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The impact of cross border mergers and acquisitions on the operating financial and short term share price performance of acquiring companies listed on the Johannesburg Stock Exchange

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

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ABSTRACT

Mergers and acquisitions are a key component in the toolbox of business strategies that companies employ to improve organisational performance. Empirical studies that focus on domestic mergers and acquisitions activity in developed countries are numerous, however there remains a limited amount of research into the effects of cross border mergers and acquisitions on the performance of acquiring companies, especially in emerging markets. This research examined whether cross border mergers and acquisitions concluded by acquiring companies listed on the Johannesburg Stock Exchange have a positive or negative impact on the operating financial and short term share price performance of the listed acquirer.

A quantitative approach was adopted for the purpose of this research. In order to analyse the impact of cross border mergers and acquisitions transactions on the share price and operating financial performance of listed acquiring firms secondary data was utilised. The research incorporated publicly available daily share trading data for shares traded on the Johannesburg Stock Exchange and financial and accounting data sourced from McGregorBFA. In addition, the sample of cross border mergers and acquisitions transactions was obtained from the MergerMarket database. Purposive sampling was applied to select an initial sample of 44 transactions. Based on the exclusion of confounding events a final sample of 29 transactions was tested. Given the small sample size, and that confounding events were determined not to have a material impact on the cross border transactions, comparative analysis was performed using the initial sample of 44 transactions. Different lenses were applied for testing financial performance by using three performance measures. These included abnormal share price returns; key financial performance ratios and industry adjusted operating cash flow return on assets. Various short-term event windows were analysed for each of these measures.

Parametric tests including t-tests for unequal variance and paired t-tests were applied in the research. Given the small sample size non-parametric testing in the form of Wilcoxon Signed Rank Sum tests was also applied. In addition, bootstrapping was applied to the cumulative average abnormal returns. This research concluded that both the short-term share price and operating financial performance of acquiring companies listed on the Johannesburg Stock Exchange does not improve significantly in the short-term post the cross border merger or acquisition transaction.

KEYWORDS

Mergers; acquisitions; cross border; short term; performance

DECLARATION

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

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Gareth Viljoen
11 November 2013

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Firstly I would like to dedicate this research project to the Lord – thank you for the strength and endurance provided to me over the last two years.

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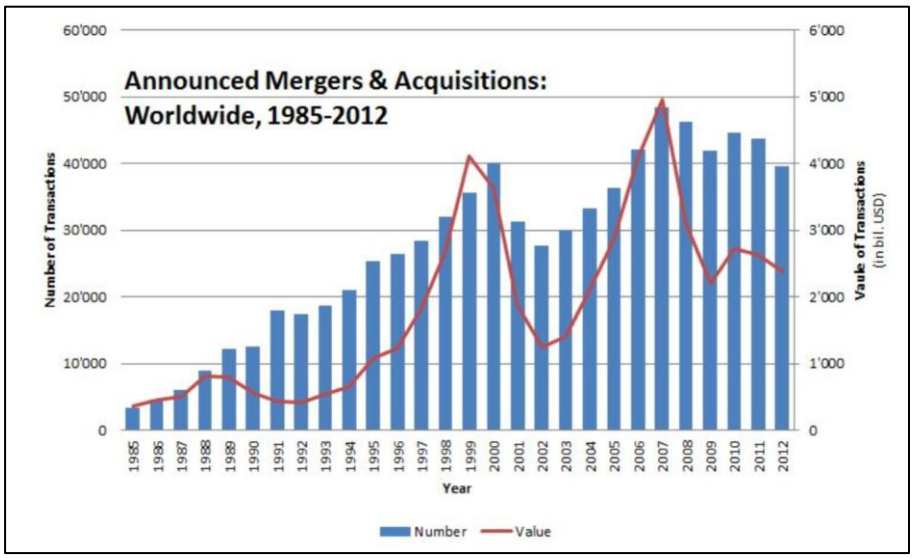
CHAPTER 1 - RESEARCH PROBLEM AND PURPOSE

1.1 Introduction

Mergers and acquisitions are a key component in the arsenal of business strategies that companies employ to improve organisational performance. The recent impact of globalisation, increased competition and the rise of emerging markets has created stimulus for companies to enter into mergers or acquisitions in order to remain competitive; access emerging technologies or new markets; and to grow market share, revenue and profitability (Vazirani, 2012).

Figure 1-1 reflects the global trend in mergers and acquisitions for the period 1985 to 2012, where there have been two distinct waves in the volume and value of mergers and acquisitions transactions. Transaction volumes and values peaked in 2007, with approximately 48,000 global transactions taking place with a combined value of approximately five trillion US dollars (Institute of Mergers, Acquisitions and Alliances, 2012). The subsequent turbulence caused by the global financial crisis which took effect in 2008, resulted in a decline in this trend, with approximately 39,000 transactions amounting to two and a half trillion US dollars taking place in 2012 (Institute of Mergers, Acquisitions and Alliances, 2012).



Source: Institute of Mergers, Acquisitions and Alliances (2012)

Figure 1-1: Trends in global mergers and acquisitions

Despite these two distinct phases of volatility in global activity, cross border mergers and acquisitions activity has grown over the last 20 years, with the average annual

growth rate in value and number of transactions increasing by 43% and 31% respectively (Uddin & Boateng, 2009). Cross border merger and acquisition activity increased by 36% in 2010, with a total transactional value amounting to $339 billion (United Nations Conference on Trade and Development, 2011). Transactional values subsequently increased by 53% to $526 billion in 2011. (United Nations Conference on Trade and Development, 2012). The performance of cross border mergers and acquisitions, especially those in emerging markets, however remains largely unexplored from an academic standpoint (Bertrand & Betshinger, 2011).

Cross border mergers and acquisitions are often utilised by companies as a strategic initiative to expand their market for their goods or services; gain new knowledge; acquire new capabilities or technologies; or to avoid potential future threats from competitors (Shimizu, Hitt, Vaidyanath & Pisano, 2004). While there are similarities in the dynamics underlying both domestic and cross border mergers and acquisitions, certain challenges can be experienced with the latter. Firms engaging in cross border mergers and acquisitions are exposed to various risks including “liability of foreignness” and “double layered acculturation” (Shimizu *et al.,* 2004, p. 310). These risks arise from various causes such as differences in national culture, business practices, institutional requirements and regulations and customer preferences (Shimizu *et al*., 2004).

1.2 Research title

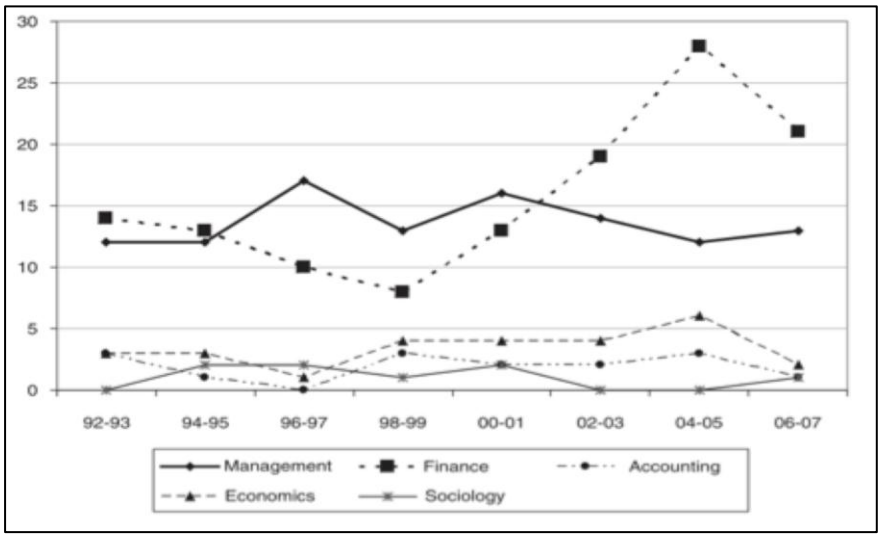
The impact of cross border mergers and acquisitions on the operating financial and short-term share price performance of acquiring companies listed on the Johannesburg Stock Exchange.

