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The long term impact of large acquisitions on the share price performance of acquiring companies listed on the JSE

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ABSTRACT

To acquire, or not to acquire? The debate rages on. Companies have been acquiring other companies for centuries, and still, both scholars and practitioners cannot agree on whether acquisitions create and destroy shareholder value. The contradictory results of research into the value creation or value destruction nature of acquisitions has not dampened the will of those corporate executives with a penchant for buying other firms. Globally, and albeit affected by the general well being of the economy, the value and quantities of acquisitions continues to show strong growth.

It is largely accepted that large acquisitions are executed as strategic initiatives which should yield benefits in the medium to long-term. Using event study methodology with a control portfolio model, this study aimed to evaluate the validity of this claim and ascertain if, at the 5% confidence interval, 14 large acquisitions by companies listed on the JSE achieved significant share price gains in the 378 trading days (18 months at an average of 21 trading days per month) after the acquisition.

This study concluded that large acquisitions had statistically; no impact on the long term share price returns of JSE listed acquiring companies.

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 the research.

Signed: _____ Date: _____

Kofi Kyei

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I thank my Lord for this simple promise: Be still and know that I am God – which to me means 'work hard, have faith and belief, and then, leave the rest to me'! For his unwavering patience with me, I am eternally grateful.

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To the GIBS MBA class of 2008, *vene, vidi, vici!* Marianne Williamson wrote "We ask ourselves, who am I to be brilliant, gorgeous, talented and fabulous? Actually, who are you not to be?" So go on, go be brilliant!

And finally to my supervisor, Prof Mike Ward, it's in the little things you do sir – a quiet word here, the short stroke of your pen there, and *voila*, inspiration is mine. For your patience, your candour and your wisdom, you have my utmost gratitude.

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1.1 RESEARCH TITLE

The long term impact of large acquisitions on the share price of acquiring companies listed on the Johannesburg Securities Exchange (JSE).

1.2 MOTIVATION FOR THE RESEARCH

In an article written for the Dec 7th, 2003 edition of the Sunday Times, Professor Njabulo Ndebele, then Vice-Chancellor of the University of Cape Town, analyses the mindset behind prejudices against the union, or the merger one might say, of 2 members of the same sex. In the article he suggests that the reason why so many have such strong opinions on this issue is because “few things excite the imagination more than sex” (Ndebele, 2003). In much the same manner, when it comes corporate strategy debates and topical issues, few things excite like the union of two companies through a merger or, an acquisition. The media love them for hardly a day goes by without a business paper headlining with a merger or an acquisition or a divestiture, each one more grand than the last. For those professionally involved with mergers and acquisitions (M&As), they are not only their daily bread, but their daily high, and the shareholders love them… well at least half of them do, for a KPMG survey in London found that 53% of M&As destroy shareholder value (Brewis, 2000).

Companies grow in one of two ways: internal – also known as organic growth where they invest in their own activities or growth by the acquisition of often, smaller firms. Dickerson, Gibson and Tsakalotos (1997) found that in the UK, companies which opt for the former growth strategy yield a higher rate of return to their shareholders. Agrawal, Jafee and Mandelker (1992) researched the performance of a large majority all New York Stock Exchange listed acquirers of firms listed on the AMEX and found that these firms statistically, suffered losses of about 10% over the 5-year period post merger.

Gregory (1997) reviewed 420 acquisitions which took place in the UK between 1984 and 1992 and found that the acquiring firms underperformed. He goes on to say that almost all financial benchmarks used to assess the acquisitions yielded negative results. Four years later though, Andrade, Mitchell and Stafford (2001) state that the two chief aims in corporate strategy research are 1) how to measure shareholder value creation or value destruction and 2) how to determine the distribution of the created or destroyed value between the shareholders of the acquirers and target firms. This infers that many of the measures previously used, and perhaps even currently used, in assessing these two topics may have been, and/or continue to be wrong.

Having reviewed 267 acquisitions which took place in Canada between 1980 and 2000, Andre, Kooli and L'Her (2004) concluded that acquirers underperform over the 3-year period following the merger. However, also in 2004, Neville conducted a survey of acquiring firms' managers and found that 85% of the respondents believed that their mergers or acquisitions had been successful.

So, in summarising, research shows that 53% of M&As destroy value, companies that grow organically do better than those that grow using M&As, the managers of the acquirers though, believe that their acquisitions are successful initiatives, and lastly, some commentators argue that nobody has yet figured out how to accurately measure the success of or a merger or an acquisition.

1.3 Research Aim

Despite the confusion and contradictory findings on the performance of acquiring firms in M&A deals, in the United States alone in the decade between 1998 and 2007, there were 96 619 M&As with a cumulative value of USD 10, 482 trillion (Mergerstat Review, 2008). That translates to a little over a trillion dollars spent every year on M&As.

"If most mergers fail, why are they so popular?" is the title of a study in which Brouthers, Van Hanstenburg and Van Den Ven (1998) stipulate that the impact on the share price is a poor assessment of the success of a merger as it does not adequately consider the strategic benefits derived from, and the motives which led to the merger. However, Penrose (1959) concludes that firms ultimately seek to maximise the total size of profits, and as such, all strategic initiatives should in the long term increase the total profits. The value of a company is also a proxy for the anticipated future profits of the company (Firer, Ross, Westerfield and Jordan, 2004). Thus, a merger or acquisition which promises increased profits beyond the sum of the would-be individual entities should result in abnormal share price gains in the period following the event announcement.

In a study entitled 'The impact of large acquisitions on the share price and operating financial performance of acquiring companies listed on the JSE', Smit (2005) concluded that large acquisitions had a statistically insignificant impact on the acquirer's share price in the 21 days around the acquisition announcement date [-10, 10] and neither improved nor deteriorated the operating financial performance of the enlarged entity two years after the acquisition. Many researchers however, agree that short term abnormal returns often fail to capture the full impact of delayed and slow market reactions to the acquisition announcements (Agrawal *et al.*, 1992).

Thus considering the statements of Penrose (1959), Brouthers *et al.* (1998) and *Agrawal et al.* (1992), this study seeks to build on Smit's (2005) work and determine whether, long run abnormal returns accrue to shareholders as synergies between acquirer and target materialise to impress upon the investor community the improved earnings projections of the enlarged entity. Additionally, examining the daily cumulative abnormal earnings reveals the time schedule for the appearance and dissipation of the abnormal returns, where applicable.

2 THEORY AND LITERATURE REVIEW

As briefly noted earlier, commentators on M&As continue to debate their value and benefits. M&As have been, and continue to be intensively researched, and no conclusive findings have emerged. They have been analysed by industry (Hassan, Patro, Tuckman, and Wang, 2007; Warf, 2003), motive (Walter and Barney, 1990), nationalities (Andre, Kooli and L'Her, 2004; Dickerson, Gibson and Tsakalotos, 1997), method of payment (Myers and Majluf, 1984; Datta, Pinches and Narayanan, 1992; Martin, 1996 and Smit, 2005) and by size of the firms involved (Moeller, Schlingemann and Stulz, 2003).

If scholars studying empirical evidence cannot agree on the benefits of M&As, then why do firms continue to buy and / or merge with other firms? This chapter reviews some of the current literature on the goals of companies, trends in the business environment in which they operate, the expected benefits of, and the measurement techniques used to evaluate the success of M&As.

2.1 THE ULTIMATE GOAL OF A BUSINESS

Ultimately, companies exist to maximize profits (Penrose, 1959) and shareholder value (Sundaram, A, and Inkpen A, 2004). These two goals encompass what companies aim

to achieve for their primary stakeholders – shareholders (shareholder value), management (compensation), employees (salaries, wages and benefits), government (taxes) and customers (provide goods or services). This proposition suggests that decisions taken by company management should all aim to increase the total long-run market value of the firm (Jensen, 2002).

However, there is a debate gaining publicity in mainstream media and boardrooms about the responsibility of companies to their secondary stakeholders – the larger society in which they operate and the environment. There is a growing voice of commentators advocating that companies be evaluated not only on their profitability and share price performance, but also on their social responsibility ratings (Goodpaster, 2001). This proposition suggests that company managers should take decisions that consider and accommodate the interests of all the stakeholders (Jensen, 2002).

This study refrains from commenting on this debate in determining the value and success of the enlarged entities post merger. In order to produce results comparable with those of Smit (2005), this study will only evaluate the success of acquisitions by reviewing the performance of the acquirer's share price.

2.2 THE CHANGING LANDSCAPE OF GLOBAL BUSINESS

In a 1994 article, Peter F. Drucker introduces his concept of the 'theory of business'. This phrase, Drucker (1994) says, refers to the assumptions which inform a company about the:

1) environment (the market, society and its structure, the customer and technology) in which it operates, and these assumptions define what the company gets paid for;

2) specific mission of the company which define what the company considers meaningful results and positive impacts on and contribution to society; and

3) core competencies required to execute the company's mission, which define those things at which the company must excel in order to maintain leadership.

Points 2 and 3 are completely dependent on point 1. Drucker (1994) then makes the assertion that these three sets of assumptions must constantly be re-evaluated as the environment is in a constant state of flux. He identifies large companies that are successful for decades, only to suddenly fail because of an inability or unwillingness, to change these assumptions.

In support of this changing landscape of business, Hamel and Valikangas (2003) highlight evidence of the increasing volatility in business:

- Of the 20 largest U.S. bankruptcies between 1984 and 2003, 10 of these occurred in 2002 and 2003.
- Over the past four decades, year-on-year volatility in the earnings growth rate of the S&P 500, companies has increased by nearly 50%
- Every year from 1973 to 1977, an average of 37 *Fortune 500* companies were entering or in the midst of a 50%, five year-decline in net income; however from 1993-1997, the average number of companies suffering similar earnings contraction more than doubled to 84.
- 18 companies singled out in Jim Collins' (2001) book *Good to Great* had consistently outperformed their peers between 1950 and 1990. Between 1994 and 2003, only six managed to outperform the Dow Jones Industrial Average.

There are many companies that do recognise the need to perennially re-evaluate their 'theory of business' assumptions. Often, a change in the environment heralds the need for new core competencies, and it is this need that drives companies to seek out acquirable firms with these core competencies. Anand (2000) suggests that this strategy can work, but only with strict adherence to key guiding principles for successful M&As which he believed to be: a vision for the future of the combined

entity, the creation of a business development team to link organisational integration and strategic vision and have a crystal understanding workings of the acquired company.

Economic theory suggests that the market structure which leads to highest profitability is a monopoly where only one firm produces a good or service, while the least profitable is a perfectly competitive market with numerous firms offering similar goods (McAleese, 2004). Empirically however, there are no perfectly competitive or monopolistic markets – all markets assume a position on the continuum between these two extremes. The theory though, motivates firms to reduce the number of competitors in their market, and a real life scenario supporting this is in the form of a study in the 1950s which found that manufacturing industries where 8 firms or less accounted for 70% of the market share had double the profitability of industries where 70% of market share was distributed over more firms (Ghemawat, 2002). One method of reducing the number of firms in any industry is the merger with or acquisition of competitors.

Nitzan (2001) links the concepts of globalisation and mergers and acquisitions into the theory that through globalisation, cross-boarder M&As was the logical evolutionary step for those seeking to grow their capital acquisitions. More and more companies are merging with, or acquiring firms in foreign countries in search of economies of

scale and scope, and to exploit technological and marketing synergies, to the extent that "cross border M&As are now the largest component of foreign direct investment" (Wharf, 2003; and Kang and Sakai, 2001).

2.3 THE STRATEGIC MOTIVES BEHIND M&AS

As mentioned earlier, M&As have been researched extensively. The complete list of reasons and strategic objectives cited for executing a merger or acquisition is too extensive to discuss this study. Walter and Barney (1990) completed a study in which they attempted to rank 20 different reasons quoted as findings in previous research studies carried out to determine the objectives of M&As; they then clustered these 20 reasons into five distinct categories. Namely:

- To obtain and exploit economies of scale
- A mechanism to deal with inter-dependencies or leverage synergies
- Expand current product lines and markets
- Enter a new business
- Maximize and utilize a firm's financial capabilities

To this list, Kode, Ford and Sutherland (2003) would add, from their review of literature on the topic,

- Industry specific requirements
- Globalization leading to scale requirements
- Speed and cost considerations of growth
- Risk reduction and diversification
- Leverage of core competencies or technology

Value creation is a function of quantity of products (or services) sold, cost of producing the product (or service), and lastly the price which consumers are willing to pay for the product (or service) (Anand, 2000). Befittingly, the ten M&A drivers from Walter and Barney (1990) and Kode *et al.* (2003) can be summarized further into 3 umbrella goals – increasing the quantity of goods sold, reducing the cost of production and increasing the price (or protecting the current price levels). Goold and Campbell (1998) propose that the chief driver that motivates managers of acquiring companies seeking to reduce costs, is an unfounded belief in the presence of synergies, or sometimes an accurate appraisal of the synergy benefits but without due consideration for the inherent costs associated with the merger or acquisition. They suggest that "a healthy dose of scepticism can help executives distinguish real opportunities from mirages" and hence only undertake those M&As that are likely to deliver substantial gains.

There is also a school of thought which suggests that the acquisitions of Chapter 11 firms are the most efficient means of redeploying the assets of bankrupt firms (Hotchkiss and Mooradian, 1997; Jensen, 1991). Studies into the current form of Chapter 11 have concluded that most firms that emerge from chapter 11 continue to yield poor operating results, and that over a third undergo a second wave of Chapter 11 re-structuring (Hotchkiss, 1995). Additionally it is also argued that Chapter 11 fails to adequately incentivize managers to redeploy the assets of a financially distressed firm to their maximum value use (Baird, 1993; Bradley and Ronsenzweig, 1992).

It is not just ailing target firms that can benefit from M&As. Another oft cited reason for a merger or an acquisition is its employment as a diversification strategy in the event of a decline in the current market of the bidding company. Amihud and Lev (1981) and Jensen (1986) all predicted though, that compared to steady or growing industries, there would be greater divergence in the interests of managers and shareholders in declining industries. Anand and Singh (1997) go on to propose that in such industries, it may be in the best interests of the shareholders for the company to rationalize or shrink in size to avail them more capital to reinvest in other industries. They echo Bradley and Ronsenzweig (1992) and re-iterate that the lack of incentives for managers to make difficult and painful downsizing decisions will most often result in them attempting to maintain the current size of the firm, with diversification strategies such as acquisitions in non-related industries.

On the issue of diversification, Doukas and Kan (2008) equate diversification to investing outside a business's core activities and found that companies diversify when:

i) cash flows of their core business fall behind those of their non-core businesses; while choosing to invest in their core activities when the opposite scenario is true; OR;

ii) there are low growth prospects for the industries of their core businesses, while choosing to invest in non-diversifying acquisitions when their core business industries are in high growth states.

They conclude that firms that diversify make better capital allocations than those firms that do not diversify. Their evidence suggests that diversifying firms will re-invest the cash flows from the low cash flow firms (typically the core business firms) to their higher yielding cash flow firms. Conversely, non diversifying firms, tend to transfer funds from the profitable to the non profitable.

On whether diversification creates or destroys shareholder value, there is a mixed bag of study findings. Megginson, Morgan and Nail (2004) found "a significantly positive relationship between corporate focus and long-term merger performance. Focus-decreasing (FD) mergers result in significantly negative long-term performance with an average 18% loss in stockholder wealth, 9% loss in firm value, and significant declines

in operating cash flows three years after merger". Conversely, Hyland and Diltz (2002) found evidence of positive market reactions to diversifying acquisitions and mergers, as well we superior long-term performance. Agrawal *et al.* (1992) who generally found negative results from conglomerate mergers and acquisitions, state that diversifying acquisitions are less negative than mergers or acquisitions of firms in similar industries. Around the same time Healy *et al.* (1992) conversely concluded that merged companies with "high degrees of overlap in their activities" reported superior long-term operating performance.

In summary, in fair weather times, companies acquire and / or merge with other companies to expand their markets and grow their revenues. In slow growth spells, the aim is consolidation, synergy identification and cost saving to improve the bottom line. In difficult times, either for the acquirer or the target, diversification for risk reduction or sometimes even growth, becomes the end goal. However, the research findings remain divided on whether these strategies achieve shareholder value creation.

