Determinants of premiums in acquisitions of JSE listed companies

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ABSTRACT

The success of an acquisition is not measured solely through market reaction or the ability to integrate the target, but also by the ability of acquiring firms to conclude the transaction at a price that does not fully erode the net present value benefits of the transaction. The aim of this research is to identify factors that result in and influence the premiums that are paid in acquisitions. The research then aims to analyse these independent variables in terms of their influence on acquisition premiums.

Out of 11,927 transactions by JSE listed companies during the years 2000 – 2009, only 30 transactions met the defined sample criteria. Target firm characteristics, acquiring firm characteristics, and transaction characteristics were investigated to assess the predictive power of the independent variables as individual factors and as components of a multivariate framework that explain the premiums paid in corporate acquisitions on the JSE. Only two independent variables, namely managerial performance and acquiring firm leverage, were identified as significantly predictive variables for either market value or book value premiums through the use of more than one analytical technique. Results were not consistent across both book value premiums and market value premiums, and it was found that conflicting results materialised when different techniques were used to analyse the data. The conclusion of the study is that the variables analysed had limited predictive ability; there was a high incidence of outlying data, which significantly influenced the results of the study; and that the sample was smaller than ideal, and it would be advisable for further studies to get a larger sample by either changing the sample criteria, or by looking at data over a longer time period.

KEYWORDS: Merger, Acquisition, Premium

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 in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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"Every morning a gazelle wakes up and knows that it must outrun the fastest lion, or it will be eaten.
Every morning a lion wakes up and knows that that it must outrun the slowest gazelle, or it will starve.
So whether you are a gazelle or a lion, when the sun comes up, you had better start running". Anonymous

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Contents

1 CHAPTER 1 - INTRODUCTION TO THE RESEARCH PROBLEM

1.1 Research Title

Determinants of premiums in acquisitions of JSE listed companies.

1.2 Acquisition Premiums

There is a significant amount of literature and research available on mergers and acquisitions. This literature focuses on various important aspects of mergers and acquisitions such as the motivations behind acquisitions (Roll, 1986), whether bidders or targets benefit (Andrade, Mitchell, & Strafford, 2001; Moeller, Schlingemann, & Stulz, 2004; Petmezas, 2009), the impact on short term share price performance (O'Sullivan & Tuch, 2007), the impact on long term share price performance (Fuller, Netter, & Stegemoller, 2002; Dutta & Jog, 2009), the impact on operating financial performance (Gosh, 2001; Fee & Thomas, 2004), or on a combination of these factors (Ward & Smit, 2007).

Whilst it is evident that premiums are usually paid in acquisitions (Laamanen, 2007; Petmezas, 2009), there is a surprisingly small body of research into the determinants of the acquisition premium (Gondhalekar, Sant, & Ferris, 2004; Wickramanayake & Wood, 2010), and whether these variables can be used to predict the magnitude of said premiums. The variables that influence premium size are broadly classified into bidding company characteristics, target company characteristics and transaction characteristics (Gondhalekar, Sant, & Ferris, 2004). While studies such as that of Walking and Edmister (Walking & Edmister, 1985) and that of Varaiya (Varaiya , 1987)

provide a conceptual framework in analysing and predicting acquisition premiums, the main body of existing research focuses on US acquisitions during the time period 1970 -1990.

1.3 Research problem and purpose

Attention on the issue of how acquisition premiums are arrived at is important as the earnings derived from an acquisition depend not only on the expected (and delivered) operational results in terms of economies of scale and scope, increased market power, diversification, or improvement in overall management; but also on the ability of the acquiring company to conclude the transaction at a price that is not higher than the future expected profits (Hambrick & Hayward, 1997; Flanagan & O'Shaughnessy, 2003; Diaz, Azofra, & Gutierrez, 2009). Thus the success of an acquisition is not measured solely through market reaction or the ability to manage and integrate the target, but also by the ability of acquiring firms to conclude the transaction at a price that does not fully erode (or exceed) the net present value benefits of the transaction (Flanagan & O'Shaughnessy, 2003). The relevance of the issue of the size and determinants of the acquisition premium is highlighted by the view that excessive premiums can destroy some or even all post-acquisition synergies (Krishan, Hitt, & Park, 2007).

The research follows a two stage approach with the following aims:

1. To identify factors that result in and influence the premium that is paid in acquisitions.
2. The research then aims to analyse these independent variables in terms of their influence on acquisition premiums. This step aims to use multiple regression

techniques to investigate the predictive power of the independent variables as individual factors and as components of a multivariate framework that explains the premiums paid in corporate acquisitions on the JSE.

1.4 Research motivation

The research is aimed at providing academics, researchers and investment analysts with a tool to assess the size of acquisition premiums, as well as estimating bid prices on expected offers. Target company management should be able to use the resulting regression equation to assess any offers made in takeover attempts. Bidding company management should be able to use the research to determine a reasonable premium to offer, and similarly to identify future acquisition opportunities. This could be done through the assessment of target firm characteristics as well as of transaction characteristics. This could be particularly useful in the context of competitive bids.

The research also aims to highlight the relative importance of various identified factors that influence acquisition premiums. This would allow both bidders and target companies to focus on controllable variables and potentially influence the acquisition premium in a way that best suits their objectives. Bidding companies may for example choose to alter the method of payment in an acquisition in order to reduce premiums. Similarly, target firms may choose to solicit multiple bids in order to increase the acquisition premium.

2 CHAPTER 2 - LITERATURE REVIEW

2.1 Mergers and acquisitions

In 2010, as global markets rebounded from the financial crisis of 2007, so too did merger and acquisition activity. In 2010, the global mergers and acquisitions market showed its first increases in terms of both cumulative deal value (to around US$2.7 trillion) and transaction numbers (to around 7000) from 2007 (McKinsey&Company , 2011). Whilst merger and acquisition activity tends to coincide on a cyclical basis with economic expansion, fundamental economic changes, and stock market booms (Lambrecht, 2005), the trend has been one of ever increasing activity and transactional value. As global financial markets continue to recover, it is expected that merger and acquisition activities will increase, especially given that many large public companies have accumulated massive amounts of cash on their balance sheets (Ernst & Young, 2009). For example, at the beginning of 2010 global private equity firms were estimated to hold in excess of $500 billion of cash (Ernst & Young, 2009). Given the purpose of private equity funds, it is suggested by some (Ernst & Young, 2009) that this cash (which is also attracting very low interest rates) will be committed to acquisitions at some point (Ernst & Young, 2009).

According to Andrade, *et al* (2003), the economic role of mergers and acquisitions is to in effect reallocate resources within an economy (be it locally or globally). It is suggested that there may be different motivations for acquisitions ranging from empire building through to diversification. Given the size of the acquisition market and the huge number of transactions involved, it would however be fair to say that there

should be an economic rationale for the activity, or more specifically, that there should be sources of gains from mergers and acquisitions (Roll, 1986).

There is a conclusive body of research that indicates that acquisitions take place at a premium, with estimates varying as a result of time period and region specific information, but typically ranging from 30% (FactSet Mergerstat, 2008), to 50% (Porrini, 2006). Crawford and Lechner (1996) and Varaiya (1987) suggest that prices offered by acquiring companies should be derived from the intrinsic value of the target firm and all the potential gains the bidder should make from the acquisition. Walking and Edmister (1985) suggest that the highest premium that a value maximising investor would pay would be "equal to the net benefits expected", namely the increase in the efficiency of the new entity's physical, financial and managerial resources.

Whilst the focus of this research is not on the rationale for mergers and acquisitions, a discussion on the determinants of the premiums paid would be incomplete without an understanding of the factors that are most commonly cited as the economic and strategic rationale for the transactions, as many of these factors directly influence the factors identified as the determinants of acquisition premiums.

Bidding firms may believe that the merger of two firms will result in synergies, and these synergies will result in value being created. A literature review by Kode, Ford, and Sutherland (2003) found that the most commonly cited reasons for the need for synergies are:

- globalisation, leading to scale requirements;
- speed and growth considerations;
- industry specific reasons;
- product and service range expansion;
- geographic influences;
- risk reduction and diversification;
- and leverage of core competencies or technological changes.

The synergies may come in multiple forms ranging from the elimination of inferior management, economies of scale or from increased market power (Ward & Smit, 2007). It is expected that these synergies can be extracted by the bidding firm (Sudarsanam & Sorwar, 2010). Research does however suggest that excessive premiums can destroy value from post-acquisition synergies (Hitt, Krishnan, & Park, 2007).

Strategic reasons are also seen as a major motivating factor behind mergers and acquisitions. It is possible that mergers may be used as a mechanism to expand during economic boom periods or contract (i.e. reduce excess capacity and focus on efficiencies) during contractionary periods (Andrade & Strafford, 2004). Diversification is another commonly cited strategic reason for mergers and acquisitions. According to Doukas and Kan (2008), companies may seek to diversify when there are low growth prospects in their core businesses; higher growth prospects in non-core businesses; or when cashflows from core businesses fall behind those of non-core businesses. Firms that diversify therefore transfer cashflows from low cash flow (and non profitable)

businesses to high cash flow (and profitable) businesses (Doukas & Kan, 2008). It must be noted that there is a significant amount of conflicting research on the benefits of diversifying acquisitions. Anand and Singh (1997) suggest that firms in declining industries may be better off rationalising in that industry and then use the capital generated from the rationalisation in other growth industries. Berger and Ofek (1995) and Megginson *et al* (2004) contend that over diversification can destroy value. Dickerson *et al* (1997) highlight that UK firms that followed organic growth strategies yielded higher returns to shareholders. In contrast though, Diltz and Hyland (2002) found evidence of positive market reaction to diversifying acquisitions as well as superior long term performance.

The hubris hypothesis (Roll, 1986) is another commonly cited reason for mergers and acquisitions. The hypothesis effectively states that the management of bidding companies may overestimate their ability to manage the identified synergies. This over confidence results in acquiring firms over paying for their targets and destroying value for shareholders (Malmendier & Tate, 2008). This effectively sees wealth transferred from bidding shareholders to target shareholders. Roll (1986) did however state that hubris cannot be the sole explanation of mergers and acquisitions as it would imply that every bid should result in a drop in bidding firms shares, but some research found the opposite.

The more sinister suggested motive for mergers and acquisitions is that of agency theory as suggested by Hambrick and Hayward (1997). According to Jensen (1998), there is a fundamental misalignment between managers and shareholders objectives

insofar as managers are often evaluated based on growth, whereas shareholders focus on share price. The suggestion is that managers are effectively (yet incorrectly) incentivised to pursue growth irrespective of whether this growth leads to shareholder value. Seth *et al* (2002) suggested that 26% of mergers and acquisitions in their study were instigated by managers for their own utility and not for the benefit of shareholders. The most easily attainable mechanism for this utility and growth is through mergers and acquisitions, and thus this practice is often pursued for the incorrect reasons (Jenson M. , Takeovers: Their causes and consequences, 1998). This view is corroborated by Harford (1999) and Malmendier & Tate (2008), and is expanded to the concept of empire building theory, whereby managers seek to increase the size of their corporate empire for reasons such as power, control and ego as opposed to shareholder value maximisation (Harford, 1999). Both Jensen (1998) and Harford (1999) found that these conditions were exacerbated in cash rich firms. A comprehensive review of research on managerial incentives and merger activity performed by Williams *et al* (2008) found that “acquiring managers can increase their pay by merging with other firms, and this is likely to happen in cases where shareholder returns are negative. Managers who already earn high compensation are more likely to engage in mergers to grow the firm, and managers of successful firms that lead their firm through "merger programs" experience higher increases in compensation”. The theories of hubris, empire building, and agency factors are not without challenge though. Mulherin and Boone (2000) found that positive wealth effects from mergers and acquisitions are observable and this is inconsistent with theories such as hubris or empire building.

While all of the above mentioned factors can be considered in isolation with varying amounts of research supporting or denying their existence or importance, a balanced view is suggested by Andrade *et al* (2001). It is suggested that the motivation behind mergers and acquisitions may be a composite of many interrelated factors including strategy, hubris, empire building and agency factors (Andrade, Mitchell, & Strafford, 2001).

The amount of conflicting literature regarding the reasons for mergers and acquisitions makes a strong case to say that little progress has been made from the 1970's and 1980's when depressingly inconclusive research suggested that there is actually no understanding of the reasons for acquisitions (Jenson & Rauback, 1983), that there is no generally accepted theory behind the rationale to mergers (Jenson & Rauback, 1983), and that there is no conclusive empirical evidence motivating the activity (Lewellen, 1971).

2.2 Evidence of success of mergers and acquisitions

Whilst on the whole there is agreement that premiums are typically paid in acquisitions (FactSet Mergerstat, 2008; Porrini, 2006), the issue of value creation as a result of acquisitions is far more complicated and is in fact a hotly contested subject. Part of the problem with assessing acquisition related value creation is a lack of agreement on the measure used to assess whether the acquisition was successful or not. There are three separate schools of thought on how to measure the success of an acquisition (Fuller, Netter, & Stegemoller, 2002).

Some proponents, such as O'Sullivan & Tuch (2007), and Brunner (2002), focus on short term share price performance as the best manner to determine value added by a merger. The basis of this method is that short term share prices fully adjust to include the impact of mergers in an efficient market (Loughran & Vijh, Do long term shareholders benefit from corporate acquisitions, 1997). This view is corroborated by Andrade *et al* (2001) and is heavily reliant of the efficient market hypothesis (Fama, Fisher, Jensen, & Roll, 1969). Unfortunately though, the evidence showing whether value is created by acquisitions (in terms of short term share price performance) is not conclusive. Conclusions range from target firms being the only positively impacted party as implied by Brunner (2002) and O'Sullivan & Tuch (2007), to value being created in the short term by share funded transactions (Andrade, Mitchell, & Strafford, 2001), and to little evidence of either value creation or destruction (Mushidzhi & Ward, 2004; Ward & Smit, 2007).

An alternative approach to assessing the success of an acquisition is to focus on long term share price performance (Dutta & Jog, 2009). This approach is either based on the view that short term abnormal returns fail to capture the full impact of delayed market reactions to acquisition announcements (Agrawal & Jaffe, 2000), or on the view that the benefits from synergies will take time to manifest themselves (Andrade, Mitchell, & Strafford, 2001). Once again, conclusions are mixed with inconsistent evidence on the impact on the acquirer (Fuller, Netter, & Stegemoller, 2002). There is however criticism of this method as factors outside the acquisition itself may play a role in influencing the share price over a long period of time (Healy, Palepu, & Ruback,

1992). One of these criticisms is that acquirers often buy when their own price is high, so in such instances, event study methodologies may begin in the "wrong" place.

The other mainstream approach to evaluating the success of acquisitions is by focusing on post-acquisition operating financial performance. The seminal work of Healy *et al* (1992) states that "post-acquisition operating financial performance represents actual economic benefits generated by mergers and acquisitions, while share price performance represents investors' perceptions and expectations of the benefits". Unfortunately the results from this stream of research are once again disappointingly ambiguous. Fee and Thomas (2004) found evidence of improvements in cash flow return on sales, as did Healy *et al* (1992) in respect of firms relative to their industries. Ghosh (2001) found that operating cash flows improved significantly in cash funded acquisitions but declined after share funded acquisitions. Healy and Palepu (1997) found that improved operating financial performance is insignificant, and are unlikely to earn returns beyond those to justify exhibited premiums.

Smit and Ward (2007) presented a study which considered all three of the abovementioned measures. The findings stated that "no statistically significant cumulative abnormal returns were observed around the announcement date". Furthermore, the research found that there was no evidence of improved financial performance. The research concluded that large acquisitions are net zero present value investments. This is in agreement with Healy and Palepu (1997). Smit and Ward (2007) provide an excellent summary of findings of a number of studies in each of the performance measurement methods discussed in the literature above.

2.3 Acquisition premiums

2.3.1 The basis for acquisition premiums

Based on the literature, it has been shown that there is no universally accepted basis for mergers and acquisitions. The motivations behind mergers and acquisitions are not universal (Jenson & Rauback, 1983; Ragozzino & Reuer, 2007) and the success of acquisitions are not backed by consistent evidence irrespective of whether one considers the acquisition in terms of short term (O'Sullivan & Tuch, 2007) or long term share price (Dutta & Jog, 2009) performance or post-acquisition financial operating performance (Ward & Smit, 2007; Healy & Palepu, 1997; Epstein, 2005). This inconclusive evidence, while a subject in its own right, has significant implications when considering the issues of the premiums that are actually paid in acquisitions (Laamanen, 2007). Attention on the issue is warranted as the earnings derived from an acquisition depend not only on the expected (and delivered) operational results in terms of economies of scale and scope, increased market power, diversification, or improvement in overall management, but also on the ability of the acquiring company to conclude the transaction at a price that is not higher than the future expected profits (Hambrick & Hayward, 1997; Flanagan & O'Shaughnessy, 2003; Diaz, Azofra, & Gutierrez, 2009). Thus the success of an acquisition is not measured solely through market reaction or the ability to manage and integrate the target, but also by the ability of acquiring firms to conclude the transaction at a price that does not fully erode (or exceed) the net present value benefits of the transaction (Flanagan & O'Shaughnessy, 2003).

The acquisition premium refers to the extent that the bid price exceeds the market value of the shares of the target firm (Diaz, Azofra, & Gutierrez, 2009). Alternatively, it is possible to define the premium as the extent to which the price offered for a company exceeds the book value per share of that company (Cheng & Chan, 1995; Wickramanayake & Wood, 2010). Shareholders of the firm being acquired will require a minimum price that will ensure a level of profit that allows the offer to be accepted. If the bid price is lower than the minimum price the deal will not be accepted (Betton, Eckbo, & Thorburn, 2009). Consequently, the higher the premium offered, the more likely it is that the offer will be accepted (Greenfield, 1992). The relevance of the issue of the size of the acquisition premium is highlighted by the view that excessive premiums can destroy some or even all post-acquisition synergies (Krishan, Hitt, & Park, 2007).

There are effectively two schools of thought regarding the acquisition premium. The synergy hypothesis states that the greater the level of value (through synergies) that a bidding company expects to gain from a transaction, the higher the amount that they will be willing to pay (Antoniou, Arbour, & Zhoa, 2007). The premium is therefore an indication of the value the acquirer assigns to the acquisition and the probability of obtaining synergies and hence future returns. This hypothesis therefore suggests a positive relationship between premiums and expected returns (Bradley, Desai, & Kim, 1983).

An alternative view is the overpayment hypothesis. This hypothesis states that acquisitive firms have the tendency to pay a premium that is in fact higher than the

future profits expected by the market. This hypothesis suggests a negative relationship between premiums and post-acquisition returns (Varaiya & Ferris, 1987). The hypothesis also implies that high premiums result in a transfer of wealth (extraordinary returns) to the shareholders of the acquired company. The overpayment hypothesis is supported by academic concepts such as the hubris hypothesis (Roll, 1986); the winners curse (Ekbo, 2009); or agency factors (Hambrick & Hayward, 1997).

In 2009 an average price of 140% of Net Asset Value (NAV) was paid in JSE listed acquisitions (Ernst & Young, 2009). A study by Porrini (2006) indicated acquisition premiums of over 50% (to NAV) in that specific research. Ekbo (2008) found an average initial offer premium of 45% in his analysis of 4889 control contests for U.S. public targets during the period 1980 -2002.

Factset data indicates premiums of approximately 30% to market value between 1992 and 2007 in over 100,000 separate transactions (FactSet Mergerstat, 2008). Research across virtually any period shows premiums regularly exceeding 50% to market value and often exceeding 100% of the targets share price prior to announcement (Haunschild, 1994; Varaiya & Ferris, 1987). However, if there is no universal motivation or economic basis for the practice, an obvious question is “how do bidding and target firms get to the premiums that are typically displayed in merger and acquisition transactions”? (Betton, Eckbo, & Thorburn, 2009).

In order to assess the determinants of acquisition premiums, three sets of characteristics have been considered as per the methodology of Gondhalekar *et al*

(2004), and the seminal work of Edmister & Walking (1985) and Varaiya (1987). These characteristics can be broadly defined as acquirer characteristics, target company characteristics, and transaction characteristics.