1.3 The research problem

The purpose of this research is to determine whether cross border mergers and acquisitions concluded by acquiring companies listed on the Johannesburg Stock Exchange have a positive or negative impact on the operating financial performance and short-term share price performance of the listed acquirer.

1.4 Research motivation

The topic of mergers and acquisitions has attracted interest from various academic and management disciples over the years, with Cartwright and Schoenberg (2006) and Haleblian, Devers, McNamara, Carpenter and Davidson (2009) agreeing that there is a multi-disciplinary review of research relating to this field of study. Haleblian *et al.* (2009) clearly indicated in figure 1-2 where the focus of research into mergers and acquisitions has been placed.



Source: Haleblian *et al.* (2009)

Figure 1-2: Trends in research on mergers and acquisitions - Number of articles by discipline

The analysis revealed that the predominant areas of research undertaken included management and finance, with less focus having been placed on accounting, economics and sociology (Haleblian *et al.*, 2009). Cartwright and Schoenberg (2006) provided a similar view, suggesting that financial and market studies have been the core focus of research into mergers and acquisitions.

One of the intentions of this study was to contribute to the field of accounting by analysing the impact of cross border mergers and acquisitions on the operating financial performance of acquiring companies.

1.4.1 Supporting evidence

It is estimated that currently, global financial holdings of excess capital amount to $300 trillion dollars (Harding, Harris, Jackson & Shankar, 2013). The recent global financial crisis has resulted in companies being reluctant to enter into mergers and acquisitions and hence companies have held onto cash. This has led to the abundance of capital reserves, which has in turn resulted in a reduction in interest rates (Grant Thornton, 2012). Given the low cost and availability of capital it is predicted that global mergers and acquisitions will start to increase (Harding *et al.*, 2013). Based on a recent survey performed, Grant Thornton (2013) (an accounting and advisory firm) is of the view that there is an increased appetite for cross border merger and acquisition activity. Given the various unresolved economic and regional issues that remain in 2013, some companies may hold back on committing to such transactions for the next three years

(Grant Thornton, 2013). Despite this, however, cross border mergers and acquisitions are still key facilitators of growth (Grant Thornton, 2013).

Empirical studies which focus on domestic mergers and acquisitions activity in developed countries are numerous, however despite the global interest and activity in cross border mergers and acquisitions, there appears to be a limited amount of research and empirical evidence in this area (Bertrand & Betshinger, 2011). This is particularly the case where emerging markets are concerned. In their individual research into cross border mergers and acquisitions, Ismail, Abdou and Annis (2011); Stiebale and Trax (2011); Bhagat, Malhotra and Zhu (2011); and Zhu and Jog (2012) all expressed similar views with respect to this limitation.

Although the recent global financial crisis has had a negative impact on the value and volume of global mergers and acquisitions, mergers and acquisitions activity in emerging markets has displayed resilience (African Development Bank, 2013). Africa in particular has shown economic growth with an associated increase in mergers and acquisitions activity, with deals in South Africa for 2012 accounting for 57% ($12.2 billion) of the total activity within Africa (African Development Bank, 2013).

Stiebale and Trax (2011) argued that there is a limitation in the availability of empirical evidence of the effects of cross border mergers and acquisitions specifically with reference to investing companies, given that cross border mergers and acquisitions differ considerably from domestic or national transactions. Bhagat *et al.* (2011) were of the view that there are few academic papers that consider the financial impact of cross border mergers and acquisitions on companies in emerging markets. Zhu and Jog (2012) noted that cross border mergers and acquisitions have become a foundational building block of foreign direct investment in emerging economies, however there is limited evidence available with respect to the effects that these cross border mergers and acquisitions have on companies and shareholders. Bertrand and Betshinger (2011) indicated that despite emerging markets having an increased share in cross border transactions, research is scarce.

1.4.2 Relevance to South Africa

Foreign direct investment has become an important capital flow for emerging markets, where foreign direct investment can be categorised as either (1) a greenfield investment, or (2) a cross border merger and acquisition transaction (Agbloyor, Abor, Adjasi & Yawson, 2012). While cross border mergers and acquisitions have

traditionally dominated foreign direct investment flows in developed economies, they have become a major source of financing in emerging markets. African financial markets have experienced various reforms in recent years, hence creating stimulus for cross border mergers and acquisitions to become a key mode of entry into these markets (Agbloyor *et al.*, 2012). From 2000 to 2009, the Southern and Northern African markets were the two most active for cross border mergers and acquisitions, with South Africa leading the way (Agbloyor *et al.*, 2012).

The positive level of economic growth recently experienced in Africa has resulted in an increase in deal volumes, particularly in the consumer, telecommunications, mining and energy sectors (MergerMarket, 2012). South African companies have been at the forefront of African mergers and acquisitions activity, given that the South African business environment is mature (MergerMarket, 2012). In addition, South Africa has some of the largest foreign direct investment flows on the continent, with flows exceeding three billion US dollars in 2012 (United Nations Conference on Trade and Development, 2012).

In the context of the above, and based on a preliminary review of available research, there do not appear to have been any specific studies relating to the impact of cross border mergers and acquisitions on the operating financial and short-term share price performance of companies in South Africa.

1.5 Research purpose and objective

Despite mergers and acquisitions being a popular method for creating strategic growth, a review of the available literature shows that the performance of cross border mergers and acquisitions has not been well clarified from an empirical point of view. This is especially true of emerging markets (Song, Kueh, Rahman & Chu, 2011).

This study attempts to add to the body of knowledge by determining the extent to which relationships can be identified between variables, so as to provide insight into the impact that cross border mergers and acquisitions transactions have on the operating financial and short-term share price performance of acquiring companies listed on the Johannesburg Stock Exchange. These variables, on a pre- and post-acquisition basis, include:

- Operating financial performance, including operating cash flows; return on assets; return on equity; earning per share, and
- Listed short-term share price performance.

Studies undertaken into mergers and acquisitions in the South African context by Smit and Ward (2007), Kyei (2008), and Halfer (2011) considered the impact of mergers and acquisitions on particular variables, namely long-run financial performance, share price performance, and cash flow returns of acquiring companies listed on the Johannesburg Stock Exchange. Ernst & Young compiled a database of mergers and acquisitions which was used as a source for sampling purposes in these studies. This particular database was, however, discontinued in 2009. This study proposes utilising the MergerMarket database, which is a global database of mergers and acquisitions. The abovementioned studies were also limited by small sample sizes and short coverage periods. In addition, they did not specifically address the performance of cross border merger and acquisition transactions.

1.6 Scope

The scope of the research is limited to South African acquirers who have undertaken cross border merger or acquisition transactions. The research focused on the impact of the transaction on the 1) the short-term share price performance around acquisition date and 2) operating financial performance of the listed acquirer pre- and post the transaction. Given limitations on time, the research did not include an analysis of the long term performance of the acquirer where long term studies examine the performance of the acquiring company for a number of months post closure of the deal. In addition, the scope of the study only included those acquirers who were listed on the Johannesburg Stock Exchange, and therefore does not include instances where an unlisted company acted in the role of acquirer.

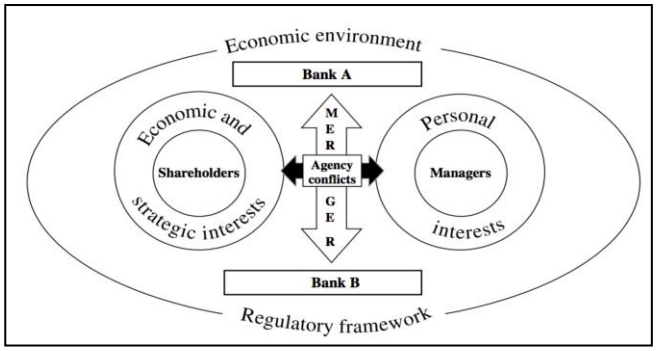
CHAPTER 2 - LITERATURE REVIEW

The literature review discusses relevant academic theory underlying the purpose and performance of mergers and acquisitions transactions and cross border mergers and acquisitions transactions. The different types of research streams applied in academic literature to study the performance of merger and acquisition transactions are reviewed. These include stock market-based studies, accounting-based studies and subjective assessment studies. The findings of various academic studies relating specifically to stock market and accounting based studies are compared. Finally, the literature review discusses methodologies employed in academic literature to study the performance of cross border merger and acquisition transactions from the perspective of the acquirer.

