



GORDON INSTITUTE
OF BUSINESS SCIENCE

University of Pretoria

The method of payment as a market signal in merger and acquisition transactions for South African firms

Nicholas R. Linder

22148087

A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the degree of Master of Business Administration.

07 November 2012

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

ABSTRACT

Merger and acquisition (M&A) transactions have been the subject of numerous studies over the years. The effect of the method of payment in M&A transactions has been studied in first world countries where information transfer is regarded as being highly efficient. The aim of this research was to study the effect of the method of payment to both acquirer and target companies post the announcement of M&A transactions within the context of emerging economies. South African JSE listed firms were used as a proxy for emerging market companies.

Event study methodologies are only as sound as the statistical methodologies used to conduct the tests as well as the accuracy with which expected returns can be calculated. This being so, the aim of the research was to apply rigorous testing using various event study methodologies and making use of the literature to ensure that the findings were robust and the testing thorough. The various testing methodologies did not always provide the same findings further emphasising that the results are only as conclusive and robust as the methodologies used.

Using the well substantiated event study methodology it was found that target companies do not significantly outperform acquirer firms. Although target companies showed a 12.5% increase over the longest event window being a 120 day window, whilst acquirers only reported 6.40% the difference was not found to be significant. The additional returns to target companies are likely due to the bid premium to stave off competition.

Results indicate that acquirer companies using shares as the method of payment do send a negative signal to the market that their shares used as the currency of exchange in the M&A transaction is inflated. As a result acquirer companies using shares underperformed acquirer companies using cash as the method of payment.

Finally target companies bought where cash was used as the method of payment outperform targets bought using shares as the method of payment. This is likely due to the capital gains tax implications in the year the M&A transaction takes place where cash is the method of payment.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Although South Africa is regarded as being a less efficient market than first world economies with regards to information transfer, based on the study (which focused on large capitalisation companies with high trading volumes) South Africa does show similar results to those of first-world economies for acquirer cash against acquirer share returns as well as for target cash against target share returns, when looking at the method of payment as a market signal in M&A transactions. This research did not however find significantly higher positive returns for target companies against acquirer companies returns.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

KEYWORDS

Abnormal returns; control-portfolios; information asymmetry; market-adjusted equal-weighted returns; and mergers and acquisitions

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination at any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

Nicholas R. Linder

07 November 2012

ACKNOWLEDGEMENTS

To those individuals closest to me who have suffered through a two year gruelling MBA, I would like to thank you for the unwavering support and enduring love offered. This MBA has tested the patience, fortitude and tolerance of those closest to me.

To my partner Mari Venter, I would like to thank you for the love and understanding that you have shown as I have been fortunate enough to pursue this opportunity and to give it my absolute best in the pursuit of self-improvement. You have stood by me throughout the process and sacrificed in order for me to achieve my goals. I am indebted to you and am exceptionally grateful for your love and support.

To my family, Chris, Liz, Tremayne, Gaby and Luke, I would like to thank you for being there for a son and brother who at times has been absent over the past two years. Your love and support has been resolute.

To my supervisor Professor Mike Ward, thank you for the patience that you have shown towards, what I can only imagine was a somewhat demanding student. More than the patience shown, I am grateful for the knowledge shared throughout the research process. You have shared your knowledge in the field of finance and have opened my eyes to the opportunities that exist. The learning has inspired me to continue to expand my knowledge. For this I am sincerely grateful.

To my business partner Ryan Smit and work colleague's thank you for supporting me through the process.

To those who showed kindness to a needy MBA student I would like to offer my appreciation. Firstly I would like to thank Mr Elias Latsis head of research at 'Mergermarket' who helped me source the valued data which made this research possible. Also to Mr Charles Chimedza from Witwatersrand University who helped me decipher statistical formulae, thank you for your time and assistance.

To the Gordon Institute of Business Science, I would like to thank you for expanding my paradigms and showing me the value of learning at a world class business school.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Contents

Chapter 1 – INTRODUCTION TO THE RESEARCH PROBLEM	1
1.1 Introduction.....	1
1.2 Research Aims	2
Chapter 2 – LITERATURE REVIEW	4
2.1 Introduction.....	4
2.2 Method of Payment and the Market Signal	4
2.3 Role of Method of Payment	10
2.4 Event Study Methodology.....	11
2.4.1 Price Prediction Models.....	11
2.4.2 Test Statistics.....	12
2.5 Event Study Methodology Assumptions.....	13
2.5.1 Market Efficiency.....	14
2.5.2 Unanticipated Events	16
2.5.3 Confounding Events.....	16
Chapter 3 - HYPOTHESES.....	18
3.1 Hypothesis 1.....	18
3.2 Hypothesis 2.....	18
3.3 Hypothesis 3.....	19
Chapter 4 – RESEARCH METHODOLOGY.....	20
4.1 Calculating Abnormal Returns	20

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

4.1.1 Market-Adjusted Equal-Weighted (MAEW) Model	20
4.1.2 Control-Portfolio (CP) Model	21
4.2 Average Abnormal Returns (AARs)	28
4.3 Cumulative Average Abnormal Returns (CAARs)	29
4.4 Population and Sampling	29
4.5 Data Collection and Availability	31
4.6 Length of the Event Window	32
4.7 Statistical Tests of Abnormal Returns (ARs) Data	32
4.7.1 T- test	33
4.7.2 Standardised T - test	34
4.7.3 Rank test	34
4.7.4 Sign test	35
4.8 Statistical Tests of Cumulative Average Abnormal Returns (CAARs) Data	36
4.8.1 T-test	36
4.8.2 Boot-strap test	36
4.9 Research Limitations	37
Chapter 5 – REPORTING	39
5.1 Reporting Results	39
5.2 Description of Sample	39
5.3 Market-Adjusted Equal-Weighted (MAEW) Model	40
5.3.1 Abnormal Returns (ARs) and Average Abnormal Returns (AARs) MAEW model	40

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

5.3.2 Cumulative Average Abnormal Returns (CAARs) MAEW model	53
5.4 Control-Portfolio (CP) Model.....	62
5.4.1 Abnormal Returns (ARs) and Average Abnormal Returns (AARs) CP model	62
5.4.2 Cumulative Average Abnormal Returns (CAARs) CP model	74
Chapter 6 – RESULTS.....	83
6.1 Target versus Acquirer	84
6.1.1 Abnormal Returns (AR) Target versus Acquirer	84
6.1.2 Testing Hypothesis 1.....	85
6.2 Acquirer Cash versus Acquirer Shares	88
6.2.1 Abnormal Returns (ARs) Acquirer Cash versus Acquirer Shares	88
6.2.2 Testing Hypothesis 2.....	90
6.3 Target Cash versus Target Shares	92
6.3.1 Abnormal Returns (ARs) Target Cash versus Target Shares	92
6.3.2 Testing Hypothesis 3.....	93
Chapter 7 – CONCLUSION.....	96
REFERENCES	99
APPENDIX.....	104

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

LIST OF FIGURES

Figure 2-1: JSE share trading volumes	16
Figure 4-1: Muller and Ward (2012) standardised eigenvalues	23
Figure 4-2: Muller and Ward (2012) R2 values between share characteristics and factor loading	24
Figure 5-1: MAEW AARs, Target and Acquirer, event window (-20, 20).....	43
Figure 5-2: MAEW AARs paired t test, Target less Acquirer, event window (-20, 20)	44
Figure 5-3: MAEW AARs, Acquirer Cash and Acquirer Shares, event window (-20, 20)	47
Figure 5-4: MAEW AARs paired t-test, Acquirer Cash less Acquirer Shares, event window (-20, 20)	48
Figure 5-5: MAEW AARs, Target Cash and Target Shares, event window (-20, 20)	51
Figure 5-6: MAEW AARs paired t-test, Target Cash less Target Shares, event window (-20, 20)	52
Figure 5-7: MAEW CAARs, Target and Acquirer, event window (-20, +100)	55
Figure 5-8: MAEW CAARs, Acquirer Cash and Acquirer Shares, event window (-20, +100).....	58
Figure 5-9: MAEW CAARs, Target Cash and Target Shares, event window (-20, +100).....	61
Figure 5-10: CP AARs, Target and Acquirer, event window (-20, 20).....	64
Figure 5-11: CP AARs paired t-test, Target less Acquirer, event window (-20, 20).....	65
Figure 5-12: CP AARs, Acquirer Cash and Acquirer Shares, event window (-20, 20).....	68
Figure 5-13: CP AARs paired t-test, Acquirer Cash less Acquirer Shares, event window (-20, 20)	69
Figure 5-14: CP AARs, Target Cash and Target Shares, event window (-20, 20)	72

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Figure 5-15: CP AARs paired t-test, Target Cash less Target Shares, event window (-20, 20)	73
Figure 5-16: CP CAARs, Target and Acquirer, event window (-20, +100)	76
Figure 5-17: CP CAARs, Acquirer Cash and Acquirer Shares, event window (-20, +100)...	79
Figure 5-18: CP CAARs, Target Cash and Target Shares, event window (-20, +100).....	82

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

LIST OF TABLES

Table 4-1: Ten characteristics affecting the share price	24
Table 4-2: Muller and Ward (2012) control-portfolio's	26
Table 5-1: Sample summary	40
Table 5-2: MAEW Target and Acquirer results using the t-test, standardised t-test, rank test and sign test	42
Table 5-3: MAEW Acquirer Cash and Acquirer Shares results using the t-test, standardised t-test, rank test and sign test	46
Table 5-4: MAEW Target Cash and Target Shares results using the t-test, standardised t-test, rank test and sign test	50
Table 5-5: MAEW Target CAAR results using t-test and boot-strap test.....	54
Table 5-6: MAEW Acquirer CAAR results using t-test and boot-strap test.....	54
Table 5-7: MAEW Acquirer Cash CAAR results using t-test and boot-strap test.....	56
Table 5-8: MAEW Acquirer Shares CAAR results using t-test and boot-strap test.....	57
Table 5-9: MAEW Target Cash CAAR results using t-test and boot-strap test	59
Table 5-10: MAEW Target Shares CAAR results using t-test and boot-strap test.....	60
Table 5-11: CP Target and Acquirer results using the t-test, standardised t-test, rank test and sign test	63
Table 5-12: CP Acquirer Cash and Acquirer Shares results using the t-test, standardised t-test, rank test and sign test	67
Table 5-13: CP Target Cash and Target Shares results using the t-test, standardised t-test, rank test and sign test	71
Table 5-14: CP Target CAAR results using t-test and boot-strap test.....	74

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 5-15: CP Acquirer CAAR results using t-test and boot-strap test.....	75
Table 5-16: CP Acquirer Cash CAAR results using t-test and boot-strap test.....	77
Table 5-17: CP Acquirer Shares CAAR results using t-test and boot-strap test.....	78
Table 5-18: CP Target Cash CAAR results using t-test and boot-strap test.....	80
Table 5-19: CP Target Shares CAAR results using t-test and boot-strap test.....	81

Chapter 1 – INTRODUCTION TO THE RESEARCH PROBLEM

1.1 Introduction

With rapid globalisation occurring in recent years and investors seeking higher returns many multi-nationals are allocating resources to emerging markets where labour costs and competition are relatively low and opportunity prevails. We have seen emerging market economies gross capital flows going from an average of US\$170 billion in the 1990s to gross capital flows exceeding US\$1400 billion by 2007 (Das, 2009).

Capital flows into emerging markets are occurring more regularly than ever before as the opportunity to produce significantly better returns than can be achieved in competitive first world economies provide opportunities for investors. In South Africa alone we have seen the likes of Wal-Mart buying a 51% stake in Massmart (USD 2083m), Industrial and Commercial Bank of China buying a 20% stake in Standard Bank (USD 5413m) and Barclays buying a 60% stake in ABSA Bank (USD 5484m), all within the last seven years. With this trend of increased merger and acquisition (M&A) transactions occurring within the emerging market context, it becomes increasingly necessary to understand the dynamics at play. It is also important to understand whether research conducted in first world countries holds true in these emerging markets where many argue that information flows are less efficient.

The method of payment in M&A transactions typically takes the form of cash, equity or a combination of the two (Chemmanur, Paeglis & Simonyan, 2009; Eckbo, Giammarino & Heinkel, 1990; Fishman, 1989; Hansen, 1987; Lau & Proimos, 2010; Mushidzhi & Ward, 2004). M&A transactions and private information held by both acquirer (bidder) and target firms plays a critical role in the choice of the method of payment. The method of payment in turn effects the returns to both acquirer and target firm's around the announcement date of the M&A transaction. A number of studies into the implications of information asymmetry between acquirer and target firms have been conducted with many finding that asymmetric information plays a critical role in the choice of the method of payment used in the transaction (Chemmanur, Paeglis & Simonyan, 2009; Eckbo, Giammarino & Heinkel, 1990; Fishman, 1989; Hansen, 1987; Lau & Proimos, 2010).

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

While significant research has been done conducted on the signalling effect of the method of payment and asymmetric information between acquirer and target firms in developed economies very little is available in the emerging market context. Understanding the dynamics of M&A transactions in the emerging market context will enable us to further our understanding of the signal sent to the market by way of the method of payment. South African firms will act as a proxy for emerging market firms. This research will explore these dynamics in the emerging market context of South Africa.

1.2 Research Aims

The aim of this research is to determine the signalling effect that the methods of payment used in M&A transactions have on the acquirer and target firms for South African listed companies. This research will test for abnormal returns pre, at and post the announcement of the M&A transaction. An event study of M&A transactions over a ten year period being from January 2002 to December 2011 will be conducted. This research will indicate how the market views the signal of equity versus cash transactions from the perspective of South African listed targets as well as South African listed acquirer firms. This research will draw on previous research and identify whether these theories hold true in the emerging market context where information flow is widely regarded as being less efficient. Five event study tests (t-distribution, standardized t-distribution, sign test, rank test and the bootstrap test) will be applied to the abnormal returns data to ensure robustness of the findings.

Mushidzhi and Ward (2004) have conducted research into abnormal returns looking at cash versus share abnormal returns for South African listed companies. Their research was conducted drawing samples over a five-year period, from March 1998 to December 2002. The event window used for the research was a 21 day window. According to Mushidzhi and Ward (2004); “shareholders of target companies earn significantly positive returns, while shareholders of bidding firms are not affected” (p. 29). They conclude that this is consistent with prior research. It is also found that, “Returns earned by shareholders of targets acquired using cash are significantly higher than those earned by the shareholders of share-acquired targets” (Mushidzhi & Ward, 2004, p. 29). Finally they do not find significant differences between cash versus share abnormal returns to acquirer firms over the event window tested.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

This research aims to expand on prior research in the following ways:

1. Two price prediction models will be employed to calculate the expected return of the shares. The first will be the Market-Adjusted Equal-Weighted (MAEW) model. The second will be the control-portfolio (CP) model with the aim of substantiating the methodology used to calculate the expected return.
2. Five statistical tests (both parametric and non-parametric) will be used to test the abnormal returns data with the aim of making the testing robust. T-distributions assume normality of the abnormal return data which is not necessarily the case. Comparisons of the results for the five tests will be made to assess the consistency of the tests' findings.
3. The sample will be taken over a ten-year period extending the sampling period by 5 years.
4. The largest event window will be extended outwards to include medium-term returns to shareholders with a maximum event window of 121 days being included in the research.

South Africa is widely regarded as the gateway into Africa and as such provides an ideal opportunity to conduct research into the effects that the signals sent by way of the method of payment around M&A announcements have on emerging market companies. Inferences regarding the events will be drawn based on statistical finding and theoretical underpinnings.

Chapter 2 – LITERATURE REVIEW

2.1 Introduction

The literature identifies a number of factors that affect the choice of the method of payment in merger and acquisition (M&A) transactions. Included in these factors is information asymmetry between target and acquirer firms, synergies post the transaction to the target and acquirer, access to cash and marketable securities, perceived value by management of the acquiring firm, risk of over payment and tax implications (Chemmanur, Paeglis and Simonyan, 2009; Eckbo, Giammarino & Heikel, 1990; Fishman, 1989; Myers and Majluf, 1984 D.R & Peterson, 1991; Travlos, 1987). This literature explores these factors and the implications of the choice of the method of payment in M&A transactions.

2.2 Method of Payment and the Market Signal

Eckbo, Giammarino and Heinkel (1990) state that, “In perfect markets with symmetrically informed agents, the medium of exchange chosen to accomplish a corporate combination is economically irrelevant; the level and division of the merger-induced gains are the same whether the transaction is executed by means of an all cash offer or by some combination of cash and securities of the combined firm” (p. 652). However, information symmetry does not occur in M&A transactions and rather acquirer firms and target firms each possess private asymmetric information when entering into an acquisition transaction (Chemmanur, Paeglis & Simonyan, 2009; Eckbo, Giammarino & Heikel, 1990; Fishman, 1989; Hansen, 1987; Slovin, Sushka & Poloncheck, 2005; Travlos, 1987). Given that both the acquirer and the target possess their own asymmetric information they are able to use this information to achieve a higher degree of the available returns in acquisition transactions. Eckbo, Giammarino and Heikel (1990) summarise the effect that the method of payment has on the acquisition transaction stating, “...in an all-cash offer; the bidder bears the entire cost of the overpayment, since the payment is independent of the true value of the target ex-post. On the other hand, while an all-stock offer means that the bidder shares some of the target mispricing with the target, the bidder may also be issuing its shares at less than true value. Thus, while an all-stock offer can reduce the bidder’s overpayment cost, it can also generate a bidder undervaluation cost” (p. 653).

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Managers have inside information that investors do not (Myers and Majluf, 1984). Myers and Majluf (1984) refer to “slack” as having access to cash, marketable securities and default-risk-free debt. They show that, “...managers will try to build up financial slack in order to avoid situations in which a security issue is required to finance a valuable investment opportunity. If information asymmetries relate primarily to firm value, rather than risk, managers will favor debt over equity financing if external capital is required” (Myers and Majluf, 1984, p. 215). Myers and Majluf’s (1984) findings regarding asymmetric information between managers and investors where managers have greater information than investors include the pertinent points as wet out below:

1. External financing using debt is better than financing by way of raising funds through equity issues. Raising equity through retaining profits is significantly better than issuing shares.
2. Where there are investment opportunities but insufficient cash flows and debt is not available, it may be in the interest of existing shareholders to pass up investments rather than to issue equity to finance the investments.
3. Dividends should be reduced to build up financial slack which can be used to facilitate future investment opportunities.
4. A merger between a slack rich and slack poor firm will increase the combined value of the acquirer and target firm.

Fishman (1989) conducted some of the earliest research on the asymmetry of information between the acquirer and target firms and the relationship between information asymmetry and the method of payment used. According to Fishman (1989), a share offer’s value is contingent on the future cash flows of the merged firm, post the acquisition transaction, whereas the value of a cash offer is not dependant on the future cash flows. Therefore the target does not need to anticipate the future cash flows when considering whether to accept or reject the decision. Fishman (1989) states that “...the target can make it’s accept/reject decision independently of any information on these cash flows, and a cash offer cannot induce an efficient accept/reject decision” (p. 42). Fishman (1989) develops a model whereby shares are offered by acquirers that place a lower value on the M&A transaction, whereas cash is offered by higher valuing

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

acquirers. The reasons for this is that shares induce the target to make efficient accept/reject decisions while cash offered at a premium allows the acquirer to fend off potential competitor rival firms. The implications of Fishman's (1989) model are the following:

1. "An initial bidder's expected payoff is lower if the medium of exchange of its initial offer is securities as compared to cash."
2. "The probability that competing bids will be observed is higher after an initial securities offer as compared to an initial cash offer."
3. "The probability that target management will reject an offer is higher if the medium of exchange is securities as compared to cash."
4. "The higher the cost of studying a target, the more likely that an initial bidder's offer is cash and the less likely that there is a multiple bidder contest."

Travlos (1987) hypothesises that since acquirer and target firms each possess asymmetric information the method of payment used by the acquirer firm will send a message to the market about the value management perceive to be the true value of the acquirer firm to be. Since management try to maximize profit to existing shareholders, should they believe the shares to be overvalued they will use shares as the currency in the merger transaction and cash should they believe their shares to be undervalued. Based on this theory shares as the method of payment send a negative signal to the market, whereas cash sends a positive signal to the market. His findings confirm this theory with abnormal negative returns occurring to acquiring companies using shares as the method of payment at the announcement date of the acquisition transaction.

Rhodes-Kropf and Viswanathan (2004) analyse share M&A transactions trying to understand the rationale of the accept/reject decision by targets of offers made by acquirers using shares. Both the acquirer and target have their own asymmetric information. According to them when an offer is made there are two mis-valuations that occur, a firm-specific component and a market-wide component. The acquirer holds information regarding its own valuation as well as any potential synergies that will occur

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

ex-post the acquisition transaction. The target, however only holds private information regarding its own value. When evaluating an offer the target will try to assess the value of the offer made by removing the market mis-valuation component from the transaction value.

Rhodes-Kropf and Viswanathan (2004) find that the target cannot tell which portion is related to the acquirer specific mis-valuation of the target firm and which portion is related to market-wide mis-valuation. When the market-wide mis-valuation is high (the target cannot discern that a greater proportion of the mis-valuation is as a result of the market-wide mis-valuation), the target will remove too little of the market-wide mis-valuation and as a result the target will overvalue the offer made by the acquirer. When the firm specific mis-valuation is high (the target cannot discern that a lesser proportion of the mis-valuation is as a result of the market-wide mis-valuation), the target will remove too much of the market-wide mis-valuation and as a result the target will undervalue the offer made by the acquirer.

Based on the above rationale, Rhodes-Kropf and Viswanathan (2004) state that, “mis-valuation also influences the medium of exchange. We believe that in most cases, for a stock merger to occur, the target’s management must expect the deal to increase value. Managers make errors when evaluating stock offers (although they get it right on average) but not when evaluating cash offers. Therefore, the medium of exchange will contain a higher fraction of stock offers when the market is overvalued and completed deals are more likely to be in cash when the market is undervalued” (p. 2710).

According to Chemmanur, Paeglis and Simonyan (2009) the profitability of the transaction to the acquirer depends on the true value of the target, the acquirer itself and the value of the synergies between the two. The value of the transaction of a share offer is dependent on future cash flows to the combined entity. The value of a cash offer is independent of the future cash flows and is merely a function of the cash price paid. Since the acquirer holds private information as to its true value, it will be incentivised to use equity if managers are of the opinion that the current price is overvalued, in turn the target company may well reject the offer as the currency being offered for the target shares is inflated. The target itself has private information. Acquirers making cash offers are at risk of paying a premium for the target. The risk of the premium increases with an

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

increase in information asymmetry. Share transactions mitigate this risk as the value is contingent on future cash flows of the combined firm. By implication the risk of overpayment is shared between the acquirer and target firm in share transactions while in pure cash transactions the full risk of overpayment lies with the acquirer firm.

Lau and Proimos (2010) find that target firms returns around the announcement of M&A transactions are consistently significant. Lau and Proimos (2010) believe that the reason for these abnormal returns is that the acquirer firm is forced to offer a premium to entice the target into the transaction as well as to facilitate the target's cooperation. They expect that the targets share price should reflect the premium offered by the acquirer firm as well as the potential rival bids which could potentially follow the initial acquirer bid.

When an acquirer makes a bid it signals its perceived value of the target firm and as a result other competitors may compete for the target company (Chen, Chou & Lee, 2011). Chen Chou and Lee (2011) suggest that in order to prevent this from taking place a higher bid at a premium may be made to discourage competition. The natural result of competing for targets in this way is that target firm's abnormal returns will increase at the announcement of the M&A transaction. Antonios, Arbour and Zhao (2011) are of the opinion that by stating that target shareholders will earn significant positive returns at the announcement of an M&A transaction a firm is essentially stating the obvious. They support this view by stating, "Intuitively target firm shareholders expect to receive a premium if they are to hand over their ownership stakes to the acquiring firm and/or if the bidding firm is hoping, via the attractiveness of its bid, to persuade the target firm's board of directors to issue a public statement in recommendation of the offer. It should therefore come as no surprise that positive CARs (cumulative abnormal returns) accrue to target firm shareholders during the period surrounding merger announcements" (Antonios, Arbour, & Zhao, 2011, p. 2).

Officer, Poulsen and Stegemoller (2009) focus their research on private targets in M&A transactions. Their reasoning is that it is more likely that information asymmetry between acquirer and target firms are greater for privately held targets than for public targets. They find that in share-financed transactions, the returns to acquirers are significantly higher when the target firm is difficult to value. They relate their findings to

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Hansen's (1987) model of information asymmetry, stating "there is a reward to acquirers for using stock as the acquisition currency when the targets assets and operations are difficult to value" (Officer *et al.*, 2009, p.22). Their reasoning is the same as that described by Chemmanur, Paeglis and Simonyan (2009), that is, when the acquirer uses shares to purchase the target, there is risk mitigation against the acquirer overpaying for the shares. Officer *et al.* (2009) find that 79% of acquirers of private companies used shares as the method of payment. This finding provides strong support for the fact that shares are the optimal method of payment when the asymmetry of information between acquirer and target is large. This risk mitigation process is received positively by the market around the announcement date of the M&A transaction.

It is recognised that along with information asymmetry in M&A transactions, tax implications need to be considered by target firms when deciding whether to accept an offer made by the acquiring firm (Davidson and Cheng, 1997; D. R. Peterson and Peterson, 1991). The tax implications of the method of payment used effect the premium paid in M&A transactions. Share offers allow target shareholders to defer capital gains taxes payable whereas cash offers result in a capital gains accruing to the target shareholders (Davidson & Cheng, 1997). Target shareholders require compensation for the fact that they will be required to pay the capital gains that have been triggered by the M&A transaction. As a result there is a positive correlation between cash as the method of payment and the premium offered in M&A transactions. Naturally the higher the capital gains tax rate and the larger the capital gain associated with the M&A transaction, the greater the premium required by the target. D. R. Peterson and Peterson (1991) agree with the capital gains tax implications in M&A transactions, but they also consider the fact that when shares are offered in M&A transactions any net loss accrued to the target firm may be 'carried over' and used in the merged firm. However they note that when shares are used as the method of payment assets are shown at book value. When cash is used however the "assets of the acquired firm may be 'stepped-up', to a limited degree, for depreciation purposes, yet any carryover attributes are lost" (D.R Peterson & Peterson, 1991, p. 384-385).

Davidson and Cheng (1997) cite research by Wansley Lane and Yang (1983) who note that target company shareholders receive higher returns when cash is used as the method of payment than when shares are used as the currency of exchange. According

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

to Davidson and Cheng (1997) there are two reasons for the difference in returns using the different payment methods. They state, “The first is that cash bids reduce the asymmetric information problem that would be created in an exchange of common stock. The second is that target shareholders have different tax liabilities in cash and in stock bids” (Davidson & Cheng, 1997, p. 465).

Davidson and Cheng (1997) believe that cash offers made to target firms result in higher abnormal returns because, “targets in cash bids demand larger payments from bidders to offset tax liability” (p.465). This is consistent with the findings of Wansley, Lane and Yang (1983) who state, “because of tax effects premiums should be larger for cash mergers than for mergers that utilize securities for payment. In mergers involving equity securities, capital gains taxes may be deferred until the new securities are sold, while cash mergers, any capital gains are taxed in the year of the acquisition” (p. 16).

2.3 Role of Method of Payment

Malmendier, Opp and Saidi (2011) start by understanding the motivation for M&A transactions in order to understand the role of the payment method in these transactions. They find that there are three broad categories of reasons for M&A transactions namely:

1. Synergies;
2. Market timing; and
3. Managerial / Agency reasons.

The concept synergies is defined by Malmendier, Opp and Saidi (2011) as increasing the joint real cash flows regardless of whether the increase in joint cash flows is due to an increase in revenue or cost reduction through these synergies.

Malmendier, Opp and Saidi (2011) refer to market timing when the rationale for the merger relates to temporary mispricing in the securities which may be as a result of manager insight. They go on to say that, “real firm cash flows are unaffected by the

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

merger itself , and potential gains accruing to the bidder are purely redistributive” (Malmendier, Opp and Saidi, 2011, p. 6).

Managerial reasons refers to the fact that managers may be willing to overpay for an acquisition for personal reasons such as control or hubris and is driven by overconfidence or ego (Malmendier, Opp & Saidi, 2011).

Malmendier, Opp and Saidi (2011) identify market timing as the only identified motivation that carries a first-order relation to the payment method. Under market timing they state that, “mispricing of securities is the underlying source of private value generation” (Malmendier, Opp & Saidi, 2011, p. 7). For both synergy and managerial / agency reasons they view the method of payment as playing a secondary role in execution.

2.4 Event Study Methodology

This research, when applying the event study method will aim to improve the robustness of the findings by being cognizant of the strengths and weaknesses of the methodology. Ahern (2009) states, “The strength of the event study methodology is that abnormal returns due to a firm-specific, but time-independent event may be precisely estimated by aggregating results over many firms experiencing a similar event at different times” (p. 466). Looking at various price prediction models and test statistics the aim of the research is to substantiate the findings.

2.4.1 Price Prediction Models

Brown and Warner (1985) use three methods to calculate abnormal returns. Each model used a different variable for the expected return. The first model is the mean adjusted model which calculates the abnormal return using the mean as the expected return for the share subtracting the mean return from the share’s event date return. The second model is the market-adjusted model and uses the market return as the expected return and subtracts the market index from the share’s event date return. The third model is the ordinary least squares (OLS) or capital asset pricing model (CAPM) and uses the market return as the explanatory variable to regress the dependant variable which is the share’s expected return. The share’s expected return is calculated using

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

the regression model which is then subtracted from the share's event date return (Ahern, 2009).

Recent research has started to explore other pricing models to calculate expected returns. Ahern (2009) refers to the mispricing of the CAPM model stating, "...because biases in standard asset pricing models are generated by omitted variables, it makes sense to look at samples grouped by these characteristics" (p. 468). He refers to the fact that "the slope coefficient is biased" when using the CAPM. Ahern (2009) cites Fama and French (1996) who use a three factor model, "including a market index, size index, and book-to-market index to explain stock returns" (p. 469).

2.4.2 Test Statistics

T. P. McWilliams and McWilliams (2000) note that; event studies often include both parametric and nonparametric tests. Typical testing will include a sign test or a rank test in combination with a parametric test such as the z or t statistic. If after running the parametric and nonparametric tests, the results are consistent the inferences that can be drawn from the tests are strengthened. If inconsistent results present themselves, it becomes necessary to examine the distribution of the data (T.P. McWilliams & McWilliams, 2000). T. P. McWilliams and McWilliams (2000) report that inconsistencies may be as a result of, "extreme observations in the data set which are influential with respect to the z-statistic but have a lesser impact on the more robust nonparametric statistics..." (p. 6). They further note that the parametric tests are generally more powerful when the underlying assumptions hold true. A. McWilliams and Siegel (1997) also highlight the fact that parametric tests can be influenced by outliers and that when the sample is small the tests become more sensitive to these outliers. They state that, "Hence, with small samples, interpretation of the significance is problematic" (p. 635).

Bowman (1983) recognises that nonparametric tests when used for large samples avoid the necessity of making strong assumptions on the sampling distribution of the abnormal returns. Bowman (1983) brings in the caveat however that nonparametric tests are not necessarily powerful and "make nominal use of the data" (p. 571). Ahern (2009) as well as T. P. McWilliams and McWilliams (2000) note that while parametric tests are testing the null hypothesis against the mean, the non-parametric tests are testing the null hypothesis against the median.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

The bootstrap test attempts to deal with the problem that the underlying assumptions of normality do not necessarily hold true, particularly in smaller samples making use of the parametric z and t tests (T. P. McWilliams and McWilliams, 2000).

T. P. McWilliams and McWilliams (2000) cite Efron and Tibshirani (1986) who describe the bootstrap as a 're-sampling technique'. A sample is obtained and a function of the sample is calculated. An example could be the CAAR calculated from a random sample over a specified period. T.P McWilliams and McWilliams (2000) describe the bootstrap procedure as follows:

"A sample (say X_1, X_2, \dots, X_n) is obtained and a statistic (say $U(X_1, X_2, \dots, X_n)$) is calculated as a function of the sample. To make an inference regarding the underlying population, knowledge of the sampling distribution of U is required, and it is assumed that initially no information is available. This problem is addressed by obtaining empirical information about the distribution through a re-sampling process: a large number (m) of samples of size n are taken with replacement from the original sample, and a new value for U is calculated for each of these samples. The values of U obtained by re-sampling constitute an empirical sampling distribution that can be used to make inferences."

2.5 Event Study Methodology Assumptions

A. McWilliams and Siegel (1997) note three assumptions when applying the event study methodology:

- Market efficiency;
- Unanticipated events; and
- Confounding effects.

In order to apply the event study methodology with the utmost precision it is necessary to ensure that steps are taken to make sure that the assumptions hold true for this event study. Taking steps to ensure these assumptions are met in the empirical tests will assist this research in drawing strong, justifiable inferences.

2.5.1 Market Efficiency

Fama (1991) describes the efficient market hypothesis stating, “I take the market efficiency hypothesis to be the simple statement that security prices fully reflect all available information” (p. 1575). A McWilliams and Siegel (1997) agree and are of the opinion that an efficient market is a market which has the ability to quickly price relevant information that is made available to the market traders into the share price (A. McWilliams & Siegel, 1997). A. McWilliams and Siegel (1997) go on to describe an event stating, “Therefore, an event is anything that results in new relevant information” (p. 630).

Antoniou, Arbour and Zhao (2011) also draw reference to the fact that short run event study tests rely on the assumption that the market is efficient. This implies that the market is able to correctly price the value of the acquirer and the target firm pre at and post the acquisition transaction. They are cognizant of the fact that the market is not necessarily efficient and that under or over-valuations may occur in the short-run around the announcement of the M&A transaction. They go on to suggest that if market inefficiency is accepted to be plausible then the ability to distinguish real economic gains from short-run abnormal returns is lost. This becomes a concern when testing abnormal returns in the emerging market context where markets are regarded as being less efficient.

Given that the event study will be conducted on JSE listed shares, the implications of markets that are less efficient than those of larger exchange’s where greater volumes of shares are traded need to be considered. Cowan and Sergeant (1996) in their article titled “Trading frequency and event study test specification”, recognise that thin trading using statistical tests to measure daily returns may result in the statistics being poorly specified. Thinly traded shares have a greater probability of showing zero and large non-zero returns. The abnormal returns would therefore not follow a normal distribution (Cowan & Sergeant, 1996).