2.4 Drivers of M&As specific to South Africa

The 'transformation imperative' is a phrase used to describe the need to fundamentally change South Africa's political, socio-economic and cultural disposition into one that is inclusive of all South Africans reduces the result of the injustices of the apartheid era (The FW de Klerk Foundation, 2006). As the chief instrument for the

socio-economic transformation of South Africa, Black Economic Empowerment is defined by the South African department of Trade and Industry as an "integrated and coherent socio-economic process that directly contributes to the economic transformation of South Africa and brings about significant increases in the number of black people that manage, own and control the country's economy, as well as the significant decrease in income inequalities" (The FW de Klerk Foundation, 2006).

For the period since South Africa's first democratic elections in 1994, BEE – with the aim to increase black ownership of companies – has been the primary driver behind large M&A transactions in South Africa, with various other secondary drivers ebbing and flowing depending on the cyclical business environment (Ernst and Young 2008). Deeper scrutiny into the period yields three distinct waves of M&A drivers – the latter half of 90s, the early 2000s and lastly, 2005 to now, November 2008.

The period immediately after South Africa's landmark 1994 elections is characterised by cross border investments as the last of the remaining sanctions were lifted and exchange controls continued to be eased (Ernst and Young, 2008). Foreign firms eagerly acquired stakes in South African companies, and due to the accommodating nature of the exchange controls of many foreign governments, these investments were multiples larger than locally based counterparts making foreign acquisitions. As the millennium drew to a close, several South African firms moved their primary listing to international stock exchanges with London the preferred destination for many of

the larger companies. The capital raised was used to make the numerous acquisitions needed to classify these companies as global enterprises (Ernst and Young, 2000).

The technology bubble bust of 2000 and a general downturn in the global economy meant that intra-industry consolidation would be a key theme behind M&A activity in the early years of the new millennium. During this period, transaction types ranged from healthy companies acquiring financially distressed firms believed to be fundamentally good businesses under poor management, to healthy companies acquiring other healthy companies to boost market share in an era of dampened profitability. This period also saw a general lull in M&A activity globally, and in South Africa (Ernst and Young, 2004).

By 2005, the global economy had recovered from the technology bust of 2000, and emerging market assets looked very attractive to cash flush investors in developed nations, and South African companies looked as good as any. Subsequently, foreign direct investment (FDI) and private equity groups (both local and foreign) have driven South African M&A activity in the most recent years. In particular 2006 and 2007 have been record-setting years for acquisitions by private equity groups (Ernst and Young, 2008).

In the foreseeable future, private equity groups are expected to continue playing an influential role in M&A activity in South Africa. BEE too is expected to remain one of

the main M&A drivers. However, aspects other than black ownership of South African companies – such as procurement from black firms and increasing black employee complement – are beginning to win greater focus and attention from government and companies on the path of socio-economic transformation. As such, BEE, albeit a key driver for some time still, is expected to take a slowly diminishing role (Ernst and Young, 2008).

2.5 Measuring the success of M&As

In ascertaining the success of a merger or acquisition deal, three questions are posed of the acquiring company (Bruner, 2004):

i) Did the share price rise? Are shareholders better off then they were before the merger. This is a simple test that compares the share price of the acquiring company before and after the acquisition. However, this is a weak test for the success of the merger though, as share prices may be influenced by a plethora of factors non-related to the acquisition.

ii) Did the company's returns exceed a benchmark? Are shareholders better off compared to a comparable investment of equal risk? When an appropriate benchmark is selected, this is a better test for evaluating M&A success. Typically, the benchmark will be the return on an appropriate index, or a sample of peer companies to the acquirer that did not merge. In academic literature, this test has been the most popular as it controls for

factors that may have influenced the whole industry or economy at large. Even the best benchmarks though are imperfect and thus remain the shortcoming of this test.

iii) Are the shareholders better off after the merger or acquisition than they would have been if the deal had not taken place? This test is what economists refer to as opportunity cost, or in the event of a non-deal, lost opportunity cost. This is the most pertinent question when evaluating the success of a merger or acquisition, while at the same time, also the hardest to compute; in fact, it is nearly impossible as one cannot compute all possible alternative hypotheses had the deal not occurred. For instance, there is no means of determining if competitors might have made the same acquisition and how that might have impacted the market, or industry.

Thus the large majority of evaluations on the success of M&A deals attempt to answer questions (i) and (ii).

2.5.1 Research methods

In answering questions (i) and (ii) above, four methodologies are employed: event studies (this methodology is detailed in the section 2.4.2 below), accounting studies, surveys of executives and clinical studies (Bruner, 2004).

- Accounting studies – focus on the examination of the reported financial results of the acquiring company before and after the merger or acquisition deal to see how these have changed with the transaction. Typically, firm liquidity, net profit, return on equity or assets, leverage and EPS measures will be scrutinised for before and after differences and will also be benchmarked against a sample of comparable companies.

- Surveys of executives – using a standardised questionnaire, a sample of executives are surveyed for their opinions on the success of the merger or acquisition deal. The scores are then aggregated to yield generalised results.

- Clinical studies – focus on a single or a small sample of M&A deals and through in-depth analysis of the details of the transaction, together with interviews with the managers or executives involved with the transaction and knowledgeable observers, researchers using this approach often uncover new insights.

2.5.2 Event study methodology

This methodology was conceived by Fama, Fischer, Jensen and Roll in 1969. They believed that capital markets were efficient, could quickly assimilate new information and thus adjust stock prices to truly reflect the value of a

company based on all available information (Tichy, 2001). This methodology is build on the premise that the share price of a stock will almost instantly reflect the new value of the stock after a specific event, and hence enables the measurement of the impact of the event on the returns of that stock. However, as share price is the function of numerous events, care must be taken to control for those events which are outside the scope of evaluation (Serra, 2004).

In this study, the event study methodology is used to measure the impact of large acquisitions on the share price and operating financial performance of the acquiring company. The aim is to determine if there is a statistically significant difference between the actual returns on the share prices of the acquiring companies and the expected returns over the event window, termed average cumulative abnormal returns (ACAR).

2.5.3 Measuring abnormal share price returns

The first step to measuring abnormal returns is to determine 'normal' returns. And with a methodology now decided, there are still numerous models used for pricing stocks and securities to choose from. In contrast to short term studies, the results of long term event studies are more sensitive to the models used in determining normal and subsequently abnormal returns (Rau and

Vermaelen, 1998). The failings and successes of the various models, but more specifically the identification of those firm characteristics which are the best pre-cursors to share price returns and thus include in the computing model, were vividly debated in the 90s. Agrawal *et al.* (1992) and Loderer and Martin (1992), both adjusted for firm size and beta risk. Fama and French (1992), however, showed firm size and book-to-market equity were a better combination to explain share price variations. Moreover, some commentators have queried the validity of standard parametric tests in evaluating the significance of long term abnormal returns (Kothari and Warner, 1997; Barber and Lyon, 1997).

Vivid debates notwithstanding, Mushidzhi and Ward (2004) propose that the most popular of these models are based on the following:

- the acquirer's average share price return before the event – Mean Adjusted Model;
- the share price returns on the respective market over the event window – Market Model;
- the share price returns on the market over the event window, after adjusting for the risk of the acquiring company relative to the market – Market Adjusted Model;

- the share price return on a portfolio of control firms over the event window – Control Portfolio Model.

Popular though they may be, these models also have their detractors. Smit (2005) notes that the "weakness of the Mean Adjusted Model is that share prices do not always reflect a linear trend, especially in the case of less liquid shares, and further because past performance is not always a good predictor of expected future returns". The market model makes use of the Sharpe-Lintner-Black capital asset pricing model (CAPM) which postulates that the expected returns of share prices are a positive linear function of their market Betas ('β') (the slope of a particular share's return relative to the average return on the entire market) and moreover, that market βs adequately predict the cross-section of expected returns (Smit, 2005). As detractors of the market model, Kothari, Shanken and Sloan (1995) note that recent research found evidence contradicting the notion that share price returns are linearly matched to their market β.

On the employment of the control portfolio model, Barber and Lyon (1997), argued that long run returns should be calculated as a simple buy and hold return on a sample firm against the buy and hold return of the control portfolio. They noted that the oft utilised approach of summing daily or

monthly abnormal returns is fallible to the new listings, rebalancing and 'skewness' (positively) biases; while admitting that the buy and hold method is negatively biased.

Barber and Lyon's (1997) criticism notwithstanding, numerous researchers including Ward and Muller (2008), Mordant and Muller (2003) and Mutooni and Muller (2006) concluded that the control portfolio model was the most appropriate for evaluating long term returns. The flexibility in selection of firm attributes to control for, is cited as the control portfolio model's most significant attribute. The above studies, as in this one, controlled for firm size (small, medium, large), industry sector (resource or non resource) and investment type (value or growth) and were all based on Fama and French's (1996) three factor model for calculating expected returns. The model, expressed as formula 1, considers the market beta, risk free rate, firm size and book to market equity ratio.

$$E(Ri) - Rf = b1[E(Rm) - Rf] + s1E(SMB) + h1E(HML) + \varepsilon it,$$

(Formula 1)

where:

E(Ri) = the expected return of security i;

Rf = the risk-free rate;

b1, s1 and h1 = slopes in a time-series regression, or more specifically:

- b1 = the market β;
- s1 = the coefficient of tilt or factor sensitivity towards small companies' shares and away from big companies' shares;
- h1 = the coefficient of tilt or factor sensitivity towards high book-to-market equity ratio companies' shares (also referred to as "value" companies) and away from low book-to-market equity ratio companies' shares (also referred to as "growth" or "glamour" companies);

E(Rm) = the expected return on the broad market portfolio;

E(SMB) = the difference between the expected return on a portfolio of small companies' shares and the expected return on a portfolio of large companies' shares (SMB - small minus big);

E(HML)	= the difference between the expected return on a portfolio of high book-to-market equity ratio companies' shares and the expected return on a portfolio of low book-to-market equity ratio companies' shares (HML – high minus low); and
εit	= the error term.

2.5.4 Past results of long term event studies on share price performance post acquisition

Much criticism is levelled against the accuracy of long term studies. Commentators offer numerous reasons for what they believe to be the inaccuracy of their results. Andrade *et al.* (2001) assert that the three chief reasons are i) the difficulty in measuring normal returns, ii) controlling for non-market events such as results announcements and iii) the difficulty in comparing share price performance against peers not involved in merger and acquisitions, as over a long-term window, most firms in the relevant market cluster undergo M&As in distinct wave cycles. Criticism such as this is among the reasons for the continued search for more robust and reliable modelling techniques as described in sections 2.5.1 and 2.5.3.

However, there also remains an appreciation for the need and relevance of long-term studies. Strategic motives behind M&As are presented in section 2.3, and with little exception, the very nature of these reasons determines that they can only be achieved in the medium to long term. Additionally, as stated in section 1.3, researchers agree that short term abnormal returns often fail to capture the full reaction of delayed and slow market reactions to the acquisition announcements (Agrawal *et al.*, 1992).

Agrawal and Jaffe (2000) conducted a review of the literature on studies evaluating long term impact on mergers and acquisitions stock returns and concluded that long run performance is negative following mergers and non-negative (sometimes even positive) following tender offers. Table 1 (where M=Merger, T=Tender, O=Other acquisition, A=Acquisition of assets, S=Statistically significant and I=Statistically insignificant) is a summary of the literature they reviewed.

Table 1: Summary of M&A studies reviewed by Agrawal and Jaffe (2000)

Study	Acquisition Type[a]	Sample Period	Sample Size	Method[b]	Event Date[c]	# Months[d]	Results	Stat Sig[e]
Mandelker (1974)	M	1941-62	241	Fama–MacBeth 2 factor model	C	40 40	-.014 Constant β -.026 Moving β	nr nr
Dodd & Ruback (1977)	T	1958-76	124	Market model	A	60 60 13	-.059 Successful -.0262 Failed +.0844 Clean-up mergers	I[f] I[f] I
Langetieg (1978)	M	1929-69	149	4 Methods Control firm	C	70 70	-.223 to -.2615	S I
Firth (1980)	Both	1969-75	434 129	Market model	A	36	+.001 Successful -.035 Failed	I nr
Asquith (1983)	M	1962-76	196 87	β-control portfolio	C	11.4	-.072 Successful -.096 Failed	S S
Malatesta (1983)	M	1969-74	256	Market model	A A*	12	-.076 -.029	S I[f]
Barnes (1984)	M	1974-76	39	Market & industry model	A	60	-.063	nr
Dodds & Quek (1985)	M	1974-76	70	Market model	A	60	-.068	nr
Bradley & Jarrell (1988)	Both	1976-81	78	β-control portfolio	A	36	-.16	I
Magenheim & Muller (1988)	M T	1976-81	51 26	Market model	A	36	-.2437 +.0632	nr nr
Franks, Harris and Mayer (1988)	Both	1955-84	392 127 207 221	4 methods 4 methods 2 methods 2 methods	C	24	-.018 to -.18 US, Equity -.036 to +.094 US, Cash -.094 to +.042 UK, Equity .0175 to .175 UK, Cash	
Franks and Harris (1989)	Both (UK)	1955-85	1058	3 methods Size decile adj.	C	24	-.126 to .048 -.128	S
Limmack (1991)	Both (UK)	1977-86	448 81	3 methods	A	24	-.1496 to -.0467 Successful -.2625 to -.0738 Failed	
Franks, Harris & Titman (1991)	Both	1975-84	399	8-factor model	A	36	-.0396 Event time +.018 Calendar time	I I
Agrawal, Jaffe & Mandelker (1992)	M T	1955-87	937 227	Size and β adj.	C	60	-.1026 +.022	S I

Study	Acquisition Type[a]	Sample Period	Sample Size	Method[b]	Event Date[c]	# Months[d]	Results	Stat Sig[e]
Loderer & Martin (1992)	M T O A	1965-86	304 155 746 93	Size and β adj.	C	60	-.0075 +.01 +.0075 +.0125	I I I I
Anderson & Mandelker (1993)	M	1966-87	670	Size & b/m adj Size adj	C	60	-.0931 -.0956	S S
Kennedy & Limmack (1996)	Both (UK)	1980-89	247	Size adj	A	23	-.0508	nr
Gregory (1997)	Both (UK)	1984-92	452	6 methods	C	24	-.1182 to -.18	S
Loughran & Vijh (1997)	M T	1970-89	788 135	BHAR (Size & b/m adj.)	C	60	-.159 +.43	S I
Rau & Vermaelen (1998)	M T	1980-91	2,823 316	Size & b/m adj.	C	36	-.0404 +.0856	S S
Mitchell & Stafford (1998)	Both	1961-93	2,767	BHAR (Size & b/m adj.) Fama-French regression CAARs using: Size & b/m adj. Fama-French regression	C	36	 -.02 EW -.079 EW -.018 EW -.054 EW	 S S I S

2.6 RESULTS FROM SMIT'S STUDY

This research builds on the work of Smit (2005) in which he evaluates the share price performance of the acquirer over a maximum window of 21 days (from 10 days before to ten days after the acquisition announcement) as well as evaluates their cash flow returns two years after the acquisition announcement. His most significant findings are presented here to allow for the evaluation of trends in share price performance from the acquisition announcement date (t=0) to eighteen months worth of trading at an average of 21 trading days per month, after the acquisition (t=378). This study only evaluated share price performance; however Smit's (2005) results on operating financial performance are also discussed below for completeness of the literature review.

2.6.1 Description of the sample

There were 802 mergers and acquisitions during the 3 year period from 2000 to 2002. After evaluating these against the criteria set out in section 4.3, only 27 acquisitions were included in his study. Table 1 is a summary of the test sample.

2.6.2 Cumulative abnormal share price returns over the 21 day event window

Smit's (2005) study found statistically insignificant average cumulative share price returns (ACAR) over the various short term event windows. The ACAR for

the 21 day window [-10,+10] was 4.35%, 0.98% for the 5 day window [-2,+2], but a negative -0.02% for the three day window [-1,+1]. These results are depicted in figure 1.