2.1 The purpose of mergers and acquisitions transactions

Mergers and acquisitions activity has been prevalent in almost every industry including, amongst others, pharmaceuticals; textiles; banking; consumer durables; food production; mining; chemicals and vehicle manufacturing (Jayesh, 2012). Given the impact of globalisation, firms have to invent new ways of competing in order to remain competitive (Shukla & Gekara, 2010). Traditional ways of growing a business organically may no longer suffice in isolation; firms have to make strategic decisions today in order to stake a claim in tomorrow's markets (Shukla & Gekara, 2010). Mergers and acquisitions are one of the key universal tools that enable firms to grow and compete.

There are various reasons that motivate the decision to enter into a merger or acquisition, the principle drivers being to increase shareholder value by reducing costs, creating economies of scale and scope, or increasing revenue (Figueira, Nellis & Schoenberg, 2007). There is, however, potential for conflict to arise given that different motives may exist between shareholders and management. Personal interest, strategic reasoning or economic factors may drive these underlying differences (Figueira *et al*. 2007). Economic and strategic reasoning is considered to play a fundamental role in stimulating mergers or acquisitions activity with the objective of, amongst others, gaining new technologies, securing resources or entering new markets. The personal interest of management is a potential motivator with the objective of increasing their power or salaries (Figueira *et al*. 2007). The interaction of the above is reflected in figure 2-1.



Source: Figueira *et al.* (2007)

Figure 2-1: Inter-relationships in the process of mergers and acquisitions

Haleblian *et al.* (2009) suggested that the reasons as to why companies enter into mergers and acquisitions can be broadly classified into four categories, which include 1) value creation; 2) managerial self-interest; 3) environmental factors; and 4) firm characteristics. They advocated that there are various underlying antecedents which support these four categories. These provide additional rationale as to why firms acquire or merge with other firms. Value creation primarily includes increasing market power and generating efficiencies. Management can act in their own self-interest based on ego gratification or by improving personal compensation. Environmental factors may contribute to mergers and acquisitions transactions given environment uncertainty and regulation, or resource dependency. Firm characteristics include factors such as acquisition experience or firm strategy and position (Haleblian *et al.*, 2009). These underlying antecedents are included in table 2-1:

Table 2-1: Antecedents as to why firms acquire

Value Creation	Market power
	Efficiency
	Resource deployment
	Market discipline
Managerial self interest	Compensation
	Hubris
	Target defence tactics
Environmental factors	Environmental uncertainty
	Regulation
	Imitation
	Resource dependence
	Network ties
Firm characteristics	Acquisition experience
	Firm strategy and position.

Source: Haleblian *et al.* (2009)

Andrade, Mitchell and Stafford (2001) were of the opinion that synergies resulting from mergers and acquisitions transactions are a key driver of value. The authors identified three key sources of synergies, namely (1) financial synergy, (2) operational synergy, and (3) managerial synergy. Furthermore, merger and acquisition synergy can be defined as "the present value of the net additional cash flow that is generated by a contribution of two companies that could not have been generated by either company on its own" (Ficery, Herd & Pursche, 2007, p. 35).

Despite the attention that mergers and acquisitions have received, together with the expectation that such transactions generate synergies and value, Vazirani (2012) was of the view that they do not always achieve the anticipated benefits. Based on various studies on mergers and acquisitions performance it would appear that targeted firms often reap positive returns, however the performance of acquiring firms is rather mixed (Uddin & Boateng, 2009). This results in complexity, creating a challenge to come to an overall conclusion on performance.

The remainder of this chapter will focus on (1) the performance of mergers and acquisitions in general; (2) the types of research typically undertaken to analyse performance; and (3) cross border mergers and acquisition transactions and the performance thereof. In addition, an overview of event study methodology will be discussed, followed by a more detailed explanation in Chapter 4.

2.2 The performance of mergers and acquisitions

The primary determinant of the success or failure of a merger or acquisition has historically been based on the achievement of financial, accounting or strategic objectives (Vazirani, 2012). There are additional parameters that can also be applied to determine whether the outcome of a merger or acquisition has been successful or not, including strategic management measures and economic measures (Vazirani, 2012).

Despite the amount of research undertaken with respect to the performance of mergers and acquisitions, Zollo and Meier (2008) found that there is debate as to how to measure the performance of mergers and acquisitions transactions. Bruner (2002) undertook a comprehensive study into the performance of 44 acquiring firms involved in mergers and acquisitions transactions for the period 1978 to 2001. The overall conclusion that the author reached was that aggregate abnormal (market-adjusted) returns to acquiring firms are zero. Of the 44 acquiring firms studied, 20 reflected negative returns (13 of the 20 reflected significantly negative returns), while 24 studies

reflected positive returns (17 of the 24 reflected significantly positive returns) (Bruner, 2002). Given the relatively even distribution, Bruner (2002) noted that from an acquirer's perspective, one-third of merger and acquisition transactions destroyed value, one-third conserved value and one-third created value.

Based on a review of 88 published papers, Zollo and Meier (2008) concluded that the majority of research relating to the performance of mergers and acquisitions can be classified into three broad research streams. The first employs stock market-based measures, while the second applies accounting-based measures. The third relies on management's assessment of the degree to which the original goals of a merger and acquisition are achieved (Zollo & Meier, 2008). Papadakis and Thanos (2010) compared the three measures, the results of which are included in table 2-2.

It becomes clear from table 2-2 that there is debate as to whether mergers and acquisitions are successful from a financial point of view. According to the accounting studies undertaken, evidence of improved post-acquisition performance is blurred, with some studies indicating negative returns whilst others reflect positive returns (Papadakis & Thanos, 2010). More specifically, in the case of short-term studies focussing on share price, the majority suggest that acquiring firms earn negative returns, whilst long-term studies suggest negative or insignificant abnormal returns (Papadakis & Thanos, 2010). Of the mergers and acquisitions that are measured, according to management's assessment of the degree to which goals have been achieved, approximately half fail to achieve these goals (Papadakis & Thanos, 2010).