Mlambo and Biekpe (2005) in their article titled “Thin trading on African stock markets: Implications for market efficiency testing”, find that thin trading on African stock markets is a real problem. They highlight the fact that investors may be forced to hold shares at times when they would otherwise have preferred to trade. Mlambo and Biekpe (2007) in

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

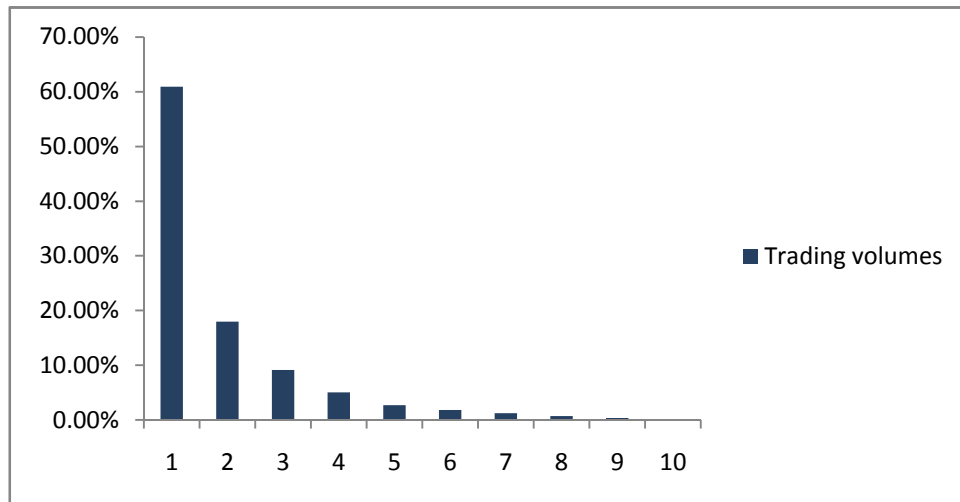
their later article “The efficient market hypothesis: Evidence from ten African stock markets” provide similar concerns for African traded shares stating, “Serious thin-trading was observed on all markets” (p. 15). While both of these research papers did not specifically look at the JSE but rather ten other African stock markets, it is important to be cognizant of the implications of market inefficiency when using the event study methodology in the emerging market context.

Cowan and Sergeant (1996) state “recent studies find a conventional parametric test statistic, the Patell (1976) standardized abnormal return statistic, poorly specified with thinly traded samples” (p. 1732). The rank and sign test are both nonparametric and avoid the dependence on normality of the return distribution. In order to combat the limitations of the assumptions here employ both parametric and nonparametric tests are applied to the event study.

The share trading volumes data taken from the JSE Bulletin over the period January 2011 to December 2011 indicates that 60.92% of the trading volume occurred on 10% of the shares listed on the JSE. The bottom 10% of companies by trading volume traded only 0.08% of the total share trading volume for the period. The sample taken uses shares drawn from the ALL Share Index (ALSI) which includes shares listed on the JSE with the largest market capitalisation and trading volumes.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Figure 2-1: JSE share trading volumes



To strengthen the parametric tests and being fully aware of the problem faced by thinly traded shares, this risk is mitigated by ensuring that only shares that are not thinly traded and are listed on the ALSI are included in the sample.

2.5.2 Unanticipated Events

The second assumption is that the event being studied is unanticipated by the market at the time of the announcement (A. McWilliams & Siegel, 1997). A. McWilliams and Siegel (1997) describe the fact that where information has leaked into the market, it becomes difficult to isolate the effect of the event. They state that when the event is unanticipated, “Abnormal returns can then be assumed to be the result of the stock market’s reaction to the new information” (A. McWilliams and Siegel, 2007, p. 634).

2.5.3 Confounding Events

In applying the event study methodology it is important to have ensured that the event that is being studied is not affected by other events which would influence the data. A. McWilliams and Siegel (1997) state that, “It is assumed that there are no confounding effects from other events. Confounding events can include the declaration of dividends, announcements of an impending merger, signing of a major government contract, announcement of a new product, filing of a large damage suite, announcement of unexpected earnings, and change in a key executive” (p. 634). T.P. McWilliams and

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

McWilliams support this assumption and acknowledge its the importance, stating, “It is crucial for the researcher to control for confounding events in order to ensure that the stock price reaction that is measured is reflecting a reaction to the event in question” (p. 8). It is important to be aware that the longer the event window, the greater the chance that the researcher has violated this assumption (McWilliams and Siegel, 1997).

Chapter 3 - HYPOTHESES

Based on the literature review conducted and with the expectation that similar results would be seen for research conducted in developed countries, three hypotheses are tested here. Following Mushidzhi and Ward (2004) in their article titled, 'Abnormal returns for cash vs share funded acquisitions', the same three hypotheses' are tested here. To begin it is tested whether target companies returns outperform acquirer companies returns around the announcement date of merger and acquisition (M&A) transactions. Once target versus acquirer company returns in the context of South Africa are understood, the effect that the method of payment, being mainly cash or shares has on the returns to target and acquirer companies around the announcement date of M&A transaction are tested.

3.1 Hypothesis 1

The null hypothesis states that target companies cumulative average abnormal returns (CAARs) are not significantly higher than acquirer companies CAARs around the announcement date of M&A transactions. The alternative hypothesis states that target companies CAARs are significantly higher than acquirer companies' CAARs around the announcement date of M&A transactions.

The alternative hypothesis to be tested is stated as:

H1: CAARs to target firms will be significantly higher than CAARs to acquirer firms.

3.2 Hypothesis 2

The null hypothesis states that acquirer companies CAARs are not significantly higher when cash is used as the method of payment in M&A transactions than when shares are used as the method of payment. The alternative hypothesis states that acquirer companies CAARs are significantly higher when cash is used as the method of payment in M&A transactions than when shares are used as the method of payment.

The alternative hypothesis to be tested is stated as:

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

H2: CAARs to acquirer firms will be significantly higher when cash is used than when shares are used as the method of payment.

3.3 Hypothesis 3

The null hypothesis states that target companies CAARs are not significantly higher when cash is used as the method of payment in M&A transactions than when shares are used. The alternative hypothesis states that target companies CAARs are significantly higher when cash is used than when shares are used as the method of payment in M&A transactions.

The alternative hypothesis to be tested is stated as:

H3: CAARs to target firms will be significantly higher when cash is used than when shares are used as the method of payment.

Chapter 4 – RESEARCH METHODOLOGY

4.1 Calculating Abnormal Returns

The unit of analysis was the abnormal daily returns over the event window. Two pricing methods were used to calculate abnormal returns namely the market-adjusted equal-weighted (MAEW) model and the control-portfolio (CP) model. Each of the prediction models applies different methodologies in calculating the expected return for the securities over the event period.

4.1.1 Market-Adjusted Equal-Weighted (MAEW) Model

Abnormal returns (ARs) represented by A_{it} using the market-adjusted equal-weighted (MAEW) method were calculated as the difference between the return to security i on day t (R_{it}) and the expected return for security i on day t (R_{mt}) calculated as:

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

The expected return using the MAEW model was calculated as:

$$R_{mt} = \log \left[\frac{ALSI_t}{ALSI_{t-1}} \right]$$

Where:

$$ALSI = \text{JSE ALL Share Index on day } t;$$

$$ALSI_{t-1} = \text{JSE ALL Share Index on day } t-1;$$

And the security return was calculated as:

$$R_{it} = \text{observed return for security } i \text{ on day } t;$$

$$R_{it} = \log \left[\frac{P_{it}}{P_{it-1}} \right]$$

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Where:

P_{it} = price of security i at the end of period t ;

P_{it-1} = price of security i at the end of period $t-1$.

4.1.2 Control-Portfolio (CP) Model

The control-portfolio (CP) model was used as a second method to calculate the expected returns. The capital asset pricing model (CAPM) method using the market as the explanatory variable has been shown to be poor at explaining the dependant variable being the expected return with biases in the standard asset pricing models (Ahern, 2009). Ahern (2009) draws reference to the fact that pricing anomalies occur when using the CAPM method in prediction models to calculate the expected return. The coefficient of determination (R^2) is often low when using the market as the explanatory variable in determining the expected return. Based on this and due to time constraints, this research does not include the CAPM as one of the methodologies used to calculate the expected returns. This research attempts to obtain a higher (R^2) by using additional explanatory variables in the regression equation and obtaining a stronger relationship between the explanatory variables and the dependant variable using the CP method.

Previous research by Mordant and Muller (2003), Mutooni and Muller (2007) and Ward and Muller (2010), used twelve control-portfolios of shares grouped by their combination of size, growth/value and resources/non resources to calculate expected returns. Muller and Ward (2012) have taken their research a step further using principal component analysis (PCA) techniques to determine which components constituted the greatest variance in the data. These CPs were then used as the components in the regression equation to calculate the expected returns and in turn the abnormal returns (ARs).

Calvo, Partridge and Jabri (2006) refer to the fact that PCA is a dimensionality reduction technique. They state that, "In mathematical terms, n correlated random variables are transformed into a set of $d \leq n$ uncorrelated variables. These uncorrelated variables are linear combinations of the original variables and can be used to express the data in a

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

reduced form” (p. 1). The goal according to Calvo, Partridge and Jabri (2006) of using the PCA methodology is to find the eigenvectors of the covariance matrix. “These eigenvectors correspond to the directions of the principal components of the original data; their statistical significance is given by their corresponding eigenvalues” (Calvo, Partridge and Jabri, 2006, p. 2).

Calvo, Partridge and Jabri (2006) describe the steps to structuring PCA as:

1. Collect x_i of an n dimensional data set X , $i = 1, 2, \dots, m$.
2. Mean correct all the points: calculate the mean \bar{x} and subtract it from each data point $x_i - \bar{x}$.
3. Calculate the variance-covariance matrix C .

$$C_{ij} = (x_i - \bar{x})(x_j - \bar{x})$$

4. Determine eigenvalues and eigenvectors of the matrix. C is a real symmetric matrix so a positive real number λ and a nonzero vector α can be found such that

$$C\alpha = \lambda\alpha$$

where λ is called an eigenvalue and α is an eigenvector of C .

5. Sort the eigenvalues (and corresponding eigen-vectors) so that $\lambda_1 \geq \lambda_2 \geq \dots \geq \lambda_n$.
6. Select the first $d \leq n$ eigenvectors and generate the new data set in the new representation.

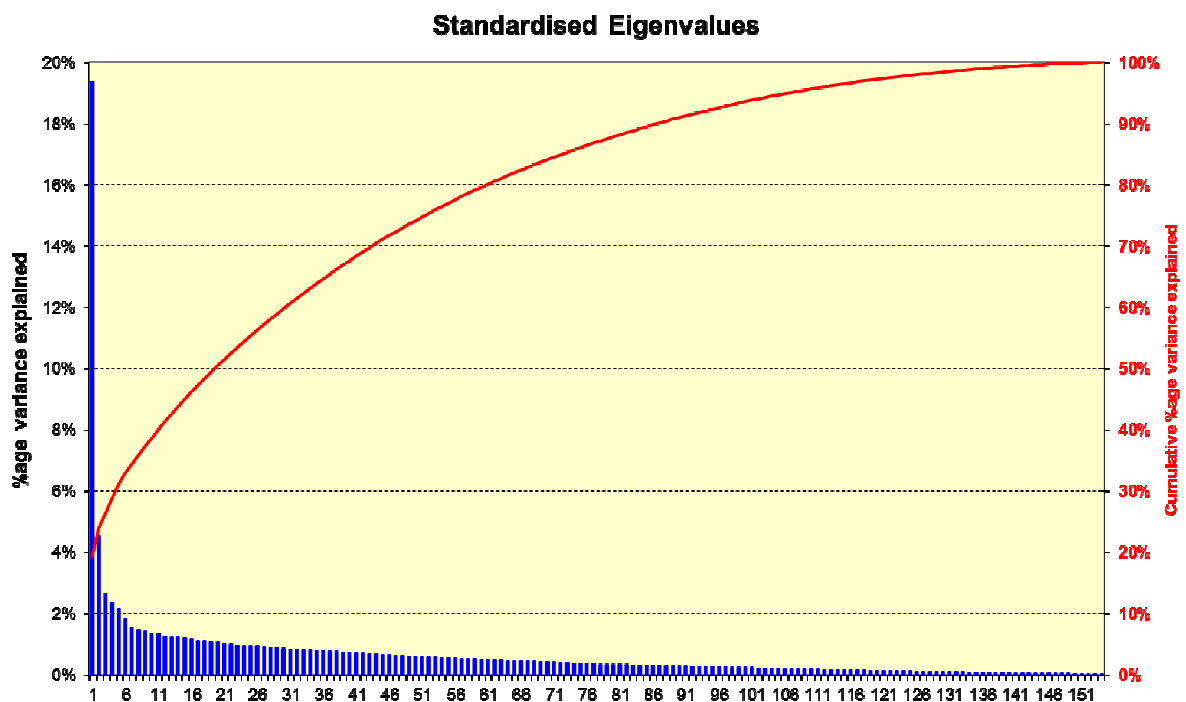
Muller and Ward (2012) in their working paper ‘Style construction from principle component analysis of JSE returns’ describe the process followed in determining the principle components used to calculate the expected returns, stating:

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

“We constructed a matrix of weekly log returns for the largest 154 companies which existed over the entire period September 2005 to June 2012 on the JSE... The return matrix was standardised by subtracting the mean return and dividing by the standard deviation for each share. We then constructed a 154x154 matrix of these returns and performed an Eigen analysis on the covariance matrix to reduce the number of dimensions and ensure the dimensions were orthogonal” (Muller & Ward, 2012, p. 1).

The results of the PCA analysis performed by Muller and Ward (2012) were that the first eigenvector contributed to 19% of the variance in the data and the first six eigenvectors constituted 33% of the variance.

Figure 4-1: Muller and Ward (2012) standardised eigenvalues



Muller and Ward (2012) used factor loadings which resulted from the eigen analysis for each of the 154 shares in the sample. Ten share characteristics that they had identified from the literature were examined against their eigen analysis (see table 4-1).

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 4-1: Ten characteristics affecting the share price

Characteristic#	Name	Calculated
1	EY	The average earnings yield (EY) over the period
2	MarketCap	The average market capitalisation over the period
3	MarketCapLog	The natural log of the market capitalisation over the period
4	Resources	The beta against the Resource Index over the period
5	RealEstate	Coded as “1” for shares in the Real Estate index
6	RandHedgeRSQ	The r-squared of returns against the change in R/\$
7	RandHedgeBeta	The beta of returns against the change in R/\$
8	S&Pness	The r-squared against the S&P500
9	FT100	The r-squared against the FTSE 100 Index
10	S&P500	The r-squared against the S&P500 Index

The factor loadings for each of the shares were then correlated with the share characteristics and a correlation matrix reflecting the R^2 between the two variables was created in order to identify the first six eigenvectors (Muller & Ward, 2012).

Figure 4-2: Muller and Ward (2012) R^2 values between share characteristics and factor loading

R-squared values between share characteristics and factor loadings							
	Eigen Vector						
Characteristic	1	2	3	4	5	6	7
RandHedgeRSQ	33%	1%	0%	7%	18%	0%	1%
RandHedgeBeta	11%	2%	4%	0%	19%	4%	4%
Resources	2%	55%	0%	3%	4%	4%	0%
RealEstate	0%	16%	47%	1%	4%	2%	0%
MarketCap	11%	7%	0%	21%	0%	0%	1%
MarketCapLog	44%	0%	0%	35%	1%	0%	0%
EY	2%	0%	0%	0%	0%	0%	0%
FT100	42%	1%	1%	6%	16%	1%	1%
S&P500	33%	5%	3%	3%	20%	2%	1%
MSCI-EM	18%	15%	1%	1%	23%	3%	2%

It is worth noting that for eigenvector 1, strong correlations were identified between factor 1 and RandHedgeRSQ, MarketCapLog, FT100 and S&P500 illustrated in table 4-2. The total contribution from factor 1 contributed to 19% of the variation in the data.

Muller and Ward (2012) described this factor based on the underlying share characteristics as a “Rand Hedge factor for Large Shares”.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

From the PCA analysis Muller and Ward (2012) determined that there were three factors affecting the share returns, namely:

1. Market Capitalisation (MarketCap), “large” or “small”;
2. Rand USD, “related” or “unrelated”; and
3. Resources/Property/Other.

The variables were classified into the three categories as described below:

1. MarketCap was determined as being “large” or “small” as follows:

- a. Large (top 50% by MarketCap); and
- b. Small (bottom 50% by Market Cap).

2. RandUSD were determined as being “related” or “unrelated” as follows:

Using regression to calculate the R^2 between the share and Rand USD exchange rate (R/\$).

- a. R/\$ Related (Top 50% in terms of R^2 between the share and the R/\$); and
- b. R/\$ Unrelated (Bottom 50% in terms of R^2 between the share and the R/\$).

3. Resources/Property/Other were determined as being “Resources”, “Property” or “Other” as follows:

- a. Resources (Yes/No - if classified by the JSE as such);
- b. Property (Yes/No - if classified by the JSE as such and in the property index); and

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

c. Other (not resources or property).

Following Mordant and Muller (2003) and Mutooni and Muller (2007) twelve control-portfolios were formed. However, by applying PCA techniques, Muller and Ward (2012) were able to construct the CPs using the factors that affect returns. The twelve CPs formed are shown in table 4-2.

Table 4-2: Muller and Ward (2012) control-portfolio's

Control Portfolio	Resource/Property/ Other	Large Cap or Small Cap	USD Related or USD Unrelated
RLD	Resourcy	Large	Dollar Related
RLU	Resourcy	Large	Dollar Unrelated
RSD	Resourcy	Small	Dollar Related
RSU	Resourcy	Small	Dollar Unrelated
PLD	Property	Large	Dollar Related
PLU	Property	Large	Dollar Unrelated
PSD	Property	Small	Dollar Related
PSU	Property	Small	Dollar Unrelated
NLD	Not Resourcy or Property	Large	Dollar Related
NLU	Not Resourcy or Property	Large	Dollar Unrelated
NSD	Not Resourcy or Property	Small	Dollar Related
NSU	Not Resourcy or Property	Small	Dollar Unrelated

Mordant and Muller (2003) described what they hoped to achieve using the CP method stating, "Control portfolios are built comprised of all shares in the market divided into groups based on the market anomaly to be filtered out, if present."

Muller and Ward (2012) placed each ALSI share into one of these twelve portfolios based on the share classification as described above. Since share characteristics change with time, they rebalanced the shares on a quarterly basis into their correct portfolios. They handled de-listings by including the de-listed shares in the portfolio until the share stopped trading after which it was included in the CP at a zero return until the end of the quarter in which the de-listing occurred. The de-listed share was then removed from the CP in the following quarter. Newly listed companies were included in the CPs in the quarter following the quarter in which the share was listed. This occurred when the re-balancing of the CPs took place.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Muller and Ward (2012) calculated daily equal weighted indices for each of the twelve CPs using log returns as follows:

$$CP_{it} = \log \left[\frac{Port_{it}}{Port_{it-1}} \right]$$

Where:

CP_{it} = the equal weighted share return for control-portfolio i for day t;

and

$Port_{it}$ = the equal weighted value of portfolio i at the end of day t.

Muller and Ward (2012) used regression to determine the relationships (calculated as the beta coefficients) between the twelve control-portfolios daily returns and each of the sample share daily returns in the event sample. The preceding 48 months daily returns were used to regress the CPs returns against the event sample share returns. The resultant regression equation calculating the expected return for the event share with the intercept term alpha and beta coefficients can be summarised in the equation below:

$$E(R_{it}) = \alpha_{it} + \beta_{i,1}RLD_t + \beta_{i,2}RLU_t + \beta_{i,3}RSD_t + \beta_{i,4}RSU_t + \beta_{i,5}PLD_t + \beta_{i,6}PLU_t + \beta_{i,7}PSD_t + \beta_{i,8}PSU_t + \beta_{i,9}NLD_t + \beta_{i,10}NLU_t + \beta_{i,11}NSD_t + \beta_{i,12}NSU_t$$

Where:

$E(R_{it})$ = the expected return on security i on day t;

α_{it} = the alpha intercept term of security i on day t;

$\beta_{i,1} \dots \beta_{i,12}$ = the relationship between each of the control-portfolios returns and security i's return on day t; and

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

$RLD_t \dots NSU_t$ = the log function share price returns on each of the twelve control-portfolios set out in table 4-2 on day t.

Abnormal returns using the control-portfolio method are equal to the difference between the security i return on day t (R_{it}) and the expected return for security i on day t $E(R_{it})$:

$$A_{it} = R_{it} - E(R_{it})$$

Where:

$E(R_{it})$ = the expected return on security i on day t;

And the security return is calculated as:

R_{it} = observed return for security i on day t; and

$$R_{it} = \log \left[\frac{P_{it}}{P_{it-1}} \right]$$

4.2 Average Abnormal Returns (AARs)

Once the ARs were calculated using the different prediction methods, average abnormal returns (AARs) for each day t were calculated to get the average of the ARs for the sample. Citing Weston, Chung and Sui (1998) in the article by Mutshizi and Ward (2004) it is noted that, "The reason for averaging across firms is that stock returns are noisy, but the noise tends to cancel out when averaged across a large number of firms" (p. 23).

AARs represented by \bar{A}_t for any event day t were calculated as:

$$\bar{A}_t = \frac{1}{N_t} \sum_{i=1}^{N_t} A_{it}$$

Where:

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

N = number of firms in the sample.

4.3 Cumulative Average Abnormal Returns (CAARs)

The cumulative average abnormal returns (CAARs) were calculated from the AARs indexed at CAAR equal to 100% at day t -21.

CAARs for any event day t were calculated as:

$$CAAR_{t+1} = CAAR_{t0} * (1 + \bar{A}_{t1})$$

4.4 Population and Sampling

The population for this study included all M&A transactions involving JSE listed large capitalisation companies.

The sample was all M&A transactions that met the following criteria:

- a. The acquirer or target firm involved in the M&A transaction was listed on the ALSI at the time of the announcement of the M&A transaction as well as over the 121-day event window.
- b. The announcement of the acquisition transaction occurred over the period January 2002 to December 2011.
- c. The acquiring or target firms daily closing share price was available from the I-Net Bridge database.
- d. The value and method of payment used in the transaction was available from the 'Mergermarket' database.
- e. Abnormal returns could be calculated over the 121-day event window.
- f. The acquisition price paid was in excess of \$5m.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

- g. There were no confounding events (as defined below) over the event window based on information sourced from the BFA McGregor database.
- h. Abnormal returns for a given date did not exceed 50% over the 121 day event window. Abnormal returns above 50% using either the MAEW model or the CP model led to exclusion of the share from the calculation for the particular model. This was done to mitigate the risk of data problems.
- i. The method of payment was classified as a share transaction when 60% or more of the purchase price was in the form of shares.
- j. The method of payment was classified as a cash transaction when 60% or more of the purchase price was in the form of cash.

This research identified the following major corporate actions, as sourced and categorised from the BFA McGregor database as confounding events namely; capitalisation issue, change board, share buyback general, share buyback specific, special dividends, subdivision, suspension, suspension lifted, termination and/or unbundling. If any of these corporate actions occurred during the 121 day event window the share was excluded from the sample.

The samples of companies which engaged in M&A transactions over the period under consideration and which met the above criteria included 39 target companies and 130 acquirer companies. Of the 39 target companies included, 29 were acquired using cash and only ten were acquired using shares. Of the 130 acquirer companies included, 105 acquired target companies using cash and 25 acquired target companies using shares.

It is not surprising that there were significantly more acquirer companies that engaged in M&A transactions and were included in the sample, since samples were drawn from the ALSI which includes companies with the largest market capitalisations on the JSE. It is expected that larger companies typically acquire smaller companies. This makes logical sense and helps explain the greater number of acquirer companies included in the sample.

4.5 Data Collection and Availability

Data was sourced from the 'Mergermarket' database, which contains all M&A transactions in South Africa where the announcement date was within the period January 2002 to December 2011 and where the deal value was greater than \$5m. 'Mergermarket' is an "independent Merger and Acquisition intelligence service" and carries an "extensive historical deals database" (Mergermarket, 2012).

The following fields were included in the data set:

- a. The announcement date, which represents the day the transaction was announced as definitive or an offer to target shareholders was made. Indicative offers are not included (Mergermarket, 2012);
- b. Target company;
- c. Target dominant country;
- d. Acquirer company;
- e. Acquirer dominant country;
- f. The percentage acquired;
- g. The deal value. All values are in US dollars (US\$);
- h. The methods of payment used in the transaction. All values are in US dollars (US\$); and
- i. Pre-rumor date, which is defined as the date when a public announcement was made on the deal which was not yet definitive (an intention to make an offer, an indicative offer).

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

The share price data and ALSI index data were obtained from the I-Net Bridge database. Company share prices for the acquirer and target firms were collected for the estimation period and event period and abnormal returns were measured. Corporate events data used to eliminate confounding events were taken from the McGregor BFA research domain.

4.6 Length of the Event Window

This research used a 320-day window. The estimation period spanned 199 days and started from day $t-219$ and ended on day $t-21$. The longest event window itself spanned 121 days from day $t-20$ to $t+100$ (shown as $[-20,+100]$). The 121 day event window included a 20 day pre-event period from $t-20$ to $t-1$, the event day itself day t_0 and continued for 100 days, post the event date to $t+100$. This event window was then broken down into smaller ten day intervals when testing the CAARs. The shortest event window was from $t-20$ to $t-10$ (shown as $[-20,-10]$ and the longest event window was from $t-20$ to $t+100$ (shown as $[-20,+100]$).

4.7 Statistical Tests of Abnormal Returns (ARs) Data

The aim of these statistical tests was to minimize the chances of type one and type two errors. Type one errors occur when the null hypothesis of no abnormal returns is rejected when it is true. Type two errors occur when the null hypothesis of no abnormal returns is not rejected when it is false (Brown and Warner, 1980). “A test’s power indicates its ability to discern the presence of abnormal performance...” (Brown and Warner, 1980)

Since different statistical tests each have their own strengths and weaknesses in reducing the likelihood of committing type-one and type-two errors and improving the power of the tests, the different tests were applied to the ARs and AARs data, assessing the results using the various test statistics.

Five tests were included to ensure robustness of the findings. According to Ahern (2009) who draws reference to Brown and Warner (1985) and Corrado and Zivney (1992) there are four leading event study statistical methods namely t-test, standardised

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

t-test, rank test and sign test. These four tests were applied to the abnormal returns data. A paired t-test was added to test differences in AAR results.

Each test carries its own merits and by combining the different tests and obtaining consistent results the inferences of the findings are strengthened. Should the tests not provide consistent results it is necessary to conduct a closer examination of the data (T.P. McWilliams & McWilliams, 2000).

4.7.1 T- test

The t-distribution relies on the assumption of normality when testing the abnormal returns data. If the assumption of normality is not met then as stated by Brown and Warner (1980), “the sampling distribution of test statistics assumed for the hypothesis tests could differ from the actual distribution, and false inferences could result.”

Following Brown and Warner (1985) and as illustrated earlier for day t the cross sectional average abnormal return (AAR) of N securities was calculated as:

$$\bar{A}_t = \frac{1}{N_t} \sum_{i=1}^{N_t} A_{it}$$

The day zero t-statistics were calculated as described in Brown and Warner (1985) as:

$$t \text{ statistic} = \bar{A}_0 / S(\bar{A})$$

Where the standard deviation $S(\bar{A})$ was calculated over a 199 day estimation period as:

$$S(\bar{A}) = \sqrt{\frac{1}{199} \sum_{t=-219}^{-21} \bar{A}_t^2}$$

The paired t-test applied the same methodology as described above but to the difference between the AARs of the samples being tested.

4.7.2 Standardised T - test

The standardised t-test was calculated as described by Brown and Warner (1985). Carrado (1989) refers to the Brown and Warner (1985) test statistic stating, “The excess return A_{it} is divided by the estimated standard deviation to calculate a standardized excess return.”

$$A_{it} = A_{it}/S(A_i)$$

Where the standard deviation $S(A_i)$ is given by:

$$S(A_i) = \sqrt{\frac{1}{198} \sum_{t=-219}^{-21} A_{it}^2}$$

The standardised t-statistic was calculated as:

$$\text{Standardised t-statistic} = \frac{1}{\sqrt{N}} \sum_{i=1}^N A_{it}$$

4.7.3 Rank test

Applying the rank statistic as specified in Corrado and Zivney (1992) adjusting for the event period, a third test on the abnormal return data was performed.

Corrado and Zivney (1992) let K_{it} denote the rank of the abnormal returns A_{it} in security i 's 320-day time series of excess returns:

$$K_{it} = \text{rank}(A_{it}) \quad t = -219, \dots, +100.$$

The ranks were then standardised by dividing by one plus the number of non-missing returns in each firm's abnormal returns time series.

$$U_{it} = K_{it}/(1+M_i); \text{ and}$$

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

M_i = number of non-missing returns for security i .

As specified by Corrado and Zivney (1992) “This yields order statistics for the uniform distribution with an expected value of one-half. The rank test statistic substitutes $(U_{it} - \frac{1}{2})$ for the excess return $A_{it}...$ ”

The rank statistic was calculated as:

$$\text{Rank Statistic} = \frac{1}{\sqrt{N}} \sum_{i=1}^N (U_{i0} - \frac{1}{2}) / S(U)$$

Where the standard deviation $S(U)$ was calculated as:

$$S(U) = \sqrt{\frac{1}{320} \sum_{t=-219}^{+100} \frac{1}{\sqrt{N}} \sum_{i=1}^{N_t} (U_{it} - \frac{1}{2})^2}$$

N_t = number of nonmissing returns for N firms on event day t .

4.7.4 Sign test

The sign statistic was also computed as in Corrado and Zivney (1992).

$$G_{it} = \text{sign} (A_{it} - \text{median} (A_{it})) \quad t = -219, \dots, +100$$

Where $\text{sign} (x)$ was equal to +1, -1, or 0, as x is positive, negative or zero.

The sign statistic for day 0 was calculated as:

$$\text{Sign statistic} = \frac{1}{\sqrt{N}} \sum_{i=1}^N \frac{G_{i0}}{S(G)}$$

Where the standard deviation $S(G)$ was calculated as:

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

$$S(G) = \sqrt{\frac{1}{320} \sum_{t=-219}^{t=+100} \left(\frac{1}{N_t} \sum_{i=1}^{N_t} G_{it} \right)^2}$$

N_t = number of non-missing returns for N firms on event day t.

4.8 Statistical Tests of Cumulative Average Abnormal Returns (CAARs) Data

Two testing methodologies were used to test the CAARs data namely the t-test and boot-strap test. The two tests were run for comparison purposes and also as to reduce the likelihood of type-one and type-two errors.

4.8.1 T-test

The same methodology applied to the AARs described in section 4.7.1 was applied to the CAAR data. The only difference being that in calculating the standard deviation, the full 320 event period was used.

$$S(CAAR) = \sqrt{\frac{1}{318} \sum_{t=-219}^{t=+100} CAAR^2_t}$$

The day zero t-statistics were calculated as described in Brown and Warner (1985) and applied to the CAARs as:

$$t \text{ statistic} = CAAR_0 / S(CAAR)$$

4.8.2 Boot-strap test

MacKinnon (2006) describes the boot-strap methodology as follows, “Bootstrap methods involve estimating a model many times using simulated data. Quantities computed from the simulated data are then used to make inferences from the actual data.”

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

In the article by MacKinnon (2006) 'Bootstrap Methods in Econometrics', the process for applying the boot-strap methodology in hypothesis testing is described. It is state that "If we knew the cumulative distribution function (CDF) of τ under the null hypothesis, $F(\tau)$, we would reject the null hypothesis whenever τ is abnormal in some sense" (MacKinnon, 2006). The value calculated is then tested against an α value to determine if the results can be regarded as statistically significant or abnormal.

For this research, resampling was performed 250 times for each of the CAARs at ten day intervals starting from event window [-20,-10] and ending with event window [-20,+100]. The actual CAARs for the sample of companies that concluded M&A transactions were then tested against the distribution of CAARs calculated using the boot-strap method. The aim was to test whether the CAARs calculated from the sample of M&A transactions were abnormal in some sense. P-values were then reported for each event window for both the MAEW and CP methods.

4.9 Research Limitations

The research was conducted on large capitalisation companies that are listed on the Johannesburg securities exchange (JSE) and form part of the all share index (ALSI). As a result the research was limited by the constraints placed on the sample drawn. The research did not attempt to explain the affect of the method of payment on thinly traded companies or on private companies where information asymmetry was greater.

Large market capitalisation firms typically buy out smaller market capitalisation firms. Since this sample was drawn from the ALSI where the companies listed are large capitalisation firms, the samples of acquirer companies were larger than the samples of the target companies. The target share sample included only ten securities in the sample. The study was also limited to the period of ten years being from January 2002 to December 2011 with samples of M&A transactions drawn from this period. While a number of tests were employed to derive consistent results for the various testing methodologies, the results and conclusions were limited by the power of the statistical tests. While every effort was made to ensure that the statistical techniques used were robust and the testing rigorous, there are limitations to the statistical testing methodologies.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Any event study is limited by the degree to which the expected returns can be well substantiated and accurately predicted. While an analysis into the calculation of event study expected returns is a research topic in itself, this research recognises that the accuracy of the results is dependent on the ability to accurately calculate expected returns.

This research used data of M&A transactions for companies listed in the 'Mergermarket' database and is therefore subject to the accuracy and completeness of the 'Mergermarket' database.

Only the method of payment in M&A transactions was considered in this study. Other factors which may have influenced the returns to share prices post the announcement of M&A transactions were not considered. Examples of factors that would have affected the results are the industries of the companies or the financial performance of the companies involved in the M&A transactions. Although this research tried to isolate the effect of the method of payment as a market signal by eliminating confounding events, it is not possible to eliminate all factors including market effects in isolating the method of payment as a market signal in M&A transactions. Therefore it is recognised that not all confounding events were eliminated in conducting the event study.

Chapter 5 – REPORTING

5.1 Reporting Results

In this chapter the results of the various tests are reported for the two pricing models as stated in Chapter 4, section 4.1.1 and section 4.1.2. The two pricing models used to calculate abnormal returns are the market-adjusted equal-weighted (MAEW) model with the results reported in section 5.3 as well as the multi factor control-portfolio (CP) model reported in section 5.4. Each section looks at the abnormal returns (ARs), average abnormal returns (AARs) as well as the cumulative average abnormal returns (CAARs) for each of the two pricing models. Although ARs and AARs were not the focus of this study, CAARs are constructed from ARs and in turn AARs. In the interest of ensuring that the study is thorough and in understanding the behaviour of CAARs this study tests the ARs and AARs for both the MAEW model and the CP model for a 41 day event window surrounding the event date. CAARs are then reported on for both the MAEW model and the CP model. Reporting is shown for each of the three hypotheses that were tested.

5.2 Description of Sample

The sample was drawn from the 'Mergermarket' database of all merger and acquisition (M&A) transactions that took place over the period 1 January 2002 to 31 December 2011, that exceeded a deal value of \$5 million. The selection criteria used to draw the sample are described in chapter 4, section 4.4. The summary of the samples drawn are shown in table 5-1. Details of the sample of M&A transactions used in this research are contained in table 8-1 (Acquirers), table 8-2 (Acquirers Cash), table 8-3 (Acquirers Shares), table 8-4 (Targets), table 8-5 (Targets Cash) and table 8-6 (Targets Shares).