2.3.2 Acquirer characteristics

The following characteristics of acquiring firms are considered:

2.3.2.1 Relative size

Graham *et al* (2008) state that large firms which are characterised by high levels of liquidity, high market to book ratios, and strong stock price performance have a proclivity to engage in acquisitions. This can often be attributed to the view that such a firm is further along in its life cycle and its shares are highly valued (Moeller, Schlingemann, & Stulz, 2004). By virtue of this progression in its life cycle, Moeller *et al* (2004) suggest that large firms have often run out of internal investment opportunities and therefore seek external opportunities (through acquisitions) to grow (refer to 2.3.2.3 "investment opportunities" for a detailed discussion). They find significant evidence that premiums are larger for acquisitions by large firms than those paid by small firms.

When it comes to the influence of the relative size of an acquirer to its target, De Long (2003) and Louis (2004), suggest that it is easier to reduce costs when acquiring relatively smaller companies. The view posits that the greater the size differential between acquirer and target, the higher the likelihood that the acquirer can

implement efficiency improvements and hence improve profitability in the target firm through economies of scale and scope and the implementation of new services and technologies. Alexandridis *et al* (2010) support this assertion. The implication is that acquiring firms will be willing to pay relatively higher premiums for relatively smaller targets as a result of the expected abnormal returns. This theory receives support from Diaz *et al* (2009) through the suggestion that the greater the size of the target company, the more difficult and expensive it is to merge cultures between the two companies. Thus, the bigger the relative size of the target, the lower the expected return. Consequently, acquiring firms are reticent to pay high premiums for relatively large targets, as their expectations of abnormal profits are tempered by the prospect of difficult and expensive integrations and due to a potential lack of significant economies of scale and scope (Diaz, Azofra, & Gutierrez, 2009). A potential conclusion regarding firm size and premiums therefore, is that large firms may pay more in acquisitions because they acquire targets or enter deals that by nature require a large premium rather than because they are large firms (Officer, 2003; and Moeller, Schlingemann, & Stulz, 2004).

An alternative view is that managers of small firms typically have more firm ownership than that of managers in larger firms. Demsetz and Lehn (1985) as cited in Moeller *et al* (2004) posit that, in general, as a consequence of ownership the incentives of managers in small firms are better aligned than in the case of large firm management. They suggest that this results in lower premiums in purchases made by small firms as the acquiring firm management is less prone to hubris and agency conflict. Similarly, Moeller *et al* (2004) suggest that large firm managers face fewer obstacles in

concluding transactions and are by virtue of the firm's size able to pay higher premiums. Consequently Moeller *et al* (2004) find that the premium paid increases with firm size after controlling for firm and deal characteristics. Maloney, McCormick and Mitchell (1993) also show that highly geared firms make better acquisitions in terms of the price paid, and that small firms have higher leverage than that of large firms. This could suggest that small firms pay less in acquisitions than large firms.

2.3.2.2 Investment opportunities;

According to the growth opportunities signalling hypothesis (formalised by McCardle & Viswanathan (1994) and Jovanovic & Braguinsky (2002)) firms make acquisitions when they have exhausted internal investment opportunities. Based on the seminal work of Lang *et al* (1991) it is possible to assess a bidders investment opportunities by analysing the firms market-to-book ratio (comparing the book value of the firm's assets to the current market value ascribed to the company, also known as the firms market capitalisation) relative to median market-to-book ratios. The basis of the literature is that firms with below median market-to-book ratios have reduced investment opportunities due to a lack of profitable internal investment opportunities (Gondhalekar, Sant, & Ferris, 2004). This is because higher market-to-book ratio implies that investors expect management to create more value from a given set of assets *ceteris paribus*. Lang *et al* (1991) assert that firms with low market-to-book ratios have a low expectation of creating value from their given assets and are therefore compelled to seek positive net present value investment opportunities (acquisitions) in order to generate returns for shareholders (Smith & Kim, 1994). It is hypothesised that this proclivity to engage in acquisitions can lead to a tendency to

pay higher premiums in order to successfully conclude acquisition transactions (Greenfield, 1992; Gondhalekar, Sant, & Ferris, 2004). The converse is true in that it is suggested that firms with attractive internal projects (as evidenced by high market-to-book ratios) have less need to seek external acquisitions, and when they do, are more circumspect and less likely to pay excessive premiums in acquisitions (Gondhalekar, Sant, & Ferris, 2004)

2.3.2.3 Free cash flow;

A firm that has high free cash flow and excess debt capacity is one that has excess financial capacity (Griffith & Carroll, 2001). The acquiring firm's cash-to-total assets can be used as a normalised measure of the free cash flow that a firm generates. Jenson (1988) hypothesised that managers tend to spend free cash flow more freely on value-reducing activities when the cost is borne by shareholders (linking closely to the agency theory as per Porrini, (2006)). Lang, Stulz and Walking (1989, 1991), have consistent findings and state further that poorly managed firms tend to pursue value reducing acquisitions as opposed to distributing the cash flows to shareholders in the form of dividends. Such firms tend to accumulate excess cash and then use this cash to make poor acquisitions (Moeller, Schlingemann, & Stulz, 2004). The implication of Lang *et al* (1991) findings, as asserted by Gondhalekar *et al* (2004) is that firms with limited internal investment opportunities, as characterised by lower than median market-to-book ratios (as discussed under 2.3.3.1) and high levels of free cash flow, are more likely to pursue an aggressive acquisition strategy. It is hypothesised that this aggressive acquisitive tendency will lead to the payment of higher premiums than those paid by acquirers without such characteristics (Greenfield, 1992; Gondhalekar,

Sant, & Ferris, 2004). This tendancy is potentially compounded by agency factors (Jenson M. , 1998), hubris (Roll, 1986), or even a failure to learn from past mistakes (Hayward, 2003).

2.3.2.4 Acquiring firm leverage

Gondhalekar, Sant, & Ferris (2004) it is suggested that there is "likely to be greater monitoring of corporate activities by the firm's creditors as financial leverage increases. Hence, it is less probable that the firm will overpay for an acquisition. Consequently, we hypothesize a negative coefficient on the acquirer's debt-to equity ratio". This follows closely on the concept of acquiring firm free cash flow (as described in section 2.3.2.4 above) whereby Jenson (1988) hypothesised that managers tend to spend free cash flow more freely on value-reducing activities when the cost is borne by shareholders. It therefore follows that acquiring firms with high levels of leverage have less free cash flow available for acquisitions, and that the acquisitions would be made on a far more conservative basis given the scarcity of funds.

2.3.3 Target company characteristics

Similarly, a set of independent variables significantly influence the target, specifically the availability of positive net present value opportunities as well as the level of free cash flow (Gondhalekar, Sant, & Ferris, 2004). These variables include:

2.3.3.1 Target size

As discussed under "Acquirer characteristics, Relative Size" (2.3.2.1), it is suggested that acquirers are willing to pay higher premiums for relatively smaller firms based on the expectation of higher profits as a result of the existence of economies of scale and scope (Louis, 2004) as well as relatively less expensive cultural integration (Diaz, Azofra, & Gutierrez, 2009).

It is also possible to focus on the implication of the targets absolute size as opposed to relative size (which has been previously discussed). There is conflicting evidence and hypotheses as to whether target size have a positive or inverse relationship with acquisition premiums. Some authors postulate that the high values at stake in large acquisitions result in more accurate valuations and hence a lower than expected price (Alexandridis, Fuller, Terhaar, & Travlos, 2010). Some authors suggest that competition could potentially be less fierce with high value targets due to a low number of competing bidders (Gorton, Kahl, & Rosen, 2009) and a high awareness of the "winners curse" (Ekbo, 2009). Noronha *et al* (1996) found that "competing bidders are less likely to enter in cases where the target is large". Based on the hypothesis that competition is positively linked to acquisition premiums (Flanagan & O'Shaughnessy, 2003; Walking & Edmister, 1985; Hambrick & Hayward, 1997; Varaiya & Ferris, 1987), this would suggest that large targets command lower acquisition premiums. Lang, Stulz and Walking (1989) however argue that if acquirers genuinely gain from an acquisition, they should *ceteris paribus* benefit more from large acquisitions, meaning they might be willing to pay more for large acquisitions.

Another perspective on target firm size and acquisition premiums centres on the ownership characteristics of large firms (Bauguess, Moeller, Schlingemann, & Zutter, 2009). It is suggested that large firms tend to have lower managerial ownership and premiums tend to reduce with reduced levels of manager ownership (Bauguess, Moeller, Schlingemann, & Zutter, 2009).

The complexity of an acquisition (which can be very closely linked to the size of the target) may require the use of professional assistance, typically in the form of an investment bank (Hayward, 2003). There is a view that acquirers will pay less for large targets as the size of the transaction would require them to use professional and expert financial advisors resulting in more accurate valuations (Kale, Kini, & Ryan, 2003). This view is however contested by research finding that investment banks may often introduce agency conflicts into acquisition negotiations resulting in higher premiums (Porrini, 2006). According to Porrini (2006) the agency issues stems from the practice of linking professional fees to the actual price of a transaction, effectively incentivising advisors to negotiate higher transaction prices (and by implication premiums). Laamanent (2007) however suggests that in some cases, the complexity of an acquisition justifies the premiums paid.

There is also the view that internal agency factors and “hubris” will result in excessive acquisition premiums (Roll, 1986). Hayward and Hambrick (1997) suggest that a relationship between CEO hubris and acquisition premiums exists, and this relationship is strengthened “when board vigilance is lacking” (Hambrick & Hayward, 1997). An empirical study by Malmendier and Tate (2008) found that overconfident CEO’s

generated less value for the acquirer than those of rational bidders by overestimating synergies (hubris), being influenced by agency factors (such as share options), and consequently paying premiums in excess of what rational bidders would pay (Malmendier & Tate, 2008).

2.3.3.2 Target firm investment opportunities

Under 2.3.2.3 it was discussed that the market-to-book ratio of an acquiring firm could be seen as an indication as to whether a firm had internal investment opportunities (high market-to-book ratio) or was compelled to seek external investment opportunities in the form of acquisitions (Lang, Stulz, & Walking, 1991, and Gondhalekar, Sant, & Ferris, 2004).

It is also possible to consider the market-to-book ratio of the target firm when assessing the premium that has been paid in the acquisition of a target firm. This ratio is estimated by considering the book value of the firm's assets to the current market value ascribed to the company, also known as the firm's market capitalisation. As per Lang *et al* (1991) high market-to-book ratios can be seen as an indicator of a high expectation for future profits based on the existing set of assets that the firm has. Given the expectation for higher profits, it logically follows that acquiring firms would be willing to pay more for such companies in the form of a higher acquisition premium (Gondhalekar, Sant, & Ferris, 2004) than for companies with lower market-to-book ratios.

2.3.3.3 Growth rate

Balke & Wohar (2001) and Wickramanayake & Wood (2010) identify the price-to-earnings (commonly known as the "PE" ratio) as a proxy for a firm's growth potential as it reflects the market's perceptions of a firm's growth opportunities. It is important to note that using a PE ratio on a single company provides little interpretive ability (Jones, 2008). It is however possible to use the P/E ratio as a measure of relative value to provide insight into the perceived growth potential of specific shares (Wickramanayake & Wood, 2010).

An alternative but related method of assessing growth rate is to focus on the target firms earnings per share (or EPS) growth. The common expectation is that acquiring firms will be willing to pay more for firms that show strong earnings growth (Gondhalekar, Sant, & Ferris, 2004) or have a high market expectation of earnings growth as exhibited by a high PE ratio (Balke & Wohar, 2001). Porrini (2006) found that the initial and final offer premiums are lower when the target's book-to-market ratio exceeds the industry median book-to-market ratio, when the target is a growth company relative to industry rivals.

There is however a contrary view that states that using PE ratios as a measure of growth potential results in exposure to price bubbles or excessive investor optimism (McGirt, 2004 a cited in Wickramanayake & Wood, 2010). Wickramanayake & Wood (2010) actually found a negative relationship between price-to-earnings ratios and bid premiums in an analysis of acquisition premiums in the Australian and Canadian mining sector between 1997 and 2007. They suggest that this brings into question the

explanatory power of the PE ratio in terms of future growth as their study found that acquiring firms were unwilling to pay the inflated price for target mining firms and adjusted their bid premiums downward.

The alternative method is to consider the measure of "modified Tobin's Q" as suggested by Lang *et al* (1989), Servaes (1991), and Wickramanayake & Wood (2010). It is suggested the Modified Tobin's Q will be a proxy for the past share price performance (or growth in market capitalisation) of the target company and will therefore be indicative of past managerial peformance. Modified Tobin's Q is based on the assumption that a large market capitalisation for a given level of assets shows superior management.

2.3.3.4 Listing age

According to Gondhalekar *et al* (2004), the listing age of a company may be seen as a proxy for the maturity of a firm. Thus it can be inferred that firms that have been listed for longer are more mature and consequently there is more information available about their growth prospects and likely performance. Conversely it is possible to argue that younger firms (from a listing perspective) are less likely to have comprehensive information about its performance and growth prospects. This lack of information can result in conflicting views on the target company's actual value and therefore impacts the premium paid in the transaction (Ragozzino & Reuer, 2007). The suggestion is therefore that an inverse relationship exists between listing age and the premium paid in an acquisition, especially when managerial hubris (Roll, 1986) exists in the bidding

firm, as the divergence in opinion allows over optimistic valuations to come into play (Varaiya & Ferris, 1987).

An alternate view is that mature firms are further along in their maturity life cycles. This in turn could mean that its share price accurate reflects its performance or alternatively that an older firm has less internal investment opportunities (Moeller, Schlingemann, & Stulz, 2004; and Griffith & Carroll, 2001). It is possible to infer through this that firms that have been listed for longer may in fact be less attractive to acquirers and may consequently demand a lower premium.

2.3.3.5 Target firm leverage

Walking and Edmister (1985) found evidence of an inverse relationship for the target's debt ratio and acquisition premiums. Following Gondhalekar, Sant, & Ferris (2004) it is suggested that the target's debt-to-equity ratio is a measure of the portion of a firm's cash flow that is encumbered, thus reducing the total amount of cash subject to managerial discretion (also referred to as "free cash flow"). They posit that as higher levels of debt further encumber cash flow, the firm becomes less attractive to potential suitors. This would suggest that as debt increases within a target, acquisition premiums would fall as the target becomes less attractive to suitors.

2.3.4 Transaction characteristics

The characteristics of the transaction form a set of independent variables that will also influence the acquisition premium (Ekbo, 2009; Walking & Edmister, 1985; Varaiya N. , 1987). These variables include:

2.3.4.1 Industry sector characteristics

Core-related acquisitions (acquisition of targets in the same industry) should result in greater opportunities for synergies than non-core related acquisitions (Flanagan & O'Shaughnessy, 2003). Due to the potential for synergies (Krishan, Hitt, & Park, 2007) core related acquisitions could lead to higher valuations (and premiums) of target firms (Flanagan & O'Shaughnessy, 2003; Hirschleifer & Titman, 1990). It was hypothesised by Gondhalekar *et* al (2004) that bidders would be willing to pay more for firms in the same industry as it would increase their market share and result in achievable economies of scale and synergies. They reported a general unwillingness of firms to pay more (a higher premium) for diversifying acquisitions. Their findings are effectively inconsistent with firms offering higher premiums for targets to become diversified.

There is an opposing view to this. It is suggested that there is greater difficulty in evaluating the strategic benefits of firms that operate in other industries to that of the acquiring firm (Porrini, 2006), meaning that firms may overestimate the synergies of an acquisition and overpay in the purchase. This would imply that acquisitions across industries may exhibit higher premiums than within industries. Porrini (2006) also suggests that the complexity of such transactions can result in acquisition premiums,

but makes no suggestions as to whether these premiums are justified or simply a result of difficulties in valuations. Similarly it is suggested that an acquirer that practices in the same industry and business line as the target will have a higher propensity to accurately value the target than an acquiring firm from another industry (Fee & Thomas, 2004), meaning that intra industry acquisitions may in fact result in lower acquisition premiums than in the case of acquisitions across industries. This is however in contrast to the findings of Gondhalekar *et* al (2004) that suggest that intra industry acquisitions should demand higher premiums due to potential economies of scope and scale as well as the ability to increase market share.

2.3.4.2 The existence of multiple bidders

The subject of bidder competition is one that has received significant attention (Noronha, Sen, & Smith , 1996; Petmezas, 2009). Noronha *et al* (1996) suggest that one of the complicating factors in terms of bidder competition is that the acquisitions of public companies are public events that are both highly scrutinised and allow competitive bidders to enter the process at any point in the process.

A number of studies have found that the premium paid in acquisitions where there were multiple bidders exceeds the premium paid in single bidder transactions (Flanagan & O'Shaughnessy, 2003; Walking & Edmister, 1985; Hambrick & Hayward, 1997; Varaiya & Ferris, 1987). The basis of these findings according to Porter (1980) (cited in Flanagan & O'Shaughnessy, 2003) is that mutliple bidders increase the bargaining power of the seller and effectively results in a higher price being paid for

the acquisition. The seller can therefore "play one contender's bid against another's and generate a higher premium for their stock" (Flanagan & O'Shaughnessy, 2003). This is consistent with two studies from the 1980's. Bradley, Desai, and Kim (1988) found empirical evidence of abnormally high announcement period returns for bids with multiple bidders compared with those of single bid transactions. They also suggested that greater competition in a bidding process results in a greater dissemination of information and a "higher valuation for both firms together". The seminal work of Walking and Edminister (1985) highlighted that the existance of a competitive bidder in an acquisition had a positive effect on the premium eventually paid for the acquisition.

It is thus not suprising that target firms may actually engage in tactics to increase the number of bidders and hence the final selling price. Noronha *et al* (1996) found that resistance by target management to an initial bid caused delays in the takeover process and encouraged multiple bidders to enter the process, effectively increasing the price paid for the company. Jarrell (1988) conducted an exhaustive study from 1962 to 1987 that found that approximately one third of target companies launched legal challenges to bids. He hypothesised that this was a delaying tactic used to allow competitors to get more information on the target firm and step in with a competitive bid at a higher premium.

Another mechanism for increasing the premium paid in acquisitions is for target companies to include a target termination fee in the merger contract (Officer, 2003). Officer (2003) posits that termination fees are used by self-interested target

management to actually deter competition and protect “sweetheart deals” with white knight bidders, which in turn result in lower premiums for target shareholders. The tactic of using termination fees to discourage competition is contrary to the findings of the likes of Flanagan & O'Shaughnessy (2003) that suggest competition increases premiums in acquisitions. However, Officer (2003) finds strong evidence that target termination fees involve signifcantly higher premiums than deals without such clasues. Bates & Lemmon (2005) as cited in Porrini (2006) agree that premiums are higher when termination fee agreements are in place. Officer (2003) suggests that this is due to only genuinely interested parties being involved in the bidding process. He concludes that “termination fee use is at least not harmful, and is likely beneficial, to target shareholders”.

Anticipated opposition from target firms as well as the possiblity of competitors waiting until late in the bidding process to make an offer may result in acquisitive firms instituting their own tactics to secure a bid. From a bidders perspective, it is also possible that firms may in fact launch preemptive bids at a premium intentionally in order to discourage competitors from bidding for the target (Noronha, Sen, & Smith , 1996). It is also possible to consider the level of free cash flow available in target firms and the influence on this on the number of bidders that the target attracts. Noronha, Sen, & Smith (1996) suprisingly found that targets with high levels of free cash flow tend not to be the recipients of multiple bids.

The existance of multiple bidders has the potential to increase profits for the shareholders of target companies. The existence of multiple bidders does however

have the potential to result in irrational overbidding (Ekbo, 2009) which can compromise the returns of the acquiring company. This phenomenon is known as the "winners curse" (Thaler, 1988), whereby the winning bidder overpays for the target in order to secure the bid. Boone and Mulherin (2007) reject the notion of a "winner's curse" stating that "breakeven returns to bidders in corporate takeovers stem not from the winner's curse but from the competitive market for targets that occur predominantly prior to the public announcement of bids". It is possible to infer from the statement that competition for a target results in higher bids (premiums) which in turn erodes returns to bidders.