Table 2-2: A synopsis of the research on the performance of acquisitions

Measure	Definition of failure and methodology, metrics	Advantages	Disadvantages	Findings	Studies and their scholarly origin
Accounting-based measures	Failure exists when the adjusted (for industry and size effects) post-merger returns of the combined firm are lower than the average size and industry adjusted pre-bid returns of each of the merging firms (Sudarsanam, 2003). Examples of accounting metrics include ROA, return on investment, cash flows etc. Zollo and Meier (2008) argue that accounting-based measures have been used in 25 (29%) of the 87 papers that they reviewed.	Synergies obtained from an acquisition are reflected in long-term accounting measures (Hitt *et al.*, 1998; Tuch and O'Sullivan, 2007). Measure direct effects as opposed to CARs which measure investors' expectations for the future (Grant, Jammine and Thomas, 1988).	Narrowest measure as they gauge only economic performance (Lubatkin and Shrieves, 1986; Venkatraman and Ramanujam, 1986). Reflect past performance of the firm (Chenhall and Langfield-Smith, 2007; Montgomery and Wilson, 1986). Aggregate data and not information for specific acquisitions (Bruton, Oviatt and White, 1994; Chenhall and Langfield-Smith, 2007; Datta, 1991; Lubatkin, 1983; Montgomery and Wilson, 1986). Should be avoided in cross-border acquisitions due to the different accounting standards from country to country (Hult *et al.*, 2008; Schoenberg, 2006)	No clear evidence of improved post-acquisitions performance (Tuch and O'Sullivan, 2007, p. 152) with the majority of studies indicating negative returns (e.g. Dickerson, Gibson and Tsakalotos, 1997; Kumar, 1984; Lu, 2004; Meeks, 1977) and the minority positive returns (e.g. Healy, Palepu and Ruback, 1992, 1997; Manson, Stark and Thomas, 1994).	Mainly used in the early years by economic scholars (e.g. Goldberg, 1983; Steiner, 1975) and later employed by strategic management scholars (e.g. Haleblian and Finkelstein, 1999; Kusewitt, 1985; Ramaswamy, 1997; Zollo and Singh, 2004).
Stock-market-based measures	Studies employing stock-market-based measures are distinguished into short term and long term. In short-term studies, researchers compare the returns to shareholders of both bidders and targets during a period surrounding the takeover announcement (usually some days), to 'normal' returns from a period (e.g. from −120 to −30 days) unaffected by the event (Sudarsanam, 2003). The acquisition is considered to be successful if the CARs are positive.	Direct measure of stock-holder value (Lubatkin and Shrieves, 1986). Data are easily accessible for all publicly traded firms (Campa and Hernando, 2004; Lubatkin and Shrieves, 1986; Schoenberg, 2006).	As regards short-run studies they measure investors' expectations and not realized performance (Montgomery and Wilson, 1986; Schoenberg, 2006). Cannot be used for privately held firms. Fail to take into account that acquisitions have multiple motives (Brouthers, van Hastenburg and van der Ven, 1998).	*Short-term studies* Shareholders of the target firms achieve significant gains due to the premium paid (e.g. Markides and Oyon, 1998; Sudarsanam and Mahate, 2003) while results for shareholders of the acquiring firms are less conclusive with most studies suggesting negative returns (e.g. Limmack, 1991; Sudarsanam and Mahate, 2003). *Long- term studies* The majority of studies (e.g. Limmack, 1991; Sudarsanam and Mahate, 2003, 2006) suggest either negative or insignificant abnormal returns	Mainly used by finance scholars (Limmack, 1991; Sudarsanam and Mahate, 2003, 2006). Also, stock-market-based measures have appeared in the strategic management literature (e.g. Carow, Heron and Saxton, 2004; Chatterjee *et al.*, 1992; Fowler and Schmidt, 1988; Haleblian and Finkelstein, 1999).

	In long-term studies, based on the premise that an acquisition may have a negative impact on the long-run wealth of shareholders (Tuch and O'Sullivan, 2007, p. 148) researchers evaluate post-merger performance of acquirers usually some years after the deal closure (e.g. 5 years). Zollo and Meier (2008) argue that stock-market-based measures have been used in 52 (69%) of the 87 papers that they reviewed.			in the long run for acquiring firms (for a review refer to Tuch and O'Sullivan, 2007).	
Managers' subjective assessments	Executives of the acquiring firm are asked to rate the extent to which the original goals set before the acquisition are effectively materialized or not. Questions refer to both financial (e.g. ROA, return on investment, sales growth, growth in profits) and non-financial factors (e.g. managerial prestige, competitive position, personnel development possibilities). Failure exists when expectations are higher than their materialization. Zollo and Meier (2008) argue that managers assessments have been used in 12 (14%) of the 87 papers that they reviewed.	Suitable when researchers encounter problems obtaining objective measures of performance (Dess and Robinson, 1984, p. 265). M&A performance is captured as a multidimensional phenomenon (Larsson and Finkelstein, 1999; Schoenberg, 2006). Takes into consideration that M&As have multiple motives (Brouthers, van Hastenburg and van der Ven, 1998).	Responses may be subject to managerial bias (Lubatkin and Shrieves, 1986; Schoenberg, 2006). Need for multiple respondents (Bowman and Ambrosini, 1997; Miller, Cardinal and Glick, 1998).	Research from both academics (e.g. Hunt, 1990; Kitching, 1974; Rostand, 1994; Schoenberg, 2006) and consultants (e.g. Adolph *et al.*, 2001; Coopers and Lybrand, 1992) suggests that around 44%–55% of the acquisitions fail to achieve their original goals.	Mainly employed by strategic management and organization behaviour scholars (e.g. Angwin, 2004; Brouthers, van Hastenburg and van der Ven, 1998; Bruton, Oviatt and White, 1994; Cartwright and Cooper, 1993; Datta, 1991; Homburg and Bucerius, 2006; Ingham, Kran and Lovestam, 1992; Larsson and Finkelstein, 1999; Vaara, 2002). Also used by consultants (e.g. Adolph *et al.*, 2001; Coopers and Lybrand, 1992).

Source: Papadakis and Thanos (2009)

2.2.1 Stock market based measures

The principle underlying stock market-based measurement is that the company's goal is to maximise shareholder wealth. Hence the measure of performance of a merger or acquisition transaction includes an examination of how the acquiring to target company's share price evolves over a period of time (Papadakis *&* Thanos, 2010). These studies have traditionally been broken into short-term and long-term event studies.

2.2.1.1 Short-term studies

Andrade, Mitchell and Stafford (2001) stated that the most statistically reliable evidence as to whether mergers and acquisitions generate wealth and value for shareholders is derived from short-term event studies. In the short-term, the average abnormal stock market reaction of the market to the merger or acquisition announcement is used as the determinant of the extent of value creation or destruction (Andrade *et al*., 2001). The reasoning is that stock prices will adjust quickly in the short-term in an efficient capital market, given the availability and free flow of public information. Andrade *et al*. (2001) further suggested that the two most commonly used event windows relating to short-term performance measurement include the three days immediately surrounding the merger or acquisition announcement, and a longer period which begins a number of days prior to the announcement and ends at the close of the merger or acquisition transaction.

Short-term studies undertaken by Delong (2001) and Sudarsanam and Mahate (2003) noted that the shareholders of target companies benefit from greater gains due to the larger premiums paid. On the other hand, studies relating to the returns earned by shareholders of acquiring companies are inconclusive, with some studies reporting positive returns (Ben-Amar & Andre, 2006) while others report negative returns (Sudarsanam & Mahate*,* 2003).

Based on the study by Bruner (2002), event studies reporting negative short-term share price returns to acquirers are reflected in table 2-3, while those reporting positive short-term prices are reflected in table 2-4. Those studies with event windows up to 10 days post-acquisition have been included to reflect the negative or positive short-term share price performance.

Table 2-3: Event studies reporting negative short-term share price returns to acquirers

Study	Cumulative Abnormal Returns	Sample Size	Sample Period	Event Window (Days)
Dodd (1980)	-1.09%** -1.24%	60 66	1970 - 1977	(-1,0)
Asquith, Bruner, Mullins (1987)	-0.85%**	343	1973 - 1983	(-1,0)
Varaiya, Ferris (1987)	-2.15%**	96	1974 - 1983	(-1,0)
Morck, Schleifer, Vishny (1990)	-0.70%	326	1975 - 1987	(-1,1)
Franks, Harris, Titman (1991)	-1.45%	399	1975 - 1984	(-5,5)
Servaes (1991)	-1.07%**	384	1972 - 1987	(-1, close)
Jennings, Mazzeo (1991)	-0.8%**	352	1979 - 1985	(-1,0)
Bannerjee, Owers (1992)	-3.3%**	57	1978 - 1987	(-1,0)
Byrd, Hickman (1992)	-1.2%**	128	1980 - 1987	(-1,0)
Healy, Palepu, Ruback (1992)	-2.2%	50	1979 - 1984	(-5,5)
Kaplan, Weisbach (1992)	-1.49%**	271	1971 - 1982	(-5,5)
Berkovitch, Narayanan (1993)	-$10m	330	1963 - 1988	(-5,5)
Sirrower (1994)	-2.3%**	168	1979 - 1990	(-1,1)
Mulherin, Boone (2000)	-0.37%	281	1990 - 1999	(-1,1)
Mitchell, Stafford (2000)	-0.14%** -0.07%	366 366	1961 - 1993	(-1,0)
Walker (2000)	-0.84%** -0.77%	278 278	1980 - 1996	(-2,2)
Houston, James, Ryngaert (2001)	-4.64% **(1985-90) -2.61% (1991-96) -3.47%** (all)	27 37 64	1985 - 1996	(-4,1)
** Considered to be statistically significant				

Source: Bruner (2002)

Based on short-term share price performance, 12 of the 17 studies reflected significantly negative performance. The study undertaken by Jennings and Mazzeo (1991, as cited in Bruner, 2002), who studied 352 transactions between 1979 and 1984, showed the smallest statistically significant short-term cumulative abnormal return at -0.8%. The study undertaken by Houston, James and Ryngaert (2001, as cited in Bruner, 2002), who studied 27 transactions between 1985 and 1996, showed the largest statistically significant short-term cumulative abnormal return of -4.64%.