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 5-1: Sample summary

Sample sizes	Value
Acquirers	130
Acquirers cash	105
Acquirers shares	25
Targets	39
Target cash	29
Target shares	10

5.3 Market-Adjusted Equal-Weighted (MAEW) Model

Section 5.3 reports the results calculated using the MAEW model for each of the three hypotheses being tested as described in chapter 3. Section 5.3.1 reports the results of the ARs and AARs for a 41-day event window being 20 days pre the event date, the event date itself and 20 days post the event date. To ensure robustness of the tests results using four leading test statistics as described in chapter 4, section 4.7 are reported. Section 5.3.2 reports the results of CAARs as described in chapter 4, section 4.8. The test-statistic results are reported as the area to the right of the test statistics for each of the statistical tests.

5.3.1 Abnormal Returns (ARs) and Average Abnormal Returns (AARs) MAEW model

In order to ensure that the testing of the data is robust, the results for ARs and AARs (calculated using the MAEW model) are reported using the four leading event study testing methodologies described by Carrado and Zivney (1992), namely the t-test, standardised t-test, rank test and sign test. The t-test, tests AARs while the standardised t-test, rank test and sign test apply testing to ARs.

5.3.1.1 Target versus Acquirer Abnormal Returns

Section 5.3.1.1 tests the target and acquirer company ARs and AARs (calculated using the MAEW method) for twenty days before the event date, the event date itself and twenty days post the event date. Table 5-2 reports the results of the four leading event study statistical tests for target and acquirer companies. Figure 5-1 reports AARs for

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

target companies and acquirer companies over the 41-day event window. Figure 5-2 applies a paired t-test to the target and acquirer AARs and tests the difference in AARs between target and acquirer returns surrounding the event date.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 5-2: MAEW Target and Acquirer results using the t-test, standardised t-test, rank test and sign test

Target Market Adjusted Equal Weighted Abnormal Returns					Acquirer Market Adjusted Equal Weighted Abnormal Returns				
AREA TO THE RIGHT					AREA TO THE RIGHT				
Day	t-test	Stand-t-test	Rank test	Sign test	Day	t-test	Stand-t-test	Rank test	Sign test
t-20	0.310	0.172	0.451	0.564	t-20	0.665	0.530	0.457	0.135
t-19	0.622	0.650	0.492	0.315	t-19	0.644	0.625	0.497	0.437
t-18	0.275	0.406	0.444	0.436	t-18	0.029**	0.046**	0.346	0.318
t-17	0.652	0.745	0.686	0.869	t-17	0.607	0.756	0.547	0.682
t-16	0.292	0.543	0.532	0.564	t-16	0.274	0.534	0.533	0.785
t-15	0.341	0.314	0.419	0.211	t-15	0.000***	0.001***	0.203	0.005***
t-14	0.782	0.530	0.613	0.789	t-14	0.459	0.436	0.478	0.172
t-13	0.970	0.997	0.597	0.315	t-13	0.935	0.971	0.646	0.828
t-12	0.128	0.455	0.528	0.685	t-12	0.260	0.159	0.447	0.376
t-11	0.814	0.874	0.684	0.961	t-11	0.301	0.166	0.412	0.318
t-10	0.434	0.400	0.494	0.564	t-10	0.951	0.942	0.733	0.828
t-9	0.439	0.351	0.439	0.211	t-9	0.762	0.688	0.631	0.865
t-8	0.880	0.887	0.774	0.981	t-8	0.301	0.337	0.483	0.500
t-7	0.226	0.295	0.333	0.131	t-7	0.797	0.912	0.665	0.682
t-6	0.154	0.060*	0.273	0.211	t-6	0.574	0.500	0.492	0.500
t-5	0.554	0.495	0.560	0.869	t-5	0.294	0.526	0.517	0.922
t-4	0.401	0.479	0.482	0.211	t-4	0.003***	0.001***	0.201	0.005***
t-3	0.468	0.473	0.477	0.564	t-3	0.466	0.310	0.471	0.624
t-2	0.209	0.076*	0.360	0.685	t-2	0.560	0.464	0.520	0.264
t-1	0.747	0.516	0.540	0.685	t-1	0.665	0.705	0.601	0.896
t+0	0.000***	0.000***	0.131	0.074*	t+0	0.064*	0.135	0.377	0.215
t+1	0.089*	0.059*	0.227	0.038**	t+1	0.165	0.311	0.495	0.736
t+2	0.095*	0.251	0.412	0.211	t+2	0.298	0.273	0.460	0.215
t+3	0.332	0.322	0.551	0.436	t+3	0.127	0.223	0.354	0.020**
t+4	0.287	0.370	0.429	0.211	t+4	0.001***	0.004***	0.273	0.376
t+5	0.799	0.741	0.707	0.789	t+5	0.425	0.330	0.535	0.828
t+6	0.278	0.247	0.433	0.564	t+6	0.495	0.403	0.434	0.172
t+7	0.598	0.474	0.498	0.436	t+7	0.238	0.244	0.418	0.318
t+8	0.550	0.338	0.412	0.315	t+8	0.150	0.070*	0.321	0.104
t+9	0.502	0.750	0.569	0.789	t+9	0.924	0.917	0.665	0.682
t+10	0.830	0.829	0.713	0.981	t+10	0.519	0.420	0.486	0.563
t+11	0.791	0.748	0.652	0.789	t+11	0.277	0.253	0.424	0.264
t+12	0.851	0.943	0.657	0.961	t+12	0.901	0.829	0.576	0.563
t+13	0.768	0.692	0.683	0.961	t+13	0.753	0.812	0.617	0.865
t+14	0.783	0.817	0.653	0.869	t+14	0.011**	0.013**	0.254	0.041**
t+15	0.758	0.931	0.706	0.685	t+15	0.986	0.987	0.737	0.828
t+16	0.575	0.621	0.551	0.564	t+16	0.522	0.284	0.458	0.215
t+17	0.754	0.482	0.532	0.789	t+17	0.290	0.187	0.412	0.264
t+18	0.727	0.706	0.578	0.926	t+18	0.428	0.253	0.411	0.264
t+19	0.698	0.727	0.584	0.789	t+19	0.431	0.445	0.540	0.785
t+20	0.259	0.339	0.445	0.436	t+20	0.552	0.627	0.540	0.682

Note: Significance at the 10%, 5% and 1% levels is indicated by *, **, and *, respectively. Reported as the area to the right of the test statistics.**

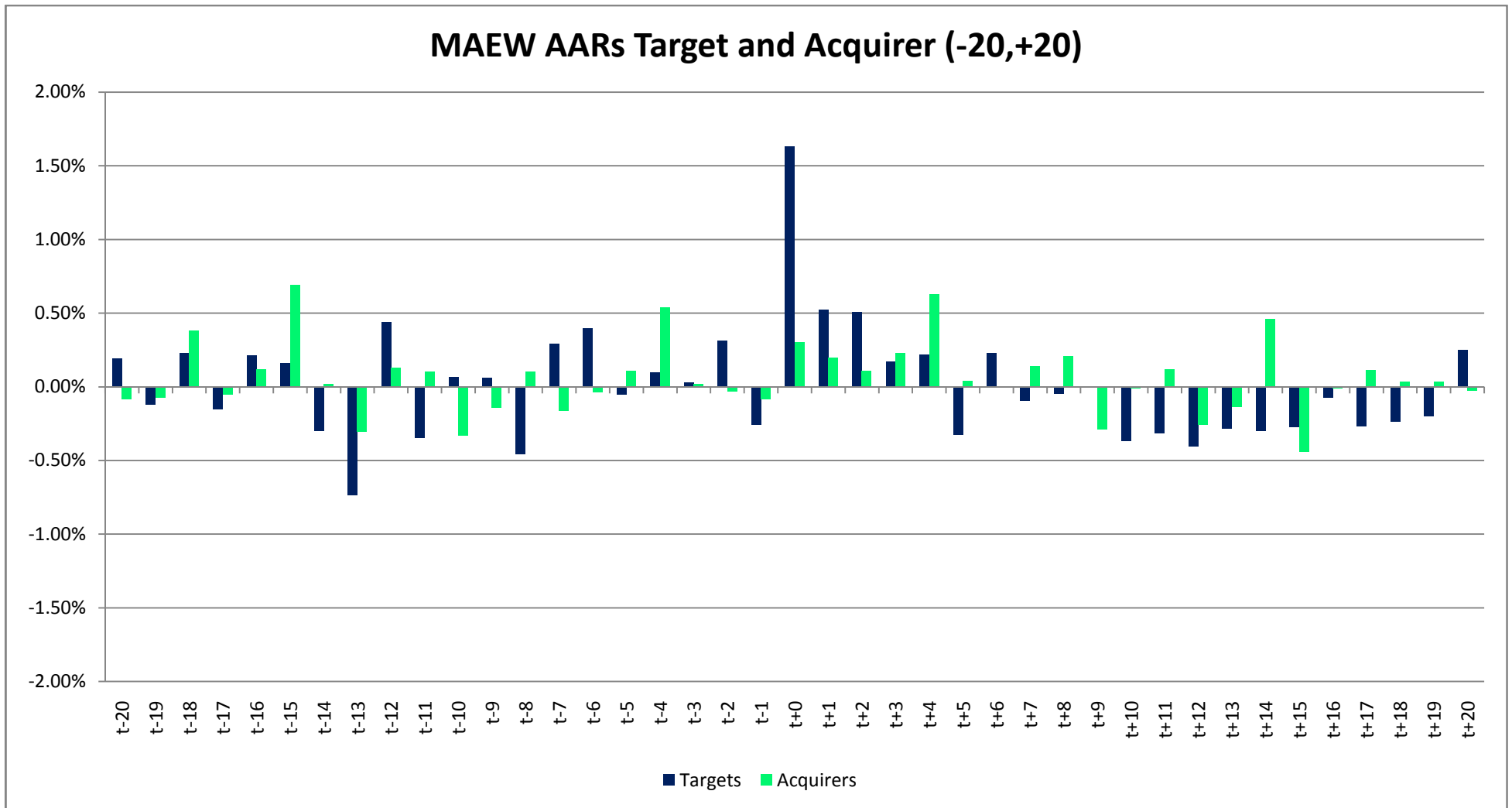


Figure 5-1: MAEW AARs, Target and Acquirer, event window (-20, 20)

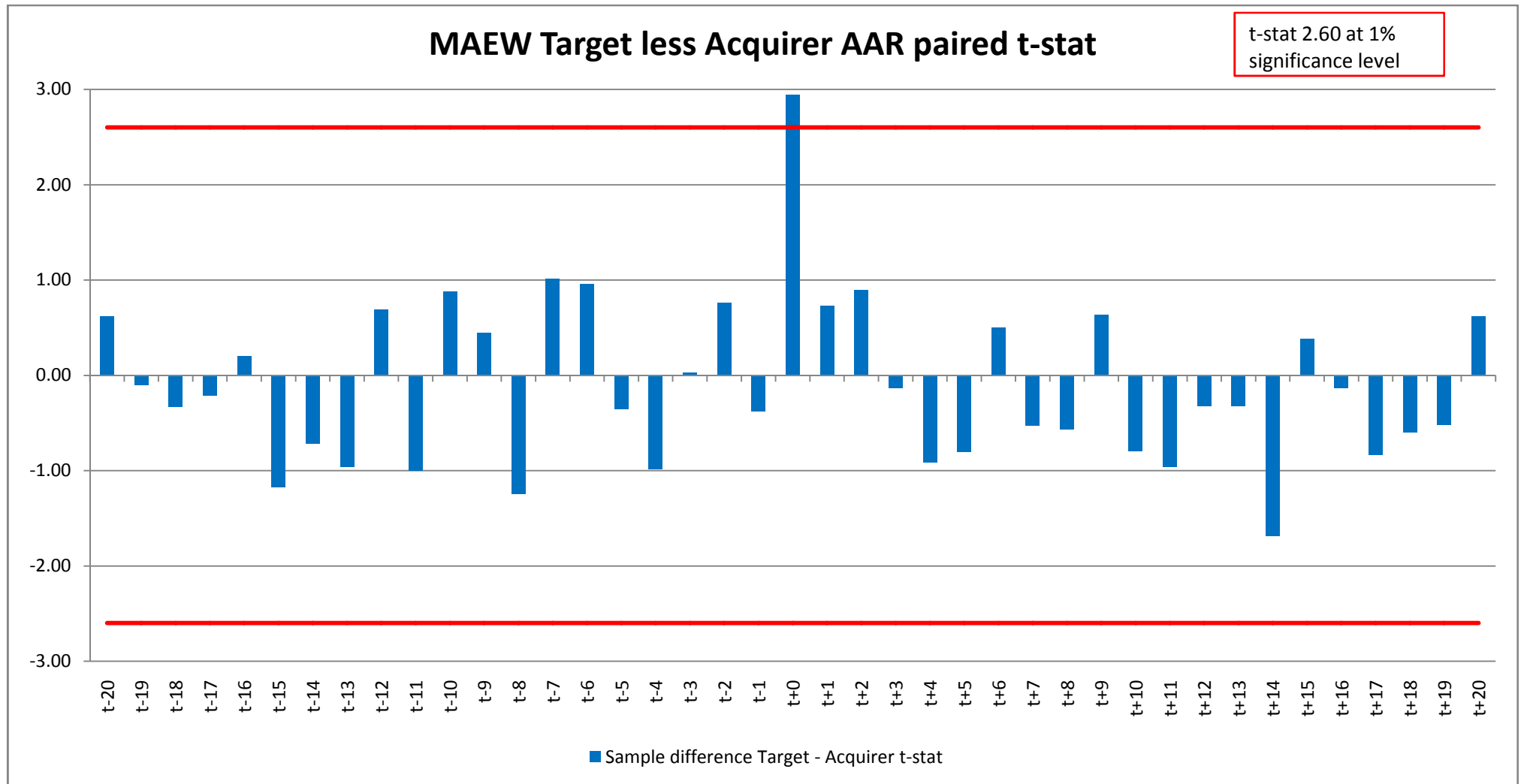


Figure 5-2: MAEW AARs paired t test, Target less Acquirer, event window (-20, 20)

5.3.1.2 Acquirer Cash versus Acquirer Shares Abnormal Returns

Section 5.3.1.2 tests the acquirer cash and acquirer share company ARs and AARs (calculated using the MAEW method) for twenty days before the event date, the event date itself and twenty days post the event date. Table 5-3 reports the results of the four leading event study statistical tests for acquirer cash and acquirer shares companies. Figure 5-3 reports the AARs of acquirer cash companies and acquirer shares companies over the 41 day event window. Figure 5-4 applies a paired t-test to the acquirer cash and acquirer share AARs and tests the difference in AARs between acquirer cash and acquirer share returns surrounding the event date.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 5-3: MAEW Acquirer Cash and Acquirer Shares results using the t-test, standardised t-test, rank test and sign test

Acquirer Cash Market Adjusted Equal Weighted Abnormal Returns					Acquirer Shares Market Adjusted Equal Weighted Abnormal Returns				
AREA TO THE RIGHT					AREA TO THE RIGHT				
Day	t-test	Stand-t-test	Rank test	Sign test	Day	t-test	Stand-t-test	Rank test	Sign test
t-20	0.414	0.262	0.377	0.060*	t-20	0.888	0.929	0.708	0.711
t-19	0.544	0.520	0.475	0.262	t-19	0.706	0.733	0.564	0.823
t-18	0.106	0.131	0.354	0.262	t-18	0.052*	0.060*	0.395	0.573
t-17	0.692	0.819	0.585	0.794	t-17	0.373	0.387	0.414	0.289
t-16	0.253	0.463	0.469	0.536	t-16	0.480	0.650	0.696	0.952
t-15	0.001***	0.003***	0.208	0.004***	t-15	0.046**	0.077*	0.316	0.289
t-14	0.548	0.479	0.508	0.206	t-14	0.340	0.399	0.402	0.289
t-13	0.964	0.977	0.670	0.842	t-13	0.460	0.593	0.502	0.573
t-12	0.631	0.466	0.548	0.676	t-12	0.033**	0.018**	0.208	0.047**
t-11	0.185	0.128	0.389	0.324	t-11	0.695	0.546	0.523	0.427
t-10	0.806	0.766	0.628	0.608	t-10	0.963	0.982	0.882	0.952
t-9	0.757	0.601	0.585	0.738	t-9	0.587	0.722	0.699	0.903
t-8	0.435	0.508	0.519	0.536	t-8	0.226	0.160	0.388	0.427
t-7	0.609	0.794	0.584	0.392	t-7	0.879	0.919	0.802	0.952
t-6	0.751	0.603	0.522	0.608	t-6	0.212	0.297	0.410	0.289
t-5	0.522	0.713	0.557	0.914	t-5	0.122	0.158	0.393	0.711
t-4	0.009***	0.002***	0.231	0.004***	t-4	0.104	0.088*	0.233	0.289
t-3	0.712	0.572	0.539	0.794	t-3	0.129	0.068*	0.294	0.177
t-2	0.470	0.429	0.534	0.262	t-2	0.666	0.564	0.468	0.427
t-1	0.484	0.553	0.521	0.608	t-1	0.820	0.831	0.767	0.992
t+0	0.004***	0.025**	0.320	0.158	t+0	0.942	0.935	0.615	0.573
t+1	0.164	0.279	0.484	0.842	t+1	0.402	0.530	0.530	0.289
t+2	0.194	0.169	0.412	0.206	t+2	0.668	0.722	0.619	0.427
t+3	0.248	0.308	0.375	0.041**	t+3	0.136	0.237	0.361	0.097*
t+4	0.003***	0.014**	0.313	0.464	t+4	0.065*	0.060*	0.257	0.289
t+5	0.287	0.212	0.489	0.738	t+5	0.724	0.739	0.649	0.823
t+6	0.417	0.365	0.396	0.085*	t+6	0.632	0.560	0.580	0.711
t+7	0.310	0.282	0.448	0.536	t+7	0.288	0.345	0.372	0.097*
t+8	0.089*	0.032**	0.253	0.017**	t+8	0.602	0.666	0.636	0.903
t+9	0.975	0.965	0.732	0.914	t+9	0.295	0.281	0.363	0.047**
t+10	0.372	0.313	0.465	0.536	t+10	0.744	0.705	0.555	0.573
t+11	0.208	0.199	0.425	0.324	t+11	0.589	0.585	0.455	0.289
t+12	0.510	0.398	0.439	0.324	t+12	0.993	0.996	0.867	0.903
t+13	0.728	0.786	0.615	0.882	t+13	0.623	0.654	0.568	0.573
t+14	0.238	0.171	0.369	0.118	t+14	0.000***	0.000***	0.096*	0.047**
t+15	0.967	0.977	0.728	0.882	t+15	0.889	0.845	0.658	0.427
t+16	0.467	0.219	0.433	0.158	t+16	0.600	0.613	0.553	0.573
t+17	0.505	0.358	0.503	0.536	t+17	0.132	0.101	0.214	0.047**
t+18	0.706	0.512	0.498	0.464	t+18	0.099*	0.058*	0.223	0.097*
t+19	0.381	0.390	0.514	0.738	t+19	0.571	0.601	0.595	0.711
t+20	0.399	0.525	0.493	0.464	t+20	0.757	0.730	0.653	0.903

Note: Significance at the 10%, 5% and 1% levels is indicated by *, **, and ***, respectively. Reported as the area to the right of the test statistics.

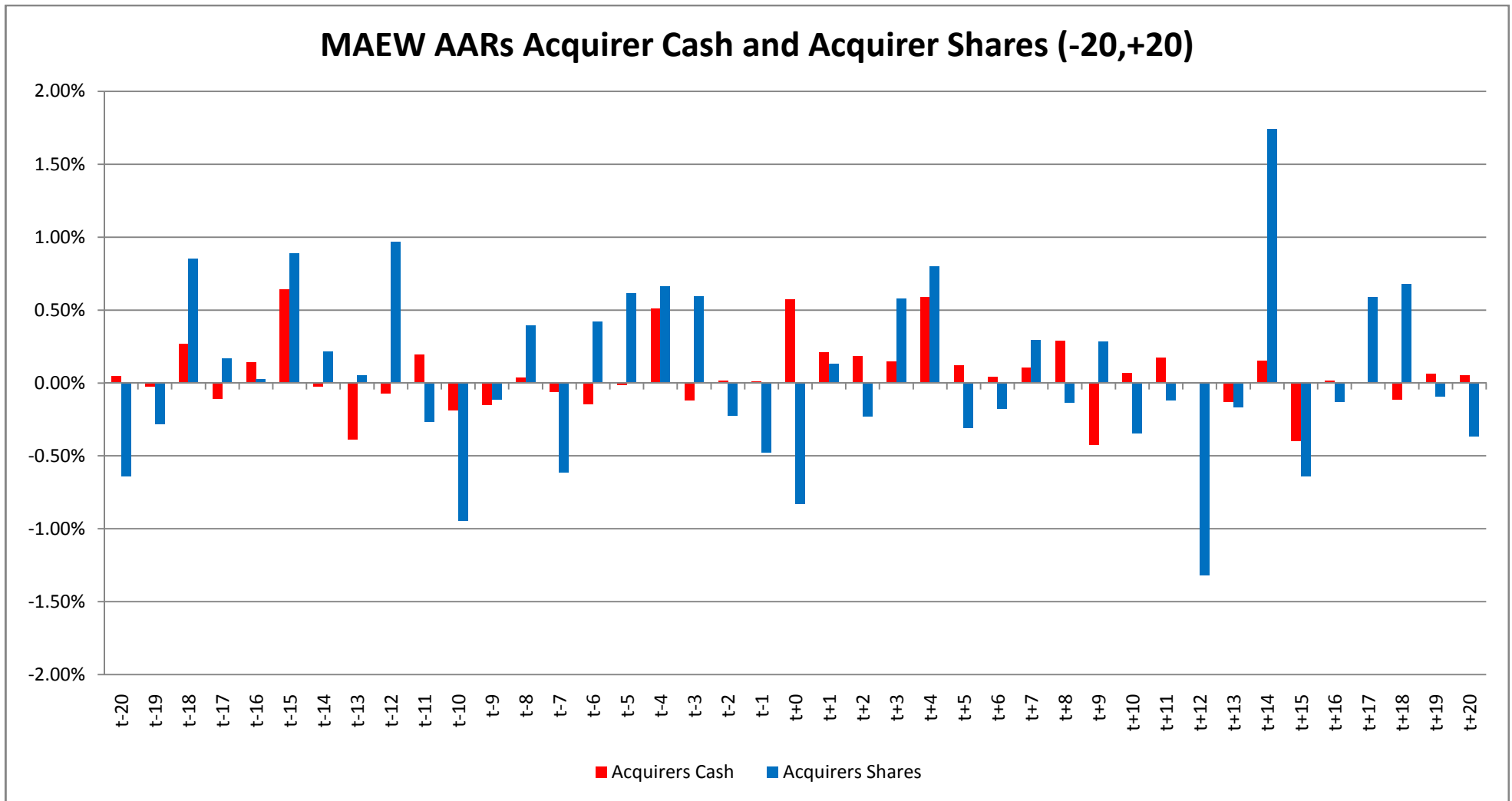


Figure 5-3: MAEW AARs, Acquirer Cash and Acquirer Shares, event window (-20, 20)

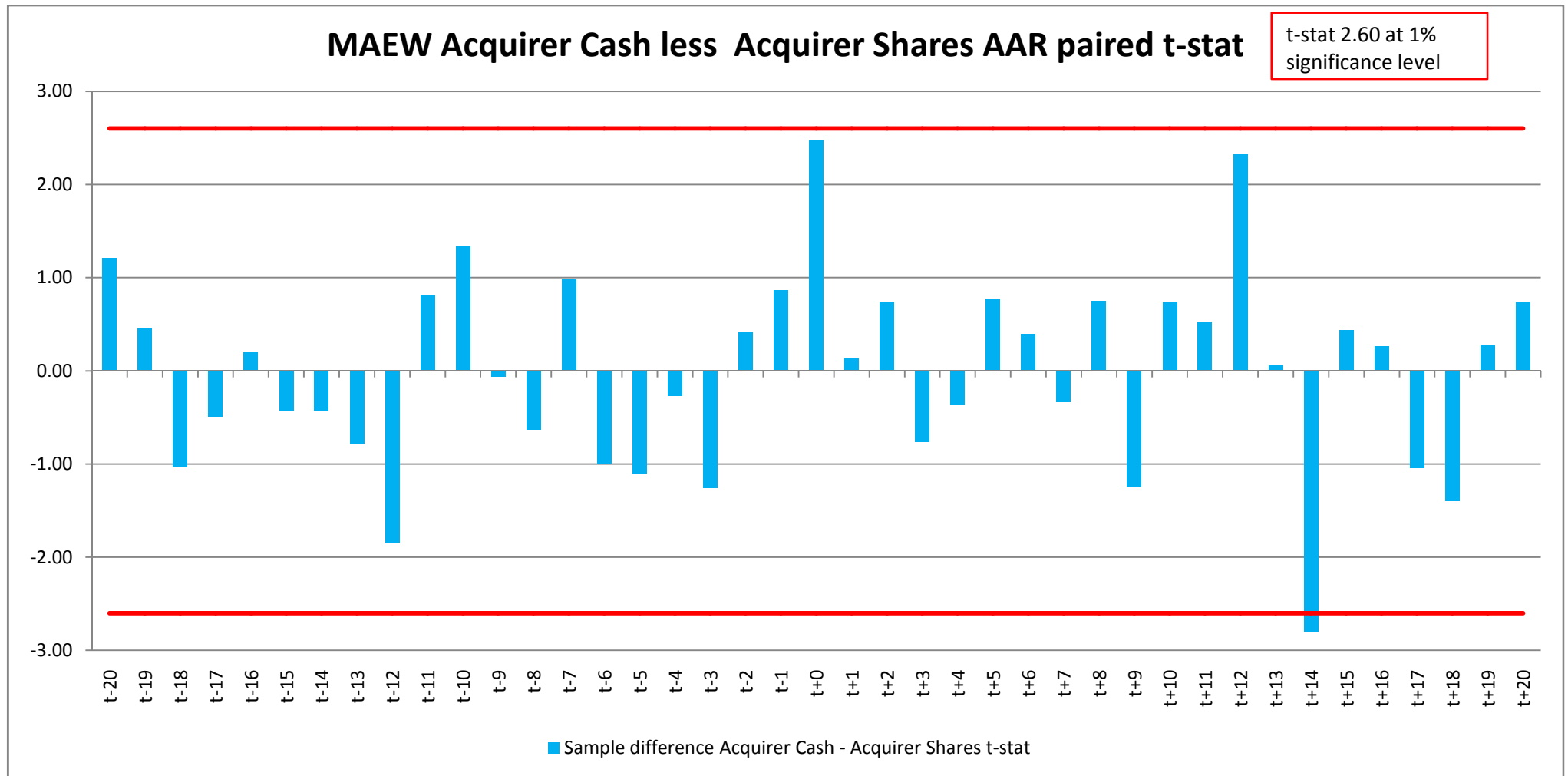


Figure 5-4: MAEW AARs paired t-test, Acquirer Cash less Acquirer Shares, event window (-20, 20)

5.3.1.3 Target Cash versus Target Shares Abnormal Returns

Section 5.3.1.3 tests the target cash and target share company ARs and AARs (calculated using the MAEW method) for twenty days before the event date, the event date itself and twenty days post the event date. Table 5-4 shows the results of the four leading event study statistical tests for target cash and target shares companies. Figure 5-5 reports the AARs of target cash companies and target shares companies over the 41-day event window. Figure 5-6 applies a paired t-test to the target cash and target shares AARs and tests the difference in AARs between target cash and target shares company returns surrounding the event date.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 5-4: MAEW Target Cash and Target Shares results using the t-test, standardised t-test, rank test and sign test

Target Cash Market Adjusted Equal Weighted Abnormal Returns					Target Shares Market Adjusted Equal Weighted Abnormal Returns				
AREA TO THE RIGHT					AREA TO THE RIGHT				
Day	t-test	Stand-t-test	Rank test	Sign test	Day	t-test	Stand-t-test	Rank test	Sign test
t-20	0.276	0.213	0.437	0.572	t-20	0.512	0.303	0.503	0.500
t-19	0.674	0.681	0.510	0.572	t-19	0.442	0.483	0.456	0.092*
t-18	0.348	0.390	0.394	0.183	t-18	0.314	0.503	0.583	0.908
t-17	0.514	0.617	0.601	0.706	t-17	0.747	0.786	0.780	0.908
t-16	0.430	0.655	0.598	0.572	t-16	0.231	0.320	0.370	0.500
t-15	0.357	0.224	0.381	0.183	t-15	0.432	0.631	0.543	0.500
t-14	0.586	0.301	0.469	0.428	t-14	0.863	0.849	0.835	0.977
t-13	0.891	0.993	0.493	0.294	t-13	0.939	0.902	0.764	0.500
t-12	0.220	0.489	0.546	0.706	t-12	0.192	0.431	0.477	0.500
t-11	0.643	0.797	0.636	0.897	t-11	0.856	0.804	0.711	0.908
t-10	0.373	0.264	0.447	0.572	t-10	0.581	0.717	0.600	0.500
t-9	0.276	0.294	0.410	0.183	t-9	0.747	0.566	0.532	0.500
t-8	0.871	0.880	0.788	0.976	t-8	0.646	0.653	0.622	0.746
t-7	0.198	0.287	0.284	0.103	t-7	0.485	0.457	0.528	0.500
t-6	0.271	0.091*	0.270	0.183	t-6	0.180	0.211	0.376	0.500
t-5	0.756	0.719	0.631	0.817	t-5	0.198	0.157	0.372	0.746
t-4	0.542	0.542	0.547	0.294	t-4	0.264	0.388	0.349	0.254
t-3	0.582	0.509	0.501	0.572	t-3	0.316	0.432	0.436	0.500
t-2	0.145	0.048**	0.307	0.572	t-2	0.575	0.498	0.550	0.746
t-1	0.704	0.462	0.496	0.572	t-1	0.647	0.594	0.619	0.746
t+0	0.000***	0.000***	0.148	0.103	t+0	0.114	0.034**	0.214	0.254
t+1	0.065*	0.053*	0.170	0.023**	t+1	0.470	0.370	0.518	0.500
t+2	0.091*	0.269	0.383	0.183	t+2	0.383	0.391	0.518	0.500
t+3	0.326	0.332	0.585	0.572	t+3	0.466	0.432	0.453	0.254
t+4	0.282	0.295	0.376	0.183	t+4	0.452	0.604	0.581	0.500
t+5	0.924	0.884	0.742	0.706	t+5	0.229	0.221	0.526	0.746
t+6	0.548	0.553	0.541	0.572	t+6	0.102	0.058*	0.242	0.500
t+7	0.541	0.490	0.459	0.294	t+7	0.616	0.466	0.583	0.746
t+8	0.539	0.337	0.414	0.428	t+8	0.530	0.457	0.446	0.254
t+9	0.619	0.859	0.669	0.897	t+9	0.318	0.306	0.312	0.254
t+10	0.908	0.925	0.748	0.976	t+10	0.359	0.279	0.529	0.746
t+11	0.859	0.831	0.723	0.897	t+11	0.412	0.376	0.409	0.254
t+12	0.871	0.956	0.661	0.948	t+12	0.548	0.587	0.578	0.746
t+13	0.828	0.757	0.747	0.991	t+13	0.439	0.422	0.436	0.254
t+14	0.842	0.901	0.709	0.897	t+14	0.440	0.340	0.449	0.500
t+15	0.484	0.762	0.544	0.428	t+15	0.912	0.957	0.896	0.908
t+16	0.641	0.600	0.546	0.572	t+16	0.411	0.570	0.541	0.500
t+17	0.765	0.513	0.568	0.817	t+17	0.548	0.441	0.438	0.500
t+18	0.677	0.631	0.517	0.706	t+18	0.651	0.692	0.674	0.977
t+19	0.418	0.399	0.409	0.428	t+19	0.900	0.947	0.865	0.977
t+20	0.266	0.330	0.398	0.428	t+20	0.419	0.472	0.576	0.500

Note: Significance at the 10%, 5% and 1% levels is indicated by *, **, and ***, respectively. Reported as the area to the right of the test statistics.