Table 2: Summary of large acquisitions included in Smit's (2005) study

Population size	802
Sample size	27
Frequency of year of occurrence	27
2000	13
2001	7
2002	7
Frequency of increase in focus or diversification	27
Increased focus	24
Diversification	3
Frequency of cross-border or local transactions	27
Cross-border	5
Local	22
JSE sectors	
Number of different sectors on JSE [a,b]	7
Number of different sub-sectors on JSE [a, c]	18
Frequency of number sub-sectors	27
Real Estate Holding & Development	3
Software & Computer Services – Software	3
Support services – Business Support Services	2
Software & Computer Services – Computer Services	2
Insurance – non-life	2
Other sub-sectors with only 1 selection	15
Method of payment	27
Frequency share-funded acquisitions	9
Frequency cash-funded acquisitions	10
Frequency of payment in a combination of share and cash	8
Number of combination payments consisting of more than 85% shares	4
Number of combination payments consisting of more than 85% cash	0
Purchase consideration (R' million)	
Largest	35 258,1
Smallest	4,5
Mean	2 071,2
Median	393,9
Standard deviation	6 687,0
Relative size of acquisition (Transaction value as percentage of market capitalisation of the acquiring company)	
Largest	270,0%
Smallest [d]	18,1%
Mean	60,2%
Median	37,7%
Standard deviation	62,0%

a) The JSE adopted a new sector classification in 2002. The number of JSE sectors and sub-sectors are stated according to the new JSE sector classification.
b) Out of a total of 12 JSE sectors
c) Out of a total of 77 JSE sub-sectors
d) The transaction size was less than 20% of the market capitalisation of the acquiring company at the announcement date. This selection was, however, included in the sample because it was still a Category 2 transaction in terms of the Listings Requirements of the JSE, requiring a circular to be sent to acquiring company shareholders. The reason why it was classified as Category 2, is probably because the transaction value was more than 20% of market capitalisation of the acquiring company at the time of some event, for instance the conclusion of heads of agreements, the signature of acquisition agreements, etc.

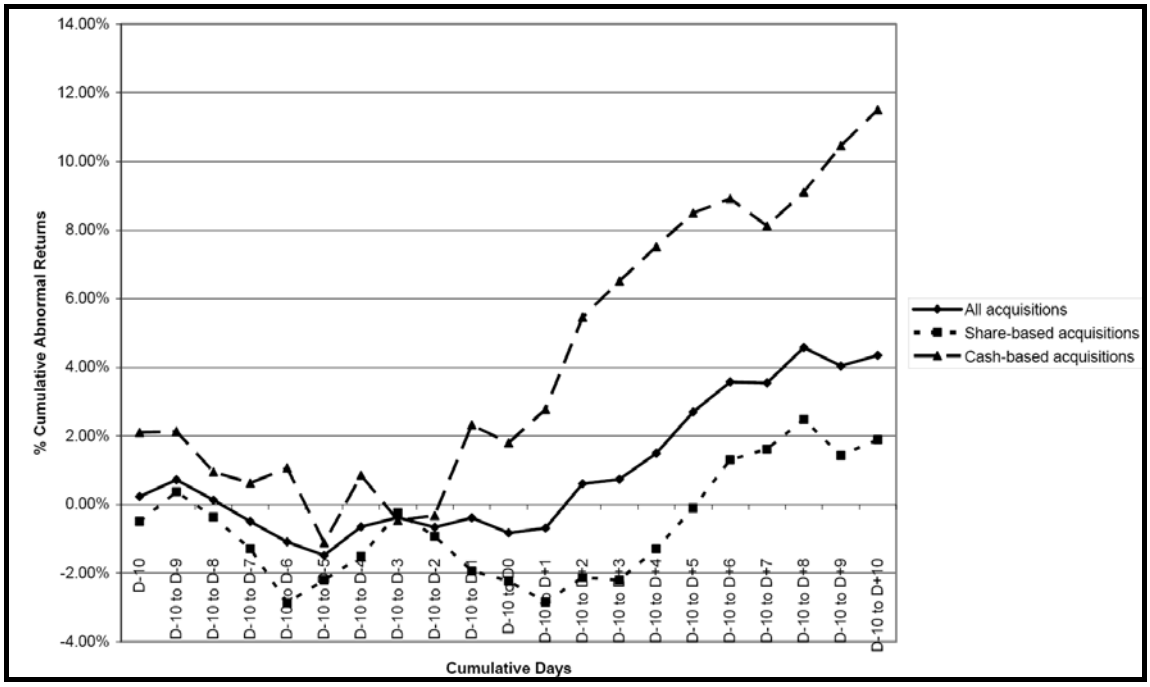

Figure 1: Smit's (2005) Average Cumulative Abnormal Returns for the 21-day event window [-10, 10]

2.6.3 Industry adjusted cash flow return on all assets

Smit's (2005) study found that on a paired basis – meaning comparing the operating financial performance two years after the acquisition to two years prior to the acquisition – there was no statistically significant improvement or deterioration in the industry adjusted cash flow return on assets. These results are shown in table 2.

Table 3: Smit's (2005) pre and post acquisition Industry Adjusted Cash Flow Return on All Assets

Paired years	Number of observations	Industry-adjusted mean between paired periods	% Positive	Standard deviation	t-stat for mean between paired periods	Industry-adjusted median between paired periods	t-stat for median between paired periods
Full sample							
[-2, +2]	19	-4,32%	47,37%	15,80%	1,192	-0,76%	0,209
[-1, +1]	27	-2,98%	59,26%	14,29%	1,084	1,39%	0,505
[-1, +2]	23	-4,75% *	30,43%	12,50%	1,824	-1,61%	0,616
[-2&-1,+1&+2]	27	-4,96%	40,74%	15,19%	1,697	-1,25%	0,429
Share-funded acquisitions							
[-2, +2]	9	-6,87%	44,44%	21,93%	0,940	-0,76%	0,104
[-1, +1]	13	0,27%	61,54%	8,62%	0,111	0,86%	0,361
[-1, +2]	11	-7,65%	18,18%	16,44%	1,543	-2,43%	0,489
[-2&-1,+1&+2]	13	-2,77%	38,46%	10,71%	0,932	-1,25%	0,422
Cash-funded acquisitions							
[-2, +2]	7	-0,41%	57,14%	7,21%	0,152	2,21%	0,812
[-1, +1]	10	-8,51%	60,00%	19,96%	1,349	1,47%	0,233
[-1, +2]	9	-1,39%	44,44%	6,62%	0,629	-1,05%	0,475
[-2&-1,+1&+2]	10	-8,96%	40,00%	21,44%	1,321	-3,03%	0,447

* - Statistically significant at the 10% error level.

2.7 When do M&As fail?

Hubbard (1999) groups the various reasons for acquisition failures into two categories – fit and process issues. Fit issues "assess the juxtaposition of the acquirer and target". These factors, listed below, largely cannot be influenced by the acquirer. They are:

- Size issues – Hubbard (1999) quotes Hunt, Lee, Grumbar and Vivian (1987) who found that acquirers struggled to effectively assimilate acquisitions that were too large, or paid too little attention to those that were too small.

- Diversification – acquisitions into related industries outperform acquisitions into unrelated industries.
- Previous acquisition experience – very unsuccessful acquirers often have little or no previous acquisition experience. They often don't have the necessary in-house skills required to address the process issues (listed on the following page).
- Organisational fit – "organisational fit can be described as the match between administrative practices, cultural practices and personnel characteristics" of the target and acquirer (Hubbard quotes Jemison and Sitkin, 1986, p.147).
- Strategic Fit – if the acquirer intends to reap synergistic benefits from the acquisition, it becomes important that acquirer and target have similar strategic and business philosophies, agree on the greater importance between market share and return on investment.
- Cultural fit – depending on the strategic motives behind the acquisition it may be necessary to imbue the culture of the acquirer into the target. If cultures are too disparate, this may prove too difficult. Culture fit issues can also be classified as process issues as even when cultures are similar, culture assimilation when required is a process intensive issue.
- Other issues – these range from the timing of the acquisition to the financial position of the seller to the profitability of the target prior to the acquisition to the ages of the acquirer and target. These factors have all been known to influence the acquisition performance.

Process issues are those issues which the acquirer has the most control over, and the majority of failed acquisitions are due to these factors (Hubbard, 1999). Acquirers who fail to adequately address these issues subsequently do not achieve the desired benefits of the acquisition:

- Negotiation plans – rushed negotiations can lead to the oversight key implementation issues which should be addressed during the negotiations.
- Inadequate pre-acquisition planning – roughly only 50% of acquirers have an implementation during the pre-acquisition stages; while targets assume that their acquirers naturally have these plans in place. This leads to mismatched expectations between acquirer and target post acquisition.
- Insufficient information gathering – leads to incomplete due diligences which only consider pre-acquisition issues and ignore post acquisition plans.
- Price and method of payment – a hotly debated topic on its impact on the failures of acquisitions however there are both academics and practitioners who propose that overpaying leaves the acquirer with fewer funds than required for the implementation process.
- People problems – negative employee reaction to the acquisition result in more failures than financial reasons.
- Implementation issues – a carefully planned and executed implementation process is the greatest determinant to acquisition success.

- Communication – effective communication during the acquisition process reduces ambiguity, uncertainty and employee stress and increases chances of success.

Hubbard (1999) goes on to say that the deep interconnectedness of the majority of the issues listed above is the reason why chief among them all, is the careful and through planning of the acquisition process – pre and post, and its disciplined implementation.

Kode *et al.* (2003) reviewed literature published between 1995 and 2001 in an effort to identify the most commonly cited reasons for the failures of M&As. They found the equally ranked leading causes of failed M&As to be excessive costs paid for the acquisition (in stark contradiction to Hubbard (1999)), and the failure in the planning to integrate the organisations (in agreement with Hubbard). Their definition for a successful M&A was the realisation of synergies resulting in improved financial performance. However "some acquisitions are driven by non-value maximizing motives. For example, Seth, Song and Pettit (2000) investigated a sample of US cross-border acquisitions and found indications that 26% were instigated by managers for their own utility rather than shareholder interests. In addition, they established evidence of hubris, where managers mistakenly over-valued their targets" (Cartwright and Schoenberg, 2006). In such cases, a different set of measures would be used to evaluate the success of the acquisition.

3 RESEARCH HYPOTHESIS

As previously noted, this paper builds on the work completed by Smit (2005) in which he examined the impact of large acquisitions on the share price and operating financial performance of the acquiring firms. He found that these acquisitions had neither a beneficial nor detrimental impact on the operating performance of the acquiring firm over the two year period post the acquisition. He also found that the acquirer's share price reaction to the acquisition announcement was statistically insignificant in the 21 days around the announcement [-10, 10]. However, there is growing acceptance of the fact that markets are not perfectly efficient and often take time to assimilate new information into the share price of stocks (Agrawal *et al.,* 2000). Thus this study seeks to evaluate the long term reaction of the acquiring company's share price to the acquisition announcement in an effort to determine if any abnormal returns do eventually accrue to shareholders.

An answer in the affirmative would suggest the proposition that M&As create shareholder value, but also further fuels the debate on market efficiency and supports the notion that markets are inefficient. To this end, the hypotheses which follow are evaluated in this study. They seek to determine the impact of large acquisitions on the share price of the acquiring firm in the 378 trading days (18 months at an average of 21 trading days per month) following the acquisition announcement.

Hypothesis 1:

H_0: $ACAR_{AD} = 0$

H_A: $ACAR_{AD} \neq 0$

Here, $ACAR_{AD}$ represents the average cumulative abnormal returns on share price for the 378 days after the announcement date of the acquisition.

Hypothesis 2:

H_0: $ACAR_C = 0$

H_A: $ACAR_C \neq 0$

$ACAR_C$ represents cumulative average abnormal returns of cash financed acquisitions.

Hypothesis 3:

H_0: $ACAR_S = 0$

H_A: $ACAR_s \neq 0$

$ACAR_S$ represents cumulative average abnormal returns of share financed acquisitions.

The testing of hypotheses 1 , 2 and 3 will be at the 5% error margin using two-tailed t-tests.

4 RESEARCH METHODOLOGY

4.1 RESEARCH DESIGN

The question that this study aims to answer – the long term impact of large acquisitions on share price performance – builds on Smit's (2005) work. The design of the research project is similar to his, with only slight differences from his methodology. Comparisons are then drawn against his findings. This study is descriptive and quantitative in nature.

4.2 UNIT OF ANALYSIS

The unit of analysis for the research question is a single large acquisition transaction during 2000, 2001 or 2002. An acquisition is considered large if the value of the purchase is equal to, or greater than 20% of the market capitalisation of the acquiring firm.

4.3 POPULATION OF RELEVANCE

The relevant population, for continuity, is similar to that used in Smit's (2005) study, with slight modifications due to the extended time horizon of evaluation. In brief, the acquiring companies must meet amongst others, the following criteria:

- made an acquisition where the purchase consideration was 20% or more of the acquiring company's market capitalisation in year 2000, 2001 or 2002.
- be listed on the JSE for a minimum of 1 year prior to the acquisition and remain listed for at least 5 years (Smit (2005) only required the companies to remain listed 1 year after the acquisition)
- company must not be a cash shell i.e. a company whose only assets are cash and cash equivalents

The study focused on large acquisitions, as in 1992, Healy *et al.* found that economic gains were more likely to be identified when the acquisition is large relative to the acquiring company.

Another reason for concentrating on large acquisition regards the availability of relevant data. The listings requirements of the JSE stipulate that pre-acquisition historical data for the operating financial performance of unlisted firms is only required in the case of Category 1 or Category 2 transactions. It is mandatory for the acquiring company to provide these to its shareholders by way of a circular. When the value of the acquisition is between 20% and 30% of the acquiring company, the transaction is classified as a Category 2, while in a Category 1 transaction the purchase is more than 30% of the acquirer's market cap.

Smit (2005) extracted his population of relevance from the database of Ernst and Young's annual review of mergers and acquisitions in South Africa. He then applied several selection and exclusion criteria to the 802 mergers and acquisitions that took place in South Africa in 2000, 2001 and 2002 by JSE listed companies. These stringent selection criteria reduced the population of relevance to 27 acquisitions. A modification of the requirements for inclusion in this study was that the acquiring company remains listed on the JSE for at least 5 years after the acquisition announcement, while Smit had only required that the acquirer remain on the JSE for one additional year post acquisition. The complete criteria set used to select acquisitions into this study are:

- the transaction description in the Ernst & Young database had to be one of the following: acquisition of related business, hostile takeover, merger of related businesses, tender offer for shares or unconditional offer for shares;
- the acquiring company is listed on the JSE, or was listed at the time of the acquisition, for at least one year prior to the large acquisition to ensure that share price and financial information prior to the acquisition was available;
- the acquiring company was listed on the JSE for at least 5 years after the large acquisition to ensure that share price and financial information after the acquisition was available;
- the transaction was a large acquisition, as described in paragraph 4.2;
- balance sheet and cash flow information of the target company was available in the circular to shareholders of the acquiring company;

- the acquiring company was not a cash shell before the acquisition (i.e. a company is classified as a cash shell if its only assets are cash and cash equivalents); and
- the acquiring company did not enter into any large acquisitions, disposals or any major corporate restructurings requiring its shareholders' approval during the one year before and three years after the large acquisition, to exclude the impact of confounding events.

These criteria further reduced the population of relevance to 14 acquisitions.

4.4 Sampling methodology and size

The list of acquisitions included in Smit's (2005) study was used as the sample frame for this study.

After applying the additional criteria requiring that the acquiring company remain listed on the JSE for 5 years after the acquisition, and not be subject to confounding events in that period, only 14 companies were included in the population of relevance. All 14 companies were researched in this judgemental sample.

Several other studies of a similar nature to this one (Healy *et al.,* 1992; Agrawal *et al.* 1992) have made use of samples, that met certain criteria. However, random sampling is a pre-requisite for the Central Limit Theorem (Zikmund, 2006), and as such, a judgemental sample places limitations on the inferences that can be made from the results of this study. These limitations are further exacerbated by the small sample size.