Table 2-4: Event studies reporting zero or positive returns to acquirers

Study	Cumulative Abnormal Returns	Sample Size	Sample Period	Event Window (Days)
Dodd, Ruback (1977)	+2.83% ** +0.58%	124 48	1958 - 1978	(0,0)
Kummer, Hoffmeister (1978)	+5.20%**	17	1956 - 1970	(0,0)
Bradley, Desai, Kim (1982)	+2.35%**	161	1962 - 1980	(-10,+10)
Asquith (1983)	+0.20% +0.50%	196 89	1962 - 1976	(-1,0)
Eckbo (1983)	+0.07% +1.20%**	102 57	1963 - 1978	(-1,0)
Dennis, McConnell (1986)	-0.12% (-1,0) +3.24% (-6,+6)**	90	1962 - 1980	(-1,0)
Bradley, Desai, Kim (1988)	+1%**	236	1963 - 1984	(-5,5)
Jarrell, Poulsen (1989)	+0.92%**	461	1963 - 1986	(-5,5)
Lang, Stulz, Walklling (1989)	0%	87	1968 - 1986	(-5,5)
Loderer, Martin (1990)	+1.72%** (1966-68) +0.57%** (1968-80) -0.07% (1981-84)	970 3401 801	1966 - 1984	(-5,0)
Smith, Kim (1994)	+0.50% -0.23%	177	1980 - 1986	(-5,5) (-1,0)
Lyroudi, Lazardis, Subeniotis (1999)	0%	50	1989 - 1991	(-5,5)
Mulherin (2000)	+0.85%**	161	1962 - 1997	(-1,0)
Kohers and Kohers (2000)	1.37% **(cash deals) 1.09%** (stock) 1.26% (whole sample)	961 673 1634	1987 - 1996	(0,1)
** Considered to be statistically significant				

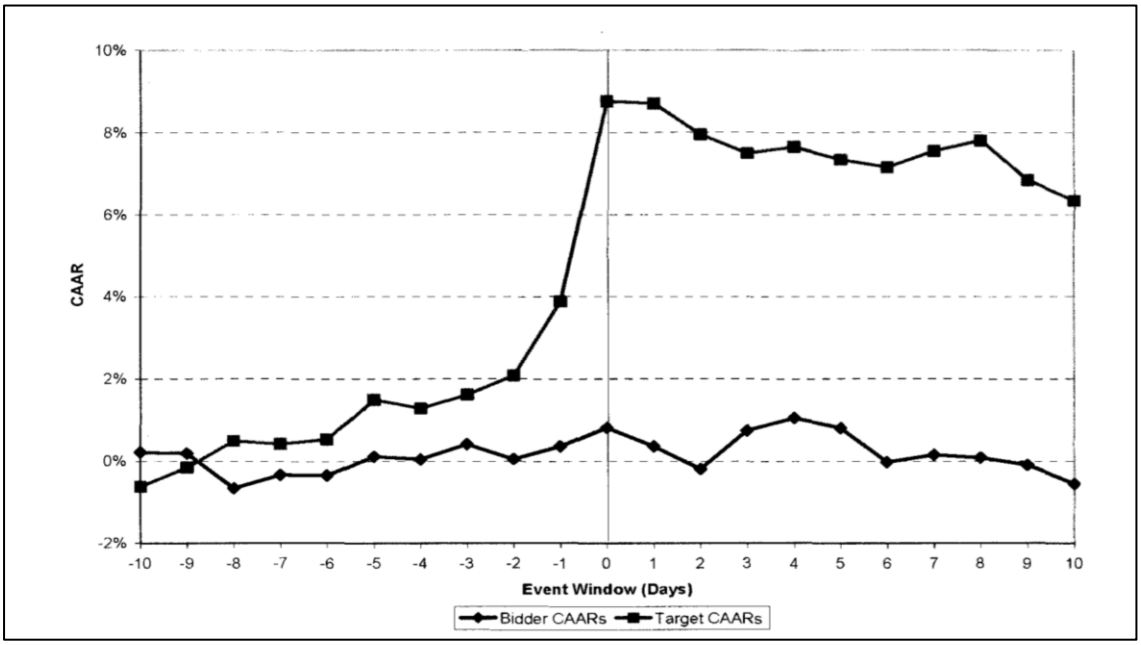
Source: Bruner (2002)

Of the 14 short-term studies reflecting positive cumulative abnormal returns, 10 studies reflected statistically significant positive short-term cumulative abnormal returns. The study undertaken by Kummer and Hoffmeister (1978, as cited in Bruner, 2002) reflected the largest statistically positive short-term cumulative abnormal return of +5.20%. Kummer and Hoffmeister (1978, as cited in Bruner, 2002) studied 17 transactions between 1956 and 1970. Loderer and Martin (1980, as cited in Bruner, 2002) noted the smallest statistically positive short-term cumulative abnormal return of +0.57% in their study involving 3,401 transactions between 1968 and 1980.

Studies that have been undertaken on mergers and acquisitions in South Africa predominantly focused on the short-term effects of the merger or acquisition on the share price of the acquiring company (Smit & Ward, 2007). Most of these studies used Average Cumulative Abnormal Returns, where some found significant negative

Average Cumulative Abnormal Returns yet others found significant positive Average Cumulative Abnormal Returns (Smit & Ward, 2007). These studies do not, however, shed light on the short-term performance of cross border mergers and acquisitions in South Africa.

Mushidzhi and Ward (2004) investigated acquisitions on the Johannesburg Stock Exchange to determine whether the method of payment used for the merger or acquisition transaction had an impact on shareholder returns around the acquisition date. Cumulative average abnormal returns for both acquirers and targets were analysed (Mushidzhi and Ward, 2004). Based on a [-10;+10] event window around the acquisition announcement date, the acquirer's shareholders lost approximately 0.55% (which was considered insignificant). The target company's shareholders however gained approximately 6.33% (Mushidzhi & Ward, 2004). Figure 2-2 reflects these cumulative average abnormal returns for both acquirer and target companies.



Source: Mushidzhi and Ward (2004)

Figure 2-2: Cumulative average abnormal returns for acquirers and target companies

2.2.1.2 Long-term Studies

Long-term studies examine the performance of the acquiring company for a number of months post the closure of the deal. Based on studies performed in this area, merger and acquisition transactions tend to generate either negative or insignificant returns for the acquiring company in the long run (Papadakis & Thanos, 2010). Of the 44 studies

undertaken by Bruner (2002), 11 of these constituted long-term event studies where the event study window varied from 356 days to 1,250 days. Eight of the 11 studies (focusing on returns to acquiring firm shareholders) produced statistically significant negative returns, with the largest negative cumulative average return amounting to -18% and the smallest to -4%. Bruner (2002) suggested that long-term returns may be impacted by confounding events, an increase in information about deals that become available to the market over a longer time period, as well as investors having second thoughts on the deal.

In a long-term share price return event study undertaken by Kyei (2008) on acquiring companies listed on the Johannesburg Stock Exchange, an insignificant positive average cumulative abnormal return was noted. The sample utilised in this study was small, including only 14 acquisitions, and was not clear about the impact on the performance of cross border mergers and acquisitions transactions in the South African context.

Given the scope of this research, together with the limited time available to the researcher, the effects on long-term share price performance were excluded from this study. Song *et al.* (2011) were also of the view that it is difficult to conduct long-term studies, given that it is challenging to filter out the effects of confounding and other non-related events that may occur over a long period of time. The results of longer-term studies therefore risk the chance of being contaminated by these non-related or confounding events.

