using a simulation approach similar to Brown and Warner (1985), Corrado (1989) evaluates a nonparametric rank test for abnormal security-price performance in event studies and concludes that the rank test is better specified under the null hypothesis and more powerful under the alternative hypothesis than the parametric t-test. Therefore, in addition to the traditional parametric approach, abnormal returns are evaluated with non-parametric analysis, described in Corrado (1989). To implement this test method, the excess returns are calculated (Equation (13)) with the selected expected returns model. Next, the excess returns are transformed into their respective ranks. If Z_{it} denotes the rank of the excess return ε_{it} in a time series of E_{it} excess returns and σ_Z is the standard deviation of excess returns, then the day $t = 0$ test statistic is:

$$non - parametric\ test\ statistic = \frac{[\frac{1}{N} \sum_{i=1}^N (Z_{it} - \frac{E_{it}-1}{2})]}{\sigma_Z} \quad (13)$$

where Z_{it} denotes the rank of the excess return ε_{it} in a time series of E_{it} excess returns and σ_Z is the standard deviation of excess returns.

The rationale underlying the ranking procedure is that abnormal returns are transformed into a uniform distribution across the possible rank values regardless of the original distribution in the original returns data. Furthermore, this method “precludes the misspecification of the nonparametric signed rank and sign tests” (Corrado, 1989, p. 388).

3.5.2 Documenting long-run performance

A key contribution of this study is the documentation and analysis of the long-run, post-termination financial and operating performance of both bidding and targeted firms.

3.5.2.1 *Long-run financial performance*

The approach employed to evaluate the long-run event study is based on the same logic developed in the previous section; however increased caution must be taken with the research design and interpretation of results as long-run event studies suffer from skewness, cross-correlation and therefore have less power than short-run event study tests (Kothari and Warner, 1995). Following the suggestions of Kothari and Warner (1995) and Ang and Zhang (2015), the drawbacks of long-run event study analysis are minimized by using a bootstrapped skewness adjusted t-statistic and by using one-to-one matched rivals as the key benchmark of expected performance.²⁷ Other benchmarks of expected performance are included to enhance the robustness of the analysis, including mean pre-acquisition firm performance and the 3 and 4 factor asset pricing models.

For this essay’s long-run event study of abnormal returns, the following design is employed: the estimation period for expected monthly returns of sample firms is [-65,-5] months,

²⁷ The study employs double bootstrapped test statistics available in STATA statistics software package, with 100 resamples.

and the cumulative abnormal returns is calculated for the windows [1,12], [1,24], [1,36], [1,48], and [1,60] months, with $t=0$ being the month of termination announcement. Like the short-run event study, significance is tested using both parametric (t -test) and non-parametric (Corrado rank) test statistics. The documented long-run financial performance of both targeted firms and unsuccessful bidders of terminated mergers is then compared with the two benchmarks (parties to a completed transaction and industry rivals) using mean and median difference testing.

3.5.2.2 Long-run operating performance

The long-run abnormal operating performance of the parties involved in an incomplete merger is documented in this study. The design of this analysis draws on the work of Barber and Lyon (1996) who simulate event studies in order to obtain a long-run operating performance event study design that optimizes the power of the results. Barber and Lyon (1996) report that the most important design element is benchmark matching, and the authors argue that matching based on past performance and industry SICs provides for the most powerful tests. Abnormal operating performance is estimated as the difference between the test sample and the matched control benchmarks (successful mergers and industry benchmark). The operating performance is evaluated along a number of performance metrics: profitability (ROA), growth (revenue growth, Tobin's q), and efficiency (total costs to total assets). The performance measures are obtained from financial statements sourced from *Datastream*, for the 5 years before and 5 years after the merger termination. Consistent with previous studies that use this method (including Otchere and Zhang, 2001; Zhu et al., 2011), year 0 is excluded for this analysis as it contains both pre- and post-acquisition data. Pre-acquisition performance is defined as median (average) performance over the [-5,-1] year period, and post-acquisition performance is defined as median (average) performance over the [1,5] year period.

The documented long-run operating performance of both targeted firms and unsuccessful bidders of terminated mergers is then compared with the two benchmarks (parties to a successful transaction and industry rivals) using mean and median difference testing. In addition, the post-acquisition operating performance of the test sample is compared with their pre-acquisition performance in order to determine any changes (improvements or otherwise) in operating performance following bid termination. The difference in means is tested using *t*-test and the difference in medians are examined using the Wilcoxon signed-rank test.

3.5.3 Cross-sectional regression analysis

A series of cross-sectional regressions are run in order to capture the abnormal post-termination performance of bidders and targets following termination. In these regressions, long-run financial and operating performance is regressed on dummy variables delineating the test from the control samples (*TermDummy*) as well as a set of control variables summarized in Table 3.5. The regressions are run separately on the set of bidding firms and target firms.

The long-run financial performance model takes the form of Equation (14):

$$\text{Abnormal returns} = f(\text{TermDummy}, \text{Control variables}, \text{TerminatedDummy} * \text{Control variables}) \quad (14)$$

where the long-run cumulative abnormal returns and buy and hold abnormal returns (where the expected performance is established using the one-to-one rival matching procedure, as advised by Ang and Zhang (2015)), *TerminatedDummy* equals 1 if the firm is involved in a terminated merger and zero otherwise, and control variables are those described in Table 3.6.

The long-run operating performance model will take the form of Equation (15):

$$\text{Operating performance} = f(\text{TermDummy}, \text{Control variables}, \text{TermDummy} * \text{Control variables}) \quad (15)$$

where the long-run operating performance is the average 5 year profitability, growth, and efficiency of the firm, *TermDummy* equals 1 if the firm is involved in a terminated merger and zero otherwise, and control variables are those described in Table 3.5 (initiator of termination, medium of exchange, deal attitude, leverage, industry relatedness, and relative size of target). The models described by Equations (10) and (11) are corrected for heteroscedasticity using the White adjusted error to calculate test statistics. The large sample, cross-sectional analyses implemented in this study substantially augments previous work on the post-termination performance of bidder and target pairs, which has evaluated small samples using univariate analyses during merger waves of the 1960s and 1970s.

3.6 Results

3.6.1 Descriptive statistics

The test sample for this study consists of 358 target/bidder pairs in terminated mergers and the matched control sample is comprised of 358 target/bidder pairs in completed mergers. Panel A of Table 3.6 presents descriptive statistics for the test and control samples in the year of acquisition announcement. The final two columns in Panel A of Table 3.6 provide a comparison of the targeted firm in an unsuccessful deal to a target firm in a completed deal (Column (1-3)), and the unsuccessful bidder and bidder in a completed deal (Column (2-4)). While there is no statistically significant difference in total assets (as is expected given that one of the matching criteria is target total assets), the targeted firm in an unsuccessful deal is smaller than the target firm in a successful deal, by total revenue and number of employees, differences which are both significant at less than 5%. Sales of targeted firms in terminated deals average \$723 million while targets in completed deals average \$1,924 million, and similarly, targeted firms in

terminated deals employ an average of 2123 employees whereas target firms in completed transactions employ an average of 8,650 employees. The comparison also indicates that targeted firms in terminated deals are less profitable (lower median *ROA*) and have lower market valuations (lower average Tobin's *q*). Furthermore, the terminated targets have higher levels of financial leverage (lower median *D/E*) than completed targets.

Column (2-4) of Panel A of Table 3.6 provides a comparison of the acquiring firms in each sample, and this comparison indicates considerable differences between the unsuccessful and successful bidder groups. Bidders in terminated mergers are significantly smaller than those in successful mergers by total assets, total revenue, and number of employees, the differences are significant at less than 5%. Together with the comparison of target groups, this finding indicates that terminated mergers more often involve smaller firm pairs than those transactions that complete. Bidders in terminated mergers have higher levels of profitability (in both mean and median *ROA*), but lower levels of revenue growth and Tobin's *q* than bidders in completed targets.

Panel B of Table 3.6 compares average transaction characteristics of terminated and completed deals. In accordance with the finding of smaller sized targets with lower Tobin's *q* in Panel A, the average deal value of a terminated transaction is \$373.03 million where the average deal value in the matched sample of completed transactions is \$443.7 million. This analysis also indicates that premium offered in terminated mergers is lower than that in completed mergers, which may be a function of deal size as previous work (Moeller, et al. 2004) has identified a positive relationship between deal size and premium. In terminated transactions, the parties are closer in size (where the average relative size of target to bidder is 86.6%) than in completed

Table 3.6: Summary statistics

This table contains the summary statistics of targeted and bidding firms in the sample of terminated and completed mergers. Panel A provides firm statistics and Panel B provides transaction statistics. The data are from the financial statements in the year of bid announcement. In Panel A, Column (1-3) provides the test statistics for a comparison of target firms in terminated and completed transactions, and Column (2-4) provides the test statistics for a comparison of acquiring firms in terminated and completed transactions. The t-statistic and z-statistic are for difference in mean and median tests respectively. The symbols ***, ** and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

<i>Panel A: Firm statistics</i>	Terminated transactions		Completed transactions			
	Targeted firm (1) Median Mean	Unsuccessful bidder (2) Median Mean	Target firm (3) Median Mean	Successful bidder (4) Median Mean	(1-3) z-stat t-stat	(2-4) z-stat t-stat
Total assets (000\$)	117,667.00 3,966,237.10	499,820.00 2,552,939.68	413,311.00 2,102,725.97	1,115,546.00 10,708,720.36	-0.559 0.412	-4.965*** -2.361**
Total revenue (000\$)	59,967.50 723,050.67	241,383.00 1,792,878.91	330,586.50 1,924,047.80	547,811.00 3,788,456.77	-3.956*** -1.979**	-4.244*** -2.528***
Number of employees	309.00 2,122.65	1,055.50 8,455.61	1,425.00 8,649.59	2,956.00 13,045.78	-3.938*** -3.081***	-4.809*** -1.796*
EPS, observed	0.760 7.374	0.980 1.423	0.900 1.168	1.030 24.404	-1.217 1.126	-1.182 -0.914
ROA	-0.005 -0.158	0.031 1.369	0.022 -0.130	0.018 -0.047	-3.016*** -0.356	2.194** 2.718***
Revenue growth	0.018 0.725	0.061 1.227	0.057 0.145	0.187 0.355	-0.621 0.688	-6.581*** 1.016
Tobin's <i>q</i>	0.512 0.992	0.483 0.493	0.796 1.342	0.697 1.030	-1.848* -1.182	-2.024** -2.570***
D/E	0.735 1.143	0.750 0.774	0.355 0.441	68.165 1.113	1.837* 1.172	-0.314 -0.682
Cash/TA	0.045 0.144	0.033 1.257	0.046 0.133	0.001 0.087	0.289 0.236	0.879 0.663
<i>N</i>	358	358	358	358		
<i>Panel B: Transaction statistics</i>						
	Terminated transactions		Completed transactions			
Avg deal value (\$mil)	373.030		443.737			
Avg premium	51.517%		60.065%			
Avg relative size of target to bidder	86.622%		32.617%			
Friendly deals	84.078%		84.637%			
Deals with competing bidder	16.480%		4.190%			
Deals with related pairs	33.520%		44.134%			
Deals with stock financing > 50%	30.168%		48.045%			
# deals, 1980-1990	31		10			
# deals, 1990-2000	194		190			
# deals, 2000-2014	133		158			
# deals, 1980-2014	358		358			
Average (Median) days to termination / completion	133.03 (89.50)		72.78 (30.00)			
% deals terminated by bidder	33.240%					
% deals terminated by target	41.899%					
% mutually terminated deals	21.788%					
% deals terminated exogenously	3.073%					

transactions where the average relative size of target to bidder is 32.6%. Considering the attitude of the deal, there is little difference observed between the two samples, with approximately 85% of both groups of transactions being characterized as friendly deals. About 16% of terminated mergers involve a competing bidder, whereas the same observation is only 4% of successful deals.²⁸ Approximately 33.5% of terminated transactions involve pairs that operate in the same industry (3-digit SIC), whereas the corresponding number for completed transactions is 44.1%. Of the terminated deals, 30% of the offers involved at least 50% stock financing, and for completed deals, this figure is substantially higher, at 48%. From these results and those presented in Panel A, it can be surmised that there are important differences in the parties and conditions when a deal is terminated versus when a deal is completed. To control for these differences, firm and transaction controls are included in the subsequent analyses.

Figure 3.1: Frequency of terminated U.S. deals relative to completed deals, 1980-2013

The frequency of terminated deals relative to completed deals seems to be decreasing over time. To further disentangle this observation, the annual ratio of terminated to completed

²⁸ It may be that the cause of termination in some deals is the presence of a competing deal. Since the sample involves targets not involved in subsequent M&A activity, these competing bids do not materialize into actual firm combinations.

deals is plotted over the period of observation, and the results are displayed in Figure 3.1 of this thesis. It is observed in this figure that the ratio is stable over the 1980s, then decreases substantially from 1992 to 2014, which may be attributed to the friendly nature of deals during this period. The termination trend does not appear to move in association with merger waves observed in Figure 1.1. Among the terminated deals, the average and median days from announcement to termination is 133 and 190, respectively. For the sample of completed deals, the average and median days from announcement to completion is 73 and 30, respectively. The coding of the initiator of termination (bidder, target, mutually, or exogenously terminated) shows that 33% of the deals were terminated by the bidder, 41% by the target, 21% mutually terminated, and 3% exogenously terminated.²⁹

3.6.2 Announcement Returns

3.6.2.1 *Target announcement and termination returns*

Surveys of M&A literature (e.g., Jensen and Ruback (1983), Jarrell, et al. (1988), Andrade, et al. (2001), Martynova and Renneboog (2008), and Eckbo (2009)) agree that at the announcement of an acquisition bid, value is created for the target and acquiring shareholders combined, with the majority of the gains accruing to target shareholders. Upon termination of an acquisition bid, one might expect a reversal of the value effects observed at the announcement, but early studies of incomplete mergers that examine the short-term wealth effects around the time of merger termination (Dodd and Ruback (1977) and Bradley (1980)) suggest a permanent revaluation effect. When the bid is initially announced, the target firm's stock price increases and upon announcement of termination, the stock prices declines but not necessarily by the same

²⁹ Table 3.6 points to significant differences between parties and deal characteristics of terminated and completed deals, which is puzzling since the sample of completed deals serves as a proxy for how parties in terminated deals would have performed if the deal had completed. Given that deals are matched on three criteria, it is expected that there are differences in the two samples. In order to control for these differences, a number of firm and transaction characteristics are included in the subsequent analyses.

magnitude as the increase realized upon bid announcement, thereby resulting in a permanent revaluation effect. Following the work of Chang and Suk (1998), the revaluation effect, which is the effect of termination, netting out the effect of announcement, is calculated as the summation of the announcement period CARs ('ACAR') and termination period CARs ('TCAR'), $ACAR+TCAR$. To evaluate the market's perception of termination at announcement, abnormal returns at announcement and termination are examined as are the revaluation effects following the announcement of termination. Several benchmarks of expected performance are employed: pre-acquisition performance, peer-returns (the peer being the matched rival), and asset-pricing models (CAPM, 3 factor model, and 4 factor model). The results of this analysis are presented in Table 3.7. Panel A displays the announcement period abnormal returns ('ACAR') for the sample of terminated targets and completed targets and also provides a comparison thereof. The results are consistent across all benchmarks and windows of observation: the announcement returns of the sample of targets in terminated deals are positive and highly significant. With the benchmark of peer-estimated returns, terminated targets earn 11.4% abnormal returns in the $[-20, 20]$ window, an observation that is significant at less than 1%. Similarly, targets in completed deals also exhibit positive abnormal returns. A comparison of ACARs of the terminated and completed targets provides striking results: across all benchmarks and all windows of observation, terminated targets earn higher abnormal returns than completed targets, which suggests that on average, the market views the sub-set of deals that are subsequently terminated as more appealing than those that are later completed.

Table 3.7: Event study of targeted firm abnormal returns at announcement and termination

This table contains the daily abnormal returns for targeted firms in terminated and completed acquisition bids. Panel A displays the cumulative abnormal returns around the acquisition bid (ACAR), Panel B displays the cumulative abnormal returns around the termination of the acquisition bid (TCAR), and Panel C displays the summative effects of acquisition bid and termination, 'revaluation', which is calculated as ACAR+TCAR. In Column (1-2), the announcement cumulative returns (ACAR) of targeted firms in terminated and completed deal are compared using t-test. The symbols ***, ** and * indicate significance of cumulative abnormal returns and t-tests at the 1%, 5% and 10% level, respectively.

	Panel A: Announcement returns							Panel B: Termination returns			Panel C: Revaluation	
	Targeted firms in terminated bids, at announcement			Targeted firms in completed bids, at announcement			Terminated vs. Completed	Targeted firms in terminated bids, at termination			Targeted firms in terminated bids, revaluation	
	(1) ACAR	t-stat	Corrado	(2) ACAR	t-stat	Corrado	(1-2) t-stat	TCAR	t-stat	Corrado	ACAR + TCAR	t-stat
<i>Benchmark = Pre-acquisition returns</i>												
[-1,1] days	0.093	7.15***	7.62***	0.027	1.89*	1.28	4.94***	-0.068	-6.11***	-3.76***	0.025	1.65*
[-5,5] days	0.117	6.42***	4.62***	0.011	1.73*	1.85*	4.44***	-0.076	-5.25***	-2.26**	0.041	1.86*
[-10,10] days	0.120	6.34***	4.23***	0.050	1.73*	1.85*	4.38***	-0.072	-4.28***	-1.57	0.048	2.03**
[-20,20] days	0.124	5.80***	2.78***	0.074	1.88*	1.94*	4.01***	-0.069	-2.98***	-0.75	0.055	1.76*
<i>Benchmark = Estimated peer returns</i>												
[-1,1] days	0.086	6.45***	6.19***	0.010	1.01	1.46	4.46***	-0.064	-5.47***	-2.80***	0.022	1.37
[-5,5] days	0.095	4.87***	3.37***	0.011	2.40**	1.49	3.37***	-0.085	-5.41***	-1.61	0.010	0.38
[-10,10] days	0.098	4.54***	3.74***	0.053	2.58***	2.40**	3.14***	-0.079	-4.35***	-1.54	0.019	0.66
[-20,20] days	0.114	3.52***	3.39***	0.067	1.95*	1.70*	2.43**	-0.086	-3.49***	-0.36	0.028	0.50
<i>Benchmark = Expected returns</i>												
CAPM												
[-1,1] days	0.090	6.99***	7.20***	0.027	1.08	0.33	4.84***	-0.070	-6.30***	0.08	0.020	1.32
[-5,5] days	0.106	5.90***	7.14***	0.040	1.91*	1.84*	4.08***	-0.086	-5.91***	2.08**	0.020	0.89
[-10,10] days	0.099	5.30***	8.18***	0.063	1.94*	1.83*	3.66***	-0.092	-5.56***	3.67***	0.007	0.30
[-20,20] days	0.083	4.08***	8.11***	0.045	1.66*	2.20**	2.83***	-0.108	-4.86***	6.22***	-0.025	-0.78
3-factor model												
[-1,1] days	0.094	7.25***	7.58***	0.021	1.83*	1.53	5.02***	-0.068	-6.18***	-0.94	0.026	1.70*
[-5,5] days	0.115	6.35***	7.21***	0.023	1.66*	1.55	4.39***	-0.076	-5.26***	1.23	0.040	1.81*
[-10,10] days	0.118	6.24***	7.81***	0.018	1.72*	2.16**	4.32***	-0.073	-4.27***	2.68***	0.045	1.60
[-20,20] days	0.120	5.62***	7.88***	0.011	1.93*	1.70*	3.89***	-0.071	-3.06***	5.54***	0.048	1.54
4-factor model												
[-1,1] days	0.094	7.29***	7.44***	0.023	1.91*	1.74*	5.04***	-0.068	-6.24***	-0.72	0.026	1.70*
[-5,5] days	0.118	6.47***	7.51***	0.014	1.39	1.75*	4.48***	-0.077	-5.37***	1.41	0.042	1.89*
[-10,10] days	0.121	6.39***	8.22***	0.037	1.95*	1.85*	4.42***	-0.072	-4.26***	3.00***	0.049	2.09**
[-20,20] days	0.124	5.82***	8.12***	0.074	1.82*	1.72*	4.02***	-0.067	-2.92***	5.85***	0.057	1.84**

Panel B of Table 3.7 shows the abnormal returns at termination ('TCAR'). For all benchmarks and windows of observation, the TCARs are negative as expected, an outcome similar to that of previous studies (e.g., Dodd and Ruback (1977) and Chang and Suk (1998)). Relative to matched peers, TCARs are -8.6%, -7.9%, -8.5%, and -6.4%, for the [-20,20], [-10,10], [-5,5], and [-1,1] windows, respectively, and these observations that are all significant at less than 1%. Panel C of Table 3.7 evaluates the combined effect of announcement and termination abnormal returns on targets in terminated deals. Following the process applied by Chang and Suk (1998), the revaluation effect is defined as 'ACAR+TCAR'. The analysis of the revaluation effect of target shares is mixed across benchmarks. When benchmarking with pre-acquisition returns and the 3-factor and 4-factor asset-pricing models, there is evidence of a positive revaluation effect that range from 2.5% to 5.7%, which could be the result of information revelation on the inefficiency of target management prior to the bid, which the market is expecting to be improved given the threat of takeover (per the *takeover threat hypothesis*).³⁰ It may also be that the bid provided a signal of target undervaluation, and this information revelation is not reversed in the event of termination. However, when benchmarking with peer returns and the capital asset pricing model, the revaluation effect (ACAR+TCAR) is not statistically significant.

3.6.2.2 Bidder announcement and termination returns

Previous studies of acquirer announcement returns are mixed: one group of studies finds significantly negative returns in the range of -1% to -3%; a second group finds significantly

³⁰ There are other possible explanations for this observation. First, it may be information revelation of a positive future outlook of the target as an independent entity. Second, it may be that net announcement-termination effect could be due to the *acquisition probability hypothesis*. Even though by nature of this study's sample construction, target firms are not involved in subsequent acquisition activity, it may be that at the time of termination, there is an increased likelihood of another bid, which results in a higher net price of target shares following termination.

positive returns in the range of 1% to 7%; and a third group finds no significant abnormal returns. Upon termination announcement, evidence of bidder abnormal returns is also mixed. Dodd (1980) finds that bidder firms earn small positive withdrawal returns, and Chang and Suk (1998) report positive excess returns for bidders offering stock and negative excess returns for bidders offering cash. Likewise, Savor and Lu (2009) report that bidder returns upon termination announcement are positive for stock financed deals and insignificant for cash financed deals. However, Jacobsen (2014) reports evidence that bidder termination returns are -0.1% and not statistically significant, and Bradley (1980) and Bradley, Desai, and Kim (1983) report significant negative abnormal returns at termination.

The evidence presented in Panel A of Table 3.8 generally suggests that both groups of bidders experience negative abnormal returns, but the observations for both are significant in only some windows of observation. For bidders in deals that are later terminated, the abnormal announcement returns (ACARs) of -4%, -4.2%, and -4.4% are statistically significant in the [-20,20] window of observation when the expectations model to estimate abnormal returns is pre-acquisition returns, 3-factor model, and 4-factor model. When ACARs of both groups are compared (see Column (1-2) in Panel A), there is no significant difference between the ACARs of both groups. The termination abnormal returns (TCAR), presented in Panel B of Table 3.8 show that bidders in terminated deals experience negative abnormal returns, though again, these observations are significant in select windows and with certain benchmarks. The negative announcement returns and negative termination returns points to a negative revaluation effect, and Panel C provides evidence to support this expectation. These findings are in line with those of Bradley (1980), Bradley, et al. (1983), and Davidson, et al. (1989), and point to a negative outlook on the bidding firm's prospects without the deal. In the following section of this essay,

Table 3.8: Event study of bidding firm abnormal returns at announcement and termination

This table contains the daily abnormal returns for bidding firms in terminated and completed acquisition bids. Panel A displays the cumulative abnormal returns around the acquisition bid (ACAR), Panel B displays the cumulative abnormal returns around the termination of the acquisition bid (TCAR), and Panel C displays the summative effects of acquisition bid and termination, 'revaluation', which is calculated as ACAR+TCAR. In Column (1-2), the announcement cumulative returns (ACAR) of bidding firms in terminated and completed deal are compared using t-test. The symbols ***, ** and * indicate significance of cumulative abnormal returns and t-tests at the 1%, 5% and 10% level, respectively.

	Panel A: Announcement returns							Panel B: Termination returns			Panel C: Revaluation	
	Bidding firms in terminated bids, at announcement			Bidding firms in completed bids, at announcement			Terminated vs. Completed	Bidding firms in terminated bids, at termination			Bidding firms in terminated bids, revaluation	
	(1) ACAR	t-stat	Corrado	(2) ACAR	t-stat	Corrado	(1-2) t-stat	TCAR	t-stat	Corrado	ACAR + TCAR	t-stat
<i>Benchmark = Pre-acquisition returns</i>												
[-1,1] days	0.001	0.24	0.33	0.002	0.61	-0.41	0.00	-0.011	-1.60	-1.47	-0.010	-1.19
[-5,5] days	-0.004	-0.46	-0.58	-0.005	-0.88	-0.05	0.02	-0.028	-2.47**	-2.33**	-0.032	-2.45**
[-10,10] days	-0.018	-1.81*	-1.33	-0.008	-0.92	0.12	-0.14	-0.039	-3.21***	-2.26**	-0.057	-3.78***
[-20,20] days	-0.040	-2.76***	-2.87***	-0.023	-2.13**	-0.40	-0.22	-0.074	-3.97***	-2.62***	-0.113	-4.49***
<i>Benchmark = Estimated peer returns</i>												
[-1,1] days	-0.007	-1.20	-0.26	0.002	0.54	-0.21	-0.11	-0.019	-2.43**	-2.40**	-0.026	-2.82***
[-5,5] days	0.007	0.84	0.68	-0.006	-0.67	-0.57	0.17	-0.035	-2.71***	-2.93***	-0.027	-1.85*
[-10,10] days	-0.012	-1.03	0.77	-0.017	-1.50	-0.87	0.06	-0.023	-1.21	-2.61***	-0.035	-1.92*
[-20,20] days	-0.029	-1.85*	-0.47	-0.039	-2.85***	-1.60	0.13	-0.068	-2.61***	-2.31**	-0.097	-3.46***
<i>Benchmark = Expected returns</i>												
CAPM												
[-1,1] days	0.001	0.10	1.14	0.002	0.78	1.18	-0.02	-0.013	-1.81*	-1.05	-0.012	-1.46
[-5,5] days	-0.006	-0.69	0.82	-0.002	-0.36	2.41**	-0.05	-0.033	-2.95***	-1.23	-0.038	-3.00***
[-10,10] days	-0.022	-2.20**	0.69	-0.003	-0.43	3.71***	-0.25	-0.050	-4.12***	-0.62	-0.071	-4.64***
[-20,20] days	-0.047	-3.36***	-1.03	-0.023	-2.08**	5.70***	-0.32	-0.095	-5.16***	0.85	-0.142	-5.57***
3-factor model												
[-1,1] days	0.001	0.14	0.62	0.001	0.37	0.58	0.00	-0.012	-1.71*	-1.48	-0.011	-1.32
[-5,5] days	-0.007	-0.84	-0.55	-0.002	-0.37	2.01**	-0.07	-0.029	-2.61***	-2.23**	-0.036	-2.79***
[-10,10] days	-0.020	-1.99**	-0.66	-0.004	-0.66	3.30***	-0.21	-0.040	-3.32***	-1.42	-0.060	-3.89***
[-20,20] days	-0.042	-3.01***	-1.99**	-0.025	-2.45**	5.22***	-0.22	-0.077	-4.23***	-0.24	-0.119	-4.77***
4-factor model												
[-1,1] days	0.000	-0.04	0.41	0.002	0.64	0.79	-0.02	-0.011	-1.58	-1.41	-0.011	-1.33
[-5,5] days	-0.007	-0.85	-0.45	-0.001	-0.20	2.10**	-0.08	-0.026	-2.23**	-1.77*	-0.033	-2.49**
[-10,10] days	-0.021	-2.06**	-0.65	-0.004	-0.70	3.37***	-0.22	-0.036	-2.92***	-1.08	-0.057	-3.70***
[-20,20] days	-0.044	-3.09***	-2.15**	-0.022	-2.19**	5.43***	-0.28	-0.075	-3.93***	0.05	-0.118	-4.60***

investigation of the cross-section of target and bidding firm wealth effects (announcement, termination, and net effects) provides insight into the sources of these outcomes observed in the event study.

3.6.2.3 Cross-sectional analysis of short-run termination returns

The literature has identified a number of determinants of target and bidder terminations returns. Dodd (1980), for instance, finds that when the termination is initiated by the target, the target shares retain their bid gains, and when the termination is initiated by the bidding firm, the value of the target shares reverts back to their pre-bid levels. However, Chang and Suk (1998) report insignificant abnormal returns when the target initiates the termination. Several studies, including Sullivan, et al. (1994) and Chang and Suk (1998), incorporate medium of exchange into their analysis of termination returns. In their study of medium of exchange and the target firm valuation effects associated with merger proposals at the time of announcement, Sullivan, et al. (1994) finds that targets exhibit significantly higher TCARs in cash offers than after termination of stock offers. The authors attribute these results to a revaluation of target shares according to private information signaled by the medium of exchange, with cash offers signaling high target value.

Chang and Suk (1998) draw on the Myers and Majluf's (1984) work on information asymmetry to advance the hypothesis that the method of payment of a deal will be stock when the bidder's shares are overvalued and so argue that when the bidder terminates a stock financed deal, it is because bidding firm managers believe the bidder's stock is undervalued. This may appear counterintuitive, since if the shares are undervalued, managers would not have offered to finance the deal with stock issue. In many terminated deals, the time between bid announcement and deal termination is substantial (in this study, the average number of days is 133). Thus, it

could be that the bidder's stock price declines during this time. Chang and Suk (1998) argue that target initiated deal termination may be a signal of the overvaluation of the bidder's stock, or it may signal that the bidder is not perceived to be a good investment opportunity for target shareholders. The results of Chang and Suk's (1998) study are consistent with this hypothesis: bidder termination returns are higher when the terminated deal involved stock financing.