4.5 SHARE PRICE DATA COLLECTION PROCESS

This study required two sets of data. The first set was the population of relevance. As briefly described earlier, the acquisitions included in Smit's (2005) study formed the relevant population for this study. As sections 4.3 and 4.4 detail the process used to extract a sample group from the population of relevance, this section will only detail the process followed to gather the second set of data.

The second set of data would be used to assess the share price performance of the acquirers. This data – the daily share prices of all JSE listed companies – was extracted from the McGregor BFANet database of information on all the companies listed on the JSE. This data is used in evaluating Hypotheses 1 to 3.

4.6 DATA ANALYSIS APPROACH – MEASURING THE SHARE PRICE PERFORMANCE

A standard methodology for event studies has been widely used in studies of this nature (Bowman, 1983; Brown & Warner, 1985; Madura & Akhigbe, 1995; Bhana, 1998; Smit, 2005 and Ward & Muller, 2008).

The 3 hypotheses listed in chapter 3 are tested using two tailed T-tests. The aim is to determine if the mean cumulative abnormal share price performances, as a result of the acquisitions, are statistically different to zero at the 5% confidence interval.

The first step to analysing abnormal performance is to define normal performance or expected returns. Past studies have identified that there are several factors which contribute to 'normal' or expected returns.

Fama and French (1996) found that company size and price-to-book ratio play significant roles in company performance. In the South African context, Gilbertson and Goldberg (1981) found that resource companies performed significantly differently to non-resource companies due to their sensitivity to commodity prices. To account for the influence of these three variables (company size, price to book ratios, and resource or non-resource), the Control Portfolio Model was adopted. To this end, Smit (2005)

based his study on the work of Mordant and Muller (2003) who used an 8-factor control portfolio.

This presents the second difference between this study and Smit's (2005); this study is based on the methodology employed by Ward and Muller (2008) who used a 12 factor control portfolio (the first difference was that Smit evaluated share price performance for the 21 days around the acquisition announcement, starting 10 days before the announcement to 10 days after the announcement henceforth denoted by [-10, 10], while this study evaluates the share price over the 389 days around the announcement, starting 10 days before to 378 days after henceforth denoted by [-10, 378]). In accounting for the impact of company size, Smit divided the JSE listed companies into large and small firms, while Ward and Muller (2008) and subsequently this study, divided the JSE listed firms into small, medium and large. This additional variable is the reason for the four new control stocks. All the stocks listed on the JSE are classified into one of these 12 control portfolios. However, except for where it is explicitly stated otherwise, the classification criteria used was as per Smit's (2005) study:

- All shares were classified as either Resource or Non- Resource companies, depending on their sector classification at the time of the acquisition.
- In classifying companies as small, medium or large, all the companies listed on the JSE were ranked by market capitalisations (as extracted from the

McGregor's BFANet database, using McGregor's BFANet Blink data extraction program). The 40 companies with the largest market capitalisations are classified as Large, companies ranking between 41 and 100 were classified as Medium sized, and the balance are classified as Small. In his study, Smit (2005) classified the 100 largest companies as Large companies and the remainder as Small companies.

- To classify a company as a Value or a Growth company, the price-to-book value ratios of all companies listed on the JSE were calculated from McGregor's BFANet database (using McGregor's BFANet Blink data extraction program) and ranked, after which the median price-to-book value ratio is determined. All companies with price-to-book value ratios larger than the median price-to-book value ratio are classified as Growth companies and the remainder as Value companies.

All shares listed on the JSE during a particular month were categorised into one of the twelve control portfolios. Once the control portfolios were constructed, the daily share prices for each company in each portfolio was obtained from McGregor's BFANet database using McGregor's BFANet Blink data extraction program.

Table 4: Classification of control portfolios

Control Portfolio Name	Resource or Non-resource	Value or Growth	Small, Medium or Large
NVS	Non Resource	Value	Small
NVM	Non Resource	Value	Medium
NVL	Non Resource	Value	Large
NGS	Non Resource	Growth	Small
NGM	Non Resource	Growth	Medium
NGL	Non Resource	Growth	Large
RVS	Resource	Value	Small
RVM	Resource	Value	Medium
RVL	Resource	Value	Large
RGS	Resource	Growth	Small
RGM	Resource	Growth	Medium
RGL	Resource	Growth	Large

The method used to evaluate the abnormal share price performance is detailed below.

The daily share price return for each share within each portfolio was then calculated in terms of Formula 2.

$$R_{it} = \log [P_{it}/P_{it-1}]$$

(Formula 2)

where:

R_{it} = the share price return for security i for day t; and

P_{it} = the share price of security i at the end of day t.

The control portfolios were rebalanced at the beginning of each month to ensure that each portfolio continued to be an accurate measurement of the share price returns of that control portfolio as a result of changes in price-to-book value ratios, market capitalisations, new listing and de-listings.

The log-function share price returns (Formula 2) of companies that were delisted from the JSE were recorded until the date of termination of listing, after which the share price returns of that company were treated as missing data items (a blank cell in Microsoft Excel) until the end of the month in which the listing was terminated. Such delisted shares were then excluded from the following month when the control portfolios were re-balanced. Similarly, the

share price returns of newly listed shares were treated as missing data items until the date of listing, after which the log-function share price returns (Formula 2) of that company were included in the returns of the relevant control portfolio.

The daily return of each portfolio was the equal-weighted average log-function share price return (Formula 2) of each share in that particular portfolio for that particular day. Zero share price returns were excluded (i.e. treated as missing data items) from the calculation of the average share price return of each control portfolio for each day to eliminate the distortion effect of thin trading on the average daily return for each control portfolio.

Following Mordant and Muller (2003), the daily log-function share price return (Formula 2) for each selection was regressed for the 378 trading days (18 months of an average of 21 trading days per month) preceding the acquisition announcement date against the daily returns of each of the twelve control portfolios to obtain a regression equation (Formula 3) for each selection. If the acquiring company was listed on the JSE for less than 18 months prior to the announcement date, but more than 12 months, as required in terms of paragraph 4.3 above, such acquiring company's share price returns (Formula 2)

were regressed over such shorter period against the daily returns of each of the twelve control portfolios.

$$E(R_{it}) = \alpha_{i,t} + \beta_{i,1}NVS_t + \beta_{i,2}NVM_t + \beta_{i,3}NVL_t + \beta_{i,4}NGS_t$$

$$+ \beta_{i,5}NGM_t + \beta_{i,6}NGL_t + \beta_{i,7}RVS_t + \beta_{i,8}RVM_t + \beta_{i,9}RVL_t + \beta_{i,10}RGS_t + \beta_{i,11}RGN_t$$

$$+ \beta_{i,12}RGL_t + \varepsilon_{it}$$

(Formula 3)

where:

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

$\alpha_{i,t}$ = the alpha intercept term of security i on day t;

$\beta_{i,1}$… $\beta_{i,12}$ = the beta coefficients on each control portfolio return; and

NGL_t…RVS_t = the log-function share price returns on each of the twelve control portfolios on day t, calculated in terms of Formula 2.

The announcement date for Smit's (2005) study, as well as this study was the date that the acquisition price was announced on the Securities Exchange News

Service ("SENS"), the JSE's electronic dissemination platform. The JSE requires that all company announcements are first released on SENS and then only published in the press (unless the press announcement is released after the close of trading on the JSE, and the SENS announcement is released before commencement of trading on the following day). In some instances the date of the announcement on SENS is the same as the announcement date in the press, while in other instances the press announcement is published only the day following the date of announcement on SENS.

Most companies had issued a cautionary announcement before the announcement of acquisition price. It is possible that much of the impact of the acquisitions had already been factored into the acquiring company's share price at the time of or even preceding the cautionary announcement. Smit (2005) and Ward and Muller (2008) both found positive Average Abnormal Returns (AAR) three days before the acquisition announcement. Smit's finding was that this AAR was statistically significant and concluded this to be a strong indication that price-sensitive information of the acquisition was leaked before the announcement date. However, Ward and Muller's (2008) positive AAR finding was statistically insignificant.

The intercept and beta coefficients of the multiple regression equation (Formula 3) for the expected return for each selection therefore takes into account the possibility that each selection's daily returns may be influenced by the returns of all listed shares and not only by the average returns of the control portfolio in which the selection is classified (Mordant and Muller, 2003).

After determining the intercept and the beta coefficients of the regression equation (Formula 3) for each selection, the expected return for each selection for each day in the event window was calculated by inserting the average return for each of the twelve control portfolio for that particular day as the relevant variable of the matching control portfolio's beta coefficients in the regression equation (Formula 3). One main event window is detailed in this report, namely the 389-day window [-10, 378] around the announcement date.

After the expected return was calculated in terms of Formula 3, the abnormal return for each selection for each day in the event window was then calculated as the difference between the actual return for that selection for that day less the expected return for that selection for that day in terms of Formula 4.

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

(Formula 4)

where:

AR_{it} = the abnormal return for security i for day t; and

$E(R_{it})$ = the expected share price return of security i for day t determined in terms of Formula 3.

The daily Abnormal Returns (ARs) calculated in terms of Formula 4, were accumulated to obtain Cumulative Abnormal Return (CAR) for each selection for each event window, according to the following formula:

$$CAR_{i,K,L} = \sum_{t=K}^{L} AR_{it}$$

(Formula 5)

where:

$CAR_{i,K,L}$ = the cumulative abnormal return for security i for the period from t = K to t = L; and

ARit = the abnormal return for security i for day t, as calculated in Formula 4.

Once all the Cumulative Abnormal Returns (CARs) for the full sample were calculated, the average cumulative abnormal return (ACAR) was then calculated as the simple average CAR of the selections in the sample, as set out in Formula 6:

$$ACAR_{K,L} = 1/n \sum_{t=K}^{L} CAR_{i,K,L}$$

(Formula 6)

where:

$ACAR_{K,L}$ = the average cumulative abnormal return for all securities in the sample for the period from t = K to t = L; and

$CAR_{i,K,L}$ = the cumulative abnormal return for each security i in the sample of a total of n securities for the period from t = K to t = L, as calculated in Formula 5.

Having calculated the ACAR, a two-tailed t-test was performed at the 5% error level to determine whether the ACAR statistically differed significantly from zero (Hypothesis 1).

Secondly, the ACAR for share-funded acquisitions and the ACAR for cash-funded acquisitions were compared to determine whether the ACAR for these two methods of payment differed statistically significantly, using two-tailed t-tests at the 5% error level (Hypothesis 2 and 3).

The daily t-statistic was calculated as the ACAR divided by its cross-sectional standard error, as suggested by Brown and Warner (1985). Smit (2005) found that this t-statistic formula had been used by a vast majority of similar studies. Brown and Warner (1985, p. 25) say that "standard parametric tests for significance of the mean excess return are well specified. In samples of only 5 securities, and even when even days are clustered, the tests typically have the appropriate probability of Type I error."

4.7 Research limitations

In this study, of the 802 mergers and acquisitions that took place in 2000, 2001 and 2002 by companies listed on the JSE, only 14 met the criteria to be analysed. The

criteria for selection into this study, as well as the methodologies adopted in evaluating company performance rendered this study the following limitations:

- This study only focused on acquisitions by companies listed on the JSE and thus does not represent non listed acquires or acquirers listed on other stock exchanges;
- It was a small sample size, and the impact of this is detailed in chapter 7;
- The study only considered the impact of large acquisitions undertaken in 2000, 2001 or 2002. The results of this study are therefore not representative of all studies during all time periods. This is an important limitation to note as several researchers (Andrade *et al.*, 2001; Asquith *et al.*, 1983 and Mitchell & Mulhein, 1996) have noted that the market for mergers and acquisitions changes over time in distinct waves;
- This study only examined large acquisitions and is thus not representative of all acquisitions;
- It ignored the aims or strategic motives behind the acquisitions under the implicit assumption that all acquisitions should in the long-run yield enough strategic synergies to show noticeably positive influences on the company share price;

- The study was a multi-industry ignoring the possibility that acquisitions in some sectors may be value creating while others in different sectors might destroy value;

Chapter 7 includes suggestions for future studies which would overcome some of the limitations in this one.

4.8 Data Integrity

During the construction of the control portfolios, the following data integrity errors were discovered:

- Some companies had missing share price data – these were excluded from the control portfolios
- Companies with less than 2 years data before the event date were also excluded from the control portfolio

Smit (2005) had encountered several additional data integrity errors during his study (such as incorrect share prices before share splits and incorrect number of share in issue for certain companies); however these have subsequently been corrected on the McGregor BFA Net database.

5 RESULTS

5.1 DESCRIPTION OF THE SAMPLE

There were 802 acquisitions by JSE listed companies in 2000, 2001 and 2002. After applying the selection criteria stipulated in chapter 2, 14 were eligible for consideration in this study. The selection criteria were designed to select acquisitions about which the required data would be available and also, acquisitions not affected by confounding events in the 5 years subsequent to the acquisition. Table 4 is a summary of the acquisitions considered in this study while Appendices 1 and 2 contain detailed information on each of the acquisitions.

5.2 SHARE PRICE PERFORMANCE

5.2.1 Average Abnormal Returns (AARs)

This study did not aim to evaluate the AARs; however, an appreciation of these during the event window is useful for understanding the results of the hypotheses tests on the ACARs. Figures 2, 4 and 6 represent the AAR curves for the full sample, share and cash funded acquisitions respectively. While figures 3, 5 and 7 are the T-test curves against critical t-test values above and below which a hypothesis test with null hypothesis stating that the daily AAR equals zero, would be rejected.

Table 5: Summary of the acquisitions included in this study

Population Size	802
Sample Size	14
Frequency in increase of focus or diversification	
focus	14
Diversification	0
Frequency of year of occurance	
2000	8
2001	2
2002	4
Frequency JSE Sectors	
Basic Materials	-
Consumer Goods	3
Consumer Services	2
Healthcare	-
Industrials	4
Financials	4
Oil and Gas	1
Technology	-
Telecommunications	-
Utilities	-
Method of payment	
Share Funded (all acquisitions where shares account for 85% or more of the purchase consideration)	5
Cash Funded	9
Purchase Consideration (in millions ZAR)	
Cash Funded Acquisitions	
Largest	R 12,110.00
Median	R 425.00
Mean	R 2,648.30
Smallest	R 91.80
Standard Deviation	R 4,383.11
Share Funded Acquisitions	
Largest	R 35,258.10
Median	R 1,391.40
Mean	R 7,997.24
Smallest	R 217.80
Standard Deviation	R 15,252.30
Relative size of acquisition (transaction value as a % of acquirer's market capitalisation)	
Cash Funded Acquisitions	
Largest	123.80%
Median	37.60%
Mean	44.98%
Smallest	20.20%
Standard Deviation	31.16%
Share Funded Acquisitions	
Largest	65.60%
Median	52.40%
Mean	44.34%
Smallest	18.20%
Standard Deviation	21.93%