2.2.2 Operating financial performance studies

Operating financial performance studies focus on accounting measures such as operating margins, return on equity, return on assets, or earnings per share (Andrade *et al*., 2001). These studies attempt to determine whether the benefits of mergers and acquisition transactions are realised through operating cash flows as opposed to increases in share price (Andrade *et al*., 2001).

From a historical perspective, Healy, Palepu and Ruback (1992) created the foundation for the application of accounting returns and operating financial performance as a methodology to study the performance of mergers and acquisitions. Of significance is that Healy *et al.* (1992) defined operating cash flow as sales minus cost of goods sold, minus selling and administrative expenses, plus depreciation and goodwill amortisation expenses. The primary focus of the above involved applying operating cash flow as a

measure of operating performance, which was adjusted against industry benchmarks in order to evaluate performance for a period of five years post-acquisition (Krishnakumar & Sethi, 2012). Healy *et al.* (1992) noted that based on a study of the post-acquisition operating performance of 50 large mergers in the United States completed between 1979 and 1983, evidence of superior pre-tax operating cash flow return on assets was obtained. The overall annual median pre-tax return amounted to 2.8%, which was seen to be statistically significant (Healy *et al.*, 1992). Evidence of a positive correlation between an increase in share price return and subsequent operating financial performance was also obtained (Healy *et al.*, 1992).

Five years later, Healy, Palepu and Ruback (1997) undertook an additional study of cash flow performance of 50 large US takeover transactions, where an adjustment for the cost associated with the acquisition premium was made. The objective of this additional study was to determine whether strategic transactions, which are friendly in nature and involve firms in overlapping business, were more profitable than hostile takeovers involving firms with different businesses (Healy *et al.*, 1997). The study found that friendly takeovers performed better than hostile takeovers, whilst takeovers involving overlapping businesses outperformed takeovers involving different businesses (Healy *et al.*, 1997).

The study undertaken by Healy *et al.* (1997) did not reflect any statistically significant abnormal increases in industry adjusted cash flow returns on assets for the acquiring company. The median industry adjusted cash flow return on assets for this study amounted to 2.1% and an abnormal industry adjusted post takeover return of 1.1%. Healy *et al.* (1997) therefore concluded that on average, acquiring companies generated only sufficient cash flow to recover the premium paid.

In contrast, Ghosh (2001) argued that the results obtained by Healy *et al.* (1992) were potentially biased given that the study conducted by them applied regression analysis using industry median firms as a benchmark. Ghosh (2001) was of the view that measurement errors arising from the application of industry median firms as a benchmark were unlikely to be random. This was because merging firms would only enter into merger or acquisition transactions following a period of superior performance. Ghosh (2001) therefore advocated the use of an alternative benchmark and a research design that accounted for superior pre-acquisition performance. The pre- and post-acquisition performance of merging firms was therefore compared to matched firms based on pre-acquisition performance and size (Ghosh, 2001).

Similar to Healy *et al.* (1992), Ghosh (2001) defined operating cash flows as sales minus cost of goods sold, minus selling and administrative expenses, plus depreciation and goodwill amortisation expenses, so as to make comparisons between the two studies possible. Using this revised approach Ghosh (2001) tested a sample of 315 pairs of acquiring and target firms. Ghosh (2001) also did not find evidence of significant improvement in the operating financial performance or operating cash flow of merging firms post-acquisition.

Bruner (2002) subsequently reviewed 15 studies undertaken between 1977 and 2001, which provided mixed views as to the significance of performance of mergers and acquisitions. Based on table 2-5, 15 studies were undertaken, with eight of the studies reflecting an increase or no change in operating financial performance post-acquisition, while seven of the studies showed a decrease in operating financial studies post-acquisition (Bruner, 2002). The predominant measures utilised in this study included return on assets, return on equity, return on sales and operating cash flow returns

Table 2-5: Studies of operating financial performance

Author	Sample period	Sample size	Measure	Findings
Meeks (1977)	1964 - 1972	233	Return on assets	ROA declined in post-merger years.
Salter and Weinhold (1979)	Unknown	16	Return on equity	ROE and ROA significantly lower than that for the New York Stock Exchange.
Mueller (1980)	1962-1972	287	Return on equity, Return on assets, Return on sales.	Firms engaging in merger activity were less profitable.
Mueller (1985)	1950-1992	100	Market share	Firms involved in mergers and acquisitions suffered significant losses.
Ravenscraft and Scherer (1987)	1950-1977	471	Return on assets	Negative relationship between operating ROA and tender offer activity.
Ravenscraft and Scherer (1987)	1950-1977	471	Return on assets	Declines in return on assets for target companies.
Herman and Lowenstein (1988)	1977 – 1983	56	Return on capital	Return on capital for acquirers increased post-merger.
Seth (1990)	1962 – 1979	102	Value of equity	Increase in equity value and cash flows as a result of operational synergies post-acquisition
Healy, Palepu and Ruback (1992)	1979 – 1984	50	Asset turnover Operating cash flow margin	Merged firms showed significant abnormal improvement in asset productivity. No significant increases in cash flow.
Chatterjee and Meeks (1996)	1977 – 1990	144	Profitability returns	Pre 1985 – no significant increases in profitability returns post-merger. Post 1985 – significant increases in profitability returns post-merger.
Dickerson, Gibson and Tsakalotos (1997)	1948 – 1977	144	Return on assets	Post-acquisition ROA for acquirers is lower than for non-acquirers for the first five years.
Healy, Palepu and Ruback (1997)	1979 to 1984	50	Operating cash flow returns	Mergers and acquisitions resulted in a zero net present value based on operating cash flows.
Parrino and Harris (1999)	1982-1987	197	Operating cash flow return	Significant increase in operating cash flow return post-merger.
Parrino and Harris (2001)	1982-1987	197	Operating cash flow	Significant increase in operating cash flow return post-merger.

Gosh (2001)	1981 to 1995	315	Return on assets Operating cash flow	No change in return on assets post-acquisition. Cash flows increased significantly for cash based acquisitions.

Source: Bruner (2002)

Sharma and Ho (2002) applied a slightly different approach by utilising both cash flow and accrual-based accounting measures (such as return on equity and earnings per share) to study the impact of mergers and acquisitions on the operating performance of Australian companies. The purpose of utilising cash flow information was to eliminate the potential of accounting distortions artificially increasing profitability, and hence distorting the true impact of mergers and acquisitions on performance. Sharma and Ho (2002) did not find evidence of significant post-acquisition gains in the operating financial performance results.

More recently, Papadakis and Thanos (2010) provided support to the view that conflicting evidence exists with respect to the operating financial performance associated with mergers and acquisitions transactions. The authors suggested that return on assets is the most widely used metric applied to measure operating financial performance. This is because return on assets is less susceptible to upward or downward estimation bias caused by changes in bargaining power and/ or leverage as a result of merger or acquisition transactions (Papadakis & Thanos, 2010). When undertaking an analysis of return on assets, a period of at least two years should be analysed post the acquisition, given that the first two years are critical to the success of the merger or acquisition (Papadakis & Thanos, 2010).

Based on a study of South African domestic mergers and acquisitions, Smit and Ward (2007) concluded that mergers and acquisitions do not result in any improvement or deterioration in the operating financial performance of the acquiring company. More recently, Halfer (2011) undertook a study to determine the effect of mergers and acquisitions on the long run operating financial performance of acquiring companies listed on the Johannesburg Stock Exchange, where a sample of 29 acquisitions was studied. The conclusion reached indicated that mergers and acquisitions are value destroying in the first one to two years from an announcement date, however a reversal in this trend was noted in the third year post the acquisition date (Halfer, 2011).

Given the above, Ismail *et al.* (2011) suggested that there are various factors at play to which the uncertainty surrounding operating financial performance can be attributed.