The work of Fishman (1989) and Essay 3 of this thesis provide an alternative explanation for this outcome. In a setting of information asymmetry, the medium of exchange is a risk-sharing tool employed by the bidding firm when there is significant uncertainty regarding the value of the acquired firm and future gains by transforming the target into a shareholder of the newly merged firm. First, if management is certain about the benefits of the acquisition, they would like to appropriate as much of the benefits of shareholders of the target by paying cash. However, there could be substantial information risk at the time of deal negotiation, and management of the bidding firm may have imperfect information of the target or may fear that information on the target is biased. Under high information asymmetry, the deal is risky and/or managers are uncertain of the benefits, and bidding firm managers may want to spread the risk by issuing equity. In a terminated, stock financed deal, the market may perceive the bidding firm shareholders as avoiding a risky, potentially value destroying combination. From this perspective, the market may view the termination of a stock financed, risky deal more positively than a cash financed, certain deal, resulting in higher TCARs in stock financed deals.

With the aim of explaining the termination (TCAR) and revaluation (ACAR+TCAR) returns, a series of OLS regressions is run on the termination returns, and the results are presented in Tables 3.9 and 3.10 for the target and bidding firms, respectively. The model is run with two specifications, on termination (Panel A of Tables 3.9 and 3.10) and revaluation (Panel

B of Tables 3.9 and 3.10) returns. The regressions also include variables to capture the party initiating termination³¹ (bidder terminated, “*BidderTerm*”, target terminated, “*TargetTerm*”, exogenously terminated, “*ExoTerm*”), a dummy to capture medium of exchange (*StockDummy*, which takes on a value of 1 when the deal involves at least 50% stock financing³²), and controls for firm and transaction characteristics. The abnormal returns used as the left-hand side variable in the regressions are those cumulated over the [-20,20] window of observation. Results are provided for abnormal returns estimated using five benchmarks of expected returns (pre-acquisition returns, peer returns, CAPM estimated returns, 3-factor estimated returns, and 4-factor estimated returns). The regressions were also run on the [-10,10], [-5,5], and [-1,1] windows, which produced results similar to those to the [-20,20] window of observation.

The results on TCARs of targets are presented in Panel A of Table 3.9. In the presence of multiple bidders, targets experience positive abnormal termination returns. The market is likely anticipating a subsequent bid by the alternate bidder, but given that the construction of the sample in this study eliminates targets involved in acquisition activity five years following acquisition, subsequent bid from competing bidders do not materialize. Even so, it may be that at the time of termination, there is an increased likelihood of another bid, which results in a higher net price of target shares following termination, consistent with the *acquisition probability hypothesis*. If the deal is terminated by the target, abnormal returns are higher, and the coefficient

³¹ Some deals are coded as jointly terminated. In order to avoid the dummy variable trap, this variable is dropped from the analysis.

³² By using the threshold of at least 50% stock financing, this study is able to capture the impact of ownership that is not limited by full stock financing, since less than full stock financing will still constitute an ownership position for target shareholders following combination and therefore also risk exposure to the performance of the combined firm.

Table 3.9: Cross-sectional analysis of targeted firm short-run abnormal returns

This table displays the results of cross-sectional analysis of target firm daily abnormal returns. In Panel A, the explained variable is the termination announcement returns (TCAR) of the targeted firm in a terminated bid, and in Panel B, the explained variable is the summative effect of announcement and termination announcement returns (ACAR+TCAR) of the targeted firm in a terminated bid. Regressions are estimated with abnormal returns calculated using several estimations of expected performance: pre-acquisition returns, matched peer returns, CAPM, 3 factor model, and 4 factor model. The variables are described in Table 3.5. The symbols ***, ** and * indicate significance of t-statistics at the 1%, 5% and 10% level, respectively. The regressions results have been corrected for heteroscedasticity using White's consistent estimator.

	Benchmark = Pre-acquisition returns		Benchmark = Peer returns		Benchmark = Expected returns (CAPM)		Benchmark = Expected returns (3-factor)		Benchmark = Expected returns (4-factor)	
<i>Panel A: Target abnormal termination returns (TCAR[-20,20]days)</i>										
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
StockDummy	-0.006	-0.06	0.003	0.02	0.035	0.37	0.002	0.02	0.008	0.08
Log(RelativeSize)	0.000	-0.01	0.000	0.01	0.013	0.35	0.009	0.23	0.000	0.00
MultipleBidders	0.223	3.40***	0.162	2.71***	0.218	4.13***	0.213	3.24***	0.222	3.42***
Related	-0.033	-0.73	-0.018	-0.36	-0.017	-0.39	-0.036	-0.79	-0.042	-0.93
Friendly	-0.049	-1.02	-0.052	-1.09	-0.083	-1.94	-0.046	-0.96	-0.033	-0.70
Log(ValueofTrans)	-0.050	-1.78*	-0.037	-1.13	-0.038	-1.41	-0.050	-1.76*	-0.049	-1.71*
D/E	0.013	2.40**	0.006	0.58	0.011	1.56	0.010	2.34**	0.011	2.30**
Log(MVE)	0.007	0.16	0.023	0.53	0.026	0.69	0.008	0.21	0.004	0.11
BidderTerm	-0.014	-0.16	0.020	0.24	0.032	0.41	-0.018	-0.20	-0.022	-0.26
TargetTerm	0.023	2.27**	0.039	2.43**	0.023	2.27**	0.025	2.28**	0.025	2.28**
ExoTerm	0.008	0.09	-0.045	-0.40	-0.027	-0.26	-0.030	-0.35	-0.025	-0.29
BidderTerm*StockDummy	-0.049	-2.38**	-0.104	-2.74***	-0.094	-2.74***	-0.062	-2.47**	-0.053	-2.41**
TargetTerm*StockDummy	0.111	1.80*	0.090	1.64	0.055	2.44**	0.095	1.67*	0.088	1.63
Exo*StockDummy	0.095	0.80	0.298	0.74	0.159	1.27	0.129	1.11	0.099	0.82
Intercept	0.016	0.15	-0.053	-0.48	-0.088	-0.89	0.018	0.16	0.014	0.13
R ²	5.65%		5.33%		7.09%		5.36%		5.40%	
Adj- R ²	4.15%		4.96%		6.86%		5.07%		5.11%	
F-statistic	3.100		2.360		3.810		6.900		4.540	
p-value	0.000***		0.002***		0.000***		0.000***		0.000***	
N	358		358		358		358		358	
<i>Panel B: Target revaluation returns (ACAR[-20,20]days + TCAR[-20,20]days)</i>										
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
StockDummy	0.056	0.48	0.311	1.09	0.125	1.00	0.045	0.36	0.044	0.35
Log(RelativeSize)	0.016	0.30	-0.026	-0.29	0.027	0.52	0.028	0.50	0.020	0.36
MultipleBidders	0.270	3.08***	0.312	1.74*	0.301	3.89***	0.268	3.00***	0.285	3.17***
Related	-0.069	-1.15	0.009	0.10	-0.034	-0.59	-0.078	-1.30	-0.089	-1.51
Friendly	-0.139	-1.98**	-0.044	-0.39	-0.177	-2.85***	-0.119	-1.69*	-0.100	-1.41
Log(ValueofTrans)	-0.061	-1.61	0.017	0.34	-0.039	-1.03	-0.053	-1.40	-0.053	-1.40
D/E	0.006	0.84	0.014	1.05	0.007	0.63	0.001	0.06	0.006	0.68
Log(MVE)	-0.010	-0.20	0.014	0.22	0.028	0.54	-0.010	-0.19	-0.026	-0.49
BidderTerm	0.069	0.71	0.130	1.14	0.143	1.32	0.058	0.56	0.033	0.31
TargetTerm	0.107	1.92*	0.138	2.15**	0.175	2.39**	0.118	1.97**	0.102	1.83*
ExoTerm	0.300	1.09	0.211	1.74*	0.258	1.91*	0.237	1.00	0.200	0.98
BidderTerm*StockDummy	-0.059	-2.38**	-0.454	-2.45**	-0.152	-2.90***	-0.044	-2.27**	-0.027	-2.17**
TargetTerm*StockDummy	0.006	0.03	0.016	0.05	-0.051	-0.28	0.007	0.03	0.005	0.02
ExoTerm*StockDummy	-0.264	-0.91	-0.210	-0.66	-0.149	-0.95	-0.182	-0.72	-0.183	-0.81
Intercept	0.189	1.33	-0.208	-0.90	-0.045	-0.30	0.164	1.10	0.193	1.25
R ²	4.86%		6.65%		6.79%		4.76%		4.96%	
Adj- R ²	3.12%		6.32%		5.84%		4.25%		4.03%	
F-statistic	2.280		2.080		3.550		2.180		2.150	
p-value	0.004***		0.009***		0.000***		0.006***		0.006***	
N	358		358		358		358		358	

of *TargetTerm*StockDummy* is also positive and significant in several specifications. Together, these observations suggest that target firms were possibly reacting to information revelation

between the time of bid and termination. It may be that the target firm garners new information that leads target managers to view bidding firm as undervalued, resulting in a rejection of a bid that uses overvalued stock as currency. Alternatively, it may be that during the time between bid and termination target managers obtain information that indicates a risky deal, which the bidder prefers to finance with stock, and target shareholders withdraw from the deal, since value is less certain. However, when the bidder terminates a stock financed deal ($BidderTerm * StockDummy$), the target's shareholders experience negative abnormal termination returns, an outcome which may be attributed to the information revelation on the value potential and riskiness associated with combining with the target, thereby triggering bidder termination. The evidence suggests that the termination of a stock financed deal may be good news to bidding shareholders but bad news to target shareholders who may have benefited from becoming shareholders in the combined firm. Another possible explanation of this outcome: if indeed the bidder terminated deal is caused by the undervaluation of the bidders' shares, then upon termination, the target will experience negative abnormal returns of upon termination by the bidder since they lost the opportunity to 'buying' into the bidding firms at lower price.

The results in Panel A also show that the higher the value of the transaction, the lower the termination returns, which may be reflective of increased attention to higher value deals ($Log(ValueofTrans)$), and the coefficient of leverage ratio (D/E) is positive and significant. This is in line with the results reported by Safieddine and Titman (1999) who find that targets in terminated have higher leverage ratios, which later translate into efficiency-seeking changes and improvements in operating performance over the five years following termination. Evidence presented by Safieddine and Titman (1999) suggests that increases in leverage are a defense strategy and subsequent operating improvements decrease the likelihood of the threat of

takeovers, allowing the target of a terminated deal to remain independent (consistent with this study's *takeover threat hypothesis*).

Panel B of Table 3.9 provides the results for the same model specification but the dependent variable is the permanent revaluation of shares, measured as ACAR+TCAR, which is a more accurate assessment of the cumulative impact of merger termination, as termination returns may simply be a reversal of announcement returns. Similar to the model specification presented in Panel A of Table 3.9, the presence of multiple bidders is positively associated with revaluation returns, so the presence of the multiple bidders, even if those competing bids do not materialize into a completed deal results in a permanent revaluation of target shares. Furthermore, like the previous specification, the *TargetTerm* coefficient is positive and significant, but the *TargetTerm*StockDummy* loses significance, which suggests that target-terminated stock deals are not associated with termination abnormal returns. As argued above, it is more likely that this form of terminated deal is associated with bidder revaluation, a question investigated in Table 3.10. As in Panel A, the coefficient *BidderTerm*StockDummy* is negative and highly significant in all regressions in Panel B of Table 3.9. This result provides further support for the contention that the bidding firm obtains negative information during the time between bid and termination, causing the bidder to terminate. It could be that market perceives this outcome as a signal of the target firm either as being overvalued by the market or as having missed out on a value-enhancing combination with the bidding firm.

Table 3.10 provides the results for the same set of regressions, but on bidder termination and revaluation returns, in Panels A and B, respectively. In Panel A, the coefficient of the *BidderTerm*StockDummy* variable is positively associated with bidder termination returns, a result that provides support for Chang and Suk's (1998) hypothesis that when the bidder

terminates a stock financed deal, it is because bidding firm managers believe its firm's shares have become undervalued in the market, a signal interpreted by the market that results in positive abnormal termination returns. Similar to the results in Panel A of Table 3.9, the higher the value of the transaction, the lower the bidder's termination returns.

Panel B of Table 3.10 indicates that the initiator of termination is an important determinant of the reversal of merger announcement returns. The *BidderTerm* coefficient, in all regressions is not significant, yet the coefficient of *BidderTerm*StockDummy* is positive and significant. This result reveals that when the bidder terminates a stock bid, it may be that bidding firm managers view their firm's shares as now undervalued and therefore withdraws the deal, again consistent with Chang and Suk (1998). The coefficients of *TargetTerm* and *TargetTerm*StockDummy*, however, are negative and significant, which suggests between the time of bid and termination, target managers view bidding firm as overvalued, resulting in a rejection of the bid that uses overvalued stock as the medium of exchange. Alternatively, it may be that the new information provides target managers with an indication of a risky deal, which the bidder prefers to finance with stock, and target shareholders withdraw from the deal because the value potential for its shareholders is less certain.

The short-run analysis of announcement, termination, and revaluation returns has provided evidence of the market's response to merger termination, which if market efficiency holds, is informative of the performance of firms in the long-run, post-termination period. The event study analysis of target returns shows that terminated targets earn higher bid

Table 3.10: Cross-sectional analysis of bidding firm short-run abnormal returns

This table displays the results of cross-sectional analysis of bidding firm daily abnormal returns. In Panel A, the explained variable is the termination announcement returns (TCAR) of the bidding firm in a terminated bid, and in Panel B, the explained variable is the summative effect of announcement and termination announcement returns (ACAR+TCAR) of the bidding firm in a terminated bid. Regressions are estimated with abnormal returns calculated using several estimations of expected performance: pre-acquisition returns, matched peer returns, CAPM, 3 factor model, and 4 factor model. The variables are described in Table 3.5. The symbols ***, ** and * indicate significance of t-statistics at the 1%, 5% and 10% level, respectively. The regressions results have been corrected for heteroscedasticity using White's consistent estimator.

	<u>Benchmark =</u> <u>Pre-acquisition</u> <u>returns</u>		<u>Benchmark =</u> <u>Peer returns</u>		<u>Benchmark =</u> <u>Expected returns</u> <u>(CAPM)</u>		<u>Benchmark =</u> <u>Expected returns</u> <u>(3-factor)</u>		<u>Benchmark =</u> <u>Expected returns</u> <u>(4-factor)</u>	
<i>Panel A: Bidder abnormal termination returns (TCAR[-20,20]days)</i>										
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
StockDummy	0.011	1.13	0.208	1.86*	0.064	1.68*	0.007	2.08**	0.001	2.01**
Log(RelativeSize)	0.031	1.16	0.003	0.09	0.036	1.32	0.040	1.53	0.042	1.62
MultipleBidders	-0.057	-1.29	-0.181	-1.72*	-0.063	-1.43	-0.075	-1.72*	-0.087	-1.93*
Related	-0.055	-1.48	0.030	0.57	-0.021	-0.58	-0.066	-1.80*	-0.064	-1.71*
Friendly	0.034	0.81	0.121	1.42	0.033	0.83	0.023	0.53	0.037	0.88
Log(ValueofTrans)	-0.033	-1.49	-0.061	-1.77*	-0.045	-1.95*	-0.032	-1.51	-0.037	-1.63
D/E	-0.004	-2.24**	0.002	1.18	-0.003	-2.59***	-0.003	-1.64	-0.002	-1.65*
Log(MVE)	0.022	0.89	0.048	1.54	0.025	1.08	0.012	0.53	0.010	0.37
BidderTerm	0.012	0.19	0.316	2.23**	0.004	0.07	0.024	0.40	0.027	0.44
TargetTerm	-0.041	-0.52	-0.116	-1.30	-0.082	-1.06	-0.074	-0.92	-0.072	-0.86
ExoTerm	0.119	0.76	-0.176	-1.36	-0.003	-0.03	0.197	1.04	0.167	0.98
BidderTerm*StockDummy	0.032	1.29	0.297	1.90*	0.054	2.47**	0.020	2.19**	0.023	2.21**
TargetTerm*StockDummy	0.022	0.19	0.302	0.98	0.029	0.23	0.048	0.42	0.035	0.30
ExoTerm*StockDummy	-0.058	-0.34	0.040	0.18	0.099	0.79	-0.147	-0.72	-0.130	-0.70
Intercept	-0.207	-2.96***	0.041	0.38	-0.231	-3.42***	-0.182	-2.64***	-0.199	-2.81***
R ²	3.89%		7.04%		5.46%		4.74%		4.65%	
Adj- R ²	3.52%		6.06%		5.11%		3.95%		4.51%	
F-statistic	1.73		1.74		2.39		1.71		1.88	
p-value	0.040**		0.039**		0.002***		0.043**		0.022**	
N	358		358		358		358		358	
<i>Panel B: Bidder revaluation returns (ACAR[-20,20]days + TCAR[-20,20]days)</i>										
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
StockDummy	0.005	0.04	-0.192	-1.24	-0.073	-0.54	-0.018	-0.15	-0.015	-0.14
Log(RelativeSize)	0.022	0.53	0.004	0.09	0.029	0.68	0.036	0.88	0.034	0.89
MultipleBidders	0.074	1.30	-0.180	-1.62	0.083	1.36	0.103	0.79	0.123	0.06
Related	-0.048	-0.97	0.034	0.56	0.000	-0.01	-0.067	-1.35	-0.056	-1.13
Friendly	0.036	0.63	0.093	0.97	0.032	0.63	0.037	0.60	0.057	0.97
Log(ValueofTrans)	0.028	0.87	-0.054	-1.54	0.049	1.43	0.023	0.72	0.030	0.92
D/E	-0.002	-0.99	-0.001	-0.90	-0.001	-0.88	-0.001	-0.51	-0.001	-0.34
Log(MVE)	-0.005	-0.13	0.042	1.02	0.010	0.27	-0.010	-0.28	-0.016	-0.44
BidderTerm	-0.033	-0.40	-0.219	-1.49	-0.027	-0.35	-0.022	-0.26	-0.034	-0.40
TargetTerm	-0.164	-1.70*	-0.066	-0.71	-0.215	-2.37**	-0.208	-2.13**	-0.232	-2.32**
ExoTerm	0.217	1.02	-0.013	-0.08	0.027	0.34	0.325	1.07	0.279	1.00
BidderTerm*StockDummy	0.084	2.05**	0.262	2.30**	0.020	2.12**	0.013	2.08**	0.050	2.33**
TargetTerm*StockDummy	-0.017	-2.10**	-0.272	-1.50	-0.016	1.08	-0.074	-1.66*	-0.096	-1.60
ExoTerm*StockDummy	-0.230	-0.94	0.041	0.15	0.069	0.47	-0.303	-0.93	-0.287	-0.96
Intercept	-0.127	-1.15	-0.031	-0.24	-0.190	-1.84*	-0.110	-1.00	-0.132	-1.20
R ²	2.53%		4.29%		4.67%		4.05%		4.27%	
Adj- R ²	2.49%		3.84%		4.24%		4.01%		4.14%	
F-statistic	2.87		2.74		4.41		2.16		2.26	
p-value	0.061*		0.075*		0.002***		0.030**		0.022**	
N	358		358		358		358		358	

announcement returns than completed merger targets.³³ Once termination is announced, these returns are not fully reversed and result in a permanent and positive revaluation. Conversely, analysis of bidder returns at announcement shows no significant difference between bidders in terminated deals and bidders in completed deals. Bidders in terminated deals experience negative abnormal returns, which after accounting for announcement returns, results in a permanent, negative revaluation of bidder shares. Therefore, the analysis of short-run returns provides early evidence in this study that merger termination is good news for target shareholders but bad news for bidding shareholders. Cross-sectional analysis of target and bidder termination and revaluation returns provides evidence that medium of exchange and initiator of the termination are important determinants of returns.

3.6.3 Long-run performance of terminated mergers

3.6.3.1 *Financial performance*

3.6.3.1.1 Long-run event study of stock returns

To evaluate the long-run impact of merger termination on the value of the sample firms, the long-run stock performance is evaluated using the event study methodology. Because long-run analyses of stock returns suffer from important limitations, certain adjustments are made to the models that increase robustness of estimations, including using cross-correlation adjustment and bootstrapped test statistics. Moreover, this study follows the direction of Ang and Zhang (2015) who advise that the optimal benchmark in long-run studies of financial performance is matched rivals. The study also employs other expectations models, including mean pre-acquisition

³³ The difference may be attributed to the difference in profitability (ROA) of the two samples, as observed in the sample summary statistics in Table 3.6. Targets in terminated mergers exhibit lower levels of average profitability relative to targets in completed mergers, a difference significant at 1%. Therefore, targets in terminated mergers are, on average, underperformers, which means that there are greater synergies available if the deal had been consummated. With more potential synergies, the higher the gains to target shareholders, which may explain the higher observed CARs among those targets in terminated deals.

performance and the 3 and 4 factor models, which provides a robustness against the joint hypothesis test problem.³⁴ Both long-run cumulative abnormal returns (CAR) and buy and hold abnormal returns (BHARs) are reported. Tables 3.11 and 3.12 display the results of the event study for targets and bidders, respectively, in terminated deals, relative to targets and bidders in completed deals.

Table 3.11 displays the results for the targets in terminated and completed transactions, and shows markedly different experiences for the two groups. The CARs and BHARs are positive, though small, in all windows of observation for targets of terminated deals, though positive CARs are only significant in [1,24], [1,36], and [1,48] month windows of observation and not at all for the BHARs. In the first two, three and four years following termination, the targeted firm CARs in Panel A amount to 2.1%, 6.0%, and 3.1%, respectively, all significant at less than 5%. Quite the opposite, targets in completed deals exhibit large and negative abnormal returns in all windows of observation.³⁵ Columns (1-2) in both Panels of Table 3.11 compare the abnormal returns of both groups, and the results indicate a statistically significant difference between the two groups, which provides first evidence that target shareholders are better off without the deal.

³⁴ The joint hypothesis problem refers to the issue that when testing for abnormal returns, one is testing for market efficiency and testing for the relevance of an expectations model. This essay employs multiple expectations models, and should the results be consistent across the different expectations models, the results may be attributed to the test of market efficiency and not the pricing models themselves. However, following Ang and Zhang (2015), this essay places greatest weight on the results associated with the expectations model based on matched rivals.

³⁵ The sample size of the targets in completed deals is reduced from n=358 to n=214 because following acquisition, some target firms cease to report independently. To ensure the revised sample is representative of the full sample, an analysis of characteristics of the full and revised sample is performed (on size (total assets), profitability (ROA), growth (EPS growth, with EPS calculated using observed figures), valuation (Tobin's q), and efficiency (total costs to total assets), and no significant differences are revealed. It is therefore concluded that the revised sample is indeed representative.

Table 3.11: Event study of long-run target abnormal returns

This table contains the monthly abnormal returns for targeted firms in terminated and completed acquisition bids, in the 1, 2, 3, 4, and 5 years following the termination and completion of the bid. Panels A, B, C, and D display estimations of long-run cumulative abnormal returns (CARs) using matched firm performance, pre-acquisition performance, 3 factor model, and 4 factor model, respectively, as estimations of targeted firm post-event expected performance. Panel E displays the buy and hold abnormal returns (BHAR) estimated using a one-to-one matched rival as a benchmark of expected performance. The test statistics for the abnormal returns are calculated using a bootstrapped, skewness-adjusted t -statistic. Columns (1-2) compared the long-run financial performance of targeted firms in terminated and completed bids using a t -test. The symbols ***, ** and * indicate significance of abnormal returns and t -tests at the 1%, 5% and 10% level, respectively.

Panel A: Target long-run cumulative average abnormal returns, relative to matched rivals

	Targeted firms in terminated bid			Targeted firms in completed bid			Difference	
	CAR	t -stat	Corrado	CAR	t -stat	Corrado	Term-Succ	t -stat
	(1)			(2)			(1-2)	
[1,12]months	0.035	1.579	0.791	-0.323	-4.319***	-3.025***	0.358	4.247***
[1,24]months	0.021	2.257**	0.308	-0.440	-4.777***	-1.638	0.461	4.339***
[1,36]months	0.060	2.649***	0.243	-0.526	-4.877***	-1.398	0.586	4.682***
[1,48]months	0.031	2.262**	0.178	-0.561	-4.804***	-0.787	0.592	4.796***
[1,60]months	0.021	0.295	0.283	-0.478	-3.731***	0.647	0.499	4.166***
N	358			214				

Panel B: Target long-run cumulative average abnormal returns, relative to pre-acquisition mean

	Targeted firms in terminated bid			Targeted firms in completed bid			Difference	
	CAR	t -stat	Corrado	CAR	t -stat	Corrado	Term-Succ	t -stat
	(1)			(2)			(1-2)	
[1,12]months	0.035	1.610	0.807	-0.330	-4.406***	-3.085***	0.365	4.333***
[1,24]months	0.022	2.370**	0.324	-0.462	-5.016***	-1.720*	0.484	4.556***
[1,36]months	0.066	2.914***	0.267	-0.579	-5.365***	-1.537	0.645	5.150***
[1,48]months	0.031	2.254**	0.178	-0.559	-4.787***	-0.784	0.590	4.779***
[1,60]months	0.022	0.322	0.308	-0.521	-4.067***	0.706	0.543	4.541***
N	358			214				

Panel C: Target long-run cumulative average abnormal returns, relative to 3 factor model

	Targeted firms in terminated bid			Targeted firms in completed bid			Difference	
	CAR	t -stat	Corrado	CAR	t -stat	Corrado	Term-Succ	t -stat
	(1)			(2)			(1-2)	
[1,12]months	0.038	1.755*	0.880	-0.360	-4.802***	-3.363***	0.398	4.723***
[1,24]months	0.022	2.365**	0.323	-0.461	-5.006***	-1.717*	0.483	4.548***
[1,36]months	0.057	2.521***	0.231	-0.501	-4.642***	-1.330	0.558	4.456***
[1,48]months	0.032	2.367**	0.186	-0.587	-5.026***	-0.823	0.619	5.018***
[1,60]months	0.023	0.328	0.314	-0.532	-4.148***	0.720	0.554	4.632***
N	358			214				

Panel D: Target long-run cumulative average abnormal returns, relative to 4 factor model

	Targeted firms in terminated bid			Targeted firms in completed bid			Difference	
	CAR	t -stat	Corrado	CAR	t -stat	Corrado	Term-Succ	t -stat
	(1)			(2)			(1-2)	
[1,12]months	0.034	1.540	0.772	-0.316	-4.214***	-2.951***	0.349	4.144***
[1,24]months	0.019	2.051**	0.280	-0.400	-4.341***	-1.489	0.419	3.943***
[1,36]months	0.066	2.904***	0.266	-0.576	-5.345***	-1.532	0.643	5.131***
[1,48]months	0.045	3.304***	0.260	-0.819	-7.015***	-1.149	0.864	7.003***
[1,60]months	0.021	0.309	0.296	-0.500	-3.904***	0.677	0.522	4.359***
N	358			214				

Panel E: Target long-run buy and hold abnormal returns

	Targeted firms in terminated bid		Targeted firms in completed bid		Difference	
	BHAR	t -stat	BHAR	t -stat	Term-Succ	t -stat
	(1)		(2)		(1-2)	
[1,12]months	0.101	0.913	-0.237	-1.226	0.337	0.735
[1,24]months	0.114	1.105	-0.448	-2.302**	0.562	1.642
[1,36]months	0.001	0.009	-0.639	-3.329***	0.640	2.992***
[1,48]months	0.183	1.110	-0.738	-3.923***	0.920	2.371**
[1,60]months	0.527	1.601	-0.879	-3.596***	1.406	1.133
N	358		214			

Table 3.12: Event study of long-run bidder abnormal returns

This table contains the monthly abnormal returns for bidder firms in terminated and completed acquisition bids, in the 1, 2, 3, 4, and 5 years following the termination and completion of the bid. Panels A, B, C, and D display estimations of long-run cumulative abnormal returns (CARs) using matched firm performance, pre-acquisition performance, 3 factor model, and 4 factor model, respectively, as estimations of targeted firm post-event expected performance. Panel E displays the buy and hold abnormal returns (BHAR) estimated using a one-to-one matched rival as a benchmark of expected performance. The test statistics for the abnormal returns are calculated using a bootstrapped, skewness-adjusted *t*-statistic. Columns (1-2) compared the long-run financial performance of bidder firms in terminated and completed bids using a *t*-test. The symbols ***, ** and * indicate significance of abnormal returns and *t*-tests at the 1%, 5% and 10% level, respectively.