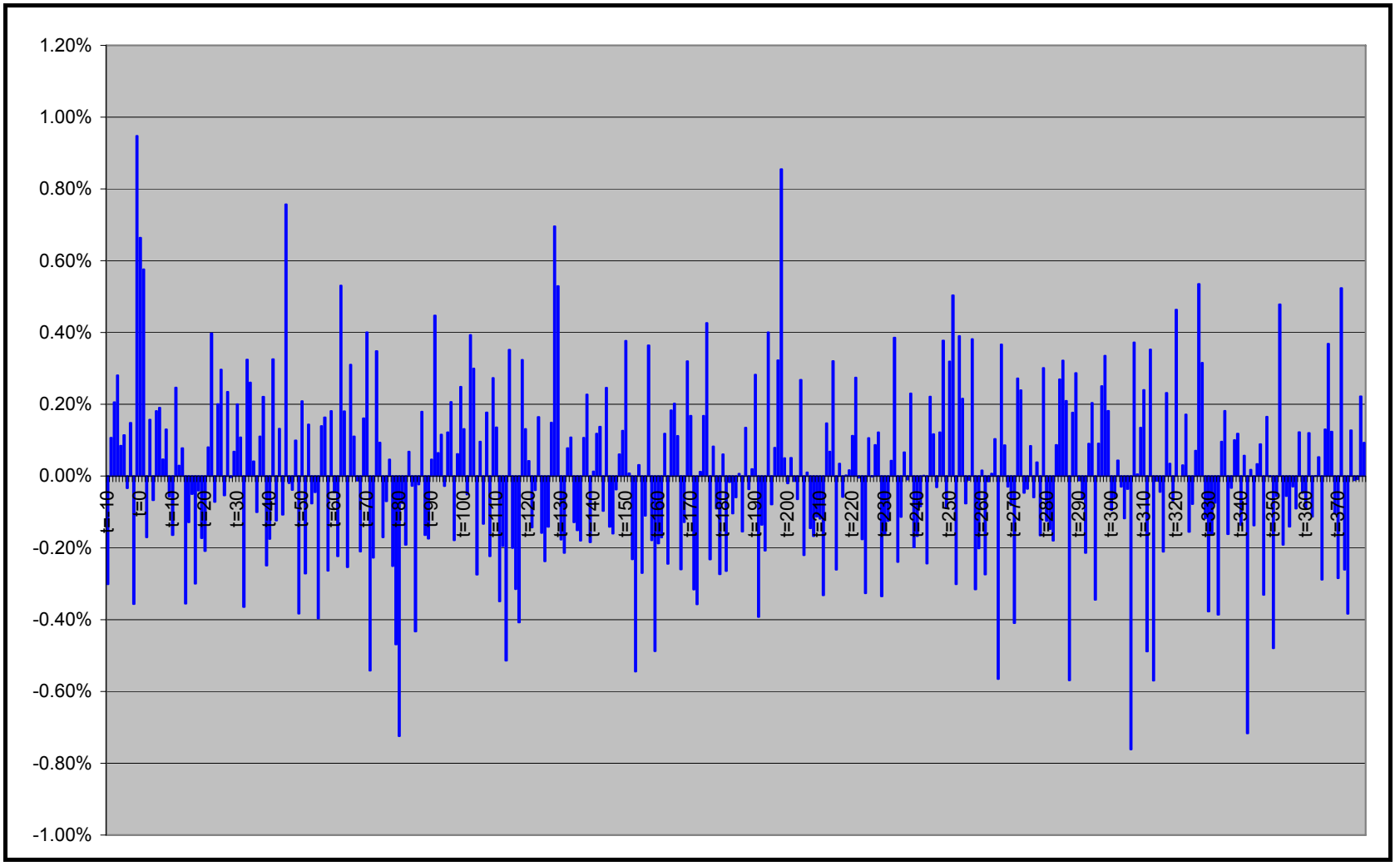

Figure 2: Average Abnormal Returns for full sample, with trend line [-10, 378]

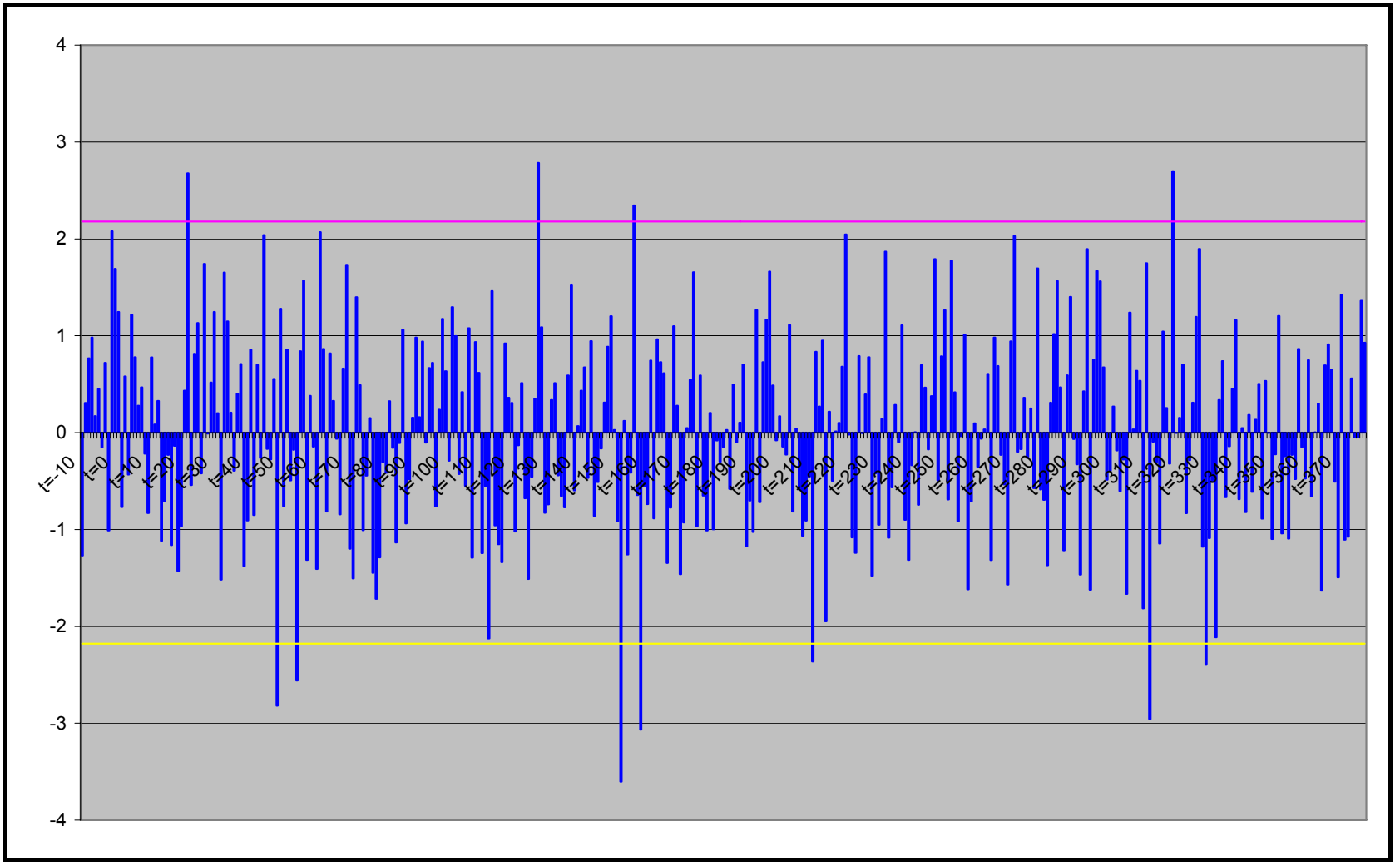

Figure 3: T-test of daily AARs for full sample revealing days of statistically significant losses and gains [-10, 378]

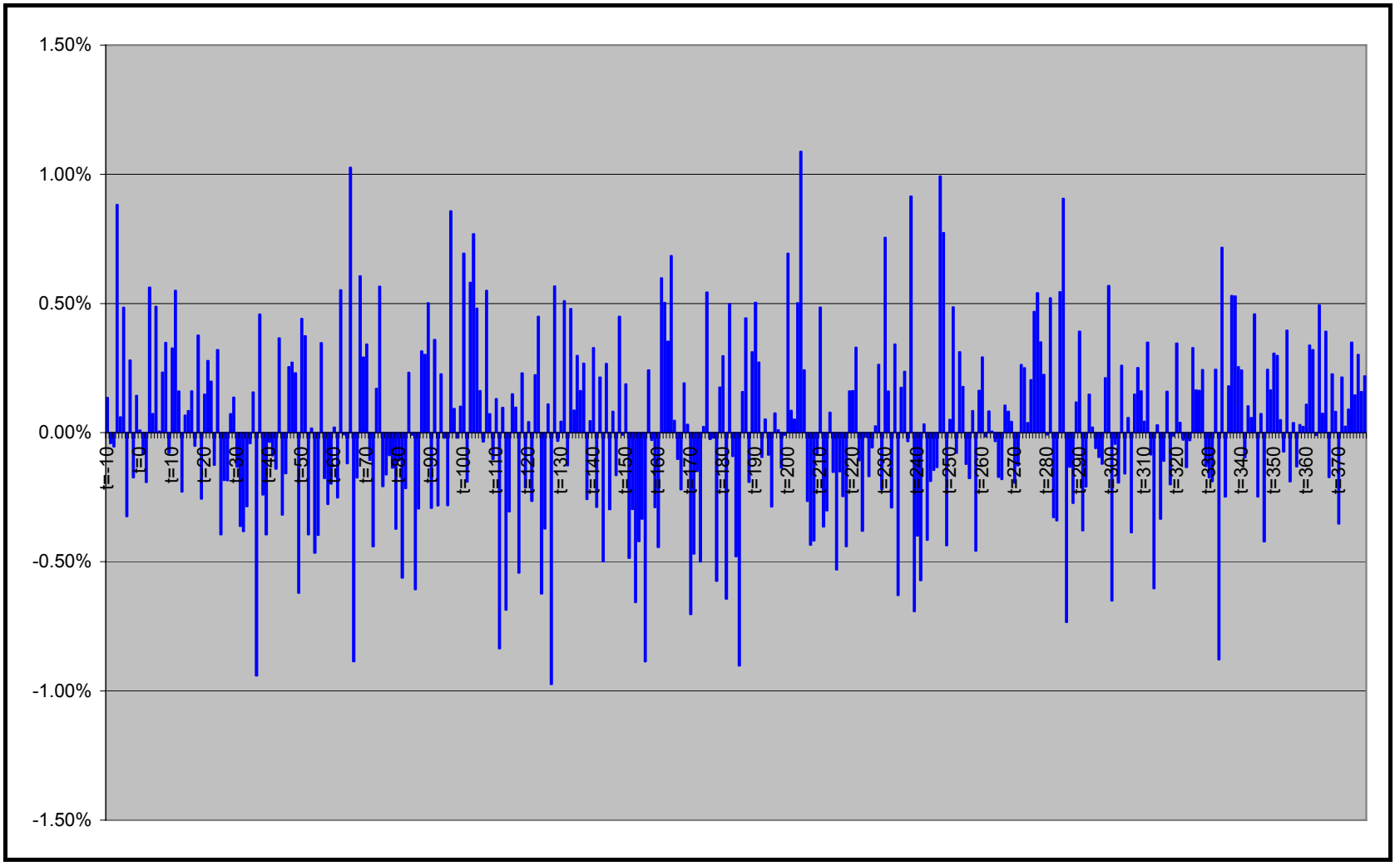

Figure 4: Average abnormal returns for share funded acquisitions [-10, 378]

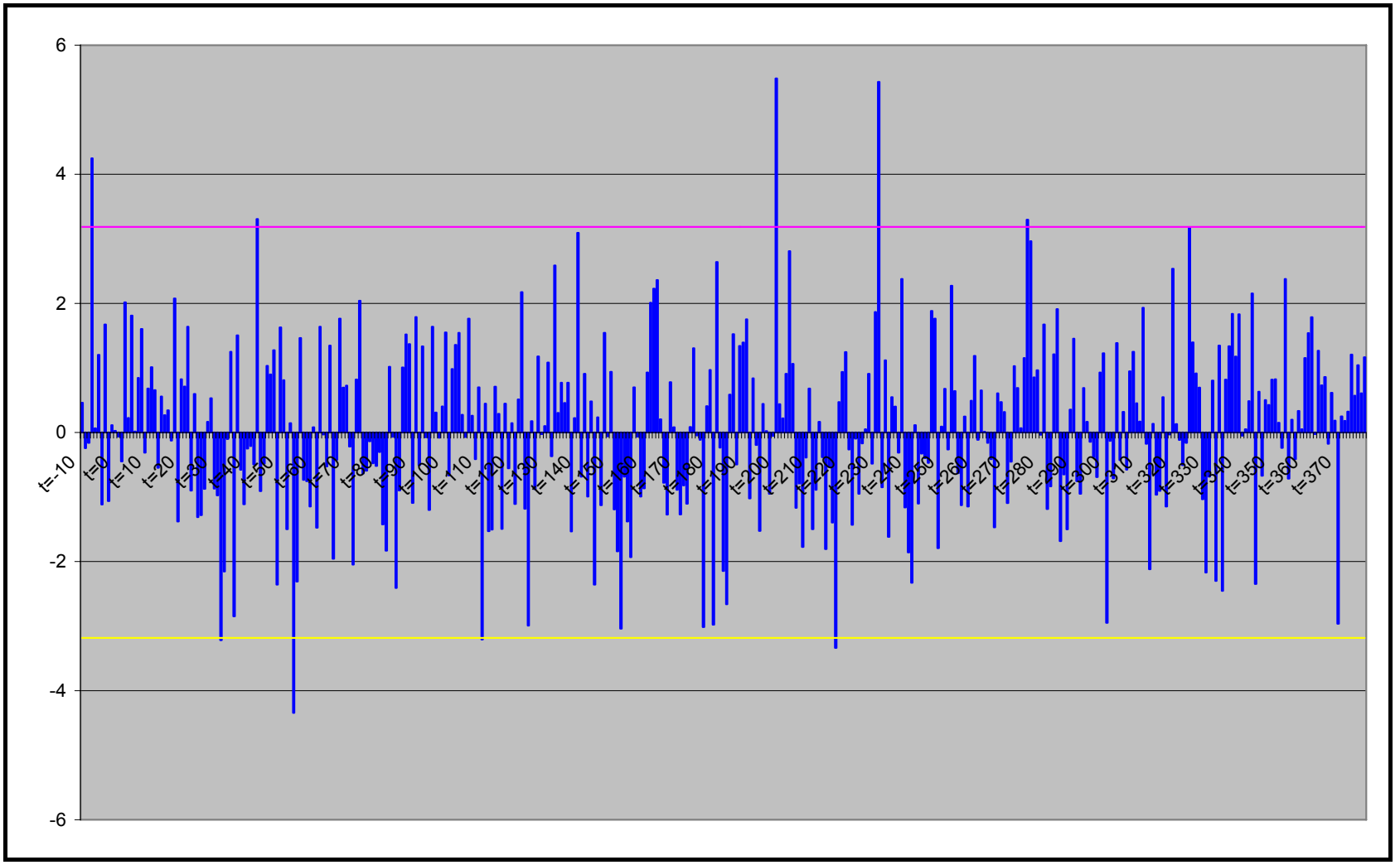

Figure 5: T-test of daily AARs for share funded acquisitions revealing days of statistically significant losses and gains [-10, 378]