These include (1) method of payment; (2) book to market ratio; (3) type of transaction; (4) cross border versus domestic transactions; (5) mergers versus tender offers; (6) firm size; (7) macro-economic conditions; and (8) time periods of the transaction. They therefore advocated that cross border mergers and acquisitions transactions have a role to play in the uncertainty associated with operating financial performance of such transactions. The abovementioned studies do not, however, shed light on cross border mergers and acquisitions as a differentiating factor.

2.2.3 Management's assessment of performance

According to Zollo and Meier (2008), management's assessment of performance includes cost improvements, cross selling of products, establishing new customer relationships and creating entirely new businesses. The concern with this approach is that management responses are subjective and are thus subject to bias (Papadakis & Thanos, 2010). Given the subjectivity involved in this approach, this study did not focus on management's assessment as a measure of performance.

2.3 Cross border mergers and acquisitions

Cross border mergers and acquisitions can be defined as the "combination of the assets and operations of two firms belonging to two different countries to establish a new legal entity" (United Nations Conference on Trade and Development World Investment Report, 2000, p. 99). Furthermore, the assets and operations of the acquired firm are consolidated into those of the foreign acquiring firm, resulting in control thereof by the acquirer (United Nations Conference on Trade and Development World Investment Report, 2000).

Recently, cross border mergers and acquisitions have increased in popularity (Song *et al.*, 2011). This increase in popularity has been facilitated by globalisation, technological development, liberalisation of trade and investment policies and a consolidation of industries (Song *et al.*, 2011). In addition, cross border mergers and acquisitions transactions have become a key constituent of foreign direct investment flows for both developed and emerging economies (Stiebale & Trax, 2011). Foreign direct investment flows can be broadly categorised as either greenfield investments or cross border mergers and acquisitions (United Nations Conference on Trade and Development, 2012). In the case of greenfield investments, a foreign company will establish a new venture in a target geographic market, whereby the foreign company exercises a high level of control over the venture (Shimizu *et al.*, 2004). The foreign company is however likely to face barriers of entry and incur high costs and spend time in order to establish the venture and the resultant operations, given the need to

develop new facilities; establish networks, distribution channels, and a workforce; and advertise its products and services (Shimizu *et al.*, 2004). On the other hand, in order to quickly enter a foreign market and reduce barriers to entry, a foreign company can acquire or merge with an existing company situated in the foreign market. The foreign company is able to gain access to markets, technology, and resources quickly, while at the same time retaining a degree of control over its investments and assets (Shimizu *et al.*, 2004).

Despite the increased popularity of cross border mergers and acquisitions transactions, empirical literature is limited to the extent that it explores the benefits and performance generated by such transactions (Song *et al.,* 2011). Questions also remain unanswered from the perspective of whether abnormal returns are realised post the announcement of these transactions (Song *et al.,* 2011). As noted in Chapter 1, this concern appears to be a common theme that has been identified in academic literature on the topic of cross border mergers and acquisitions and the performance thereof.

2.4 Determinants affecting cross border mergers and acquisitions

Multi-national companies from developed countries have historically been the driver of cross border merger and acquisition transactions, however more recently companies based in emerging economies have become participants in these transactions (Bhagat *et al.*, 2011). Bhagat *et al*. (2011) were of the view that the reasons for entering into, and factors influencing, cross border merger and acquisition transactions, appeared to be different when comparing emerging and developed economies.

In emerging markets the factors driving cross border mergers include the need for international exposure and experience, immaturity of their local capital markets and inadequate standards of corporate governance (Bhagat *et al.*, 2011). In many cases, the political, economic and regulatory environments in emerging economies have restricted growth and avenues of opportunity for companies domiciled in these economies (Bhagat *et al.*, 2011). Governments in many emerging economies are however moving to more open, liberalised and receptive economic policies, thus opening up these once closed economies and encouraging cross border merger and acquisition activity (Guillen & Garcia-Canal, 2009). Martynova and Renneboog (2008), suggested that cross border mergers and acquisitions transactions are utilised as a mechanism by acquirers that are domiciled in emerging economies to align or bootstrap themselves to better corporate governance standards, by acquiring a target

company domiciled in a developed economy. This in turn enables the acquiring company to increase its valuation.

Although the popularity of cross border mergers and acquisitions has increased, Mantecon (2009) identified various risks particular to these transactions, which can have an impact on the success and profitability thereof. The acquirer may often be unfamiliar with the culture, institutional values and accounting practices and disclosure requirements of the foreign target. Unfamiliar legal systems and differing levels of protection relating to property rights can impact future cash flows of the acquirer (Mantecon, 2009). These levels of uncertainty often limit the value of assets exchanged, which has a direct bearing on the levels of performance of the transaction (Mantecon, 2009).

2.4.1 Determinants of returns arising from cross border mergers and acquisitions

Two broad theories underlie the determinants of returns from cross border mergers and acquisitions (Bhagat *et al.*, 2011). Classical theory views value creation and wealth transfer as the primary determinants, while neo-classical theory considers the role that a country's institutional structure plays in protecting investor rights. Both the classical and neo-classical theories have predominantly been tested on cross border mergers and acquisitions by firms that are domiciled in developed economies (Bhagat *et al.*, 2011).

2.4.1.1 Classical theory

Certain sources of value creation in cross border mergers and acquisition transactions include:

- Diversification and efficient utilisation of the target company's assets;
- Synergies between the acquirer and the target company;
- Relative size of the target to the acquirer;
- Reduction of tax liability; and
- The impact of exchange rates (Bhagat *et al.*, 2011).

In terms of classical theory studies, slightly negative market responses and returns have been noted for larger listed acquirers when compared to privately held acquirers. The negative returns may be a result of various reasons, for example, recognition by investors that internal growth opportunities are no longer sustainable; management hubris arising from past success in growing the company; or investor perception that the purpose of a merger or acquisition is to build an empire (Bhagat *et al.*, 2011).

2.4.1.2 Neo-classical theory

La Porta, Lopez-de-Silanes, Schliefer and Vishny (2000) argued that there are diverse elements that determine the returns earned by cross border acquirers. These include the:

- strength and efficiency of a country's financial system;
- breadth and depth of its capital markets;
- corporate ownership structures;
- efficiency of investment allocation;
- dividend policies, and
- extent and speed to which new security issues take place.

Furthermore, Bhagat *et al*. (2011) suggested that countries that have strong legal traditions which allow for investor protection and securities regulation; deeper and efficient stock markets; and less concentrated ownership of public firms provide a better foundation and opportunity for economic growth and financial development.

In a study undertaken by Rossi and Volpin (2004), it was suggested that target companies are often found in countries that have weaker investor protection requirements when compared to those of the acquirer's country. The potential to enhance investor protection for the target firm may therefore be a motivating factor for cross border mergers and acquisition transactions. Bhagat *et al*. (2011) advocated that the enhanced levels of investor protection would generate positive returns for the acquirer at the announcement date of the cross border merger or acquisition transaction. In comparison, if the acquirer provided weaker levels of investor protection, negative returns would result.

2.5 Cross border mergers and acquisitions in emerging markets

Companies situated in developed markets have historically accounted for the bulk of cross border transactions, however companies from emerging economies have more recently increased their participation in such activities (Bhagat *et al.*, 2011). According to Deshpande, Svetina and Zhu (2012), given the recent high levels of growth in developing countries such as Brazil, India, China, and South Africa, companies domiciled in these markets have become attractive targets for cross border mergers and acquisitions. In addition, there has also been an increase of outward cross border mergers and acquisitions transactions from developing countries.

Uddin and Boateng (2009) suggested various modes of value creation applicable to cross border mergers and acquisitions, including amongst others, (1) financial, managerial and operational synergies; (2) establishing market power; (3) creating tax benefits; (4) diversification; and (5) empire building. This thinking was supported by Gubbi, Aulakh, Ray, Sarkar and Chittoor (2009), who suggested that cross border mergers and acquisitions are also a conduit for accessing strategic resources that are unavailable in the acquirer's domestic market, whilst also allowing for the acceleration of internationalisation.