Panel A: Bidder long-run cumulative average abnormal returns, relative to matched peers

	Bidding firms in terminated bid			Bidding firms in completed bid			Difference	
	CAR	<i>t</i> -stat	Corrado	CAR	<i>t</i> -stat	Corrado	Term-Succ	<i>t</i> -stat
	(1)			(2)			(1-2)	
[1,12]months	-0.148	-3.501***	-2.062**	-0.028	-0.609	-0.106	-0.120	-2.644***
[1,24]months	-0.147	-4.931***	-2.649***	-0.070	-0.884	-0.524	-0.077	-3.581***
[1,36]months	-0.166	-5.916***	-3.247***	-0.084	-0.927	-0.700	-0.082	-4.445***
[1,48]months	-0.172	-5.841***	-2.412**	-0.098	-0.975	-0.738	-0.075	-4.349***
[1,60]months	-0.173	-5.287***	-1.809*	-0.075	-0.636	-0.366	-0.098	-3.987***
N	358			358				

Panel B: Bidder long-run cumulative average abnormal returns, relative to pre-acquisition mean

	Bidding firms in terminated bid			Bidding firms in completed bid			Difference	
	CAR	<i>t</i> -stat	Corrado	CAR	<i>t</i> -stat	Corrado	Term-Succ	<i>t</i> -stat
	(1)			(2)			(1-2)	
[1,12]months	-0.143	-3.380***	-1.991**	-0.027	-0.588	-0.102	-0.116	-2.553***
[1,24]months	-0.113	-3.773***	-2.027**	-0.053	-0.676	-0.401	-0.059	-2.740***
[1,36]months	-0.140	-5.008***	-2.749***	-0.071	-0.785	-0.593	-0.069	-3.763***
[1,48]months	-0.157	-5.336***	-2.204**	-0.089	-0.891	-0.674	-0.068	-3.974***
[1,60]months	-0.202	-6.158***	-2.107**	-0.087	-0.741	-0.426	-0.115	-4.643***
N	358			214				

Panel C: Bidder long-run cumulative average abnormal returns, relative to 3 factor model

	Bidding firms in terminated bid			Bidding firms in completed bid			Difference	
	CAR	<i>t</i> -stat	Corrado	CAR	<i>t</i> -stat	Corrado	Term-Succ	<i>t</i> -stat
	(1)			(2)			(1-2)	
[1,12]months	-0.166	-3.916***	-2.306**	-0.031	-0.681	-0.119	-0.134	-2.958***
[1,24]months	-0.104	-3.464***	-1.861*	-0.049	-0.621	-0.368	-0.054	-2.516***
[1,36]months	-0.143	-5.088***	-2.793***	-0.072	-0.797	-0.602	-0.070	-3.822***
[1,48]months	-0.173	-5.851***	-2.416**	-0.098	-0.977	-0.739	-0.075	-4.356***
[1,60]months	-0.282	-8.606***	-2.944***	-0.122	-1.035	-0.595	-0.160	-6.490***
N	358			214				

Panel D: Bidder long-run cumulative average abnormal returns, relative to 4 factor model

	Bidding firms in terminated bid			Bidding firms in completed bid			Difference	
	CAR	<i>t</i> -stat	Corrado	CAR	<i>t</i> -stat	Corrado	Term-Succ	<i>t</i> -stat
	(1)			(2)			(1-2)	
[1,12]months	-0.124	-2.937***	-1.730*	-0.023	-0.511	-0.089	-0.101	-2.218**
[1,24]months	-0.078	-2.598***	-1.396	-0.037	-0.466	-0.276	-0.041	-1.887*
[1,36]months	-0.107	-3.816***	-2.094**	-0.054	-0.598	-0.452	-0.053	-2.867***
[1,48]months	-0.129	-4.388***	-1.812*	-0.073	-0.733	-0.554	-0.056	-3.267***
[1,60]months	-0.212	-6.455***	-2.208**	-0.091	-0.776	-0.446	-0.120	-4.867***
N	358			214				

Panel E: Bidder long-run buy and hold abnormal returns (BHAR)

	Bidding firms in terminated bid		Bidding firms in completed bid		Difference	
	BHAR	<i>t</i> -stat	BHAR	<i>t</i> -stat	Term-Succ	<i>t</i> -stat
	(1)		(2)		(1-2)	
[1,12]months	-0.147	-1.870*	-0.068	-1.603	-0.079	-1.596
[1,24]months	-0.217	-2.500***	-0.175	-1.362	-0.042	-1.849*
[1,36]months	-0.169	-2.793***	-0.097	-1.106	-0.072	-2.320**
[1,48]months	-0.185	-2.632***	-0.144	-1.273	-0.040	-2.129**
[1,60]months	-0.196	-3.029***	-0.144	-1.192	-0.052	-2.481**
N	358		358			

Table 3.12 reveals a very different outcome for bidding firms in terminated deals. While bidders in terminated and completed deals earn negative abnormal returns in all windows of observation, only the abnormal returns of the terminated sample are significant. For example, in the first, second, third, fourth, and fifth years following termination, the bidding firms' CARs in Panel A of -14.7%, -21.7%, -16.9%, -18.5%, and 19.6%, respectively, are all statistically significant. The comparison of the two group's long-run returns indicates that bidders in terminated deals perform worse than those in completed deals, suggesting that bidders are better off with the deal.

3.6.3.1.2 Cross-sectional analysis of long-run abnormal stock returns

To analyze the determinants of the observed long-run abnormal returns, two OLS regression models are run on long-run abnormal returns (CARs and BHARs).³⁶ The first involves data from both parties in terminated and completed deals. A dummy variable "*TermDummy*" is included in this specification to delineate the two sample groups and is therefore the key variable of interest. This dummy variable is interacted with independent variables to identify the performance of the terminated sample. As with analysis of short-run returns, the medium of exchange is incorporated into the analysis as *Stockoffer* which is a dummy variable that takes the value 1 when the deal involves at least 50% stock. Other independent variables include firm and transaction controls. The results of this specification are presented in Tables 3.13 and 3.15 for the target and bidder groups, respectively. The second model of long-run financial performance is run on only firms involved in terminated deals. In this specification, the net (revaluation) returns (ACAR+TCAR) are included in the regression to evaluate the correlation between short- and long-run returns, as are variables to capture the initiator of the deal (*BidderTerm*, *TargetTerm*,

³⁶ Following Ang and Zhang (2015), the CARs and BHARs used in the regression analyses are those estimated using a matched portfolio of rivals, which they assert is the best benchmark of expected performance in long-run studies of financial performance.

and *ExoTerm*). The results of this second model are presented in Tables 3.14 and 3.16 for the target and bidder groups, respectively. All versions of the model are run on CARs and BHARs in the [1,24], [1,36], [1,48], and [1,60] windows of observation, and all regressions are controlled for heteroscedasticity.

In Panels A (CARs) and B (BHARs) of Table 3.13, the coefficient of the *TermDummy* is positive and statistically significant in most regressions, which confirms the observation in Table 3.11, that the long-run abnormal returns of targets in terminated deals are higher than those targets in completed deals. While the relative size of the parties (*Log(RelativeSize)*) is a significant and positive predictor in only one regression (BHAR[1,60]), when this variable is interacted with the *TermDummy*, the coefficient is significant in three regressions (CAR[1,24], CAR[1,36], and CAR[1,48]). This result suggests that target firms in terminated deals perform better when the deal avoided is one where the bidder was proportionately larger than the target. Consistent with Safieddine and Titman (1999), leverage is an important predictor of long-run performance, with higher leverage ratios associated with higher performance in the CAR[1,24] regression. Similarly, the presence of competing bidders at the time of the deal is associated with higher long-run financial returns, thereby lending support to the claim that bidder competition is a signal of the value of the target firm.

The results in Table 3.14 provide further insight into the cross-section of long-run abnormal returns of targets in terminated deals. There is evidence in all versions of this model that revaluation returns ($(ACAR+TCAR)/20$) are positively and significantly associated with long-run financial returns, which supports the efficient market hypothesis of short-run pricing being a reflection of future performance. The positive revaluation of targets in terminated deals is therefore associated with positive future financial performance. The dummy variable identifying

Table 3.13: Cross-sectional analysis of target long-run financial performance (Specification 1)

This table displays the results of cross-sectional analysis of target firm long-run monthly abnormal returns, employing Specification 1 of the model. The model is run on the data of the test sample and controls samples – the sample of targeted firms in terminated deals and the matched sample of targeted firms in completed deals. In Panels A and B, the explained variable is the monthly cumulative abnormal returns (CARs) and buy and hold abnormal returns (BHARs), respectively, in the [1,24], [1,36],[1,48], and [1,60] windows of observation. The variable *TermDummy* takes on a value of 1 if the deal was terminated and zero otherwise. Other variables are defined in Table 3.5. Following Ang and Zhang (2004), abnormal returns are estimated using the matched peer performance. The symbols ***, ** and * indicate significance of t-statistics at the 1%, 5% and 10% level, respectively. The regressions results have been corrected for heteroscedasticity using White's consistent estimator.

Panel A: Long-run cumulative abnormal returns of target firms

	<u>CAR[1,24]months</u>		<u>CAR[1,36]months</u>		<u>CAR[1,48]months</u>		<u>CAR[1,60]months</u>	
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
TermDummy	0.137	2.59***	0.234	1.88*	0.309	1.81*	0.355	2.06**
Stockoffer	0.035	0.40	-0.043	-0.43	-0.073	-0.64	-0.007	-0.06
Log(RelativeSize)	-0.064	-0.85	-0.071	-0.83	-0.044	-0.42	-0.047	-0.43
MultipleBidders	0.039	0.24	0.045	1.65*	0.081	0.49	0.056	0.24
Related	0.059	0.58	0.099	0.84	0.023	0.17	-0.054	-0.37
Friendly	0.126	0.86	0.141	0.94	0.157	1.03	-0.044	-0.26
Log(ValueofTrans)	0.005	0.11	-0.019	-0.35	-0.020	-0.33	-0.010	-0.16
D/E	0.032	2.52***	0.010	0.56	0.001	0.03	0.012	0.49
StockOffer*TermDummy	0.004	0.03	0.131	0.68	0.165	0.80	-0.006	-0.03
LogRelativeSize*TermDummy	0.205	1.84*	0.355	2.65***	0.252	1.68*	0.203	1.20
MultipleBidders*TermDummy	0.270	1.94*	0.279	1.33	0.424	1.71*	0.230	1.77
RelatedTerm*Dummy	-0.136	-0.76	-0.316	-1.46	-0.323	-1.41	-0.056	-0.23
Friendly*TermDummy	-0.342	-0.75	-0.442	-1.01	-0.505	-1.04	-0.393	-1.47
Log(ValueofTrans)*TermDummy	0.006	0.12	-0.021	-0.38	-0.022	-0.36	-0.011	-0.17
D/E*TermDummy	0.035	2.71***	0.011	1.60	0.001	0.03	1.013	0.53
Intercept	-0.083	-0.35	0.070	0.27	0.157	0.54	0.359	1.11
R ²	7.56%		9.33%		9.00%		6.94%	
F-statistic	3.660		3.620		3.560		2.730	
p-value	0.000		0.000		0.000		0.000	
N	572		572		572		572	

Panel B: Long-run buy and hold abnormal returns of target firms

	<u>BHAR[1,24]months</u>		<u>BHAR[1,36]months</u>		<u>BHAR[1,48]months</u>		<u>BHAR[1,60]months</u>	
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
TermDummy	0.516	2.37**	0.848	2.43**	0.606	2.57***	0.186	1.31
Stockoffer	0.240	0.69	0.569	1.63	0.600	1.72*	0.456	1.14
Log(RelativeSize)	0.018	0.10	-0.220	-1.28	-0.096	-0.73	-0.367	-1.67*
MultipleBidders	0.330	1.72*	0.255	1.94*	0.199	0.53	0.587	1.70*
Related	-0.035	-0.12	-0.083	-0.26	-0.072	-0.24	-0.627	-1.27
Friendly	-0.161	-0.53	-0.525	-1.49	-0.605	-1.74*	-1.031	-2.04**
Log(ValueofTrans)	-0.092	-1.19	-0.042	-0.55	-0.022	-0.25	-0.049	-0.38
D/E	0.003	0.17	0.012	0.58	0.006	0.29	-0.068	0.02
StockOffer*TermDummy	-0.526	-1.42	-0.709	-1.91*	-0.551	-1.30	-0.066	-0.10
LogRelativeSize*TermDummy	0.099	0.49	0.316	1.68*	0.243	1.50	0.129	0.55
MultipleBidders*TermDummy	0.222	1.02	0.294	1.07	0.152	0.36	0.224	0.45
RelatedTerm*Dummy	0.160	0.51	0.080	0.23	0.174	0.52	0.946	1.67
Friendly*TermDummy	-0.012	-0.04	-0.352	-0.92	-0.146	-0.38	-0.487	0.87
Log(ValueofTrans)*TermDummy	-0.099	-1.28	-0.045	-0.59	-0.024	-0.27	-0.052	-0.41
D/E*TermDummy	0.003	1.18	0.013	1.62	0.007	2.31**	-0.073	1.09
Intercept	-0.390	-1.11	-0.783	-1.97*	-0.494	-1.35	-0.754	-1.38
R ²	2.91%		4.48%		1.71%		1.15%	
F-statistic	1.820		2.620		2.180		1.680	
p-value	0.026		0.001		0.005		0.047	
N	572		572		572		572	

Table 3.14: Cross-sectional analysis of target long-run financial performance (Specification 2)

This table displays the results of cross-sectional analysis of target firm long-run monthly abnormal returns, employing Specification 2 of the model, which is run on the data of the test sample – the sample of targeted firms in terminated deals. In Panels A and B, the explained variable is the monthly cumulative abnormal returns (CARs) and buy and hold abnormal returns (BHARs), respectively, in the [1,24], [1,36], [1,48], and [1,60] windows of observation. Following Ang and Zhang (2004), abnormal returns are estimated using the matched peer performance. The variables are described in Table 3.5. The symbols ***, ** and * indicate significance of t-statistics at the 1%, 5% and 10% level, respectively. The regressions results have been corrected for heteroscedasticity using White's consistent estimator.

Panel A: Target cumulative abnormal returns of terminated targest only								
	CAR[1,24]months		CAR[1,36]months		CAR[1,48]months		CAR[1,60]months	
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
(ACAR+TCAR)20	0.166	1.71*	0.116	1.73*	0.141	1.88*	0.221	1.99**
Stock	-0.046	-0.22	-0.013	-0.06	-0.078	-0.29	-0.085	-0.30
LogRelativeSize	0.123	1.11	0.211	1.68*	0.099	0.78	0.045	0.31
MultipleBidders	0.098	0.62	0.256	1.30	0.276	1.26	0.030	0.14
Related	-0.063	-0.43	-0.219	-1.17	-0.297	-1.57	-0.115	-0.61
Friendly	-0.148	-3.54***	-0.268	-1.53	-0.286	-1.38	-0.342	-1.54
LogValueofTrans	0.048	0.55	-0.055	-0.54	-0.105	-0.98	-0.029	-0.27
D/E	-0.029	-1.98	-0.015	-0.76	0.000	0.00	0.016	0.64
BidderTerm	-0.367	-1.54	-0.393	-1.36	-0.443	-1.45	-0.413	-1.31
TargetTerm	0.106	0.47	0.093	0.31	0.094	0.29	0.091	0.29
ExoTerm	-0.092	-0.21	0.462	1.37	0.531	1.51	0.638	2.30**
BidderTerm*Stock	-0.222	-1.70*	-0.227	-1.62	-0.240	-1.60	-0.058	-2.14**
TargetTerm*Stock	0.118	0.38	0.050	0.12	-0.101	-0.23	-0.264	-0.56
ExoTerm*Stock	0.052	0.12	-0.369	-1.03	-0.480	-1.29	-0.691	0.25
Intercept	-0.054	-0.17	-0.056	-0.16	-0.045	-0.11	0.001	0.00
R ²	4.35%		4.29%		4.37%		3.71%	
F-statistic	4.430		1.340		1.370		5.030	
p-value	0.000		0.168		0.152		0.000	
N	358		358		358		358	

Panel B: Target buy and hold abnormal returns of terminated targets only								
	BHAR[1,24]months		BHAR[1,36]months		BHAR[1,48]months		BHAR[1,60]months	
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
(ACAR+TCAR)20	0.118	2.01**	0.324	1.75*	0.370	1.92*	0.153	1.75*
Stock	-0.436	-1.86*	-0.118	-0.60	-0.280	-0.62	-1.170	-1.07
LogRelativeSize	0.117	0.73	0.105	1.37	0.150	1.15	-0.270	-1.02
MultipleBidders	0.106	0.84	-0.024	-0.17	0.092	0.33	0.421	0.80
Related	0.122	0.96	0.014	0.13	0.075	0.53	0.197	0.98
Friendly	-0.113	-0.93	-0.174	-1.24	-0.459	-2.23**	-0.464	-1.51
LogValueofTrans	-0.144	-1.49	-0.119	-1.28	-0.012	-0.11	0.041	0.25
D/E	0.007	0.59	-0.006	-0.35	0.007	0.26	0.022	0.46
BidderTerm	0.067	0.27	0.023	0.09	0.499	0.66	1.633	0.97
TargetTerm	0.027	0.12	0.060	0.23	0.576	0.79	1.702	1.08
ExoTerm	-0.245	-0.97	-0.439	-1.35	-0.146	-0.18	1.345	0.83
BidderTerm*Stock	-0.189	-1.64	-0.033	-2.11**	-0.320	-1.65*	-1.170	-1.13
TargetTerm*Stock	0.325	1.19	-0.096	-0.36	-0.435	-0.82	-1.274	-1.18
ExoTerm*Stock	0.739	0.66	0.554	1.15	-0.091	-0.11	-1.441	-1.11
Intercept	0.184	0.60	0.164	0.50	-0.343	-0.38	-2.388	-1.10
R ²	5.88%		5.91%		3.24%		3.19%	
F-statistic	2.010		1.180		1.090		1.110	
p-value	0.012		0.029		0.136		0.134	
N	358		358		358		358	

deals involving stock (*Stock*) is negative in all regressions and is only statistically significant in the regression on BHAR[1,24]. However, when *Stock* is interacted with *BidderTerm*, it is negative and significant in four versions. This result indicates that when a bidder terminates a stock financed deal, it is not only a signal of target overvaluation but also of dim future prospects of the target firm as an independent firm.

The first specification of the cross-sectional regression on bidder returns is presented in Table 3.15. The event study results presented in Table 3.12 provides evidence that bidding firms in terminated deals earn returns higher than those earned by bidders in completed deals, so it is expected that the variable of interest in Table 3.12, *TermDummy*, will be both positive and significant. The key variable of interest is positive but not significant in any of the versions of this regression. Therefore after controlling for firm and transaction characteristics, bidders in terminated deals do not outperform bidding firms in completed deals, and so, these results do not provide support for this essay's *H4*. Nonetheless, there are other explanatory variables in this regression model that shed light on the long-run financial performance of bidding firms involved in terminated deals. In terminated stock offers, bidders exhibit long-run positive abnormal performance, an observation that will be further disentangled in Table 3.16. Similar to targets of terminated deals, long-run abnormal returns of terminated bidders are higher when the relative size of the parties (bidder TA/target TA) is large. Also, bidders in terminated friendly deals exhibit lower abnormal returns. This result suggests that friendly deals would have created more value than hostile deals.

Table 3.16, which reports the results on the sample of terminated bidders, permits further investigation of the above observations. The *BidderTerm*Stock* coefficient is positive, so the bidders observed in Table 3.15 as earning positive abnormal returns are those who had offered

Table 3.15: Cross-sectional analysis of bidder long-run financial performance (Specification 1)

This table displays the results of cross-sectional analysis of bidder firm long-run monthly abnormal returns, employing Specification 1 of the model. The model is run on the data of the test sample and controls samples – the sample of bidding firms in terminated deals and the matched sample of bidding firms in completed deals. In Panels A and B, the explained variable is the monthly cumulative abnormal returns (CARs) and buy and hold abnormal returns (BHARs), respectively, in the [1,24], [1,36], [1,48], and [1,60] windows of observation. The variable *TermDummy* takes on a value of 1 if the deal was terminated and zero otherwise. The other variables are described in Table 3.5. Following Ang and Zhang (2004), abnormal returns are estimated using the matched peer performance. The symbols ***, ** and * indicate significance of t-statistics at the 1%, 5% and 10% level, respectively. The regressions results have been corrected for heteroscedasticity using White's consistent estimator.

Panel A: Cumulative abnormal returns of bidding firms

	CAR[1,24]months		CAR[1,36]months		CAR[1,48]months		CAR[1,60]months	
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
TermDummy	0.468	1.59	0.476	1.53	0.326	0.97	0.427	1.12
Stockoffer	-0.093	-0.82	-0.145	-1.28	-0.170	-1.36	-0.195	-1.42
Log(RelativeSize)	-0.069	-0.88	-0.037	-0.46	-0.084	-0.99	-0.142	-1.34
MultipleBidders	-0.028	-0.19	-0.184	-1.10	-0.225	-1.16	-0.147	-0.89
Related	0.189	1.46	0.061	0.45	-0.023	-0.14	-0.007	-0.04
Friendly	0.267	1.60	0.122	0.78	0.056	0.31	-0.051	-0.24
Log(ValueofTrans)	0.020	0.33	0.042	0.64	0.029	0.40	0.085	0.96
D/E	-0.006	-0.68	-0.013	-1.27	-0.016	-1.40	-0.016	-1.48
StockOffer*TermDummy	0.307	1.60	0.450	2.12	0.421	1.82*	0.278	1.09
LogRelativeSize*TermDummy	0.378	2.82***	0.320	1.88*	0.428	2.48**	0.438	2.37**
MultipleBidders*TermDummy	-0.064	-0.28	0.036	0.12	0.022	0.07	0.105	0.33
Related*TermDummy	-0.213	-1.06	-0.172	-0.76	-0.137	-0.51	-0.226	-0.78
Friendly*TermDummy	-0.556	-2.15**	-0.768	-2.75***	-0.603	-1.90*	-0.754	-2.11**
Log(ValueofTrans)*TermDummy	0.021	0.34	0.043	0.66	0.030	0.41	0.088	0.99
D/E*TermDummy	-0.006	-0.70	-0.013	-1.30	-0.017	-1.44	-0.017	-1.52
Intercept	-0.415	-2.33**	-0.218	-1.27	-0.162	-0.80	-0.222	-1.01
R ²	11.52%		11.42%		10.80%		9.94%	
F-statistic	3.150		3.780		3.630		3.780	
p-value	0.000		0.000		0.000		0.000	
N	716		716		716		716	

Panel B: Buy and hold abnormal returns of bidding firms

	BHAR[1,24]months		BHAR[1,36]months		BHAR[1,48]months		BHAR[1,60]months	
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
TermDummy	0.377	0.39	0.357	1.08	-0.104	-0.24	0.439	0.89
Stockoffer	0.470	0.96	0.040	0.33	-0.013	-0.07	-0.016	-0.08
Log(RelativeSize)	-0.089	-0.42	0.036	0.44	0.083	0.96	0.005	0.03
MultipleBidders	0.377	0.88	-0.433	-1.16	-1.687	-1.44	-0.231	-0.26
Related	0.144	0.50	-0.200	-1.61	-0.248	-1.24	-0.140	-0.69
Friendly	0.276	0.56	0.170	0.77	-0.201	-0.89	-0.004	-0.02
Log(ValueofTrans)	-0.377	-1.10	0.038	0.38	0.076	0.52	-0.016	-0.10
D/E	-0.019	-1.59	-0.027	-1.46	-0.025	-1.63	-0.023	-2.49**
StockOffer*TermDummy	1.445	1.81*	0.880	2.17**	1.058	1.94*	0.605	1.09
LogRelativeSize*TermDummy	0.526	1.85*	0.486	1.35	0.299	0.91	0.499	1.10
MultipleBidders*TermDummy	-1.740	-1.39	0.197	0.45	1.260	1.04	0.287	0.28
Related*TermDummy	0.276	0.47	0.331	0.94	0.235	0.45	-0.080	-0.15
Friendly*TermDummy	0.519	0.49	-0.674	-2.14**	-0.178	-0.48	-0.981	-1.85*
Log(ValueofTrans)*TermDummy	-0.387	-1.13	0.039	0.39	0.078	0.53	-0.016	-0.10
D/E*TermDummy	-0.020	-1.63	-0.028	-1.50	-0.026	-0.67	-0.024	-0.56
Intercept	-0.349	-0.52	-0.118	-0.47	0.176	0.51	0.032	0.10
R ²	5.54%		5.53%		3.11%		5.66%	
F-statistic	1.190		2.160		1.690		1.800	
p-value	0.274		0.007		0.048		0.031	
N	716		716		716		716	

Table 3.16: Cross-sectional analysis of bidder long-run financial performance (Specification 2)

This table displays the results of cross-sectional analysis of bidding firm long-run monthly abnormal returns, employing Specification 2 of the model, which is run on the data of the test sample – the sample of bidding firms in terminated deals. In Panels A and B, the explained variable is the monthly cumulative abnormal returns (CARs) and buy and hold abnormal returns (BHARs), respectively, in the [1,24], [1,36], [1,48], and [1,60] windows of observation. Following Ang and Zhang (2004), abnormal returns are estimated using the matched peer performance. The variables are described in Table 3.5. The symbols ***, ** and * indicate significance of t-statistics at the 1%, 5% and 10% level, respectively. The regressions results have been corrected for heteroscedasticity using White's consistent estimator.

Panel A: Cumulative abnormal returns of unsuccessful bidders only

	CAR[1,24]months		CAR[1,36]months		CAR[1,48]months		CAR[1,60]months	
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
(ACAR+TCAR)20	0.919	3.95***	0.700	3.20***	0.859	3.15***	0.878	3.22***
Stockoffer	-0.353	-1.20	-0.617	-1.81*	-0.520	-1.39	-0.578	-1.46
LogRelativeSize	0.321	2.80***	0.291	1.76*	0.369	2.22**	0.307	1.80*
MultipleBidders	-0.065	-0.32	-0.128	-0.48	-0.130	-0.48	-0.015	-0.05
Related	-0.046	-0.29	-0.108	-0.58	-0.146	-0.68	-0.234	-1.01
Friendly	-0.267	-1.32	-0.623	-2.60***	-0.541	-2.01**	-0.784	-2.62***
LogValueofTrans	0.120	1.06	0.169	1.45	0.137	1.01	0.241	1.60
DE	0.001	0.12	-0.005	-0.44	-0.007	-0.66	-0.008	-0.67
BidderTerm	0.153	0.56	-0.060	-0.19	-0.108	-0.32	-0.241	-0.63
TargetTerm	-0.179	-0.62	-0.356	-1.09	-0.579	-1.58	-0.671	-1.72*
Exo	0.237	0.44	-0.285	-0.58	0.185	0.43	0.174	0.36
BidderTerm*Stock	0.461	1.72*	0.293	1.67*	0.482	1.98**	0.253	1.46
TargetTerm*Stock	0.184	0.44	0.172	0.35	0.093	0.18	0.477	0.84
Exo*Stock	0.303	0.50	0.867	1.50	0.261	0.48	-0.050	-0.08
Intercept	0.107	0.26	0.396	0.90	0.550	1.10	0.499	0.96
R ²	0.145		0.116		0.117		0.109	
F-statistic	2.440		2.290		2.640		2.560	
p-value	0.002		0.003		0.001		0.001	
N	358		358		358		358	

Panel B: Buy and hold abnormal returns of unsuccessful bidders only

	BHAR[1,24]months		BHAR[1,36]months		BHAR[1,48]months		BHAR[1,60]months	
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
(ACAR+TCAR)20	1.776	1.26	1.179	2.70***	0.851	2.71***	2.035	2.32**
Stockoffer	-1.644	-1.09	-0.415	-1.43	-0.403	-0.88	-0.043	-0.10
LogRelativeSize	0.542	2.33**	0.671	1.80*	0.641	1.97**	0.721	1.66*
MultipleBidders	-1.276	-1.29	-0.130	-0.50	-0.079	-0.20	0.388	0.69
Related	0.372	0.76	0.123	0.38	0.003	0.01	-0.226	-0.46
Friendly	0.663	0.76	-0.566	-2.20**	-0.512	-1.52	-1.176	-2.22**
LogValueofTrans	-0.502	-0.69	0.207	0.83	0.287	0.74	0.156	0.40
DE	-0.011	-0.93	-0.005	-0.62	-0.006	-0.54	-0.005	-0.59
BidderTerm	0.007	0.02	0.132	0.40	0.350	0.95	0.224	0.48
TargetTerm	0.809	1.16	0.179	0.62	0.053	0.15	-0.290	-0.61
Exo	0.451	0.68	-0.291	-0.53	0.750	1.44	1.041	1.41
BidderTerm*Stock	0.624	0.40	1.674	1.36	2.295	1.67*	2.318	1.62
TargetTerm*Stock	0.908	0.57	-0.302	-0.68	-0.746	-0.89	-0.240	-0.24
Exo*Stock	2.105	1.06	0.822	1.16	-0.054	-0.07	-0.865	-0.91
Intercept	0.565	0.75	1.141	1.76*	1.685	2.13**	1.884	2.05**
R ²	0.066		0.086		0.105		0.285	
F-statistic	1.620		1.120		0.980		0.710	
p-value	0.062		0.338		0.483		0.785	
N	358		358		358		358	

stock in the terminated deal. Therefore for this group of bidders, the shareholders seem to be better off without the stock financed deal, which lends support to the hypothesis that stock deals are riskier deals, less likely to create value for the bidder. This result complements that of Table 3.10 where coefficient of *BidderTerm*Stock* in the regression on short run abnormal returns is positive and significant. The results in Table 3.15 also show that short-run revaluation returns $((ACAR+TCAR)/20)$ are positively associated with long-run financial performance, so the market is able to price in the long-run performance of bidding firms at the time of termination. Confirming the evidence in Table 3.14, Table 3.15 shows that the relative size of the bidder and target is positively associated with long-run financial performance and friendly terminated deals are associated with negative long-run performance of bidders in terminated deals.

The analysis of long-run financial performance provides important insight into the post-termination performance of bidders and targets. Targets in terminated deals earn positive abnormal returns larger than those earned by targets in completed deals, consistent with *H1* (a targeted firm of a terminated merger will outperform a targeted firm of a completed merger). Those terminated target long-run abnormal returns are largely explained by the relative size of the bidder and target (*LogRelativeSize*) and bidder competition (*MultipleBidders*). Moreover, the medium of exchange and initiator of termination are significant determinants of terminated targets' long-run financial performance, with bidder-terminated, stock financed deals associated with lower returns, which may be a signal of target overvaluation and of the dim future prospects of the target firm as an independent firm. Unlike targets, bidders in terminated deals perform worse than those in completed deals, suggesting that bidder shareholders are better off with the deal. This result is inconsistent with *H4*, that an unsuccessful bidder will outperform a bidding firm in a completed merger. Cross-sectional analysis of bidding firm returns provides a finer

examination of this result, and evidence from this analysis suggests that while in general shareholders of bidding firms are better off with the deal, shareholders in terminated stock financed deals are better off without the deal.

3.6.3.2 *Operating performance*

The real economic impact of merger termination will be reflected in the post-acquisition operating performance of the targeted firm and unsuccessful bidder in the years following termination. Previous work on the operating performance of parties in terminated deals by Holl and Pickering (1988) and Taffler and Holl (1991) point to a positive outcome and inconclusive results for the bidding firms, respectively. These studies, however, are dated and employ techniques that do not control for industry, firm, or transaction characteristics. To test the hypotheses that parties to a terminated transaction will outperform pre-acquisition and/or the performance of parties in successful deals, several dimensions of operating performance are tracked over the five years following termination: profitability (ROA), efficiency (TC/TA), growth (revenue growth), and market valuation (Tobin's q).