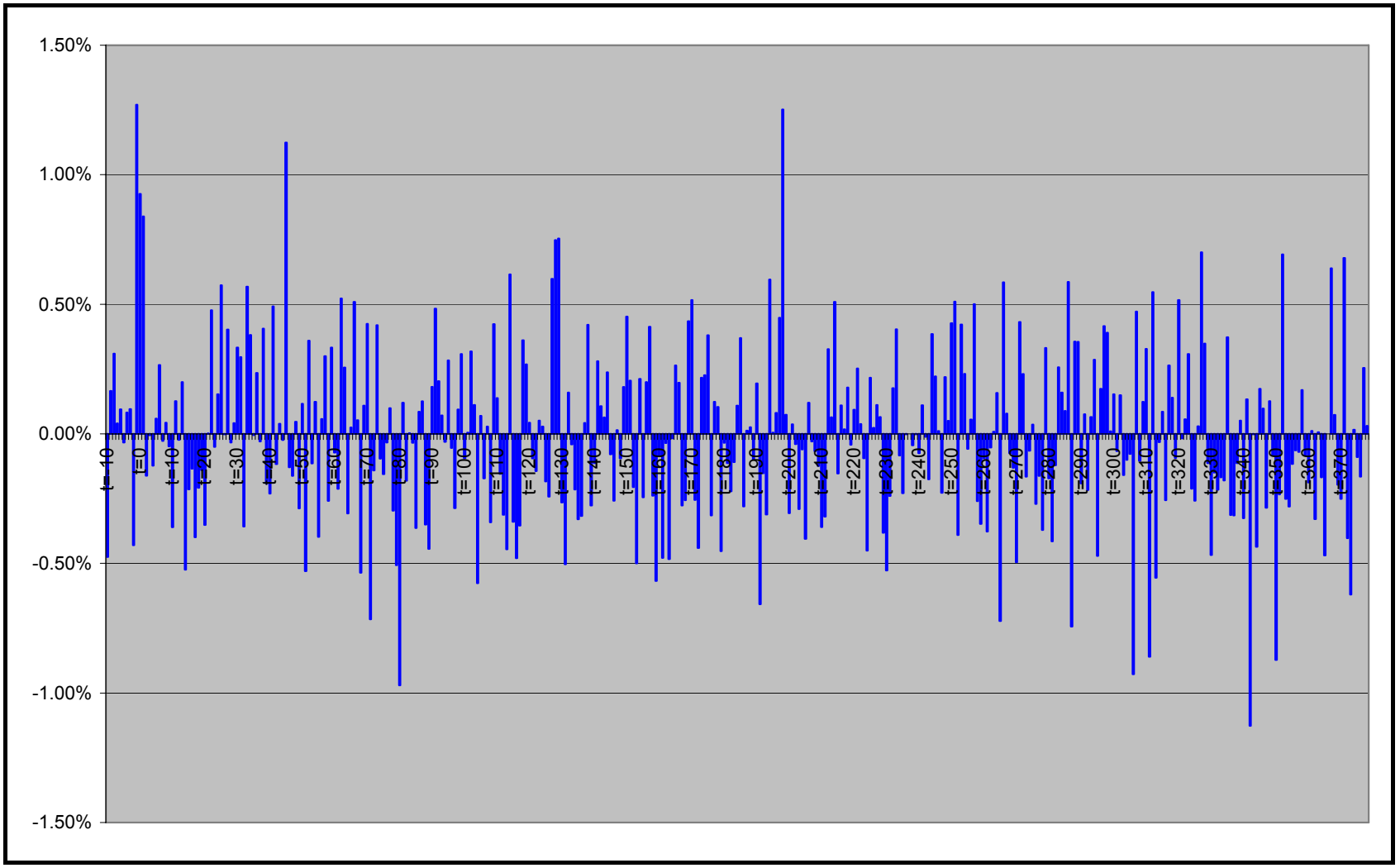

Figure 6: Average Abnormal Returns for cash funded acquisitions [-10, 378]

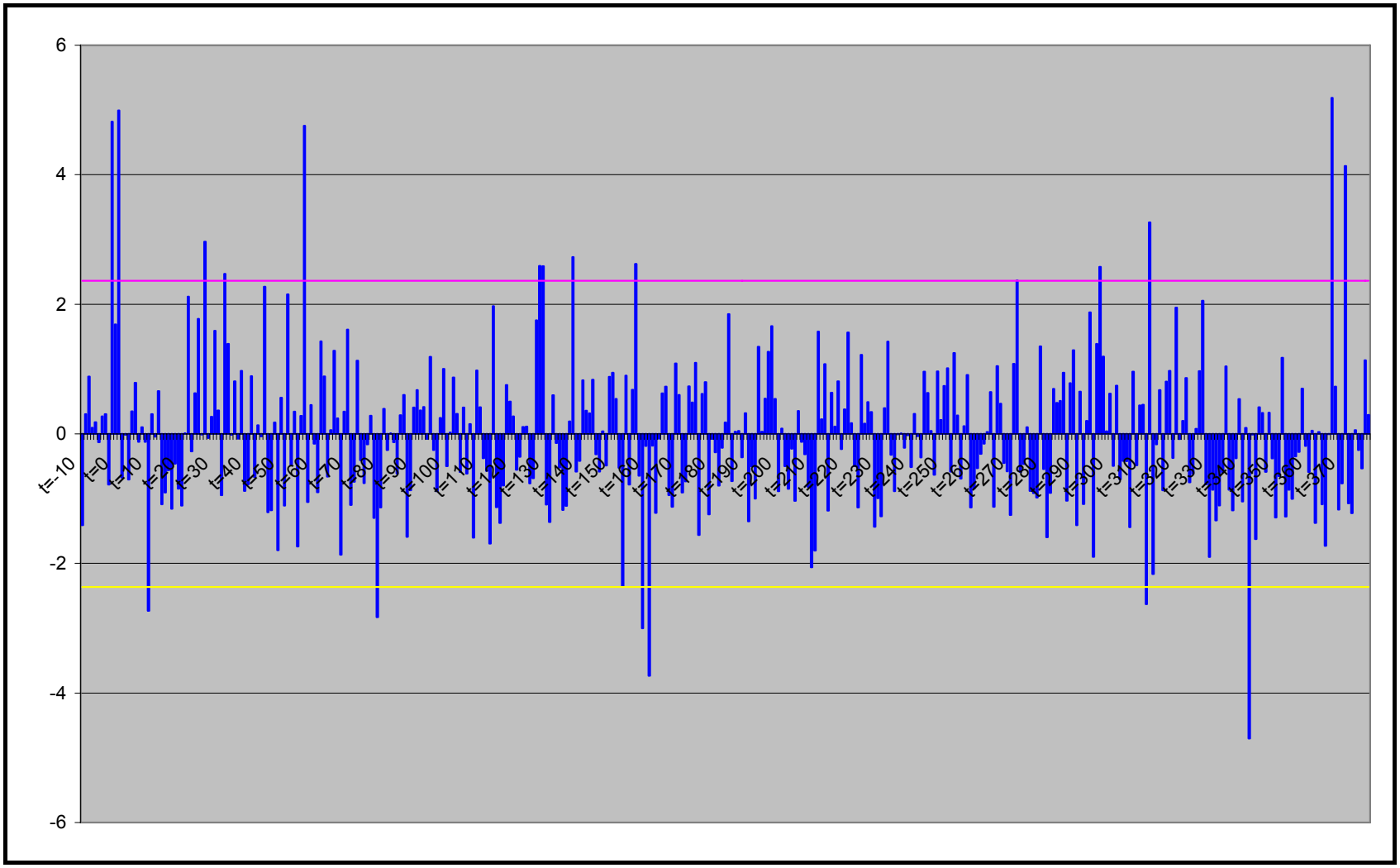

Figure 7: T-test of daily AARs for cash funded acquisitions revealing days of statistically significant losses and gains [-10, 378]

Figures 2, 4 and 6, the graphs of the abnormal returns, depict daily abnormal returns ranging -0.97% to 1.08% for share funded acquisitions, -1.12% to 1.27% for cash funded acquisitions and –0.76% to 0.95% for the full sample selection. These figures are the peak positive and negative daily returns for the sample groups. However, the majorities of the daily returns lie in the –0.5 to 0.5% band, with little or no discernable behavioural patterns, and are statistically insignificant. Tables 6, 7 and 8 present those days with statistically signification AARs.

Table 6: Statistically significant AARs for the full sample selection [-10, 378]

	Daily AAR	t-statistic	critical t value	H0: $\mu = 0$
t=22	0.40%	2.67568585	2.178812827	reject
t=49	-0.38%	-2.818556991	2.178812827	reject
t=55	-0.40%	-2.559166024	2.178812827	reject
t=128	0.70%	2.783305874	2.178812827	reject
t=153	-0.54%	-3.601619683	2.178812827	reject
t=157	0.36%	2.344112952	2.178812827	reject
t=159	-0.49%	-3.067874748	2.178812827	reject
t=211	-0.33%	-2.362478119	2.178812827	reject
t=313	-0.57%	-2.958309696	2.178812827	reject
t=320	0.46%	2.697125353	2.178812827	reject
t=330	-0.38%	-2.39005333	2.178812827	reject

Table 7: Statistically significant AARs for the share funded acquisitions [-10, 378]

	Daily AAR	t-statistic	critical t value	H0: μ = 0
t=-7	0.88%	4.246496796	3.182446305	reject
t=32	-0.38%	-3.217928231	3.182446305	reject
t=43	0.37%	3.307209232	3.182446305	reject
t=54	-0.47%	-4.343235377	3.182446305	reject
t=111	-0.84%	-3.209367566	3.182446305	reject
t=200	0.69%	5.485476979	3.182446305	reject
t=218	-0.44%	-3.340128719	3.182446305	reject
t=231	0.16%	5.430175218	3.182446305	reject
t=276	0.47%	3.295847718	3.182446305	reject

Table 8: Statistically significant AARs for the cash funded acquisitions [-10, 378]

	Daily AAR	t-statistic	critical t value	H0: μ = 0
t=-1	1.27%	4.816928771	2.364624251	reject
t=1	0.84%	4.995310869	2.364624251	reject
t=10	-0.36%	-2.732550832	2.364624251	reject
t=27	0.40%	2.966908333	2.364624251	reject
t=33	0.57%	2.469566979	2.364624251	reject
t=57	0.30%	4.753883713	2.364624251	reject
t=79	-0.51%	-2.83087065	2.364624251	reject
t=128	0.75%	2.590022745	2.364624251	reject
t=129	0.75%	2.587563174	2.364624251	reject
t=138	0.42%	2.727903879	2.364624251	reject
t=157	0.41%	2.622177891	2.364624251	reject
t=159	-0.57%	-3.000346081	2.364624251	reject
t=161	-0.48%	-3.73343992	2.364624251	reject
t=272	0.23%	2.368033957	2.364624251	reject
t=297	0.42%	2.576897586	2.364624251	reject
t=311	-0.86%	-2.630704463	2.364624251	reject
t=312	0.55%	3.264731888	2.364624251	reject
t=342	-1.13%	-4.703752501	2.364624251	reject
t=367	0.64%	5.186660904	2.364624251	reject
t=371	0.68%	4.136147626	2.364624251	reject

Out of the 389 days in the event window, for the full sample selection , 11 (3%) have significant AARs, for cash funded acquisitions, 19 (5%), and for share funded acquisitions, only 9 (2%) have significant AARs. The AARs for the balance of the days are statistically equal to zero.

The t-tests in figures 3, 5 and 7 show that for the 389 day window around the acquisition announcement [-10, 378], the majority of the daily average abnormal returns (AARs) are statistically insignificant.

Table 9: Summary of the AARs for the event window [-10, 378]

	Full Sample	Share funded acquisitions	Cash funded acquisitions
Max	0.95%	1.09%	1.27%
Min	-0.76%	-0.97%	1.13%
Mean	0.0043%	0.023%	0.00495%
Std Dev	0.25%	0.35%	0.33%
Median	-0.000527%	0.0298%	-0.00506%
T-Test	0.345836502	1.299303437	-0.29549277
T-critical (5%)	1.9661127	1.9661127	1.9661127
H0: μ = 0 (5%)	fail to reject	fail to reject	fail to reject
T-critical (10%)	1.648800515	1.648800515	1.648800515
H0: μ = 0 (10%)	fail to reject	fail to reject	fail to reject

Table 9 summarises the AARs for the complete event window. These figures demonstrate that regarding the full sample selection, for the period of 389 days [-10, 378], the average of all the average daily returns is 4,32E-05, which statistically, is the same as 0 at both the 5% and 10% confidence intervals. For share funded acquisitions, this average is -0.0097, for cash funded acquisitions, the average is 4.95E-05 and both these figures also equate to zero at the 5% and 10% confidence intervals.

However, albeit statistically, these AARs equal zero, in reality, they are not zero. And the very nature of an accumulating figure as in the average cumulative abnormal return (ACAR) is that sooner or later, this figure will reach and surpass the threshold figure at which it becomes statistically different to zero. Thus, from the AAR findings, one can expect that in the long run, on

average, large acquisitions will yield positive ACARs, share funded acquisitions will yield positive ACARs sooner than the average, while cash funded acquisitions will yield negative ACAR but will take longest time.

5.2.2 Average Cumulative Abnormal Returns (ACARs)

Once the daily AARs for each security in the sample were determined, the next step was to accumulate them for the duration of the event window in order to examine the cumulative abnormal returns (CARs). Once obtained, the average of the daily CARs was calculated. This is the chief aim of this study and those results are presented below.

Figure 8 suggests that, for the majority of the event window, positive average cumulative abnormal returns (ACARs) accrue to the shareholders of firms making large acquisitions. For the full sample size, the ACARs peak at 4,69% ,70 days after the acquisition announcements and peter down to 1,37% on the last day of the event window, 378 days after the acquisitions announcement.

The ACARs for cash funded acquisitions peak at 5.58%, 67 days after the acquisition announcement and then also begin to decline. Their decline however is more severe than the sample average and reach -0.22%, 344 days

(or 16.5 months) after the announcement, declining even more aggressively after that to -2,47% in the remaining 34 days of the event window.

Over the duration of the event window, share funded acquisitions fared better, however were more erratic. In the 67 days after acquisition announcements it took cash funded acquisitions to peak, share funded acquisitions had reached a 'mini' peak of 4.76% (on t=24) and fallen back down to 1.23%. They would rise and fall again for several cycles before eventually falling to a nadir of -0.61% only to rise and reach to an event window peak of 9.03% on the last day.

There were numerous days with statistically significant ACARs, however as was the case with the AARs, the majority of the ACAR losses and gains remained insignificant. Tables 10 to 12, contain the details of those statistically significant ACAR losses and gains.

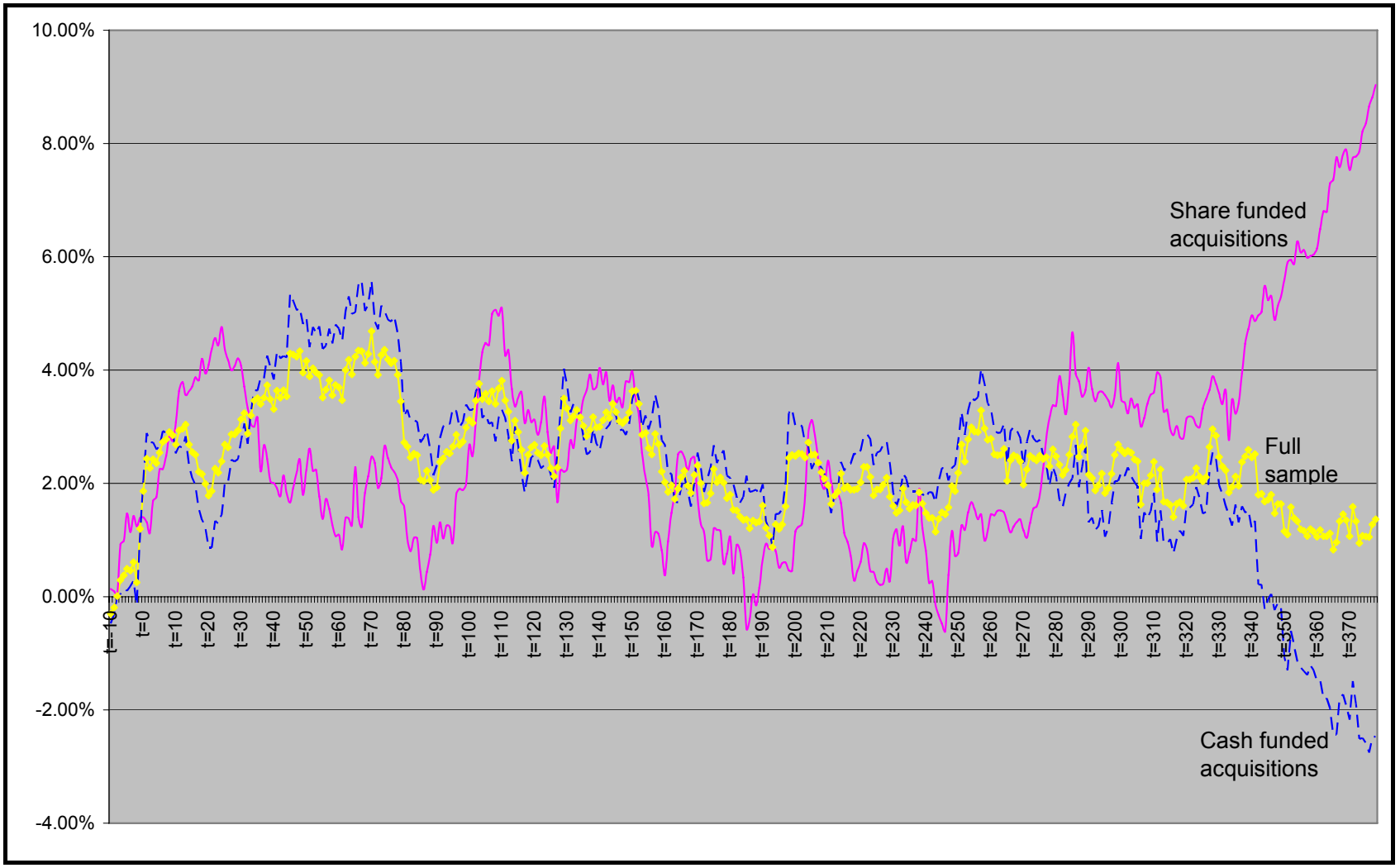

Figure 8: Average Cumulative Abnormal Returns [-10, 378]