It is important to note at this point that the concept of multiple bidders has an inherent weakness in that the measure itself is often inaccurate. The first weakness is that the existence of multiple bidders does not necessarily provide any indication of the intensity of competition, and this is the factor that is in fact likely to drive acquisition premiums (Boone & Mulherin, 2007). In addition, competition between multiple bidders may take place in private (Moeller, Schlingemann, & Stulz, 2004). Boone and Mulherin (2002) found that an acquisition by a single public bidder may be the result of a private auction in which multiple bidders may have participated. Thus, should the measure of competition be publically announced bids, the proxy may be flawed in that competition did in fact exist. Thus while the measure indicates no competition, private competition may have in fact significantly influenced the premium. Another weakness is that the measure does not deal with the issue of the intensity of competition, but rather just with the existence thereof. The intensity of the competition will influence the premiums paid in acquisitions.

2.3.4.3 Cash vs. Share funded transactions

A significant body of work exists on the impact of payment method (specifically cash versus share funded acquisitions). Following Martin (1996) and Faccio & Masulis (2005) payment for an acquisition is classified into cash or equity where cash is defined as cash, non contingent liabilities and newly issued debt, and equity is defined as shares. Stock-financed acquisitions not only require valuation of the target's stock but also require valuation of the acquirer's stock and determination of an exchange rate that convinces the target's shareholders to give up their stock for a set portion of the acquirer's stock (Porrini, 2006).

Slovin *et al* (2005) find that equity financed deals create value primarily for buyers, while cash funded deals generate negligible returns for both buyers and sellers. This concept is explored in detail by Myers & Majluf (1984), Datta et al (1992), Martin (1996), and more recently by Mushidzhi & Ward (2004) and Smit & Ward (2007). Lau & Proimos (2010) find that "pure-equity-financed M&A's overwhelmingly destroys bidder shareholder wealth". On average, the literature on the subject of acquisition gains concludes that the use of equity as a purchase mechanism (means of payment) is "an unfavourable signal of value" (Slovin, Sushka, & Polonchenk, 2005).

For a significant period of time, there has been an argument that the premium paid is in fact influenced by and dependent on the method of payment in the acquisition, specifically whether the offer is made in cash or in shares (Wansley, Lane, & Yang, 1983). Maheswaran & Pinder (2005), Bugeja & Walters (1995), and Wansley *et al*

(1983) for example found that cash takeovers involve premiums that are as much as 90% greater in equity financed deals. There are a number of hypotheses on the relationship between acquisitions premiums and payment methods. Wickramanayake and Wood (2010) cite Shawky et al (1996) for a summary of a number of hypotheses on the subject. The hypotheses can be broadly grouped into the "wealth redistribution hypothesis", and the "bidder overvaluation hypothesis". More recently, research has emerged on the influence of capital gains tax in cash offers and its impact on acquisition premiums, as well as on the convenience factor of a cash offer.

The bidder overvaluation hypothesis (Shawky, Klib, & Staas, 1996) argues that should acquiring firms have information that their own assets are overvalued, they will in all likelihood undertake a share financed acquisition as opposed to using cash. Myers and Majluf (1984) argue that this tactic will be recognised by both the market (negatively influencing the value of the bidding company) as well as by target firm's management. This view is corroborated by Yook (2003) as well as Loughran & Vijh (1997). The hypothesis argues that as a result, acquisitions funded through equity require a greater premium than in cash bids.

The wealth redistribution hypothesis suggests that share based offers result in an unanticipated reduction in leverage (Higgens & Schall, 1975). This makes outstanding debt less risky, transferring wealth from shareholders to debt holders (Galai & Masulis, 1976). This suggests inequitable wealth redistribution in favour of debt holders at the expense of shareholders. The hypothesis suggests that equity financed takeovers involve greater premiums than those of cash funded transactions. This hypothesis and

that of bidder overvaluation are supported by the study of Shawky *et al* (1996) which found a significantly positive relationship between premiums and equity financed transactions.

There is however a significant body of literature that suggests that cash offers actually result in higher acquisition premiums than when shares are the method of payment (Alexandridis, Fuller, Terhaar, & Travlos, 2010). Ayers *et al* (2004) for example find a positive relationship between cash funded acquisitions and acquisition premiums. They suggest that the convenience of cash offers and the pre-emptive benefits that cash offers provide to the acquiring firm results in acquiring firms being willing to pay a greater bid premium in an acquisition. The premise of the argument is that bidding firms use the convenience of a cash offer as a mechanism in making a pre-emptive bid in order to beat competitors.

Bugeja and Da Silva Rosa (2008) also argue in the opposite direction suggesting that cash bids result in higher premiums. Their argument supports the work of Erickson (1998) and states that a cash financed transaction effectively forces a greater tax liability onto target shareholders. This reduces the attractiveness of a cash offer and by implication the likelihood for success. This in turns should necessitate higher acquisition premiums in cash funded acquisitions (Wansley, Lane, & Yang, 1983). Support of this hypothesis was found by Dhaliwal *et al* (2004) (as cited in Wickramanayake & Wood, 2010) which found a statistically significant positive relationship between acquisition premiums and the capital gains tax rate in the US Healthcare sector.

2.3.4.4 Prevailing market conditions

Another aspect that needs to be considered is that of market conditions (or investor sentiment) at the time of an acquisition. Jovanovic and Rousseau (2001) as cited in Petmezas (2009) found that high merger activity is correlated with high stock market valuations. Similarly Rhodes-Kropf and Viswanathan (2004) suggest that stock market misvaluations drive merger activity. It has been suggested that managers may be affected by the prevailing investor optimism during secular bull markets (Petmezas, 2009). This may result in overestimation of synergies leading to poor acquisitions in "hot" markets. It is also possible that managers may use the cover of these market conditions as opposed to an acknowledgement of a lack of internal opportunity to motivate acquisitions, and that these transactions may be overpriced in order to be successfully concluded (Petmezas, 2009). Petmezas (2009) finds evidence that investor sentiment, as opposed to purely internal opportunity sets, may in fact drive acquisitions. This finding is supported by that of Baker *et al* (2007) who find that investor sentiment co-exists with managerial overconfidence (hubris). From the perspective of premiums, the overconfidence and investor sentiment generated during high valuation markets may lead to excessive premiums being paid in acquisitions.

In terms of classifying or defining prevailing market conditions, the methodology used by Petmezas (2009) is followed, and is discussed in detail under 4.5.2.3.

3 CHAPTER 3 - RESEARCH QUESTIONS AND HYPOTHESES

Based on the literature review, it is clear that there are three distinct areas that drive acquisition premiums, namely acquiring firm characteristics, target firm characteristics, and transaction characteristics. It is possible to consider various research questions by focusing on the each of the following propositions:

- There are relationships between target firm characteristics and acquisition premiums.
- There are relationships between acquiring firm characteristics and acquisition premiums.
- There are relationships between bid characteristics and acquisition premiums.

The literature review has provided insight into individual factors that contribute to each of these suggested relationships. From this, a number of research questions and associated hypotheses have been derived, and are discussed hereunder:

Research question one asks: How does the method of payment affect the acquisition bid premium offered to target shareholders? The associated hypothesis is:

H_1: The acquisition of firms financed by a cash payment is associated with greater acquisition premiums that those financed by equity.

Research question two asks: what is the impact of a firm's investment opportunities on the acquisition premium? Two related hypothesis are proposed:

H_{2A}: Acquiring firm internal investment opportunities have a positive linear relationship with acquisition premiums.

H_{2B}: Target Firm internal investment opportunities have a positive linear relationship with acquisition premiums.

Research question three asks: how does the performance of the target company influence the acquisition premium? Two associated hypothesis have been identified:

H_{3A}: Acquisition premiums are positively related to the growth potential of the target firm.

H_{3B}: A negative linear relationship exists between past share performance and observed acquisition premiums.

Research question four asks: how does the existence of multiple bidders for a target influence the acquisition premium paid for the target? The related hypothesis, the fourth hypothesis is:

H_4: The existence of multiple bidders positively influences the premium paid in acquisitions.

Research question five asks: how do prevailing market conditions influence the premiums paid in acquisitions? The associated hypothesis is:

H_5: Acquisitions premiums have a positive linear relationship with secular bull markets.

Research question six asks: does the relationship between the industry of the acquirer and the industry of the target firm influence the acquisition premium paid for the target? The sixth hypothesis is:

H_6: Acquisitions involving firms in the same industry will result in higher premiums than those of acquisitions involving firms in different industries.

Research question seven asks: does the listing age of a target firm influence the acquisition premium? Thus the seventh research hypothesis is:

H_7: There is a negative relationship between listing age and acquisition premium.

Research question eight asks: does free cash flow in an acquiring firm influence the premium paid in an acquisition? Thus the eighth hypothesis is:

H_8: There is a positive relationship between free cash flow in an acquiring firm and acquisition premiums.

Research question nine asks: does relative size of the target influence the acquisition premium? The ninth hypothesis is:

H_9: There is a positive linear relationship between acquirer relative size and acquisition premiums.

Research question ten asks: does the level of debt in the acquirer or target influence the acquisition premium? This question can be divided into two hypotheses namely:

H_{10A}: There is a negative linear relationship between acquisition firm leverage and acquisition premiums.

H_{10B}: There is a negative linear relationship between target firm leverage and acquisition premiums.

4 CHAPTER 4 - RESEARCH METHODOLOGY

4.1 Research design

A literature review has been conducted through the exploratory research of secondary data (Blumberg, Cooper, & Schindler, 2008), in order to identify factors that result in and influence the premiums that are paid in acquisitions. The literature will thus address the first objective of the research, and will allow independent variables to be identified for use in the multivariate regression analysis.

Given that the constructs in premium determination have been identified through the literature review, the investigation of the research questions and associate hypotheses are quantitative and causal by nature. Correlations between independent variables, (specifically target firm characteristics, acquiring firm characteristics and bid characteristics) and acquisition premiums will be analysed. The aim of the research is to develop a greater understanding of the determinants of acquisition premiums, as well as creating a regression model with predictive powers for future acquisitions. However, given the time constraints associated with the research, it will not be possible to test the predictive power of the regression model on future acquisition premiums. The research will therefore be experimental in design, but the hypothesis will only be backward tested against historical acquisition premiums.

4.2 Population and sampling

4.2.1 Unit of analysis

The unit of analysis is acquisition premiums during the period 2000 – 2009.

4.2.2 Population of relevance

The population of relevance is *completed* acquisitions of firms listed on the Johannesburg Stock Exchange (JSE) All Share Index between 2000 and 2009. Completed acquisitions are acquisitions where bidders acquire a specified percentage of the target's outstanding shares (Varaiya, 1987). There are approximately 400 companies listed on the JSE. The All Share Index consists of approximately 160 companies, yet these companies account for around 98% of the JSE's combined market capitalisation. Given that the (approximately 140) companies that are not part of the All Share Index only account for 15% of the JSE's market capitalisation, these companies have been excluded from the population of relevance. The basis of this decision is to limit the potentially distorting premium effects of relatively small acquisitions.

The population of relevance was extracted from the database of mergers and acquisitions compiled by Ernst & Young (Transaction Advisory Services) for use in their annual review of merger and acquisition activity for each respective year.

4.3 Sampling method

A judgemental sampling technique (a nonprobability sampling technique) was used with data being selected based on appropriate characteristics (Blumberg, Cooper, & Schindler, 2008). The criterion used to select acquisitions into the study includes:

- Target firms must have been JSE listed companies that were listed between the years 2000 -2009 (as described under "population of relevance" in paragraph 4.2.2). No private companies, trusts, or foreign companies were considered for the sample.
- Acquiring firms must have been JSE listed companies that were listed between the years 2000 -2009 (as described under "population of relevance" in paragraph 4.2.2). No private companies, trusts, or foreign companies were considered for the sample.
- The industry sector classification of both the target and acquiring firm must be available.
- The acquisition must have been announced and completed between 1 January 2000 and 31 December 2009.
- The transaction characteristic (as per the Ernst & Young data bases) was described as one of:
    - acquisition of related business;
    - hostile takeover;
    - merger of related business;
    - tender offer for shares;
    - conditional offer for shares;
    - unconditional offer for shares;
    - Section 311 Scheme of Arrangement;
    - S311 Scheme and Delisting;
    - buyout of minorities.

- Balance sheet and income statement information of the target and acquiring companies was available.
- Share price information on both acquiring and target firms over the previous year was available.
- Information on the number of issued shares outstanding during the 2 month period prior to the first cautionary announcement was available.
- Information on the financing method (cash or shares) must have been available.
- Detail regarding the existence of competitive bids is available.
- The acquiring firm must have purchased a minimum of 50% of the outstanding shares of the target firm.
- Details on when the target firm listed on the JSE must be available.
- Black Economic Empowerment (BEE) transactions have been specifically excluded from the sample. The basis of this decision is that not all BEE transactions are based on market valuations.
- Acquiring companies with no underlying business prior to an acquisition were eliminated in order to eliminate reverse listings into cash shells.

The study only focuses on JSE listed target firms as these firms have publically available information and multiple potential bidders may compete for control based on readily available information. As per Draper and Paudyal (2006), information on privately owned firms is often not publically available and competition tends to be limited and based on imperfect information. In addition, the market for unlisted firms tends to be illiquid, and this may influence the bargaining power of acquiring firms and therefore

influence acquisition premiums (Draper & Paudyal, 2006). Unlisted target firms are consequently excluded from the sample.

4.4 Sample size

The criterion stipulated in 4.3 above is strict, but is necessary to ensure the following:

- That market value and book value premiums can be calculated.
- That the requisite balance sheet and cash flow on both the target as well as the acquirer was available, in order to perform calculation of the independent variables described in 4.6.2 below.

Out of a total of 11,927 transactions noted in the Ernst & Young Mergers and Acquisitions database during the years 2000 – 2009, only 30 transactions met the criterion described in 4.3 above. These 30 transactions in this judgemental sample were individually studied (as opposed to treating the 30 transactions as the population of relevance and selecting a random sample from such a small population of relevance). This does present a problem as the sample is clearly a judgemental sample (as described by the criterion imposed in section 4.3 above) and is not randomly selected. This limits the statistical inferences made, as random sampling is required for the Central Limit Theorem to be assumed (Ward & Smit, 2007). The 30 transactions that meet the criteria described in 4.3 (above) are detailed in Appendix 1.

4.5 Data collection and analysis

Information on merger and acquisition activity was sourced from the database of mergers and acquisitions compiled by Ernst & Young (Transaction Advisory Services) for use in their annual review of merger and acquisition activity for each respective year. Information and data on both acquiring and target firms was obtained from databases including McGregor BFA, INET Bridge, JSE Stock Exchange News (SENS), Bloomberg, Sharenet and from the annual financial statements of the bidding and acquired firms. The required information for analysis of the dependent, independent variables and transaction characteristics (as described in sections 4.6.1; 4.6.2; and 4.6.3 below) includes share prices, balance sheet and income statement information, debt to equity ratios, earnings per share and price to earnings ratios, dividends, market to book ratios, and return on equity.

4.6 Data collection process

The first step in the data collection process was to merge the individual merger and acquisition databases from 2000 – 2009 from Ernst & Young. This process involved ensuring that the formatting of the various databases were standardised. Following on the merging of the databases, Microsoft Excel was used to apply the various criteria as described in 4.3 above. The companies in the resultant set of transactions were then coded according to their JSE share codes, which were found through Sharenet (for currently listed companies) and McGregor BFA (for delisted companies).

Based on the sample derived from the steps described above, the JSE Stock Exchange News (SENS) was used to ascertain as to when the first cautionary was issued to the public regarding the proposed acquisition. As described in 4.7.1 below, the date two months prior to the first cautionary date was used as the date for collection of share price, price to earnings data, number of shares outstanding, listing age, and market capitalisation of either the target or acquiring firm. This information was sourced through the McGregor BFA database. The last published annual financial statements prior to the announcement date for each of the acquiring and target companies, were sourced through McGregor BFA. These financial records were then used to ascertain the applicable values for net asset values, cash holdings, total assets, liabilities, and interest bearing liabilities.

Based on the values ascertained through the data collection process described above, values for the dependent and independent variables discussed in 4.7.1, 4.7.2 and 4.7.3 (below) were calculated.

4.7 Methodology

4.7.1 Dependant variable definitions

Studies of bid premiums typically select one of two methods of takeover premium measurement (Wickramanayake & Wood, 2010). The measurements are:

Market Value Premium (MVPREM): is the market value premium offered to firm *i,* defined as the effective offer price, p_i^*, as a percentage premium over firm *i*, market share price two months prior to the JSE SENS announcement of the takeover. Using the share price in a window period before any public announcements of the proposed corporate activity is aimed at militating against any share price movement prior to announcement as a result of information leaks, and is suggested in Cheng & Chan (1995) and Wickramanayake & Wood (2010).

$$MVPREM_i = \frac{\text{Effective offer price for target}}{\text{Market share price of target}} - 1$$

Book Value Premium (BVPREM): is price offer for target firm *i,* as a percentage premium over the target firm's book value per share.

$$BVPREM_i = \frac{\text{Effective offer price for target}}{\text{Net assets of target firm / Total Target Shares Outstanding}} - 1$$

4.7.2 Independent variable definitions

Wickramanayake & Wood (2010) suggest that there is no generally accepted formal guidance for selecting the test variables used in regressing acquisition premiums. Test variables will provide insight into the characteristics of acquiring firms, target firms, and transaction characteristics. These characteristics have been described in the literature review (specifically sections 2.3.2, 2.3.3, and 2.3.4) and are based on acquirer characteristics, target characteristics and transaction characteristics proposed by

Wickramanayake & Wood (2010), Gondhalekar, Sant, & Ferris, (2004), Varaiya (1987), and Walking & Edmister (1985).

4.7.2.1 Acquirer specific independent variables

The relative size of the acquiring firm to the target firm is determined by the market capitalisation of the acquirer relative to that of the target. (Wickramanayake & Wood, 2010).

The *relative size independent variable* is therefore calculated as follows:

$$\text{RELSIZE} = \frac{\text{acquiring firm market capitalisation}}{\text{target firm market capitalisation}}$$

The *acquiring firm's investment opportunities* are estimated by comparing the book value of the firm's assets to the current market value ascribed to the company, also known as the firm's market capitalisation (Gondhalekar, Sant, & Ferris, 2004). It is estimated according to the formula:

$$\text{INVESTOPP}_{ACQ} = \frac{\text{Book value of acquiring firm's assets}}{\text{Acquiring firm market capitalisation}}$$

The acquiring firm's cash-to-total assets can be used as a normalised measure of the *acquiring firm's free cash flow* that a firm generates (Jenson, 1988). This normalised measure is calculated by the formula:

$$FCF_{ACQ} = \frac{\text{Acquiring firm cash}}{\text{Acquiring firm total assets}}$$

The *acquiring firm's leverage* is estimated by considering the level of debt in the company compared to the asset base that the company has (Wickramanayake & Wood, 2010). Acquiring firm leverage is estimated using the formula:

$$LEV_{ACQ} = \frac{\text{Acquiring firm interest bearing liabilities}}{\text{Acquiring firm total assets}}$$

4.7.2.2 Target firm specific independent variables

The *target firm's investment opportunities* are estimated by comparing the book value of the firm's assets to the current market value ascribed to the company, also known as the firm's market capitalisation (Gondhalekar, Sant, & Ferris, 2004). It is estimated according to the formula:

$$INVESTOPP_{TGT} = \frac{\text{Book value of target firm's assets}}{\text{Target firm market capitalisation}}$$

Balke and Wohar (2001) identify the price-to-earnings (PE) ratio as a potential proxy for the markets perception of a *target firm's growth potential*. That is to say that investors who are willing to buy shares at relatively high prices, would expect to be compensated with high earnings growth in the future. The PE ratio can be calculated as follows:

$$GROWTH_{TGT} = \frac{\text{Target firm share price}}{\text{Net profit after tax/total shares outstanding}}$$

An alternative method of estimating the growth potential of a target company is through the use of the "Modified Tobin's Q" method. This methodology is suggested by Lang *et al* (1989) and used again by the likes of Wickramanayake & Wood (2010). The measure is calculated as follows:

$$MTQ_{TGT} = \frac{\text{Market capitalisation of target firm}}{\text{Total assets of target firm}}$$

The *target firms listing age* is defined by the number of years that the company has been listed on the JSE (Gondhalekar, Sant, & Ferris, 2004).