3.6.3.2.1 Univariate analysis of operating performance

Table 3.17 presents the results of the univariate analysis of terminated target operating performance, relative to its industry-adjusted, pre-acquisition performance and relative to targets in matched completed deals. Industry adjusted performance is estimated as the difference between the observation of the target and that of its matched rival (Target – Rival), and this adjustment is made in order to control for the influence of industry on the observations of operating performance. Columns (1) and (2) provide the pre- and post-termination performance of targeted firms in a terminated deal, and the comparison of median and mean performance points to significant improvements in all dimensions of operating performance. Median

profitability, for instance, increases from pre-bid ROA levels of -4.99% to -0.5%, an improvement significant at less than 1%. Of note is that targeted firms exhibit poor performance before and after acquisition. Columns (3) and (4) provide the results for the sample of targets in completed deals, and the results differ along profitability, efficiency, and growth figures. Following acquisition, targets in completed deals exhibit lower levels of profitability, efficiency, and revenue growth, a result that contributes to the body of research (e.g., Agrawal, et al. (1992) and McKinsey & Company (1990)) that finds that mergers underperform. The industry-adjusted performance of the two samples is directly compared in Columns (1-3), (2-4) and ((1-2)-(4-3)) of Table 3.17. Comparison of pre-bid performance in Column (1-3) shows that targets in completed mergers outperform targets in terminated deals prior to the bid across all measures of operating performance except Tobin's q . Following acquisition, the observation reverses: targets involved in terminated deals outperform on profitability, efficiency, and revenue growth. Tobin's q is the only measure on which completed targets outperform. When the change in operating performance around the bid (Post-Pre) is compared, the targets in terminated deals again experience larger, industry-adjusted improvements to profitability, efficiency, and revenue growth. Target firms in successful mergers, however, exhibit larger increases in Tobin's q .

The results of the same analysis of the post-acquisition, operating performance, but of the bidding firm in a terminated deal, are presented in Table 3.18. Comparison of pre- and post-termination, industry-adjusted operating performance provides no evidence of any changes in the operating performance of unsuccessful bidders. The bidding firms in successful bids exhibit statistically significant declines in revenue growth and Tobin's q following acquisition. A comparison of the performance of the two samples shows that prior to the bid, bidders in terminated bids achieved higher levels of profitability and efficiency, but lower growth levels

Table 3.17: Univariate analysis of target long-run operating performance

This table contains the results of the test of difference in median (mean) measures of operating performance of the targeted firms in terminated and completed mergers. The variables are defined in Table 3.5. The t-statistic and z-statistic measure statistical significance of the difference in mean and median tests, respectively. The symbols ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Targeted firms in terminated bids				Target firms in successful bids				Target firms, Terminated versus Successful					
	(1)	(2)	(1-2)		(3)	(4)	(4-3)		(1-3)		(2-4)		(1-2) - (4-3)	
	Pre-bid	Post-bid	Post-bid - Pre-bid		Pre-bid	Post-bid	Post-bid - Pre-bid		Pre-bid		Post-bid		Difference	
	Median	Median	Median	z-stat	Median	Median	Median	z-stat	Median	z-stat	Median	z-stat	Median	z-stat
	Mean	Mean	Mean	t-stat	Mean	Mean	Mean	t-stat	Mean	t-stat	Mean	t-stat	Mean	t-stat
ROA	-0.050	-0.005	0.045	7.08***	0.001	-0.050	-0.051	-3.43***	-0.051	-4.99***	0.045	16.35***	0.096	7.44***
	-0.061	-0.033	0.028	1.36	-0.089	-0.053	0.036	0.86	0.028	1.07	0.020	1.75*	-0.008	0.08
TC/TA	-0.047	-0.082	-0.034	-11.21***	-0.090	0.037	0.127	8.97***	0.043	8.58***	-0.119	-20.37***	-0.162	-13.30***
	-0.183	-0.230	-0.047	-0.85	-0.043	0.261	0.304	16.50***	-0.141	-0.96	-0.491	-11.15***	-0.351	-6.07***
gRevenue	-0.032	0.041	0.073	11.88***	-0.025	0.032	0.057	1.40	-0.007	-7.23***	0.009	1.76*	0.016	9.06***
	0.038	0.092	0.054	2.82***	0.187	0.091	-0.096	-5.10***	-0.149	-2.57***	0.001	0.40	0.150	1.02
Tobin's q	-0.088	0.093	0.181	12.52***	-0.076	0.286	0.362	8.32***	-0.012	-0.11	-0.193	-22.55***	-0.181	-1.97**
	-0.724	0.743	1.467	2.83***	-0.261	0.966	1.226	18.65***	-0.463	-0.79	-0.223	-9.29***	0.240	0.24
N	358				214									

Table 3.18: Univariate analysis of bidder long-run operating performance

This table contains the results of the test of difference in median (mean) measures of operating performance of the bidding firms in terminated and completed mergers. The variables are defined in Table 3.5. The t-statistic and z-statistic measure statistical significance of the difference in mean and median tests, respectively. The symbols ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Bidding firms in terminated bids				Bidding firms in successful bids				Bidding firms, Terminated versus Successful					
	(1)	(2)	(1-2)		(3)	(4)	(4-3)		(1-3)		(2-4)		(1-2) - (4-3)	
	Pre-bid	Post-bid	Post-bid - Pre-bid		Pre-bid	Post-bid	Post-bid - Pre-bid		Pre-bid		Post-bid		Difference	
	Median	Median	Median	z-stat	Median	Median	Median	z-stat	Median	z-stat	Median	z-stat	Median	z-stat
	Mean	Mean	Mean	t-stat	Mean	Mean	Mean	t-stat	Mean	t-stat	Mean	t-stat	Mean	t-stat
ROA	0.061	0.027	-0.034	-0.83	0.032	0.029	-0.004	-1.54	0.028	10.42***	-0.002	-0.72	-0.030	-6.55***
	0.853	0.486	-0.366	-0.01	0.049	0.039	-0.011	-0.48	0.803	5.26***	0.447	-4.38***	-0.356	-2.75***
TC/TA	-0.195	-0.041	0.154	0.39	-0.120	-0.083	0.038	0.35	-0.075	-9.82***	0.042	12.90***	0.116	8.13***
	-0.099	3.731	3.829	1.15	-0.022	-0.071	-0.050	-1.03	-0.077	-5.88***	3.802	4.15***	3.879	4.56***
gRevenue	0.001	-0.015	-0.015	-0.79	0.011	0.024	0.013	1.63	-0.010	-2.34**	-0.038	-5.69***	-0.028	-2.63***
	0.120	-0.036	-0.156	-1.23	0.080	0.029	-0.051	-1.72*	0.040	-0.31	-0.065	-1.94*	-0.106	-0.80
Tobin's q	-0.123	-0.151	-0.028	-1.49	-0.223	-0.142	0.081	-3.64***	0.100	8.41***	-0.009	0.26	-0.109	-4.40***
	6.449	2.326	-4.123	-1.51	-0.242	-0.868	-0.626	-1.96*	6.691	2.61***	3.194	-3.24***	-3.497	-1.36
N	358				358				358					

and lower Tobin's q . Following the bid, the successful bidders in completed deals outperforms unsuccessful bidders in terminated deals along all measures of operating performance. Even more, the comparison of the change in operating performance in Column ((1-2)-(4-3)) of Table 3.18 provides evidence that bidders in completed deals make higher operating performance improvements than unsuccessful bidders. This result is counter to expectations of bidding firms in terminated deals will be avoiding a value-destroying venture and will therefore outperform bidders in successful deals. However, it is consistent with the observations made in the event study of long-run returns. Cross-sectional analysis of these results will contribute clarity to the firm and transaction characteristics that explain the operating performance of bidder firms post-termination.

3.6.3.2.2 Cross-sectional analysis of long-run operating performance

The cross-sectional analysis of operating performance of targets and bidders is very similar to the analysis of long-run returns. Two specifications of an OLS model are estimated to explain post-bid operating performance. The first employs data from both the test sample of parties in terminated bids and control sample of parties in completed bids, and the variable *TermDummy* facilitates the delineation of the two samples and is therefore the variable of interest. The purpose of the first specification is to evaluate the *ex post* performance of parties in a terminated transaction, relative to those in a completed transaction, thereby testing *H1* (terminated targets) and *H4* (terminated bidders). The second specification of the model uses data from the test sample only, which allows for the incorporation of termination specific data (specifically, the initiator of termination). The purpose of the second specification is to evaluate the change in operating performance following acquisition, relative to pre-acquisition performance, thereby further investigating the determinants of post-operating performance. Data in both specifications

are industry adjusted, thereby controlled for the influence of industry on post-termination operating performance.

The results of the cross-sectional analysis of the terminated target's post-termination, industry adjusted operating performance are displayed in Table 3.19, with the first and second model specifications displayed in Panels A and B, respectively. In Panel A, the key variable of interest, *TermDummy*, is significant in the profitability and efficiency regressions, both implying that after accounting for firm and transaction characteristics, the targets in terminated deals outperform targets in completed deals on profitability and efficiency, but there is no evidence to support superior performance on growth and Tobin's *q*. The variable $D/E * TermDummy$ in Panel A also shows evidence consistent with Safieddine and Titman (1999): targets in terminated deals that exhibit superior operating performance are those with higher leverage. These firms increase leverage as a protection from further takeover bids and at the same time, make improvements in operating performance, which also reduces the threat of takeover.

Panel B of Table 3.19 provides further insight into the cross-section of terminated targets' operating performance, and similar to the cross-section of terminated targets' long-run abnormal financial performance, the initiator of the termination is an important determinant of post-termination performance. When the target terminates the bid (*TargetTerm*), ROA and Tobin's *q* is higher, indicating that the target shareholders are generally better off without the deal when the deal is target-terminated. Though when the deal is largely stock financed and terminated by the bidder, the target's profitability is lower. It may be that in these deals, stock financing was selected to spread the risks associated with the deal but the risks associated with the target were deemed to be great by the bidding firm, who then terminated the deal. The results suggest that the bidder is correct in terminating the deal, since this sub-set of targets underperform in the

Table 3.19: Cross-sectional analysis of target long-run operating performance

This table displays the results of cross-sectional analysis of long-run operating performance of target firms. Panel A presents the results on the sample of all target firms in terminated and completed deals, and Panel B presents the results on the sample of targeted firms in terminated deals. The explained variables are operating performance variables, ROA, TC/TA, post-g_{Revenue}, and Tobin's *q*. The explanatory variables are described in Table 3.5. The symbols ***, ** and * indicate significance of t-statistics at the 1%, 5% and 10% level, respectively. The regressions results have been corrected for heteroscedasticity using White's consistent estimator.

<i>Panel A: All targets</i>	post-ROA		post-TC/TA		post-g _{Revenue}		post-Tobin's <i>q</i>	
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
TermDummy	0.172	1.70*	-0.336	-2.33**	0.123	0.63	2.162	1.54
(ACAR)20	0.057	0.70	-0.057	-0.97	0.062	0.70	0.101	0.33
Stock	0.059	1.01	0.060	0.90	-0.053	-0.67	0.365	1.20
LogRelativeSize	-0.021	-0.62	0.078	1.86*	-0.003	-0.04	-0.285	-1.42
MultipleBidders	0.164	0.82	0.111	1.14	-0.187	-0.76	1.858	1.05
Related	-0.104	-2.06**	0.046	0.63	0.082	0.88	0.130	0.38
Friendly	-0.213	-2.68***	0.021	0.25	0.362	2.00**	0.232	0.68
LogValueofTrans	-0.018	-1.00	0.019	0.44	-0.025	-0.59	0.115	0.59
post-D/E	-0.002	-0.34	-0.023	-1.32	0.059	3.14***	0.221	1.64
AnnounceCAR*TermDummy	-0.056	-0.65	0.082	1.06	-0.171	-1.27	-0.986	-1.01
Stock*TermDummy	-0.067	-0.98	0.045	0.35	0.099	0.74	-0.507	-0.81
LogRelativeSize*TermDummy	-0.016	-0.35	-0.062	-0.80	-0.092	-0.72	0.876	1.36
MultipleBidders*TermDummy	-0.176	-0.86	-0.193	-1.38	0.373	1.41	-3.163	-1.58
Related*TermDummy	0.108	1.75*	-0.051	-0.47	0.012	0.10	-0.638	-0.75
Friendly*TermDummy	0.144	1.55	-0.089	-0.72	-0.374	-1.90*	0.995	0.82
Log(ValueofTrans)*TermDummy	-0.004	-0.77	-0.053	-2.99***	0.134	7.12***	0.501	3.72***
post-D/E*TermDummy	0.126	1.47	-0.186	-2.40**	0.388	2.88***	2.234	2.29**
Intercept	0.298	3.42***	0.266	2.47**	-0.354	-1.92*	0.162	0.32
R ²	8.63%		3.15%		7.25%		2.79%	
Adj- R ²	8.22%		3.09%		7.02%		2.66%	
F-statistic	5.650		1.440		7.150		1.400	
p-value	0.000***		0.122		0.000***		0.139	
N	517		517		517		517	

<i>Panel B: Targets in terminated mergers</i>	Δ ROA		Δ TC/TA		Δ g _{Revenue}		Δ Tobin's <i>q</i>	
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
(ACAR+TCAR)20	0.030	1.71*	0.027	0.50	0.143	1.40	0.939	1.01
Stock	0.125	1.53	0.138	0.91	-0.094	-0.59	-1.855	-1.05
LogRelativeSize	-0.031	-1.07	0.011	0.15	-0.128	-1.29	0.500	0.87
MultipleBidders	0.026	0.55	-0.125	-1.14	0.126	1.65*	-2.024	-1.45
Related	0.002	0.05	0.014	0.14	0.029	0.34	-0.474	-0.55
Friendly	-0.077	-1.48	-0.086	-0.77	0.016	0.21	1.360	1.11
LogValueofTrans	-0.041	-1.48	-0.003	-0.03	0.051	0.83	0.315	1.00
Δ D/E	0.002	0.38	-0.025	-1.93*	0.054	3.28***	0.142	2.15**
BidderTerm	0.123	1.60	-0.281	-1.05	-0.016	-0.10	-2.784	-1.16
TargetTerm	0.156	2.03**	0.023	0.21	0.076	0.79	1.192	1.74*
ExoTerm	-0.023	-0.41	-0.146	-0.96	2.198	1.41	-1.793	-0.85
BidderTerm*Stock	-0.176	-1.65*	0.084	0.30	0.067	0.29	1.956	0.77
TargetTerm*Stock	-0.016	-0.17	-0.118	-0.62	0.209	1.03	1.918	1.06
ExoTerm*Stock	-0.299	0.95	-0.070	-0.37	-2.266	-1.44	0.350	0.13
Intercept	0.103	1.27	0.078	0.36	-0.345	-2.19***	-0.513	-0.29
R ²	5.09%		2.29%		8.15%		4.92%	
Adj- R ²	4.99%		2.00%		7.64%		4.11%	
F-statistic	3.340		2.900		2.240		2.370	
p-value	0.0172**		0.0575*		0.0234**		0.0152**	
N	358		358		358		358	

long-run. Similar to Panel A, Panel B shows that targets that increase their D/E ratios exhibit superior operating performance in the five years following termination. Safieddine and Titman (1999) argue that these targets increase leverage in order avoid further takeover attempts because it commits target managers to make improvements that would have been made by a successful bidder. The coefficient of $(ACAR+TCAR)20$ indicates that the improvements in profitability are priced into revaluation returns.

Table 3.20 presents the same analysis on the sample of bidder firms. Panel A displays the results of the first specification of the OLS regression, and the coefficient of *TermDummy* is positive and significant in the efficiency (TC/TA) regression, which is consistent with the findings in the univariate analysis. This result provides evidence counter to *H4*, that in general, an unsuccessful bidder in a terminated merger will outperform a bidding firm in a completed merger, since the unsuccessful bidder declines in efficiency following termination. The *TermDummy* is not significant in any other regression, so only efficiency suffers in the post-termination period. In stock financed deals ($Stock*TermDummy$), efficiency improves at bidding firms, which indicates that in deals with high levels of stock financing, the bidding firm shareholders are better off (at least in terms of operational efficiencies) without the deal than those bidding firm shareholders in completed deals, which supports *H4*. The regression results in Panel A of Table 3.20 also provide evidence that terminated bidders in large deals ($Log(ValueofTrans)*TermDummy$) exhibit negative operating performance following termination.

The results of the second specification on bidding firm post-termination operating performance are provided in Panel B of Table 3.20. Similar to targets in terminated mergers, changes in post-acquisition, operating performance of bidding firms in terminated deals are

Table 3.20: Cross-sectional analysis of bidder long-run operating performance

This table displays the results of cross-sectional analysis of long-run operating performance of bidding firms. Panel A presents the results on the sample of all bidding firms in terminated and completed deals, and Panel B presents the results on the sample of bidding firms in terminated deals. The explained variables are operating performance variables, ROA, TC/TA, post-g_{Revenue}, and Tobin's *q*. The explanatory variables are described in Table 3.5. The symbols ***, ** and * indicate significance of t-statistics at the 1%, 5% and 10% level, respectively. The regressions results have been corrected for heteroscedasticity using White's consistent estimator.

<i>Panel A: All bidders</i>	post-ROA		post-TC/TA		post- g _{Revenue}		post-Tobin's <i>q</i>	
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
TermDummy	0.140	0.54	1.986	2.33**	0.059	0.51	-0.449	-0.16
ACAR20	0.055	0.96	-0.103	-0.39	0.020	0.29	1.111	1.10
Stock	-0.025	-0.67	-0.061	-0.55	0.047	0.98	1.422	1.71*
LogRelativeSize	0.016	0.92	0.000	0.00	0.032	1.41	-0.147	-0.65
MultipleBidders	0.111	1.57	0.783	2.34**	-0.350	-1.98**	3.859	1.49
Related	0.044	1.06	-0.010	-0.08	0.062	1.14	-1.050	-1.06
Friendly	0.085	0.64	0.368	0.93	0.071	0.74	-1.748	-1.44
LogValueofTrans	-0.150	-2.68***	0.908	2.19**	0.022	1.08	-1.600	-3.15***
post-D/E	0.002	0.45	0.020	0.80	0.002	0.89	0.477	2.81***
ACAR20*TermDummy	-0.235	-1.35	-0.291	-0.32	-0.004	-0.06	-1.256	-0.88
Stock*TermDummy	0.301	1.34	-3.188	-1.83*	-0.132	-1.79*	1.647	0.74
LogRelativeSize*TermDummy	0.309	1.13	0.166	0.51	-0.010	-0.12	4.401	1.39
MultipleBidders*TermDummy	0.110	0.27	-1.245	-0.69	0.200	0.98	0.403	0.08
Related*TermDummy	-0.249	-1.14	-0.964	-0.58	-0.052	-0.60	-2.460	-1.25
Friendly*TermDummy	0.204	0.87	0.555	0.72	-0.058	-0.48	3.405	1.26
Log(ValueofTrans)*TermDummy	-0.229	-4.08***	1.383	3.34***	-0.034	-1.65	-2.44	-4.80***
post-D/E*TermDummy	0.002	0.69	0.030	1.22	0.003	1.36	0.73	4.28***
Intercept	0.249	2.57***	1.282	1.87*	-0.085	-0.97	2.507	1.76*
R ²	5.61%		3.79%		3.66%		9.38%	
Adj- R ²	5.45%		3.66%		2.80%		8.84%	
F-statistic	3.320		10.060		1.790		1.920	
p-value	0.000***		0.000***		0.033**		0.019**	
N*	684		684		684		684	
<i>Panel B: Unsuccessful bidders in terminated mergers</i>								
	Δ ROA		Δ TC/TA		Δ g _{Revenue}		Δ Tobin's <i>q</i>	
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
(ACAR+TCAR)20	-0.119	-0.77	-0.386	-0.46	0.021	1.00	0.278	0.26
Stock	0.951	1.00	0.303	0.38	-0.007	-0.10	12.587	1.14
LogRelativeSize	0.376	1.41	0.490	1.24	0.017	0.21	4.565	1.49
MultipleBidders	0.434	0.97	0.403	0.71	-0.158	-1.46	5.971	1.16
Related	-0.164	-0.81	-0.803	-0.48	0.018	0.23	-3.212	-2.29**
Friendly	0.213	1.00	0.747	0.86	0.013	0.17	1.308	0.58
LogValueofTrans	0.317	2.78***	-1.442	-2.42**	0.033	1.18	2.695	2.70***
Δ D/E	0.001	0.30	0.027	0.77	0.000	0.20	0.597	7.08***
BidderTerm	0.515	1.66*	-0.193	-0.25	-0.019	-0.22	4.882	1.83*
TargetTerm	-0.059	-0.56	-0.240	-0.42	0.044	0.64	0.117	0.09
ExoTerm	0.023	0.11	-0.944	-0.60	-0.101	-1.43	4.214	1.84*
BidderTerm*Stock	0.843	1.81*	-6.934	-1.37	-0.062	-0.52	10.083	1.88*
TargetTerm*Stock	-0.781	-0.85	0.800	0.77	-0.173	-1.15	-9.832	-0.92
ExoTerm*Stock	-0.638	-0.67	1.679	1.00	0.043	0.48	-13.460	-1.21
Intercept	0.517	1.82*	4.279	3.80***	-0.047	-0.37	1.408	0.49
R ²	5.88%		2.99%		2.50%		12.67%	
Adj- R ²	5.41%		2.19%		1.98%		10.77%	
F-statistic	1.5		2.45		0.94		3.89	
p-value	0.0964*		0.0016***		0.5224		0***	
N*	342		342		342		342	

associated with changes in leverage. Increases in D/E are associated with increases in Tobin's q . Similar to the results in Panel A, the value of the transaction is positively associated with improvements in operating performance, across all measures. When the deal is terminated by the bidder (*BidderTerm*) and when the deal is stock financed and terminated by the bidder (*BidderTerm*Stock*), the operating performance of the bidder improves following termination. The coefficient of the revaluation returns variable ($(ACAR+TCAR)20$), is not significant in any regression, so revaluation returns do not price in long-run, post-termination operating performance.

Analysis of the operating performance of targets and bidders in terminated deals has revealed that targets outperform both pre-termination performance and targets in completed deals. The results also provide evidence that positive changes in operating performance are more likely when the target terminates the deal. The evidence on the post-termination performance of bidders differs significantly. The univariate analysis shows no changes in operating performance from pre-target levels, and relative to successful bidders, the terminated bidders actually perform worse. Cross-sectional analysis provides evidence that terminated bidders are associated with lower levels of efficiency, which is in agreement with univariate analysis. In the case of a stock financed deal, however, the bidder in a terminated merger actually performs better than bidders in completed mergers. Also, when the bidder terminates the deal, the bidder exhibits improvements in operating performance.

3.7 Conclusions

This study provides a comprehensive examination of the long-run effects of merger termination. The literature on completed mergers suggests the combined firm underperforms in the long-run

and therefore both target and bidding shareholders might be better off without the transaction, but still, merger activity persists on a massive scale. This study seeks to contribute knowledge to the literature by showing whether deal termination is beneficial for shareholders of bidding and targeted firms in terminated deals. The objective of this study is to determine if merger termination is actually good news for shareholders because based on empirical evidence, if the merger had succeeded, shareholders would have suffered.

This study contributes to a set of literature that studies the effects of terminated literature. Most studies of long-run financial stock performance of the targeted firm in a terminated deal (e.g., Asquith, et al. (1983), Pound (1986)) produce evidence of positive abnormal returns. Most studies of the unsuccessful bidder (e.g., Taffler and Holl (1991), Parkinson and Dobbins (1993)) report no abnormal returns earned by shareholders upon merger termination. Very few studies of terminated deals have investigated the real economic impact of merger termination on the targeted and unsuccessful bidding firm operations. Most closely related to this study is Holl and Pickering (1988) and Taffler and Holl (1991), who both investigate the long-run operating performance of targeted firms and unsuccessful bidders of terminated mergers. These studies suffer from a number of limitations. First, both studies evaluate small samples of mergers during the 1965-1975 period, thereby reducing the generalizability of the results to more recent merger activity, as it has been shown that recent merger waves differ substantially from those during the 1960s and 1970s (Martynova and Renneboog, 2008). Additionally, the methodology employed by both Holl and Pickering (1988) and Taffler and Holl (1991) involves univariate analysis and no cross-sectional analysis of post-termination performance, so it may be that the cross-sectional variability of the observed post-acquisition performance in these studies is not associated with the acquisition but instead explained by target firm (Moeller, et al., 2004)) or industry (Mitchell

and Mulherin, 1996) characteristics. The objective of this study is to use a large sample to test whether firms in terminated mergers perform well in the post-termination period, thereby contributing large-sample evidence on post-termination value implications for both targeted firms and unsuccessful bidders. Not only does this study provide evidence on the economic effects of terminations, it also contributes knowledge to the general mergers and acquisitions literature that is concerned with the paradox of high levels of merger activity coupled with low levels of value creation by identifying conditions under which failed mergers, relative to completed mergers, create value for target shareholders.

Based on a review of the literature, hypotheses are developed from the targeted firm and unsuccessful firm perspectives that describe post-termination performance. Given the documented result of merger underperformance by both academic (e.g., Agrawal, et al. (1992)) and professional studies (e.g., McKinsey & Company (1990)), the likelihood of value destruction for both targeted firms and acquirers is high, and therefore, the long-run performance of a target following deal termination will be significantly better than that of a target involved in a completed merger. Extant literature also suggests that merger termination can have a positive impact on both the targeted firm (e.g., Chiplin and Wright (1987)) and the bidding firm (e.g., Holl and Pickering (1988)), as the threat of a subsequent takeover compels firms to improve performance in order to reduce the likelihood of future bids on their own assets which also acts to protect management's jobs. Therefore under the *takeover threat hypothesis*, it is hypothesized targeted firms and unsuccessful bidders will outperform its pre-bid termination performance. Another possible outcome for targeted firms is that target management may veto the merger in order to entrench incumbent managers at the expense of target shareholders because there is a high probability that incumbent managers will lose their positions as a consequence of a

successful takeover (Karpoff, et al., 1996). The *entrenchment hypothesis* therefore suggests that a targeted firm in a terminated merger will not outperform its pre-bid termination performance.

To test these hypotheses, data on two benchmarks are employed: (1) the sample firms' pre-merger announcement performance and (2) a sample of bidders and targets in successful acquisitions. A matched sample of sample of industry rivals for parties to terminated and completed deals is constructed, with the purpose of controlling for the influence of industry factors. The analysis in this study is designed to document post-termination financial and operating performance and compare the documented performance to the two benchmarks using difference testing and cross-sectional regressions, while controlling for industry. Together, the analyses test if merger termination is in fact good news for the shareholders of the target and bidding firms.

This study contributes strong evidence that target firms in terminated deals not only outperform their pre-acquisition performance but also outperform stock and operating performance of targets in completed deals. Even more interesting, the outperformance is priced into the targeted firm's share price following termination. These results provide support for the hypothesis that target shareholders are better off without the deal because they have avoided a value-destroying venture. The evidence also supports the *takeover threat hypothesis*, that threat of takeover, even if the deal is not completed, will induce target managers to pursue value-enhancing activities in order to avoid a future takeover. The outcome for bidding firms in terminated mergers is much less rosy. Bidders in terminated deals perform worse than those in completed deals, suggesting that bidder shareholders are better off with the deal. Bidding firms do not exhibit improvements in operating performance relative to pre-termination levels, and bidding firms in terminated deals do not outperform bidding firms in completed deals. There are

exceptions to this outcome. Bidding firms in terminated deals exhibit improvements relative to pre-acquisition levels and relative to bidders in completed deals when the bidder terminates the deal and when the deal involves high levels of stock financing.

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CHAPTER 4

Essay 3: Medium of exchange under information asymmetry: A signal of deal quality?

Abstract

This study develops and tests the *deal quality hypothesis*, which proposes that the medium of exchange choice in a merger and acquisition transaction is a signal of the quality of the combination, quality that is realized through post-acquisition gains and/or synergies. This study employs a unique sample construction that controls for both the endogeneity inherent in the medium of exchange choice, while also controlling for industry effects. The study finds that cash bids are completed under conditions of low information asymmetry, and stock bids are completed under conditions of high information asymmetry. Cash bidders exhibit long-run outperformance, and stock bidders exhibit long-run underperformance. Cash as the medium of exchange provides a signal of high deal quality, but when a bidder selects stock as the medium of exchange, it is a signal of low deal quality and a signal of bidder overvaluation.

4.1 Introduction

A bidding firm can choose to finance an acquisition of a target firm with all cash, all equity, or some mix of the two. In a cash deal, the roles of the two parties are clear: the acquiring firm is the buyer and the targeted firm is the seller, and the relationship ends following the transaction. However in a stock deal, the targeted firm will own equity in the newly-combined firm and therefore, the target shareholders will shoulder a portion of the risks of the transaction. Betton, et al. (2008) report that in a sample of US bids from 1980-2005, 26% of initial bidders used all cash, 37% used all-stock bids, and 37% used a mix of cash and stock. Further, Betton, et al. (2008) notes that this distribution has changed markedly over time; during the 1980-1985 period, 90% of initial merger bids offered a mix of cash and stock. The 1990-1995 and 1996-2000 sub-periods, approximately 55% of initial bids included stock payment.

In perfect capital markets, the medium of exchange should be irrelevant, since the level and division of the merger-induced gains are the same regardless of whether the acquisition is paid for using cash or equity (Chemmanur, et al., 2009). The choice, however, is far from being irrelevant: studies consistently report evidence that shareholders of bidding firms fare far worse in stock transactions than they do in cash transactions following the deal completion. A number of explanations have been presented to describe what motivates the medium of exchange choice and the market response elicited from such announcements. Some authors (i.e., Gilson, et al. (1988)) present a tax-based explanation which posits that cash deals may be relatively costly as the implied capital gains tax penalty forces a higher target premium, and the higher premium is associated with high announcement returns. Others (e.g., Jensen (1986); Harris and Raviv (1988)) suggest that corporate control considerations motivate the choice: some bidders select cash over stock as the medium of exchange in order to avoid dilution of private control benefits. Receiving considerable attention in the literature is the information asymmetry explanation of the method of payment choice, which contends the medium of exchange reveals information about the true values of the parties' assets (Myers and Majluf, 1984; Hansen, 1987). Fishman (1989), Berkovitch and Narayanan (1990), and Eckbo, et al. (1990) argue that cash (stock) offers will involve lower (higher) bidder competition, moderated by the degree of bidder and target misvaluation. Cash payments are used to signal a higher valuation of the target firm and thus preempt bidder competition.