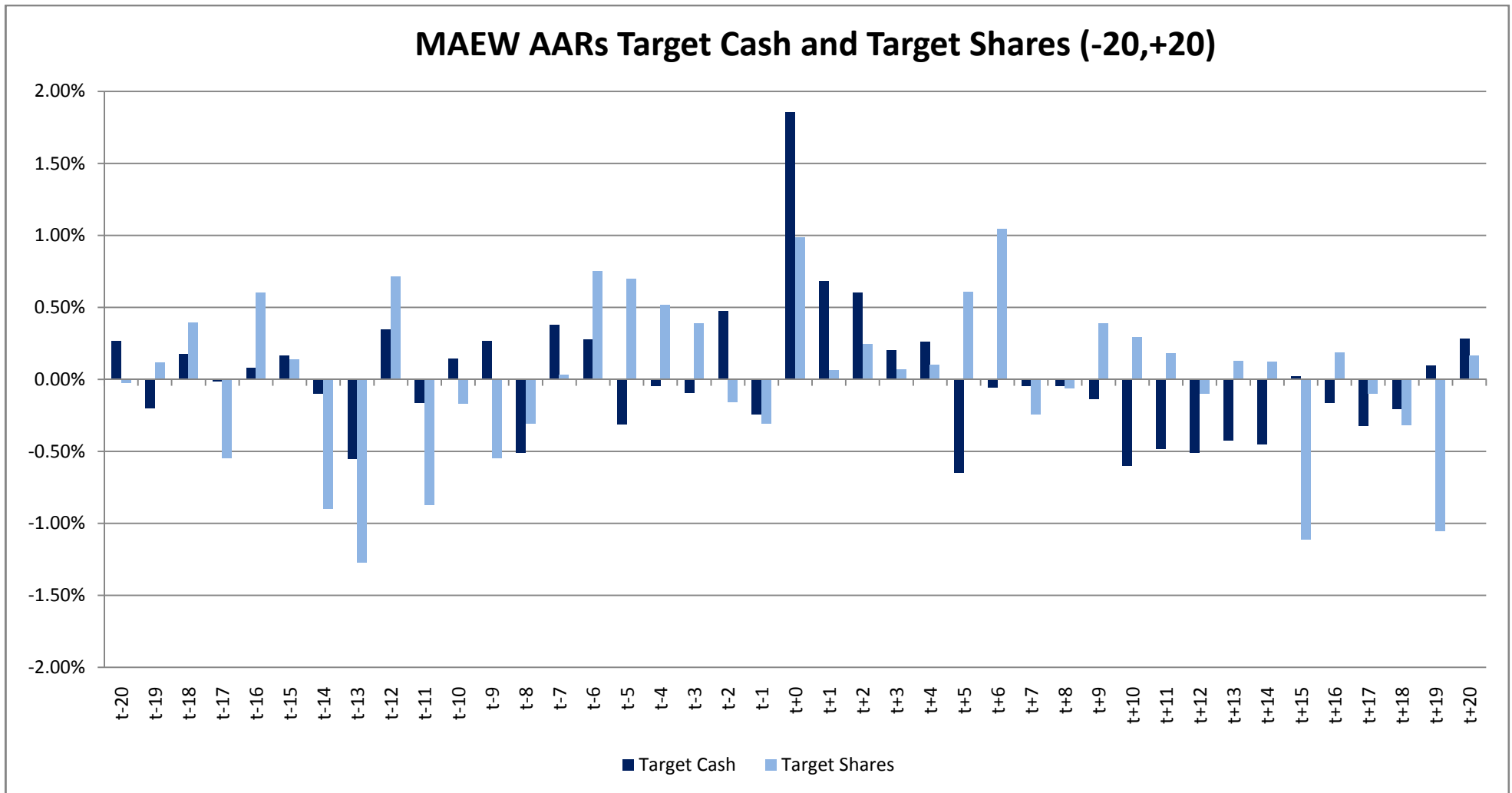


Figure 5-5: MAEW AARs, Target Cash and Target Shares, event window (-20, 20)

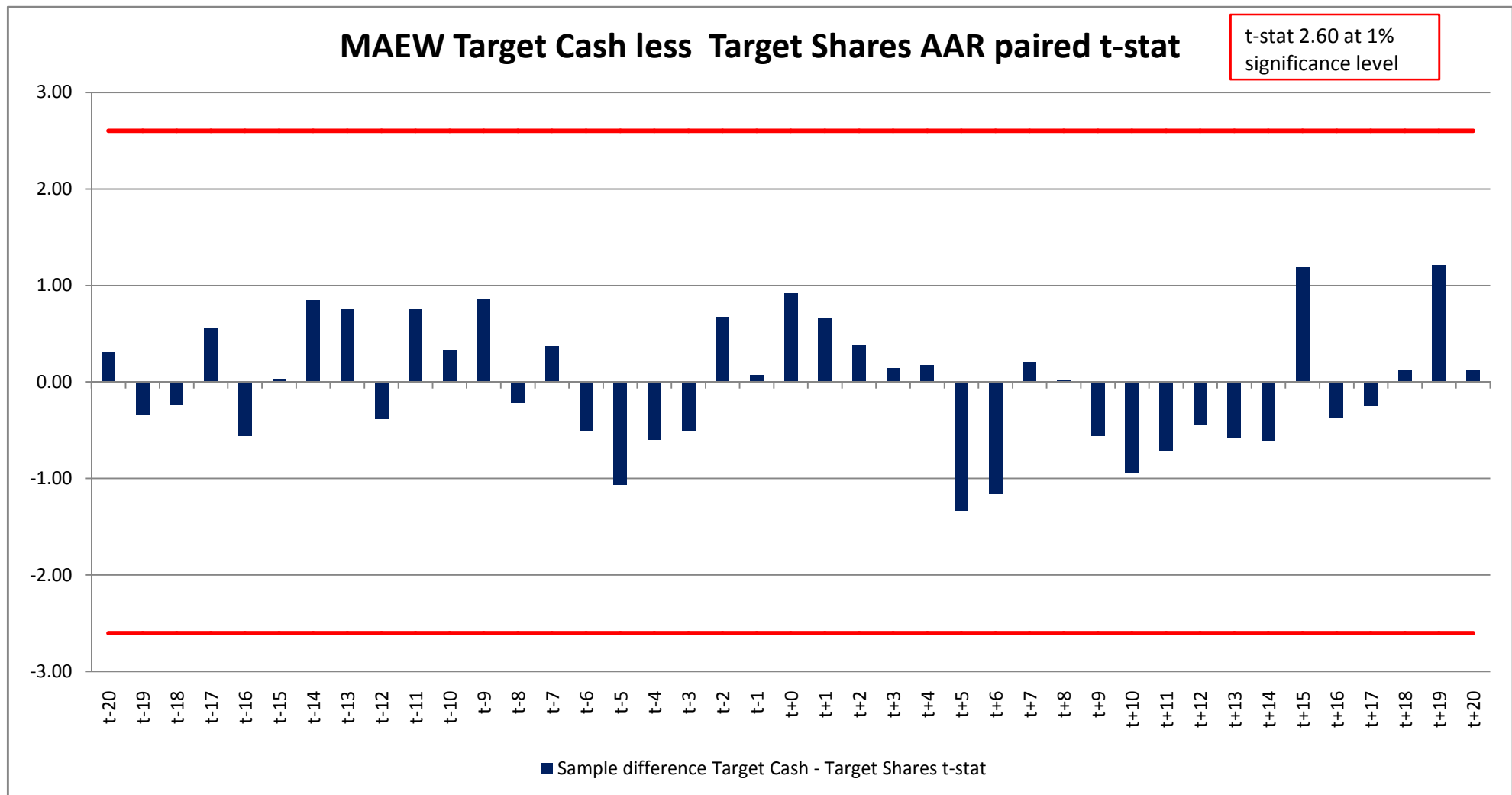


Figure 5-6: MAEW AARs paired t-test, Target Cash less Target Shares, event window (-20, 20)

5.3.2 Cumulative Average Abnormal Returns (CAARs) MAEW model

Section 5.3.2 tests the CAARs (calculated using the MAEW method) using the t-test as well as the boot-strap test. The boot-strap test is regarded as being extremely robust and does not assume a normal distribution of returns. Due to the nature of the testing and in the interest of time constraints, the boot-strap test is reported at 10-day intervals starting from t-20 to t-10 and ending on t-20 to t+100. For consistency the t-test is reported at the same 10-day time intervals so that the results of the t-test and boot-strap test over the interval can be compared. This will also enable isolation of the affect of the method of payment as a signal to the market in merger and acquisition transactions.

5.3.2.1 Target versus Acquirer Cumulative Average Abnormal Returns (CAARs)

Section 5.3.2.1 tests target and acquirer company CAARs at 10-day intervals starting from t-20 to t-10 and ending on t-20 to t+100. Table 5-5 reports the results using the t-test and boot-strap test for target companies over the 121-day event window. Table 5-6 reports the results using the t-test and boot-strap test for acquirer companies over the 121-day event window. Figure 5-7 reports the CAARs of target companies and acquirer companies over the 121-day event window as well as the difference between target company CAARs and acquirer company CAARs over the event window.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 5-5: MAEW Target CAAR results using t-test and boot-strap test

Event Window	CAAR	t-stat	AREA TO THE RIGHT	AREA TO THE RIGHT
			t-test	Boot-strap
[-20,-10]	99.64%	-0.22	58.60%	63.60%
[-20,+00]	101.69%	1.01	15.67%	13.60%
[-20,+10]	102.50%	1.50	6.81%	7.20%
[-20,+20]	100.37%	0.22	41.30%	45.20%
[-20,+30]	100.46%	0.28	39.05%	46.40%
[-20,+40]	100.09%	0.06	47.80%	52.00%
[-20,+50]	100.09%	0.06	47.78%	51.60%
[-20,+60]	100.07%	0.04	48.27%	50.40%
[-20,+70]	99.70%	-0.18	57.19%	63.60%
[-20,+80]	100.51%	0.31	37.96%	49.60%
[-20,+90]	99.80%	-0.12	54.81%	54.80%
[-20,+100]	101.73%	1.04	15.07%	37.20%

Note: One sample t-test and boot-strap test, area to the right of the test statistic

Table 5-6: MAEW Acquirer CAAR results using t-test and boot-strap test

Event Window	CAAR	t-stat	AREA TO THE RIGHT	AREA TO THE RIGHT
			t-test	Boot-strap
[-20,-10]	100.59%	0.66	25.43%	22.00%
[-20,+00]	101.21%	1.35	8.97%	14.40%
[-20,+10]	102.48%	2.77	0.33%	3.60%
[-20,+20]	102.36%	2.64	0.49%	9.20%
[-20,+30]	101.95%	2.18	1.57%	13.20%
[-20,+40]	101.47%	1.69	4.68%	24.40%
[-20,+50]	101.30%	1.46	7.41%	38.80%
[-20,+60]	101.57%	1.76	4.07%	40.80%
[-20,+70]	102.06%	2.31	1.15%	32.40%
[-20,+80]	101.67%	1.87	3.23%	47.60%
[-20,+90]	101.46%	1.63	5.28%	51.60%
[-20,+100]	101.73%	1.93	2.82%	46.00%

Note: One sample t-test and boot-strap test, area to the right of the test statistic

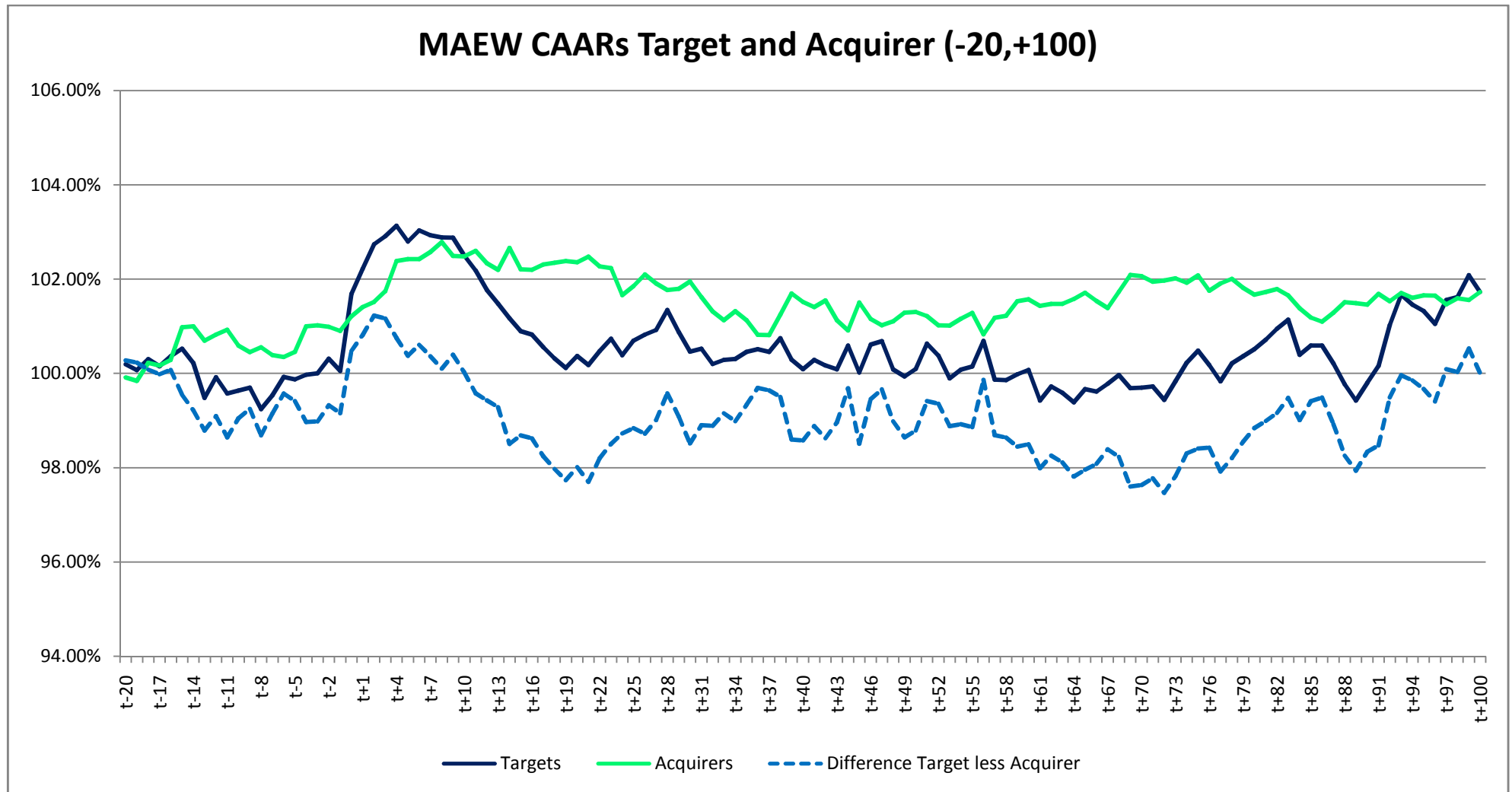


Figure 5-7: MAEW CAARs, Target and Acquirer, event window (-20, +100)

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

5.3.2.2 Acquirer Cash versus Acquirer Shares Cumulative Average Abnormal Returns (CAARs)

Section 5.3.2.2 tests the acquirer cash and acquirer shares company CAARs at 10-day intervals starting from t-20 to t-10 and ending on t-20 to t+100. Table 5-7 reports the results using the t-test and boot-strap test for acquirer cash companies over the 121-day event window. Table 5-8 reports the results using the t-test and boot-strap test for acquirer shares companies over the 121-day event window. Figure 5-8 reports the CAARs for acquirer cash companies and acquirer shares companies over the 121-day event window as well as the difference between acquirer cash company CAARs and acquirer shares company CAARs over the event window.

Table 5-7: MAEW Acquirer Cash CAAR results using t-test and boot-strap test

Event Window	CAAR	t-stat	AREA TO THE RIGHT	AREA TO THE RIGHT
			t-test	Boot-strap
[-20,-10]	100.49%	0.60	27.53%	27.60%
[-20,+00]	101.15%	1.41	8.09%	17.20%
[-20,+10]	102.51%	3.08	0.13%	3.60%
[-20,+20]	102.31%	2.84	0.27%	9.20%
[-20,+30]	101.75%	2.15	1.68%	29.20%
[-20,+40]	101.62%	1.99	2.45%	33.20%
[-20,+50]	101.38%	1.70	4.62%	45.60%
[-20,+60]	101.84%	2.26	1.29%	35.60%
[-20,+70]	103.01%	3.69	0.02%	25.20%
[-20,+80]	102.71%	3.33	0.06%	28.00%
[-20,+90]	102.43%	2.98	0.18%	37.60%
[-20,+100]	102.96%	3.63	0.02%	32.00%

Note: One sample t-test and boot-strap test, area to the right of the test statistic

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 5-8: MAEW Acquirer Shares CAAR results using t-test and boot-strap test

Event Window	CAAR	t-stat	AREA TO THE RIGHT	AREA TO THE RIGHT
			t-test	Boot-strap
[-20,-10]	101.02%	0.38	35.05%	22.40%
[-20,+00]	101.43%	0.54	29.54%	22.40%
[-20,+10]	102.33%	0.88	19.17%	20.80%
[-20,+20]	102.47%	0.93	17.78%	20.40%
[-20,+30]	102.72%	1.02	15.47%	20.00%
[-20,+40]	100.97%	0.37	35.74%	40.80%
[-20,+50]	100.88%	0.33	37.09%	38.00%
[-20,+60]	100.36%	0.14	44.62%	42.80%
[-20,+70]	98.10%	-0.72	76.22%	64.40%
[-20,+80]	97.29%	-1.02	84.44%	73.20%
[-20,+90]	97.37%	-0.99	83.76%	74.00%
[-20,+100]	96.59%	-1.28	89.86%	74.80%

Note: One sample t-test and boot-strap test, area to the right of the test statistic

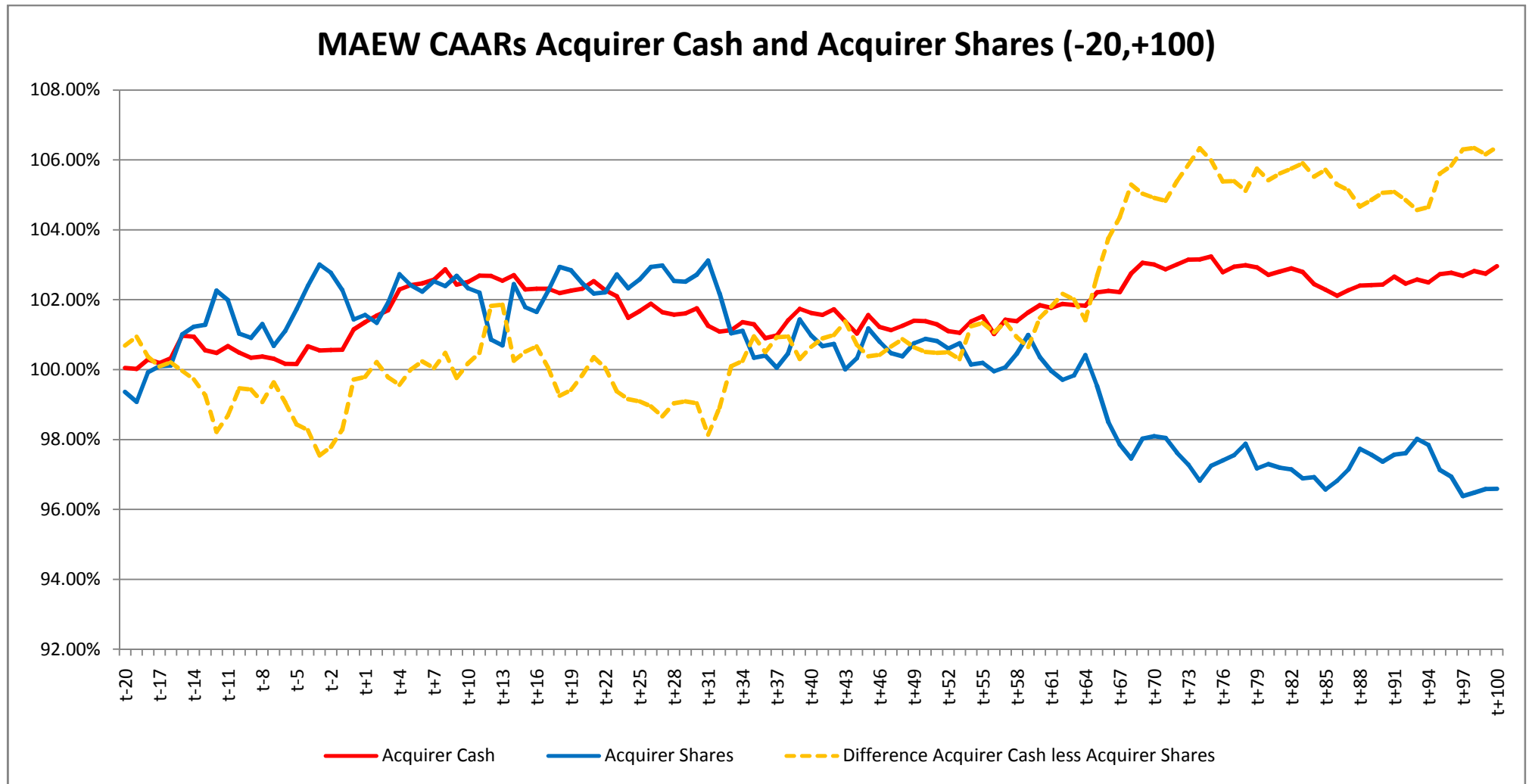


Figure 5-8: MAEW CAARs, Acquirer Cash and Acquirer Shares, event window (-20, +100)

5.3.2.3 Target Cash versus Target Shares Cumulative Average Abnormal Returns (CAARs)

Section 5.3.2.3 tests target cash and target shares company CAARs at 10-day intervals starting from t-20 to t-10 and ending on t-20 to t+100. Table 5-9 reports the results using the t-test and boot-strap test for target cash companies over the 121-day event window. Table 5-10 reports the results using the t-test and boot-strap test for target shares companies over the 121-day event window. Figure 5-9 reports the CAARs for target cash companies and target shares companies over the 121-day event window as well as the difference between target cash company CAARs and target shares company CAARs over the event window.

Table 5-9: MAEW Target Cash CAAR results using t-test and boot-strap test

Event Window	CAAR	t-stat	AREA TO THE RIGHT	AREA TO THE RIGHT
			t-test	Boot-strap
[-20,-10]	100.14%	0.12	45.37%	45.60%
[-20,+00]	102.19%	1.83	3.49%	8.40%
[-20,+10]	102.40%	2.01	2.36%	7.60%
[-20,+20]	100.20%	0.17	43.41%	39.60%
[-20,+30]	100.21%	0.18	42.93%	41.60%
[-20,+40]	99.75%	-0.21	58.23%	49.20%
[-20,+50]	100.22%	0.19	42.62%	38.40%
[-20,+60]	100.00%	0.00	50.12%	39.60%
[-20,+70]	98.92%	-0.91	81.65%	58.00%
[-20,+80]	98.84%	-0.97	83.33%	57.60%
[-20,+90]	98.28%	-1.44	92.35%	64.00%
[-20,+100]	99.87%	-0.11	54.30%	43.60%

Note: One sample t-test and boot-strap test, area to the right of the test statistic

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 5-10: MAEW Target Shares CAAR results using t-test and boot-strap test

Event Window	CAAR	t-stat	AREA TO THE RIGHT	AREA TO THE RIGHT
			t-test	Boot-strap
[-20,-10]	98.18%	-0.41	65.92%	88.00%
[-20,+00]	100.21%	0.05	48.09%	57.60%
[-20,+10]	102.74%	0.62	26.78%	34.00%
[-20,+20]	100.80%	0.18	42.83%	59.20%
[-20,+30]	101.10%	0.25	40.21%	56.40%
[-20,+40]	100.96%	0.22	41.44%	58.80%
[-20,+50]	99.57%	-0.10	53.89%	70.40%
[-20,+60]	100.14%	0.03	48.77%	76.00%
[-20,+70]	101.82%	0.41	34.01%	67.20%
[-20,+80]	105.31%	1.20	11.56%	49.60%
[-20,+90]	104.12%	0.93	17.61%	55.20%
[-20,+100]	107.08%	1.61	5.58%	41.60%

Note: One sample t-test and boot-strap test, area to the right of the test statistic

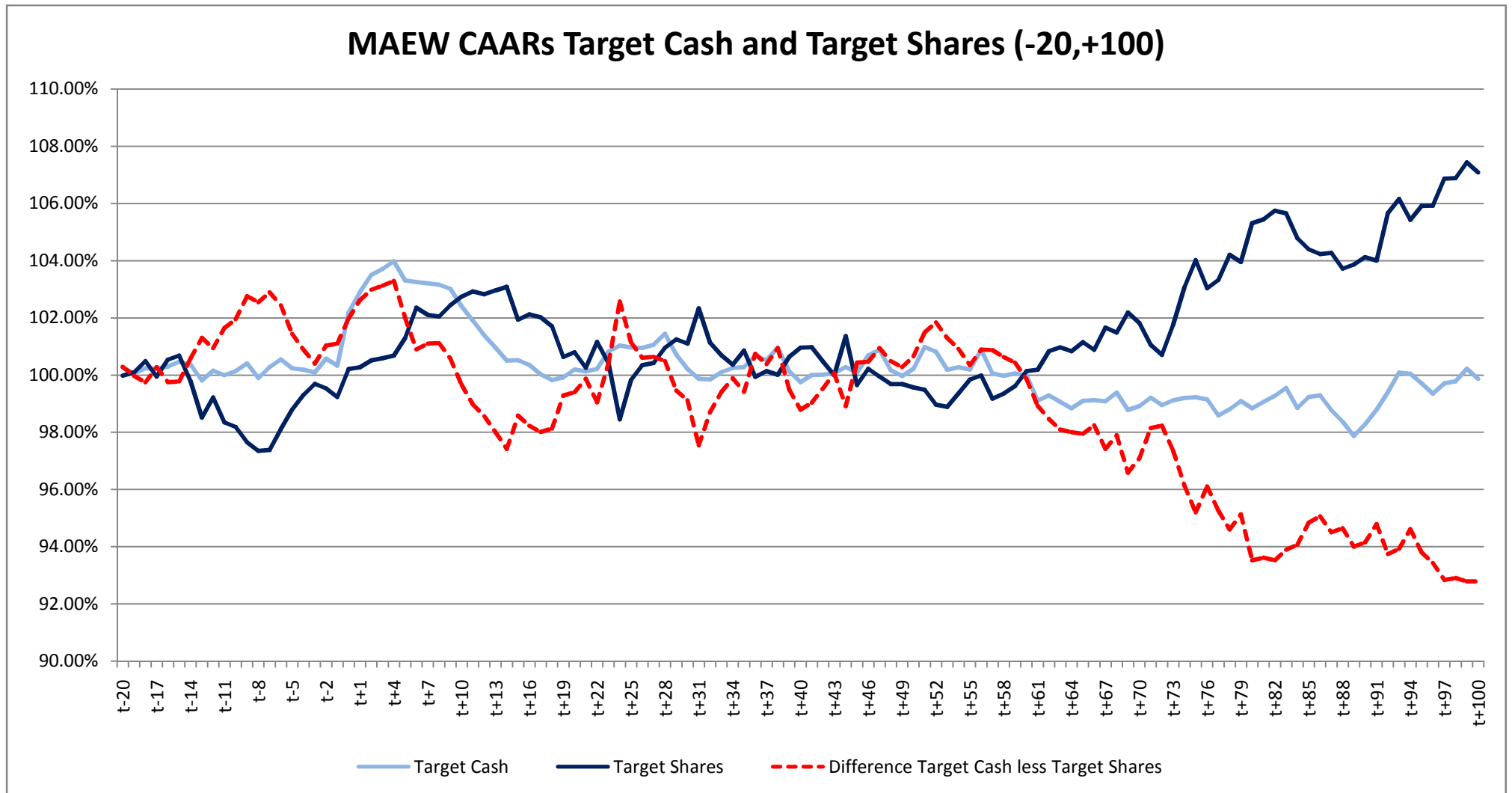


Figure 5-9: MAEW CAARs, Target Cash and Target Shares, event window (-20, +100)

5.4 Control-Portfolio (CP) Model

Section 5.4 reports the results calculated using the CP model for each of the three hypotheses being tested as described in chapter 3. Section 5.4.1 reports the results for ARs and AARs for a 41-day event window being 20 days pre the event date, the event date itself and 20 days post the event date. To ensure robustness of the tests the results are reported using four leading test statistics as described in chapter 4, section 4.7. Section 5.4.2 reports the results for CAARs as described in chapter 4, section 4.8. The test statistic results are reported as the area to the right of the test statistics for each of the statistical tests.

5.4.1 Abnormal Returns (ARs) and Average Abnormal Returns (AARs) CP model

In order to ensure that the testing of the data is robust, the results for ARs and AARs (calculated using the CP model) using the four leading event study testing methodologies described by Carrado and Zivney (1992), namely the t-test, standardised t-test, rank test and sign test. The t-test tests AARs while the standardised t-test, rank test and sign test apply testing to ARs.

5.4.1.1 Target versus Acquirer Abnormal Returns

Section 5.4.1.1 tests the target and acquirer company ARs and AARs (calculated using the CP method) for twenty days before the event date, the event date itself and twenty days post the event date. Table 5-11 reports the results for the four leading event study statistical tests for target and acquirer companies. Figure 5-10 reports AARs of target companies and acquirer companies over the 41-day event window. Figure 5-11 applies a paired t-test to target and acquirer AARs and tests the difference in AARs between target and acquirer returns surrounding the event date.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 5-11: CP Target and Acquirer results using the t-test, standardised t-test, rank test and sign test

Target Control Portfolio Abnormal Returns					Acquirer Control Portfolio Abnormal Returns				
Day	AREA TO THE RIGHT				Day	AREA TO THE RIGHT			
	t-test	Stand-t-test	Rank test	Sign test		t-test	Stand-t-test	Rank test	Sign test
t-20	0.471	0.700	0.566	0.562	t-20	0.590	0.758	0.587	0.627
t-19	0.250	0.221	0.429	0.562	t-19	0.053*	0.180	0.355	0.052*
t-18	0.340	0.481	0.422	0.438	t-18	0.516	0.593	0.446	0.259
t-17	0.328	0.258	0.398	0.218	t-17	0.035**	0.005***	0.257	0.097*
t-16	0.428	0.207	0.508	0.782	t-16	0.789	0.844	0.557	0.436
t-15	0.346	0.325	0.494	0.138	t-15	0.435	0.707	0.542	0.834
t-14	0.413	0.243	0.408	0.138	t-14	0.059*	0.166	0.344	0.209
t-13	0.807	0.645	0.603	0.562	t-13	0.866	0.564	0.564	0.834
t-12	0.772	0.927	0.530	0.320	t-12	0.201	0.378	0.409	0.072*
t-11	0.372	0.577	0.618	0.957	t-11	0.843	0.252	0.443	0.209
t-10	0.746	0.680	0.609	0.562	t-10	0.253	0.469	0.460	0.500
t-9	0.044**	0.029**	0.290	0.080*	t-9	0.367	0.268	0.411	0.209
t-8	0.474	0.382	0.506	0.680	t-8	0.684	0.785	0.643	0.791
t-7	0.637	0.730	0.643	0.920	t-7	0.137	0.394	0.538	0.564
t-6	0.465	0.583	0.454	0.562	t-6	0.558	0.499	0.469	0.259
t-5	0.338	0.286	0.368	0.218	t-5	0.413	0.597	0.516	0.791
t-4	0.553	0.615	0.590	0.562	t-4	0.832	0.658	0.644	0.871
t-3	0.340	0.388	0.514	0.438	t-3	0.070*	0.009***	0.260	0.004***
t-2	0.547	0.696	0.568	0.562	t-2	0.513	0.776	0.623	0.871
t-1	0.173	0.111	0.330	0.138	t-1	0.487	0.562	0.512	0.686
t+0	0.794	0.733	0.627	0.562	t+0	0.339	0.118	0.376	0.166
t+1	0.000***	0.000***	0.135	0.009***	t+1	0.069*	0.106	0.463	0.834
t+2	0.077*	0.098*	0.357	0.320	t+2	0.464	0.639	0.560	0.627
t+3	0.038**	0.060*	0.239	0.218	t+3	0.854	0.549	0.499	0.373
t+4	0.438	0.354	0.520	0.782	t+4	0.072*	0.187	0.398	0.166
t+5	0.250	0.260	0.346	0.080*	t+5	0.127	0.074*	0.431	0.834
t+6	0.868	0.860	0.758	0.979	t+6	0.006***	0.110	0.417	0.564
t+7	0.152	0.171	0.277	0.138	t+7	0.325	0.267	0.431	0.209
t+8	0.472	0.631	0.554	0.680	t+8	0.699	0.822	0.548	0.834
t+9	0.407	0.223	0.422	0.680	t+9	0.172	0.033**	0.368	0.373
t+10	0.676	0.711	0.623	0.862	t+10	0.528	0.596	0.515	0.209
t+11	0.685	0.657	0.604	0.782	t+11	0.422	0.163	0.409	0.902
t+12	0.806	0.803	0.716	0.862	t+12	0.312	0.100	0.381	0.097*
t+13	0.825	0.941	0.648	0.782	t+13	0.944	0.991	0.737	0.982
t+14	0.406	0.309	0.464	0.320	t+14	0.046**	0.143	0.419	0.314
t+15	0.788	0.806	0.602	0.782	t+15	0.056*	0.007***	0.349	0.436
t+16	0.219	0.614	0.464	0.320	t+16	0.805	0.816	0.531	0.564
t+17	0.703	0.795	0.643	0.782	t+17	0.529	0.473	0.515	0.686
t+18	0.736	0.478	0.561	0.680	t+18	0.436	0.098*	0.441	0.436
t+19	0.371	0.330	0.414	0.218	t+19	0.165	0.093*	0.335	0.129
t+20	0.769	0.741	0.635	0.680	t+20	0.171	0.238	0.375	0.209

Note: Significance at the 10%, 5% and 1% levels is indicated by *, **, and ***, respectively. Reported as the area to the right of the test statistics.