$LISTAGE_{TGT}$ = target firm listing age (years)

The *target firm's leverage* is estimated by considering the level of interest bearing debt in the company compared to the asset base that the company has (Wickramanayake & Wood, 2010). Target firm leverage is estimated using the formula:

$$LEV_{TGT} = \frac{\text{target firm interest bearing liabilities}}{\text{target firm assets}}$$

4.7.2.3 Transaction specific indepenent vaiables

The transaction characteristics are included in the multivariate regression through the use of dummy variables.

The issue as to whether the acquisition takes place within an industry (core related acquisition) is denoted by the dummy variable "0", with a diversifying acquisition being denoted by the dummy variable "1". The coding of acquisitions into core or diversifying transactions was achieved by considering the industry coding for the purchaser and target firm.

The existence of multiple bidders for a target is denoted by the dummy variable "1", whereas a bid without competition is denoted by the dummy variable "0". Information on the existence of multiple bidders was found by accessing the JSE SENS (Stock Exchange News) database.

Cash funded transactions are denoted by the dummy variable "1". Share funded transactions are represented by the dummy variable "0". The classification of a transaction as having being funded by either shares or cash is determined according to the methodology suggested by Faccio & Masulis (2005) (as discussed in paragraph 2.3.4.3), and is denoted in the Ernst & Young mergers and acquisitions database.

Transactions that occur in bull market conditions are denoted by the dummy variable "1", whereas the dummy variable "0" denotes secular bear markets. The methodology suggested for identifying high- and low- valuation markets is derived from the work of Petmezas (2009). Each calendar month in the period under review is classified as a

high, neutral or low valuation month based on the P/E ratio of the market index in comparison to the historical P/E average.

4.7.3 Cross sectional regressions

Cross sectional regression analysis will be used to analyse the acquisition premiums. This methodology is based on the seminal work of Walking & Edmister (1985) and Varaiya (1987), and has been replicated as a valid methodology by many researchers including Maheswaran & Pinder (2005) and Wickramanayake & Wood (2010) in recent years. The technique seeks to measure the explanatory power of the independent variables using a multiple linear regression model with the premium as the dependant variable. The equation is given by:

$$PREM_i = \alpha + \beta_1 RELSIZE + \beta_2 INVESTOPP_{ACQ} + \beta_3 FCF_{ACQ} + \beta_4 LEV_{ACQ} + \beta_5 INVESTOPP_{TGT} + \beta_6 GROWTH_{TGT} + \beta_7 MTQ_{TGT} + \beta_8 LISTAGE_{TGT} + \beta_9 LEV_{TGT} + \beta_{10} DIND + \beta_{11} DCOMP + \beta_{12} DCASH + \beta_{13} DBULL + \varepsilon$$

Where,

$PREM_i =$	Bid premium calculated by book value or market value premium
$B_i =$	Beta coefficient for respective independent variables
$\beta_1 RELSIZE =$	Relative size of acquirer to target
$\beta_2 INVESTOPP_{ACQ} =$	acquiring firm investment opportunities as defined by market-to-book ratio
$\beta_3 FCF_{ACQ} =$	acquiring firm free cash flow as defined by cash-to-total assets
$\beta_4 LEV_{ACQ} =$	acquiring firm leverage as defined by liabilities-to-assets
$\beta_5 INVESTOPP_{TGT} =$	target firm investment opportunities as defined by market-to-book ratio
$\beta_6 GROWTH_{TGT} =$	target firm growth performance as described by PE ratio
$\beta_7 MTQ_{TGT} =$	level of market capitalisation derived from the firms asset base
$\beta_8 LISTAGE_{TGT} =$	target firm listing age (years)
$\beta_9 LEV_{TGT} =$	target firm leverage as defined by liabilities-to-assets

$\beta_{10}DIND$ = dummy variable for core related or diversification acquisition

$\beta_{11}DCOMP$ = dummy variable for multiple or single bids

$\beta_{12}DCASH$ = dummy variable for cash or share funded transaction

$\beta_{13}DBULL$ = dummy variable for bull market or bear market conditions

4.8 Limitations

Given the nature of this study, constraints such as time have been identified. Limitations therefore exist and include (but are not limited to):

- The sample is limited to 2000-2009 and thus excludes acquisitions outside of the period. In different time periods, different relationships between concomitant variables (Blumberg, Cooper, & Schindler, 2008) may have existed.
- The research is limited to JSE listed companies and thus the findings are limited to South African merger and acquisition premiums.
- The research excludes acquisition of unlisted companies due to the potential lack of publically available financial information.
- The causal factors identified and studied in the research may not be exhaustive.
- Collinearity may exist between independent variables. A correlation matrix is provided to consider the effect of this phenomenon.
- Only All Share Index Listed companies have been considered. Given that firms outside of this index only account for approximately 2% of the JSE's total market capitalisation, these firms have been eliminated to prevent any distortions resulting from large amounts of small transactions. It may be

possible to overcome this problem by including these companies and then using a weighted regression. This approach has not been used in this research.

- As suggested by Boone & Mulherin (2007) and Moeller, Schlingemann, & Stulz (2004), it is possible that competition for a target may have taken place in private. Thus while the dummy variable used indicates that there was no competition, it may well have been a factor in the acquisition price. The dummy variable also does not indicate the intensity of competition.
- Data used to calculate values in many of the independent variables (as described in 4.5.2 above) was collected using published financial statements of the companies concerned. It is however possible that the actual values may have changed significantly between the publishing of financials and the acquisition. Acquisitive firms may therefore have based offers on balance sheet and income statement values that was different to the latest pulished financials.
- The resulting sample of 30 transactions was dissappointingly small.
- Outling data points within the sample (in terms of both dependant and independent variables) were a major problem. Adjusting the data to eliminate the effect of these outliers reduced the sample further.
- Book values were used in the calculation of both depenant and independent variables. This makes the study subject to the limitations of accounting practice.
- Data integrity problems existed as described in section 4.9 below.

4.9 Data Integrity

During the data collection process, it was noted that there were some inconsistencies in the data provided from the McGregor BFA. While these inconsistencies were not significant or regular, it has to be noted that these errors could influence the accuracy and validity of the results of this study. The inconsistencies included:

- Inconsistent and missing share prices.
- Inconsistent numbers of outstanding shares.
- Inconsistent price to earnings multiples.
- Unavailability of financial statements for three of the delisted companies in the sample.

Given that inconsistencies in the data and the potentially contaminating effect thereof on the results of the study, manual verification of all the values derived from the McGregor BFA database was performed. Alternative sources such as iNet Bridge, Sharenet, and published financial statements were used to verify the data. While this manual verification process would not be practical in the case of a large sample, the small sample size of 30 allowed this process to be undertaken.

5 CHAPTER 5 – RESULTS

5.1 Description of the sample

The sample was collected from the Ernst & Young Mergers and Acquisitions database for the years 2000 – 2009. The criterion stipulated in 4.3 above is strict, but is necessary to ensure the following:

- That market value and book value premiums paid for the target firm could be calculated.
- That the requisite balance sheet and cash flow information on both the target as well as the acquirer was available, in order to perform calculation of the independent variables described in 4.6.2 below.

Out of a total of 11,927 transactions noted in the Ernst & Young Mergers and Acquisitions database during the years 2000 – 2009, only 30 transactions met the criterion described in 4.3 above. These 30 transactions in this judgemental sample were individually studied (as opposed to treating the 30 transactions as the population of relevance and selecting a random sample from a small population of relevance). This does present a problem as the sample is clearly a judgemental sample (as described by the criterion imposed in section 4.3 above) and was not randomly selected. This limits the statistical inferences made, as random sampling is required for the Central Limit Theorem to be assumed (Ward & Smit, 2007). The 30 transactions that meet the criteria described in 4.3 (above) are detailed in Appendix 1, and a summary of the sample is provided in Table 1 below:

Table 1: **Summary of the sample of mergers and acquisitions between 2000 and 2009 that met the criteria described in 4.3 (above).**

Population Size	11 927
Sample Size	30
Frequency of yearly occurrence	30
2000	4
2001	2
2002	0
2003	5
2004	6
2005	5
2006	3
2007	2
2008	2
2009	1
Method of payment	30
Cash Funded	20
Share Funded	10
Existence of Multiple Bidders	30
Multiple Bidders	0
Single Bidders	30
Transaction concluded in a bear or bull market	30
Bear Market Transactions	7
Bull Market Transactions	23
Diversifying vs. Core Acquisitions	30
Diversifying acquisition	23
Core acquisition	7

5.2 Data Analysis Steps

Descriptive statistics were run on the data to check for missing values, high and low values, and anomalies. Descriptive statistics are provided in Table 2 (continuous variables) and Table 3 (dichotomous variables).

Table 2: Descriptive Statistics for unadjusted data on Continuous Variables (January 2000 – December 2009)

	Mean	5% Trimmed Mean	Standard Deviation	Median	Minimum	Maximum	Skewness	Kurtosis
Market value Premium (%)	38.13%	31.65%	49.41%	26.75%	-17.07%	246.20%	2.85	10.62
Book Value Premium (%)	169.47%	140.46%	263.95%	77.90%	-120.01%	1059.78%	1.95	3.80
Relative size	22.10	12.14	53.45	4.54	0.16	274.314	4.09	18.21
Acquiring firm investment opportunities	0.95	0.70	1.51	0.64	0.01	8.53	4.67	23.73
Acquiring firms free cash flow	13.27%	11.77%	13.66%	9.77%	0.10%	62.79%	1.90	4.773
Acquiring firm leverage	23.25%	21.43%	21.60%	15.07%	0.00%	87.32%	1.30	1.40
Target firm investment opportunities	0.65	0.73	1.11	0.59	-4.14	2.82	-2.52	12.560
Target firm growth potential (PE)	7.73	7.70	7.45	8.00	-17	28	-0.94	5.39
Modified Tobin's Q	0.77	0.75	0.59	0.53	0.04	1.97	0.62	-0.85
Target Firm Leverage	17.12%	14.78%	22.63%	7.49%	0.00%	77.57%	1.73	2.09
Target firm listing age	21.50	20.07	20.21	13.50	1	71	0.96	-0.20

Refer to section 4.7.1; and 4.7.2 for definitions of the various dependant and independent variables contained in table 2.

Table 3: Descriptive Statistics for Dummy Variables (January 2000 – 2009)

Panel A: Method of Payment	Observations	Proportion
Share Financed	20	67%
Cash Financed	10	33%

Panel B: existence of Multiple Bidders	Observations	Proportion
Multiple Bidders	0	0%
Single Bidders	30	100%

Panel C: Prevailing Market Conditions	Observations	Proportion
Bull Market	23	77%
Bear Market	7	23%

Panel D: Nature of acquisition	Observations	Proportion
Diversifying acquisition	23	77%
Core acquisition	7	23%

Refer to section 4.7.2 for definitions of the various dependant and independent variables contained in table 3.

5.2.1 Pearson Correlation Analysis for unadjusted and adjusted data

The first step of analysing the data was to consider the Pearson correlations between the market value premiums and the continuous variables, as well as book value premiums and the continuous variables. This step was conducted using both unadjusted data as well as with data that was adjusted for obvious outliers (using judgemental identification from scatterplots). The aim of this step was to identify statistically significant linear relationships (through use of the Pearson correlation coefficient) and then see if these statistically significant relationships supported any significant predictive variables identified in the regression techniques described in in 5.2.3, 5.2.4, and 5.2.5 below. Thus the focus of this analysis was to identify strong and statistically significant Pearson correlation coefficients that were directional consistent

with the statistically significant regression coefficients identified. The correlation matrices are attached in appendix 2 (unadjusted data) and appendix 3 (adjusted data).

The only statistically significant Pearson correlation for market value premiums using unadjusted data was that of target firm investment opportunity. A statistically significant Pearson correlation existed for Modified Tobin's Q in terms of book value premiums when unadjusted data was used.

When the data was adjusted to remove outliers (as discussed above), no statistically significant Pearson correlation coefficients emerged for market value premiums, while target firm investment opportunity, target firm growth, and Modified Tobin's Q displayed statistically significant Pearson correlations. Of concern with the use of adjusted data was that this approach reduced an already small sample. It was clear that the existence of outliers was problematic, but the removal of the outliers was not an ideal approach because of sample size.

5.2.2 Z-Score and Spearman's Rank Correlations (unadjusted data)

An alternative mechanism that was considered was to convert the distributions of the various continuous variables into standardised distributions (using Z-Scores), and then consider the Spearman's Rank correlation coefficients between the Z-Scores for each continuous variable and market value premiums and book value premiums respectively. The rationale for considering this approach is that the Pearson's

correlation coefficient is used to identify significant linear relationships between the two measures of acquisition premiums (market and book value premiums), whereas the Spearman's Rank correlation coefficient can be used to identify monotonic relationships. It must be noted that this approach was only considered on unadjusted data, as a standardised distribution (Z-score) cannot be assumed on a sample of less than 30.

The first step in the approach was to visually consider the scatterplots for the various continuous variables in terms of both market value premiums and book value premiums to identify any discernable non-linear relationships. The next step was to use the Spearman's Rank correlation coefficients to determine from a quantitative perspective whether any statistically significant monatomic relationships existed, and whether any relationships outside of those identified using the Pearson's correlation coefficient were present. The results of this analysis have been provided in appendix 4 and appendix 5 of this report.

The Spearman's Rank correlation coefficients confirmed the relationships highlighted by the Pearson's correlation coefficients (Modified Tobin's Q in terms of Market Value premiums, and Modified Tobin's Q, and Target Firm investment opportunities in terms of book value premiums), but did not identify any strong, statistically significant relationships outside of these. As a result, it was concluded that the Spearman's Rank approach did not add significant value to the analysis of determinants of acquisition premiums. As a consequence, the Spearman's Rank correlation coefficients have not

been discussed in Chapter 6 of the report, as the relationships in the data are adequately described using the Pearson correlation coefficients and the regression coefficients of the various regression techniques below, and the Spearman's Rank approach did not add any new insights into the data. The results of the Spearman's Rank correlation analysis are included in appendix 5.

5.2.3 Stepwise Regression for Book Value and Market Value Premiums

Based on the preferred research methodology, initial exploratory stepwise multiple regression models for both book value premiums and market value premiums were run on unadjusted data. In both instances it was found that outlying data points significantly influenced the models that were run.

Based on the initial findings that outliers were significantly influencing the statistical models being run (stepwise multiple regression models), the data in the sample was checked for outliers, and significant outliers that influenced the models were identified. Consideration for both dependant and independent variable was given to the top and bottom five extreme data values, to scatter plots and box plots, as well as to mean impacts using the 5% trimmed mean technique (refer to table 1).

Obvious outliers were then removed for market value premium and book value premium (dependent variables) providing a judgmentally adjusted sample and exploratory stepwise multiple regressions for both measures were run again. Once

again, outliers for the various predictors (independent variables) were found to be an issue, significantly influencing the regression models.

Based on this finding, outlying data points for the identified independent variables (predictors) were then removed. Exploratory stepwise regression models for both market value premiums and book value premiums were then applied once again.

The outcome was that in the case of Market Value Premiums, a single significant explanatory variables emerges, relative size (α =0.048). However the explanatory power of the model is poor with a R^2 value of 0.181. The final model produced for the stepwise regression (market value premium) is shown below:

Model 1: **Final model produced for the stepwise regression (adjusted market value premium):**

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.426[a]	.181	.140	17.69446%

a. Predictors: (Constant), Relative Size

b. Dependent Variable: Market Value Premium

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	21.973	4.553		4.826	.000
	Relative Size	.609	.290	.426	2.104	.048

a. Dependent Variable: Market Value Premium

Excluded Variables[b]

Model		Beta In	t	Sig.
1	acquiring firm's investment opportunities	.138[a]	.651	.523
	acquiring firm's free cash flow	.128[a]	.587	.564
	acquiring firm's leverage	-.311[a]	-1.564	.134
	target firm's investment opportunities	.021[a]	.095	.925
	target firm's growth potential.	.225[a]	1.026	.318
	modified Tobin's Q	-.021[a]	-.100	.921
	target firm's leverage	-.109[a]	-.508	.618
	target firms listing age	-.195[a]	-.959	.350
	Cash/Shares	.156[a]	.728	.475
	Bull/Bear	-.244[a]	-1.216	.239
	Same industry or diversifying	.192[a]	.948	.355

a. Predictors in the Model: (Constant), Relative Size

b. Dependent Variable: Market Value Premium

In the case of Book Value premiums, a single significant explanatory variable emerges, namely Modified Tobin's Q (regression coefficient o $\beta = 0.427$ and $\alpha = 0.019$). However, as with market value premiums the explanatory power of the model is poor with a R^2

value of 0.182. The final model produced for the stepwise regression (book value premium) is shown below:

Model 2: Final model produced for the stepwise regression (adjusted book value premium):

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.427[a]	.182	.153	242.89921%

Model Summary[b]

Model	Change Statistics				
	R Square Change	F Change	df1	df2	Sig. F Change
1	.182	6.245	1	28	.019

a. Predictors: (Constant), modified Tobin's Q

b. Dependent Variable: Book Value Premium

Coefficients[a]

Model		Standardized Coefficients			95.0% Confidence Interval for B	
		Beta	t	Sig.	Lower Bound	Upper Bound
1	(Constant)		.290	.774	-130.130	173.020
	modified Tobin's Q	.427	2.499	.019	34.575	349.004

Excluded Variables[b]

Model		Beta In	t	Sig.	Partial Correlation
1	Relative Size	.135[a]	.736	.468	.140
	acquiring firm's investment opportunities	-.137[a]	-.771	.447	-.147
	acquiring firm's free cash flow	.102[a]	.557	.582	.107
	acquiring firm's leverage	.175[a]	1.023	.315	.193
	target firm's investment opportunities	-.121[a]	-.695	.493	-.133
	target firm's growth potential.	-.273[a]	-1.381	.179	-.257
	target firm's leverage	.159[a]	.915	.368	.173
	target firms listing age	-.074[a]	-.428	.672	-.082
	Cash/Shares	.029[a]	.164	.871	.032
	Bull/Bear	.241[a]	1.435	.163	.266
	Same industry or diversifying	.269[a]	1.607	.120	.296

5.2.4 Backward regression for Market Value Premiums

Due to the finding that no significant predictors were found through the use of a stepwise multiple regression, a backward multiple regression technique was applied. In this technique all predictor variables were entered into the model. The weakest predictor variable was then removed and the regression re calculated. This process was then repeated with only useful predictors being left in the model.

The model was initially run based on unadjusted data. Variables with coefficients that were significant ($\alpha < 0.05$) were acquiring firms free cash flow ($\alpha = 0.18$), Modified Tobin's Q ($\alpha = 0.008$), and Bull/Bear market conditions ($\alpha = 0.002$). Scatter plots were graphed for the two continuous variables (acquiring firm's cash flow and Modified Tobin's Q). The dichotomous variable (bull/bear) was tested for significance with a T-test. It was found to be significant if equal variance were assumed. Based on these steps, outliers were identified amongst the significant variables and were removed. The following transactions were consequently removed:

- Acquiring firm free cash flow: case 23 (Net1 Applied Technology Ltd and Prism Holdings Ltd) and case 29 (Standard Bank Group Ltd and Liberty Holdings Ltd).
- Modified Tobin's Q: case 29 (Standard Bank Group Ltd and Liberty Holdings Ltd)
- Bull/Bear Market: case 29 (Standard Bank Group Ltd and Liberty Holdings Ltd)

The outliers were removed from the first iteration of the regression and the backward regression was rerun. The variables found to have significant regression coefficients

were relative size (α = 0.011) and target firm investment opportunities (α = 0.000). Once again, scatter plots were graphed to identify outliers amongst the significant predictors. The following transactions were consequently removed:

- Target firm investment opportunity: case 13 (Venfin Ltd and Intervid Ltd)
- Relative Size: case 13 (Venfin Ltd and Intervid Ltd)

The outliers described above were removed from the model and the regression was rerun to find significant predictors. The only variable that now had any level of significance was that of target firm investment opportunity (α = 0.01). A scatter plot was graphed in order to identify outliers. The following transactions were consequently removed:

- Target firm investment opportunity: case 10 (JCI Ltd and Rand Leases Ltd) and case 2 (Seardel Ltd and Frame Group Holdings Ltd).