The theoretical literature on the medium of exchange choice under asymmetric information has placed substantial emphasis on the choice as a valuation signal of the bidding firm, labelled in this essay as the *misvaluation hypothesis*. Early work by Myers and Majluf (1984) on the pecking order theory shows that stock bids will cause a negative market reaction as

investors hedge against the possibility that the bidder's stock is overvalued. The seasoned equity offerings (SEO) literature provides evidence that SEO announcements elicit negative market reaction, which is consistent with Myers and Majluf's (1984) proposition that investors view the equity offering as a signal of overpriced bidder's stock (Travlos (1987), Asquith, Bruner, and Mullins (1983), among others). Hansen (1987) contends that a bidder's choice between cash and stock is an attempt to alleviate the trade-attenuating effects of adverse selection under two-sided asymmetric information. Hansen's (1987) model allows for both bidders and targets to have private information which results in a 'double lemons' problem: bidders do not offer shares when they believe their shares are undervalued and targets only accept cash when the offer exceeds their share value.

The medium of exchange literature (e.g., de la Bruslerie (2012)) has pointed to another possible signal embedded in the medium of exchange choice: the bidder and target have private information regarding the likelihood that future gains will be realized following merger completion. A partial or full payment of shares allows bidding shareholders to spread the risk and uncertainties of the value of the acquired firm and future gains by transforming target shareholders into a shareholder of the newly merged firm. Under high information asymmetry, the bidder is less certain of the quality of the combination and will prefer to finance the acquisition with stock, since target shareholders share in the uncertainty. Under conditions of low information asymmetry, the bidding firm perceives the deal as high quality since the synergies are certain, and the bidder will prefer to offer cash in order to monopolize the certain synergy gains. Therefore, it may be that the medium of exchange is a signal of the quality of deal. The signal is described in this essay by the *deal quality hypothesis*. The deal quality signal is similar to Hansen's (1987) misvaluation signal in that a signal of bidder overvaluation may be

a reflection of the market's anticipation of future profitability of the bidding firm as a stand-alone firm, and the positive expectations may materialize in real gains following the acquisition. Therefore, the *deal quality* and *misvaluation hypotheses* may not be mutually exclusive, but the difference in the deal quality and misvaluation signal lies in the entity being evaluated. In the case of the *misvaluation hypothesis*, the information elicited by the medium of exchange announcement is associated with the value of the bidder at the time of the announcement, independent of the combination. It is argued in this essay that medium of exchange choice not only is a signal of bidding firm value but also of the post-acquisition prospects of the combined firm. This essay seeks to evaluate the *deal quality hypothesis* against the dominant explanation of the medium of exchange choice under information asymmetry -- the *misvaluation hypothesis*. More specifically, this essay seeks to disentangle the deal quality signal from the signal of bidder valuation elicited from the medium of exchange. In doing so, this study seeks to contribute evidence on the information embedded in the medium of exchange choice associated with the quality of the deal.

Employing a sample construction approach proposed by Savor and Lu (2009), this study controls for both endogeneity and industry effects in the analysis of the information content of the medium of exchange choice. Since the bidding firm ultimately steers the medium of exchange choice (Di Giuli, 2013), this study focuses on the bidding firm in the medium of exchange choice. The *deal quality hypothesis* is tested from two perspectives. First, this study tests the perception of deal quality at the time of deal negotiation by investigating the perceived synergies at the time of the deal (*ex ante* deal quality). Second, and more importantly, this study evaluates the long-run, post-acquisition financial and operating performance to test actual deal quality realized in the post-combination period (*ex post* deal quality). In both cases, the *deal*

quality hypothesis contends that the higher the certainty of post-acquisition gains (which is determined by the degree of bidder-side information asymmetry at the time of announcement), the more certain the bidder will be regarding the realization of acquisition gains, and thus, the bidder is more likely to opt for an all-cash or heavy cash weighted offer in order to monopolize future gains and avoid shareholder dilution. Furthermore, the higher the bidder-side information asymmetry in evaluating the target firm, the more likely the bidder will opt for an offer of all-stock or heavy stock weighting in order to share the uncertainty with target shareholders, even though bidding shareholders will face dilution and will share future gains with target shareholders.

This essay reports evidence that at announcement, bidding firms in cash bids experience significantly positive abnormal returns at announcement, and bidders in stock deals earn significantly negative cumulative abnormal returns in most windows of observation. For stock bidders facing information asymmetry, the information content of the announcement returns is negatively associated with the bidder valuation and positively associated with perceived acquisition gains, which lends support to both the *misvaluation* and *deal quality hypotheses*. For cash bidders, the announcement returns are not associated with bidder valuation errors but are positively associated with perceived acquisition gains, thereby supporting the *deal quality hypothesis* but not the *misvaluation hypothesis*. The analysis of actual quality, which involves investigation of post-acquisition, long-run financial and operating performance, produces consistent results. Cash deals outperform stock deals over the five years following acquisition, which indicates that cash offers indeed signal a high quality combination, while stock deals signal low quality combination. To disentangle the deal quality signal from the misvaluation signal, a number of cross-sectional analyses are estimated. The results provide strong evidence

that post-acquisition performance of cash bidders is associated with perceived synergies and bidder valuation errors at the time of announcement, but the association with perceived synergies is greater in economic significance, thereby indicating that *deal quality hypothesis* dominates the *misvaluation hypothesis* as an explanation for long-run outperformance of the cash bidders. For stock bidders, however, the medium of exchange choice under information asymmetry is associated with a signal of deal quality and bidder misvaluation, with some moderate evidence suggesting that the *deal quality hypothesis* may dominate the misvaluation explanation. This evidence sheds new light on the medium of exchange choice, by contributing insight into the information content of the medium of exchange choice, that while it does signal valuation, it also signals deal quality. The results presented in this essay benefit investors given that the results inform shareholders of target and bidding firms as to the quality of the deal being negotiated on their behalf. For instance, since a stock offer made under high information asymmetry is associated with poor post-acquisition performance, target shareholders may be better off rejecting the deal.

The remainder of the proposal of this study is structured as follows. In section 4.2 of this study, a survey of the medium of exchange under information asymmetry literature is completed, which serves as the theoretical footing of the hypotheses proposed in section 4.3. Section 4.4 presents the sample construction and methodology, and section 4.5 reports the results of the empirical analyses. Section 4.6 provides concluding comments.

4.2 Literature Review

The medium of exchange negotiated in acquisitions is an important factor to consider when evaluating an acquisition (Carleton, et al., 1983). There is evidence that the bidder's stock reaction to a takeover announcement is negative in all-stock financed acquisition offers. A

number of explanations have been presented to describe what motivates the medium of exchange choice and the market response elicited from such announcements. Gilson, et al., (1988) present a tax-based explanation which posits that cash deals may be relatively costly as the implied capital gains tax penalty forces higher target premiums. Others, including Jensen (1986) and Harris and Raviv (1988), suggest that corporate control considerations motivate the choice: some bidders select cash over stock as the medium of exchange in order to avoid dilution of private control benefits. The information asymmetry explanation of the medium of exchange choice contends that when the target and bidder have private information regarding the intrinsic value of their assets, the medium of exchange reveals information about the true values of the parties' assets (Eckbo, 2009).

In this essay, the information content of the medium of exchange is examined, and therefore, the extant theoretical and empirical literature that investigates the medium of exchange under information asymmetry is first reviewed. Extant literature on the *misvaluation hypothesis*, the dominant explanation of the medium of exchange choice under information asymmetry, is first summarized and evaluated. Next, the smaller set of literature associated with the hypothesis developed and tested in this essay, the *deal quality hypothesis*, is presented and assessed. Table 4.1 summarizes the theoretical literature on the medium of exchange under asymmetric information.

4.2.1 Signal of misvaluation

The medium of exchange choice involves the bidder's decision to purchase the target with cash, stock, or some combination thereof. Previous studies provide evidence that abnormal returns are associated with the selection of cash or stock, and Myers and Majluf (1984) construct a theoretical setting that explains the market reaction to a firm's external financing choice. Debt

will be issued in preference to equity because a stock issue, which is less favorable to existing stockholders than debt, signals to the markets that the firm's assets in place are overvalued, and in turn this signal drives down the share price. The work of Myers and Majluf (1984) also implies a link between financing and the value of a firm's assets in place: the bidder will offer stock when the bidder's stock is overvalued and will offer cash when stock is undervalued. Accordingly, market participants interpret a cash offer as good news and a common stock exchange offer as bad news about the bidding firm's true value. This view allows for information asymmetry tilted towards the bidder: the bidder has private information on the value of its own shares, but there are no assumptions made on the target's own private information. Recognizing this adverse selection, target shareholders reduce their estimate of the bidder's value. Thus, without some benefit in stock over cash as a means of payment, a lemons problem arises for stock offers. A main criticism of the one-sided information asymmetry hypothesis is its failure to consider any private information the target might have on the value of its own assets that might impact the medium of exchange choice.

A cornerstone of the information asymmetry view of exchange medium is Hansen's (1987) theoretical model in which the medium of exchange choice is determined by a bidder's attempt to alleviate the trade-attenuating effects of adverse selection under two-sided asymmetric information.³⁷ The model allows for both bidders and targets to have private information which results in a 'double lemons' problem, which stems from both parties recognizing the adverse selection bias in the other's decision. Key to Hansen's (1987) model is two-sided information

³⁷ Fishman's (1989) derives a model similar to Hansen (1987) with similar predictions. In Fishman's model, there is a choice between paying cash and a risky debt security, rather than using stock. This essay evaluates the Hansen (1987) model over the Fishman (1989) because it is more direct in his characterization of the medium of exchange choice.

Table 4.1: Theoretical literature on medium of exchange choice under information asymmetry

This table contains the existing theoretical literature, key studies, and associated predictions on the signals associated with the medium of exchange choice under information asymmetry.

Panel A provides the theoretical foundations of the *misvaluation hypothesis*, and Panel B provides the theoretical foundations of the *deal quality hypothesis*.

<u>Theory</u>	<u>Key studies</u>	<u>Predictions</u>
<i>Panel A: Theoretical foundations of the misvaluation hypothesis</i>		
<i>Misvaluation hypothesis, under one-sided information asymmetry</i>	Myers and Majluf (1984)	Investor concern with adverse selection produces a negative market reaction to the news of a stock deal. Managers of a bidder will prefer a cash offer if they believe that their firm is undervalued, while a common stock exchange offer will be preferred in the opposite case. Market participants interpret a cash offer as good news and a common stock exchange offer as bad news about the bidding firm's true value.
<i>Misvaluation hypothesis under, two-sided information asymmetry</i>	Hansen (1987)	Misvaluation of the target firm is especially harmful when the transaction value is high and the size of the target's assets is large relative to that of the bidder's assets. The more the target undervalues the bidder's stock, the more costly a given offer, and the more likely the bidder is to use cash.
	Berkovitch and Narayanan (1990)	Both acquiring and target firms will obtain higher returns when a takeover is financed with cash rather than equity.
	Eckbo, Giammarino, and Heinkel (1990)	The mix of cash and stock offered to the target provides information as to the true value of the bidder, and the revealed true value of the bidding firm's value is monotonically increasing and convex in the fraction of the total offer that consists of cash.
<i>Panel B: Theoretical foundations of the deal quality hypothesis</i>		
<i>Deal quality hypothesis</i>	Fishman (1989)	First to model synergies into the medium of exchange. In stock deals, the offer's value is contingent on the future cash flows, and in cash deals, the value is not contingent on the future cash flows of the target.
	Berkovitch and Narayanan (1990)	That the higher the cash component of the deal, the lower the fraction of synergies captured by the target, but the higher the dollar value of the synergies capture by the target.
	Rhodes-Kropf and Viswanathan (2004)	In equilibrium, stock bids reflect the expected level of synergies between the firms, and the target response to the bid is based on its assessment of synergies given the bids and management's own private information. Acceptance of the bid, signals the target's positive assessment of synergies alongside its own valuation of stand-alone assets.
	de la Bruslerie (2012)	Proposition 1: In mixed-payment situations, takeovers of positively correlated target and initiator firms should offer a lower payment in shares. Conversely, a strategy for diversifying activities will correspond to buyers offering a higher proportion of cash. Proposition 2: For the acquirer, the cash-payment portion increases with expectations of acquisition gains and synergies.

asymmetry: not only does the bidder not know the true value of the target's assets, but the target also does not know the true value of the bidder's assets. In deriving the equilibrium of the cash/stock choice, Hansen (1987) argues that the value of a stock offer is contingent on the true value of both the bidder and the target's stand-alone assets. A cash offer that undervalues the target will be rejected, while an equivalent stock offer may be accepted because the target expects the stock offer will rise in the *ex post*. Furthermore, the more the target undervalues the bidder's stock, the more costly a given offer, and the more likely the bidder is to use cash. In particular, high uncertainty about the true value of the target firm induces the bidder to pay with its own equity rather than cash. Capital participation in the combined firm requires target shareholders share the risk of potential downward revaluations after the bid's completion. According to Hansen (1987), "the target then uses the exchange medium and size of any stock offer as signals of acquiring-firm value; given the target's strategy, the acquirer optimally chooses the exchange medium and offer size in a way that sustains that target's beliefs on the signal value relation" (p.77). The signal that provides information on bidder and target valuation, as predicted by Hansen (1987), will be referred to as the *misvaluation hypothesis*.

Hansen's (1987) model explains the probability of paying in cash or in shares but does not consider the possibility of mixed payment schemes. His model also assumes a setting of first-and-final offers and does not allow for multiple bidders, which potentially reduces the value of his predictions in actual merger and acquisition transactions. The value of the target, the bidder's perceived value of the target, and the value of the bidder in Hansen's (1987) model are valuations of current assets in place and do not directly refer to any gains that might be created by combining the target and bidder. Several studies evoking Hansen (1987) cite that his model links medium of exchange with the long-term profitability of the combined entity (e.g., Heron

and Lie (2002)) or with the risk-sharing function of the medium of exchange (e.g., Cao and Madura (2011)). It seems that research subsequent to Hansen (1987) has inferred post-acquisition implications from his model, but Hansen (1987) is clear that his model reflects only assets in place and no *ex post* profitability or (un)certainty regarding *ex post* acquisition gains. The implications of the model are limited to the revaluation of target and bidder assets that result from the signal conveyed from medium of exchange at announcement.

Berkovitch and Narayanan (1990) and Eckbo, et al. (1990) update Hansen's (1987) model by allowing for mixed payments, multiple offers, and multiple bidders, and both Berkovitch and Narayanan (1990) and Eckbo, et al. (1990) make conclusions that are in line with those made in the original Hansen (1987) model. In Berkovitch and Narayanan (1990), the authors construct a separating equilibrium model that emphasizes the role of the medium of exchange in competition among bidders and its effect on returns to stockholders. Berkovitch and Narayanan (1990) conclude that both acquiring and target firms will obtain higher returns when a takeover is financed with cash rather than equity. Likewise, Eckbo, et al. (1990) construct a separating equilibrium in which the mix of cash and stock offered to the target provides information as to the true value of the bidder. Eckbo, et al.'s (1990) model predicts that the revealed true value of the bidding firm is monotonically increasing and convex in the fraction of the total offer that consists of cash.

Hansen (1987) provides some preliminary empirical evidence in favor of his model's predictions, and subsequent work further supports the role of information asymmetry in the medium of exchange choice. See Table 4.2 for a summary of the empirical work that tests the *misvaluation hypothesis*. Travlos (1987), Asquith, et al. (1983), Servaes (1991), Brown and Ryngaert (1991), Martin (1996), Chang (1998), Emery and Switzer (1999), Heron and Lie

(2004), Schlingemann (2004) and many others show that bidder announcement-induced abnormal stock returns are on average negative in all-stock offers for public targets.³⁸ However, recent work by Golubov, et al. (2012) casts doubt on these findings. These authors argue that stock-financing is a joint announcement of a takeover and an equity issue, and they isolate the abnormal returns from the two ‘events’ into abnormal returns associated with the takeover and abnormal returns associated with the equity issue. After accounting for the equity issue abnormal returns, Golubov, et al. (2012) report evidence that stock financed acquisitions are not value destructive and the method of payment has no explanatory power of acquirer returns.³⁹ Several studies have sought to more directly evaluate the signal of stand-alone value of target and bidder assets embedded in the medium of exchange choice. Sullivan, et. al (1994) study the valuation effects associated with terminated merger proposals by running a series of cross-sectional regressions on abnormal returns around the time of the medium of exchange announcement, which aims to separate the sources of abnormal returns by synergy, tax code incentives, and a valuation signal. The authors find significantly higher returns for target shareholders after termination of cash offers than after termination of stock offers, concluding that target firms’ shares are revalued according to Hansen’s (1987) predictions, and the revaluation is the result of “private information signaled by the offer medium that pertains to the target firm’s stand-alone value” (p.51). Also investigating revaluation following deal termination

³⁸ It has been noted in the literature that the announcement of a stock offer may send a signal similar to that of a new equity issue because stock offers oftentimes involve the issuance of new equity. Indeed, the empirical evidence on new equity offerings is in line with the price reaction to stock payments in an M&A transaction (Asquith, et al. (1983), Wansley, et al. (1983), Huang and Walkling (1987), Travlos (1987), Franks and Harris (1989), Murphy and Nathan (1989), and Eckbo, et al. (1990)). What’s more, evidence presented by Dodd (1980) and Bradley (1980), among others suggests that the revaluation effect of new equity offerings is permanent, which provides further credibility to the proposition that new equity offerings provide a credible valuation signal.

³⁹ To isolate the effect of the equity issue from the takeover announcement returns, Golubov, et al. (2012) use historical SEO announcement returns to estimate (through linear prediction and propensity-score matching) the bidders’ abnormal returns due to the medium of exchange choice.

Table 4.2: Empirical literature testing the *misvaluation hypothesis*

This table contains a summary of the evidence of tests of the *misvaluation hypothesis*. It identifies each study's research question, sample, key conclusions, and whether the study provided support (Yes) or not (No) for the *misvaluation hypothesis*.

<u>Study</u>	<u>Research question</u>	<u>Sample</u>	<u>Conclusions</u>	<u>Support?</u>
Asquith, Bruner, Mullins (1983)	Examines the effect of mergers on the wealth of bidding firms' shareholders.	156 mergers of Fortune 1000 companies from 1979-1983	Bidder announcement-induced abnormal stock returns are on average negative in all-stock offers for public targets.	Yes
Hansen (1987)	Presents and test a theory for the choice of exchange medium, under asymmetric information.	106 US mergers from 1974-1977	Bidder announcement-induced abnormal stock returns are on average negative in all-stock offers for public targets. The probability of stock offer increases in bidder's asset size as well as in the size of its liabilities.	Yes
Travlos (1987)	An examination of the role of the medium of exchange in explaining common stock returns of bidding firms at the announcement of takeover bids.	167 US mergers from 1972-1981	Bidder announcement-induced abnormal stock returns are lower for stock offers than for cash offers.	Yes
Eckbo, Giammarino, and Heinkel (1990)	Develop and test a separating equilibrium in which the value of the bidder firm is revealed by the mix of cash and stock used as payment for the target.	182 Canadian mergers from 1964-1982	The average announcement-induced abnormal stock returns to bidders are highest for all-cash deals, lowest for all stock deals, and mixed cash-stock deals in between.	Yes
Brown and Ryngaert (1991)	A model is developed (and tested) in which the mode of acquisition conveys information concerning the value of the bidder.	342 US mergers from 1981-1986	Bidder announcement-induced abnormal stock returns are on average negative in all-stock offers for public targets.	Yes
Cornett and De (1991)	An examination of the role of medium of payment in corporate acquisitions	132 US bank mergers from 1982 to 1986	The results of this study indicate that when the full sample of banks involved in interstate bank mergers is divided into subsamples by medium of payment the abnormal announcement period returns for the subsamples are equal to each other.	No
Servaes (1991)	Analyzes the relation between takeover gains and the q ratios of targets and bidders.	704 US mergers and tender offers from 1972-1987	Bidder announcement-induced abnormal stock returns are on average negative in all-stock offers for public targets.	Yes
Sullivan, Jensen, and Hudson (1994)	An examination of the relationship between the medium of exchange (cash or stock) and valuation effects associated with terminated merger proposals.	123 US mergers from 1980-1988	Target firm shares are revalued according to private information signaled by the offer medium is associated with the target firm's standalone value. Bidding firm shareholders experience insignificant returns.	Yes
Martin (1996)	An examination of the motives underlying the payment method in corporate acquisitions.	4239 US mergers from 1978-1988	Bidder announcement-induced abnormal stock returns are on average negative in all-stock offers for public targets.	Yes
Emery and Switzer (1999)	Examination of the theory that managers have the owners' interest in mind when they choose stock or cash to pay for an acquisition and are fully aware of how the market has reacted to similar choices in the past.	577 US mergers from 1967-1987	Bidder announcement-induced abnormal stock returns are on average negative in all-stock offers for public targets.	Yes
Betton and Eckbo (2000)	An investigation of the size and impact of premiums and toeholds on outcome probabilities and expected payoffs of takeovers.	2335 US takeover bids and 1353 US tender offers from 1971 to 1990	The probability that the target accepts the initial bid in tender offer contests is lower for stock offers than for cash offers.	Yes
Cornu and Isakov (2000)	The deterring role of the medium of payment in a takeover contest is analyzed from the point of view of the bidder.	86 European mergers from 1995-1996	Evidence indicates that cash offers signal a high-valuing bidder, strongly determined to acquire the target firm.	Yes

Branch and Yang (2003)	An examination of the probability of merger completion/success, testing for the influence of medium of exchange and collars.	1097 US successful and unsuccessful mergers from 1991 to 2001	Uncertain equity values implicit in the stock payment method accounts for the reduced success rate of stock offers.	Yes
Heron and Lie (2004)	An investigation of the relation between the method of payment in acquisitions, earnings management, and operating performance.	859 US mergers from 1985 and 1997.	Bidder announcement-induced abnormal stock returns are on average negative in all-stock offers for public targets.	Yes
Schlingemann (2004)	An analysis of the relationship between bidder gains and the source of financing funds.	623 US cash takeovers from 1984-1998.	Bidder announcement-induced abnormal stock returns are on average negative in all-stock offers for public targets.	Yes
Ang and Cheng (2006)	An investigation of whether overvaluation is a significant motive in inducing firms to make acquisitions.	3862 US mergers from 1981-2001	Overvalued firms are more likely to acquire with stock, and acquirers are more overvalued in successful stock mergers than in withdrawn mergers.	Yes
Moeller, Schlingemann, and Stulz (2007)	Examination of the theoretical predictions that link acquirer returns to information asymmetry.	4322 US acquisitions from 1980 - 2002	There is no difference in abnormal returns between cash offers for public firms, equity offers for public firms, and equity offers for private firms after controlling for one of these proxies, idiosyncratic volatility.	No
Chemmanur, Paeglis, and Simonyan (2009)	Examines the choice of the medium of exchange in acquisitions when both acquirers and targets possess private information about their own intrinsic values.	817 US mergers from 1978-2004	Acquirers choosing a stock offer are overvalued and those choosing a cash offer are correctly valued, and the greater the extent of acquirer overvaluation, the greater the likelihood of it using a stock offer. The greater the extent of information asymmetry faced by an acquirer in evaluating its target, the greater its likelihood of using a cash offer.	Yes
Martynova and Renneboog (2009)	An examination of how is a takeover bid financed and what is its impact on the expected value creation of the takeover.	1361 European mergers from 1993-2001	The choice of equity versus internal cash or debt financing also depends on the bidder's strategic preferences with respect to the means of payment.	Yes
Savor and Lu (2009)	A test of the market-timing theory of acquisitions, which predicts that stock financed mergers benefit the acquiring firm's long-term shareholders by converting overvalued equity into (less overvalued) hard assets.	1773 US mergers from 1978-2003	Provides support for the hypothesis that overvalued firms create value for long-term shareholders by using their equity as currency (results do not hold for cash offers).	Yes
Chen, Chou, and Lee (2011)	An examination of how the strategic timing of acquisition announcements determines the impact of the method of payment on target stock returns.	1329 US mergers from 1995-2004	Provide evidence that the timing of acquisition announcements by bidders is important for assessing the effects of payment method as a signal of target valuation.	Yes
Malmendier, Opp, and Saidi (2011)	An examination of the sources of value creation in mergers and acquisitions.	249 unsuccessful US mergers from 1980-2008	A significant portion target returns does not reflect value creation but instead reflects a revaluation of the target. Cash offers reveal information about the target firm's stand-alone value, however, they report that stock offers do not.	Mixed
Golubov, Petmezas and Travlos (2012)	An examination of whether the source of financing affects the value of an investment project in the context of acquisitions.	1858 US mergers and 1528 US SEOs from 1996-2009	Accounting for the effect of the source of financing, stock financed acquisitions are not value destructive, and the method of payment has no explanatory power in the cross-section of acquirer returns.	No
Di Giuli (2013)	An examination of firms' mispricing and investment opportunities on the method of payment in mergers.	1187 US mergers from 1990-2005	The acquirers lead the decision on the method of payment, exploiting short-term market mispricing. Target managers believe in the quality of the merger and care about the long-term value of the merged entity's shares. Better investment opportunities lead to greater use of stock.	Yes

is Malmendier, et al. (2011) who report that targets of cash offers are upwardly revalued by 15% following termination, while targets with stock offers revert to their pre-announcement levels after deal termination. Malmendier, et al. (2011) postulate that cash offers reveal information about the target firm's stand-alone value, while stock offers do not.

Chemmanur, et al. (2009) provide a test of whether bidders are more likely to choose a stock offer if their own equity is overvalued, and whether bidders who face greater information asymmetry in evaluating targets are more likely to use a stock versus a cash offer. The study seeks to improve upon previous studies of the financing choice under information asymmetry by investigating bidder and target private information, while also considering the role of bidder competition. As the authors expect, bidders choosing a stock offer are overvalued and those choosing a cash offer are correctly valued, and the greater the extent of acquirer overvaluation, the greater the likelihood of it using a stock offer. Furthermore, Chemmanur, et al. (2009) provide evidence that the greater the extent of information asymmetry faced by the bidder in evaluating its target, the greater its likelihood of using a cash offer, but the choice of cash is dominated by bidder competition, not valuation errors. The results of this paper, therefore, contradict the *a priori* view of deal quality. Savor and Lu (2009) extend preceding analysis by analyzing the short- and long-term wealth effects of the method of payment choice, providing support for the hypothesis that overvalued firms create value for long-term shareholders by using their equity as currency. Savor and Lu (2009) explain that in the long-run, an overvalued firm's stock price will eventually decline, and once this effect is accounted for, stock-offer acquisitions actually increase the wealth of the combined firm.

While the balance of the empirical evidence is in favor of the *misvaluation hypothesis*, derived from Hansen's (1987) model, there is some contradictory evidence. Cornett and De

(1991) find evidence contradicting the *misvaluation hypothesis*. Moeller, Schlingemann, and Stulz (2007) study the relationship between information asymmetry and medium of exchange while controlling for idiosyncratic volatility which proxies uncertainty, and they report that after controlling for uncertainty, there is no difference in abnormal returns between cash or stock offers for public firms. The concept of uncertainty will be revisited in the following section in this literature review. Overall, the empirical evidence on the *misvaluation hypothesis* is mixed but slanted in its favor.

4.2.2 Signal of deal quality

Though a large portion of the medium of exchange literature has attributed abnormal returns of the acquiring firm at the medium of exchange announcement to the revaluation of the bidders' and targets' stand-alone assets, there has been speculation that the medium of exchange is also a signal of the quality of the combination (or otherwise put, the likelihood that the combined firm will realize acquisition gains). While Hansen's (1987) model does not speak to the likelihood that the combination is value-enhancing (or synergistic), the signal associated with expected future gains can co-exist with Hansen's two-sided information asymmetry framework: the bidder and target might each have private information regarding the value *and* the likelihood of the realization of future gains that may follow the merger. A stock financed acquisition allows the bidding shareholders to spread the risk and uncertainties of the value of the acquired firm and future gains because target shareholders become shareholders of the newly merged firm. Under high information asymmetry, the bidder is less certain of the quality of the combination and will prefer to finance the acquisition with stock, since target shareholders share in the uncertainty. Under conditions of low information asymmetry, the bidder perceives the deal as high quality since the synergies are certain, the bidder will prefer to offer cash in order to monopolize the

certain synergy gains. This hypothesized signal is labelled in this essay as the *deal quality hypothesis*, and the existing empirical work on the *deal quality hypothesis* is summarized in Table 4.3.

Several models subsequent to Hansen (1987) have incorporated the concept of synergy into the price and medium of exchange setting process (e.g., Fishman (1989), Berkovitch and Narayanan (1990), Rhodes-Kropf and Viswanathan (2004) and de la Bruslerie (2012)). These studies extend the analysis from a focus on stand-alone asset value to a forward-looking orientation that factor in potential synergies. When discussing the role of medium of exchange, Fishman (1989) suggests that “rather than making the offer contingent on the target's information about future cash flows, a securities offer's value is contingent on the cash flows themselves” (Fishman, 1989, p.42). If bidders possess private information about the acquisition's profitability, they also should have private information about the value of the stock offer. Therefore, if a bidder perceives an acquisition as having a low value, it will offer stock because target shareholders must share in any subsequent revaluation. If a bidder knows the acquisition is profitable and places a high value on the target's stock, it will offer cash. Thus according to Fishman (1989), the *misvaluation hypothesis* and *deal quality hypothesis* are related. Though Fishman discusses the importance of expected cash flows of the combined entity, the theoretical model presented by Fishman (1989), like Hansen (1987), estimates the value of the firms as stand-alone entities and does not incorporate any synergies resulting from the combination.