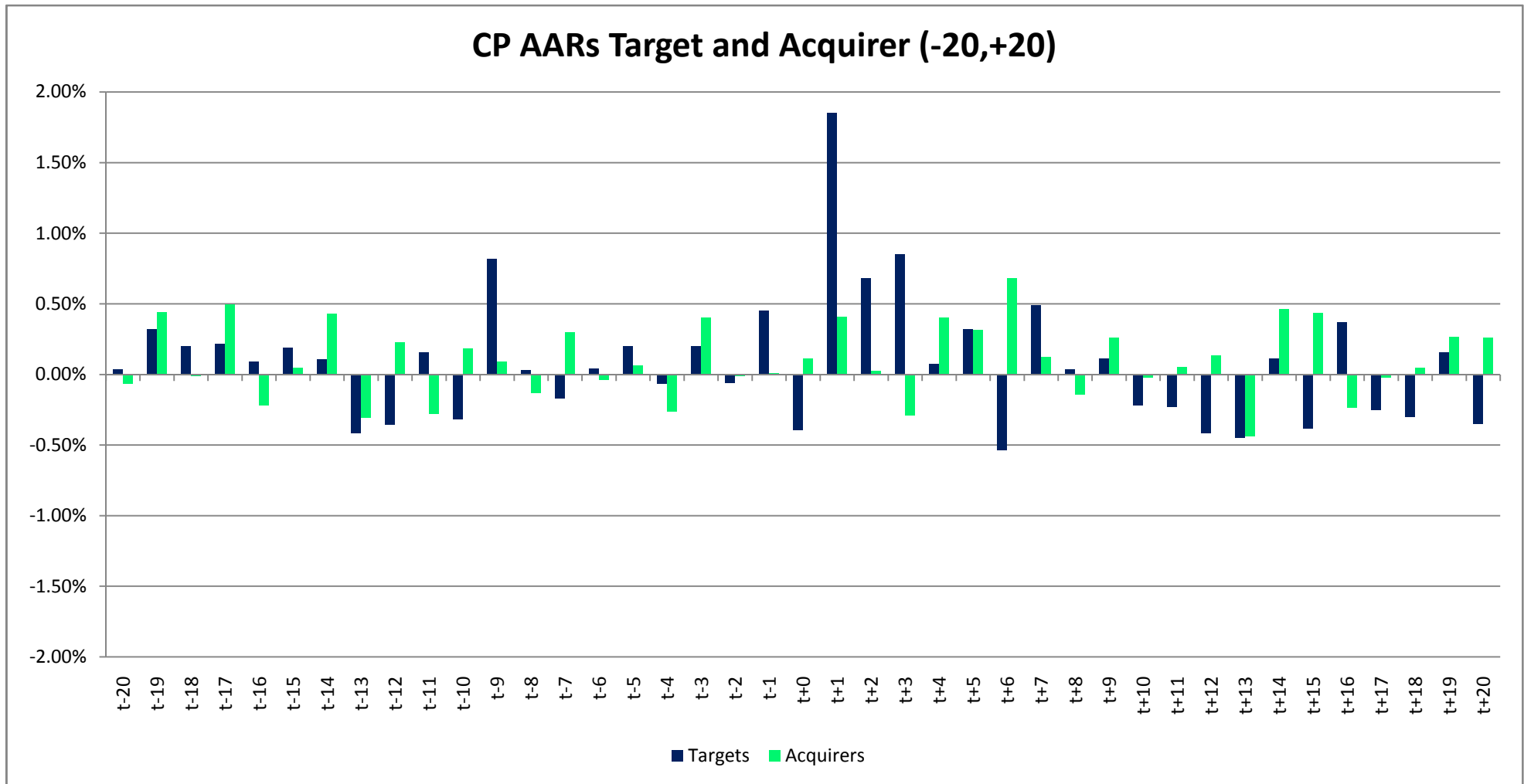


Figure 5-10: CP AARs, Target and Acquirer, event window (-20, 20)

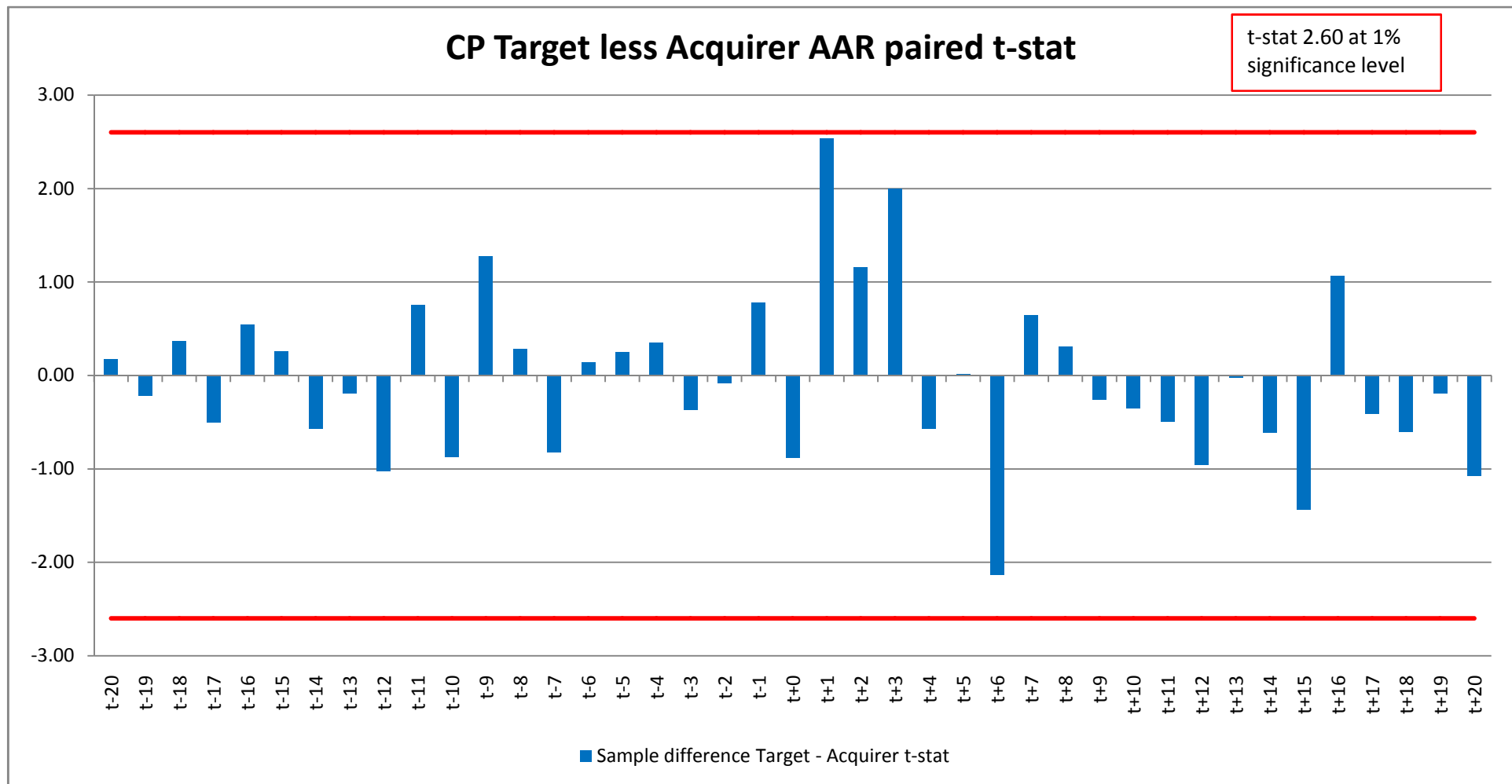


Figure 5-11: CP AARs paired t-test, Target less Acquirer, event window (-20, 20)

5.4.1.2 Acquirer Cash versus Acquirer Shares Abnormal Returns

Section 5.4.1.2 tests acquirer cash and acquirer share company ARs and AARs (calculated using the CP method) for twenty days before the event date, the event date itself and twenty days post the event date. Table 5-12 reports the results of the four leading event study statistical tests for acquirer cash and acquirer shares companies. Figure 5-12 reports AARs of acquirer cash companies and acquirer shares companies over the 41-day event window. Figure 5-13 applies a paired t-test to acquirer cash and acquirer share AARs and tests the difference in AARs between acquirer cash and acquirer share returns surrounding the event date.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 5-12: CP Acquirer Cash and Acquirer Shares results using the t-test, standardised t-test, rank test and sign test

Acquirer Cash Control Portfolio Abnormal Returns					Acquirer Shares Control Portfolio Abnormal Returns				
AREA TO THE RIGHT					AREA TO THE RIGHT				
Day	t-test	Stand-t-test	Rank test	Sign test	Day	t-test	Stand-t-test	Rank test	Sign test
t-20	0.667	0.801	0.633	0.677	t-20	0.315	0.447	0.405	0.424
t-19	0.030**	0.148	0.330	0.059*	t-19	0.674	0.524	0.504	0.282
t-18	0.435	0.440	0.419	0.205	t-18	0.699	0.800	0.553	0.576
t-17	0.090*	0.017**	0.238	0.040**	t-17	0.073*	0.058*	0.437	0.718
t-16	0.680	0.711	0.523	0.323	t-16	0.830	0.877	0.627	0.718
t-15	0.619	0.839	0.555	0.677	t-15	0.118	0.213	0.484	0.911
t-14	0.075*	0.120	0.276	0.117	t-14	0.295	0.577	0.641	0.718
t-13	0.856	0.599	0.579	0.843	t-13	0.611	0.441	0.486	0.576
t-12	0.175	0.333	0.421	0.205	t-12	0.552	0.571	0.419	0.041**
t-11	0.973	0.733	0.626	0.677	t-11	0.015**	0.002***	0.075*	0.001***
t-10	0.241	0.511	0.485	0.608	t-10	0.499	0.409	0.406	0.282
t-9	0.152	0.064*	0.288	0.040**	t-9	0.952	0.956	0.807	0.958
t-8	0.632	0.746	0.624	0.739	t-8	0.663	0.671	0.632	0.718
t-7	0.081*	0.380	0.519	0.537	t-7	0.730	0.504	0.575	0.576
t-6	0.333	0.174	0.377	0.117	t-6	0.928	0.972	0.744	0.832
t-5	0.532	0.727	0.545	0.795	t-5	0.217	0.250	0.423	0.576
t-4	0.907	0.733	0.658	0.795	t-4	0.218	0.364	0.530	0.832
t-3	0.141	0.039**	0.304	0.006***	t-3	0.112	0.039**	0.240	0.168
t-2	0.656	0.915	0.694	0.940	t-2	0.179	0.140	0.340	0.282
t-1	0.498	0.650	0.554	0.677	t-1	0.472	0.330	0.382	0.576
t+0	0.352	0.080*	0.340	0.117	t+0	0.441	0.572	0.548	0.576
t+1	0.016**	0.018**	0.371	0.537	t+1	0.926	0.927	0.742	0.983
t+2	0.375	0.539	0.538	0.608	t+2	0.713	0.729	0.595	0.576
t+3	0.774	0.440	0.457	0.392	t+3	0.820	0.723	0.621	0.424
t+4	0.251	0.438	0.444	0.261	t+4	0.015**	0.044**	0.317	0.168
t+5	0.072*	0.027**	0.405	0.739	t+5	0.738	0.739	0.543	0.832
t+6	0.003***	0.087*	0.402	0.463	t+6	0.622	0.494	0.501	0.718
t+7	0.278	0.220	0.390	0.157	t+7	0.608	0.565	0.589	0.576
t+8	0.733	0.862	0.591	0.843	t+8	0.429	0.445	0.399	0.576
t+9	0.113	0.005***	0.262	0.157	t+9	0.703	0.870	0.758	0.911
t+10	0.577	0.599	0.525	0.205	t+10	0.381	0.517	0.479	0.424
t+11	0.306	0.099*	0.363	0.739	t+11	0.773	0.656	0.596	0.958
t+12	0.257	0.057*	0.371	0.157	t+12	0.633	0.629	0.469	0.168
t+13	0.835	0.928	0.667	0.940	t+13	0.961	0.992	0.819	0.958
t+14	0.036**	0.137	0.404	0.323	t+14	0.515	0.424	0.504	0.424
t+15	0.306	0.065*	0.456	0.608	t+15	0.001***	0.005***	0.156	0.168
t+16	0.779	0.853	0.530	0.463	t+16	0.638	0.462	0.520	0.718
t+17	0.444	0.340	0.486	0.608	t+17	0.709	0.755	0.591	0.718
t+18	0.620	0.328	0.535	0.608	t+18	0.117	0.022**	0.220	0.168
t+19	0.261	0.119	0.389	0.261	t+19	0.164	0.277	0.260	0.089*
t+20	0.205	0.274	0.394	0.323	t+20	0.326	0.347	0.379	0.168

Note: Significance at the 10%, 5% and 1% levels is indicated by *, **, and ***, respectively.

Reported as the area to the right of the test statistics.

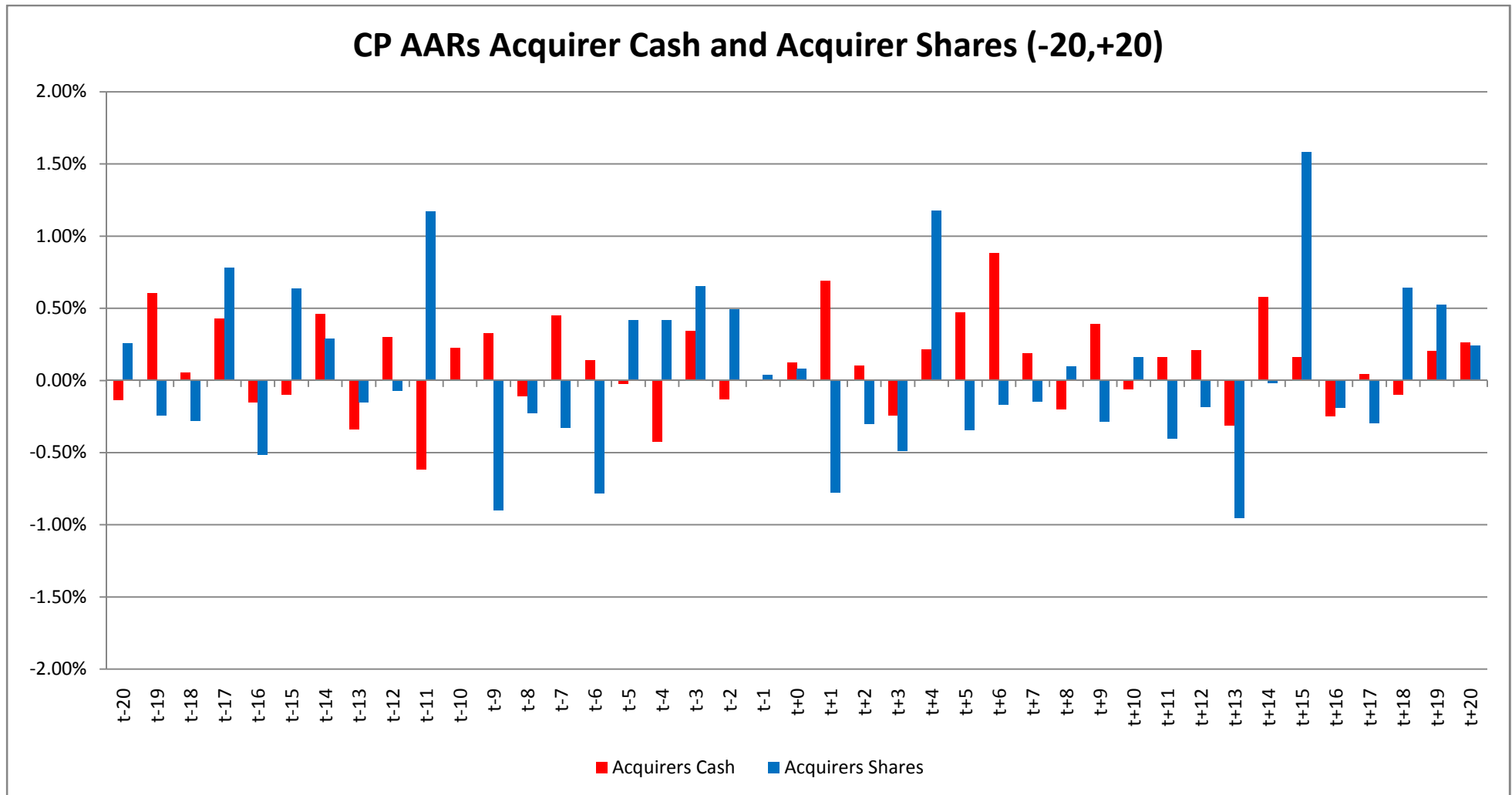


Figure 5-12: CP AARs, Acquirer Cash and Acquirer Shares, event window (-20, 20)

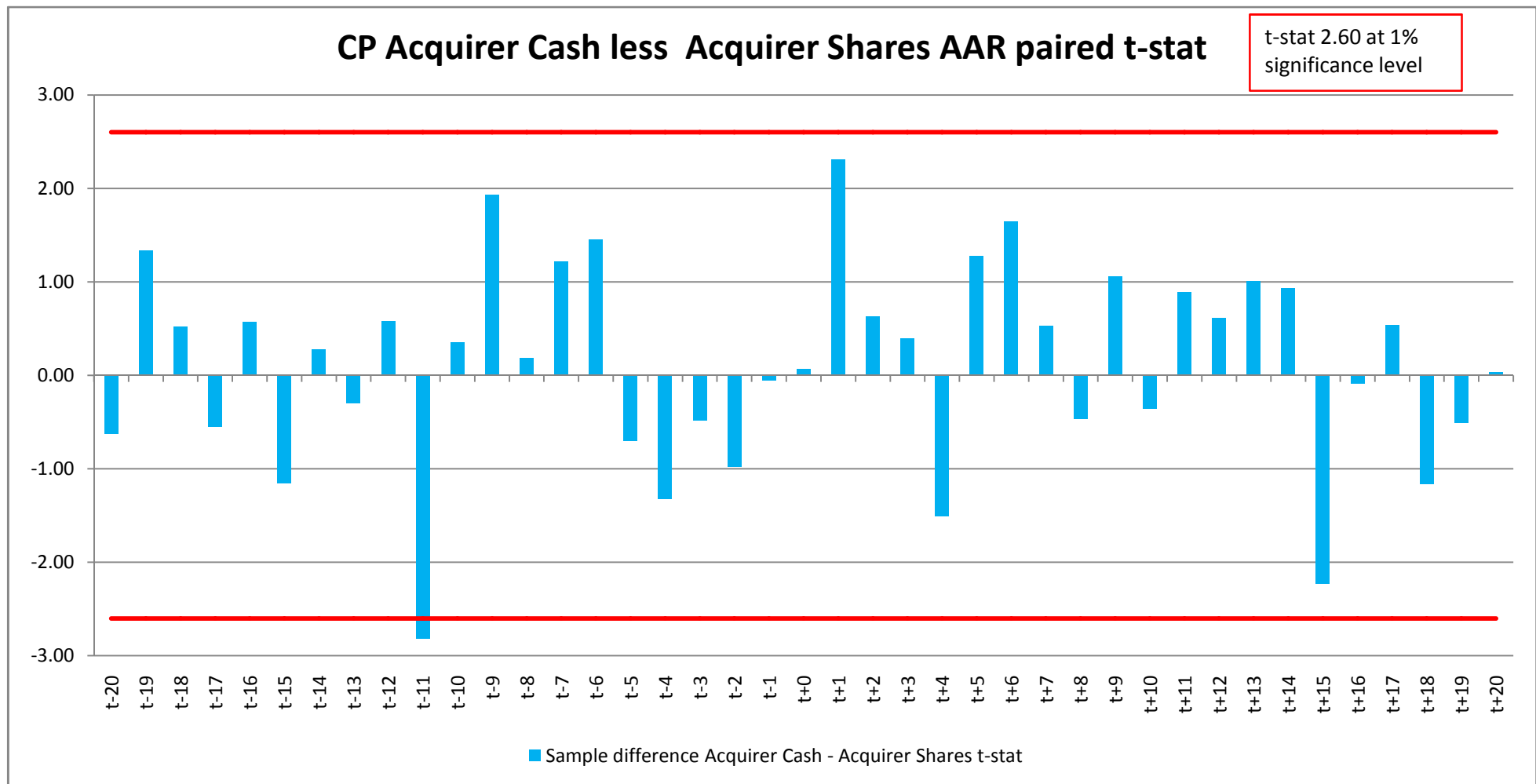


Figure 5-13: CP AARs paired t-test, Acquirer Cash less Acquirer Shares, event window (-20, 20)

5.4.1.3 Target Cash versus Target Shares Abnormal Returns

Section 5.4.1.3 tests target cash and target share company ARs and AARs (calculated using the CP method) for twenty days before the event date, the event date itself and twenty days post the event date. Table 5-13 shows the results of the four leading event study statistical tests. Figure 5-14 reports the AARs for target cash companies and target shares companies over the 41-day event window. Figure 5-15 applies the paired t-test to target cash and target shares AARs and tests the difference in AARs between target cash and target shares company returns surrounding the event date.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 5-13: CP Target Cash and Target Shares results using the t-test, standardised t-test, rank test and sign test

Target Cash Control Portfolio Abnormal Returns					Target Shares Control Portfolio Abnormal Returns				
AREA TO THE RIGHT					AREA TO THE RIGHT				
Day	t-test	Stand-t-test	Rank test	Sign test	Day	t-test	Stand-t-test	Rank test	Sign test
t-20	0.547	0.837	0.620	0.571	t-20	0.358	0.263	0.414	0.500
t-19	0.363	0.388	0.488	0.704	t-19	0.235	0.151	0.336	0.272
t-18	0.386	0.620	0.497	0.704	t-18	0.380	0.270	0.297	0.113
t-17	0.310	0.191	0.371	0.296	t-17	0.502	0.580	0.505	0.272
t-16	0.330	0.128	0.458	0.704	t-16	0.671	0.625	0.613	0.728
t-15	0.404	0.385	0.561	0.429	t-15	0.359	0.344	0.351	0.034**
t-14	0.375	0.151	0.342	0.185	t-14	0.557	0.649	0.602	0.272
t-13	0.751	0.485	0.561	0.571	t-13	0.696	0.787	0.649	0.500
t-12	0.745	0.960	0.546	0.429	t-12	0.616	0.451	0.482	0.272
t-11	0.204	0.310	0.517	0.895	t-11	0.805	0.890	0.768	0.887
t-10	0.800	0.829	0.678	0.815	t-10	0.418	0.242	0.398	0.113
t-9	0.060*	0.027**	0.265	0.053*	t-9	0.268	0.325	0.442	0.500
t-8	0.382	0.337	0.480	0.704	t-8	0.661	0.549	0.560	0.500
t-7	0.641	0.782	0.682	0.895	t-7	0.518	0.454	0.485	0.728
t-6	0.363	0.431	0.362	0.296	t-6	0.681	0.761	0.677	0.887
t-5	0.272	0.183	0.286	0.105	t-5	0.606	0.665	0.624	0.728
t-4	0.577	0.592	0.579	0.571	t-4	0.465	0.571	0.574	0.500
t-3	0.419	0.448	0.591	0.704	t-3	0.323	0.368	0.340	0.113
t-2	0.570	0.699	0.567	0.571	t-2	0.467	0.550	0.541	0.500
t-1	0.090*	0.052*	0.254	0.185	t-1	0.711	0.640	0.598	0.272
t+0	0.734	0.636	0.579	0.571	t+0	0.696	0.738	0.676	0.500
t+1	0.000***	0.000***	0.159	0.024**	t+1	0.130	0.051*	0.198	0.113
t+2	0.039**	0.041**	0.274	0.105	t+2	0.636	0.663	0.624	0.887
t+3	0.019**	0.031**	0.195	0.185	t+3	0.581	0.542	0.476	0.500
t+4	0.249	0.176	0.420	0.571	t+4	0.824	0.802	0.721	0.887
t+5	0.450	0.516	0.478	0.296	t+5	0.129	0.091*	0.165	0.034**
t+6	0.945	0.948	0.804	0.976	t+6	0.247	0.257	0.518	0.728
t+7	0.193	0.185	0.259	0.105	t+7	0.311	0.362	0.419	0.500
t+8	0.393	0.621	0.533	0.571	t+8	0.640	0.553	0.576	0.728
t+9	0.332	0.127	0.339	0.296	t+9	0.626	0.671	0.645	0.966
t+10	0.666	0.713	0.660	0.946	t+10	0.554	0.557	0.484	0.272
t+11	0.878	0.903	0.739	0.895	t+11	0.122	0.078*	0.246	0.272
t+12	0.887	0.873	0.787	0.946	t+12	0.315	0.395	0.428	0.272
t+13	0.823	0.953	0.643	0.815	t+13	0.577	0.596	0.596	0.500
t+14	0.353	0.267	0.445	0.571	t+14	0.584	0.531	0.524	0.113
t+15	0.706	0.790	0.531	0.429	t+15	0.733	0.631	0.707	0.966
t+16	0.131	0.463	0.397	0.185	t+16	0.689	0.767	0.628	0.728
t+17	0.847	0.935	0.778	0.976	t+17	0.210	0.168	0.248	0.0344**
t+18	0.636	0.411	0.552	0.815	t+18	0.739	0.608	0.554	0.272
t+19	0.294	0.246	0.372	0.185	t+19	0.627	0.618	0.548	0.500
t+20	0.513	0.464	0.480	0.296	t+20	0.922	0.923	0.857	0.966

Note: Significance at the 10%, 5% and 1% levels is indicated by *, **, and ***, respectively.
Reported as the area to the right of the test statistics.

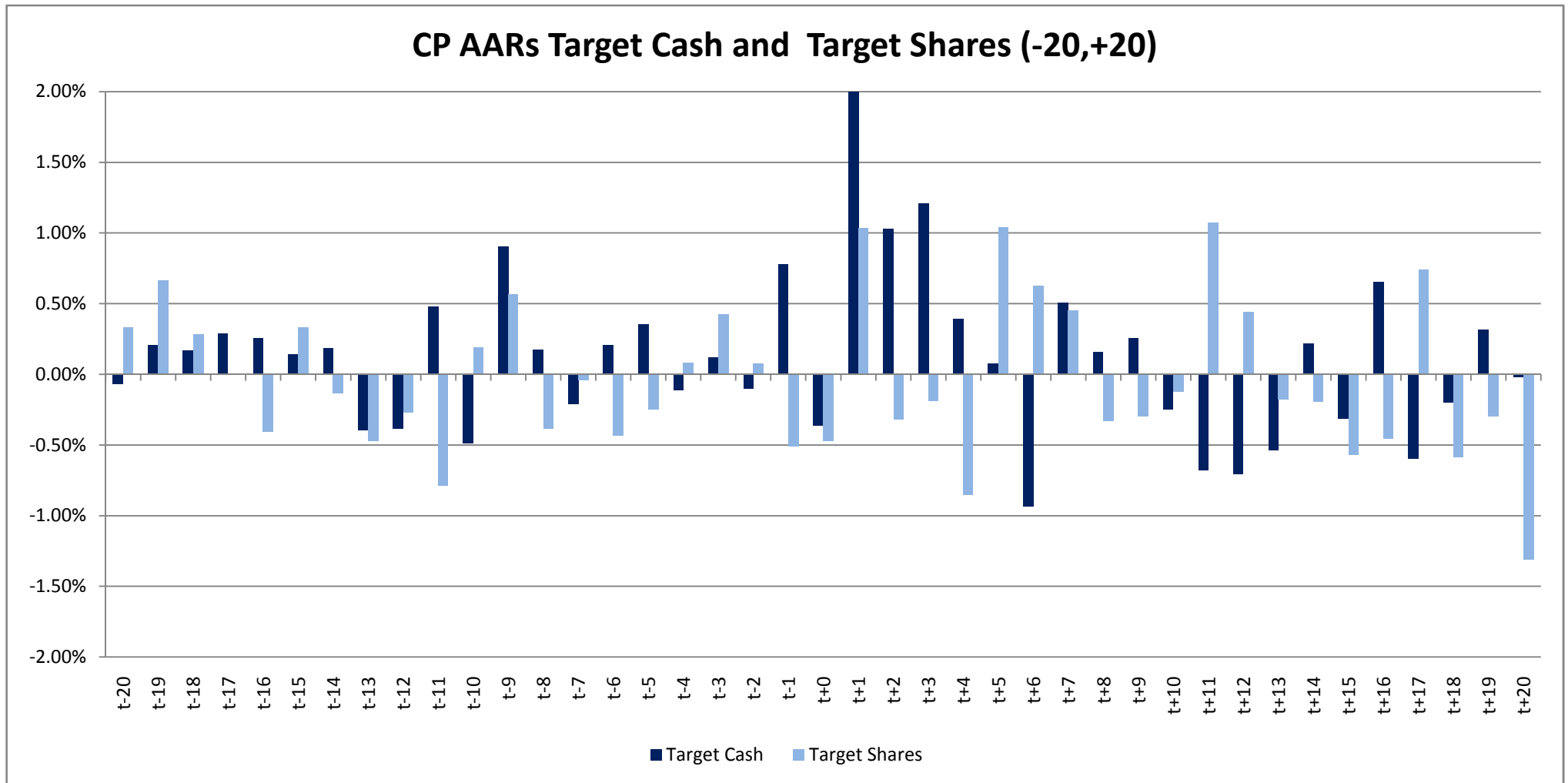


Figure 5-14: CP AARs, Target Cash and Target Shares, event window (-20, 20)

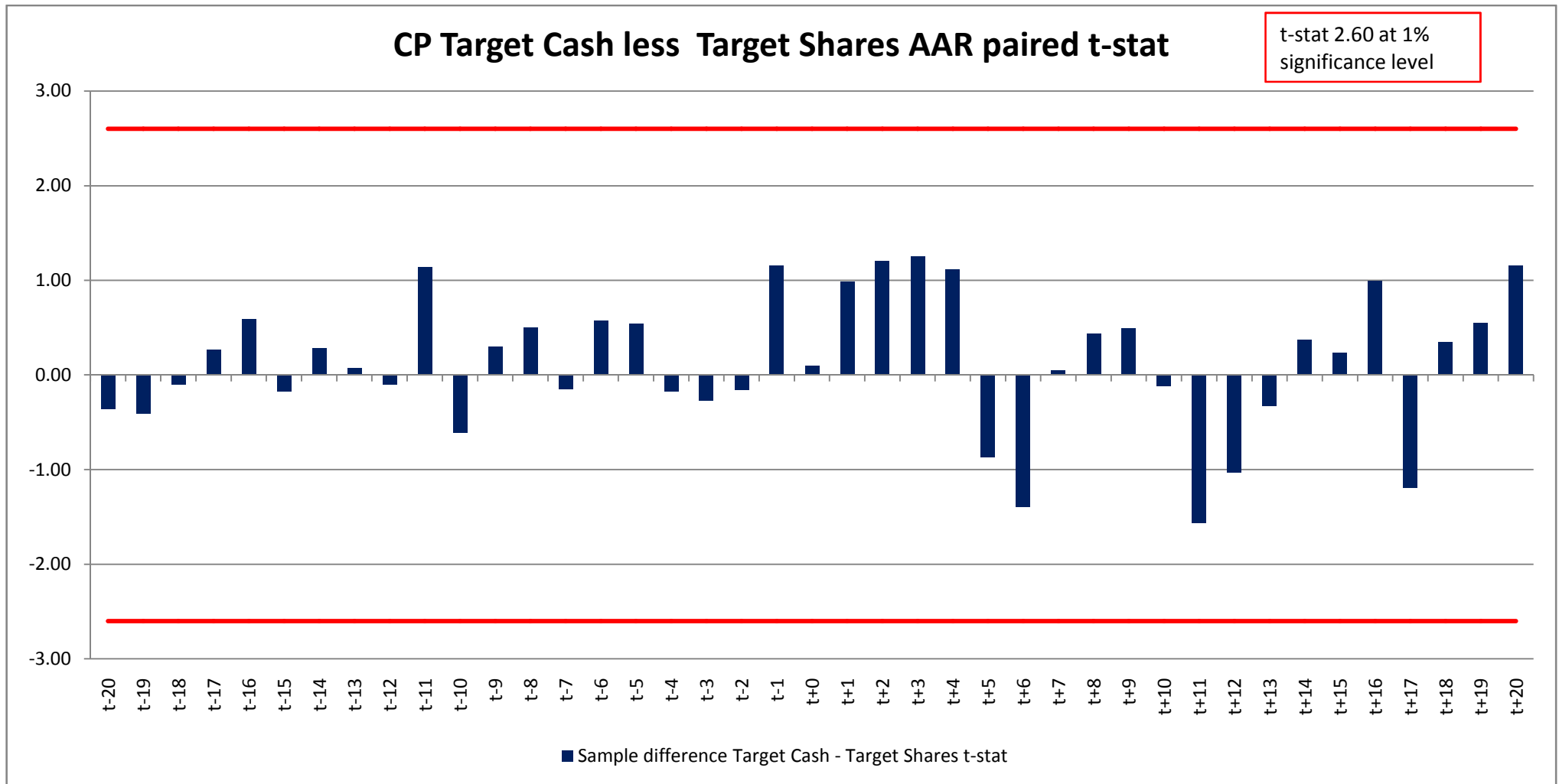


Figure 5-15: CP AARs paired t-test, Target Cash less Target Shares, event window (-20, 20)

5.4.2 Cumulative Average Abnormal Returns (CAARs) CP model

Section 5.4.2 tests CAARs (calculated using the CP method) using the t-test as well as the boot-strap test. The boot-strap test is regarded as being extremely robust and does not assume a normal distribution of returns. Due to the nature of the testing and in the interest of time constraints, the boot-strap test is reported at 10 day intervals starting from t-20 to t-10 and ending on t-20 to t+100. For consistency the t-test is reported at the same 10-day time intervals so that the results of the t-test and boot-strap test can be compared over the interval. This is also done in an attempt to isolate the affect of the method of payment as a signal to the market in merger and acquisition transactions.

5.4.2.1 Target versus Acquirer Cumulative Average Abnormal Returns (CAARs)

Section 5.4.2.1 tests the target and acquirer company CAARs at 10-day intervals starting from t-20 to t-10 and ending on t-20 to t+100. Table 5-14 reports the results using the t-test and boot-strap test for target companies over the 121-day event window. Table 5-15 reports the results using the t-test and boot-strap test for acquirer companies over the 121-day event window. Figure 5-16 reports the CAARs for target companies and acquirer companies over the 121-day event window as well as the difference between target company returns and acquirer company returns over the event window.

Table 5-14: CP Target CAAR results using t-test and boot-strap test

Event Window	CAAR	t-stat	AREA TO THE RIGHT	AREA TO THE RIGHT
			t-test	Boot-strap
[-20,-10]	100.21%	0.03	48.74%	62.40%
[-20,+00]	101.27%	0.19	42.49%	53.20%
[-20,+10]	105.02%	0.75	22.79%	10.80%
[-20,+20]	103.21%	0.48	31.66%	41.20%
[-20,+30]	104.37%	0.65	25.80%	40.80%
[-20,+40]	105.25%	0.78	21.77%	38.00%
[-20,+50]	107.39%	1.10	13.66%	32.40%
[-20,+60]	108.76%	1.31	9.72%	28.00%
[-20,+70]	108.72%	1.30	9.83%	36.40%
[-20,+80]	110.13%	1.51	6.71%	35.60%
[-20,+90]	110.08%	1.50	6.81%	36.80%
[-20,+100]	112.50%	1.86	3.26%	29.60%

Note: One sample t-test and boot-strap test, area to the right of the test statistic

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 5-15: CP Acquirer CAAR results using t-test and boot-strap test

Event Window	CAAR	t-stat	AREA TO THE RIGHT	AREA TO THE RIGHT
			t-test	Boot-strap
[-20,-10]	100.95%	0.25	40.14%	29.20%
[-20,+00]	101.49%	0.39	34.76%	38.80%
[-20,+10]	103.29%	0.86	19.47%	12.00%
[-20,+20]	104.28%	1.13	13.14%	14.40%
[-20,+30]	104.03%	1.06	14.56%	27.60%
[-20,+40]	103.95%	1.04	15.09%	42.40%
[-20,+50]	103.69%	0.97	16.70%	45.20%
[-20,+60]	104.06%	1.07	14.39%	43.20%
[-20,+70]	104.85%	1.28	10.26%	40.80%
[-20,+80]	105.57%	1.47	7.30%	45.20%
[-20,+90]	105.62%	1.48	7.12%	51.20%
[-20,+100]	106.40%	1.68	4.77%	46.00%

Note: One sample t-test and boot-strap test, area to the right of the test statistic

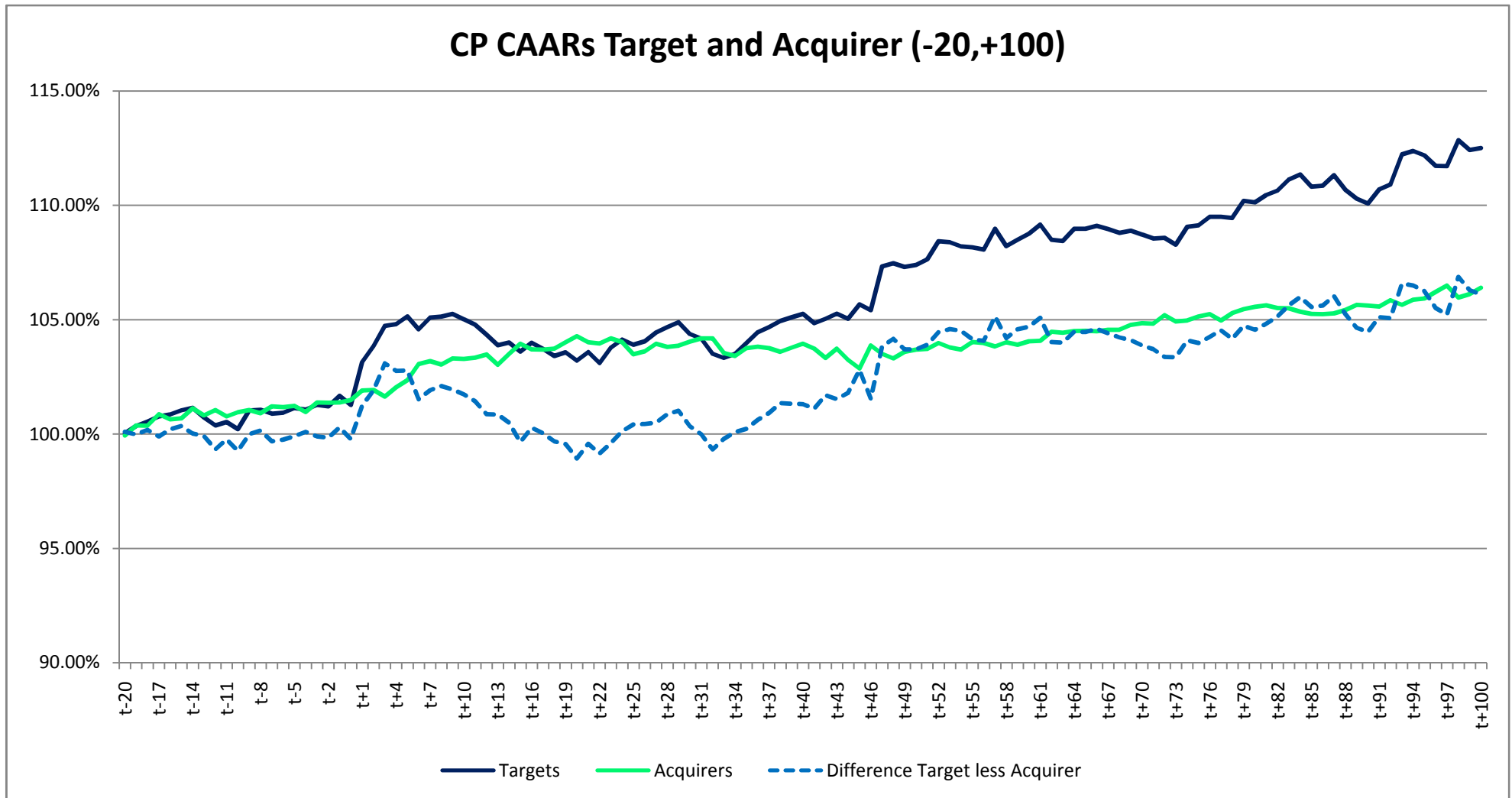


Figure 5-16: CP CAARs, Target and Acquirer, event window (-20, +100)

5.4.2.2 Acquirer Cash versus Acquirer Shares Cumulative Average Abnormal Returns (CAARs)

Section 5.4.2.2 tests acquirer cash and acquirer shares company CAARs at 10-day intervals starting from t-20 to t-10 and ending on t-20 to t+100. Table 5-16 reports the results using the t-test and boot-strap test for acquirer cash companies over the 121-day event window. Table 5-17 reports the results using the t-test and boot-strap test for acquirer shares companies over the 121-day event window. Figure 5-17 reports the CAARs for acquirer cash companies and acquirer shares companies over the 121-day event window as well as the difference between acquirer cash company returns and acquirer shares company returns over the event window.