The fourth iteration of the process was conducted by removing the outliers described above and rerunning the regression. The only predictor with a significant regression coefficient was Acquiring Firm Leverage (α = 0.026). As with other iterations of the regression, a scatter plot was graphed in order to identifying outliers influencing the model. The following transactions were consequently removed:

- Acquiring Firm Leverage: case 22 (Growthpoint Properties Ltd and Metboard Properties Ltd) and case 10 (JCI Ltd and Rand Leases Ltd)

The final iteration of the backward regression was to remove the outliers described above and re run the regression. The only predictor variable with a significant regression coefficient was that of Acquiring Firm Leverage (α = 0.030). By considering the scatter plot of the model it appeared that the outlier problem was resolved through the process described above. The model however had a very low predictive power (R^2 = 0.197).

Model 3: Final model produced for the backward regression (adjusted market value premium):

Model Summary[m]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
12	.444[l]	.197	.160	17.73503%

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
12	(Constant)	35.588	5.615		6.339	.000
	acquiring firm's leverage	-.467	.201	-.444	-2.322	.030

a. Dependent Variable: Market Value Premium

5.2.5 Backward regression for Book Value Premiums

Due to the finding that no significant predictors were found through the use of a stepwise multiple regression, a backward multiple regression technique was also applied on Book Value Premiums. In this technique all predictor variables were entered into the model. The weakest predictor variable was then removed and the

regression re calculated. This process was then repeated with only useful predictors being left in the model.

The model was initially run based on unadjusted data. Variables with coefficients that were significant ($\alpha < 0.05$) were Modified Tobin's Q ($\alpha = 0.001$) and whether the acquisition was within the Same Industry or Diversifying ($\alpha = 0.036$). The dichotomous variable (Same industry / diversifying acquisition) was tested for significance with a T test. It was found not to be significant. A Scatterplot was then graphed for the continuous variable (Modified Tobin's Q) in order to identify any outliers. The following transaction was consequently removed:

- Modified Tobin's Q: Case 19 (JD Group Ltd and Connection Group Holdings Ltd)

The outliers were removed from the first iteration of the regression and the backward regression was rerun. The variables found to have significant regression coefficients were acquiring firm free cash flow ($\alpha = 0.027$) and acquiring firm's leverage ($\alpha = 0.020$). Scatter plots were graphed for the two continuous variables (acquiring firm's cash flow and acquiring firm's leverage) in order to identify outliers. The following transaction was consequently removed:

- Acquiring firm free cash flow: case 23 (Net1 Applied Technology Ltd and Prism Holdings Ltd) and case 17 (FirstRand Group Ltd and Sage Group Ltd).
- Acquiring firm leverage: case 22 (Growthpoint Ltd and Metboard Properties Ltd) and case 20 (Pangbourne Properties Ltd and IFour Properties Ltd).

The outliers were then removed from the second iteration of the regression and the backward regression technique was then rerun. Significant predictive variables that emerged were acquiring firm's leverage (α = 0.031), modified Tobin's Q (α = 0. 000), and target firm leverage (α = 0.026). Scatterplots were plotted for these continuous variables to check for potential problems with the data. Potential issues that arose were:

- Acquiring firm's leverage was found to potential have a non-linear relationship.
- Target firm's leverage had three potential outlier cases: case 8 (Barloworld Ltd and Avis Ltd), case 22 (Growthpoint Properties Ltd and Metboard Properties Ltd), and case 28 (Sanlam Ltd and Genbel Securities Ltd).

Based on the findings of the third iteration of the regression, a final confirmatory regression was performed using the simultaneous (or "Enter") technique. This technique requires the specification of the predictor variables that make up the model. In this case, the continuous variables identified as significant in the third iteration of the model were entered, namely acquiring firm's leverage, modified Tobin's Q, and target firm leverage. The regression found that target firm leverage was not a significant predictor (α =0.109), but both acquiring firm's leverage (α = 0.012) and Modified Tobin's Q (α =0.000) were significant predictors. The model was rerun once again based on these two predictors. Both predictors were once again significant with (acquiring firm's leverage (α =0.023) and Modified Tobin's Q (α = 0.000). The summary of the model is as follows:

Model 4: Final model produced for the simultaneous regression (adjusted book value premium):

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.804[a]	.646	.615	97.43621%

a. Predictors: (Constant), modified Tobin's Q, acquiring firm's leverage

Coefficients[~]

Model		Unstandardized Coefficients	
		B	Std. Error
1	(Constant)	-5.640	37.870
	acquiring firm's leverage	-2.986	1.223
	modified Tobin's Q	199.714	32.442

Coefficients[a]

Model		Standardized Coefficients		
		Beta	t	Sig.
1	(Constant)		-.149	.883
	acquiring firm's leverage	-.304	-2.442	.023
	modified Tobin's Q	.766	6.156	.000

a. Dependent Variable: Book Value Premium

6 CHAPTER 6 – DISCUSSION OF RESULTS

6.1 Target firm, acquiring firm and acquisition characteristics

Section 5.2 examines examined the statistical characteristics and descriptive statistics for both acquisition specific variables and firm specific variables that may explain cross sectional variability in acquisition premiums. In the following section, the results of the stepwise regression (as described in section 5.2.1 above) and backward regression (section 5.2.2 above) are discussed. A summary of the statistics produced and referred to in sections 6.1.1 to 6.1.10 is provided in Appendix 6 of this report. The hypotheses (described in section 3) are tested and the explanatory power of each of the independent variables in determining market value and book value premiums are discussed.

6.1.1 Hypothesis One

Hypothesis one posits that acquisition of firms financed by a cash payment is associated with greater acquisition premiums that those financed by equity. Following Martin (1996) and Faccio & Masulis (2005) payment for an acquisition is classified into cash or equity where cash is defined as cash, non contingent liabilities and newly issued debt, and equity is defined as shares. This section therefore analyses the explanatory power of the dummy variable for cash takeovers in the regression of acquisition premiums, by considering the variable in the context of firstly market value premiums and then book value premiums.

Given the dichotomous nature of variable, the first test to consider the significance of the variable as a predictor of market value premiums was a T-test for equality of means. Unadjusted data was initially considered. The immediate observation was that the sample size of thirty was smaller than ideal, resulting in even smaller sub samples (cash = 20 and shares = 10). While the standard error between the means of cash and share transactions was not particularly high (5.2% for share transactions and 12.1% for cash transactions), there was a relatively large difference in means (16% for share transactions and 49% for cash transactions). Levene's test for equality of variance in terms of market value premiums was conducted and was found not to be significant, meaning that it was possible to assume equal variances in the sample. With a significance of $\alpha = 0.083$ it was possible to conclude that whether a transaction was paid for in cash or shares was not a significant predictor (at the 5% level) of market value premiums.

A stepwise regression was then performed with market value premium as the dependent variable. The final iteration of the process excluded cash as a predictive variable by virtue of a low regression coefficient ($\beta = 0.156$) which was not significant at any meaningful level ($\alpha = 0.475$) and added very little predictive power to previous iterations of the regression (as indicated by a partial correlation of just 0.165). This result was confirmed by reanalysing cash as a predictive variable through a backward multiple regression. Not only did this technique exclude payment method as a significant predictive variable ($\alpha = 0.962$), but it also provided a conflicting direction of relationship as evidenced by the regression coefficient ($\beta = -0.010$).

Payment method (i.e. cash or shares) was then considered in the context of exhibited book value premiums. Once again, the significance of the variable was considered through a T Test for equality of means. While the means between share transactions (162%) and cash transactions (172%) were relatively close, the standard error of the means was alarmingly high (64% for shares and 66% for cash). Using Levene's test for equality of variance it was possible to determine that equal variances could be assumed ($\alpha = 0.537$). It was then possible to conclude that payment method was not a significant predictor of book value premiums by virtue of a non-significant ($\alpha = 0.920$) T Test for equality of means.

Similarly to the process with market value premiums, a stepwise regression was conducted on book value premiums in order to consider whether payment method had any significant predictive power. Payment method was rejected as a significant predictor as a result of a low regression coefficient ($\beta = 0.029$) which did not display significance ($\alpha = 0.871$) and had a low partial correlation with previous iterations of the regression model (partial correlation = 0.032). This finding was confirmed when payment method was excluded as a significant predictive variable in a backward multiple regression technique. The excluded variable regression coefficient of $\beta = -0.105$ was in conflict with the direction of the null hypothesis, but was not significant ($\alpha = 0.444$) and had a low partial correlation to the previous iteration of the backward regression (partial correlation = -0.172).

Through analysis of payment method in relation to both market value premiums and book value premiums, no significant evidence was found that supported the null hypothesis of a positive linear relationship between payment method and exhibited premiums. Thus despite evidence presented in previous studies such as Martin (1996) and Faccio & Masulis (2005), there is no evidence presented in this study that could lead to acceptance of the null hypothesis.

6.1.2 Hypothesis Two

Hypothesis two seeks to determine whether internal investment opportunities influence acquisition premiums. To test this, two hypotheses have been developed. The analysis relies on the result of the stepwise and backward multiple regressions, specifically for "Acquiring firms investment opportunities" and "Target firms investment opportunities".

6.1.2.1 Hypothesis Two A

Following Lang *et al* (1991) it is possible to assess a bidders investment opportunities by analysing the firms market-to-book ratio (comparing the book value of the firm's assets to the current market value ascribed to the company, also known as the firms market capitalisation) relative to median market-to-book ratios. The basis of the literature is that firms with below median market-to-book ratios have reduced investment opportunities due to a lack of profitable internal investment opportunities (Gondhalekar, Sant, & Ferris, 2004). To test the hypothesis that acquiring firm internal investment opportunities have a positive linear relationship with acquisition

premiums, the correlations and regression coefficients (using both a stepwise and backward technique) for both market value premium and book value premium against acquiring firm market to book ratios were considered.

When considering market to book ratio's in terms of market value premiums there is no evidence to support hypothesis 2B. The direction of the Pearson correlations for both adjusted (0.138) and unadjusted (-0.017) is not consistent, and in both instances are not statistically significant at the 5% or 10% levels (refer to appendix 6). When considering the influence of market-to-book ratios on exhibited market value premiums, the final iteration of the stepwise multiple regression that was performed excluded market to book premiums as a significant predictor. As an excluded variable, market to book ratios had a low regression coefficient ($\beta = 0.138$), was not a significant contributor to the model ($\alpha = 0.532$) and had a low partial correlation (0.148) to the final iteration of the stepwise regression. This finding was confirmed through the use of a backward regression, which excluded market to book ratios as a significant predictor in market value premiums. While the beta direction (-0.155) conflicted with that of the stepwise regression, the final iteration backward regression also showed market-to-book ratios to not be significant ($\alpha = 0.469$).

The influence of acquiring firm investment opportunities (as described by market-to-book ratios) were then considered in terms of book value premiums through a similar process. While consistent in direction, the Pearson correlations for both unadjusted (-0.234) and adjusted (-0.290) data were not significant at either the 5% or 10%

significance level. A stepwise regression was then performed on the sample and market-to-book ratios were excluded as a significant predictor of book value premiums. The final iteration of the stepwise regression excluded market to book ratios showing a regression coefficient of β= -0.137 that was not significant (α = 0.468) and did not add predictive power to the regression model (partial correlation = -0.147). A backward regression was performed to retest this result and confirmed the fining that market-to-book ratios are not a significant predictor of exhibited book value premiums.

Based on an analysis of correlations of unadjusted and adjusted data, as well as of both a stepwise and backward regression, market-to-book ratios could not be proved to be significant predictors of either market or book value premiums. The conflicting direction of the regression relationships and the lack of significance of the predictor mean that there is no evidence to support the null hypothesis that posits that acquiring firm internal investment opportunities have a positive linear relationship with acquisition premiums. This finding provides no support for the growth opportunities signalling hypothesis as proposed by McCardle & Viswanathan (1994) and Jovanovic & Braguinsky (2002). The finding also contradicts findings of Greenfield (1992) and Gondhalekar, Sant, & Ferris (2004) who found that the proclivity of firms with low internal investment opportunities to engage in acquisitions leads to a tendency to pay higher premiums in order to successfully conclude acquisition transactions.

6.1.2.2 Hypothesis Two B

Following Lang *et al* (1991) and Gondhalekar, Sant, & Ferris (2004) hypothesis 2B suggests that target firm internal investment opportunities have a positive linear relationship with acquisition premiums. It is suggested that high market-to-book ratios within target firms can be seen as an indicator of a high expectation for future profits based on the existing set of assets that the firm has. Given the expectation for higher profits, it logically follows that acquiring firms would be willing to pay more for such companies in the form of a higher acquisition premium than for companies with lower market-to-book ratios. To test this hypothesis, the correlation of target firm market-to-book ratios with both book value and market value premiums were considered. In addition stepwise and backward multiple regressions of market and book value premiums were conducted using market-to-book ratios as a potential predicting variable.

Target firm market-to-book ratios were first considered in terms of market value premiums. An initially significant (at the 5% level) Pearsion correlation ($\alpha = 0.442$) was found based on unjusted data. However, the removal of clearly outlying data (three specific transaction) reduced the correlation (0.352) and indicated that the correlation was infact not significant ($\alpha = 0.072$) at the 5% level. Both a stepwise and backward regression were peformed, and in both instances, market-to-book ratios within target firms were excluded as a significant predictor. In the stepwise regression, the excluded beta ($\beta = 0.138$) was not significant ($\alpha = 0.523$) and showed a low partial correlation (0.148) to the final iteration of the model. The backward regression provided a

conflicting direction of the variable (β = -0.155). This was once again not significant (α = 0.496) and had a low partial correlation (-0.159) with the final iteration of the model.

Target firm market-to-book ratios when considered in terms of book value premiums also showed no significant predictive power. Based on adjusted data, a significant (α =0.000) Pearson correlation was displayed (-0.639). However, both the stepwise and backward regression excluded target firm investment opportunity as a significant predictor at either the 5% of 10% level in the final iterations of the respective models.

Thus while Lang *et al* (1991) and Gondhalekar, Sant, & Ferris (2004) find support for the the hypothesis that target firm internal investment opportunities have a positive linear relationship with acquisition premiums, no such support can be found in the sample data of JSE acquisitions between 2000 and 2009. It is thus not possible to accept the null hypothesis based on the evidence presented.

6.1.3 Hypothesis Three

Hypothesis three seeks to determine if the performance of the target firm influences the premium paid to target shareholders in acquisitions. This hypothesis is tested by using two measures of performance, namely target firm's growth potential (the firms PE ratio) and the Modified Tobin's Q measure.

6.1.3.1 Hypothesis Three A

Balke & Wohar (2001), Jones (2008) and Wickramanayake & Wood (2010) identify the price-to-earnings ratio as a measure of the stock market's perception of the growth potential of a specific firm. To test the hypothesis that the performance of a firm positively influences acquisition premiums, the correlations and regression coefficients (using both a stepwise and backward regression technique) for both market value premium and book value premium against price-to-earnings were considered.

When considering the market value premium approach, the statistical results around PE ratios do not support with hypothesis 3A. As illustrated in Appendix 6 the Pearson correlations between PE ratios and market value premiums are not significant across both unadjusted data as well as on data adjusted to eliminate outliers ($\alpha = 0.201$ and $\alpha = 0.245$ respectively). In fact the Pearson correlation across unadjusted data was negative (-0.24) but was positive across adjusted data (0.231). Furthermore, when considering the results of a stepwise regression analysis, the final iteration suggested that PE was an insignificant contributor to the model ($\beta = 0.225$ and $\alpha = 0.318$). A low partial correlation with the model (0.229) confirms that this measure does not add to the predictive power of the stepwise regression. To confirm this finding, a backward regression technique was performed, with the final iteration showing that the PE ratio measure was indeed not a significant contributor. The regression coefficient indicated a negative relationship between PE's and market value premiums ($\beta = -0.145$), yet this measure was not statistically significant ($\alpha = 0.460$).

When assessed from a book value premium perspective, the PE ratios of the unadjusted sample shows a low Pearson correlation of 0.026 which was in fact statistically insignificant ($\alpha = 0.890$). When the sample was adjusted for outliers the Pearson correlation of 0.563 was found, and this was statistically significant ($\alpha = 0.003$). It must however be noted that four observations were removed from the sample to get this result. The stepwise regression on book value premiums also excluded PE's as a contributing predictor, with the final iteration of the process finding a negative relationship between book value premiums and PE's ($\beta = -0.273$) but at a statistically insignificant level ($\alpha = 0.179$). A backward regression was run to validate this finding. Once again, the final iteration of this technique excluded PE's as a contributing factor, finding a statistically insignificant ($\alpha = 0.895$) beta of -0,020.

Based on the conflicting direction of the regressions, the insignificance of the predictor in both stepwise and backward regressions of book value and market value premium's, the null hypothesis of PE having a positive relationship to the growth potential of the target firm cannot be accepted. This contradicts the findings of Balke & Wohar (2001), and Wickramanayake & Wood (2010).

6.1.3.2 Hypothesis Three B

The second part of hypothesis is tested by considering the measure known as Modified Tobin's Q, and is suggested by Lang *et al* (1989), Servaes (1991), and more recently, by Wickramanayake & Wood (2010). This effectively considers the impact of past managerial performance (as measured by share price performance) on acquisition

premiums. To test this hypothesis the correlations and regression coefficients (using both a stepwise and backward technique) for both market value premium and book value premium against Modified Tobin's Q were considered.

When considered from the perspective of market value premiums, analysis of Modified Tobin's Q produced conflicting results at levels that were not significant. When the correlations of the unadjusted sample were considered, a statistically non-significant ($\alpha = 0.245$) negative relationship was shown (Pearson correlation = -0,240). However, when the sample was adjusted to remove clear outliers, the Pearson correlation reversed to become positive (0.068), but once again, not at a statistically significant level ($\alpha = 0.730$). The final iteration of the stepwise regression excluded Modified Tobin's Q as a predictor ($\beta = 0.225$ and $\alpha = 0.912$). The partial correlation of this variable with the model (-0.23) is low and confirms that Modified Tobin's Q does not add value as a predictor in the regression. A backward regression was also performed on market value premiums. The final iteration of this process once again excluded Modified Tobin's Q as a predictor of market value premiums ($\beta = -0.159$; $\alpha = 0.421$; and partial correlation = -0.176).

When the hypothesis was considered in terms of book value premiums, a contrasting result was found. The Pearson correlations for both adjusted and unadjusted data (0.427 and 0.636) were not only consistently positive, but also both statistically significant at the 5% level ($\alpha = 0.019$ and $\alpha = 0.000$ respectively). A stepwise regression of the unadjusted data found Modified Tobin's Q to be a significant predictor in the

resultant model of the final iteration with β = 0.427. The regression coefficient of 0.427 indicates that an increase in Tobin's Q increase observed market value premiums by 42.7% on average. This coefficient is statistically significant at the 5% level. It must however be noted that the explanatory power of this model (with Modified Tobin's Q as the only predictor not excluded in the final iteration) was low with an R^2 = 0.182. The finding of the stepwise regression was confirmed through the use of a backward regression. This regression found Modified Tobin's Q as well as acquiring firm leverage and target firm leverage to be significant predictors of book value premiums. This regression was retested by using a simultaneous (or "Enter") technique. A strong model resulted (R^2 = 0.646) with Modified Tobin's Q having a regression coefficient of 0.766, meaning that an increase in Modified Tobin's Q increases observed book value premiums by 76.6%. The regression coefficient is significant at the 1% level.

The finding of a statistically positive relationship between Modified Tobin's Q (as a proxy for prior target managerial performance) on book value premiums contradicts the findings of Lang et al. (1989), Servaes (1991), and Wickramanayake & Wood (2010), all of whom found evidence of a negative relationship. The null hypothesis that posists that acquiring firms will be willing to pay more for a target if the management is seen to have performed poorly is therefore rejected.