More recently, de la Bruslerie (2012) constructs a theoretical model of the acquisition process and the resultant medium of exchange, and like the previous models of information asymmetry (Hansen (1987), Fishman (1989), Eckbo, et al. (1990) and Berkovitch and Narayanan (1990)), de la Bruslerie (2012) assumes two-sided information asymmetry, but this study differs

from previous work in that it views the method of payment choice as one set jointly between bidder and target.⁴⁰ In the development of his model, de la Bruslerie (2012) proposes an optimal mixed-payment scheme:

The cash percentage variable is a full part of the agreement and has to be set optimally, considering the information level of both parties. Paying with stocks will allow for risk sharing. The risk is not only an economic risk of value but also an information risk due to the discrepancies between the information levels of each party and to the possible exaggeration from one party to the other. The acquirer has imperfect information about the target firm and may fear that information delivered by the seller is possibly biased. Conversely, the seller does not know what the gains of synergy will be when the acquisition is complete. (p. 83)

de la Bruslerie (2012) develops a model of ‘agreement setting’ between the bidding and target firms where the merger is successful at some agreed upon price and method of payment. Not only is payment with shares a guarantee against a possible valuation mistake of the target, it also allows the splitting of the future gains ensuing from the acquisition and the risks between parties. A partial or full payment of stock allows the bidding shareholders to spread the risk and uncertainties of the value of the acquired firm and future gains by converting the target into a shareholder of the combined firm. The downside of a stock financed acquisition for bidding shareholders is a dilution of equity. de la Bruslerie’s (2012) model is a direct extension of Hansen’s (1987) model in that it suggests that the optimal deal characteristics (including medium of exchange) provides a signal of valuation, but it also suggests that it is a signal of the riskiness of future gains (through expectation of gains/synergies).

The model proposes that if the bidder expects high levels of future gains from the combination (i.e., a high quality deal), it may choose to pay more of the deal in cash, since a

⁴⁰ In a paper similar to de la Bruslerie (2012) and Martynova and Renneboog (2009) investigate the determinants of the financing decision in corporate takeovers. However unlike de la Bruslerie (2012), Martynova and Renneboog (2009) investigate the sources of financing and therefore is a test of the pecking order hypothesis (Myers and Majluf, 1984). Even so, the Martynova and Renneboog (2009) model makes predictions similar to de la Bruslerie (2012) in describing the risk-sharing motives that underlie the structuring of the medium of exchange.

higher cash percentage also means that the bidder will be sharing less of the future gains with target shareholders. Alternatively, if the bidder is uncertain that expected gains will be realized (i.e., the deal is of lower quality), the bidder will prefer to share these risks with target shareholders by offering a medium of exchange with a higher percentage of stock. Together, the

Table 4.3: Empirical literature testing the *deal quality hypothesis*

This table contains a summary of the evidence of tests of the *deal quality hypothesis*. It identifies each study's research question, sample, key conclusions, and whether the study provided support (Yes) or not (No) for the *deal quality hypothesis*.

Study	Research question	Sample	Conclusions	Support?
da Silva Rosa, Izan, Steinbeck, and Walter (2000)	An examination of abnormal returns earned by Australian bidders and targets over the bid announcement period.	240 Australian mergers from 1988-1996	The size of the target relative to the bidder firm and the variability of bidding firms' share price prior to the bid announcement are both positively associated with the likelihood of a stock offer.	Yes
Ghosh (2001)	An analysis of the operating performance following corporate acquisitions.	315 US mergers from 1981-1995	The cash flows of the combined entity increase significantly when acquisitions are made with cash, but decline for stock financed acquisitions.	Yes
Heron and Lie (2002)	An investigation of the relation between the method of payment in acquisitions, earnings management, and operating performance.	859 US M&As from 1985 and 1997.	There is no evidence that the method of payment conveys information about the acquirer's future operating performance.	No
Branch and Yang (2003)	An examination of the probability of merger completion/success, testing for the influence of medium of exchange and collars.	1097 US successful and unsuccessful mergers from 1991 to 2001	Uncertain equity values implicit in the stock payment method accounts for the reduced success rate of stock offers.	Yes
Moeller, Schlingemann, and Stulz (2007)	Examination of the theoretical predictions that link acquirer returns to information asymmetry.	4322 US acquisitions from 1980 - 2002	After controlling for idiosyncratic volatility, there is no difference in abnormal returns between cash offers for public firms, equity offers for public firms, and equity offers for private firms.	Yes
Chemmanur, Paeglis, and Simonyan (2009)	Examines the choice of the medium of exchange in acquisitions when both acquirers and targets possess private information about their own intrinsic values.	817 US mergers from 1978-2004	The greater the information asymmetry faced by a bidder in evaluating its target, the greater its likelihood of using a cash offer, which contradicts the risk-sharing explanation of deals characterized by higher information asymmetry and therefore higher uncertainty regarding expected future gains.	No
Cao and Madura (2011)	An investigation of the role of medium of exchange in asset sell-off transactions.	1740 asset sell-offs from 1990-2010	The results suggest that bidders prefer that sellers share in the risk of the transaction under these conditions.	Yes
Di Giuli (2013)	An examination of firms' mispricing and investment opportunities on the method of payment in mergers.	1187 US mergers from 1990-2005	The acquirers lead the decision on the method of payment, exploiting short-term market mispricing. Target managers believe in the quality of the merger and care about the long-term value of the merged entity's shares. Better investment opportunities lead to greater use of stock.	No
Savor and Lu (2009)	A test of the market-timing theory of acquisitions, which predicts that stock financed mergers benefit the acquiring firm's long-term shareholders by converting overvalued equity into (less overvalued) hard assets.	1773 US mergers from 1978-2003	Provides support for the hypothesis that overvalued firms create value for long-term shareholders by using their equity as currency (results do not hold for cash offers).	Yes

propositions of de la Bruslerie (2012) provide theoretical footing for the *deal quality hypothesis*: the medium of exchange is related to the quality of the combination, quality that is materialized through future acquisition gains and/or synergies.

Empirical work, noted in Table 4.3, conducted prior to de la Bruslerie's (2012) model provides some evidence that the long-term quality of the combination is linked to the medium of exchange choice. Loughran and Vijh (1997) and Rau and Vermaelen (1998) use an event-time portfolio approach to evaluate post-acquisition, long-run wealth effects and find that stock acquirers earn negative long-term abnormal returns, and Mitchell and Stafford (2000) obtain the same finding with a calendar-time portfolio approach. Another empirical study that provides some evidence in favor of the *deal quality hypothesis* is Cao and Madura (2011) who examine the determinants of the medium of exchange in asset sell-off transactions, and the study finds that a stock financed acquisition is more likely when targets are based in countries that have relatively high country risk, weak shareholder rights, and a weak legal system. Cao and Madura (2011) conclude that bidders prefer that targets share in the risk of the transaction under conditions characterized by higher risk. Focusing on operating performance of 315 target and bidder pairs, Ghosh (2001) reports that cash flows increase significantly following acquisitions that are made with cash, but decline for stock financed acquisitions. Ghosh's (2001) results provide *ex post* support for the *deal quality hypothesis*, but the hypothesis being tested does not directly speak to the signal itself embedded in the medium of exchange announcement. Moeller, et al. (2007) study the relationship between information asymmetry and medium of exchange while controlling for idiosyncratic volatility of the target firm (which serves as their measure of uncertainty regarding target firm value), and the authors report that after controlling for uncertainty, there is no difference in abnormal returns between cash or stock offers for public

firms. It can be argued that should target and bidder idiosyncratic risk explain a significant portion of the returns variability, then *ex ante* firm risk, which likely amplifies uncertainty regarding expected merger gains, is an important component of returns. Therefore, the medium of exchange which is, in part, explained by idiosyncratic risk, may signal information regarding the likelihood of merger profitability.

Heron and Lie's (2002) study of the operating performance and medium of exchange is arguably the most direct empirical test of the *deal quality hypothesis*. In this paper, Heron and Lie (2002) investigate mergers and acquisitions during the 1985-1997 period and track and compare pre- and post-acquisition operating income. The authors report no relationship between medium of exchange and post-acquisition operating income levels and conclude that the method of payment does not provide information about the combined firm's future operating performance. However, Linn and Switzer (2001) find an improvement in the operating performance of cash acquirers, but no improvement in the performance of stock acquirers. While the analyses presented by both Heron and Lie (2002) and Linn and Switzer (2001) make important inroads into assessing the post-acquisition operating performance differences between stock and cash financed deals, these studies are limited to univariate analyses and do little to evaluating how their observations are associated with information asymmetries at the time of deal announcement (a crucial aspect of theoretical perspectives of the medium of exchange choice). Also contradicting the *deal quality hypothesis* is Chemmanur, et al. (2009), who present evidence that supports their contention that the greater the information asymmetry faced by a bidder in evaluating its target, the greater its likelihood of using a cash offer, which contradicts the risk-sharing explanation of the medium of exchange. Like Chemmanur, et al. (2009), Savor and Lu (2009) report evidence in favor of the hypothesis that overvalued firms create value for

long-term shareholders by using their equity as currency, and their results do not hold for cash offers. Thus, the evidence on the *deal quality hypothesis* is inconclusive.

4.2.3 Summary of literature

Much of the empirical work on the medium of exchange choice has focused on the signal of bidder value at the time of announcement of the bid. Previous studies associated with the *deal quality hypothesis* evaluate the long-run financial (e.g., Savor and Lu (2009)) and operating (e.g., Ghosh (2001)) performance of cash and stock financed deals. These studies, however, do not attribute differences in performance to deal quality, but rather, these studies rely on valuation-based explanations, similar to this essay's *misvaluation hypothesis*. The two direct tests of the *deal quality hypothesis*, Heron and Lie (2002) and Linn and Switzer (2001), provide contradictory results and even more, the two studies do not account for the cross-sectional variability in observed post-acquisition performance. This essay seeks to contribute clarity on the deal quality signal by evaluating it alongside the dominant explanation, the *misvaluation hypothesis*, while also evaluating the cross-section of observed post-acquisition performance.

4.3 Hypothesis Development

Based on the literature reviewed in the previous section, a series of hypotheses are proposed here to test the *deal quality hypothesis* alongside the *misvaluation hypothesis*. Extant literature has proposed the *misvaluation hypothesis*, which contends that the medium of exchange is associated with the value of stand-alone assets of the acquiring and target firm. An alternative hypothesis proposed and tested in this essay is the *deal quality hypothesis*, which contends that the bidders and targets have private information regarding the likelihood of realization of future gains. While the *misvaluation hypothesis* is well-tested in the literature (i.e., Travlos (1987), Martin (1996), Chang (1998), etc.), there are fewer studies that evaluate the *deal quality hypothesis*.

The exceptions are studies by Heron and Lie (2002) and Linn and Switzer (2001), which provide conflicting evidence. On the one hand, Heron and Lie (2002) find no relationship between medium of exchange and post-acquisition operating income levels and conclude that the method of payment does not provide information about the combined firm's future operating performance. On the other hand, Linn and Switzer (2001) find an improvement in the operating performance of cash acquirers, but no improvement in the performance of stock acquirers. Moreover, the Linn and Switzer (2001) and Heron and Lie (2002) studies are limited to an analysis of the pre- and post-acquisition operating performance. While this approach has value, it does not attribute any changes in operating performance to misvaluation or the quality of the combination under conditions of information asymmetry, which is investigated in this study. The distinction is important since it is not clear if the information content of the medium of exchange change is associated with valuation of the stand-alone firm assets and of the likelihood that the combination will be value accretive.

In a setting of information asymmetry, the medium of exchange may be used by the acquiring firm as a risk-sharing and gain-sharing tool, when there is significant uncertainty regarding the value of the acquired firm and future gains, since the target shareholders become shareholders of the newly merged firm (de la Bruslerie, 2012). If management is certain about the benefits of the acquisition, they would like to appropriate as much of the benefits to shareholders of the bidder by paying cash. However, there may be substantial information risk at the time of deal negotiation, and management of the bidding firm may have imperfect information of the target or may fear that information on the target is biased. Under high information asymmetry, the deal is risky and/or managers are uncertain of the benefits, and bidding firm managers may want to spread the risk by issuing equity. If this hypothesis holds,

then the bidder's long-run performance is expected to be negative because greater uncertainty underlies the deal and the combination is therefore of lower quality.

In this essay, the *deal quality hypothesis* is tested from two perspectives. The first (*H1a*) tests the perception of deal quality at the time of deal negotiation, where bidders under high information asymmetry will opt for a stock offer in order to share the uncertainty with target shareholders, even though bidding shareholders will face dilution. Therefore, the degree of information asymmetry facing the bidder is compared for cash- and stock financed deals, and evaluated alongside measures of perceived deal quality. Alternatively, under conditions of lower information asymmetry at the time of the bid, the acquiring firm is more certain that future gains will be realized, so in this case, the bidder will prefer a cash offer in order to control future gains. Information asymmetry measures are discussed in section 4.4.2 (Methodology) of this essay. The preceding discussion leads to the statement of the following:

H1a: (Ex ante deal quality hypothesis) High bidder information asymmetry is associated with an offer of all-stock or heavy stock weighting. Low bidder information asymmetry is associated with all-cash or heavy cash weighted offer.

The second (*H1b*) tests the deal quality using *ex post* data, which inherently involve information asymmetries between the bidding and target firms, which is formally stated as:

H1b: (Ex post deal quality hypothesis) Cash offers will outperform the long-run performance of stock offers.

The deal quality signal is similar to the misvaluation signal in that a signal of bidder overvaluation may be a reflection of the market's anticipation of future profitability of the bidding firm as a stand-alone firm, and the positive expectations may materialize in real gains following the acquisition of another firm. Hence, the *deal quality* and *misvaluation hypotheses* may not be mutually exclusive, though where the deal quality and misvaluation signals diverge is in the entity being evaluated. With the *misvaluation hypothesis*, the information elicited by the

medium of exchange announcement is associated with the value of the bidder at the time of the announcement, independent of the combination. While, the *deal quality hypothesis* contends that the information embedded in the medium of exchange announcement is associated with the combination. The *deal quality hypothesis* is, therefore, tested in conjunction with the *misvaluation hypothesis* in order to disentangle the information content of the medium of exchange choice.

The hypotheses presented in this section relate to the information embedded in the medium of exchange choice under asymmetric information. The construction of these hypotheses permits comparison of the acquisition-induced abnormal performance of cash and stock bids to draw inferences about the effect of information asymmetry on the choice of the medium of exchange and the implications for the long-run performance of the combined firm.

4.4 Sample Construction and Methodology

4.4.1 Sample construction

This study investigates the information content of the medium of exchange choice, but such a study is, however, problematic because the most overvalued firms are most likely to be involved in stock financed acquisitions (e.g., Di Giuli, 2013), as it is those “firms that are most overvalued that have the greatest incentive to make an acquisition before the market discovers the mispricing” (Savor and Lu, 2009, p.1061). To avoid the endogeneity problem inherent in this type of study, this study follows the Savor and Lu (2009) methodology, which exploits the fact that not all attempted acquisitions are ultimately consummated. Unsuccessful bidders in stock financed deals present a natural control for the long-run financial and operating performance because the unsuccessful bidders are a proxy for how the successful firms would have performed had they not managed to consummate their transactions. Therefore, in addition to completed

mergers, a control sample of incomplete mergers, matched to the test group of completed samples, is constructed. While the matching provides for a deal match, there may be significant differences in the attributes of the target and bidding firms in completed and terminated deals (as is also observed by Savor and Lu (2009)). The matching criteria, however, and the resultant control sample make inroads in providing for a test sample counterfactual. In order to control for differences in the two samples, a number of firm and transaction characteristics are included in the subsequent analyses. A secondary control sample of industry rivals not involved in M&A activity in the five years before or after the announcement date (two rivals to each party in the transaction) is formed in order to control for the influence of industry wide factors (Barber and Lyon, 1996).

The test sample of this study consists of completed takeovers that were announced between 1989 and 2010. This window allows for investigation of the medium of exchange choice over the past several mergers waves. The window of observation ends at 2010 because it permits examination of five years of post-acquisition financial and operating performance. The initial list of acquirers and targets (as well as various deal characteristics) come from the *SDC Platinum Mergers and Acquisitions* database. The initial search is subject to the following restrictions:

1. Merger is listed as completed.
2. The bidder and the target are US public firms.
3. The medium of exchange is available from *SDC Platinum Mergers and Acquisitions* database.

4. The deal is completed, and is not classified as a bankruptcy acquisition, going private transaction, leveraged buyout, liquidation, privatization, repurchase, reverse takeover, or restructuring.
5. The bidder holds less than 10% of the target's shares prior to the announcement and obtains control of the target (more than 50%) as a result of the transaction.
6. The bidder is covered in *Datastream* database with 241 days of data prior to bid announcement such that announcement period returns can be estimated using expectations models.
7. The transaction value is at least \$1M and represents at least 5% of bidder market capitalization measured 30 days prior to the announcement of the deal.⁴¹
8. The bidder does not engage in further acquisition activity for five years following the transaction.

In addition to the identities of the involved parties, transaction data is obtained from *SDC Platinum*. *SDC Platinum* also provides the *Datastream* identifier, which is used to cross-reference the two databases. From *Datastream*, short- and long-term financial and operating performance data is collected. Following the application of the initial filter criteria, the cash-finance test sample is constructed by identifying deals involving all cash or deals dominated by cash (more than 80% cash)⁴² An identical procedure is employed to form the stock financed test sample: the sample of stock bids constitutes those bidding firms using 80% or more stock

⁴¹ The employment of this screen is standard in the literature (for example, Chemmanur, et al. (2009), Savor and Lu (2009), Di Giuli (2013)). This screen ensures that the proposed deal has a material impact on the acquirer's future performance.

⁴² Deals involving 80% cash financing may be viewed as mixed payment deals, but deals of this nature are employing mostly cash financing, so there is little risk sharing on the part of target shareholders and the majority of the post-acquisition gains (or losses) will be earned by acquiring firm shareholders. In cases of 80% or more cash financing, the hypotheses (both deal quality and misvaluation) will still hold.

financing. In the construction of the sample, this study observes the financing of the deal (though this outcome may differ from the initial offer made). The resultant sample consists of 426 completed cash deals and 516 completed stock financed deals. Given the one-to-one matching (on deal size and bidder/target relatedness), the matched sample of withdrawn cash and stock financed deals amounted to 426 and 516 deals, respectively, and given two-to-one matching of rivals to firms involved in acquisitions bids, the matched sample of rivals not engaging M&A activity amounted to 852 and 1032, respectively.

The formation of the control samples (withdrawn deal sample and matched rivals sample) involves the use of difference-in-difference treatment effect, whereby the test sample observations are adjusted for the control samples by taking the difference between the observations of the test group and the control groups. In some analyses, the data is industry-adjusted only and therefore requires a single difference-in-difference (test – matched rival). In other cases, a double difference-in-difference approach (test – matched deal – matched rival) is employed to control for both transaction and industry. Lechner (2010) notes that extension of the traditional one dimensional difference-in-difference technique to create multi-dimensional estimators is not only acceptable but common in the economics literature. Yelowitz (1995) and Ravallion, et al. (2005), for example, both employ two-dimensional and three-dimensional difference-in-difference estimation.

4.4.2 Methodology

The methodology design of this study is informed by several earlier studies, namely, Moeller, et al. (2007), Chemmanur, et al. (2009), Savor and Lu (2009), Cao and Madura (2011), Golubov, et al. (2012), and Di Giuli (2013), who study the medium of exchange choice under information asymmetry. In this setting, the bidder has private information on its own value and makes a bid

for the target, who has private information on its own value which impacts the accept/reject decision. Given that the bidder leads the decision on the method of payment (Di Giuli, 2013), this study focuses on the bidder as the initiator of the deal quality and misvaluation signals.

4.4.2.1 Construct measurement

To test the *deal quality hypothesis*, the key constructs that require measurement are acquisition announcement-induced returns, asymmetric information, expected acquisition gains, and long-run post-acquisition performance of the combined firm. Because the *misvaluation hypothesis* is associated with the *deal quality hypothesis*, the measurement of misvaluation (i.e., valuation error) is defined here as well. Table 4.4 provides a summary of the measurement of key constructs.

Table 4.4: Measurement of key constructs

This table contains information on how the key constructs in this study are measured. It also includes the studies that inform the use of the particular measures.

<u>Construct</u>	<u>Metric</u>	<u>Informing study/studies</u>
Market reaction ("CAR")	Daily cumulative abnormal returns around announcement date Non-parametric rank test of abnormal returns	Kothari and Warner (1995) Corrado (1989)
Information asymmetry ("AI")	Size of target Degree of relatedness Highly technological assets	Moeller, et al. (2004) and Fuller, et al. (2002) Chemmanur, et al. (2009) Cao and Madura (2011)
Misvaluation ("VE")	Residual income model	Ohlson (1990)
Expected acquisition gains ("AG")	Perceived synergies	Di Giuli (2013)

4.4.2.1.1 Acquisition announcement-induced returns

The market's reaction to the acquisition announcement serves as the measure of the total information content at announcement of the acquisition. The traditional event-study technique is employed to capture the abnormal daily returns, and two approaches to measuring statistical significance are used: parametric (*t*-statistics) and non-parametric tests (Corrado non-parametric

rank statistic) of abnormal returns. The t -statistic associated with short-run cumulative abnormal return (CARs) estimates is defined as follows:

$$t_{CAR} = \frac{\overline{CAR}}{\sigma_{CAR}} \sqrt{N} \quad (16)$$

where $\overline{CAR}$ is the average cumulative abnormal return, σ_{CAR} is the standard deviation associated with the estimated CARs, and N is the number of firms in the sample. The non-parametric rank test proposed by Corrado (1985) tests the null hypothesis that CARs are equal to zero.⁴³ The Corrado rank test statistic is estimated as:

$$Corrado\ rank = \frac{1}{\sqrt{N}} \sum_{i=1}^N (K_{i,t} - 0.5) / \sigma_K \quad (17)$$

where $K_{i,t}$ is the rank associated with the asset abnormal return, N is the number of firms in the sample, and σ_K is the standard deviation associated with the ranks. STATA software is used to estimate the t and Corrado rank statistics.

4.4.2.1.2 Information asymmetry (IA)

Several metrics are employed to measure the extent of information asymmetry, denoted IA , that is faced by the bidder in evaluating the target. First, bidder information asymmetry is measured using the size of the target. The larger the target, the more complicated the process of valuing

⁴³ The Corrado rank statistic is evaluated in addition to the convention t -statistic because it is viewed as a powerful non-parametric alternative that has the advantage of not requiring an assumption of returns distribution. Using a simulation approach similar to Brown and Warner (1985), Corrado (1989) evaluates Corrado's nonparametric rank test for abnormal security-price performance in event studies and concludes that the rank test is better specified under the null hypothesis and more powerful under the alternative hypothesis than the parametric t -test. Therefore, in addition to the traditional parametric approach, abnormal returns will be evaluated with non-parametric analysis, described in Corrado (1989).

target assets (Moeller, et al. (2004) and Fuller, et al. (2002)). The natural logarithm of the target's total assets (in US dollars) is used to measure target size ("TSIZE").⁴⁴

Second, following Chemmanur, et al. (2009), an industry-based measure of information asymmetry is also used, which "may capture any special ability the acquirer has in evaluating the target due to its industry expertise (which may reduce the degree of the asymmetric information that the acquirer faces in evaluating the target, compared to that faced by other outside investors in the equity market)" (p.528). The metric is a dummy variable that describes the degree of relatedness between the target and bidder (or rather, 'unrelatedness'), which takes on a value of one if the target and acquirer have a different 3-digit SIC code and zero otherwise ("UNRELATED"). It is expected that the more related the acquirer and the target, the less the information asymmetry facing the acquirer in evaluating the target.

Third, according to Cao and Madura (2011), high technology firms' have significant intangible assets which have very low transparency, and therefore, the value of the high technology firm is difficult to assess, resulting in high information asymmetry about that firm. Drawing on the work of Cao and Madura (2011), the third measure of information asymmetry is a dummy variable ("TTECH") that takes on a value of one if the firm is categorized in primary SIC codes 3571, 3572, 3575, 3577, 3578 (computer hardware), 3661, 3663, 3669 (communications equipment), 3674 (electronics), 3812 (navigation equipment), 3823, 3825, 3826, 3827, 3829 (measuring and controlling devices), 4899 (communication services), or 7370, 7371, 7372, 7373, 7374, 7375, 7379 (software), and zero otherwise.

⁴⁴ There is an alternative explanation associated with information asymmetry and firm size. Large firms will have a greater analyst and media following and therefore higher levels of publicly available information, relative to smaller firms. This makes valuation of small firms more difficult because of the high degree of information asymmetry the bidder faces. Target size (TSIZE) exhibits positive correlation with the other measures of information asymmetry, so given this observation along with support of extant literature, it is concluded that target size is a suitable measure of information asymmetry.

4.4.2.1.3 Acquirer misvaluation (VE)

A key determinant of the medium of exchange choice in this study is the bidder's private information about its own value, so a metric must be designed such that it incorporates the effects of this private information, namely, the under- or overvaluation of the acquirer in the stock market relative to its intrinsic value, conditional on insiders' private information, denoted here as “ VE ”. This study follows the literature in the application of the residual income model, originally proposed by Ohlson (1990) and used subsequently in a number of studies, including D'Mello and Shroff (2000), Jindra (2000), and Chemmanur, et al. (2009). This study follows an estimation similar to D'Mello and Shroff (2000) that employs Ohlson's (1990) model, where the misvaluation, or valuation error (VE) is estimated as follows:

$$VE = \ln(P_0 / V_0) \quad (18)$$

where P_0 is the acquirer's closing share price on the day before the acquisition announcement and V_0 is the intrinsic value of the acquirer's shares conditional on insiders' private information at the time of the acquisition (calculated in Equation (19)),

$$V_0 = B_0 + \frac{EPS_1 - r \times B_0}{1+r} + \frac{EPS_2 - r \times B_2}{(1+r)^2} + TV \quad (19)$$

and

$$TV = \frac{(EPS_2 - r \times B_1) + (EPS_3 - r \times B_2)}{2 \times (1+r)^2 \times r} \quad (20)$$

where B_0 is the book value of equity at the end of the fiscal year in which the acquisition was announced divided by the number of shares outstanding; EPS_t is the income before extraordinary items divided by the number of shares outstanding (observed figures); and r is the required rate of return on the acquirer's equity; and TV is the terminal value (as calculated in Equation (20)). Following Chemmanur, et al. (2009), the required rate of return is measured using a firm-specific rate of return, obtained from the single factor market-model, with beta calculated using data from

the estimation period employed (i.e., [-241,-40]) to estimate short-run abnormal returns. The terminal value, TV , is calculated as an average of residual earnings in years 2 and 3, thereby reducing the possibility of unusual performance in year 3, which can significantly distort the terminal value, TV , in Equation (20). Ohlson's (1990) residual income model described here by Equations (19) and (20), contends that firm value is the summation of book value and discounted future earnings in excess of a normal return on book value. Thus, firm value depends on the stock variable (book value) and the flow variables that relate to the future value to be created by the combined firm (D'Mello and Shroff, 2000).

4.4.2.1.4 Acquisition gains (AG)

The *deal quality hypothesis* developed in this study contends that the higher the information asymmetry between the bidding and target firm, the more likely the bidder will prefer an offer of all-stock or heavy stock weighting in order to share the uncertainty with target shareholders, even though bidding shareholders will face dilution. The lower the information asymmetry, the more certain the bidder will be regarding the realization of acquisition gains, so in this case, the bidder is more likely to opt for an all-cash or heavy cash weighted offer in order to monopolize future gains and avoid shareholder dilution.

4.4.2.1.4.1 Expected acquisition gains

At the time of the bid, the *deal quality hypothesis* presumes that a cash offer will reflect high perceived synergies, and a stock deal will reflect low perceived synergies. To measure the expected acquisition gains at the time of acquisition, this study draws on the work of Di Giuli (2013) who devises a simple measure that compares the pre- and post-combined market values of the target and acquirer and to measure the perceived synergies ('AG'):

$$Perceived\ synergies = \frac{\left(\frac{M}{B} of MergedEntity_{t+1} - \left[\frac{M}{B} of Bidder_{t-1} + \frac{M}{B} of Target_{t-1}\right]\right)}{Target\ total\ assets} \quad (21)$$

where the $(t-1)$ is the day prior to the announcement of the acquisition. The higher the perceived synergies standardized by target size, the more confident the bidder that synergies will be realized.

4.4.2.1.4.2 Ex post acquisition gains

The *ex post deal quality hypothesis* dictates that in the long-run, a cash offer will result in positive long-term abnormal post-acquisition financial and operating performance, and a stock offer will result in no or negative long-term abnormal performance.

The long-term financial performance and operating performance is documented by performing a long-run event study of abnormal stock returns and abnormal operating performance (ROA, ROE, Profit Margin, Tobin's q , Revenue growth, EBIT growth, Total revenue to total assets, and Current ratio). Increased caution must be taken with the research design and interpretation of results as long-run event studies suffer from skewness, cross-correlation and therefore have less power than short-run event study tests (Kothari and Warner, 1995). Following the suggestions of Kothari and Warner (1995) and Ang and Zhang (2015), the drawbacks of long-run event study analysis are minimized by using a bootstrapped skewness adjusted t -statistic and a heteroscedasticity-consistent estimator. For this study's long-run event study of abnormal returns, the estimation period for expected monthly returns of sample firms is $[-60, -12]$ months, and the cumulative abnormal returns (CARs) and buy and hold abnormal returns (BHARs) are calculated for the windows $[1,12]$, $[1,24]$, $[1,36]$, $[1,48]$, and $[1,60]$ months. The long-run event study tests for significant abnormal returns using both parametric and non-parametric test-statistics. The t -statistic is used for parametric tests of statistical significance, and the t -statistic is defined in Equation (13), and the Corrado rank non-parametric statistic is defined

in Equation (14). STATA software is used to estimate both the t -statistics and Corrado rank statistics.