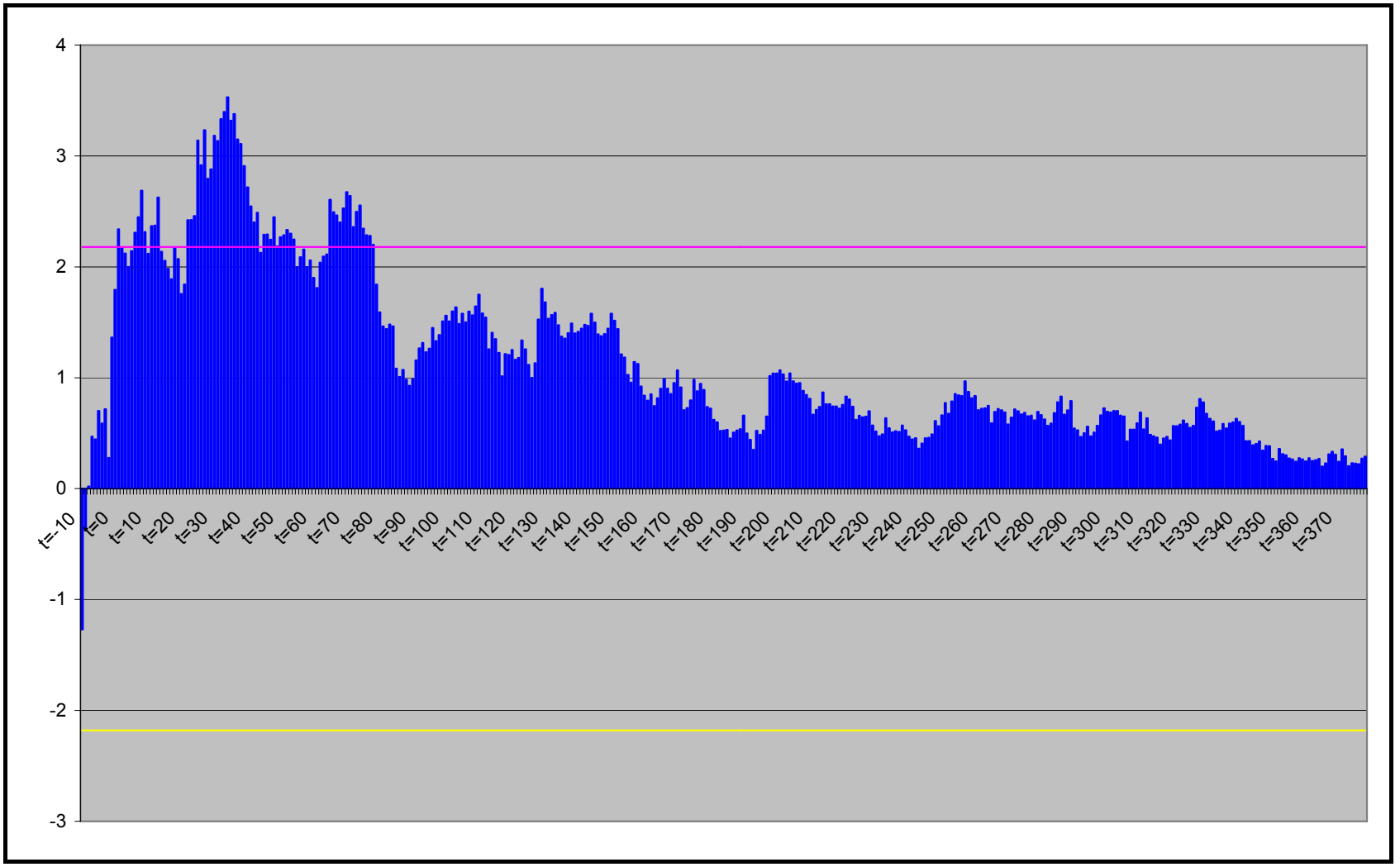

Figure 9: T-test of daily ACARs for full sample revealing days of statistically significant gains [-10, 378]

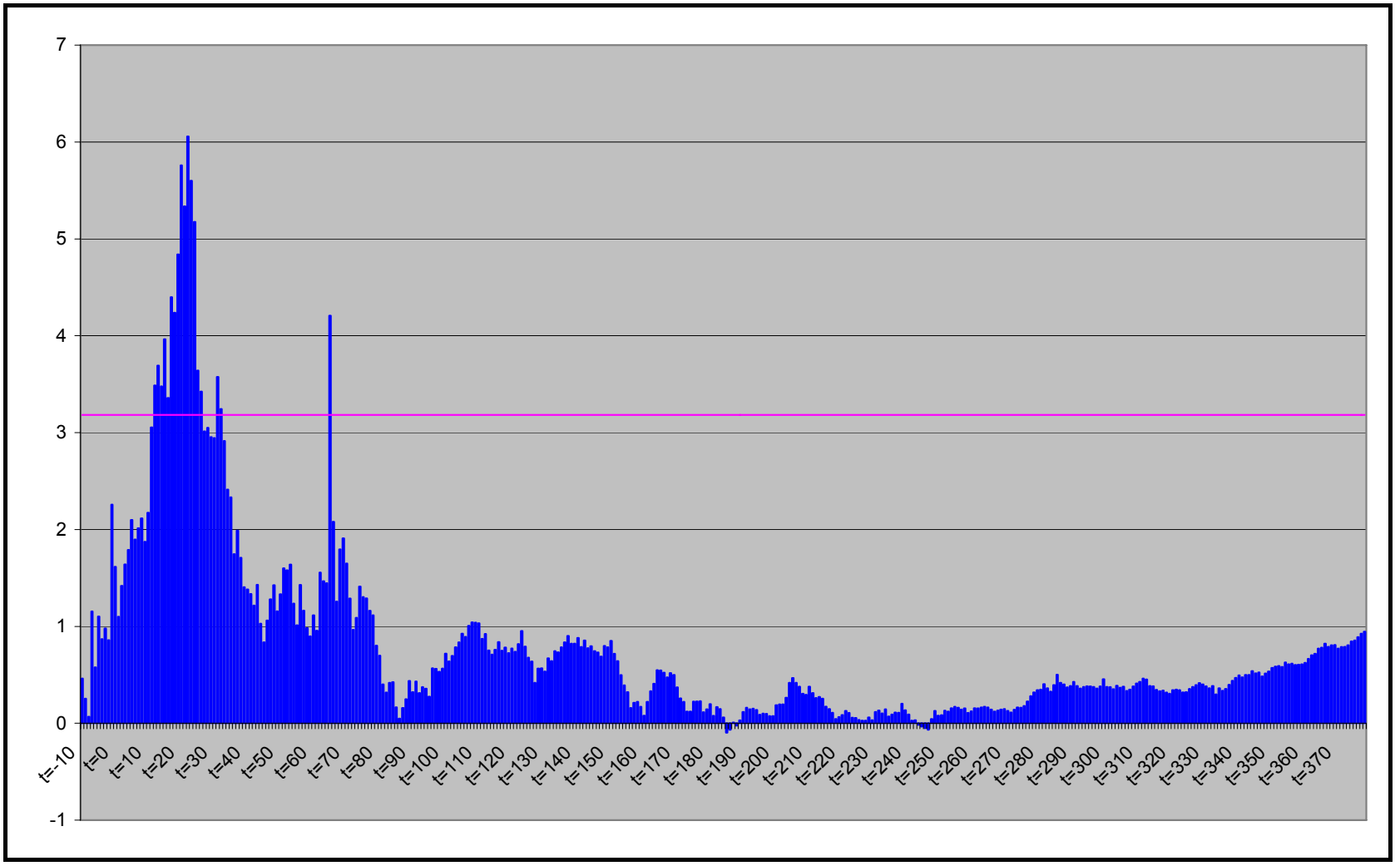

Figure 10: T-test of daily ACARs for share funded acquisitions revealing days of statistically significant gains [-10, 378]

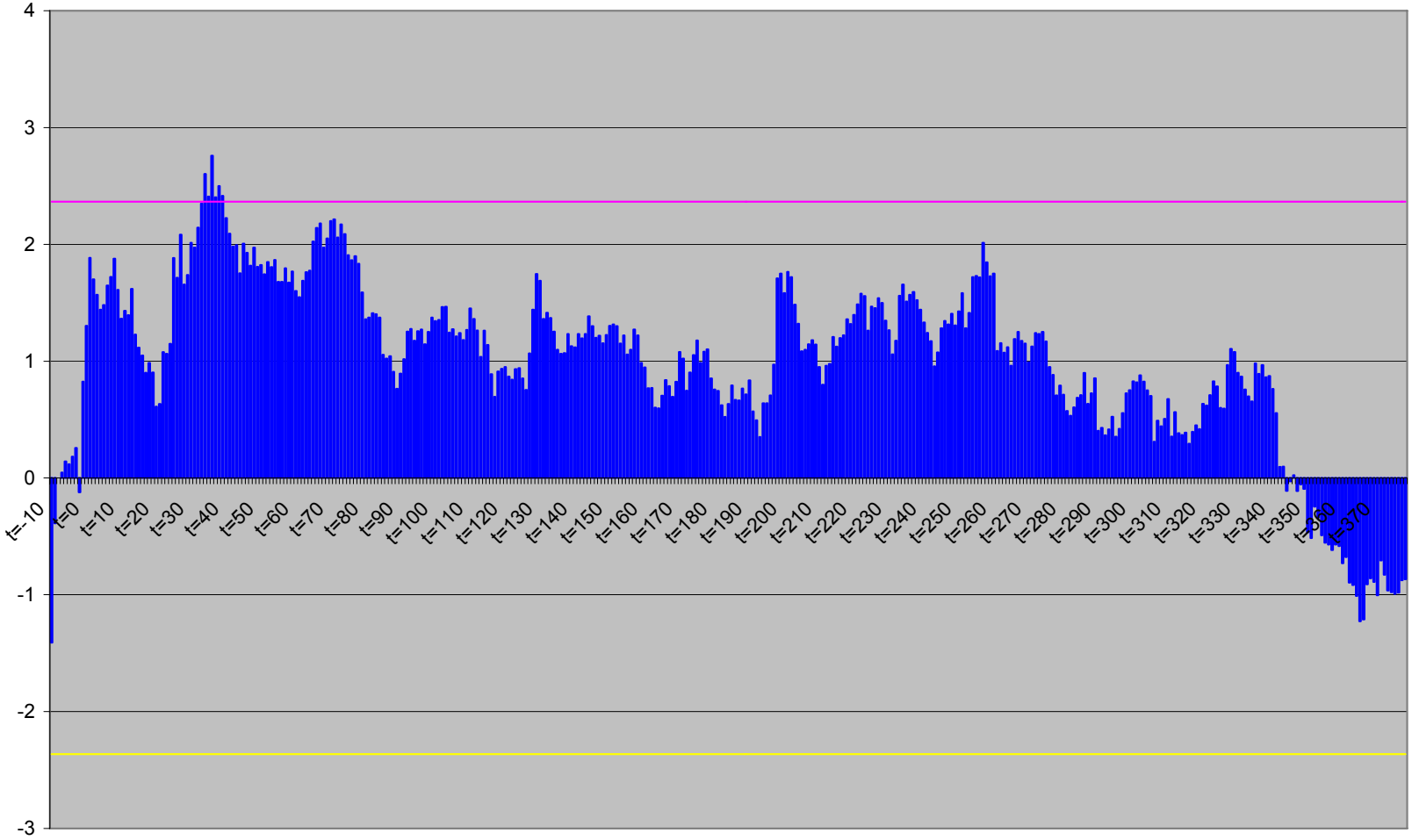

Figure 11: T-test of daily ACARs for cash funded acquisitions revealing days of statistically significant losses and gains [-10, 378]

Table 10: Statistically significant ACARs for the full sample selection [-10, 378]

	Daily ACAR	t-statistic	critical t value	H0: $\mu = 0$
t=1	2.44%	2.339772888	2.178812827	reject
t=6	2.73%	2.308598706	2.178812827	reject
t=7	2.78%	2.447932386	2.178812827	reject
t=8	2.91%	2.686568465	2.178812827	reject
t=9	2.85%	2.314358793	2.178812827	reject
t=11	2.93%	2.367693465	2.178812827	reject
t=12	2.96%	2.371126178	2.178812827	reject
t=13	3.04%	2.62601629	2.178812827	reject
t=22	2.26%	2.420490637	2.178812827	reject
t=23	2.19%	2.423350921	2.178812827	reject
t=24	2.39%	2.456649817	2.178812827	reject
t=25	2.69%	3.139778137	2.178812827	reject
t=26	2.63%	2.914917609	2.178812827	reject
t=27	2.87%	3.232930015	2.178812827	reject
t=28	2.86%	2.795321888	2.178812827	reject
t=29	2.93%	2.879973579	2.178812827	reject
t=30	3.13%	3.181764941	2.178812827	reject
t=31	3.24%	3.133990257	2.178812827	reject
t=32	2.88%	3.332344774	2.178812827	reject
t=33	3.20%	3.395956645	2.178812827	reject
t=34	3.46%	3.529134368	2.178812827	reject
t=35	3.50%	3.318007503	2.178812827	reject
t=36	3.40%	3.377609471	2.178812827	reject
t=37	3.51%	3.148916366	2.178812827	reject
t=38	3.73%	3.10843851	2.178812827	reject
t=39	3.48%	2.910081982	2.178812827	reject
t=40	3.31%	2.718331594	2.178812827	reject
t=41	3.64%	2.54498443	2.178812827	reject
t=42	3.51%	2.400527138	2.178812827	reject
t=43	3.64%	2.488577782	2.178812827	reject
t=45	4.29%	2.289837016	2.178812827	reject
t=46	4.27%	2.2918497	2.178812827	reject
t=47	4.24%	2.243932948	2.178812827	reject
t=48	4.33%	2.448087923	2.178812827	reject
t=49	3.95%	2.185997788	2.178812827	reject
t=50	4.16%	2.26746297	2.178812827	reject
t=51	3.89%	2.28611289	2.178812827	reject
t=52	4.03%	2.333193886	2.178812827	reject
t=53	3.96%	2.299792839	2.178812827	reject
t=54	3.91%	2.247269968	2.178812827	reject
t=65	4.24%	2.605143771	2.178812827	reject
t=66	4.35%	2.492602975	2.178812827	reject
t=67	4.33%	2.463244523	2.178812827	reject
t=68	4.12%	2.400539309	2.178812827	reject

t=69	4.29%	2.527917589	2.178812827	reject
t=70	4.69%	2.675316975	2.178812827	reject
t=71	4.14%	2.639257794	2.178812827	reject
t=72	3.92%	2.360383558	2.178812827	reject
t=73	4.27%	2.497110515	2.178812827	reject
t=74	4.36%	2.552879282	2.178812827	reject
t=75	4.19%	2.345106136	2.178812827	reject
t=76	4.12%	2.286649065	2.178812827	reject
t=77	4.17%	2.278919939	2.178812827	reject
t=78	3.92%	2.199741853	2.178812827	reject

Table 11: Statistically significant AARs for the share funded acquisitions [-10, 378]

	Daily ACAR	t-statistic	critical t value	H0: μ = 0
t=12	3.79%	3.48552624	3.182446305	Reject
t=13	3.56%	3.692178166	3.182446305	reject
t=14	3.63%	3.477822824	3.182446305	reject
t=15	3.71%	3.962845484	3.182446305	reject
t=16	3.87%	3.357618059	3.182446305	reject
t=17	3.82%	4.396846252	3.182446305	reject
t=18	4.20%	4.237829188	3.182446305	reject
t=19	3.94%	4.839366167	3.182446305	reject
t=20	4.09%	5.759255114	3.182446305	reject
t=21	4.37%	5.335777318	3.182446305	reject
t=22	4.57%	6.058873839	3.182446305	reject
t=23	4.44%	5.600252107	3.182446305	reject
t=24	4.76%	5.175230282	3.182446305	reject
t=25	4.36%	3.641130573	3.182446305	reject
t=26	4.18%	3.424023433	3.182446305	reject
t=31	3.71%	3.57476452	3.182446305	reject
t=32	3.33%	3.242859795	3.182446305	reject
t=65	2.29%	4.205207738	3.182446305	reject

Table 12: Statistically significant ACARs for the cash funded acquisitions [-10, 378]

	Daily ACAR	t-statistic	critical t value	H0: μ = 0
t=34	3.65%	2.602287918	2.364624251	reject
t=35	3.64%	2.408281592	2.364624251	reject
t=36	3.88%	2.75791399	2.364624251	reject
t=37	3.85%	2.402273893	2.364624251	reject
t=38	4.25%	2.499065166	2.364624251	reject
t=39	4.06%	2.414769087	2.364624251	reject

For the full sample, out of the 389 days in the event window, 54(14%) have significant ACARs, for share funded acquisitions, 18 (5%), and for cash funded acquisitions, only 6 (1,5%) have significant ACARs. The ACARs for the balance of the days are statistically equal to zero.