Table 5-16: CP Acquirer Cash CAAR results using t-test and boot-strap test

Event Window	CAAR	t-stat	AREA TO THE RIGHT	AREA TO THE RIGHT
			t-test	Boot-strap
[-20,-10]	100.73%	0.16	43.70%	34.80%
[-20,+00]	101.43%	0.31	37.78%	30.80%
[-20,+10]	103.91%	0.86	19.70%	4.00%
[-20,+20]	104.92%	1.08	14.23%	8.40%
[-20,+30]	104.55%	1.00	16.08%	13.20%
[-20,+40]	104.57%	1.00	15.97%	26.00%
[-20,+50]	104.69%	1.03	15.38%	28.00%
[-20,+60]	105.16%	1.13	13.09%	33.20%
[-20,+70]	106.34%	1.39	8.41%	28.80%
[-20,+80]	107.32%	1.60	5.61%	25.60%
[-20,+90]	107.46%	1.63	5.28%	31.20%
[-20,+100]	108.24%	1.80	3.72%	29.60%

Note: One sample t-test and boot-strap test, area to the right of the test statistic

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 5-17: CP Acquirer Shares CAAR results using t-test and boot-strap test

Event Window	CAAR	t-stat	AREA TO THE RIGHT	AREA TO THE RIGHT
			t-test	Boot-strap
[-20,-10]	101.88%	1.02	15.54%	37.60%
[-20,+00]	101.73%	0.94	17.52%	45.60%
[-20,+10]	100.63%	0.34	36.71%	72.00%
[-20,+20]	101.57%	0.85	19.93%	64.00%
[-20,+30]	101.79%	0.97	16.73%	67.20%
[-20,+40]	101.25%	0.68	24.98%	72.80%
[-20,+50]	99.50%	-0.27	60.57%	84.00%
[-20,+60]	99.47%	-0.29	61.33%	82.00%
[-20,+70]	98.66%	-0.72	76.45%	84.80%
[-20,+80]	98.37%	-0.88	80.99%	89.20%
[-20,+90]	98.06%	-1.05	85.18%	84.00%
[-20,+100]	98.85%	-0.63	73.33%	84.40%

Note: One sample t-test and boot-strap test, area to the right of the test statistic

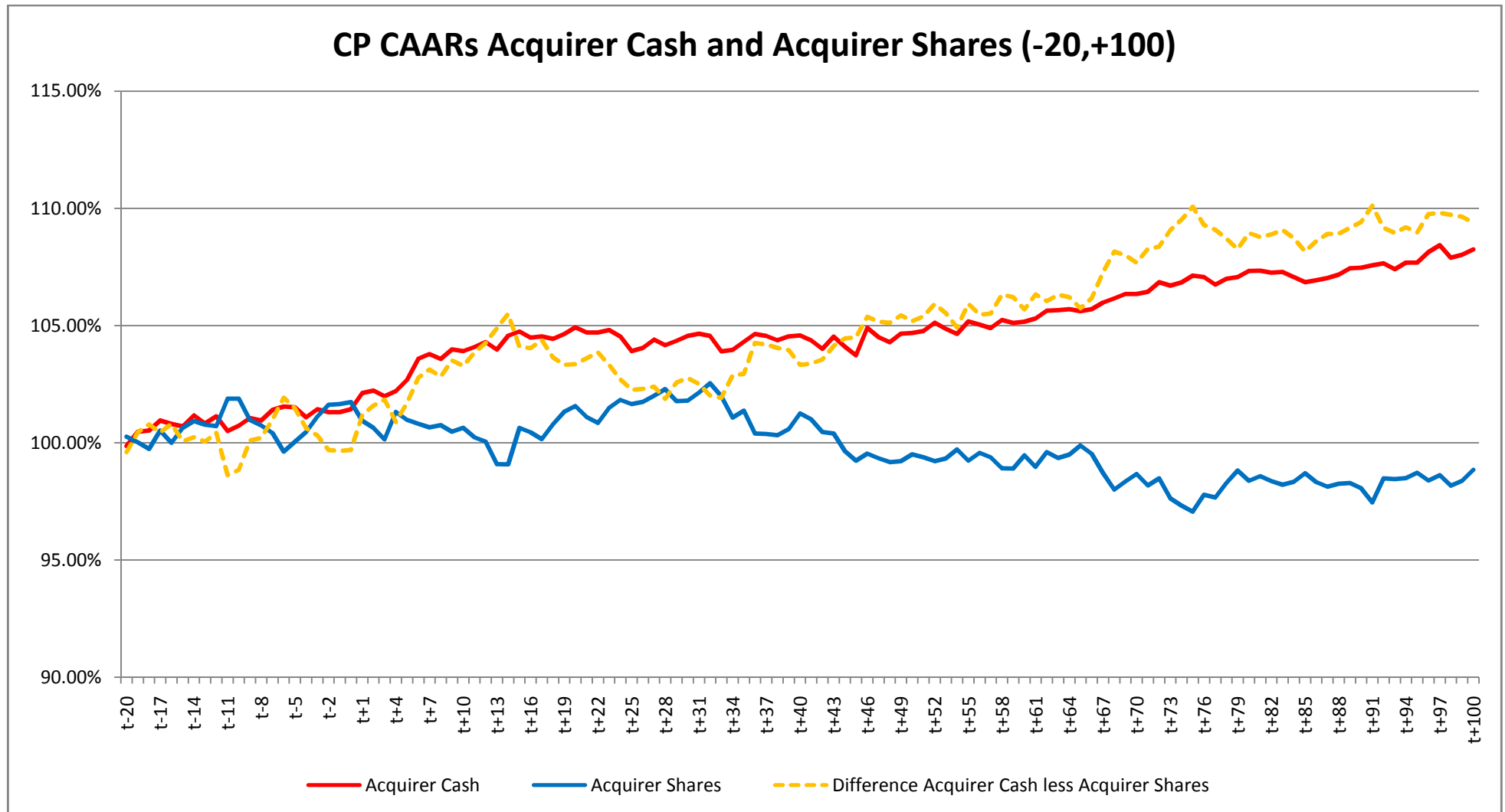


Figure 5-17: CP CAARs, Acquirer Cash and Acquirer Shares, event window (-20, +100)

5.4.2.3 Target Cash versus Target Shares Cumulative Average Abnormal Returns (CAARs)

Section 5.4.2.3 tests target cash and target shares company CAARs at 10 day intervals starting from t-20 to t-10 and ending on t-20 to t+100. Table 5-18 reports the results using the t-test and boot-strap test for target cash companies over the 121-day event window. Table 5-19 reports the results using the t-test and boot-strap test for target shares companies over the 121-day event window. Figure 5-18 reports the CAARs for target cash companies and target shares companies over the 121-day event window as well as the difference between target cash company returns and target shares company returns over the event window.

Table 5-18: CP Target Cash CAAR results using t-test and boot-strap test

Event Window	CAAR	t-stat	AREA TO THE RIGHT	AREA TO THE RIGHT
			t-test	Boot-strap
[-20,-10]	100.38%	0.05	47.90%	56.40%
[-20,+00]	102.14%	0.30	38.38%	31.60%
[-20,+10]	106.86%	0.95	17.21%	8.40%
[-20,+20]	104.87%	0.67	25.08%	26.00%
[-20,+30]	106.23%	0.86	19.52%	24.00%
[-20,+40]	107.31%	1.01	15.69%	24.00%
[-20,+50]	109.39%	1.30	9.80%	20.00%
[-20,+60]	111.15%	1.55	6.27%	20.80%
[-20,+70]	110.57%	1.46	7.32%	31.60%
[-20,+80]	113.45%	1.86	3.27%	20.40%
[-20,+90]	113.90%	1.93	2.85%	24.80%
[-20,+100]	117.34%	2.40	0.91%	23.60%

Note: One sample t-test and boot-strap test, area to the right of the test statistic

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 5-19: CP Target Shares CAAR results using t-test and boot-strap test

Event Window	CAAR	t-stat	AREA TO THE RIGHT	AREA TO THE RIGHT
			t-test	Boot-strap
[-20,-10]	99.72%	-0.05	51.97%	62.00%
[-20,+00]	98.78%	-0.21	58.40%	72.00%
[-20,+10]	99.81%	-0.03	51.35%	64.80%
[-20,+20]	98.46%	-0.27	60.59%	76.40%
[-20,+30]	99.06%	-0.16	56.53%	77.20%
[-20,+40]	99.38%	-0.11	54.32%	75.20%
[-20,+50]	101.63%	0.28	38.85%	62.40%
[-20,+60]	101.92%	0.34	36.91%	63.60%
[-20,+70]	103.33%	0.58	28.09%	56.80%
[-20,+80]	100.81%	0.14	44.37%	70.00%
[-20,+90]	99.46%	-0.09	53.73%	76.00%
[-20,+100]	99.33%	-0.12	54.62%	80.00%

Note: One sample t-test and boot-strap test, area to the right of the test statistic

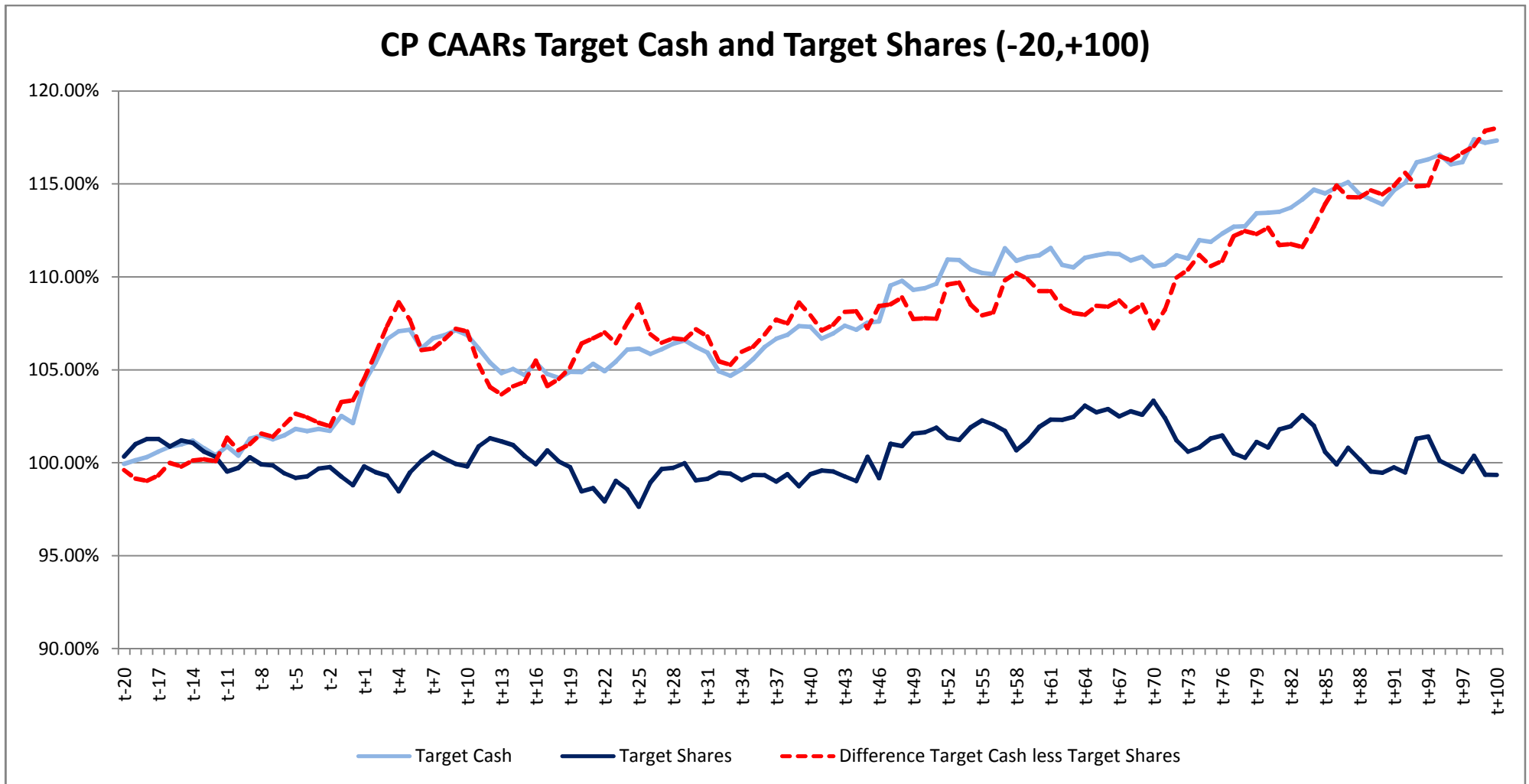


Figure 5-18: CP CAARs, Target Cash and Target Shares, event window (-20, +100)

Chapter 6 – RESULTS

Chapter three defined the three hypotheses that would be tested. The aim of this research in the context of the literature is to understand the relationship between the method of payment and signal sent to market around the announcement date of merger and acquisition (M&A) transactions. In light of this and understanding that the transaction can be funded by way of cash, shares or a combination of the two, the results of these findings for the three hypotheses are reported. In the interest of ensuring that the findings are robust, and based on the literature, numerous statistical tests (described in chapter 4) have been applied to not only test Cumulative Average Abnormal Returns (CAARs) but also to the building blocks of the CAARs, namely Abnormal Returns (ARs) and Average Abnormal Returns (AARs).

When reporting the results of the research and since numerous statistical tests have been conducted on the data (as described in chapter 4, section 4.7) attention is drawn here to results where two or more of the statistical tests concur, reporting results at a 5% significance level or less. This research aims to draw inferences regarding results where there is significant statistical evidence to substantiate the findings.

When testing CAARs this research regards the boot-strap methodology as being more robust than the t-test. The boot-strap methodology does not assume normality of the distribution of CAARs. Non-normal distributions in CAARs are found to be particularly prevalent over longer event windows.

Finally when calculating ARs and in turn AARs and CAARs, the results of the event study can only be as well specified as the accuracy with which the expected returns are calculated. Although the research has used both the market-adjusted equal-weighted (MAEW) model and control-portfolio (CP) model to calculate expected returns, this research places emphasis on the CP model results in accepting or rejecting the null hypotheses. The CP model has used principal components that were found to be well substantiated in determining the expected returns for the shares being tested. This research recognises that using the CP methodology enables determination of the expected values for shares with greater probability incorporating relevant independent

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

variables in calculating the dependant variable being the expected returns for the shares.

6.1 Target versus Acquirer

The theory leads to the belief that target firms will outperform acquirer firms around the announcement of M&A transactions. As summarised in the literature, Antonios, Arbour and Zhao (2011) state, “Intuitively target firm shareholders expect to receive a premium if they are to hand over their ownership stakes to the acquiring firm and/or if the bidding firm is hoping, via the attractiveness of its bid, to persuade the target firm’s board of directors to issue a public statement in recommendation of the offer.” Based on this it would be expected that target firms outperform acquirer firms around the announcement of M&A transactions.

6.1.1 Abnormal Returns (AR) Target versus Acquirer

6.1.1.1 Target ARs Reporting

Table 5-2 (left panel) reports the results for target firms where expected returns were calculated using the MAEW model. It is shown that on day t0 significant positive ARs are observed at a 1% significance level for both the t-test and standardised t-test for target companies. The sign test showed significance at a 10% level. The rank test, which based on the literature, is regarded as the most robust of the four testing methodologies used does not show statistical significance at even a 10% significance level, however it is worth noting that at 13.1% it reports the greatest evidence of positive ARs using the rank test over the 41 day event window. Figure 5-1 shows the AARs (calculated using the MAEW method) for target and acquirer companies and clearly illustrates the higher AARs to target companies on day t0. The paired t-test applying the t-test to the difference between target and acquirer AARs (calculated using the MAEW method) illustrated in figure 5-2 confirms that on day t0 target companies outperform acquirer companies. The paired t-stat shows significance at a 1% level. These findings agree with the findings by Chen, Chou And Lee (2011) as well as Antonios, Arbour and Zhao (2011) who find that target companies outperform acquirer companies around the announcement of M&A transactions due to the bid premium offered by acquirers.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Referring to the CP model illustrated in table 5-11 (left panel) it is observed that on day $t+1$ significant positive returns are observed at a 1% significance level for the t-test, standardised t-test and sign test. The rank test again did not show significance at a 10% level, however at 13.5% on day $t+1$ the greatest ARs for the 41-day event window were observed. Figure 5-11 illustrates similar patterns in the AAR results to those observed using the MAEW method, however the positive movement in returns to the target firms is one day later. It can be clearly observed that on day $t+1$ target firms outperform acquirer firms. The paired t-test illustrated in figure 5-11 using the CP method to calculate the ARRs shows a significant positive difference in AARs at just less than a 1% significance level for target less acquirer companies AARs on day $t+1$.

6.1.1.2 Acquirer AR Reporting

Table 5-2 (right panel) indicates that for acquirer firms using the MAEW model, there were significant positive returns at a 1% level on days $t-15$ and $t-4$ applying the t-test, standardised t-test and sign-test for acquirer companies. Significant positive returns at a 1% significance level are also observed on day $t+4$ (applying the t-test and standardised t-test) and on day $t+14$ at a 5% significance level (applying the t-test, standardised t-test and sign test). The size of the increase in the AARs calculated using the MAEW method is however smaller than those observed for target firms (illustrated in figure 5-1).

Using the CP method and referring to table 5-11 (right panel) it is shown that on days $t-17$, $t-3$ and days $t+15$ abnormal positive returns for acquirer firms were observed using the various testing methodologies. Figure 5-10 again illustrates that the extent of the increase in AARs (calculated using the CP method) is less than those observed for target firms showing similar results to the MAEW method.

6.1.2 Testing Hypothesis 1

Based on the analysis of ARs using the various methodologies it can be confirmed that target companies tend to show significant positive ARs on and around day t_0 relative to acquirer companies, which also ties in with the literature.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Reporting on the alternative hypothesis 1 which states that, “CAARs to target firms will be significantly higher than CAARs to acquirer firms” evidence in the research can be examined.

6.1.2.1 Target CAARs Reporting

Referring to table 5-5 which reports on the target company CAARs using the MAEW model at 10 day intervals starting from event window t-20 to t-10 (shown as [-20,-10]) and ending with window t-20 to t+100 (shown as [-20,+100]). Using the MAEW method, the t-test and boot-strap test report similar CAARs results for intervals surrounding the announcement. As longer event windows are used, it is noteworthy that there tend to be bigger differences between the boot-strap test results and the t-test results. As discussed in chapter 4, the boot-strap test seems to be significantly more robust as it provides probabilities based on an actual sample distribution of returns.

It is observed in table 5-5 that for the event window [-20,+00] the CAAR is calculated to be 101.69% showing a positive return which has a p-value of 13.60% applying the boot-strap method (15.67% applying the t-test). This shows evidence of positive returns to target firms leading up to the announcement of M&A transactions. These findings provide evidence of leakage of information regarding the transaction pre the announcement date. For the period [-20,+10] there is evidence that target firms show significant positive returns. The CAAR for this period is 102.50% with a p-value of 7.20% applying the boot-strap test (6.81% applying the t-test). Figure 5-7 shows CAARs using the MAEW method and illustrates that although it is observed that there are significant positive returns to target firms, the positive returns are followed by negative returns with target company CAARs returning to 100.37% by t+20.

Figure 5-16 which shows CAARs using the CP model illustrates that there are large positive returns around the announcement date to target firms. Once the expected return variable is calculated using the CP model and incorporating the control-portfolios, it is observed that target firm CAARs continue to increase as the time interval increases to the maximum window of [-20,+100]. At this maximum window the CAAR is 112.50%. Table 5-14 summarises the increase in CAARs showing that for the longest event window [-20,+100] CAARs increase substantially to 112.50%. The boot-strap test

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

however reports a p-value of 29.60% (3.26% using the t-test). It is noteworthy that the boot-strap and t-test results differ considerably.

6.1.2.2 Acquirer CAAR Reporting

Table 5-6 reports on acquirer company CAARs using the MAEW model at 10 day intervals starting from event window [-20,-10] and ending with window [-20,+100]. Statistically significant positive returns are shown for the window [-20,+10] where the boot-strap test reports a p-value of 3.60% (0.33% applying the t-test). For the event window [-20,+20] the boot-strap reports a p-value of 9.20% (applying the t-test 0.49%). Figure 5-7 illustrates that using the MAEW method; target companies temporarily outperform acquirer companies directly around the announcement date but over longer windows acquirer companies tend to show greater CAARs than target companies.

Table 5-15 summarises the results of acquirer CAARs using the CP method and illustrates that using the boot-strap methodology there are no significant positive returns to acquirer companies over the various CAARs. Figure 5-16 illustrates that acquirer CAARs move below CAARs observed by target firms over the event window.

6.1.2.3 Conclusion Hypothesis 1

The broken line reflected in figure 5-16 shows the difference between target company CAARs and acquirer company CAARs (calculated using the CP method). The increase in the difference between the two CAARs illustrates that target companies outperform acquirer companies over the event window tested. This in itself does not show that target companies significantly outperform acquirer companies around the announcement date.

Referring to table 5-14 it is recognised that the boot-strap test reports the area to the right of the test statistic for target companies as 29.60% (3.26% applying the t-test) for the event window [-20,+100]. Table 5-15 reports the p-value using the boot-strap test for acquirer companies as 46.00% (4.77% applying the t-test) for the same event window. Both target and acquirer firm's results show high p-values using the boot-strap test.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Applying the t-test does not show evidence of target firms having much lower p-values than acquirer firms.

The alternative hypothesis states that:

H1: CAARs to target firms will be significantly higher than CAARs to acquirer firms.

Based on evidence of the findings from testing hypothesis 1:

The null hypothesis is not rejected in favour of the alternative hypothesis.

6.2 Acquirer Cash versus Acquirer Shares

Based on the literature it would be expected that cash transactions lead to higher returns to acquirer firms than share transactions. The literature states that management tend to use shares as the method of payment when they believe the shares to be overvalued which sends a negative signal to market (Travlos, 1987). Applying the same rigorous testing to the data the theory is now tested.

6.2.1 Abnormal Returns (ARs) Acquirer Cash versus Acquirer Shares

6.2.1.1 Acquirer Cash ARs Reporting

Referring to table 5-3 (left panel) which reports the results for acquirer cash companies using the MAEW method, it is noteworthy that significant positive returns at a 1% significance level are observed on days t-15 and t-4 (applying the t-test, standardised t-test and sign test). Day t0 and day t+4 show positive returns to acquirer cash companies at a 1% significance level using the t-test and a 5% significance level using the standardised t-test. Figure 5-3 illustrates the results of AARs using the MAEW method and shows that on day t+12 acquirer cash companies outperform acquirer share companies. However on day t+14 this is reversed with acquirer share firms outperforming acquirer cash firms. Figure 5-4 reporting the paired t-stats for acquirer cash firms less acquirer shares firms, illustrates that on day t0 acquirer cash companies show significantly higher returns than acquirer share companies (with positive returns to

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

acquirer cash companies and negative returns to acquirer share companies) although the paired t-statistic is not significant at a 1% level.

Referring to the AAR results calculated using the CP method, table 5-12 (left panel) shows somewhat sporadic statistical test results for the acquirer cash companies. This illustrates the importance of multiple testing methodologies and shows that conclusions should be drawn when numerous results concur, strengthening the evidence of the findings. On day t-3 note that the standardised t-test and sign test show positive AARs and on day t+1 the t-test and standardised t-test show statistical significance at a 5% level. Figure 5-13 illustrates that on day t-11, the paired t-statistic shows evidence that acquirer share companies showed high positive returns relative to acquirer cash companies.

6.2.1.2 Acquirer Shares AR Reporting

Referring to table 5-3 (right panel) which reports the AARs for the acquirer share companies calculated using the MAEW method, it is observed that on day t-12 significant positive returns are shown at a 5% significance level for the t-test, standardised t-test and sign test. Again on day t+14 significant positive returns are observed for acquirer share companies at a 1% significance level for the t-test and standardised t-test and at a 5% level applying the sign test. These results are substantiated by figure 5-4 particularly on day t+14, where acquirer share companies outperform acquirer cash companies at a 1% significance level applying the paired t-test.

Table 5-12 (right panel) reporting on the AARs for acquirer share firms calculated using the CP method shows that on day's t-11 and t+15 significant positive returns to acquirer share companies can be seen. Figure 5-12 and 5-13 substantiate these results particularly on day t-11 where acquirer share company returns significantly outperform acquirer cash company returns at a 1% significance level.

6.2.2 Testing Hypothesis 2

Reporting on alternative hypothesis 2 which states that, “CAARs to acquirer firms will be significantly higher when cash is used than when shares are used as the method of payment” the evidence in the research is used.

6.2.2.1 Acquirer Cash CAAR Reporting

Table 5-7 reports on CAARs calculated using the MAEW method. It is observed that for short event windows [-20,+10] significant positive returns are shown for acquirer cash companies with a boot-strap p-value of 3.60% (applying the t-test 0.13%). For the event window [-20,+20] the results for CAARs are positive with a boot-strap p-value of 9.20% (applying the t-test 0.27%). Over longer event windows CAARs are not significantly positive. Acquirer cash companies report small positive CAARs as the window extends outwards towards [-20,+100] with a CAAR of 102.96% for the maximum event window. This is in line with the theory described by Travlos (1987) that acquirer cash companies will report insignificant positive returns. Figure 5-8 illustrates that CAARs to acquirer cash companies show positive but insignificant returns over the event window.

When observing CAARs calculated using the CP model for acquirer cash companies shown in table 5-16, it is observed that the boot-strap method reports similar results to those calculated using the MAEW model. For the periods [-20,+10] and [-20,+20] the boot-strap method reports p-values of 4.00% and 8.40% respectively. As the window extends to longer periods, however, the significance reduces and the p-values increase. At the extended window of [-20,100] the boot-strap p-value is 29.60% (3.72% applying the t-test). Figure 5-17 shows CAARs for acquirer cash companies increasing to 108.24% for the maximum window.

6.2.2.2 Acquirer Shares CAAR Reporting

CAARs for acquirer share firms reduce to 96.59% (reported in table 5-8 and illustrated in figure 5-8) being below the index of 100% and in line with the theory described by Travlos (1987). The reported right tail results increase to as much as 74.80% for the maximum event window [-20,+100]. It would be expected that the acquirer share

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

companies show negative CAARs as a result of the signal by management that the acquirer shares used as the currency of exchange are overvalued. It is noteworthy that the effect is later than expected as can be observed from figure 5-8. The significant decrease in CAARs occurs at around day t+60 where the negative signal to market are observed.

Applying the CP method and referring to table 5-17, CAAR results show that the low and negative returns are prevalent agreeing with the findings using the MAEW methodology. The boot-strap test shows large areas to the right of the test statistic with a p-value as high as 89.20% (80.99% applying the t-test) for event window [-20,+80]. For the maximum event window the boot-strap test reports a p-value of 84.40% (73.33% applying the t-test). This again is strong evidence of negative CAARs to acquirer share companies over the event window and is consistent with the results found using the MAEW method as well as the literature.

6.2.2.3 Conclusion Hypothesis 2

The broken line reflected in figure 5-17 shows the difference between acquirer cash company CAARs and acquirer share company CAARs (calculated using the CP method). The MAEW method and CP method provide consistent results when testing hypothesis 2. The increase in the difference between the CAARs of acquirer cash companies and acquirer share companies, illustrates that acquirer cash companies outperform acquirer share companies over the event window tested and is consistent with prior empirical studies. The results applying the boot-strap test and the t-test show significant differences for acquirer cash companies than are observed for acquirer share companies where the p-values are very large.

The alternative hypothesis states that:

H2: CAARs to acquirer firms will be significantly higher when cash is used than when shares are used as the method of payment

Based on the evidence of the findings from testing hypothesis 2:

The null hypothesis should be rejected in favour of the alternative hypothesis.

6.3 Target Cash versus Target Shares

The literature states that firms acquired where cash is used as the method of payment will show higher abnormal returns than those acquired using shares, (Davidson & Cheng, 1997; Wansley, Lane & Yang, 1983; and D.R Peterson & Peterson, 1991). The reason for this is because of the capital gains tax effects payable in the year of the acquisition when the transaction was concluded using cash. When shares are used as the method of payment this tax liability may be deferred.

6.3.1 Abnormal Returns (ARs) Target Cash versus Target Shares

6.3.1.1 Target Cash AR Reporting

Table 5-4 (left panel) reports the results for target cash companies using the MAEW method. It is noteworthy that the t-test and standardised t-test report significant positive returns on day t_0 at a 1% significance level. The rank test also reports the most evidence of significant positive returns over the 41-day period, with a 14.80% p-value. Figure 5-5 shows a spike in the AARs for the target cash firms on day t_0 . Referring to the paired t-stat results illustrated in figure 5-6 reporting the difference in AARs between target cash companies and target share companies, it is noteworthy that none of the results approach a 1% significance level.

Using the CP method reported in table 5-13 (left panel), there is evidence of significant positive returns consistently for days $t+1$, $t+2$ and $t+3$ using the different testing methodologies. Figure 5-14 illustrates the higher AARs to target cash companies on days $t+1$, $t+2$ and day $t+3$. Figure 5-15 reporting the paired t-stat for AARs calculated using the CP method, shows similar findings to the paired t-stat reported in figure 5-6 using the MAEW method with none of the paired t-statistics moving towards a 1% significance level.

6.3.1.2 Target Shares AR Reporting

Table 5-4 (right panel) reports the results for target share returns calculated using the MAEW method and shows little evidence of positive returns using the four leading testing methodologies. Significance is only found using one of the four methodologies (the standardised t-test) over the entire 41-day period and as a result is not substantiated by the other tests. Figure 5-5 and 5-6 reporting AARs and the paired t-statistic do not show any significant AARs over the 41-day event window.

Using the CP method for target share companies and referring to table 5-13 (right panel), again there is little evidence of significant positive returns to target share companies with little consistency between tests. Figures 5-14 and 5-15 also do not show any significant positive AARs to target share companies.

6.3.2 Testing Hypothesis 3

Reporting on alternative hypothesis 3 which states that, “CAARs to target firms will be significantly higher when cash is used than when shares are used as the method of payment” evidence in the research is used.

6.3.2.1 Target Cash CAARs Reporting

For results using the MAEW method reported in table 5-9 for target cash companies, it is noteworthy that the boot-strap test reports significant positive CAARs for the windows [-20,00] and [-20,+10] with bootstrap p-values of 8.40% (3.49% applying the t-test) and 7.60% (2.36% applying the t-test) respectively. Figure 5-9 illustrates positive CAARs to target cash companies leading up to the event date. This is evidence of leakage of information to the market and is in line with the theory that target cash firms show significant positive returns around the announcement of M&A transactions. CAARs tend to reduce as the window is extended past [-20,+10] towards [-20,+100] using the MAEW method. The CAAR for the window [-20,+100] is below the 100% index at 99.87%. The boot-strap method reports a p-value of 43.60%.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Using the CP method reported in table 5-18, however the findings are very different. While the boot-strap reports similar results to those found using the MAEW method over the shorter periods for example at [-20,+10] the boot-strap reports a p-value of 8.40% (17.21% applying the t-test). Over longer periods the CP method shows target cash CAARs growing to 117.34% for the window [-20,+100], significantly different to the CAAR of 99.87% found using the MAEW method for the same event window. The boot-strap p-value of 23.60% shows significantly more evidence in favour of positive returns to target cash firms than the 43.60% boot-strap p-value calculated using the MAEW method. This finding is quite remarkable and emphasises the importance of the methodology used to calculate the expected returns. Intuitively the event study results are only as good as the methodology used to calculate the shares expected returns.

6.3.2.2 Target Shares CAAR Reporting

Reporting on the returns calculated using the MAEW method for target share companies reported in table 5-10, it is noteworthy that over longer event windows CAARs increase to a maximum of 107.08% over the longest window [-20,+100]. Even with the increase in CAARs, the boot-strap test does not find any statistically significant returns over the longer event window, although the t-test does report statistical significance with a p-value of 5.58% over the event window [-20,+100]. This clearly illustrates how much more robust the boot-strap test is in testing CAARs. Figure 5-9 illustrates that using the MAEW method target share CAARs increase particularly as the length of the window increases to past [-20,+60].