In the design of this analysis, this study draws on the work of Barber and Lyon (1996) who simulate event studies in order to obtain a long-run operating performance event study design that optimizes the power of the results. Barber and Lyon (1996) report that the most important design element is benchmark matching, and the authors argue that matching based on past performance and industry SICs provides for the most powerful tests. This study follows this approach: abnormal operating performance is determined using two dimensional difference-in-difference: the difference between the test bidder and the matched control bidder (from the matched sample of incomplete deals) and the matched rivals. Similar to Heron and Lie (2002) and Linn and Switzer (2002), the long-run operating performance of combined firms is evaluated, but by using the incomplete acquisition sample and the rivals sample as the benchmarks, this study avoids the endogeneity issues that affect previous studies⁴⁵, while also controlling for industry effects. The operating performance is measured along a number of performance metrics: profitability (ROA, ROE, profit margin), growth (revenue growth, EBIT growth, Tobin's q), productivity (total revenue to total assets), and liquidity (Current Ratio). The number and variety in metrics is necessary for two reasons. First, operating performance is naturally a multi-faceted construct that, accordantly, may evaluated along different dimensions, and by incorporating measures of profitability, growth, asset productivity, and liquidity, this

⁴⁵ Inherent in a study of the information content of the medium of exchange choice is an endogeneity problem, because it is the most overvalued firms are most likely to be involved in stock financed acquisitions (e.g., Di Guili, 2013), as it is those “firms that are most overvalued that have the greatest incentive to make an acquisition before the market discovers the mispricing” (Savor and Lu, 2009, p.1061). This study follows the Savor and Lu (2009) sample construction approach to ‘side-step’ this endogeneity issue. This method involves exploiting the fact that not all attempted acquisitions are ultimately consummated. Unsuccessful bidders present a natural control for the long-run financial and operating performance because the unsuccessful bidders are a proxy for how the successful firms would have performed had they not managed to consummate their transactions. In addition to completed mergers, a control sample of incomplete mergers, matched to the test group of completed samples, is constructed.

essay establishes a multi-faceted view of operating performance. Second, since operating performance make use of accounting data in metric construction, studies of operating performance introduce biases associated with accounting manipulation (Hopwood, 1972). By using multiple measures of operating performance that extract different line items from financial statements, this essay attempts to control for this bias by observing abnormal operating performance across several metrics. The operating performance measures are obtained from financial statements 5 years before and 5 years after the merger. Consistent with previous studies that use this method (including Otchere and Zhang, 2001; Zhu et al., 2011), year 0 is excluded for this analysis as it contains both pre- and post-acquisition data.

4.4.2.1.5 Control variables

The data used to run cross-sectional analyses of short- and long-run performance control for endogeneity and industry in the construction of the sample and implementation of difference-in-difference techniques. Additional control variables are included in the OLS regressions to control for other elements that may explain the cross-sectional variability of the acquirer performance. The relative size of the parties ($LN(RelativeSize)$) is included as a control variable, since the closer the two parties are in size, the more likely there is to be an impact on bidder's post-acquisition performance, or the perception thereof at the time of announcement.

Fishman (1989) argues that cash (stock) offers will involve lower (higher) bidder competition, moderated by the degree of bidder and target misvaluation. Empirical work (e.g., Cornu and Isakov (2000) and Moeller (2005)) supports the contention that cash payments are used to signal a higher valuation of intrinsic value of the target firm and thus preempt potential competing bidders. As reported in Table 4.6, approximately 5% of this study's sample of cash deals involved competing bids versus 2.9% in stock financed deals, a difference significant at

10%. The statistical difference is contrary to theoretical expectation of Fishman (1989) who argues that cash (stock) offers will involve lower (higher) bidder competition, since cash deals signal a high target valuation. It may be that the use of cash sends a signal to other potential bidders of high potential synergies associated with the target firm, thereby enticing competing bids. To control for the signal to competing bidders, this study includes the control variable *BidderComp*, a dummy variable that takes on a value of 1 when multiple bidders are involved, and zero otherwise.

Pre-acquisition firm characteristics are also included as controls in these analyses. If prior to acquisition, the target firm is profitable, it is likely to have a positive impact on the bidding firm following combination (Heron and Lie, 2002), and therefore, a pre-acquisition target profitability variable (*ROAtarget*), which captures the target's return on assets at the year of announcement is included. From the bidder's perspective the choice between cash and stock may be motivated by its current capital structure (Vermaelen and Xu, 2012), where cash is used when the bidder has excess debt capacity (or has excess cash) and stock is used when debt capacities (or cash) are exhausted. To control for capital structure of the bidding firm, the debt-to-equity ratio of the bidding firm (*DEbidder*) at the year of announcement is included in the cross-sectional analyses.

4.5 Results

4.5.1 Preliminary analysis of test and control samples

An initial analysis of key variables of the test sample firms highlights differences between parties engaged in cash and stock financed deals, in the year of deal announcement. The results of this analysis are presented in Table 4.5. Among measures of information asymmetry variables, cash deals are completed in conditions of lower levels of information asymmetry in two of the three

measures. Cash financed deals involve smaller targets and less often targets in high technology. However, there is no statistically significant difference between cash and stock financed deals on the third measure, *UNRELATED*. The measure of *ex ante*, expected acquisition gains (*AG*) indicates a marked difference between cash and stock financed deals, with cash financed deals characterized by higher levels of perceived synergies (significant at less than 1%). Furthermore, Table 4.5 shows that bidders in cash financed deals are less over-valued (*VE*) than stock deals, though both groups of bidders tend to be overvalued, which supports the *misvaluation hypothesis*.

Table 4.5: Sample summary statistics of key variables, firm characteristics, and transaction characteristics

This table contains the summary statistics of cash and stock financed deals at the time of bid announcement. Variables are delineated by key study variables, firm characteristics, and transaction characteristics. Columns (1) and (2) provide the mean and median statistics, respectively, for cash deals, and Columns (3) and (4) provide the mean and median statistics, respectively, for stock deals. Columns (1-3) and (2-4) display the results of difference in means *t*-statistics and difference in medians *z*-statistics, respectively. The symbols ***, ** and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

	<u>Cash Deals</u>		<u>Stock Deals</u>		<u>Difference</u>	<u>Difference</u>
	<u>mean</u>	<u>median</u>	<u>mean</u>	<u>median</u>	<u>in means</u>	<u>in medians</u>
	(1)	(2)	(3)	(4)	(1-3)	(2-4)
<u>Key study variables:</u>						
<i>Information asymmetry (IA):</i>						
LN(Total assets target) (TSIZE)	5.958	4.717	6.052	5.150	-1.72*	-1.81*
Unrelated (%) (UNRELATED)	30.282		33.721		0.65	
High Technology (%) (TTECH)	13.014		19.372		1.84*	
<i>Expected acquisition gains:</i>						
Perceived synergies (AG)	0.243	0.143	0.181	0.091	3.39***	9.36***
<i>Misvaluation:</i>						
Bidder valuation error (%) (VE)	98.191	93.845	123.348	159.407	-2.65***	-3.21***
<u>Firm characteristics:</u>						
Total assets bidder (\$mil)	7,573,593	119,913	9,685,711	877,895	-0.42	0.95
ROA bidder (%)	2.79	4.44	0.77	1.04	2.75***	5.43***
ROA target (%)	-0.06	0.09	-0.09	0.02	2.42**	2.28**
D/E bidder (%)	56.22	51.07	52.83	49.07	1.23	-1.04
D/E target (%)	108.88	65.68	70.22	57.15	0.88	0.97
<u>Transaction characteristics:</u>						
Bid premium (%)	48.72	40.03	21.06	22.01	3.22***	3.77***
Competing bidders (%)	4.930		2.907		1.93*	
Relative size (%)	36.61	3.39	13.19	2.80	1.24	0.04
Friendly bid (%)	73.94		95.35		-5.64***	
N	426		516			

In general firm characteristics, the firms exhibit less difference. There is no significant difference in bidder size (total assets) and the capital structure of either party. There is a significant difference, however, in profitability. Both cash financed bidding and target firms are more profitable (*ROA*) than bidding and target firms involved in stock deals. Summary statistics on the transaction characteristics shows that the typical cash deal involves high acquisition premia and are less often friendly in nature, though 75% of cash deals are friendly. There is no difference in the relative size of cash versus stock financed deals.

The preliminary analysis of key variables, firm characteristics, and transaction characteristics provides first insight into important differences among cash heavy and stock heavy deals. There are first signs that stock financed deals are completed under conditions of higher information asymmetry and when bidder stock is more overvalued (relative to cash financed deals). On the other hand, in cash financed deals, there is less information asymmetry, perceived synergies are higher (as is the deal premia) and parties to the cash transaction are more profitable at the time of announcement. Also, bidder competition is higher in cash financed deals versus stock financed deals. Overall, the evidence points to cash deals being more lucrative (though more expensive) in nature, which may be an indication of the long-run quality of the combination.

4.5.2 Perceived deal quality

4.5.2.1 Analysis of Offer Conditions

A multinomial logistic regression analysis is estimated, which allows for an *ex ante* comparison of transactions that use different methods of payment. The multinomial regression analysis permits an examination of the differences among the test and control samples while, at the same time, controlling for the effects of other firm characteristics such as total assets and leverage.

Cash bidders are coded as 1, stock bidders as 2, withdrawn cash and stock bidders as 3.⁴⁶ A multinomial logistic model specifies the probability, P_{ij} , that firm i belongs to group j as a function of the firm's pre-acquisition characteristics, X_i . The multinomial logistic regression model is specified as follows:

$$PR(Y_{ij} = j) = \frac{\exp(\beta_j X_i)}{1 + \sum_{k=1}^J \exp(\beta_k X_i)} \quad (22)$$

where β_j is a vector of parameters to be estimated. The parameters of the model are estimated using the maximum likelihood method.

With this method, *ex ante* hypotheses can be tested. All hypotheses are conditional on the degree of information asymmetry, and therefore, measures of information asymmetry (*IA*) are included in all models and interacted with variables associated with each hypothesis. The *misvaluation hypothesis* contends that cash offers signal undervaluation of bidder's stock, while stock offers signal overvaluation of bidder's stock. To test this proposition, the variable *VE* and the interaction *VE*IA* are included in the model, where *VE* is the proxy for valuation error and *IA* is a measure of information asymmetry. These variables will provide evidence on the role of valuation errors (*VE*) in the medium of exchange selection as well as valuation errors conditions upon information asymmetry (*VE*IA*). The *ex ante deal quality hypothesis (H1a)* contends that the higher the information asymmetry between the bidding and target firm, the more likely the bidder will opt for a stock offer in order to share the uncertainty with target shareholders, even though bidding shareholders will face dilution. The lower the information asymmetry, the more

⁴⁶ The study of the information content of the medium of exchange choice is problematic, as the most overvalued firms are most likely to be involved in stock financed acquisitions (e.g., Di Guili, 2013), as it is those bidders that are most overvalued that have the greatest incentive to complete the transaction before the market discovers the mispricing (Savor and Lu, 2009, p.1061). To avoid the endogeneity problem inherent in a study of the medium of exchange choice, this study follows the Savor and Lu (2009) methodology, which exploits the fact that not all attempted acquisitions are completed. Bidders involved in withdrawn deals present a natural control for the endogenous medium of exchange choice because the unsuccessful bidders are a proxy for how the successful firms would have performed had they not managed to consummate their transactions.

certain the bidder will be regarding the realization of acquisition gains, so in this case, the bidder is more likely to opt for an all-cash or heavy cash weighted offer in order to control future gains and avoid shareholder dilution. To test this proposition, the variables AG and the interaction $AG*IA$ are included in the model, where AG is the estimation of perceived acquisition gains, and IA is the degree of information asymmetry. The interaction term, $AG*IA$, tests the proposition that perceived acquisitions gains associated with the acquisition bid and associated medium of exchange choice is conditional upon information asymmetry. The control variables will control for firm-characteristics (size of target, relative size of target, cash constraints of bidder, etc.) and transaction characteristics (deal attitude, premium size, etc.). The model is evaluated using three specifications, employing three measures of information asymmetry, since this metric is fundamental to the study. Information asymmetry in Regressions 1, 2 and 3 is measured using target size ($TSIZE$), degree of relatedness ($UNRELATED$), and target's participation in high technology industries ($TTECH$), respectively.

Table 4.6 provides the results of the logistic model of the medium of exchange choice. The estimation of the multinomial regression yields two sets of parameters for each specification: the first set represents the coefficients of complete cash deals relative to completed stock deals and the second set represents the coefficients of incomplete deals relative to complete stock deals. The interpretation of the multinomial coefficients in both sets of parameters are therefore relative to completed stock deals. A positive (negative) coefficient represents a more (less) likely outcome than completed stock deals. Under both the misvaluation and deal quality hypotheses, it is expected that information asymmetry will be lower in cash deals, so it is expected that the coefficient of the information asymmetry proxy, IA , will be negative. The *misvaluation hypothesis* asserts that the bidder shares will be less overvalued when using cash,

so it is expected that the valuation error proxy, VE , will be negative. Following the *deal quality hypothesis*, expected acquisition gains, AG , will be higher when the bidder employs cash, and therefore, this coefficient is expected to be positive.

The coefficient of the information asymmetry variable (IA) in all three regressions is negative, indicating that the stock-financing is offered under conditions of higher information asymmetry than both cash deals and incomplete deals. However, the coefficient is only significant when stock deals are compared to incomplete deals. The interaction of $VE*IA$, which is expected to be negative for cash offers (relative to stock offers), is indeed negative across the three regressions, though only significant in Regressions 2 and 3 in Table 4.6. This result provides preliminary support for the *misvaluation hypothesis*, that cash offers reveal undervaluation of bidder's stock, and stock offers reveal overvaluation of bidder's stock. Testing the *ex ante deal quality hypothesis* ($H1a$) is the interaction term $AG*IA$, which is expected to be negative for cash deals relative to stock deals, since cash deals are expected to have higher perceived synergies (AG) in conditions of lower information asymmetry (IA). The results in Table 4.6 provide evidence in favour of $H1a$ – in all three regressions, the coefficient is negative and statistically significant in the first two regressions. Together, these results provide early support for both the *misvaluation* and *deal quality hypotheses* as explanations for the medium of exchange choice under information asymmetry, suggesting that these hypotheses may not be mutually exclusive. Of note, however, is that the coefficient of the deal quality test variable ($AG*IA$) is higher in economic significance than the misvaluation test variable ($VE*IA$), which indicates that the *deal quality hypothesis* may dominate that of the *misvaluation hypothesis*.

Table 4.6: Multinomial model of medium of exchange choice

This table contains the results of a multinomial regression that compares the three samples (cash deals, stock deals, and matched incomplete deals). The reference sample for each regression is the sample of completed stock deals. The regression is estimated three times, employing the three measures of information asymmetry (*IA*): 1. Target firm size by total assets (*TSIZE*), 2. Degree of target firm and bidding firm unrelatedness (*UNRELATED*), and 3. Targets operating in high technology industries (*TTECH*). The variables *VE* and *AG* are defined in Table 4.4. The control variables include the natural logarithm of the relative size of the bidder to target (*LN(RelativeSize)*), a dummy variable that takes on a value of 1 in the presence of bidder competition (*BidderComp*), target pre-bid performance (*ROAtarget*), and the capital structure of the bidder (*DEbidder*). The symbols ***, **, and * represent significance at 1%, 5%, and 10% respectively.

	Regression 1: IA = TSIZE				Regression 2: IA = UNRELATED				Regression 3: IA = TTECH			
	Complete cash deals (relative to completed stock deals)		Incomplete deals (relative to complete stock deals)		Complete cash deals (relative to completed stock deals)		Incomplete deals (relative to complete stock deals)		Complete cash deals (relative to completed stock deals)		Incomplete deals (relative to complete stock deals)	
	β_i	z-stat	β_i	z-stat	β_i	z-stat	β_i	z-stat	β_i	z-stat	β_i	z-stat
IA	-0.052	-1.37	-0.410	-3.17***	-0.111	-1.19	-1.882	-2.63***	-0.811	-1.27	-0.193	-0.26
VE	0.007	0.05	-0.356	-2.00**	0.109	0.39	-0.103	-0.44	-0.271	-1.66*	-0.221	-1.66*
VE*IA	-0.025	-1.13	0.010	0.50	-0.248	-1.79*	-0.249	-0.80	-0.749	-2.16**	-0.349	-0.87
AG	0.527	2.17**	2.857	6.52***	1.645	1.75*	1.390	1.19	1.226	1.70*	2.043	2.44**
AG*IA	-0.112	-1.67*	-0.144	-2.48**	-1.064	-1.74*	1.951	1.20	-1.416	-1.00	1.994	1.39
LN(RelativeSize)	-1.165	-3.61***	-2.251	-6.47***	-0.949	-3.06***	-1.953	-5.22***	-0.980	-3.15***	-1.964	-5.33***
BidderComp	0.652	1.01	2.094	3.96***	0.350	1.62	1.644	3.32***	0.381	0.65	1.602	3.47***
ROAtarget	0.583	0.33	-1.228	-1.11	0.351	0.27	-1.696	-2.51***	0.454	0.31	-1.787	-2.01**
DEbidder	0.004	1.20	0.001	1.02	0.001	1.73*	0.002	1.21	0.001	1.46	0.001	1.39
Intercept	1.232	0.71	7.038	4.27***	1.449	1.87*	2.418	2.75***	1.775	2.83***	1.618	2.24**
<u>Sample sizes</u>												
Completed cash deals	426		Pseudo R ²	34.94%			Pseudo R ²	35.64%			Pseudo R ²	33.14%
Completed stock deals	516		Wald χ^2	329.89			Wald χ^2	158.88			Wald χ^2	164.82
Incomplete deals	942		p-value	0.000***			p-value	0.000***			p-value	0.000***
Total	1884		N	1884			N	1884			N	1884

4.5.2.2 Deal announcement returns

4.5.2.2.1 Event study of announcement returns

The total information content of the announcement is proxied by the cumulative abnormal returns of the bidding firm, and announcement abnormal returns are measured using several expectations models (constant mean returns, CAPM, and 3-factor model) and parametric and non-parametric tests of statistical significance.⁴⁷ Table 4.7 documents the cumulative abnormal

Table 4.7: Announcement cumulative abnormal returns

This table contains the daily abnormal returns for bidding firms in cash (Column (1)) and stock financed (Column (2)) acquisition bids. In Column (1-2), the announcement cumulative returns of bidding firms in cash and stock financed deals are compared using the *t*-test. The symbols ***, ** and * indicate significance of cumulative abnormal returns and *t*-tests at the 1%, 5% and 10% level, respectively.

	Bidding firm in cash bids			Bidding firm in stock bids			Cash - Stock
	(1) CAR	<i>t</i> -stat	Corrado	(2) CAR	<i>t</i> -stat	Corrado	(1-2) <i>t</i> -stat
Constant mean returns							
[-1,1] days	0.020	2.958***	3.260***	-0.015	-1.965**	-3.337***	3.381***
[-2,2] days	0.008	0.652	1.198	-0.030	-0.611	-0.595	0.400
[-5,5] days	-0.006	-0.285	-0.498	-0.044	-0.881	-0.551	0.863
[-10,10] days	-0.016	-0.645	-0.596	-0.089	-1.276	-1.020	2.317**
[-20,20] days	-0.061	-1.462	-0.929	-0.083	-0.954	-0.320	2.405**
CAPM							
[-1,1] days	0.021	3.271***	3.121***	-0.012	-1.630	-2.229**	3.316***
[-2,2] days	0.016	1.299	1.498	-0.039	-0.789	-0.275	0.406
[-5,5] days	0.017	1.181	0.683	-0.059	-1.198	-1.429	0.751
[-10,10] days	0.019	1.147	0.142	-0.114	-1.741*	-1.730*	2.295**
[-20,20] days	0.011	0.515	0.197	-0.140	-1.721*	-1.176	2.411**
3-factor model							
[-1,1] days	0.020	2.927***	3.289***	-0.014	-1.938*	-3.388***	3.351***
[-2,2] days	0.008	0.607	1.481	-0.031	-0.625	-1.945*	2.411**
[-5,5] days	-0.005	-0.215	-0.744	-0.046	-0.926	-0.375	2.878***
[-10,10] days	-0.018	-0.736	-0.634	-0.089	-1.297	-0.649	2.368**
[-20,20] days	-0.060	-1.452	-0.597	-0.081	-0.942	-1.863*	2.390**
N		426			516		

⁴⁷ This essay employs multiple expectations models because event studies naturally suffer from the joint test problem, which refers to the issue that when testing for abnormal returns, one is testing for market efficiency and testing for the relevance of an expectations model. Should the results be consistent across the different expectations models, the results may be attributed to the test of market efficiency and not the pricing models themselves. However, following Ang and Zhang (2015), this essay places greatest weight on the results associated with the expectations model based on matched rivals.

returns of bidding firms in cash and stock deals. Bidding firms in cash bids experience significantly positive abnormal returns at announcement, but only in the 3 day window around the announcement day, [-1,1]. Conversely, bidders offering stock deals experience significantly negative cumulative abnormal returns in most windows of observation. A comparison of cash and stock bidders (Column (1-2)) reveals large and statistically significant differences among the returns experienced by bidding shareholders. It is clear from the results that the market interprets stock bids negatively, while having a muted reaction to cash offers, a result consistent with previous studies (e.g. Hansen (1987) and Heron and Lie (2004)).

4.5.2.2.2 Cross-sectional analysis of announcement returns

To further test the *deal quality hypothesis*, a series of cross-sectional OLS regressions is estimated with the aim of disentangling the information content of the medium of exchange. Multivariate regressions are estimated with the bidder's daily cumulative abnormal returns (CARs) as the dependent variable, with the CAR being the 3-factor model.⁴⁸ The explanatory variables are similar to that of the multinomial model (in Table 4.6): *IA* (employing the high technology proxy of information asymmetry, *TTECH*)⁴⁹, *VE* (misvaluation), *AG* (perceived synergies), and interactions to test the information asymmetry hypotheses associated with medium of exchange choice (*VE*IA* and *AG*IA*). The data used to estimate the regressions are two dimensional difference-in-difference bidder observations (test bidding firm in completed deal - matched bidder in withdrawn deal - matched rival), thereby controlling for both endogeneity of the medium of exchange choice and industry effects. The results of the cross-sectional analysis of short-run bidder CARs are presented in Table 4.8.

⁴⁸ Regressions involving CARs calculated using constant mean returns and CAPM as the expectation models are also estimated. The results are similar.

⁴⁹ Regressions are re-estimated using the two other proxies of information asymmetry, *TSIZE*, *UNRELATED*, and the results are similar.

Table 4.8: Cross-sectional analysis of bidding firm announcement cumulative abnormal returns

This table displays the results of cross-sectional analysis of daily abnormal returns of cash and stock financed bids. Information asymmetry (IA) is measured using the high technology measure (*TTECH*). The variables *VE* and *AG* are defined in Table 4.4. The control variables include the natural logarithm of the relative size of the bidder to target ($LN(RelativeSize)$), a dummy variable that takes on a value of 1 in the presence of bidder competition (*BidderComp*), target pre-bid performance (*ROAtarget*), and the capital structure of the bidder (*DEbidder*). The symbols ***, **, and * represent significance at 1%, 5%, and 10% respectively. The regressions results have been corrected for heteroscedasticity using White's consistent estimator.

	<i>Cash bidders</i>						<i>Stock bidders</i>					
	[-20,20] days		[-10,10] days		[-1,1] days		[-20,20] days		[-10,10] days		[-1,1] days	
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
IA	-0.110	-0.31	-0.065	-0.92	-0.018	-0.46	-0.041	-2.59***	-0.009	-2.34**	-0.001	-2.08**
VE	-0.015	-0.49	0.007	0.97	-0.003	-0.73	-0.042	-2.89***	-0.021	-2.23**	-0.001	-0.02
VE*IA	0.004	0.11	0.024	1.00	-0.004	-0.69	0.110	2.07**	0.029	2.11**	0.007	0.92
AG	0.001	0.30	0.002	1.14	0.001	0.43	0.017	3.95***	0.003	0.76	0.002	1.93*
AG*IA	0.016	0.84	0.024	1.92*	0.031	5.01***	-0.020	-3.32***	-0.002	-1.37	-0.003	-1.74*
LN(RelativeSize)	0.000	-0.50	0.000	0.34	-0.002	-1.72*	0.000	-1.20	0.000	-1.03	0.000	-1.39
BidderComp	0.032	2.18**	0.022	2.30**	0.009	3.25***	0.027	1.00	0.018	1.07	0.007	0.90
ROAtarget	-0.045	-0.52	-0.001	-0.05	-0.006	-0.91	-0.064	-0.70	-0.005	-0.23	-0.008	-1.12
DEbidder	0.000	-0.70	0.000	0.41	0.000	4.79***	0.000	-0.87	0.000	0.29	0.000	4.94***
Intercept	-0.023	-0.54	-0.037	-2.62***	-0.003	-0.44	-0.036	-1.04	-0.038	-1.82*	-0.002	-0.28
R ²		0.13		0.11		0.15		0.13		0.12		0.06
F-statistic		0.80		1.71		5.61		2.21		3.29		4.97
p-value		0.6462		0.060*		0.000***		0.002***		0.018**		0.000***
N		426		426		426		516		516		516

The results presented on the cash bidders show that bidder information asymmetry (IA), alone, has no association with the information conveyed by market returns at announcement. Similarly, when the information asymmetry proxy is interacted with the misvaluation proxy ($VE*IA$), the coefficients are not significant, and this result suggests that CARs of cash bidders, at the time of announcement, do not convey information on the bidder's value. The variable testing the *ex ante deal quality hypothesis* ($H1a$), $AG*IA$, is positive and significant in the cash bidder CARs when CARs are estimated in the $[-10,10]$ and $[-1,1]$ windows. There is information at announcement associated with expected deal quality of the deal for cash bidders. The information content of the abnormal returns at announcement for stock bidders is markedly different. The information asymmetry coefficient is negative and highly significant in all stock bidder CAR regressions, and when interacted with the valuation error, $VE*IA$, the coefficient is significant at 5%, providing evidence in favor of the *misvaluation hypothesis*. Furthermore, the interaction $AG*IA$ is also significant in two of the three stock bidder regressions, lending support for the *ex ante deal quality hypothesis*. Analysis of the information content of announcement returns provides evidence in support of the *misvaluation hypothesis* for stock bidders but not cash bidders, and evidence in support for the *deal quality hypothesis* for both cash and stock bidders.

The information elicited from a cash deal announcement is clearly different from that of stock deals. Cash bids produce positive abnormal returns for the bidder, and abnormal returns are positively associated with the perceived synergies under information asymmetry ($VE*AG$). With stock bids, negative abnormal returns are observed and those returns are negatively associated with the degree of information asymmetry (IA) and with perceived synergies under information asymmetry ($AG*IA$).

4.5.3 Post-acquisition deal quality

To evaluate the post-acquisition quality of the combination, this study tracks the performance of the combined firm in two ways: long-run financial and operating performance. Performance is documented then evaluated using cross-sectional analyses, with the aim of evaluating the *ex post deal quality hypothesis (H1b)*.

4.5.3.1 Long-run financial performance

4.5.3.1.1 Long-run abnormal returns

Two approaches are employed to capture long-run abnormal returns: CARs (using three expectations models: constant mean return, single factor, and 3 factor models) and BHARs. Both CARs and BHARs are observed over 12, 24, 36, 48, and 60 month windows, and parametric (*t*-statistics) and non-parametric (Corrado rank) statistics are estimated. Table 4.9 documents the CARs and BHARs for bidding firms in completed cash and stock deals and for bidding firms in incomplete cash and stock deals. Panel A presents the CAR estimates using the 3 factor model as the estimation of expected returns, and Panel B presents the results of BHAR estimates.⁵⁰

The evidence presented in Column (1) of Panels A and B of Table 4.9 on cash bidders in completed bids shows that no significant abnormal returns (positive or negative) are earned, while the matched sample of cash bidders in incomplete bids (in Column (2)) earn negative abnormal returns. The CARs and BHARs of cash bidders in completed and incomplete deals are compared in Column (1-2), and there is evidence in both specifications (i.e., in Panels A and B) of statistically significant differences between the two groups in the early years (months 12, 24, and 36) following the combination, with the abnormal returns of cash bidders in incomplete deals being lower than those in completed deals. An explanation for the difference, associated

⁵⁰ The results across expectations models are very similar, so to conserve space, only the CARs estimated using the 3 factor model are reported.

Table 4.9: Bidding firm long-run abnormal stock returns

This table contains the monthly abnormal returns for cash (Column (1)) and stock financed (Column (3)) deals, in the 1, 2, 3, 4, and 5 years following the deal announcement. Panel A display estimations of long-run cumulative abnormal returns (CARs) using the 3 factor model as the models of expected performance. Panel B displays the buy and hold abnormal returns (BHAR) estimated using a one-to-one matched rival as a benchmark of expected performance. The test statistics for the abnormal returns are calculated using a bootstrapped, skewness-adjusted t -statistic. The symbols ***, ** and * indicate significance of abnormal returns and t -tests at the 1%, 5% and 10% level, respectively.

Cash bidders								Stock bidders								Cash versus Stock, Deal-Adj.
Bidding firm in completed cash bids			Bidding firm in incomplete cash bids			Difference	Bidding firm in completed stock bids			Bidding firm in incomplete stock bids			Difference			
Panel A: Long-run cumulative average abnormal returns (CAR), relative to 3 factor model																
	CAR	t-stat	Corrado	CAR	t-stat	Corrado	Comp-Incomp t-stat	CAR	t-stat	Corrado	CAR	t-stat	Corrado	Comp-Incomp t-stat	CAR	t-stat
	(1)			(2)			(1-2)	(3)			(4)			(3-4)	(1-2) - (3-4)	
[1,12]months	0.034	1.02	1.39	-0.236	-2.59***	-1.68*	2.40**	-0.111	-1.04	-0.72	0.031	2.02**	3.42***	-3.28***	0.412	2.38**
[1,24]months	0.018	0.40	0.66	-0.273	-1.53	-2.28**	1.36	-0.359	-1.94*	-1.24	0.057	2.07**	3.34***	-2.45**	0.707	2.29**
[1,36]months	-0.005	-0.09	0.66	-0.393	-1.28	-1.59	1.09	-0.140	-0.18	-1.68	0.093	1.75*	2.47**	-2.09**	0.621	2.55***
[1,48]months	-0.006	-0.10	0.96	0.045	0.09	0.23	-0.09	-0.298	-0.36	-2.34**	0.094	1.47	1.00	-1.47	0.341	2.52***
[1,60]months	-0.037	-0.51	1.13	-0.125	-0.23	-0.30	0.14	-0.527	-0.61	-2.43**	0.181	1.20	0.65	-1.37	0.796	2.64***
N	426			426				516			516					
Panel B: Long-run buy-and-hold abnormal returns (BHAR), relative to market returns																
	BHAR	t-stat		BHAR	t-stat		Comp-Incomp t-stat	BHAR	t-stat		BHAR	t-stat		Comp-Incomp t-stat	CAR	t-stat
	(1)			(2)				(3)			(4)			(3-4)	(1-2) - (3-4)	
[1,12]months	-0.159	-0.53		-0.603	-2.23**		3.03***	-0.395	-2.14**		0.369	3.56***		-3.90***	1.209	2.48**
[1,24]months	0.108	0.75		-0.517	-3.25***		1.72*	-0.693	-2.34**		0.509	2.94***		-2.91***	1.827	2.32**
[1,36]months	-0.217	-0.66		-0.616	-2.27**		1.38	-0.373	-1.07		0.266	1.44		-2.48**	1.038	1.69*
[1,48]months	0.054	0.33		-0.130	-0.78		0.44	-0.207	-0.64		0.144	0.81		-1.75*	0.535	1.37
[1,60]months	0.089	0.37		-0.255	-1.22		0.18	-0.249	-0.52		0.015	0.06		-1.63	0.608	1.39
N	426			426				516			516					

with Essay Two of this thesis, is that the shareholders of bidding firms in incomplete cash deals have missed a value-creating opportunity (i.e., the combination with the target), and shareholders are worse off without the acquisition. Long-run financial performance of bidding firms in stock deals is documented in Columns (3) and (4).