6.1.4 Hypothesis Four

The subject of bidder competition is one that has received significant attention (Noronha, Sen, & Smith, 1996; Petmezas, 2009). Noronha et al (1996) suggest that one of the complicating factors in terms of bidder competition is that the acquisitions of public companies are public events that are both highly scrutinised and allow competitive bidders to enter the process at any point in the process. A number of studies have found that the premium paid in acquisitions where there were multiple bidders exceeds the premium paid in single bidder transactions (Flanagan & O'Shaughnessy, 2003; Walking & Edmister, 1985; Hambrick & Hayward, 1997; Varaiya & Ferris, 1987). Hypothesis four therefore posits that acquisitions characterised by multiple bidders display a positive linear relationship with acquisition premiums.

As described in 4.2 and 4.3 above, strict criteria were applied to the population of relevance in order to get a sample of transactions. It was found that not one of the 30 transactions that met the criteria was characterised as a transaction where multiple competitive bids existed. This fact was confirmed through the manual analysis of SENS announcements for the year prior to the cautionary announcement of the successful bid.

Concern about inherent weaknesses in the measure of multiple bidders was raised in section 2.3.4.2 above. As previously stated it is important to note at this point that the concept of multiple bidders has an inherent weakness in that the measure itself is often inaccurate. In reality competition between multiple bidders may take place in

private (Moeller, Schlingemann, & Stulz, 2004). Boone and Mulherin (2002) found that an acquisition by a single public bidder may be the result of a private auction in which multiple bidders may have participated. Thus, should the measure of competition be publically announced bids, the proxy may be flawed in that competition did in fact exist. Thus while the measure indicates no competition, private competition may have in fact significantly influenced the premium. Another weakness is that the measure does not deal with the issue of the intensity of competition, but rather just with the existence thereof.

Given the fact that no evidence of multiple bidders could be found in the sample, it was not possible to test the influence of this measure on acquisition premiums, and this measure was consequently excluded from any form of statistical testing. It is entirely possible that studies with different sample criteria may well result in multiple bidder transactions being included in the sample, thereby allowing for testing of a similar null hypothesis as the one proposed in hypothesis four.

6.1.5 Hypothesis Five

Jovanovic and Rousseau (2001) as cited in Petmezas (2009) found that high merger activity is correlated with high stock market valuations. Similarly Rhodes-Kropf and Viswanathan (2004) suggest that stock market misvaluations drive merger activity. It has been suggested that managers may be affected by the prevailing investor optimism during secular bull markets (Petmezas, 2009). This may result in overestimation of synergies leading to poor acquisitions in “hot” markets. Hypothesis five seeks to determine whether acquisitions premiums have a positive linear

relationship with secular bull markets. This section therefore analyses the explanatory power of the dummy variable "DBull" for transactions concluded during secular bull markets in the stepwise and backward multiple regressions of acquisition premiums.

The first part of the analysis of market conditions' influence on market value premiums was conducted through a T Test for equality of means. The unadjusted data was considered and the immediate concern was around the relatively small sample (30 observations) and the unequal spread between bull market condition (23 observations) and bear market conditions (7 observations). A large difference between the means of each subgroup was observed (72% mean for bear markets and 28% mean for bull markets). The standard error of the mean for bear market transactions (34%) was concerningly high. Levene's test for equality of variances showed significance (α = 0.001) meaning that equal variance could not be assumed. Thus using a two tailed T-test for equality of means, it was found that market conditions were not a significant predictor of market value premiums (α = 0.220). This process was repeated on adjusted data (removing the most obvious outlying data point), allowing equal variance to be assumed. The result once again though was that market conditions could not be seen as a significant predictor of market value premiums (as indicated by α = 0.248 in the T-Test for equal variances).

The next step in the analysis involved entering market conditions into a stepwise multiple regression of market value premiums in order to consider the predictive power of the variable. The model excluded market conditions as a significant predictor

of market value premiums. As an excluded variable, market conditions showed a small and negative regression coefficient of β = -0.244 with low significance (α = 0.239) and a low partial correlation with the previous iteration of the model derived from the regression (partial correlation = -0.269). While directionally consistent with this finding, a backward regression also excluded market conditions as a meaningful predictive variable for market value premiums (β = -0.146; α = 0.465; partial correlation = -0.160).

Market conditions were then considered in terms of their effect on book value premiums. The T-Test for equality of means did not provide any evidence of market conditions being a significant predictor of book value premiums. In the initial analysis (based on unadjusted data) huge disparities in acquisition premium means between bull market (201%) and bear market (64%) conditions existed, with high levels of standard error in the means (61% and 26% respectively). It was possible to assume equal variances for the sample (α = 0.022 in the Levene's Test for equal variances), leading to the conclusion that market conditions are not a significant predictor of book value premiums (α=0.236). This process was rerun based on adjusted data (outlier removed), but the result was similar. Even though it was possible to assume equal variances in the sample (Levene's test for equality of variances indicated α = 0.032), the T–test for equality of means did not indicate significant at the 5% or even the 10% level (α = 0.284).

When market conditions were included in a stepwise regression on book value premiums, the final iteration excluded it as a significant predictive variable. While directionally consistent with the null hypothesis, a low regression coefficient (β = 0.241) which was not significant (α= 0.163) and added little predictive power to the previous iteration of the model (partial correlation of 0.266) was displayed. This finding was confirmed through the application of a backward regression technique. Market conditions were once again excluded as a predictive variable given a low regression coefficient (β = 0.040), which was of low significance (α = 0.788).

In both the cases of market value premiums and book value premiums it was not possible to find either directionally-consistent or significant evidence of a relationship between market conditions and premiums. The analysis ranged from considering T-tests for equality of means as well as through both stepwise and backward regression techniques. Thus, despite the findings of the likes of Jovanovic and Rousseau (2001) as cited in Petmezas (2009), Rhodes-Kropf and Viswanathan (2004), and Petmezas (2009), which found evidence of a relationship between market conditions and acquisition premiums, no statistically significant evidence emerges to support the null hypothesis proposed in hypothesis five.

6.1.6 Hypothesis Six

It has been suggested that core-related acquisitions (acquisition of targets in the same industry) should result in greater opportunities for synergies than non-core related acquisitions (Flanagan & O'Shaughnessy, 2003). Due to the potential for synergies

(Krishan, Hitt, & Park, 2007) core related acquisitions could lead to higher valuations (and premiums) of target firms (Flanagan & O'Shaughnessy, 2003; Hirschleifer & Titman, 1990). Hypothesis six seeks to determine if acquisitions involving firms in the same industry will result in higher premiums that those of acquisitions involving firms in different industries. This section therefore analyses the explanatory power of the dummy variable "DInd" for transactions considered to be core related or diversifying through use of a T Test for equality of means as well as by entering the nature of the acquisition as an independent variable in a stepwise and backward multiple regressions of acquisition premiums. These measures were considered in the context of both market value premiums as well as book value premiums.

The T Test for equality of means found that the industry characteristics of transactions were not significant in the context of market value premiums. A skewed sample (seven transactions within the same industry and 23 diversifying transactions) emerged. Despite this, Levene's test for equality of variance indicated that equal variance would be assumed ($\alpha = 0.275$). However, the T test for equality of means (with assumed equal variance) indicated that industry characteristics were in fact not a significant factor in market value premiums ($\alpha = 0.186$).

The stepwise regression technique excluded industry characteristics as a significant predictor of market value premiums. While directionally consistent with the null hypothesis, the regression coefficient for industry characteristics was low ($\beta = 0.192$), had no significance ($\alpha = 0.355$) at any meaningful level, and added little value to

previous iterations of the stepwise regression model (partial correlation of only 0.213). This finding was confirmed when industry characteristics were entered into a backward multiple regression of market value premiums. The excluded regression coefficient (while directionally consistent with the null hypothesis) was very low (β = 0.083), not significant (α = 0.675) and added virtually no predictive power to previous iterations of the regression (partial correlation of just 0.093).

Similarly the T Test for equality of means found that the industry characteristics of transactions were not significant in the context of book value premiums. Levene's test for equality of variance indicated that equal variance would be assumed (α = 0.094). The T test for equality of means (with assumed equal variance) indicated that industry characteristics were still not a significant factor in book value premiums (α = 0.240). The stepwise regression technique excluded industry characteristics as a significant predictor of book value premiums. While directionally consistent with the null hypothesis (as was the case with market value premiums), the regression coefficient for industry characteristics was low (β = 0.269), had no significance (α = 0.120) at any meaningful level, and added little value to previous iterations of the stepwise regression model (partial correlation of only 0.269). This finding was confirmed when industry characteristics were entered into a backward multiple regression of book value premiums. The excluded regression coefficient (while directionally consistent with the null hypothesis) was low (β = 0.148), not significant (α = 0.264) and added virtually no predictive power to previous iterations of the regression (partial correlation of 0.249).

The sample presented leads to a lack of evidence that industry characteristics of an acquisition have predictive power in the context of either market value premiums or book value premiums. Thus while the likes of Flanagan & O'Shaughnessy (2003), Krishan, Hitt, & Park (2007) and Hirschleifer & Titman (1990) find evidence of a positive relationship between core related acquisitions and acquisition premiums, no such conclusion can be drawn from the sample of JSE acquisitions between 2000 - 2009 (as defined by sample criterion described in section 4.3 above). It is therefore not possible to accept the null hypothesis that acquisitions involving firms in the same industry will result in higher premiums than those of acquisitions involving firms in different industries.

6.1.7 Hypothesis Seven

According to Gondhalekar *et al* (2004), the listing age of a company may be seen as a proxy for the maturity of a firm. Hypothesis seven therefore posits that there is a negative relationship between listing age and acquisition premiums. To test this, the correlation between listing age and market and book value premiums, as well as the regression coefficients (in both the stepwise and backward multiple regressions) for listing age were used.

While directionally consistent, the Pearson correlations for both unadjusted and adjusted data were in fact positive (0.110 and 0.003 respectively) which contradicts

the null hypothesis. The correlations were however not significant at either the 5% or 10% level.

Entering listing age for a stepwise regression of market value premiums resulted in listing age being excluded as a significant predictor in the final iteration of the stepwise regression. As an excluded variable, listing age displayed a low and negative beta (β = -0.195) which was not significant (α = 0.330) and added little value to the previous iteration of the regression model (partial correlation = -0.215). The backward regression confirmed this finding with listing age once again being excluded as a significant predictor of market value premiums. The beta was once again low and negative (β = -0.240), not significant (α = 0.218) and had a low partial correlation with the previous iteration of the model (partial correlation = -0.267).

In terms of book value premiums, listing age showed very low negative correlations for both unadjusted (-0.063) and adjusted (-0.055) data. These correlations were in both instances not significant at either the 5% or 10% level. The final iterations of the stepwise and backward regressions provided conflicting directional betas. However, in both instances listing age was excluded as a significantly contributing predictive variable. In the case of the stepwise regression, listing age was excluded as a predictor in the final iteration of the model based on a low regression coefficient (β= -0.74) that was not significant (α = 0.672) and had a low contribution to the model prior to its exclusion (partial correlation = -0.082). It is interesting to note that the different multiple regression techniques (stepwise and backward) employed, produced

directionally conflicting relationships between listing age and book value premium. It must however be reiterated that in both instances the level of significance did not meet either the 5% or 10% hurdle.

While some researchers find evidence that an inverse relationship exists between listing age and the premium paid in an acquisition, especially when managerial hubris (Roll, 1986) exists in the bidding firm, as the divergence in opinion allows over optimistic valuations to come into play (Varaiya & Ferris, 1987), no such evidence can be found in the sample considered (whether it is assessed in terms of market value premium or book value premium). It is therefore not possible to accept the null hypothesis that proposes that there is a negative linear relationship between listing age and acquisition premiums.

6.1.8 Hypothesis Eight

Hypothesis eight proposes that there is a positive relationship between free cash flow in an acquiring firm and the acquisition premium. This follows Jenson (1988) who hypothesised that managers tend to spend free cash flow more freely on value-reducing activities when the cost is borne by shareholders (linking closely to the agency theory as per Porrini, (2006)). Lang, Stulz and Walking (1989, 1991), have consistent findings and state further that poorly managed firms tend to pursue value reducing acquisitions as opposed to distributing the cash flows to shareholders in the form of dividends. To test this, the correlation between free cash flows in acquiring firms and acquisition premiums (market value and book value premiums) was

considered. In addition, the regression coefficient (using both the stepwise and backward multiple regression technique) for free cash flow was used.

The direction of the correlation between acquiring firm free cash flow and market value premiums was not significant (α = 0.908) and was initially negative (-0.022), which contradicted the null hypothesis. On adjustment for outliers, this correlation reversed direction (0.034) but remained non-significant. (α = 0.867). When entered into a stepwise multiple regression of market value premiums, acquiring free cash flow was excluded as a significant predictor in the final iteration of the model. Despite directional consistency with the null hypothesis, as an independent variable, acquiring firm free cash flow provided little predictive power (β = 0.128 and α = 0.664) and added little value to the previous iteration of the regression (as indicated by a low partial correlation of 0.133).

In order to verify this result, a backward multiple regression technique was performed using acquiring firm free cash flow as an independent variable. This process confirmed the finding of the stepwise regression in that acquiring firm free cash flow was rejected as a significant predictive independent variable by virtue of its low predictive power (β = 0.202), non significance (α = 0.325), and low value add to the previous iteration of the regression model (partial correlation = 0.215).

Acquiring firm free cash flow was then analysed in terms of its predictive power on book value premiums. Once again, it was not possible to find any significant predictive power for this independent variable. As with market value premiums, there was directional conflict when considering the Pearson correlation of acquiring firm free cash flow to book value premiums on an unadjusted and adjusted basis. The unadjusted Pearson correlation (0.0230) suggested a positive relationship, but this correlation was not significant at any meaningful level ($\alpha = 0.230$). Once the data was adjusted to remove clearly outlying data points (three observations were removed), the direction of the Pearson correlation between acquiring firm free cash flow and book value premiums reversed (-0.132). Once again the correlation was not significant at any meaningful level ($\alpha = 0.511$).

When entered into a stepwise multiple regression process on book value premiums, acquiring firm free cash flow was excluded as a significant predictor. The basis of this exclusion was a low regression coefficient ($\beta=0.102$), at low significance ($\alpha = 0.582$), and a low value adding properties when considered in the context of the previous iteration of the regression (partial correlation = 0.107). In order to check the veracity of this finding, an alternative multiple regression technique was employed (a backward regression). Similarly to the stepwise multiple regression, acquiring firm free cash flow was excluded from the final iteration of the regression by virtue of a low ($\beta = -0.015$) and statistically non-significant ($\alpha = 0.914$) regression coefficient which add very little predictive power (partial correlation = -0.024) to previous iterations of the backward regression model. Once again it is worth noting that there was directional conflict in

terms of the regression coefficients derived from each technique, indicating a lack of consistency in the data.

While previous research (Jenson (1988) and Lang, Stulz and Walking (1989, 1991)) has found evidence and support of the hypothesis that there is a positive relationship between acquiring firm free cash flow and acquisition premiums, no such evidence was forthcoming from the data. Conflicting and non-significant findingss were produced across both market value and book value premiums. It is therefore not possible to accept the null hypothesis based on the presented sample.

6.1.9 Hypothesis Nine

Hypothesis nine suggests that there is a positive liner relationship between acquirer relative size and acquisition premiums. This follows the suggestion that acquirers are willing to pay higher premiums for relatively smaller firms based on the expectation of higher profits as a result of the existence of economies of scale and scope (Louis, 2004) as well as relatively less expensive cultural integration (Diaz, Azofra, & Gutierrez, 2009). To test this, the correlations between relative size and market and book value premiums were considered. In addition the regression coefficients (in both the stepwise and backward multiple regressions of both market value and book value premiums) for relative size were analysed.

When the correlation between relative size and market value premiums was considered, conflicting directional results emerged across unadjusted (Pearson correlation = -0.142) and adjusted data (Pearson correlation = 0.242 after four outlying transactions were removed) emerged. The correlations were however in both cases insignificant at both the 5% and 10% level. A stepwise multiple regression on market value premiums was conducted and after the final iteration of the model, relative size was found to be the only significant predictor to the model explaining market value premiums. Relative size provided a positive regression coefficient of β = 0.609 at a significance of α = 0.048 (significant at the 5% level). This positive beta supports the null hypothesis of there being a positive relationship between relative size and acquisition premiums. Of concern though was that the explanatory power of the model was very low (R^2 = 0.181).

Furthermore, the finding was not supported when a backward regression was conducted on the sample. The final iteration of the backward regression in fact excluded acquirer relative size as a significant predictor, indicating a regression coefficent of β = 0.243, which was not significant at the 5% level (α = 0.226). The partial correlation of the variable to the previous model (0.262) confirmed a low contribution to the explanatory power of the regression. The conflicting finding, as well as the low explanatory power of the model produced by the final iteration of the stepwise regression provides cause for concern in unequivocally supporting the null hypothesis.

In terms of book value premiums, while directionally consistent, the Pearson correlations for both unadjusted data (-0.031) and adjusted data (-0.031) were in contradiction to the proposed positive relationship between relative size and acquisition premiums. In both instances the correlations were not significant at either the 5% or 10% level. Both the stepwise regression and backward multiple regression techniques failed to support acquirer relative size as a significant predictor in acquisition premiums. In both instances, relative size showed a low explanatory contribution to either model. The regression coefficient (β = 0.135) for the final iteration of the stepwise regression was at a non-significant level (α = 0.468), while in the instance of the backward regression, relative size was excluded as a significant predictor based on a regression coefficient of β = -0.212 and α = 0.131. It is worth noting that the two techniques suggest conflicting directional contribution of relative size as a predictive variable.

While various reasons such as economies of scale and scope (Louis, 2004) have been suggested for the existence of a positive relationship between relative size and acquisition premiums, no consistent (non-conflicting) and significant evidence can be found to support the null hypothesis. Despite a significant finding in terms of market value premiums, the relationship identified is weak and is contradicted by other findings. The possibility that the statistical relationship identified has more to do with analysis techniques than with bona fide predictive properties of the variable is too great to accept the finding with any level of comfort. This conclusion is reached based on assessment of both market value and book value premiums.

6.1.10 Hypothesis Ten

Hypothesis ten suggests that there is a relationship between leverage and acquisition premiums. This hypothesis has been divided into two separate hypotheses in order to consider the influence of leverage from the perspective of both acquiring firms and target firms.

6.1.10.1 Hypothesis Ten A

Following Gondhalekar, Sant, & Ferris (2004) it is suggested that there is "likely to be greater monitoring of corporate activities by the firm's creditors as financial leverage increases. Hence, it is less probable that the firm will overpay for an acquisition". Consequently, a negative relationship between the acquirer's debt-to equity ratio and acquisition premiums is hypothesised. To test this, the correlation between acquiring firm leverage and both market and book value premiums was considered. This was done for both unadjusted and adjusted sample data. In addition the regression coefficient (in both a stepwise and backward multiple regression) for acquiring firm leverage was analysed (once again this was performed across both market and book value premiums).

The first aspect of the analysis of acquiring firm leverage in relation to acquisition premiums was conducted in terms of market value premiums. The correlation between this independent variable (for both unadjusted and adjusted data) and

market value premiums was directionally consistent with the null hypothesis in that unadjusted data indicated a Pearson correlation of -0.057 while the adjusted data indicated a Pearson correlation of -0.313. In both instances the correlation was not significant (α = 0.673 and α = 0.112 respectively). The stepwise regression technique applied rejected acquiring firm leverage as a significant predictor. Thus while the direction of the regression coefficient was consistent with the null hypothesis (β = -0.313), it can be disregarded as it had low significance (α = 0.134) and added little value to previous iterations of the stepwise regression model (partial correlation was -0.338). Of interest however was that acquiring firm leverage emerged as the only predictive variable in the backward regression of market value premiums. The regression coefficient (β = -0.467) was significant at the 5% level (α = 0.030) and was once again directionally consistent with the null hypothesis. The regression coefficient could be interpreted as indicating that an increase in acquiring firm leverage of one unit results in a decrease in market value premium of 46.7%. While this is in support of the null hypothesis, restraint should be shown before making any conclusions. Of concern is the low predictive power of the single variable regression model that was produced. With R^2 = 0.197 it would be fair to view the result of the regression with a degree of scepticism as only 20% of the movement in market value premiums can be explained by the model. The fact that the stepwise regression excluded acquiring firm leverage as a significant predictor of market value premiums adds to this concern.