Table 5-19 tests target share company CAARs calculated using the CP method. The CAARs remain close to the index value of 100% over all event windows reported. The boot-strap values in table 5-19 also reflect the fact that none of the target share CAARs show significant positive returns over any of the event windows tested. Figure 5-18 illustrates CAARs for target share companies and illustrates that they remain close to the indexed value of 100%.

6.3.2.3 Conclusion Hypothesis 3

The broken line reflected in figure 5-18 shows the difference between target cash company CAARs and target share company CAARs (calculated using the CP method). The increase in the difference between the two types of CAARs illustrates that target cash companies outperform target share companies over the event window tested using the CP method, which is consistent with prior empirical studies.

Referring to table 5-18 it is noted that the boot-strap test reports the area to the right of the test statistic for target cash companies as 23.60% (0.91% applying the t-test) for the window [-20,+100]. Table 5-19 reports the area to the right using the boot-strap test for target shares as 80.00% (54.62% for the t-test) for the same window [-20,+100]. These findings are consistent with Davidson and Cheng (1997), Wansley, Lane and Yang (1983) and D.R Peterson and Peterson (1991).

The alternative hypothesis states that:

H3: CAARs to target firms will be significantly higher when cash is used than when shares are used as the method of payment

Based on the evidence of the findings from testing hypothesis 3:

The null hypothesis should be rejected in favour of the alternative hypothesis

Chapter 7 – CONCLUSION

The aim of this research was to understand how the method of payment used in merger and acquisition (M&A) transactions affect returns to the acquirer and target companies by way of the market signal. We began by understanding the building blocks of the cumulative average abnormal returns (CAARs) namely the abnormal returns (ARs) and average abnormal returns (AARs) for a 41 day period around the announcement of M&A transactions. We then looked at the CAARs at ten day intervals starting from the minimum event window of [-20,-10] to a maximum event window of [-20,+100]. We used two methodologies to calculate the expected returns namely the market-adjusted equal-weighted (MAEW) model and the control-portfolio (CP) model. Once we had calculated the ARs, AARs and CAARs rigorous statistical testing methodologies to the results were applied looking for consistencies between testing methodologies to substantiate findings.

This research shows that target companies do outperform acquirer companies around the announcement of M&A transactions using the CP method. Directly around the announcement on days t0 and t+1 target companies outperform acquirer companies using the MAEW method and the CP method. Over longer windows, CAARs using the CP method showed that target companies outperform acquirer companies; however the difference between the target and acquirer results is not statistically significant using the boot-strap or t-test. Target company CAARs (using the CP model) increased to 112.50% over the longest event window being [-20,+100], while those of acquirer companies increased to 106.40% for the same window. While it is evident that targets do outperform acquirer firms, the null hypothesis cannot be rejected based on the strength of the statistical tests.

Analysing the method of payment as a market signal in M&A transactions for acquirer companies, it is noteworthy that acquirer firms that use cash as the method of payment show insignificant positive returns. Analysing acquirer cash companies' against acquirer share companies' CAARs, the findings are in agreement with the findings of Travlos (1987). Acquirer cash CAARs calculated using the CP model, show some insignificant positive returns with CAARs increasing to 107.11% over the longest event window [-20,+100]. Acquirer firms using shares as the method of payment however show

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

negative returns (using the CP and MAEW model). Acquirer cash companies show insignificant positive returns whilst acquirer share companies show negative returns over the 121 day event window. Both pricing methodologies show acquirer share companies' returns were negative and support research findings by Travlos (1987). The findings of this research are therefore consistent with the findings in developed countries and the literature.

Target companies acquired using cash, show positive returns with CAARs of 117.34% reporting a 17.34% return over the event window [-20,+100] applying the CP model. In contrast target companies acquired using shares showed an insignificant negative return with the CAAR of 99.33% reported for the event window [-20,+100]. These findings are consistent with Davidson and Cheng (1997), Wansley, Lane and Yang (1983) and D.R Peterson and Peterson (1991) who relate the larger ARs to a required premium to meet capital gain payments in the year of the transaction when cash is used as the payment method.

It is noteworthy that for the two pricing methodologies used being the MAEW method and the CP method the results did not consistently provide the same results. There were a number of findings which were quite startling and which we consider to be worth mentioning. The ability to accurately predict expected prices has been the subject of numerous research and the goal of investment managers. The importance of the methodology used to calculate expected returns in event studies is self evident. While significant research has been conducted into price prediction models including Fama and French (1995) in their article entitled 'Size and Book-to-Market Factors in Earnings and Returns', Fama and French (1996) 'Multifactor Explanations in Earnings and Returns' and Ahern (2009) in his article entitled 'Sample selection and event study estimation', the ability to accurately predict expected share prices based on influencing variables remains controversial, debated and unsolved. Further research into the methodologies used to calculate predicted prices should be conducted as well as testing the strength of the methodologies used to calculate expected returns against empirical data.

The importance in the context of this research in accurately calculating expected returns is clearly illustrated when testing hypothesis 1: while the MAEW method reports short

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

term substantial gains to target companies for event windows up to and including window $[-20,+10]$, once the event window is lengthened, the MAEW method reports a reduction in CAARs to target companies. The CP model however reports continuous growth in CAARs to target companies right until the longest event window reported $[-20,+100]$. This finding clearly illustrates the importance of ensuring that the methodology used to calculate expected returns are sound. Emphasis was placed on the Muller and Ward (2012) CP pricing methodology for calculating expected returns and drawing conclusions.

A second critical finding is the fact that when applying statistical tests to CAARs the assumption of normality in the distribution of the CAARs is often not relevant. This is found to be particularly true over longer event windows. Non-parametric tests should be applied to test results over longer event windows in order to avoid type-one and type-two errors from occurring. While research has been conducted in this field including research by Brown and Warner (1980), Brown and Warner (1985) Corrado (1989) and Ahern (2009), further research should be conducted on different event study statistical testing methodologies.

This research focused on large capitalisation companies with high trading volumes. Research into companies with lower trading volumes would offer additional insights into the subject. Studying the method of payment as a market signal in M&A transactions on other security exchanges would provide further information on the topic in the emerging market context.

Research into transactions where private companies partake in M&A deals could also be a topic for further research. The literature recognises that the asymmetry of information between companies increases when one of the companies involved is a privately held company.

REFERENCES

- Ahern, K. R. (2009). Sample selection and event study estimation. *Journal of Empirical Finance*, 16(3), 466-482. Retrieved from <http://0-dx.doi.org.innopac.up.ac.za/10.1016/j.jempfin.2009.01.003>
- Antonios, A., Arbour, P., & Zhao, H. (2011). Measuring the economic gains of mergers and acquisitions: Is it time for change? Unpublished manuscript
- Bowman, R. (1983). Understanding and conducting event studies. *Journal of Business and Financial Accounting*, 10(4), 561-584
- Brown, S. J., & Warner, J. B. (1980). Measuring security price performance. *Journal of Financial Economics*, 8(3), 205-258
- Brown, S. J., & Warner, J. B. (1985). Using daily stock returns – the case of event studies. *Journal of Financial Economics*, 14(1), 3-31
- Calvo, R. A., Partridge, M., & Jabri M. A. (2006). A comparative study of principle component analysis techniques. Sydney, Australia: University of Sydney, Department of Electrical Engineering.
- Chemmanur, T. J., Paeglis, I., & Simonyan (2009). The medium of exchange in acquisitions: Does the private information of both the acquirer and target matter? *Journal of Corporate Finance*, 15(5), 523-542. Retrieved from <http://0-dx.doi.org.innopac.up.ac.za/10.1016/j.jcorpfin.2009.08.004>
- Chen, S. S., Chou, R. K., & Lee Y. C. (2011). Bidders' strategic timing of acquisition announcements and the effects of payment method on target returns and competing bids. *Journal of Banking and Finance*, 35(9), 2231-2244. Retrieved from <http://dx.doi.org/10.1016/j.jbankfin.2011.01.029>

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

- Corrado, C. J., & Zivney, T. L. (1992). The specification and power of the sign test in event study hypothesis tests using daily stock returns. *Journal of Financial and Quantitative Analysis*. 27(3), 465-478. doi: <http://dx.doi.org/10.2307/2331331>
- Cowen, A. R., & Sergeant, A. M. A. (1996). Trading frequency and event study test specification. *Journal of Banking and Finance*. 20, 1731-1757.
- Das, K. D. (2009). Global capital flows to the emerging-market economies: Qualitative and quantitative differences. *Journal of Asset Management*. 11(4), 244-260. doi: 10.1057/jam.2009.27
- Davidson III, W. N., & Cheng, L. T. W. (1997). Target firm returns: does the form of payment affect abnormal returns? *Journal of Business Finance and Accounting*, 24(3), 465-479.
- Eckbo, B. E., Giammarino, R. M., & Heinkel, R. L. (1990). Asymmetric information and the medium of exchange in takeovers: theory and tests. *The Review of Financial Studies*. 3(4), 651-675. Retrieved from <http://0-web.ebscohost.com.innopac.up.ac.za/ehost>
- Fama, E. F. (1991). Efficient capital markets: 2. *The Journal of Finance*, 46(5), 1575-1617. Retrieved from <http://faculty.chicagobooth.edu/jeffrey.russell/teaching/Finecon/readings/fama.pdf>
- Fama, E. F., & French, K. R. (1995). Size and book-to-market factors in earnings and returns. *The Journal of Finance*, 50(1), 131-155.
- Fama, E. F., & French, K. R. (1996). Multifactor explanations of asset pricing anomalies. *The Journal of Finance*, 51(1), 55-84.
- Fishman, M. J. (1989). Preemptive bidding and the role of the medium of exchange in acquisitions. *The Journal of Finance*, 44(1), 41-57.

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

- Hansen, G. (1987). A theory for the choice of exchange medium in mergers and acquisitions. *Journal of Business*, 60(1), 75-95. Retrieved from <http://0-web.ebscohost.com.innopac.up.ac.za/ehost>
- Lau, B., & Proimos, A. (2010). The underperformance of equity-financed bidders. *International Journal of Managerial Finance*, 6(1), 4-23. doi:10.1108/17439131011015760
- Malmendier, U., Opp, M. M., & Saidi, F. (2011). Cash is king, revaluation and the medium of exchange in merger bids. Unpublished manuscript.
- MacKinnon, J. G. (2006). Bootstrap methods in econometrics. *The Economic Record*, 82, 2-18. doi:10.1111/j.1475-4932.2006.00328.x
- McWilliams, T. P., & McWilliams, V. B. (2000). Another look at theoretical and empirical issues in event study methodology. *The Journal of Applied Business Research*, 16(3), 1-11.
- McWilliams, A., & Siegel, D. (1997). Event studies in management research: Theoretical and empirical issues. *Academy of Management Journal*, 40(3), 626-657. doi: 10.2307/257056
- Mergermarket. (2012, March). Independent merger and acquisition (M&A) intelligence service.
- Mlambo, C., & Biepke, N. (2005). Thin-trading on African stock markets: Implications for market efficiency testing. *The Investment Analyst Journal*, 61, 29-40.
- Mlambo, C., & Biepke, N. (2007). The efficient market hypothesis: Evidence from ten African stock markets. *The Investment Analyst Journal*, 66, 5-17.
- Mordant, N., & Muller, C. (2003). Profitability of directors share dealings on the JSE. *Investment Analysts Journal*, 57, 17-32

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

- Mutooni, R., & Muller, C. (2007). Equity style timing. *Investment Analysts Journal*, 65, 15-24
- Muller, C., & Ward, M. (2012). Style construction from principle component analysis of JSE returns. Unpublished manuscript.
- Mushidzhi, T. B., & Ward, M. J. D. (2004). Abnormal returns for cash versus share funded acquisitions. *Investment Analyst Journal*, 60, 17-31
- Myers, S., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), 187-221. Retrieved from [http://dx.doi.org/10.1016/0304-405X\(84\)90023-0](http://dx.doi.org/10.1016/0304-405X(84)90023-0)
- Officer, M. S., Poulsen, A. B., & Stegemoller, M. (2009). Target-firm information asymmetry and acquirer returns. *Review of Finance*, 13(3), 467-493. doi:10.1093/rof/rfn017
- Peterson, D. R., & Peterson, P. P. (1991). The medium of exchange in mergers and acquisitions. *Journal of Banking and Finance*, 15(2), 383-405. Retrieved from http://0-ac.els-cdn.com/innopac.up.ac.za/037842669190074V/1-s2.0-037842669190074V-main.pdf?_tid=59db9c36-1d1f-11e2-ab9d-00000aacb35e&acdhat=1351003306_3d2ffc50517f70899b4ab7005b065f96
- Rhodes-Kropf, M., & Viswanathan, S. (2004). Market valuation and merger waves. *The Journal of Finance*, 59(6), 2685-2718. doi: 10.1111/j.1540-6261.2004.00713.x
- Slovin, M. B., Sushka, M. E., & Polonchek, J. A. (2005). Methods of payment in asset sales: Contracting with equity versus cash. *The Journal of Finance*, 60(5), 2385-2407.
- Travlos, N. G. (1987). Corporate takeover bids, methods of payment, and bidding firm's stock returns. *The Journal of Finance*, 42(4), 943-963. Retrieved from <http://www.jstor.org/stable/2328300>

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Wansley, J. W., William, R. L., & Yang, H. C. (1983). Abnormal returns to acquired firms by type of acquisition and method of payment. *Financial Management*, Autumn, 17-22.

Ward, M., & Muller, C. (2010). The long-term share price reaction to black economic empowerment announcements on the Johannesburg Securities Exchange. *Investments Analysts Journal*, 71, 27-36.

APPENDIX

Table 8-1: Sample Acquirers

Code	Announced Date	Pre-Rumour Date	Target Company	Bidder Company	Bidder Dominant Country	Seller Company	Consideration
SHF	15/12/2011		PSG Group Limited (20% Stake)	Steinhoff International Holdings Ltd	South Africa		Cash (USD 19m), Equity (USD 176m)
RBP	12/12/2011		RMB Holdings (8.14% Stake)	Royal Bafokeng Holdings (RBH)	South Africa	Remgro Limited; Gerrit Thomas Ferreira (Private investor)	Cash (USD 348m)
RBP	12/12/2011		RMI Holdings (9.11% Stake)	Royal Bafokeng Holdings (RBH)	South Africa	Remgro Limited; Gerrit Thomas Ferreira (Private investor)	Cash (USD 213m)
SUI	01/12/2011	16/05/2011	Real Africa Holdings Ltd (33.47% Stake)	Sun International Ltd	South Africa	Grand Parade Investments Limited	Cash (USD 61m)
NPK	16/11/2011		Nampak Wiegand Glass (50% Stake)	Nampak Ltd	South Africa	Wiegand-Glas GmbH	Cash (USD 118m)
SLM	06/10/2011		FBN Life Assurance Limited (35% Stake)	Sanlam Ltd	South Africa	First Bank of Nigeria Plc	Cash (USD 6m)
PPC	03/10/2011		Quarries Of Botswana (Pty) Ltd (three quarries)	Pretoria Portland Cement Co	South Africa	Quarries Of Botswana (Pty) Ltd	Cash (USD 7m)
IPL	30/09/2011		Lehnkering GmbH	Imperial Holdings Limited	South Africa	Triton Partners	Cash (USD 232m)
REM	20/09/2011		Grindrod Limited (22.63% Stake)	Remgro Limited	South Africa		Cash (USD 269m)
RBW	12/09/2011		Bush Valley Chickens	Rainbow Chicken Limited	South Africa		Cash (USD 13m)
SLM	08/09/2011		Shriram Capital Limited (26% Stake)	Sanlam Ltd	South Africa	Shriram Group	Cash (USD 266m)
ADR	06/09/2011	28/07/2011	Paracon Holdings Limited	Adcorp Holdings Limited	South Africa		Cash (USD 38m), Equity (USD 61m)
SSK	20/06/2011		Cycad Pipelines (Pty) Ltd	Stefanutti Stocks Holdings Ltd	South Africa	Alfred Henry Smith (Private Investor)	Cash (USD 43m)
GFI	15/04/2011		Tarkwa and Damang Gold Mines (18.9% Stake)	Gold Fields Limited	South Africa	IAMGOLD Corporation	Cash (USD 667m)
GFI	18/03/2011		Gold Fields La Cima SA (6.97% Stake)	Gold Fields Limited	South Africa		Cash (USD 133m)
JDG	14/03/2011		Steinhoff Doors and Building Materials (Proprietary) Limited	JD Group Limited	South Africa	Steinhoff International Holdings Ltd	Equity (USD 477m)
SHF	14/03/2011		Abra SA	Steinhoff International Holdings Ltd	South Africa	JD Group Limited	Equity (USD 19m)
SOL	08/03/2011		Talisman Energy Inc (Cypress A shale gas assets) (50% Stake)	Sasol Limited	South Africa	Talisman Energy Inc	Cash (USD 1079m)
BAT	02/03/2011		Pepkor Limited (24.6% Stake)	Brait SA	South Africa		Cash (USD 599m)
TBS	15/02/2011		Davita Trading (Proprietary) Limited	Tiger Brands Limited	South Africa	Corvest 6 (Pty) Ltd.; RZT Zelpy 4976 (Proprietary) Limited;	Cash (USD 186m)
GRT	14/02/2011		V&A Waterfront Holdings (Pty) Ltd	Growthpoint Properties Ltd	South Africa	London & Regional Properties Limited; Istithmar World Capital	Cash (USD 1341m)
SHF	31/01/2011		Conforama SA (99.98% Stake)	Steinhoff International Holdings Ltd	South Africa	PPR SA	Cash (USD 1643m)
SOL	20/12/2010		Talisman Energy Inc (Farrell Creek shale assets) (50% Stake)	Sasol Limited	South Africa	Talisman Energy Inc	Cash (USD 1045m)
RMH	15/12/2010		OUTsurance (45% Stake)	RMB Holdings	South Africa	FirstRand Limited	Cash (USD 548m)
BCX	15/12/2010		UCS Group (services businesses)	Business Connexion Group	South Africa	UCS Group	Cash (USD 4m), Equity (USD 85m)
NPN	30/11/2010		Level Up! International Holdings Pte. Ltd.	Naspers Limited	South Africa		Cash (USD 51m)
BAW	17/11/2010		Vostochnaya Technica (50% Stake)	Barloworld Limited	South Africa		Cash (USD 52m)
NPN	14/07/2010		Digital Sky Technologies Limited (28.7% Stake)	Naspers Limited	South Africa		Cash (USD 388m)
FSR	21/06/2010		Barnard Jacobs Mellet Holdings Ltd	FirstRand Limited	South Africa		Cash (USD 61m)
DSY	11/05/2010		Standard Life Healthcare Limited	Discovery Holdings Limited	South Africa	Standard Life Plc	Cash (USD 206m)
GND	29/04/2010		Fuelogic Pty Ltd	Grindrod Limited	South Africa	Ukhamba Holdings Pty Ltd; Calulo Petrochemicals Pty Ltd	Cash (USD 22m)
REM	08/01/2010		Capevin Holdings Limited (65.1% Stake)	Remgro Limited; Zeder Investments Ltd	South Africa	Phetogo Investments (Proprietary) Limited	Cash (USD 133m)
REM	08/01/2010		Capevin Investments Ltd (39.4% Stake)	Remgro Limited; Zeder Investments Ltd	South Africa		Cash (USD 158m)
LBH	03/12/2009		CfC Insurance Holdings Ltd (24% Stake)	Liberty Holdings Limited	South Africa	CFC Stanbic Holdings Ltd	Cash (USD 11m)
ASA	30/11/2009		Sanlam Home Loans Pvt Ltd (50% Stake)	ABSA Bank Limited	South Africa	Sanlam Life Insurance Limited	Cash (USD 19m)
BVT	23/11/2009		Nice Equipment Co	The Bidvest Group Limited	South Africa		Cash (USD 7m)
BSR	30/09/2009	11/08/2009	TWP Holdings Ltd	Basil Read Holdings Limited	South Africa		Cash (USD 19m), Equity (USD 86m)
NPN	29/09/2009		Buscape Informacao e Tecnologia Ltda (91% Stake)	Naspers Limited	South Africa	Great Hill Partners LLC	Cash (USD 342m)
NED	16/09/2009		Imperial Bank Limited (49.9% Stake)	Nedbank Group Limited	South Africa	Imperial Financial Holdings Limited	Cash (USD 47m), Equity (USD 189m)
HAR	08/09/2009		Pamodzi Gold Limited's Free State Mine	Harmony Gold Mining Company	South Africa	Pamodzi Gold Limited	Cash (USD 53m)
BVT	03/08/2009		Nowaco Czech Republic s.r.o.; FARUTEX Sp. z o.o	The Bidvest Group Limited	South Africa	CCMP Capital Advisors, LLC; Bancroft Private Equity LLP	Cash (USD 360m)
FBR	27/07/2009		Mugg & Bean (South African and African business)	Famous Brands Ltd	South Africa	Mugg & Bean	Cash (USD 13m)
SNT	10/07/2009		Emerald Insurance Company Limited	Sanlam Limited	South Africa	Super Group Limited	Cash (USD 12m)
SSK	26/06/2009		Civil and Coastal Construction (Pty) Limited (49% Stake)	Stefanutti Stocks Holdings Ltd	South Africa	Gregory Moore (private investor); Simon Allen (private investor)	Cash (USD 7m)
BSR	10/06/2009		Mvela Phanda Construction (Proprietary) Limited; Contract F	Basil Read (Proprietary) Limited	South Africa	South African private investors Group; P Gerolemou Family	Cash (USD 42m)
NED	15/05/2009		BoE (Proprietary) Limited (50% Stake)	Nedbank Group Limited	South Africa	Old Mutual Plc	Equity (USD 63m)
NED	15/05/2009		Nedgroup Life Assurance Company Limited (50% Stake)	Nedbank Group Limited	South Africa	Old Mutual Plc	Equity (USD 40m)
GRF	16/02/2009		Benoni Gold Mine (Pty) Ltd	Group Five Ltd	South Africa		Cash (USD 8m)
PSG	09/02/2009		T-Sec (Private client stockbroking division)	PSG Konsult Ltd	South Africa	T-Sec	Cash (USD 7m)

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

ARI	15/12/2008		TEAL Exploration & Mining Inc. (35% Stake)	African Rainbow Minerals Ltd	South Africa		Cash (USD 45m)
ANG	15/12/2008		Sao Bento Gold Company Limited	AngloGold Ashanti Limited	South Africa	Eldorado Gold Corporation	Equity (USD 70m)
INL	11/12/2008		DCD-Dorbyl Pty Limited (17% Stake)	Investec Limited; Siyahamba	South Africa	Blackstar Group SE	Cash (USD 19m)
DRD	09/12/2008		Eisburg Gold Mining Company Ltd (35% Stake)	DRDGOLD Limited	South Africa	Mintails Limited	Cash (USD 17m)
BRN	31/10/2008		Sea Harvest Corporation Ltd. (73.16% Stake)	Brimstone Investment Corp	South Africa	Tiger Brands Limited	Cash (USD 53m)
JSE	27/10/2008		Bond Exchange of South Africa	Johannesburg Stock Exchange	South Africa		Cash (USD 22m)
ALT	31/08/2008		Altech Fleetcall Pty Limited	Allied Technologies Limited	South Africa		Cash (USD 7m)
INL	07/08/2008		Multi Spectrum Property Group (50% Stake)	Investec Limited; One Vision	South Africa		Cash (USD 22m)
MTN	25/06/2008		Verizon South Africa (Pty) Ltd	MTN Group Limited	South Africa	Verizon Business; Jay & Jayendra (Pty) Ltd	Cash (USD 174m)
BSR	26/05/2008		Roadcrete Africa (Road Building and Civil Engineering Business)	Basil Read Pty Ltd.	South Africa	Roadcrete Africa Proprietary Limited	Cash (USD 14m), Equity (USD 6m)
RBX	19/05/2008		Thaba Bosiu Construction (Pty) Limited; Zamori Construction	Raubex Group Ltd	South Africa		Cash (USD 9m), Equity (USD 4m)
ASA	16/04/2008		Woolworths Financial Services (Proprietary) Limited (50% Stake)	Abisa Group Limited	South Africa	Woolworths Holdings Ltd.	Cash (USD 111m)
GND	14/04/2008		Cockett Marine Oil Limited (50% Stake)	Grindrod Limited	South Africa		Cash (USD 13m)
SLM	11/04/2008		Buckles Holdings Limited (60% Stake)	Sanlam Ltd	South Africa		Cash (USD 15m)
LBH	27/03/2008		Fountainhead Property Trust Management Limited (50% Stake)	Liberty Group Limited	South Africa	Standard Bank Group Limited	Cash (USD 23m)
TRE	04/03/2008		Global Asset Management; Global Container Management; Global	Trencor Limited	South Africa	TrenStar, Inc.	Cash (USD 77m)
RBX	22/02/2008		Bonn Plant Hire (PTY) LTD; Akasia Road Surfacing (PTY) LTD	Raubex Group Ltd	South Africa		Cash (USD 15m)
SLM	12/02/2008		Principal Investment Management Limited (86% Stake)	Sanlam Ltd	South Africa	Asset Management Investment Company Plc; BP Marsh & McLennan	Cash (USD 69m)
NPN	18/12/2007	07/11/2007	Tradus plc	Naspers Limited	South Africa		Cash (USD 1675m)
APN	20/11/2007		Strides Latin America (50% Stake)	Aspen Pharmacare Holding	South Africa	Strides Arcolab Limited	Cash (USD 153m)
APN	20/11/2007		Onco Therapies Limited (49% Stake)	Aspen Pharmacare Holding	South Africa	Quantum Life Sciences Pvt Ltd	Cash (USD 17m)
FBR	16/11/2007		Cape Franchising	Famous Brands Ltd	South Africa		Cash (USD 23m)
NED	25/10/2007		Old Mutual Banking Services (50% Stake)	Nedbank Group Limited	South Africa	Old Mutual Plc	Cash (USD 21m)
NPN	04/10/2007		Gadu-Gadu SA	Naspers Limited	South Africa		Cash (USD 155m)
SOL	10/09/2007		Sasol Dia Acrylates (Pty) Limited (50% Stake)	Sasol Limited	South Africa	Mitsubishi Chemical Corporation	Cash (USD 31m)
ABL	20/08/2007		Ellerine Holding Ltd	African Bank Investments Ltd	South Africa		Equity (USD 1161m)
OMN	16/08/2007		Zetachem Pty Ltd	Omnia Holdings Limited	South Africa		Cash (USD 28m)
BVT	03/05/2007		Viamax Holdings	The Bidvest Group Limited	South Africa	Transnet Ltd	Cash (USD 141m)
BVT	03/05/2007		Angliss International Ltd	The Bidvest Group Limited	South Africa	Vestey Group Limited	Cash (USD 79m)
GRF	02/05/2007		Sky Sands (Proprietary) Limited	Group Five Ltd	South Africa		Cash (USD 17m)
PSG	26/04/2007		Capitec Bank Holdings (16.53% Stake)	PSG Group Limited	South Africa		Equity (USD 78m)
WEZ	25/04/2007		Africa Wide Mineral Prospecting and Exploration (Pty) Ltd	Wesizwe Platinum Limited	South Africa		Equity (USD 92m)
BSR	22/03/2007		Blasting and Excavating (Proprietary) Limited	Basil Read Holdings Limited	South Africa		Cash (USD 12m)
INL	15/03/2007		DCD-Dorbyl Pty Limited	Investec Limited; BEE SPV	South Africa		Cash (USD 74m)
ADR	27/02/2007		Capital Outsourcing Group	Adcorp Holdings Limited	South Africa	Medu Capital (Pty) Ltd	Cash (USD 10m), Equity (USD 23m)
SHF	21/02/2007		Unitrans Holding (Pty) Ltd (39.24% Stake)	Steinhoff International Holdings	South Africa		Equity (USD 232m)
IMP	16/02/2007	14/02/2007	African Platinum PLC	Impala Platinum Holdings Ltd	South Africa		Cash (USD 518m)
ANG	12/02/2007		OOO GRK Amikan; OOO Artel Staratelei Angarskaya Proizvodstva	AngloGold Ashanti Limited	South Africa	Trans-Siberian Gold Plc	Cash (USD 40m)
IVT	22/12/2006		Tiletoria (60% Stake)	Invicta Holdings Limited	South Africa		Cash (USD 7m)
EMI	18/12/2006		Freestone Property Holdings Ltd	Emira Property Fund	South Africa		Equity (USD 172m)
SHF	13/12/2006	17/11/2006	Homestyle Group plc (Formerly Roseby's)	Steinhoff International Holdings	South Africa		Equity (USD 250m)
DTC	04/12/2006		CSF Solutions Ltd	Datatec Limited	South Africa		Cash (USD 0m), Equity (USD 11m)
GRF	21/11/2006		Quarry Cats	Group Five Ltd	South Africa	Cobblers Limited	Cash (USD 34m), Equity (USD 68m)
NPN	14/11/2006		M-Net (38.56% Stake); Supersport (38.56% Stake)	Naspers Limited	South Africa	Avusa Ltd	Cash (USD 34m), Equity (USD 411m)
MTN	03/10/2006		MTN Nigeria Communications Limited (6.98% Stake)	MTN Group Limited	South Africa		Cash (USD 288m), Equity (USD 61m)
RLO	02/10/2006		Reunert - PSG Investment Services Joint Venture	Reunert Limited; PSG Kons	South Africa		Cash (USD 40m)
GFI	11/09/2006		Barrick Gold South Africa (Pty) Limited	Gold Fields Limited	South Africa	Barrick Gold Corporation	Cash (USD 1200m), Equity (USD 325m)
GFI	11/09/2006		Western Areas Limited (65.3% Stake)	Gold Fields Limited	South Africa		Equity (USD 742m)
GFI	11/09/2006		Western Areas Limited (16.7% Stake)	Gold Fields Limited	South Africa	JCI Limited	Equity (USD 190m)
MTN	06/07/2006		MTN Uganda, Ltd. (32.44% Stake)	MTN Group Limited	South Africa	Overseas Telecom AB	Cash (USD 165m)
IPL	15/02/2006		Lex Commercial Limited; Lex Auto Logistics; Lex Fleet Services	Imperial Holdings Limited	South Africa	RAC Plc	Cash (USD 87m)
ASA	22/12/2005		Barclays plc (South African Branch Business)	ABSA Bank Limited	South Africa	Barclays Plc	Cash (USD 88m)
GFI	01/12/2005	21/11/2005	Bolivar Gold Corporation (89% Stake)	Gold Fields Limited	South Africa		Cash (USD 326m)
APN	23/09/2005		Matrix Laboratories (API manufacturing facilities)	Aspen Pharmacare Holding	South Africa	Matrix Laboratories Limited	Cash (USD 36m)
MUR	02/09/2005	26/04/2005	Concor Limited (49% Stake)	Murray & Roberts Holdings	South Africa	Hochtief AG	Cash (USD 20m)
BVT	15/07/2005		Deli XL BV	The Bidvest Group Limited	South Africa	Royal Ahold NV	Cash (USD 68m)
PET	25/05/2005		Springlake Holdings (Proprietary) Limited	Petmin Limited	South Africa	NAMF Nominees (Proprietary) Limited ; Clidet Number 53	Cash (USD 0m), Equity (USD 12m)
BRN	19/04/2005		Nedcor SA (12% Stake)	Brimstone Investment Corp	South Africa	Old Mutual Plc	Cash (USD 482m)
BRN	19/04/2005		Old Mutual SA (14% Stake)	Brimstone Investment Corp	South Africa	Old Mutual Plc	Cash (USD 562m)
ASA	11/04/2005		Banco Comercial Angolano Sarl (50% Stake)	Abisa Group Limited	South Africa		Cash (USD 8m)
ALT	30/08/2004		Econet Wireless Group (50% Stake)	Allied Technologies Limited	South Africa		Cash (USD 70m)
MUR	22/07/2004		The Cementation Company (Africa) Ltd. (79% Stake)	Murray & Roberts Holdings	South Africa	Skanska UK	Cash (USD 19m)
MUR	22/07/2004		Cementation Skanska Canada Inc	Murray & Roberts Holdings	South Africa	Skanska UK	Cash (USD 8m)
APN	10/03/2004		Fine Chemicals Corporation Pty Ltd	Aspen Pharmacare Holding	South Africa	Brait Private Equity	Cash (USD 38m)
SLM	31/12/2003		Glacier Management Company Ltd (33.33% Stake)	Sanlam Ltd	South Africa	Macquarie Group Limited	Cash (USD 13m)
GFI	19/12/2003		Sociedad Minera La Cima S.A (92% Stake)	Gold Fields Limited	South Africa		Cash (USD 40m)
HAR	13/11/2003		Avgold Limited (88.4% Stake)	Harmony Gold Mining Company	South Africa	Anglovaal Mining Ltd	Equity (USD 886m)
BVT	06/11/2003		McCarthy Holdings Ltd	The Bidvest Group Limited	South Africa	Investec Limited; ABN AMRO (pre 2009); Societe Generale	Cash (USD 126m)
DRD	14/10/2003		Mineral Resources Porgera Limited ; Orogen Minerals (Porgera)	DRDGOLD Limited	South Africa	Oil Search Limited	Cash (USD 53m), Equity (USD 21m)
NED	10/10/2003		SND Investment Holdings Limited (48.7% Stake)	Nedbank	South Africa	BNP Paribas SA	Cash (USD 44m)
ANG	18/09/2003		Gold Fields Limited (Driefontein mining area)	AngloGold Ashanti Limited	South Africa	Gold Fields Limited	Cash (USD 42m)