Unlike cash bidders in completed deals, stock bidders in completed deals (see Column (3) of Table 4.9) earn statistically significant negative abnormal returns, with significant negative performance documented in 3, 4, and 5 years following acquisition.⁵¹ The BHARs presented in Panel B are also negative but significant only in the first two years following deal announcement. Conversely, the matched group of incomplete stock bidders earns significantly positive long-run abnormal returns in all post-acquisition windows observed, and Column (3-4) provides evidence that these observed returns are markedly higher than those earned by bidding firms in completed stock bids, and this observation holds for each method of abnormal return estimation in Panels A and B.

The final column of Table 4.9 (identified as Column (1-2) - (3-4)) and the associated *t*-statistics provide for a deal-adjusted comparison of cash and stock deals. Using a single difference-in-difference, the test sample is corrected for endogeneity of the medium of exchange choice by taking the difference between the test sample abnormal return and the matched incomplete sample abnormal return.⁵² When deal-adjusted observations of cash and stock bidder long-run abnormal returns are compared (cash - stock), the differences are positive and in most cases statistically significant. This result indicates that after transaction adjustments, cash deals

⁵¹ Of note is that the estimated CARs for the incomplete stock bids are much larger than those of completed stock bids. The magnitude in the difference is largely attributed to greater cross-sectional variation in the sample of completed stock bid CARs. The CARs have been windorized, so outliers have been eliminated and therefore this sample's CARs are simply characterized by greater variation.

⁵² Following the approach of Savor and Lu (2009), this approach deals with the endogeneity problem associated with the medium of exchange choice by matching completed deals with incomplete deals. By employing single difference-in-difference (i.e., completed deal observation – incomplete deal observation), this study is able to side-step the endogenous nature of the medium of exchange choice.

significantly outperform stock deals, thereby providing some evidence for the *ex post deal quality hypothesis (H1b)* in that a stock offer will result in no or negative long-term abnormal post-acquisition financial, and the results presented here identify negative abnormal performance. However, there are no significant abnormal returns observed in the case of completed cash deals. To directly test the *ex post deal quality hypothesis (H1b)*, a cross-sectional analysis of the observed long-run analysis is performed.

4.5.3.1.2 Cross-sectional analysis of long-run financial performance

The long-run financial performance observed in Table 4.9 points to outperformance of cash acquirers and underperformance of stock acquirers, after adjusting for performance of matched incomplete deals. The determinants of these observations in years 1, 3, and 5, post-acquisition, are evaluated in a series of cross-sectional OLS regressions, the results of which are presented for cash and stock acquirers in Table 4.10 Panels A and B, respectively. The long-run financial performance (CARs and BHARs) is regressed on the pre-acquisition valuation errors under information asymmetry ($IA*VE$) with the aim of determining if the long-run performance is associated with *misvaluation hypothesis* signal, which suggests that if a firm is overvalued, in the long-run, abnormal returns will be negative as prices move into equilibrium. An alternative explanation is provided by Savor and Lu (2009) and Chemmanur et al. (2009) who are that stock bidders will outperform in the long-run because these firms acquired a target with overvalued equity as currency.

The explanation of long-term performance proposed in this thesis, the *deal quality hypothesis*, is tested by including a variable to capture the pre-acquisition expected acquisition gains, $IA*AG$. This regression also includes the announcement returns ($CAR[-5,5]days$) to

Table 4.10: Cross-sectional analysis of bidding firm long-run abnormal returns

This table displays the results of cross-sectional analysis of bidding firm long-run monthly abnormal returns. In Panels A and B, the explained variable is the monthly cumulative abnormal returns (CARs) and buy and hold abnormal returns (BHARs), respectively, in the [1,12], [1,36], and [1,60] windows of observation for cash and stock bidders, respectively. Information asymmetry (*IA*) is measured using the high technology measure (*TTECH*). The variables *VE* and *AG* are defined in Table 4.4. The control variables include the natural logarithm of the relative size of the bidder to target (*LN(RelativeSize)*), a dummy variable that takes on a value of 1 in the presence of bidder competition (*BidderComp*), target pre-bid performance (*ROAtarget*), and the capital structure of the bidder (*DEbidder*). The symbols ***, ** and * indicate significance of t-statistics at the 1%, 5% and 10% level, respectively. The regressions results have been corrected for heteroscedasticity using White's consistent estimator.

Panel A: Cross-sectional analysis of long-run financial performance of cash bidders

	CAR [1,12]		CAR [1,36]		CAR [1,60]		BHAR [1,12]		BHAR [1,36]		BHAR [1,60]	
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
IA	-0.158	-0.59	-2.068	-2.69***	-4.052	-2.26**	-1.400	-1.84*	-0.813	-1.67*	-0.523	-1.50
VE	0.082	0.86	0.077	0.20	0.076	0.11	0.052	1.13	0.088	0.90	0.133	1.08
AG	0.008	1.41	0.015	2.37**	0.064	1.81	0.020	1.85*	0.010	1.46	0.013	1.72*
IA*VE	0.165	0.93	-0.640	-1.31	-0.979	-1.05	-0.164	-0.79	-0.214	-1.32	-0.328	-0.13
IA*AG	-0.149	-1.47	-0.188	-1.56	-0.103	-1.16	-0.889	-1.85*	-0.605	-1.79*	-0.509	-1.76*
CAR[-5,5]	0.154	1.27	0.659	1.32	2.168	2.32**	0.296	1.55	0.642	1.16	0.558	1.83*
BidderComp	-0.201	-0.97	0.681	0.82	2.008	1.14	-0.759	-0.99	-0.661	-1.10	-0.634	-1.27
LNRelativesize	-0.001	-4.32***	-0.002	-3.13***	-0.008	-3.99***	0.001	1.31	0.004	0.96	0.004	0.77
ROAtarget	0.261	2.28**	0.270	0.78	-0.185	-0.16	0.220	1.66*	0.112	0.90	-0.010	-0.07
DEbidder	0.000	0.67	0.000	-0.42	0.000	-0.53	0.000	0.92	0.000	0.87	0.000	0.96
Intercept	-0.323	-2.44**	-1.084	-1.88*	-2.088	-1.32	-0.264	-1.76*	-0.362	-2.69***	-0.319	-2.18**
R ²		3.68%		2.88%		1.78%		3.49%		3.70%		4.35%
F-statistic		7.38		3.21		6.98		1.44		2.25		2.17
p-value		0.000		0.000		0.000		0.083		0.001		0.001
N		426		426		426		426		426		426

Panel B: Cross-sectional analysis of long-run financial performance of stock bidders

	CAR [1,12]		CAR [1,36]		CAR [1,60]		BHAR [1,12]		BHAR [1,36]		BHAR [1,60]	
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat
IA	-0.569	-2.94***	-0.904	-2.56***	-0.917	-2.56***	-2.950	-1.77*	-1.713	-0.85	-1.101	-1.05
VE	1.860	2.46**	1.842	1.44	0.398	1.39	0.111	2.38**	0.186	2.41**	0.280	4.38***
AG	0.535	1.46	0.303	0.24	0.466	0.37	0.043	1.79*	0.020	0.97	0.027	1.52
IA*VE	-1.251	-2.10**	-1.554	-1.99**	-1.195	-1.99**	-0.345	-1.66*	-0.451	-1.67*	-0.690	-4.49***
IA*AG	-2.775	-2.67***	-2.417	-2.38**	-2.418	-2.38**	-1.872	-1.79*	-1.276	-1.00	-1.072	-1.60
CAR[-5,5]	2.878	2.82***	2.506	2.51***	2.509	2.51***	0.623	1.16	1.352	1.47	1.176	1.75*
BidderComp	5.174	0.94	4.504	1.56	4.503	1.56	1.598	1.09	1.392	1.40	1.336	1.68*
LNRelativesize	0.062	1.01	0.054	1.15	0.054	1.15	0.001	1.66*	0.001	1.22	0.001	1.62
ROAtarget	-0.434	-0.21	-0.376	-2.15**	-0.377	-2.15**	-0.464	-2.11**	-0.235	-1.14	-0.022	-0.15
DEbidder	0.373	2.19**	0.326	1.86*	0.327	1.86*	0.001	1.17	0.001	1.10	0.001	2.02***
Intercept	-2.648	-2.67***	-2.296	-2.30**	-2.294	-2.30**	-0.556	-3.71***	-0.764	-3.41***	-0.672	-4.59***
R ²		29.65%		45.61%		32.65%		26.79%		42.26%		33.52%
F-statistic		13.56		16.57		14.24		13.47		16.88		16.07
p-value		0.000		0.000		0.000		0.000		0.000		0.000
N		516		516		516		516		516		516

identify if the long-run performance is priced at announcement. The data in Table 4.10 regressions are one dimensional difference-in-difference estimators by matched deal.

The results on cash bidders, presented in Panel A, indicates that the higher the information asymmetry at announcement of acquisition (IA), the lower the cumulative abnormal returns, and the results are statistically significant in most windows of observations for CARs. The coefficient of IA in the BHAR specifications are significant in the first three years following acquisition, which may indicate that the post-acquisition firm, relative to the matched rival, overcomes issues associated with information asymmetry in the fourth and fifth year following acquisition. When information asymmetry is interacted with perceived synergies ($IA*AG$), coefficients are negative and significant in $CAR[1,24]$ and all BHAR windows of observation. Conversely, the misvaluation coefficient under information asymmetry ($IA*VE$) is not significant in any regression. The results therefore suggest that the *deal quality hypothesis* dominates the *misvaluation hypothesis* as an explanation for long-run outperformance of the cash bidders. The coefficient $CAR[-5,5]days$ is positive across all cash bidder regressions but significant in only the five year windows, so announcement returns price in the very long-run performance observed in CAR and BHAR estimates.

For stock bidders (in Panel B of Table 4.10), the results are strikingly different. While the information conditions at announcement are similarly negatively associated with long-run performance, the key variables of interest, $IA*VE$ and $IA*AG$, are both significant in most regressions. The performance of stock bidders seems to be equivalently explained by the *misvaluation* and *deal quality hypotheses*, with no explanation clearly dominating the other. Furthermore, observing the coefficient of $CAR[-5,5]days$, the long-run abnormal returns are priced at the time of announcement, which is noteworthy, since the conditions of information

asymmetry are higher for stock deals, but still the market is seemingly better at pricing stock deal long-run performance versus cash deals.

4.5.3.2 Long-run operating performance

The long-run, post-acquisition operating performance of cash and stock bidders is also evaluated, which provides direct insight into the firms' performance and contributes robustness to the analysis of long-run financial performance. A number of measures are evaluated, including measures of profitability (ROA, ROE, Profit margin), growth (Tobin's q , Revenue growth, and EBIT growth), asset productivity (TR/TA), and liquidity (CurrentRatio). This estimation involves two dimensional difference-in-difference estimators, controlling for both endogeneity associated with the medium of exchange choice and industry effects.

4.5.3.2.1 Documentation of long-run operating performance

The results of univariate analyses of mean and median operating performance over the five years following acquirer and target firm combination are presented in Table 4.11. The analysis is completed in two stages. First, industry-adjusted measures of completed and incomplete (withdrawn) deals are compared, then deal-adjusted measures are compared. For cash bidders in Columns (1) and (2), cash bidders in completed deals outperform those cash deals that do not complete, the relative outperformance is highly statistically significant. The outlier is the productivity observation, where total revenue to total assets is lower among cash bidders in completed deals, though this may be attributed to challenges associated with managing the post-acquisition combination of operations, for example, integration issues or poor integration strategy (Andersen Consulting, 1999).

In Column (3-4) of Table 4.11, it is observed that stock bidders in incomplete deals outperform those involved in completed stock deals along most metrics of operating

performance, save for profit margin and EBIT growth. This result is consistent with those observed in the analysis of abnormal financial performance. An industry-adjusted, deal-adjusted (i.e., two dimensional difference-in-difference) comparison of cash and stock deals in Column ((1-2) - (3-4)) reveals that cash acquirers do indeed outperform stock deals on most measures and the differences are highly statistically significant. These results are counter to those reported by Heron and Lie (2002) who find no evidence that the method of payment conveys information about the acquirer's future operating performance. The findings, however, are in agreement with those of Ghosh (2001) who reports that cash flows of the acquirer increase significantly when

Table 4.11: Univariate analysis of bidder post-acquisition, long-run operating performance

This table contains the results of the test of difference in median (mean) measures of post-acquisition operating performance of the firms in cash and stock financed deals. The *t*-statistic and *z*-statistic measure statistical significance of the difference in mean and median tests, respectively. The symbols ***, ** and * indicate significance at the 1%, 5%, and 10% level, respectively.

	Cash bidders, completed deals (ind-adj)	Cash bidders, withdrawn deals (ind-adj)	Difference	Stock bidders, completed deals (ind-adj)	Stock bidders, withdrawn deals (ind-adj)	Difference	Ind-adjusted, Deal-adjusted Difference
	(1)	(2)	(1-2)	(3)	(4)	(3-4)	(1-2) - (3-4)
	Mean	Mean	<i>t</i> -stat	Mean	Mean	<i>t</i> -stat	<i>t</i> -stat
	Median	Median	<i>z</i> -stat	Median	Median	<i>z</i> -stat	<i>z</i> -stat
ROA	0.002	0.501	-1.51	0.073	0.014	0.66	-0.65
	0.000	0.009	-1.54	-0.004	0.015	-3.97***	4.88***
ROE	0.088	-0.547	3.33***	0.040	0.464	-1.24	0.29
	-0.014	-0.162	8.03***	-0.009	0.186	-3.74***	3.08***
Profit margin	1.757	-1.128	7.81***	0.282	-0.056	1.28	3.89***
	0.651	-0.859	12.17***	0.081	-0.057	2.27**	10.06***
Tobin's <i>q</i>	-0.251	-12.540	1.56	-0.273	0.981	-1.39	0.36
	0.054	-0.501	4.06***	-0.043	0.428	-2.83***	1.99**
Revenue growth	0.059	-0.063	1.19	-0.007	0.330	-1.58	0.87
	-0.001	-0.042	0.29	0.053	0.106	-3.49***	2.00**
EBIT growth	-0.207	-1.182	0.74	-0.868	-0.248	-1.07	1.34
	-0.053	-0.280	2.96***	0.107	0.053	2.47**	2.72***
TR/TA	-0.110	-0.056	-0.60	-0.076	0.161	-0.71	0.95
	-0.140	-0.056	-2.10**	-0.198	0.086	-0.15	1.12
Current Ratio	0.212	-0.163	0.98	-0.272	1.931	-4.04***	2.40**
	-0.305	-0.163	-0.60	-0.215	1.135	-6.50***	4.52***
N	426	426		516	516		

acquisitions are made with cash, but decline for stock financed acquisitions. This study improves upon these previous studies by evaluating the determinants of the documented differences in

operating performance, and even more, linking those differences to the signals associated with *deal quality* and *misvaluation hypotheses*.

4.5.3.2.2 Cross-sectional analysis of long-run operating performance

The *deal quality hypothesis* developed in this paper contends that there may be substantial information risk at the time of deal negotiation, and management of the bidding firm may have imperfect information of the target or may fear that information on the target is biased. Under high information asymmetry, the deal is riskier and bidding firm managers may want to spread the risk by issuing equity. If this hypothesis holds, stock is offered under conditions of higher bidder-side information asymmetry for a combination that is of lower quality, and by extension, it is expected that a stock financed combination will involve lower long-run operating performance than those financed by cash. The opposite holds for cash deals: cash deals will be completed under conditions of lower bidder-side information asymmetry, suggesting that acquisition gains are higher for cash deals and therefore the combination is of higher quality. Table 4.11 provides results that point to outperformance of cash bidders over stock bidders, but to test if information asymmetry at the time of deal announcement is associated with the outperformance, a cross-sectional analysis of long-run operating performance is performed. The test will provide insight into the information content of the medium of exchange choice under information asymmetry that is realized by the combined firm post-acquisition.

Cross-sectional analyses of operating performance, the results of which are presented in Table 4.12, further probe those presented in the univariate analyses by using two dimensional difference-in-difference data. Panels A and B present the results of cross-sectional analysis of the post-acquisition operating performance of cash and stock bidders, respectively. In general, the regressions produce results quite similar to those in the regressions on financial performance (in

Table 4.12: Cross-sectional analysis of bidder post-acquisition, long-run operating performance

This table displays the results of cross-sectional analysis of long-run operating performance of firms in cash (Panel A) and stock (Panel B) financed deals. The explained variables are operating performance variables, ROA, ROE, Profit margin, Tobin's q, Revenue growth, EBIT growth, TR/TA (total revenue/total assets), Current Ratio. The explanatory variables are described in Table 6. The symbols ***, ** and * indicate significance of t-statistics at the 1%, 5% and 10% level, respectively. The regressions results have been corrected for heteroscedasticity using White's consistent estimator.

<i>Panel A: Cross sectional analysis of cash bidders operating performance</i>																	
	ROA		ROE		Profit margin		Tobin's q		Revenue growth		EBIT growth		TR/TA		Current Ratio		
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	
IA	-0.111	-0.23	-3.446	-1.95*	1.098	0.32	-17.136	-0.90	-1.049	-3.92***	-1.902	-2.68***	-0.851	-1.00	-4.202	-2.64***	
VE	0.051	0.52	-0.003	-0.01	0.352	1.10	-0.366	-0.42	-0.142	-1.58	0.433	0.68	0.046	0.37	0.203	0.59	
AG	0.637	1.19	2.585	1.19	-5.117	-0.67	-6.060	-1.24	-0.476	-0.94	-3.667	-0.71	1.376	2.53	2.297	1.07	
IA*VE	-0.008	-0.02	-0.313	-0.89	0.028	0.03	-21.409	-0.89	-0.388	-2.45	-0.580	-0.45	-0.082	-0.31	-0.606	-0.99	
IA*AG	-2.580	-1.15	-7.884	-2.30**	-2.027	-2.23**	-12.843	-1.04	-1.014	-1.75*	-5.399	-0.66	-3.828	-1.55	-11.678	-2.52***	
CAR[-5,5]days	0.018	0.40	0.145	1.76*	0.574	2.31**	0.392	1.91*	0.080	1.89*	0.314	1.50	0.118	3.61***	0.298	1.80*	
BidderComp	0.185	0.64	-0.771	-2.21**	2.696	1.28	-1.209	-0.34	-0.312	-1.88*	-6.951	-1.12	-0.518	-2.95***	1.244	0.61	
LNRelativesize	0.000	-0.41	-0.004	-4.23***	0.001	0.45	-0.003	-0.49	0.000	0.41	-0.001	-0.51	0.000	0.79	-0.001	-2.90***	
ROAtarget	-0.049	-0.29	-1.583	-2.28**	1.058	1.76*	1.290	0.39	0.133	0.73	-0.443	-0.21	-0.471	-0.71	0.143	0.23	
DEbidder	0.000	0.51	0.000	-0.99	0.000	-0.02	0.003	0.28	0.000	1.42	-0.001	-0.78	0.000	-1.61	0.000	-0.73	
Intercept	0.311	1.74*	1.785	1.58	-3.239	-0.98	1.632	0.76	0.416	2.01**	-2.167	-1.33	0.322	1.48	2.495	3.02***	
R ²	1.81%		4.17%		6.42%		2.76%		1.61%		29.64%		6.44%		5.88%		
F-statistic	1.86		5.48		11.08		0.96		5.88		2.48		7.02		4.00		
p-value	0.154		0.000***		0.000***		0.096*		0.000***		0.233		0.000***		0.012**		
N	426		426		426		426		426		426		426		426		
<i>Panel B: Cross sectional analysis of stock bidders operating performance</i>																	
	ROA		ROE		Profit margin		Tobin's q		Revenue growth		EBIT growth		TR/TA		Current Ratio		
	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	β_i	t-stat	
IA	-0.114	-0.74	-4.356	-2.68***	1.060	0.07	-20.847	-1.44	-1.056	-5.40***	-2.650	-1.17	-3.286	-4.20***	-8.256	-1.25	
VE	0.052	1.67*	0.004	0.01	0.340	0.26	0.446	0.67	0.143	2.18**	0.604	2.96***	0.176	1.56	0.399	0.28	
AG	0.654	3.82***	3.268	1.64	-4.939	-0.16	-7.372	-1.98	-0.479	-1.29	-5.108	-3.09***	5.311	1.64	4.513	0.51	
IA*VE	-0.008	-0.06	-0.396	-1.23	0.027	0.01	-26.045	-1.42	-0.391	-3.37***	-0.807	-1.96**	-0.318	-1.30	-1.192	-0.47	
IA*AG	-2.648	-3.69***	-9.967	-3.17***	-1.957	-0.52	-15.624	-1.66*	-1.021	-2.41**	-7.520	-2.87***	-14.776	-1.52	-22.946	-1.19	
CAR[-5,5]days	0.019	1.28	0.184	2.42**	0.554	0.54	0.477	3.05***	0.081	2.60***	0.437	1.53	0.455	1.18	0.586	0.85	
BidderComp	0.190	2.05**	-0.975	-3.04***	2.602	0.30	-1.470	-0.54	-0.314	-2.59***	-9.682	-4.87***	-1.998	-2.40**	2.445	0.29	
LNRelativesize	0.000	-1.31	-0.005	-5.82***	0.001	0.10	-0.003	-0.78	0.000	0.56	-0.001	-2.22**	0.002	3.32***	-0.003	-1.37	
ROAtarget	-0.050	-0.93	-2.000	-3.14***	1.022	0.41	1.569	0.62	0.134	1.01	-0.617	-0.91	-1.818	-2.99***	0.280	0.11	
DEbidder	0.000	1.64	0.000	-1.36	0.000	0.00	0.004	0.45	0.000	1.96**	-0.001	-3.39***	0.000	-1.77*	0.000	-0.35	
Intercept	0.319	5.58***	2.256	2.18**	-3.126	-0.23	1.986	1.21	0.419	2.77***	-3.019	-5.79***	1.244	2.22**	4.902	1.43	
R ²	1.86%		7.91%		6.20%		3.36%		1.62%		10.93%		24.86%		11.55%		
F-statistic	1.91		10.39		10.69		1.17		5.92		5.18		27.10		7.86		
p-value	0.180		0.001***		0.000***		0.117		0.000***		0.187		0.000***		0.023**		
N	516		516		516		516		516		516		516		516		

Table 4.9). In Panel A of Table 4.13, the misvaluation under information asymmetry ($IA*VE$) is not significant in any regression, while the deal quality under information asymmetry ($IA*AG$) is a significant explanatory variable for post-acquisition ROE, Profit margin, Revenue growth, and Current Ratio. This outcome, again, suggests that deal quality, but not valuation, is a signal elicited by cash financed bids.

For stock bidders in Panel B of Table 4.12, the results again indicate that deal quality, here measured by post-acquisition operating performance, is associated with both the misvaluation and deal quality explanations for the medium of exchange choice. The coefficients of the misvaluation under information asymmetry variable ($IA*VE$) are significant in the Revenue growth and EBIT growth regressions, and the coefficients of the deal quality under information asymmetry variable ($IA*AG$) are significant in the ROA, ROE, Tobin's q , Revenue growth, and EBIT growth regressions. Analysis of the cross-section of stock bidder operating performance suggests that the *deal quality hypothesis* may dominate the *misvaluation hypothesis*.

4.6 Conclusions

This essay develops and tests the *deal quality hypothesis*: not only is payment with shares a guarantee against a possible valuation mistake of the target, but it also allows the splitting of first, the future gains ensuing from the acquisition and, second, the risks between parties. High uncertainty about the true value of the target firm induces the bidder to pay with its own equity rather than cash. Furthermore, a partial or full payment of shares allows the bidding shareholders to spread the risk and uncertainties of the value of the acquired firm and future gains by transforming target shareholders into a shareholder of the newly merged firm. Under high information asymmetry, the bidder is less certain of the quality of the combination and will prefer to finance the acquisition with stock, since target shareholders share in the uncertainty.

Under conditions of low information asymmetry, the bidder perceives the deal as high quality since the synergies are certain, the bidder will prefer to offer cash in order to monopolize the certain synergy gains. This study seeks to contribute evidence of the information embedded in the medium of exchange choice associated with the quality of the deal by testing the proposed *deal quality hypothesis* alongside the dominant hypothesis, the *misvaluation hypothesis*.

Employing a sample construction approach proposed by Savor and Lu (2009), this study controls for both endogeneity and industry effects in the analysis of the information content of the medium of exchange choice. The focus of this study is on the bidding firm, since literature has identified the bidding firm as the entity leading the decision on the method of payment (Di Giuli, 2013). The study reports evidence that at announcement, bidding firms in cash bids experience significantly positive abnormal returns at announcement, but only in the 3 day window around the announcement day, $[-1,1]$, and bidders in stock deals earn significantly negative cumulative abnormal returns in most windows of observation. For stock bidders, the information content of the announcement returns is associated with the *misvaluation* and *deal quality hypotheses*, but for cash bidders, it is associated with only the *deal quality hypothesis*. The analysis of actual quality (i.e., *ex post* deal quality) is accomplished by investigating post-acquisition, long-run financial and operating performance, and these analyses produce consistent results. Cash financed deals exhibit higher post-acquisition stock performance than stock financed deals, and analysis of post-acquisition operating performance provides the same result.

To disentangle the deal quality signal from the misvaluation signal, a number of cross-sectional analyses are carried out. For cash financed deals, long-run post-acquisition stock and operating performance is associated with bid-time deal quality but not bid-time valuation errors. Thus for bidders in completed cash financed deals, the *deal quality hypothesis* dominates the

misvaluation hypothesis as an explanation for long-run post-acquisition performance. The post-acquisition stock and operating performance of stock bidders seems to be equivalently explained by the misvaluation and deal quality hypotheses, with no explanation clearly dominating the other. The cross-sectional analysis of post-acquisition operating performance provides some evidence that *deal quality hypothesis* may dominate the *misvaluation hypothesis*. The evidence presented in this paper therefore supports the contention that cash, as the medium of exchange, provides a signal of high deal quality, and when a bidder selects stock as the medium of exchange, it is a signal of low deal quality *and* a signal of bidder overvaluation. By evaluating the *deal quality hypothesis* alongside the dominant explanation of the medium of exchange signal (as described by this essay's *misvaluation hypothesis*), this essay therefore contributes new insight into the information content associated with the medium of exchange choice.

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CHAPTER 5

Thesis Summary and Conclusions

The increase in M&A activity and the economic significance of this form of corporate restructuring serves as the primary motivation for the study of the antecedents and consequences of mergers and acquisitions. Matching the continued growth of mergers and acquisitions is a growing body of academic work on the causes and consequences of this form of corporate restructuring, but while M&A activity has attracted a great deal of attention and garnered a substantial amount of research, there are many unresolved questions that remain. The primary objective of this thesis has been to investigate this increasingly important corporate phenomenon and to examine three areas of the M&A literature where unresolved questions remain. Specifically, this thesis has explored: (i) the phenomenon of the negative acquisition premium, (ii) the long-run implications of merger failure, and (iii) the deal quality signaling properties embedded in the medium of exchange announcement.

Altogether, this thesis contributes evidence that enriches the M&A literature. Essay 1 investigates the phenomenon of the negative acquisition premium, and reports evidence that while target firm financial distress and constrained external debt markets permit the acquiring firm to offer a negative acquisition premium, it is the combination of a decline in target stock price and high target firm block ownership, and therefore lower target share liquidity, that lead target shareholders to prefer the negative premium bid over selling at market prices. Evidence indicates that in stock financed deals involving a small negative premium, large target shareholders are able to identify value-enhancing deals and are willing to accept a discount on market prices in order to participate in a combination with a bidder that will result in synergistic

gains. Essay 1 also reports that the market does not efficiently price this profitable outcome at the announcement of the negative premium acquisition bid. Essay 2 investigates the question: is the termination of a merger is good news for the shareholders of the targeted and acquiring firms? The evidence presented in Essay 2 indicates that merger failure is good news for target shareholders in general and only good news for bidding firm shareholders when the deal is either terminated by the bidder or is financed with high levels of stock. The medium of exchange and the initiating party of termination are significant determinants of terminated targets' long-run financial performance. Essay 3 develops and tests the *deal quality hypothesis*, which proposes that the medium of exchange choice in a merger and acquisition transaction is a signal of the quality of the combination, quality that is realized through post-acquisition gains and/or synergies. It evaluates the *deal quality hypothesis* alongside the dominant explanation of the information content of the medium of exchange choice, the *misvaluation hypothesis*. The study finds that cash bids are completed under conditions of low information asymmetry, and stock bids are completed under conditions of high information asymmetry. Acquiring firms offering cash exhibit long-run outperformance following completion of the deal, while bidders offering stock exhibit long-run underperformance. It is concluded that cash as the medium of exchange provides a signal of high deal quality, but when a bidder selects stock as the medium of exchange, it is a signal of low deal quality and a signal of bidder overvaluation. The three essays, though investigating different aspects of the construction of the acquisition bid, each identify that the deal construction (e.g., deal consideration, medium of exchange) and deal outcomes (e.g., failure or success) is a key determinant of post-combination (or in Essay 2, post-termination) outcomes, both in terms of financial and operating performance.