The process described above was repeated in terms of book value premiums. The correlation between this independent variable (for both unadjusted and adjusted data) and book value premiums was directionally inconsistent with the null hypothesis in

that unadjusted data indicated a Pearson correlation of 0.154 while the adjusted data indicated a Pearson correlation of 0.010. In both instances the correlation was not significant (α = 0.417 and α = 0.960 respectively). The stepwise regression technique applied rejected acquiring firm leverage as a significant predictor of book value premiums. Thus while the direction of the regression coefficient was inconsistent with the null hypothesis (β = 0.175), it can be disregarded as it had low significance (α = 0.315) and added little value to previous iterations of the stepwise regression model (partial correlation was 0.193). Of interest however was that acquiring firm leverage emerged as one of three predictive variables in the backward regression of book value premiums. The other predictive variables highlighted by the final iteration of the backward regression were Modified Tobin's Q and target firm leverage. The regression coefficient for acquiring firm leverage (β = -0.302) was significant at the 5% level (α = 0.031) and was directionally consistent to the null hypothesis. The regression coefficient could be interpreted as indicating that an increase in acquiring firm leverage of one unit results in a decrease in book value premium of 30.2%. This is in support of the null hypothesis in that this indicates that an increase in acquiring firm leverage actually *lowers* acquisition premiums. Of interest was the fact that the proposed model had a relatively high predictive power (R^2 = 0.658). In order to confirm the veracity of this result a final regression was conducted using the simultaneous (or "enter") technique. While target firm leverage was excluded at this point, acquiring firm leverage and Modified Tobin's Q were identified as significant predictors in the model. Furthermore the model had good predictive power (R^2 = 0.646) with acquiring firm leverage having a regression coefficient of 0.304, meaning that an increase in acquiring firm leverage decreases observed book value premiums

by 30.4%. The regression coefficient is significant at the 5% level (α = 0.023). The full model explains 65% of the movement in book value premiums.

The null hypothesis proposes that there is a negative relationship between acquiring firm leverage and acquisition premiums. Evidence of this relationship was found in both the analysis of market value premiums (through a backward regression) and through the analysis of book value premiums (once again through a backward regression as well as through a simultaneous regression).

While the evidence was weak in the instance of market value premiums, there is sufficient evidence to accept the null hypothesis that there is a negative relationship between acquiring firm leverage and acquisition premiums. This is in support of Gondhalekar, Sant, & Ferris (2004) who is suggest that there is “likely to be greater monitoring of corporate activities by the firm’s creditors as financial leverage increases".

6.1.10.2 Hypothesis Ten B

Walking and Edmister (1985) found evidence of an inverse relationship for the target’s debt ratio and acquisition premiums. Following Gondhalekar, Sant, & Ferris (2004) it is suggested that the target’s debt-to-equity ratio is a measure of the portion of a firm’s cash flow that is encumbered, thus reducing the total amount of cash subject to managerial discretion (also referred to as “free cash flow”). They posit that as higher

levels of debt further encumber cash flow, the firm becomes less attractive to potential suitors. This would suggest that as debt increases within a target, acquisition premiums would fall as the target becomes less attractive to suitors. To test this the correlation between target firm leverage and both market and book value premiums were considered. This was done for both unadjusted and adjusted sample data. In addition the regression coefficient (in both a stepwise and backward multiple regression) for target firm leverage was analysed (once again this was performed across both market and book value premiums).

The first aspect of the analysis of target firm leverage in relation to acquisition premiums was conducted in terms of market value premiums. The correlation between this independent variable (for both unadjusted and adjusted data) and market value premiums was directionally consistent with the null hypothesis in that unadjusted data indicated a Pearson correlation of -0.173 while the adjusted data indicated a Pearson correlation of -0.219. In both instances the correlation was not significant ($\alpha = 0.361$ and $\alpha = 0.262$ respectively). The stepwise regression technique applied rejected target firm leverage as a significant predictor. Thus while the direction of the regression coefficient was consistent with the null hypothesis ($\beta = -0.109$), it can be disregarded as it had low significance ($\alpha = 0.618$) and added little value to previous iterations of the stepwise regression model (partial correlation was -0.116). Similarly, target firm leverage was excluded as a predictive variable in the backward regression of market value premiums. The regression coefficient ($\beta = -0.019$) was small and not significant at the 5% level ($\alpha = 0.927$) but was directionally consistent with the null

hypothesis. There was therefore no evidence of a statistically significant relationship between target firm leverage and market value premiums.

The process described above was repeated in terms of book value premiums. The correlation between target firm leverage (for both unadjusted and adjusted data) and book value premiums was directionally inconsistent with the null hypothesis in that unadjusted data indicated a Pearson correlation of 0.090 while the adjusted data indicated a Pearson correlation of 0.248. In both instances the correlation was not significant ($\alpha = 0.637$ and $\alpha = 0.069$ respectively). The stepwise regression technique applied rejected target firm leverage as a significant predictor of book value premiums. Thus while the direction of the regression coefficient was inconsistent with the null hypothesis ($\beta = 0.159$), it can be disregarded as it had low significance ($\alpha = 0.368$) and added little value to previous iterations of the stepwise regression model (partial correlation was 0.173).

Of interest however was that acquiring firm leverage emerged as one of three predictive variables in the backward regression of book value premiums. The other predictive variables highlighted by the final iteration of the backward regression were Modified Tobin's Q and acquiring firm leverage. The regression coefficient for acquiring firm leverage ($\beta = -0.312$) was significant at the 5% level ($\alpha = 0.026$) and was directionally consistent to the null hypothesis. The regression coefficient could be interpreted as indicating that an increase in target firm leverage of one unit results in a decrease in book value premium of 31.2%. This is in support of the null hypothesis in

that this indicates that an increase in target firm leverage actually *lowers* acquisition premiums. Of interest was the fact that the proposed model had a relatively high predictive power (R^2 = 0.658). In order to confirm the veracity of this result a final regression was conducted using the simultaneous (or "enter") technique. Target firm leverage was excluded at this point, with acquiring firm leverage and Modified Tobin's Q identified as significant predictors in the model. When entered into the model through the simultaneous technique, the regression coefficient (β = 0.206) not only reversed directions (compared to previous iterations of the regression process) but also lost significant as a predictor (α = 0.109).

The null hypothesis proposes that there is a negative relationship between target firm leverage and acquisition premiums. While some evidence of this relationship was found in the analysis of boot value premiums (through a backward regression), it is likely that this finding had more to do with the regression technique than the inherent predictive power of the variable. The relationship was tenuous at best and could not be considered robust enough to confirm the null hypothesis. Thus despite the findings of Walking and Edmister (1985) and Gondhalekar, Sant, & Ferris (2004), the judgmental sample of JSE mergers and acquisitions between 2000 and 2009 provides no significant evidence of a negative relationship between target firm leverage and acquisition premiums. The null hypothesis can therefore not be accepted.

7 CHAPTER 7 - CONCLUSION

This research set out to identify determinants of acquisition premiums in JSE mergers and acquisitions by studying acquisitions that met predetermined criteria (see section 4.2) on the exchange between 2000 and 2009. A sample of 30 transactions was identified from the population of relevance and was extracted from the database of mergers and acquisitions compiled by Ernst & Young (Transaction Advisory Services).

Acquisition premiums were considered in the context of both market value premiums as well as book value premiums. A variety of independent variables were identified through a comprehensive review of existing literature. Based on the literature, hypotheses for each of the independent variables were proposed and were then tested in terms of the defined dependant variables to find statistically significant relationships. The testing followed the use of correlation statistics for both unadjusted data and data adjusted to remove outlying data points. Two independent multiple regression techniques, a stepwise multiple regression and a backward multiple regression (with a confirmatory simultaneous regression applied on the final iteration) were then used to determine if the independent variables could provide a model with explanatory properties in terms of either book value premiums or market value premiums.

Initial multiple regression models (both stepwise and backward) were run on unadjusted data. Outliers significantly influenced models in all instances. This highlighted a major problem with the study. The sample criteria specified in section 4.2

and 4.3 resulted in a very small sample, and this sample was significantly impacted by the presence of outliers. These outliers affected the outcome of the initial multiple regression approaches applied. As a result it was necessary to rerun the statistical analysis on adjusted data. With outlying data points removed, the sample was reduced once again, compounding the issue of limited sample size.

In terms of market value premiums, two independent variables were highlighted as having potentially explanatory properties. A stepwise regression of adjusted data highlighted acquirer relative size as the only predictive variable in the final iteration of the model. The predictive power of the model was however so low (R^2 = 0.181) that it would be difficult to accept acquirer relative size as a significant predictor of market value premiums. In addition to this, none of the other techniques applied highlighted relative size as a predictive variable of market value premiums (or book value premiums for that matter).

A backward regression of market value premiums found only one potentially predictive independent variable in acquiring firm leverage. Once again the model created through the final iteration had very limited predictive power (R^2 = 0.197). However, as discussed below, acquiring firm leverage did get highlighted as a predicting factor of book value premiums.

A stepwise regression of book value premiums found one potentially predictive variable in Modified Tobin's Q. Although the predictive power of the model was low (R^2 = 0.182), Tobin's Modified Q was once again identified as a potentially predictive variable of book value premiums through a backward regression of adjusted data.

The backward regression of book value premiums highlighted three predictive variables in the model produced by the final iteration of the regression, namely Modified Tobin's Q, acquiring firm leverage, and target firm leverage. A simultaneous "enter" regression was used to confirm this result and concerningly, target firm leverage was excluded as a predictive variable. The final model produced did however have good predictive power (R^2 = 0.646).

Thus, only Modified Tobin's Q and acquiring firm leverage were identified as significantly predictive variables for either market value or book value premiums through the use of more than one technique. Modified Tobin's Q was identified as a predictor of book value premiums for by a stepwise and backward multiple regression, as well as through a simultaneous multiple regression. The finding of a statistically positive relationship between Modified Tobin's Q (as a proxy for prior target managerial performance) on book value premiums contradicted the findings of Lang et al. (1989), Servaes (1991), and Wickramanayake & Wood (2010). The null hypothesis that posists that acquiring firms will be willing to pay more for a target if the management is seen to have performed poorly is therefore rejected.

Acquiring firm leverage was identified as a predictor of market value premiums through a backward multiple regression and as a predictor of book value premiums through a backward multiple regression and a simultaneous multiple regression.

Thus, while two predictive variables were identified in the research, it must be noted that the results were not consistent across both book value premiums and market value premiums. Of greater concern was the fact that outliers significantly influenced the results of the study. It appeared that the existence of relationships was influenced to a large degree by the technique of analysis as well as by the removal of the outliers. Sample size was also a major cause for concern. It would therefore be fair to summarise the findings of the study as follows:

1. The variables analysed had limited predictive ability.
2. There was a high incidence of outlying data, which significantly influenced the results of the study.
3. The sample was smaller than ideal, and it would be advisable for further studies to get a larger sample by either changing the sample criteria, or by looking at data over a longer time period.

While few definitive results were found by this study, this study is one of the first South African studies on determinants of acquisition premiums. This field of study

deserves further research. The following recommendations are suggested for further studies:

1. A longer time period than 2000-2009 be studied.
2. Alternative independent variables be sought and examined.
3. A larger sample is studied (through changing some of the sample criteria if required).

Given the lack of definitive results in the study, an alternative method of approaching this research would be to follow a qualitative research design. In line with theories such as the “hubris” theory (Roll, 1986), “agency” theory (Jenson M. , 1988), a study of the qualitative motivations and decision making processes of executives involved in mergers and acquisitions could provide insight into how acquisition premiums are arrived at. Based on the lack of results in this study, it may be possible that the drivers of acquisition premiums are less mathematical and more human than proposed by this study.

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APPENDIX 1: Details of selections

Case no.	Acquirer	Target	Initial Caution Date	Transaction Value (millions)	% of outstanding shares purchased by acquirer	Cash/Shares	Diverifying / Non diversifying Acquisition	Bull / Bear Market Conditions
1	Invicta Holdings Ltd	Bearing Man Ltd	14/06/2000	R 92	55%	Cash	Diversifying	Bull
2	Seardel Investment Corporation Ltd	Frame Group Holdings Ltd	31/03/2000	R 533	77%	Cash	Diversifying	Bull
3	Aveng Ltd	LTA Ltd	10/07/2000	R 1 300	100%	Cash	Diversifying	Bull
4	Nampack Ltd	Malbak Ltd	02/11/2001	R 1 649	100%	Shares	Diversifying	Bull
5	Bidvest Ltd	Voltex Holdings Ltd	19/10/2001	R 304	68%	Cash	Non Diversifying	Bull
6	Invicta Holdings Ltd	Bearing Man Ltd	13/04/2001	R 330	39%	Cash	Diversifying	Bull
7	Harmony Gold Mining Company Ltd	African Rainbow Minerals Gold Ltd	05/05/2003	R 4 900	100%	Cash	Diversifying	Bear
8	Barloworld Ltd	Avis Southern Africa Ltd	01/08/2003	R 1 420	65%	Shares	Non Diversifying	Bear
9	JCI Ltd	Barnato Exploration Ltd	21/08/2003	R 200	100%	Cash	Diversifying	Bear
10	JCI Ltd	Rand Leases Properties Ltd	17/10/2003	R 54	69%	Cash	Diversifying	Bear
11	Ellerine Holdings Ltd	Wetherleys Investment Holdings Ltd	03/07/2003	R 507	100%	Cash	Diversifying	Bear
12	Liberty Holdings Ltd	Capital allicance Holdings Ltd	12/11/2004	R 3 333	100%	Cash	Diversifying	Bull
13	Venfin Ltd	Intervid Ltd	01/03/2004	R 21	100%	Shares	Non Diversifying	Bull
14	Ellerine Holdings Ltd	Relyant retail Ltd	17/05/2004	R 1 451	100%	Shares	Diversifying	Bull
15	Murray & Roberts Holdings Ltd	The Cementation Company Africa Ltd	19/11/2003	R 114	79%	Cash	Diversifying	Bull
16	Steinhoff International Holdings Ltd	unitrans Ltd	20/08/2004	R 935	44%	Cash	Non Diversifying	Bull
17	Firstrand Group Ltd	Sage Group Ltd	23/12/2004	R 634	98%	Cash	Diversifying	Bull
18	Sanlam Ltd	African Life Assurance Company Ltd	14/02/2005	R 1 763	75%	Cash	Diversifying	Bull
19	JD Group Ltd	Connection Group Holdings Ltd	14/07/2005	R 500	100%	Cash	Diversifying	Bull
20	Pangbourne Properties Ltd	Ifour Properties Ltd	14/02/2008	R 1 103	59%	Shares	Diversifying	Bull
21	Brait Ltd	Consol Ltd	21/07/2006	R 6 162	100%	Cash	Non Diversifying	Bull
22	Growthpoint Properties Ltd	Metboard Properties Ltd	27/02/2006	R 1 397	100%	Shares	Diversifying	Bull
23	Net1 Applied Technologies Ltd	Prism Holdings Ltd	24/01/2006	R 687	100%	Cash	Diversifying	Bull
24	African Bank Investments Ltd	Ellerine Holdings Ltd	20/08/2007	R 9 480	96%	Shares	Non Diversifying	Bull
25	Blue Financial Services Ltd	Credit U Holdings Ltd	01/08/2008	R 278	98%	Shares	Diversifying	Bear
26	Basil Read Holdings Ltd	TWP Holdings Ltd	11/08/2009	R 769	100%	Shares	Diversifying	Bull
27	Allied Electronics Corporation Ltd	Bytes Technology Group Ltd	31/08/2007	R 2 400	38%	Shares	Diversifying	Bull
28	Sanlam Ltd	Genbel securities Ltd	30/06/2000	R 3 571	38%	Cash	Diversifying	Bull
29	Standard Bank Group Ltd	Liberty Holdings Ltd	31/03/2008	R 4 395	41%	Cash	Diversifying	Bear
30	sun international Ltd	Real Africa Holdings Ltd	28/02/2006	R 1 109	57%	Cash	Non Diversifying	Bull

APPENDIX 2: Correlation matrix for book market value premiums and book value premiums (unadjusted data)

	Market Value Premium	Book Value Premium	Relative Size	Acquiring firm investment opportunities	Acquiring firm Free cash flow	Acquiring firm leverage	Target firm investment opportunities	Target firm growth	Modified Tobin's Q	Target firm leverage	Target firm listing age
Market Value Premium											
- Pearson Correlation	1	-0.046	-0.142	0.138	-0.022	-0.057	0.442*	-0.240	-0.219	-0.173	0.110
- Sig. (2 tailed test)		0.809	0.809	0.466	0.908	0.763	0.014	0.201	0.245	0.361	0.565
- N	30	30	30	30	30	30	30	30	30	30	30
Book Value Premium											
- Pearson Correlation	-0.046	1	-0.031	-0.234	0.230	0.154	-0.172	0.026	0.427*	0.090	-0.063
- Sig. (2 tailed test)	0.809		0.872	0.213	0.222	0.417	0.363	0.890	0.019	0.637	0.743
- N	30	30	30	30	30	30	30	30	30	30	30
Relative Size											
- Pearson Correlation	-0.142	-0.031	1	-1.06	0.248	-0.086	-0.721**	-0.448*	-0.350	-0.172	-0.123
- Sig. (2 tailed test)	0.809	0.872		0.576	0.186	0.653	0.000	0.013	0.058	0.362	0.518
- N	30	30	30	30	30	30	30	30	30	30	30
Acquiring firm investment opportunities											
- Pearson Correlation	0.138	-0.234	-1.06	1	-0.159	-0.116	0.379*	0.018	-0.247	-0.135	0.329
- Sig. (2 tailed test)	0.466	0.213	0.576		0.400	0.542	0.039	0.923	0.189	0.475	0.076
- N	30	30	30	30	30	30	30	30	30	30	30
Acquiring firm Free cash flow											
- Pearson Correlation	-0.022	0.230	0.248	-0.159	1	-0.455*	-0.339	0.025	0.325	-0.343	-0.150
- Sig. (2 tailed test)	0.908	0.222	0.186	0.400		0.011	0.067	0.895	0.080	0.063	0.429
- N	30	30	30	30	30	30	30	30	30	30	30
Acquiring firm leverage											
- Pearson Correlation	-0.057	0.154	-0.086	-0.116	-0.455*	1	-0.062	-0.048	-0.048	0.498**	-0.080
- Sig. (2 tailed test)	0.763	0.417	0.653	0.542	0.011		0.747	0.800	0.800	0.005	0.675
- N	30	30	30	30	30	30	30	30	30	30	30
Target firm investment opportunities											
- Pearson Correlation	0.442*	-0.172	-0.721**	0.379*	-0.339	0.121	1	-0.057	-0.125	-0.038	0.223
- Sig. (2 tailed test)	0.014	0.363	0.000	0.039	0.067	0.525		0.766	0.511	0.842	0.236
- N	30	30	30	30	30	30	30	30	30	30	30
Target firm growth											
- Pearson Correlation	-0.240	0.026	-0.448*	0.018	0.025	-0.062	-0.057	1	0.525**	0.026	0.005
- Sig. (2 tailed test)	0.201	0.890	0.013	0.923	0.895	0.747	0.766		0.003	0.891	0.978
- N	30	30	30	30	30	30	30	30	30	30	30
Modified Tobin's Q											
- Pearson Correlation	-0.219	0.427*	-0.350	-0.247	0.325	-0.048	-0.125	0.525**	1	-0.153	0.027
- Sig. (2 tailed test)	0.245	0.019	0.058	0.189	0.080	0.800	0.511	0.003		0.421	0.886
- N	30	30	30	30	30	30	30	30	30	30	30
Target firm leverage											
- Pearson Correlation	-0.173	0.090	-0.172	-0.135	-0.343	0.498**	-0.038	0.026	-0.153	1	-0.311
- Sig. (2 tailed test)	0.361	0.637	0.362	0.475	0.063	0.005	0.842	0.891	0.421		0.094
- N	30	30	30	30	30	30	30	30	30	30	30
Target Firm listing age											
- Pearson Correlation	0.110	-0.063	-0.123	0.329	-0.150	-0.080	0.223	0.005	0.027	-0.311	1
- Sig. (2 tailed test)	0.565	0.743	0.518	0.076	0.429	0.675	0.236	0.978	0.886	0.094	
- N	30	30	30	30	30	30	30	30	30	30	30