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 8-2: Sample Acquirer Cash

Code	Announced Date	Pre-Rumour Date	Target Company	Bidder Company	Bidder Dominant Country	Seller Company	Consideration
RBP	12/12/2011		RMB Holdings (8.14% Stake)	Royal Bafokeng Holdings (R)	South Africa	Remgro Limited; Gerrit Thomas Ferreira (Private investor)	Cash (USD 348m)
RBP	12/12/2011		RMI Holdings (9.11% Stake)	Royal Bafokeng Holdings (R)	South Africa	Remgro Limited; Gerrit Thomas Ferreira (Private investor)	Cash (USD 213m)
SUI	01/12/2011	16/05/2011	Real Africa Holdings Ltd (33.47% Stake)	Sun International Ltd	South Africa	Grand Parade Investments Limited	Cash (USD 61m)
NPK	16/11/2011		Nampak Wiegand Glass (50% Stake)	Nampak Ltd	South Africa	Wiegand-Glas GmbH	Cash (USD 118m)
SLM	06/10/2011		FBN Life Assurance Limited (35% Stake)	Sanlam Ltd	South Africa	First Bank of Nigeria Plc	Cash (USD 6m)
PPC	03/10/2011		Quarries Of Botswana (Pty) Ltd (three quarries)	Pretoria Portland Cement C	South Africa	Quarries Of Botswana (Pty) Ltd	Cash (USD 7m)
IPL	30/09/2011		Lehnkering GmbH	Imperial Holdings Limited	South Africa	Triton Partners	Cash (USD 232m)
REM	20/09/2011		Grindrod Limited (22.63% Stake)	Remgro Limited	South Africa		Cash (USD 269m)
RBW	12/09/2011		Bush Valley Chickens	Rainbow Chicken Limited	South Africa		Cash (USD 13m)
SLM	08/09/2011		Shriram Capital Limited (26% Stake)	Sanlam Ltd	South Africa	Shriram Group	Cash (USD 266m)
SSK	20/06/2011		Cycad Pipelines (Pty) Ltd	Stefanutti Stocks Holdings L	South Africa	Alfred Henry Smith (Private Investor)	Cash (USD 43m)
GFI	15/04/2011		Tarkwa and Damang Gold Mines (18.9% Stake)	Gold Fields Limited	South Africa	IAMGOLD Corporation	Cash (USD 667m)
GFI	18/03/2011		Gold Fields La Cima SA (6.97% Stake)	Gold Fields Limited	South Africa		Cash (USD 133m)
SOL	08/03/2011		Talisman Energy Inc (Cypress A shale gas assets) (50% Stake)	Sasol Limited	South Africa	Talisman Energy Inc	Cash (USD 1079m)
BAT	02/03/2011		Pepkor Limited (24.6% Stake)	Brait SA	South Africa		Cash (USD 599m)
TBS	15/02/2011		Davita Trading (Proprietary) Limited	Tiger Brands Limited	South Africa	Corvest 6 (Pty) Ltd.; RZT Zelpy 4976 (Proprietary) Limited;	Cash (USD 186m)
GRT	14/02/2011		V&A Waterfront Holdings (Pty) Ltd	Growthpoint Properties Ltd;	South Africa	London & Regional Properties Limited; Istithmar World Ca	Cash (USD 1341m)
SHF	31/01/2011		Conforama SA (99.98% Stake)	Steinhoff International Hold	South Africa	PPR SA	Cash (USD 1643m)
SOL	20/12/2010		Talisman Energy Inc (Farrell Creek shale assets) (50% Stake)	Sasol Limited	South Africa	Talisman Energy Inc	Cash (USD 1045m)
RMH	15/12/2010		OUTsurance (45% Stake)	RMB Holdings	South Africa	FirstRand Limited	Cash (USD 548m)
NPN	30/11/2010		Level Up! International Holdings Pte. Ltd.	Naspers Limited	South Africa		Cash (USD 51m)
BAW	17/11/2010		Vostochnaya Technica (50% Stake)	Barloworld Limited	South Africa		Cash (USD 52m)
NPN	14/07/2010		Digital Sky Technologies Limited (28.7% Stake)	Naspers Limited	South Africa		Cash (USD 388m)
FSR	21/06/2010		Barnard Jacobs Mellet Holdings Ltd	FirstRand Limited	South Africa		Cash (USD 61m)
DSY	11/05/2010		Standard Life Healthcare Limited	Discovery Holdings Limited	South Africa	Standard Life Plc	Cash (USD 206m)
GND	29/04/2010		Fuelogic Pty Ltd	Grindrod Limited	South Africa	Ukhamba Holdings Pty Ltd; Calulo Petrochemicals Pty Ltd;	Cash (USD 22m)
REM	08/01/2010		Capevin Holdings Limited (65.1% Stake)	Remgro Limited; Zeder Inve	South Africa	Phetogo Investments (Proprietary) Limited	Cash (USD 133m)
REM	08/01/2010		Capevin Investments Ltd (39.4% Stake)	Remgro Limited; Zeder Inve	South Africa		Cash (USD 158m)
LBH	03/12/2009		CFC Insurance Holdings Ltd (24% Stake)	Liberty Holdings Limited	South Africa	CFC Stanbic Holdings Ltd	Cash (USD 11m)
ASA	30/11/2009		Sanlam Home Loans Pvt Ltd (50% Stake)	ABSA Bank Limited	South Africa	Sanlam Life Insurance Limited	Cash (USD 19m)
BVT	23/11/2009		Nice Equipment Co	The Bidvest Group Limited	South Africa		Cash (USD 7m)
NPN	29/09/2009		Buscape Informacao e Tecnologia Ltda (91% Stake)	Naspers Limited	South Africa	Great Hill Partners LLC	Cash (USD 342m)
HAR	08/09/2009		Pamodzi Gold Limited's Free State Mine	Harmony Gold Mining Com	South Africa	Pamodzi Gold Limited	Cash (USD 53m)
BVT	03/08/2009		Nowaco Czech Republic s.r.o.; FARUTEX Sp. z o.o	The Bidvest Group Limited	South Africa	CCMP Capital Advisors, LLC; Bancroft Private Equity LLP	Cash (USD 360m)
FBR	27/07/2009		Mugg & Bean (South African and African business)	Famous Brands Ltd	South Africa	Mugg & Bean	Cash (USD 13m)
SNT	10/07/2009		Emerald Insurance Company Limited	Santam Limited	South Africa	Super Group Limited	Cash (USD 12m)
SSK	26/06/2009		Civil and Coastal Construction (Pty) Limited (49% Stake)	Stefanutti Stocks Holdings L	South Africa	Gregory Moore (private investor); Simon Allen (private inve	Cash (USD 7m)
BSR	10/06/2009		Mvela Phanda Construction (Proprietary) Limited; Contract P	Basil Read (Proprietary) Lin	South Africa	South African private investors Group; P Gerole mou Famil	Cash (USD 42m)
GRF	16/02/2009		Benoni Gold Mine (Pty) Ltd	Group Five Ltd	South Africa		Cash (USD 8m)
PSG	09/02/2009		T-Sec (Private client stockbroking division)	PSG Konsult Ltd	South Africa	T-Sec	Cash (USD 7m)
ARI	15/12/2008		TEAL Exploration & Mining Inc. (35% Stake)	African Rainbow Minerals L	South Africa		Cash (USD 45m)
INL	11/12/2008		DCD-Dorbyl Pty Limited (17% Stake)	Investec Limited; Siyahamb	South Africa	Blackstar Group SE	Cash (USD 19m)
DRD	09/12/2008		Elsburg Gold Mining Company Ltd (35% Stake)	DRDGOLD Limited	South Africa	Mintails Limited	Cash (USD 17m)
BRN	31/10/2008		Sea Harvest Corporation Ltd. (73.16% Stake)	Brimstone Investment Corp	South Africa	Tiger Brands Limited	Cash (USD 53m)
JSE	27/10/2008		Bond Exchange of South Africa	Johannesburg Stock Excha	South Africa		Cash (USD 22m)
ALT	31/08/2008		Altech Fleetcall Pty Limited	Allied Technologies Limited	South Africa		Cash (USD 7m)
INL	07/08/2008		Multi Spectrum Property Group (50% Stake)	Investec Limited; One Visio	South Africa		Cash (USD 22m)
MTN	25/06/2008		Verizon South Africa (Pty) Ltd	MTN Group Limited	South Africa	Verizon Business; Jay & Jayendra (Pty) Ltd	Cash (USD 174m)
BSR	26/05/2008		Roadcrete Africa (Road Building and Civil Engineering Busin	Basil Read Pty Ltd.	South Africa	Roadcrete Africa Proprietary Limited	Cash (USD 14m), Equity (USD 6m)

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

RBX	19/05/2008		Thaba Bosiu Construction (Pty) Limited; Zamori Construction	Raubex Group Ltd	South Africa		Cash (USD 9m), Equity (USD 4m)
ASA	16/04/2008		Woolworths Financial Services (Proprietary) Limited (50% Stake)	Absa Group Limited	South Africa	Woolworths Holdings Ltd.	Cash (USD 111m)
GND	14/04/2008		Cockett Marine Oil Limited (50% Stake)	Grindrod Limited	South Africa		Cash (USD 13m)
SLM	11/04/2008		Buckles Holdings Limited (60% Stake)	Sanlam Ltd	South Africa		Cash (USD 15m)
LBH	27/03/2008		Fountainhead Property Trust Management Limited (50% Stake)	Liberty Group Limited	South Africa	Standard Bank Group Limited	Cash (USD 23m)
TRE	04/03/2008		Global Asset Management; Global Container Management;	Trencor Limited	South Africa	TrenStar, Inc.	Cash (USD 77m)
RBX	22/02/2008		Bonn Plant Hire (PTY) LTD; Akasia Road Surfacing (PTY) L	Raubex Group Ltd	South Africa		Cash (USD 15m)
SLM	12/02/2008		Principal Investment Management Limited (86% Stake)	Sanlam Ltd	South Africa	Asset Management Investment Company Plc; BP Marsh &	Cash (USD 69m)
NPN	18/12/2007	07/11/2007	Tradus plc	Naspers Limited	South Africa		Cash (USD 1675m)
APN	20/11/2007		Strides Latin America (50% Stake)	Aspen Pharmacare Holding	South Africa	Strides Arcolab Limited	Cash (USD 153m)
APN	20/11/2007		Onco Therapies Limited (49% Stake)	Aspen Pharmacare Holding	South Africa	Quantum Life Sciences Pvt Ltd	Cash (USD 17m)
FBR	16/11/2007		Cape Franchising	Famous Brands Ltd	South Africa		Cash (USD 23m)
NED	25/10/2007		Old Mutual Banking Services (50% Stake)	Nedbank Group Limited	South Africa	Old Mutual Plc	Cash (USD 21m)
NPN	04/10/2007		Gadu-Gadu SA	Naspers Limited	South Africa		Cash (USD 155m)
SOL	10/09/2007		Sasol Dia Acrylates (Pty) Limited (50% Stake)	Sasol Limited	South Africa	Mitsubishi Chemical Corporation	Cash (USD 31m)
OMN	16/08/2007		Zetachem Pty Ltd	Omnia Holdings Limited	South Africa		Cash (USD 28m)
BVT	03/05/2007		Viamax Holdings	The Bidvest Group Limited	South Africa	Transnet Ltd	Cash (USD 141m)
BVT	03/05/2007		Angliss International Ltd	The Bidvest Group Limited	South Africa	Vestey Group Limited	Cash (USD 79m)
GRF	02/05/2007		Sky Sands (Proprietary) Limited	Group Five Ltd	South Africa		Cash (USD 17m)
BSR	22/03/2007		Blasting and Excavating (Proprietary) Limited	Basil Read Holdings Limited	South Africa		Cash (USD 12m)
INL	15/03/2007		DCD-Dorbyl Pty Limited	Investec Limited; BEE SPV	South Africa		Cash (USD 74m)
IMP	16/02/2007	14/02/2007	African Platinum PLC	Impala Platinum Holdings L	South Africa		Cash (USD 518m)
ANG	12/02/2007		OOO GRK Amikan; OOO Artel Staratelei Angarskaya Proizv	AngloGold Ashanti Limited	South Africa	Trans-Siberian Gold Plc	Cash (USD 40m)
IVT	22/12/2006		Tiletoria (60% Stake)	Invicta Holdings Limited	South Africa		Cash (USD 7m)
MTN	03/10/2006		MTN Nigeria Communications Limited (6.98% Stake)	MTN Group Limited	South Africa		Cash (USD 288m), Equity (USD 61m)
RLO	02/10/2006		Reunert - PSG Investment Services Joint Venture	Reunert Limited; PSG Kons	South Africa		Cash (USD 40m)
GFI	11/09/2006		Barrick Gold South Africa (Pty) Limited	Gold Fields Limited	South Africa	Barrick Gold Corporation	Cash (USD 1200m), Equity (USD 325m)
MTN	06/07/2006		MTN Uganda, Ltd. (32.44% Stake)	MTN Group Limited	South Africa	Overseas Telecom AB	Cash (USD 165m)
IPL	15/02/2006		Lex Commercial Limited; Lex Auto Logistics; Lex Fleetserve	Imperial Holdings Limited	South Africa	RAC Plc	Cash (USD 87m)
ASA	22/12/2005		Barclays plc (South African Branch Business)	ABSA Bank Limited	South Africa	Barclays Plc	Cash (USD 88m)
GFI	01/12/2005	21/11/2005	Bolivar Gold Corporation (89% Stake)	Gold Fields Limited	South Africa		Cash (USD 326m)
APN	23/09/2005		Matrix Laboratories (API manufacturing facilities)	Aspen Pharmacare Holding	South Africa	Matrix Laboratories Limited	Cash (USD 36m)
MUR	02/09/2005	26/04/2005	Concor Limited (49% Stake)	Murray & Roberts Holdings	South Africa	Hochtief AG	Cash (USD 20m)
BVT	15/07/2005		Deli XL BV	The Bidvest Group Limited	South Africa	Royal Ahold NV	Cash (USD 68m)
BRN	19/04/2005		Nedcor SA (12% Stake)	Brimstone Investment Corp	South Africa	Old Mutual Plc	Cash (USD 482m)
BRN	19/04/2005		Old Mutual SA (14% Stake)	Brimstone Investment Corp	South Africa	Old Mutual Plc	Cash (USD 562m)
ASA	11/04/2005		Banco Comercial Angolano Sarl (50% Stake)	Absa Group Limited	South Africa		Cash (USD 8m)
ALT	30/08/2004		Econet Wireless Group (50% Stake)	Allied Technologies Limited	South Africa		Cash (USD 70m)
MUR	22/07/2004		The Cementation Company (Africa) Ltd. (79% Stake)	Murray & Roberts Holdings	South Africa	Skanska UK	Cash (USD 19m)
MUR	22/07/2004		Cementation Skanska Canada Inc	Murray & Roberts Holdings	South Africa	Skanska UK	Cash (USD 8m)
APN	10/03/2004		Fine Chemicals Corporation Pty Ltd	Aspen Pharmacare Holding	South Africa	Brait Private Equity	Cash (USD 38m)
SLM	31/12/2003		Glacier Management Company Ltd (33.33% Stake)	Sanlam Ltd	South Africa	Macquarie Group Limited	Cash (USD 13m)
GFI	19/12/2003		Sociedad Minera La Cima S.A (92% Stake)	Gold Fields Limited	South Africa		Cash (USD 40m)
BVT	06/11/2003		McCarthy Holdings Ltd	The Bidvest Group Limited	South Africa	Investec Limited; ABN AMRO (pre 2009); Societe General	Cash (USD 126m)
DRD	14/10/2003		Mineral Resources Porgera Limited ; Orogen Minerals (Porgera)	DRD GOLD Limited	South Africa	Oil Search Limited	Cash (USD 53m), Equity (USD 21m)
NED	10/10/2003		SND Investment Holdings Limited (48.7% Stake)	Nedbank	South Africa	BNP Paribas SA	Cash (USD 44m)
ANG	18/09/2003		Gold Fields Limited (Driefontein mining area)	AngloGold Ashanti Limited	South Africa	Gold Fields Limited	Cash (USD 42m)
MSM	09/10/2002		Builders Warehouse; Tile Warehouse	Massmart Holdings Limited	South Africa		Cash (USD 16m)
LBH	30/09/2002		Hightree Financial Services Ltd	Liberty Group Limited	South Africa		Cash (USD 7m)
IMP	22/08/2002		Mimosa Investments Limited (15% Stake)	Impala Platinum Holdings L	South Africa		Cash (USD 12m)
NPK	31/07/2002		Crown Cork & Seal Company Inc (Central and East African)	Nampak Ltd	South Africa	Crown Cork & Seal Company Inc	Cash (USD 25m)
ANG	31/07/2002		Cerro Vanguardia SA	AngloGold Ashanti Limited	South Africa	Petrobras Energia Participaciones S.A.-	Cash (USD 90m)
NED	22/04/2002		BoE Bank Limited	Nedbank Group Limited	South Africa		Cash (USD 593m), Equity (USD 130m)
SAP	18/03/2002		Potlatch Corp. (coated fine paper business and pulp and paper)	Sappi Ltd	South Africa	Potlatch Corp.	Cash (USD 480m)
SOL	05/03/2002		Roche Blasting Services Pty Limited (50% Stake)	Sasol Limited	South Africa	Downer EDI Limited	Cash (USD 13m)
SOL	22/02/2002		Schumann Sasol International AG	Sasol Limited	South Africa	VARA Holding	Cash (USD 43m)

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 8-3: Sample Acquirer Shares

Code	Announced Date	Pre-Rumour Date	Target Company	Bidder Company	Bidder Dominant Country	Seller Company	Consideration
SHF	15/12/2011		PSG Group Limited (20% Stake)	Steinhoff International Holdings Ltd	South Africa		Cash (USD 19m), Equity (USD 176m)
ADR	06/09/2011	28/07/2011	Paracon Holdings Limited	Adcorp Holdings Limited	South Africa		Cash (USD 38m), Equity (USD 61m)
JDG	14/03/2011		Steinhoff Doors and Building Materials (Proprietary) Limited	JD Group Limited	South Africa	Steinhoff International Holdings Ltd	Equity (USD 477m)
SHF	14/03/2011		Abra SA	Steinhoff International Holdings Ltd	South Africa	JD Group Limited	Equity (USD 19m)
BCX	15/12/2010		UCS Group (services businesses)	Business Connexion Group	South Africa	UCS Group	Cash (USD 4m), Equity (USD 85m)
BSR	30/09/2009	11/08/2009	TWP Holdings Ltd	Basil Read Holdings Limited	South Africa		Cash (USD 19m), Equity (USD 86m)
NED	16/09/2009		Imperial Bank Limited (49.9% Stake)	Nedbank Group Limited	South Africa	Imperial Financial Holdings Limited	Cash (USD 47m), Equity (USD 189m)
NED	15/05/2009		BoE (Proprietary) Limited (50% Stake)	Nedbank Group Limited	South Africa	Old Mutual Plc	Equity (USD 63m)
NED	15/05/2009		Nedgroup Life Assurance Company Limited (50% Stake)	Nedbank Group Limited	South Africa	Old Mutual Plc	Equity (USD 40m)
ANG	15/12/2008		Sao Bento Gold Company Limited	AngloGold Ashanti Limited	South Africa	Eldorado Gold Corporation	Equity (USD 70m)
ABL	20/08/2007		Ellerine Holding Ltd	African Bank Investments Ltd	South Africa		Equity (USD 1161m)
PSG	26/04/2007		Capitec Bank Holdings (16.53% Stake)	PSG Group Limited	South Africa		Equity (USD 78m)
WEZ	25/04/2007		Africa Wide Mineral Prospecting and Exploration (Pty) Ltd	Wesizwe Platinum Limited	South Africa		Equity (USD 92m)
ADR	27/02/2007		Capital Outsourcing Group	Adcorp Holdings Limited	South Africa	Medu Capital (Pty) Ltd	Cash (USD 10m), Equity (USD 23m)
SHF	21/02/2007		Unitrans Holding (Pty) Ltd (39.24% Stake)	Steinhoff International Holdings Ltd	South Africa		Equity (USD 232m)
EMI	18/12/2006		Freestone Property Holdings Ltd	Emira Property Fund	South Africa		Equity (USD 172m)
SHF	13/12/2006	17/11/2006	Homestyle Group plc (Formerly Roseby's)	Steinhoff International Holdings Ltd	South Africa		Equity (USD 250m)
DTC	04/12/2006		CSF Solutions Ltd	Datatec Limited	South Africa		Cash (USD 0m), Equity (USD 11m)
GRF	21/11/2006		Quarry Cats	Group Five Ltd	South Africa	Cobblers Limited	Cash (USD 34m), Equity (USD 68m)
NPN	14/11/2006		M-Net (38.56% Stake); Supersport (38.56% Stake)	Naspers Limited	South Africa	Avusa Ltd	Cash (USD 34m), Equity (USD 411m)
GFI	11/09/2006		Western Areas Limited (65.3% Stake)	Gold Fields Limited	South Africa		Equity (USD 742m)
GFI	11/09/2006		Western Areas Limited (16.7% Stake)	Gold Fields Limited	South Africa	JCI Limited	Equity (USD 190m)
PET	25/05/2005		Springlake Holdings (Proprietary) Limited	Petmin Limited	South Africa	NAMF Nominees (Proprietary) Limited ; Clidet Number 537	Cash (USD 0m), Equity (USD 12m)
HAR	13/11/2003		Avgold Limited (88.4% Stake)	Harmony Gold Mining Company Limited	South Africa	Anglovaal Mining Ltd	Equity (USD 886m)
ANG	05/08/2003	16/05/2003	Ashanti Goldfields Company Limited	AngloGold Ashanti Limited	South Africa		Equity (USD 1421m)

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 8-4: Sample Targets

Code	Announced Date	Pre-Rumour Date	Target Company	Target Dominant Country	Bidder Company	Bidder Dominant Country	Seller Company	Consideration
AFC	19/12/2011		AECI Limited (11.5% Stake)	South Africa	AECI Employees Share Trust; AECI Community Education and Development Trust	South Africa		Cash (USD 141m)
PSG	15/12/2011		PSG Group Limited (20% Stake)	South Africa	Steinhoff International Holdings Ltd	South Africa		Cash (USD 19m), Equity (USD 176m)
RMH	12/12/2011		RMB Holdings (8.14% Stake)	South Africa	Royal Bafokeng Holdings (Pty) Limited	South Africa	Remgro Limited; Gerrit Thomas Ferreira (Private investor)	Cash (USD 348m)
NHM	04/05/2011		Northam Platinum Ltd (Booyssendal Project's southern portion)	South Africa	Aquarius Platinum Limited	South Africa	Northam Platinum Ltd	Cash (USD 183m)
FSR	25/02/2011		FirstRand Limited (3.82% Stake)	South Africa	RMB Holdings	South Africa	Financial Securities Limited	Equity (USD 576m)
NHM	08/02/2011		Northam Platinum Ltd (50.4% Stake)	South Africa	Mvelaphanda Resources Limited (shareholders)	South Africa	Mvelaphanda Resources Limited	Equity (USD 1129m)
WEZ	17/12/2010	04/08/2010	Wesizwe Platinum Limited (51% Stake)	South Africa	Black Economic Empowerment; Jinchuan Group Limited; China	China		Cash (USD 226m)
MSM	29/11/2010	27/09/2010	Massmart Holdings Limited (51% Stake)	South Africa	Wal-Mart Stores Inc	USA		Cash (USD 2162m)
CLS	21/10/2010		Clicks Group Limited (10% Stake)	South Africa	Black Economic Empowerment	South Africa		Cash (USD 184m)
BCX	05/08/2010		Business Connexion Group Ltd (30.7% Stake)	South Africa	Black Economic Empowerment	South Africa		Equity (USD 92m)
NHM	26/04/2010		Northam Platinum Ltd (12.2% Stake)	South Africa	Eurasian Natural Resources Corporation Plc	United Kingdom	Mvelaphanda Resources Limited	Cash (USD 297m)
HYP	25/03/2010	01/03/2010	Hyprop Investments Limited (66.7% Stake)	South Africa	Redefine Income Fund Limited	South Africa		Cash (USD 756m)
SAP	24/03/2010		Sappi Ltd (4.5% Stake)	South Africa	Lereko Investments Pty Ltd; AMB Capital; Employee Share Ownership Trust	South Africa		Cash (USD 110m)
AIP	16/03/2010		Adcock Ingram Limited (13% Stake)	South Africa	Black Economic Empowerment	South Africa		Cash (USD 177m)
SYC	12/03/2010		Sycom Property Fund Managers Limited (50% Stake)	South Africa	Acucap Properties Ltd	South Africa	Parkdev (Proprietary) Limited	Cash (USD 18m)
CPI	07/12/2009		Capitec Bank (49% Stake)	South Africa	PSG Group Limited	South Africa		Equity (USD 205m)
IPL	16/09/2009		Imperial Bank Limited (49.9% Stake)	South Africa	Nedbank Group Limited	South Africa	Imperial Financial Holdings Limited	Cash (USD 47m), Equity (USD 189m)
TBS	01/09/2009		Tiger Brands Limited (5.05% Stake)	South Africa	The Tiger Brands Foundation	South Africa		Equity (USD 172m)
HLM	22/07/2009		Hulamin Limited (28% Stake)	South Africa	Coronation Fund Managers Limited	South Africa	Anglo American Plc	Cash (USD 92m)
AFR	21/07/2009		AFGR Limited (11 Lowveld Based Stores)	South Africa	MGK Bedryfsmaatskappy Beperk	South Africa	Laeveld Korporatiewe Beleggings Beperk; Afgri Operations	Cash (USD 6m)
SNT	11/06/2009		Sanlam Properties (Pty) Ltd (Property Asset Management Business)	South Africa	Vukile Manco Business	South Africa	Sanlam Properties (Pty) Ltd	Equity (USD 41m)
ASA	02/06/2009	26/03/2009	Absa Group Limited (5.1% Stake)	South Africa	Batho Bonke Capital (Proprietary) Limited	South Africa		Cash (USD 313m)
AFR	15/05/2009		AFGR Foods	South Africa	Sovereign Food Investments Ltd	South Africa	AFGR Limited	Equity (USD 120m)
ANG	17/03/2009		AngloGold Ashanti Limited (11.3% Stake)	South Africa	Paulson & Co Inc	USA	Anglo American Plc	Cash (USD 1277m)
BAW	12/06/2008		Barloworld Limited (10% Stake)	South Africa	Black Economic Empowerment	South Africa		Cash (USD 303m)
LBH	28/05/2008		Liberty Holdings Limited (40.83% Stake)	South Africa	Standard Bank Group Limited	South Africa		Cash (USD 572m)
RBW	20/02/2008		Rainbow Chicken Limited (15% Stake)	South Africa	Black Economic Empowerment	South Africa	Eagle Creek Investments (Pty) Ltd	Cash (USD 120m)
SBK	25/10/2007		Standard Bank Group Limited (20% Stake)	South Africa	Industrial and Commercial Bank of China Limited	China		Cash (USD 5413m)
SOL	10/09/2007		Sasol Limited (10% Stake)	South Africa	Black Economic Empowerment	South Africa		Cash (USD 2467m)
CPI	26/04/2007		Capitec Bank Holdings (16.53% Stake)	South Africa	PSG Group Limited	South Africa		Equity (USD 78m)
ILV	19/05/2006	15/03/2006	Illovo Sugar Limited (51% Stake)	South Africa	Associated British Foods Plc	United Kingdom		Cash (USD 596m)
BCX	22/03/2006		Business Connexion Group Ltd	South Africa	Telkom SA Limited	South Africa		Cash (USD 379m)
ASA	09/05/2005	23/09/2004	ABSA Bank Limited (60% Stake)	South Africa	Barclays Plc	United Kingdom		Cash (USD 5484m)
IPL	05/04/2005		Imperial Holdings Limited (7% Stake)	South Africa	Lereko Mobility (Pty) Ltd	South Africa		Cash (USD 224m)
FSR	24/02/2005		FirstRand Limited (6.5% Stake)	South Africa	FirstRand Empowerment Foundation	South Africa		Cash (USD 880m)
FSR	24/02/2005		FirstRand Limited (3.5% Stake)	South Africa	FirstRand Limited (Staff Trusts)	South Africa		Cash (USD 481m)
LON	12/05/2004		Lonmin Platinum (Lonplats) (27% Stake)	South Africa	Lonmin Plc; HDSA Investors	United Kingdom	Impala Platinum Holdings Ltd	Cash (USD 763m)
GFI	29/03/2004		Gold Fields Limited (20% Stake)	South Africa	Norimet Ltd	Russia	Anglo American Plc	Cash (USD 1160m)
GFI	18/09/2003		Gold Fields Limited (Driefontein mining area)	South Africa	AngloGold Ashanti Limited	South Africa	Gold Fields Limited	Cash (USD 42m)

MBA Research Project: The method of payment as a market signal in merger and acquisition transactions for South African firms

Table 8-5: Sample Targets Cash

Code	Announced Date	Pre-Rumour Date	Target Company	Target Dominant Country	Bidder Company	Bidder Dominant Country	Seller Company	Consideration
AFE	19/12/2011		AECI Limited (11.5% Stake)	South Africa	AECI Employees Share Trust; AECI Community Education and	South Africa		Cash (USD 141m)
RMH	12/12/2011		RMB Holdings (8.14% Stake)	South Africa	Royal Bafokeng Holdings (Pty) Limited	South Africa	Remgro Limited; Gerrit Thomas Ferreira (Private investor)	Cash (USD 348m)
NHM	04/05/2011		Northam Platinum Ltd (Booyseendal Project's southern portion)	South Africa	Aquarius Platinum Limited	South Africa	Northam Platinum Ltd	Cash (USD 183m)
WEZ	17/12/2010	04/08/2010	Wesizwe Platinum Limited (51% Stake)	South Africa	Black Economic Empowerment; Jinchuan Group Limited; China	China		Cash (USD 226m)
MSM	29/11/2010	27/09/2010	Massmart Holdings Limited (51% Stake)	South Africa	Wal-Mart Stores Inc	USA		Cash (USD 2162m)
CLS	21/10/2010		Clicks Group Limited (10% Stake)	South Africa	Black Economic Empowerment	South Africa		Cash (USD 184m)
NHM	26/04/2010		Northam Platinum Ltd (12.2% Stake)	South Africa	Eurasian Natural Resources Corporation Plc	United Kingdom	Mvelaphanda Resources Limited	Cash (USD 297m)
HYP	25/03/2010	01/03/2010	Hyprop Investments Limited (66.7% Stake)	South Africa	Redefine Income Fund Limited	South Africa		Cash (USD 756m)
SAP	24/03/2010		Sappi Ltd (4.5% Stake)	South Africa	Lereko Investments Pty Ltd; AMB Capital; Employee Share Own	South Africa		Cash (USD 110m)
AIP	16/03/2010		Adcock Ingram Limited (13% Stake)	South Africa	Black Economic Empowerment	South Africa		Cash (USD 177m)
SYC	12/03/2010		Sycom Property Fund Managers Limited (50% Stake)	South Africa	Acucap Properties Ltd	South Africa	Parkdev (Proprietary) Limited	Cash (USD 18m)
HLM	22/07/2009		Hulamin Limited (28% Stake)	South Africa	Coronation Fund Managers Limited	South Africa	Anglo American Plc	Cash (USD 92m)
AFR	21/07/2009		AFGR Limited (11 Lowveld Based Stores)	South Africa	MGK Bedryismaatskappy Beperk	South Africa	Laevel Korporatiewe Beleggings Beperk; Afgri Operations	Cash (USD 6m)
ASA	02/06/2009	26/03/2009	Absa Group Limited (5.1% Stake)	South Africa	Batho Bonke Capital (Proprietary) Limited	South Africa		Cash (USD 313m)
ANG	17/03/2009		AngloGold Ashanti Limited (11.3% Stake)	South Africa	Paulson & Co Inc	USA	Anglo American Plc	Cash (USD 1277m)
BAW	12/06/2008		Barloworld Limited (10% Stake)	South Africa	Black Economic Empowerment	South Africa		Cash (USD 303m)
LBH	28/05/2008		Liberty Holdings Limited (40.83% Stake)	South Africa	Standard Bank Group Limited	South Africa		Cash (USD 572m)
RBW	20/02/2008		Rainbow Chicken Limited (15% Stake)	South Africa	Black Economic Empowerment	South Africa	Eagle Creek Investments (Pty) Ltd	Cash (USD 120m)
SBK	25/10/2007		Standard Bank Group Limited (20% Stake)	South Africa	Industrial and Commercial Bank of China Limited	China		Cash (USD 5413m)
SOL	10/09/2007		Sasol Limited (10% Stake)	South Africa	Black Economic Empowerment	South Africa		Cash (USD 2467m)
ILV	19/05/2006	15/03/2006	Illovo Sugar Limited (51% Stake)	South Africa	Associated British Foods Plc	United Kingdom		Cash (USD 596m)
BCX	22/03/2006		Business Connexion Group Ltd	South Africa	Telkom SA Limited	South Africa		Cash (USD 379m)
ASA	09/05/2005	23/09/2004	ABSA Bank Limited (60% Stake)	South Africa	Barclays Plc	United Kingdom		Cash (USD 5484m)
IPL	05/04/2005		Imperial Holdings Limited (7% Stake)	South Africa	Lereko Mobility (Pty) Ltd	South Africa		Cash (USD 224m)
FSR	24/02/2005		FirstRand Limited (6.5% Stake)	South Africa	FirstRand Empowerment Foundation	South Africa		Cash (USD 880m)
FSR	24/02/2005		FirstRand Limited (3.5% Stake)	South Africa	FirstRand Limited (Staff Trusts)	South Africa		Cash (USD 481m)
LON	12/05/2004		Lonmin Platinum (Lonplats) (27% Stake)	South Africa	Lonmin Plc; HDSA Investors	United Kingdom	Impala Platinum Holdings Ltd	Cash (USD 763m)
GFI	29/03/2004		Gold Fields Limited (20% Stake)	South Africa	Norimet Ltd	Russia	Anglo American Plc	Cash (USD 1160m)
GFI	18/09/2003		Gold Fields Limited (Driefontein mining area)	South Africa	AngloGold Ashanti Limited	South Africa	Gold Fields Limited	Cash (USD 42m)

Table 8-6: Sample Targets Shares

Code	Announced Date	Pre-Rumour Date	Target Company	Target Dominant Country	Bidder Company	Bidder Dominant Country	Seller Company	Consideration
PSG	15/12/2011		PSG Group Limited (20% Stake)	South Africa	Steinhoff International Holdings Ltd	South Africa		Cash (USD 19m) Equity (USD 176m)
FSR	25/02/2011		FirstRand Limited (3.82% Stake)	South Africa	RMB Holdings	South Africa	Financial Securities Limited	Equity (USD 576m)
NHM	08/02/2011		Northam Platinum Ltd (50.4% Stake)	South Africa	Mvelaphanda Resources Limited (shareholders)	South Africa	Mvelaphanda Resources Limited	Equity (USD 1129m)
BCX	05/08/2010		Business Connexion Group Ltd (30.7% Stake)	South Africa	Black Economic Empowerment	South Africa		Equity (USD 92m)
CPI	07/12/2009		Capitec Bank (49% Stake)	South Africa	PSG Group Limited	South Africa		Equity (USD 205m)
IPL	16/09/2009		Imperial Bank Limited (49.9% Stake)	South Africa	Nedbank Group Limited	South Africa	Imperial Financial Holdings Limited	Cash (USD 47m), Equity (USD 189m)
TBS	01/09/2009		Tiger Brands Limited (5.05% Stake)	South Africa	The Tiger Brands Foundation	South Africa		Equity (USD 172m)
SNT	11/06/2009		Sanlam Properties (Pty) Ltd (Property Asset Management B)	South Africa	Vukile Manco Business	South Africa	Sanlam Properties (Pty) Ltd	Equity (USD 41m)
AFR	15/05/2009		AFGR Foods	South Africa	Sovereign Food Investments Ltd	South Africa	AFGR Limited	Equity (USD 120m)
CPI	26/04/2007		Capitec Bank Holdings (16.53% Stake)	South Africa	PSG Group Limited	South Africa		Equity (USD 78m)