The t-tests in figures 9 to 11 depict the low percentages of significant ACARs for the 389 day window around the acquisition announcement [-10, 378]. The figures are also useful for evaluating the trends of the ACARs. The significant ACARs all occur in the first 90 days after the acquisition announcements. However, the t-test values steadily diminish and for cash funded acquisitions become negative, yet remain statistically insignificant. For the hypothesis tests of the ACARs, only the t-test value on the last day of the event window (t=378) is evaluated, and in all three cases, the t-test results lie in the band of statistical insignificance.

6 Discussion of Results

6.1 Average abnormal returns

Although not the research question evaluated in this study, an appreciation for the average daily abnormal returns helps to better understand the results from the evaluation of the cumulative abnormal returns. This study concluded that, over the duration of the 389 day event window, the AARs averaged 0.0043%, and troughed and peaked at –0.76% and 0.95% for the full sample, averaged 0.023% and troughed and peaked at -0.97% to 1.08% for share funded acquisitions, and averaged 0.00495% while troughing and peaking at -1.12% to 1.27% for cash funded acquisitions. In all three cases, the average AARs for the duration of the event window are positive, however, they are also all statistically insignificant at the 5% and 10% confidence intervals.

Albeit statistically insignificant, the positive AARs suggest that in the long run, accumulating a positive figure must result in a net positive CAR. Either the CARs will begin positively and tapper off, start slowly and climb, or peak somewhere in the middle of the event window, their net impact should be positive. There can even be negative CAR periods; however the net impact should be a positive CAR. In section 6.2 the CAR results and their statistical significance are discussed.

Over a shorter event window [-10, 10], and with a different sample, Smit's (2005) AARs were considerably higher (0.11%, 0.09% and 0.55% for the full sample, share funded acquisitions and cash funded acquisitions respectively), yet still statistically insignificant. He found 3 days on which the sample AARs were significant at the 10% confidence interval, and one day where the AAR was significant at the 5% confidence interval.

6.2 Average cumulative abnormal returns

The trends of the average cumulative abnormal returns (ACARs) were as expected from the AAR results. In brief, the positive AARs – albeit statistically insignificant – would yield net positive ACARs over the event window. This study found a peak average cumulative abnormal return of 4.69% for the full sample, 70 trading days after the acquisition announcement. This figure compares less favourably to the findings of Ward and Muller (2008) who found that JSE listed companies who completed BEE transactions aimed at transferring some ownership of the company into black hands, achieved peak ACARs of 15%, 190 days after the acquisition announcement. In other words, shareholders of JSE firms are better served when portions of their companies are sold to black investors than when their companies make large strategic acquisitions of their own.

The results of this study are in stark contrast to Gregory's (1997) in which he found that, 3 years after the acquisition announcement, the shareholders of UK acquirers achieved significantly negative returns of between -8.15% and -11.25% depending on model used to evaluate the share price performance. However and also 3 years after the acquisition announcement, the Canadian acquirers in Andre *et al.*'s (2004) study, who also used the Fama and French (1993) 3-factor model for evaluating long term returns, achieved statistically insignificant negative returns of -0.109%.

Lastly, this study's findings fared better than Smit's (2005) study in which this ACARs for the full sample over the 21 day event window peaked at 4.35%.

6.3 Differences between the ACARs of share funded acquisitions and cash funded acquisitions

On the issue of payment method, the findings of this study are at odds with the bulk of the research reviewed in this document. The ACARs for cash funded acquisitions peak at 5.58%, 67 days after the acquisition announcement while ACARs for share funded acquisitions, after some erratic early behaviour, rise to reach an event window peak of 9.03%. Further accentuating the disparity of the finding in this study with other researchers, Rau and Vermaelen (1998) and Myers and Majluf (1984) assert that managers who are better informed than the market, about the long-term prospects of their companies, will opt to pay for acquisitions with shares when they believe their

stock to be overvalued and with cash otherwise. Hence, on average, long run abnormal returns to acquirers will be negative in the case of share funded acquisitions and positive for cash funded acquisitions.

As another contradiction to the finding in this study, Andre et al. (2004), after having found statistically insignificant negative returns for their full sample, the returns for the sub-group of cash funded acquisitions was also statistically insignificant (-0.158), while share funded acquisitions achieved significant negative returns of -1.501%.

Smit's (2005) study was for a shortened event window [-10, 10], and thus direct comparisons should not be drawn against the findings of this study. It is however interesting to note that he found that the ACARs of cash funded acquisitions peaked at 11.5% while those of share funded acquisitions peaked at 1.89% over the 21 day event window, and were negative for the 5 day [-2,2] and 3 day [-1,1] event windows. Smit's (2005) findings, noticeably at odds with Gregory (1997) and Andre *et al.* (2004), are more consistent with Datta, Pinches and Narayanan (1992) who proposed that both the acquirers and the targets of cash funded acquisitions fared better than share funded acquisitions.

6.4 HYPOTHESIS TESTING OF THE ACARS

Hypothesis 1 was tested:

H_0: $ACAR_{AD} = 0$

H_A: $ACAR_{AD} \neq 0$

Here, $ACAR_{AD}$ represents the average cumulative abnormal returns on share price for the 378 days after the announcement date of the acquisition. Based on the results in figures 8 and 9 and table 10, and the discussion in sections 5.2.2 and 6.2, the null hypothesis can not be rejected.

Hypothesis 2 was tested:

H_0: $ACAR_C = 0$

H_A: $ACAR_C \neq 0$

$ACAR_C$ represents cumulative average abnormal returns of cash financed acquisitions. Based on the results in figures 8 and 10 and table 11, and the discussion in sections 5.2.2 and 6.3, the null hypothesis can not be rejected.

Hypothesis 3 was tested:

H_0: $ACAR_S = 0$

H_A: $ACAR_s \neq 0$

$ACAR_C$ represents cumulative average abnormal returns of cash financed acquisitions. Based on the results in figures 8 and 11 and table 12, and the discussion in sections 5.2.2 and 6.3, the null hypothesis can not be rejected.

6.5 Conclusion on share price performance

The hypothesis tests answer the research questions of this study; however there is a more interesting finding, with implications on the greater body of financial theory, which emerged en route to those answers. Figure 9, the t-tests of the ACAR values over the duration of the event window, and table 10, the summary of those days with statistically significant ACARs present this notable finding.

In summary, these two sets of results confirm the presence of abnormal share price returns 67 days after the initial acquisition announcements, which in turn support the views of Agrawal *et al.* (1992), among other researchers, who suggested that short term abnormal returns often fail to capture the full impact of delayed and slow market reactions to acquisition announcements.

A key pillar of the efficient market hypothesis on which many financial models are built is the market's ability to quickly assimilate all available information, and reflect this

new information through the share price of the listed stocks (Agrawal *et al.*, 1992). The presence of abnormal returns in the case of this study, several months after the acquisition announcement contradicts the efficient market hypothesis.

Additionally, this efficient market hypothesis proposition that the market is able to quickly adjust share prices based on new information, is the chief reason why the bulk of research into share price reaction to acquisition announcements are short term studies (Agrawal and Jaffe, 2000). Typically these are 3 [-1,1] to 41 [-20,20] days around the announcement date. Findings of abnormal returns months and years after the acquisition announcement suggests that researchers should begin to focus on long term studies as short term studies ignore delayed reactions to the acquisition announcements.

7 CONCLUSION

Apart from the reverse finding of the relative performances of share versus cash funded acquisitions, the balance of the findings of in this study are in alignment with large sections of the existing body of research on the topic of long term abnormal stock performance after an acquisition. It should be noted though, that the wide variety of other research findings makes it relatively simple to find a subset to match almost any results. Therefore, in light of the findings of this study, has the study contributed to the body of knowledge on this topic? What improvements would make the results more relevant and useful? What improvements would make the results more robust to scrutiny and criticism? What are areas for further studies to complement the findings of this report?

There is limited research on the impact of acquisitions on share price performance and even less so on the operating financial performance of South African companies. Therefore as a point of departure, most studies which employ robust methodologies and focus specifically on South Africa will add to the current body of knowledge. The methodology employed in this study was initially developed in 1992 and has undergone numerous improvements since. It's wide and frequent use in numerous other studies confirms that it is well accepted amongst researchers and commentators in this field. However, this study does suffer a severe Achilles heel, and that is in the size of the sample examined.

In table 1 in section 2.5.4, Agrawal and Jaffe (2000) review other studies on M&As. In all these studies, the sample sizes range from 81 to 2767 acquisition or merger transactions. Moreover, the central limit theorem requires a minimal sample size of 30 before inferences from the results of a study can be used to approximate the population (Zikmund, 2003). Thus in order to generalise the findings of the results in a study of this nature to all large share funded and cash funded acquisitions, the minimum sample size required would be 60. This presents the first area of improvement for future studies – to select a period long enough to apply the strict criteria listed in section 4.3 which ensure the quality of the selections and still obtain a sample size large enough to draw meaningful generalisations.

In addition to limiting the generalisations that can be inferred, the small sample size of this study presented another drawback – the impact on outliers on the results. As sample sizes decrease, the greater the individual influence of the individual selections. With a sample size of 14, any outlier can drastically impact the group's results. In particular, one of the required inputs for t-test calculations is the standard deviation of the sample. Thus an outlier which significantly influences this figure can reverse a would-be significant finding and vice versa. Moreover, as samples are meant to represent the population, the standard deviation of the sample serves as a proxy for the population's standard deviation. Thus in the case of a small sample, outliers can significantly impact the results inferred to the population. One method to address this potential problem is to create several sample groups of equal sizes, extract their

standard deviations, average them and use that figure in calculating the t-statistic. This technique minimises the potential impact of outliers.

A natural complimentary study to this report is a study into the impact of large acquisitions on the operating financial performance of the acquiring firm. In fact, in Smit's (2005) study, he evaluated both the short term share price reaction and longer term operating financial performance of large acquisitions on JSE listed companies. Corporate finance theory suggests that the value of a company, represented by its share price reflects the sum of the future earnings of the company. As such, a study which compares the share price performance and operating financial performance over the same period should yield complimentary results. A reverse finding would suggest that the share price inaccurately reflects future earnings and subsequently oppose the efficient market hypothesis.

It was the initial aim of this study to evaluate this corollary. However research studies are an iterative process and the unavailability of the required data on the operating financial performance of the non listed target firms in the years preceding the acquisition announcement precluded the inclusion of the comparison of post acquisition operating financial performance of the enlarged entity against the sum of the operating financial performance of the individual entities pre-acquisition.

Lastly, in spite of the debate on the shareholder value creation or value destruction nature of M&As, their preponderance continues unabated. And albeit determining their impact on shareholder value remains an ongoing quest, it would also be interesting to understand their impact on the greater society; for instance is the global society better off today with Boeing and Airbus as the two dominant aircraft manufacturers, or were people better off in the 60s and 70s when there were numerous others?

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APPENDIX 1 – DETAILS OF SHARE FUNDED ACQUISITIONS

Ticker code	No.	Acquirer	Target	JSE Sector up to 2001	JSE Sector from 2002	Announcement Date	Effective Date	% of acquirer's Market Cap	Transaction value (R million)	Amount paid in shares (R mil	Amount paid in cash (R mil)
AEG	1	Aveng Limited	LTA Limited	Industrial - Building, Construction and Engineering	Construction & Building Materials - Other Construction	10-Jul-00	01-Jul-00	65.6%	1391.4	1227.6	163.9
JDG	2	JD Group Limited	Profurn Limited	Industrial - Retail	General Retailers - Hardlines	27-Jun-02	23-Apr-03	61.7%	1154.0	1128	26
NPK	3	Nampak Limited	Malbak Limited	industrial - Packaging and Printing	Support Services - Business Support Services	26-Apr-02	07-Aug-02	23.8%	1964.9	1674.5	290.4
SAB	4	SA Breweries PLC	Miller Brewing Company	Industrial - Beverages	Beverages - Breweries	30-May-02	09-Jul-02	52.4%	35258.1	34792.6	465.5
SYC	5	Sycom Property Fund Limited	Riverwoods Office Park	Property Unit Trusts	Real Estate Holding and Development	19-Apr-01	01-Jan-01	18.2%	217.8	217.8	

APPENDIX 2 – DETAILS OF CASH FUNDED ACQUISITIONS

Ticker code	No.	Acquirer	Target	JSE Sector up to 2001	JSE Sector from 2002	Announcement Date	Effective Date	% of acquirer's Market Cap	Transaction value (R million)	Amount paid in shares (R mil	Amount paid in cash (R mil)
ATS	1	Atlas Properties Limited	Advent Properties (Proprietary) Limited	Property Loan Stock	Real Estate Holding and Development	27-Jul-01	30-Sep-01	123.8%	402.3	145.3	257
CHE	2	Chemical Services Limited	AECI Coatings (Pty) Limited	Non-Mining Resources - Chemicals, Oils and Plastics	Chemicals - Commodity	26-Oct-00	01-Jan-01	28.8%	275.0	104	171
DST	3	Distillers Corporation SA Limited	Stellenbosch Farmers Winery Limited	Industrial - Beverages	Beverages - Distillers and Vintners	20-Sep-00	01-Jul-00	37.7%	515.2	151.2	
IVT	4	Invicta Holdings Limited	Bearing Man Limited	Industrial - Retail	Engineering & Machinery, Engineering, General	13-Jul-00	01-Jul-00	37.60%	91.8		91.8
SUI (KER)	5	Sun International LTD (Formerly known as Kersaf Investment LTD)	Sun International Inc.	Industrial - Hotels and Leisure	Leisure, Entertainment and Hotels	31-May-00	31-May-00	20.2%	425.0		425
MAF	6	Mutual and Federal Insurance Company Limited	CGU Holdings Limited	Insurance - Short Term Insurance	Insurance - Non Life	30-Jun-00	01-Jun-00	31.4%	12110.0		12110
PGR	7	Peregrine Holdings Limited	Citadel Holdings Limited	Financial - Financial Services	Speciality and Other Finance - Investment Banks	22-Jul-02	28-Oct-02	53.0%	246.9	77.4	169.5
SNT	8	Santam Limited	Guadian National Insurance Company Limited	Insurance - Short Term Insurance	Insurance - Non-Life	11-Jan-00	30-Dec-99	45.3%	1590.3		1590.3
SOL	9	Sasol Limited	Condea	Non-Mining Resources - Chemicals, Oils and Plastics	Resources, Oil & Gas, Exploration and Production	11-Dec-00	01-Jul-00	27.0%	8178.0		8178