APPENDIX 3: Correlation matrix for book market value premiums and book value premiums (adjusted data)

	Market Value Premium	Book Value Premium	Relative Size	Acquiring firm investment opportunities	Acquiring firm Free cash flow	Acquiring firm leverage	Target firm investment opportunities	Target firm growth	Modified Tobins Q	Target firm leverage	Target firm listing age
Market Value Premium											
- Pearson Correlation	1	0.216	0.242	-0.017	0.034	-0.313	0.352	0.231	0.068	-0.219	0.003
- Sig. (2 tailed test)		0.290	0.234	0.932	0.867	0.112	0.072	0.245	0.730	0.262	0.987
N	28	26	26	27	27	27	27	27	28	28	28
Book Value Premium											
- Pearson Correlation	0.216	1	-0.283	-0.290	-0.132	0.010	-0.639**	0.563**	0.636**	0.248	-0.055
- Sig. (2 tailed test)	0.290		0.152	0.143	0.511	0.960	0.000	0.003	0.000	0.069	0.781
- N	26	28	27	27	27	27	27	26	28	28	28
Relative Size											
- Pearson Correlation	0.242	-0.283	1	-0.221	0.180	0.003	0.377*	-0.390*	-0.283	-0.155	-0.094
- Sig. (2 tailed test)	0.234	0.152		0.267	0.368	0.987	0.048	0.049	0.145	0.430	0.635
- N	26	27	28	27	27	28	28	26	28	28	28
Acquiring firm investment opportunities											
- Pearson Correlation	-0.017	-0.290	-0.221	1	-0.049	-0.324	0.187	-0.049	-0.284	-0.044	0.076
- Sig. (2 tailed test)	0.932	0.143	0.267		0.804	0.092	0.342	0.808	0.135	0.819	0.697
- N	27	27	27	28	28	28	28	27	29	29	29
Acquiring firm Free cash flow											
- Pearson Correlation	0.034	-0.132	0.180	-0.049	1	-0.455*	-0.339	0.025	0.325	-0.343	-0.150
- Sig. (2 tailed test)	0.867	0.511	0.368	0.804		0.011	0.067	0.895	0.080	0.063	0.429
- N	27	27	27	28	28	30	30	30	30	30	30
Acquiring firm leverage											
- Pearson Correlation	-0.313	0.010	0.003	-0.324	-0.398*	1	0.023	-0.237	-0.041	0.318	-0.011
- Sig. (2 tailed test)	0.112	0.960	0.987	0.092	0.036		0.906	0.235	0.833	0.092	0.954
- N	27	27	28	28	28	28	28	27	29	29	29
Target firm investment opportunities											
- Pearson Correlation	0.352	-0.639**	0.377*	0.187	-0.123	0.023	1	-0.035	-0.539**	-0.228	0.157
- Sig. (2 tailed test)	0.072	0.000	0.048	0.342	0.531	0.906		0.862	0.003	0.234	0.415
- N	27	27	28	28	28	28	28	27	29	29	29
Target firm growth											
- Pearson Correlation	0.231	0.563**	-0.390*	-0.049	-0.120	-0.237	-0.035	1	0.440*	0.280	-0.029
- Sig. (2 tailed test)	0.245	0.003	0.049	0.808	0.552	0.235	0.862		0.019	0.149	0.882
- N	27	26	26	27	27	27	27	28	28	28	28
Modified Tobin's Q											
- Pearson Correlation	0.068	0.636**	-0.283	-0.284	0.091	-0.041	-0.539**	0.440*	1	-0.153	0.027
- Sig. (2 tailed test)	0.730	0.000	0.145	0.135	0.640	0.833	0.003	0.019		0.421	0.886
- N	28	28	28	29	29	29	29	28	28	30	30
Target firm leverage											
- Pearson Correlation	-0.219	0.248	-0.155	-0.044	-0.340	0.318	-0.228	0.280	-0.153	1	-0.311
- Sig. (2 tailed test)	0.262	0.069	0.430	0.819	0.071	0.092	0.234	0.149	0.421		0.094
- N	28	28	28	29	29	29	29	28	30	28	30
Target Firm listing age											
- Pearson Correlation	0.003	-0.055	-0.094	0.076	-0.071	-0.011	0.157	-0.029	0.027	-0.311	1
- Sig. (2 tailed test)	0.987	0.781	0.635	0.697	0.716	0.954	0.415	0.882	0.886	0.094	
- N	28	28	28	29	29	29	29	28	30	30	28

APPENDIX 4: Z-Score Correlation matrix for book market value premiums and book value premiums (unadjusted data)

	Z Score: Market Value Premium	Z Score: Book Value Premium	Z Score: Relative Size	Z Score: Acquiring firm investment opportunities	Z Score: Acquiring firm Free cash flow	Z Score: Acquiring firm leverage	Z Score: Target firm investment opportunities	Z Score: Target firm growth	Z Score: Modified Tobin's Q	Z Score: Target firm leverage	Z Score: Target firm listing age
Z Score: Market Value Premium - *Pearson Correlation* - *Sig. (2 tailed test)* - *N*	1 30	-0.046 0.809 30	-0.142 0.809 30	0.138 0.466 30	-0.022 0.908 30	-0.057 0.763 30	0.442* 0.014 30	-0.240 0.201 30	-0.219 0.245 30	-0.173 0.361 30	0.110 0.565 30
Z Score: Book Value Premium - *Pearson Correlation* - *Sig. (2 tailed test)* - *N*	-0.046 0.809 30	1 30	-0.031 0.872 30	-0.234 0.213 30	0.230 0.222 30	0.154 0.417 30	-0.172 0.363 30	0.026 0.890 30	0.427* 0.019 30	0.090 0.637 30	-0.063 0.743 30
Z Score: Relative Size - *Pearson Correlation* - *Sig. (2 tailed test)* - *N*	-0.142 0.809 30	-0.031 0.872 30	1 30	-1.06 0.576 30	0.248 0.186 30	-0.086 0.653 30	-0.721** 0.000 30	-0.448* 0.013 30	-0.350 0.058 30	-0.172 0.362 30	-0.123 0.518 30
Z Score: Acquiring firm investment opportunities - *Pearson Correlation* - *Sig. (2 tailed test)* - *N*	0.138 0.466 30	-0.234 0.213 30	-1.06 0.576 30	1 30	-0.159 0.400 30	-0.116 0.542 30	0.379* 0.039 30	0.018 0.923 30	-0.247 0.189 30	-0.135 0.475 30	0.329 0.076 30
Z Score: Acquiring firm Free cash flow - *Pearson Correlation* - *Sig. (2 tailed test)* - *N*	-0.022 0.908 30	0.230 0.222 30	0.248 0.186 30	-0.159 0.400 30	1 30	-0.455* 0.011 30	-0.339 0.067 30	0.025 0.895 30	0.325 0.080 30	-0.343 0.063 30	-0.150 0.429 30
Z Score: Acquiring firm leverage - *Pearson Correlation* - *Sig. (2 tailed test)* - *N*	-0.057 0.763 30	0.154 0.417 30	-0.086 0.653 30	-0.116 0.542 30	-0.455* 0.011 30	1 30	-0.062 0.747 30	-0.048 0.800 30	-0.048 0.800 30	0.498** 0.005 30	-0.080 0.675 30
Z Score: Target firm investment opportunities - *Pearson Correlation* - *Sig. (2 tailed test)* - *N*	0.442* 0.014 30	-0.172 0.363 30	-0.721** 0.000 30	0.379* 0.039 30	-0.339 0.067 30	0.121 0.525 30	1 30	-0.057 0.766 30	-0.125 0.511 30	-0.038 0.842 30	0.223 0.236 30
Z Score: Target firm growth - *Pearson Correlation* - *Sig. (2 tailed test)* - *N*	-0.240 0.201 30	0.026 0.890 30	-0.448* 0.013 30	0.018 0.923 30	0.025 0.895 30	-0.062 0.747 30	-0.057 0.766 30	1 30	0.525** 0.003 30	0.026 0.891 30	0.005 0.978 30
Z Score: Modified Tobin's Q - *Pearson Correlation* - *Sig. (2 tailed test)* - *N*	-0.219 0.245 30	0.427* 0.019 30	-0.350 0.058 30	-0.247 0.189 30	0.325 0.080 30	-0.048 0.800 30	-0.125 0.511 30	0.525** 0.003 30	1 30	-0.153 0.421 30	0.027 0.886 30
Z Score: Target firm leverage - *Pearson Correlation* - *Sig. (2 tailed test)* - *N*	-0.173 0.361 30	0.090 0.637 30	-0.172 0.362 30	-0.135 0.475 30	-0.343 0.063 30	0.498** 0.005 30	-0.038 0.842 30	0.026 0.891 30	-0.153 0.421 30	1 30	-0.311 0.094 30
Z Score: Target Firm listing age - *Pearson Correlation* - *Sig. (2 tailed test)* - *N*	0.110 0.565 30	-0.063 0.743 30	-0.123 0.518 30	0.329 0.076 30	-0.150 0.429 30	-0.080 0.675 30	0.223 0.236 30	0.005 0.978 30	0.027 0.886 30	-0.311 0.094 30	1 30

APPENDIX 5: Z-Score Spearman's Correlation matrix for book market value premiums and book value premiums (unadjusted data)

	Z-Score: Market Value Premium	Z-Score: Book Value Premium	Z-Score: Relative Size	Z-Score: Acquiring firm investment opportunities	Z-Score: Acquiring firm Free cash flow	Z-Score: Acquiring firm leverage	Z-Score: Target firm investment opportunities	Z-Score: Target firm growth	Z-Score: Modified Tobin's Q	Z-Score: Target firm leverage	Z-Score: Target firm listing age
Z-Score: Market Value Premium - Correlation Coefficient - Sig. (2 tailed test) - N	1 30	-0.044 0.816 30	-0.001 0.995 30	0.197 0.296 30	-0.077 0.684 30	-0.171 0.367 30	0.443* 0.014 30	-0.059 0.758 30	-0.170 0.370 30	-0.173 0.361 30	-0.036 0.850 30
Z-Score: Book Value Premium - Correlation Coefficient - Sig. (2 tailed test) - N	-0.044 0.816 30	1 30	-0.143 0.452 30	-0.383* 0.0.37 30	0.230 0.222 30	0.044 0.819 30	-0.742 0.000 30	0.405* 0.026 30	0.576** 0.001 30	0.232 0.217 30	-0.241 0.255 30
Z-Score: Relative Size - Correlation Coefficient - Sig. (2 tailed test) - N	-0.001 0.995 30	-0.143 0.452 30	1 30	-0.313 0.092 30	0.004 0.985 30	0.133 0.485 30	-0.012 0.948 30	-0.485** 0.007 30	-0.393* 0.032 30	-0.258 0.168 30	-0.190 0.316 30
Z-Score: Acquiring firm investment opportunities - Correlation Coefficient - Sig. (2 tailed test) - N	0.197 0.296 30	-0.383* 0.0.37 30	-0.313 0.092 30	1 30	-0.072 0.705 30	-0.311 0.094 30	0.400* 0.029 30	0.147 0.439 30	-0.311 0.094 30	-0.015 0.938 30	0.259 0.168 30
Z-Score: Acquiring firm Free cash flow - Correlation Coefficient - Sig. (2 tailed test) - N	-0.077 0.684 30	0.0.74 0.696 30	0.004 0.985 30	-0.072 0.705 30	1 30	-0.491* 0.006 30	-0.212 0.261 30	0.013 0.944 30	0.210 0.266 30	-0.232 0.218 30	-0.093 0.627 30
Z-Score: Acquiring firm leverage - Correlation Coefficient - Sig. (2 tailed test) - N	-0.171 0.367 30	0.044 0.819 30	0.133 0.485 30	-0.311 0.094 30	-0.491* 0.006 30	1 30	0.050 0.794 30	0.014 0.943 30	-0.049 0.795 30	0.331 0.074 30	-0.080 0.675 30
Z-Score: Target firm investment opportunities - Correlation Coefficient - Sig. (2 tailed test) - N	0.443* 0.014 30	-0.742 0.000 30	-0.012 0.948 30	0.400* 0.029 30	-0.212 0.261 30	0.050 0.794 30	1 30	-297 0.111 30	-0.448* 0.013 30	-0.137 0.471 30	0.294 0.115 30
Z-Score: Target firm growth - Correlation Coefficient - Sig. (2 tailed test) - N	-0.059 0.758 30	0.405* 0.026 30	-0.485** 0.007 30	0.147 0.439 30	0.013 0.944 30	0.014 0.943 30	-297 0.111 30	1 30	0.567** 0.001 30	0.183 0.334 30	0.049 0.799 30
Z-Score: Modified Tobin's Q - Correlation Coefficient - Sig. (2 tailed test) - N	-0.156 0.411 30	0.576** 0.001 30	-0.393* 0.032 30	-0.311 0.094 30	0.210 0.266 30	-0.049 0.795 30	-0.448* 0.013 30	0.567** 0.001 30	1 30	-0.056 0.771 30	0.117 0.537 30
Z-Score: Target firm leverage - Correlation Coefficient - Sig. (2 tailed test) - N	-0.170 0.370 30	0.232 0.217 30	-0.258 0.168 30	-0.015 0.938 30	-0.232 0.218 30	0.331 0.074 30	-0.137 0.471 30	0.183 0.334 30	-0.056 0.771 30	1 30	-0.210 0.266 30
Z-Score: Target Firm listing age - Pearson Correlation - Sig. (2 tailed test) - N	0.036 0.850 30	-0.241 0.255 30	-0.190 0.316 30	0.259 0.168 30	-0.026 0.893 30	-0.080 0.675 30	0.294 0.115 30	0.049 0.799 30	0.117 0.537 30	-0.210 0.266 30	1 30

APPENDIX 6: summary of correlation and regression statistics

Hypothesis	1	2		3		4	5	6	7	8	10		9
	Method of Payment (Cash/shares)	Acq Inv Opportunities	Target Inv Opportunities	Target firm Growth (as measured by PE ratios)	Managerial performance (as measured by Modified Tobin's Q)	Existence of multiple bidders	Market conditions (Bull/Bear)	Industry characteristics (core/diversifying)	Listing age	Free cash flow of Acq	Acquiring firm Leverage	Target firm Leverage	Relatve Size
Market Value Premium Correlation (30 observations)	N/A	PC = 0.138 Sig= 0.466	PC = 0.442* Sig= 0.014	PC = -0.24 Sig= 0.201	PC = -0.219 Sig= 0.245		N/A	N/A	PC = 0.110 Sig= 0.565	PC = -0.022 Sig= 0.908	PC = -0.057 Sig= 0.673	PC = -0.173 Sig= 0.361	PC = -0.142 Sig= 0.809
Market Value Premium Correlation (adjusted samples) (↓Obs = number of observations deemed to be outliers)	N/A	PC = -0.017 Sig= 0.932 ↓Obs. =3	PC = 0.352 Sig= 0.072 ↓Obs =3	PC = 0.231 Sig= 0.245 ↓Obs =3	PC = 0.068 Sig= 0.730 ↓Obs =2		N/A	N/A	PC = 0.003 Sig= 0.987 ↓Obs =2	PC = 0.034 Sig= 0.867 ↓Obs =3	PC = -0.313 Sig= 0.112 ↓Obs =3	PC = -0.219 Sig= 0.262 ↓Obs =2	PC = 0.242 Sig= 0.234 ↓Obs =4
MVP Stepwise regression (final iteration)	B = 0.156 Sig = 0.475 Part.= 0.165	B = 0.138 Sig = 0.523 Part.= 0.148	B = 0.021 Sig = 0.928 Part.= 0.022	B = 0.225 Sig = 0.318 Part.= 0.229	B = 0.021 Sig = 0.921 Part.= -0.23		B = -0.244 Sig = 0.239 Part.= -0.269	B = 0.192 Sig = 0.355 Part.= 0.213	B = -0.195 Sig = 0.350 Part.= -0.215	B = 0.128 Sig = 0.564 Part.= 0.133	B = -0.311 Sig = 0.134 Part.= -0.338	B = -0.109 Sig = 0.618 Part.= -0.116	B = 0.609 Sig = 0.048 R2.= 0.181
MVP Backward regression (final iteration) - highlighted blocks represents predictors in model -Blocks not highlighted represent excluded variable statistics	B = -0.010 Sig = 0.962 Part.= -0.010	B = -0.155 Sig = 0.469 Part.= -0.159	B = 0.073 Sig = 0.226 Part.= 0.262	B = -0.145 Sig = 0.460 Part.= -0.162	B = -0.159 Sig = 0.421 Part.= -0.176		B = -0.146 Sig = 0.465 Part.= -0.160	B = 0.083 Sig = 0.675 Part.= 0.093	B = -0.240 Sig = 0.218 Part.= -0.267	B = 0.202 Sig = 0.325 Part.= 0.215	B = -0.467 Sig = 0.03 R2.= 0.197	B = -0.019 Sig = 0.927 Part.= -0.020	B = 0.243 Sig = 0.226 Part.= 0.262
Book Value Premium Correlation (30 observations)	N/A	PC = -0.234 Sig= 0.213	PC = -0.172 Sig= 0.363	PC = 0.026 Sig= 0.890	PC = 0.427* Sig= 0.019		N/A	N/A	PC = -0.063 Sig= 0.743	PC = 0.230 Sig= 0.222	PC = 0.154 Sig= 0.417	PC = 0.090 Sig= 0.637	PC = -0.031 Sig= 0.872
Book Value Premium Correlation (adjusted sample) (↓Obs = number of observations deemed to be outliers)	N/A	PC = -0.29 Sig= 0.143 ↓Obs =3	PC = -0.639** Sig= 0.000 ↓Obs =3	PC = 0.563** Sig= 0.003 ↓Obs =4	PC = 0.636** Sig= 0.000 ↓Obs =2		N/A	N/A	PC = -0.055 Sig= 0.781 ↓Obs =2	PC = -0.132 Sig= 0.511 ↓Obs =3	PC = 0.010 Sig= 0.960 ↓Obs =3	PC = 0.248 Sig= 0.069 ↓Obs = 2	PC = -0.283 Sig= 0.152 ↓Obs =3
BVP Stepwise Regression (unadjusted data final iteration) - highlighted blocks represents predictors in model -Blocks not highlighted represent excluded variable statistics	B = 0.029 Sig = 0.871 Part.= 0.032	B = -0.137 Sig = 0.468 Part.= -0.147	B = -0.121 Sig = 0.493 Part.= -0.133	B = -0.273 Sig = 0.179 Part.= -0.257	B = 0.427 Sig = 0.019 R2.= 0.182		B = 0.241 Sig = 0.163 Part.= 0.266	B = 0.269 Sig = 0.120 Part.= 0.296	B = -0.74 Sig = 0.672 Part.= -0.082	B = 0.102 Sig = 0.582 Part.= 0.107	B = 0.175 Sig = 0.315 Part.= 0.193	B = 0.159 Sig = 0.368 Part.= 0.173	B = 0.135 Sig = 0.468 Part.= 0.140

BVP Backward Regression (Final iteration) *- highlighted blocks represents predictors in model* *-Blocks not highlighted represent excluded variable statistics*	*B = -0.105* *Sig = 0.444* *Part.= -0.172*	*B = 0.024* *Sig = 0.862* *Part.= 0.039*	*B = 0.181* *Sig = 0.192* *Part.= 0.289*	*B = -0.020* *Sig = 0.895* *Part.= -0.030*	*B = 0.805* *Sig = 0.00* *R2.= 0.658*		*B = 0.040* *Sig = 0.788* *Part.= 0.061*	*B = 0.148* *Sig = 0.264* *Part.= 0.249*	*B =0.223* *Sig = 0.098* *Part.=0.362*	*B =-0.015* *Sig = 0.914* *Part.=-0.024*	*B = -0.302* *Sig = 0.031* *R2.= 0.65*	*B = 0.312* *Sig = 0.026* *R2.= 0.658*	*B = -0.212* *Sig = 0.131* *Part.= -0.332*
Simultaneous regression	N/A	N/A	N/A	M/A	B = 0.766 Sig = 0.00 R2.= 0.646		N/A	N/A	N/A	N/A	B = 0.304 Sig = 0.023 R2.= 0.646	N/A	N/A