2.6 The performance of cross border mergers and acquisitions

2.6.1 Stock market performance

Empirical evidence from studies undertaken to date which focus on the creation of shareholder value through cross border mergers and acquisitions remains inconclusive (Bhagat *et al.*, 2011). Much of this empirical evidence arises from studies conducted on acquiring and target firms in the United States of America (Gubbi *et al.*, 2009). The evidence that is available points to target companies (as opposed to acquiring companies) that are involved in cross border mergers and acquisitions transactions benefiting more than those involved in domestic transactions.

Table 2-6 summarises recent academic papers that studied acquirer returns related to cross border merger and acquisition transactions. With reference to table 2-6, the samples tested all cover a similar period. The majority of the acquirers were from developed markets, while the target companies were domiciled in both developed and emerging markets (Bhagat *et al.*, 2011). Four of the studies showed a significant positive return, two reported a negative return, and two reported returns that were not significantly different from zero (Bhagat *et al.*, 2011).

In other studies Mantecon (2009) analysed a sample of 30,783 acquisitions, where 6,824 of these constituted cross border acquisitions. The sample was collected for the period 1985 to 2005. The author applied event study methodology for a three-day event window around the acquisition date. In the case of the overall sample, the cumulative average abnormal return for acquiring firms amounted to 0.48%, whilst the cumulative average abnormal return for cross border acquisitions amounted to 0.29% and 0.53% for domestic acquisitions (Mantecon, 2009). These results were not considered to be significant, but displayed that acquirers experienced larger gains in domestic transactions as opposed to cross border transactions (Mantecon, 2009).

Table 2-6: Acquirer returns for cross border mergers and acquisitions

Paper	Sample period	Sample size	Bidder from these countries	Target from these countries	Bidder return	Bidder return Z-statistic or (sig. level)	Bidder return *positively* related to	Bidder return *negatively* related to
Chari-Ouimet-Tesar (2010)	1988–2002	346	Developed market	Emerging market	2.43%	(.05)	Majority control	–
Burns and Liebenberg (2009)	1988–2004	1129	U.S.	26 developed countries, 20 emerging countries	.83% (n = 755) 2.41% (n = 153)	4.19 4.44	Private targets	–
Cakici-Hessel-Tandon (1996)	1983–1992	195	Developed countries (UK, Canada, Germany, Japan,)	U.S.	.63%	4.69	–	–
Martynova and Renneboog (2008)	1993–2001	2419	European countries	European countries	0.47%	2.25	Bidder/target same language, Bidder/target common border, Bidder shareholder rights improvement, Target shareholder rights improvement,	Bidder size, Hostile bid
Benou–Gleason–Madura (2007)	1985–2001	503	U.S.	22 developed, 18 less-developed countries	.29%	.79	Target media visibility, IB reputation	Cash offers, tech bubble period
Mueller and Yurtoglu (2007)	1981–2002	9733	Developed countries	Developed countries	.006%	–	Separate regressions for positive and negative acquirer returns.	Separate regressions for positive and negative acquirer returns.
Kuipers-Miller-Patel (2009)	1982–1991	181	Developed countries	U.S.	−0.92%	5.82	Level of shareholder rights, and rule of law in acquirer's country.	Level of creditor rights in acquirer's country.
Bris and Cabolis (2008)	1989–2002	506	Developed and emerging countries	Developed and emerging countries	−1.12%	(.03)	–	–

Source: Bhagat *et al.* (2011)

Gubbi *et al.* (2009) analysed 425 completed cross border acquisitions made by listed Indian firms covering the period 2000 to 2007. Event study methodology was applied to determine whether there were any abnormal stock price effects over an 11-day event window. The authors obtained mean cumulative average abnormal returns for majority stake cross border events (a majority stake was defined as the holding firm acquires greater than 50% in the target firm) amounting to 2.76%. In the case of non-majority stakes, cumulative average abnormal returns amounted to 1.77%. In both cases Gubbi *et al.* (2009) applied t-tests. The t-test results for majority stakes amounted to 5.54 (insignificant at the 5% significance level) and 2.19 for non-majority stakes (significant at the 5% significance level). In addition, Gubbi *et al.* (2009) applied non-parametric Wilcoxon signed rank tests to negate the impact of outliers. A Z-statistic of 4.84 was obtained for majority stakes, while a Z-statistic of 1.61 was obtained for non-majority stakes. In both instances these were insignificant (at the 5% significance level).

Overall evidence obtained suggested a significant positive abnormal return for investors, leading Gubbi *et al*. (2009) to conclude that cross border acquisitions by Indian firms are an important mechanism "which facilitate strategic and organisational transformation" (Gubbi *et al*. 2009. p. 412). Despite this, Gubbi *et al.* (2009) were of the view that the evidence was inconclusive with respect to cross border mergers and acquisitions transactions being a value generating strategy.

In comparison, Aybar and Ficici (2009) used event study methodology to study the impact of cross border mergers and acquisitions on shareholder wealth. 433 cross border mergers and acquisitions were studied for the period 1991 to 2004, using an event study window of 10 days prior to and 10 days post the announcement date. Aybar and Ficici (2009) found that equity markets react negatively to the announcement of a cross border merger or acquisition. A Wilcoxon signed rank test was applied to the event window [-10;+10] and a Z-statistic of -1.12 was obtained (insignificant at the 5% significance level). Accordingly, the authors attempted to identify factors that influence investor decisions, including firm specific characteristics; the nature of the investment; strategic fit and target market conditions.

Firm specific conditions focused predominantly on the regional origin of the acquirer, however statistically significant evidence could not be found (Aybar & Ficici, 2009). A comparative analysis of cross border mergers and acquisitions involving small and large foreign targets suggested that size (ratio of the value of the acquired stake to the

acquirer's market capitalisation) is a significant factor influencing investor reactions to the announcement of cross border mergers and acquisitions (Aybar and Ficici, 2009). Cumulative abnormal return differences were significant and positive for three specific short-term windows ([-5,+1], [-2,+1] and [-1,+1]), but negative for long-term event windows (Aybar & Ficici, 2009). This led Aybar and Ficici (2009) to conclude that whilst academic studies widely show that large acquisitions have a negative impact on an acquirer's value, investors are more positive when a cross border acquirer bids for a larger target.

Aybar and Ficici (2009) also compared investor reaction when acquirers made bids for 50% or more of the targets' shares compared to those involving 50% or less of the targets' shares. The authors did not find significant statistical evidence to confirm the level of control as a factor. Similarly, they were not able to verify the impact of high corporate governance standards on acquirer value.

Chari, Ouimet and Tesar (2010) suggested that in order for acquiring companies to display an improvement in post cross border merger or acquisition performance, they require an intangible asset firm-based advantage which can exploited. It is therefore often more difficult for companies from emerging markets to increase post-acquisition performance as they need to gain this advantage in intangible assets abroad rather than domestically. In addition, Chari *et al.* (2010) pointed out that it is easier for an acquiring company from a developed country to aid the improvement of the target's financial performance and returns (where the target is domiciled in an emerging economy). This is due to better standards of corporate governance being an inherent characteristic of developed countries.

Chari *et al.* (2010) tested a sample of 594 cross border acquisitions. Of the sample, acquirers from developed markets made 594 acquisitions in emerging markets and 1,624 acquisitions in developed markets, while acquirers in emerging markets made 900 acquisitions in emerging markets. Chari *et al.* (2010) tested cumulative average abnormal returns and found that acquirers from developed economies generated a positive and significant abnormal return of 1.16% over a three-day event window, when compared to acquiring target companies based in emerging markets. The authors' noted that while emerging market acquirers realise positive returns from the acquisition of other emerging market targets, the returns are lower.

Zhu *et al*. (2012) studied risk and return characteristics of target firms involved in merger and acquisition transactions in emerging markets. The authors used event study methodology to study cross border and domestic acquisitions in 18 emerging markets between 1990 and 2007. The authors identified various risks faced by investors investing in emerging markets, including increased volatility of share prices, political risk, liquidity risk and weaker levels of corporate governance. Zhu *et al*. (2012) therefore applied various key risk measures including total risk measured by the variance in daily stock returns, unsystematic risk and downside risk.

Of particular interest was that three-day cumulative average abnormal returns were analysed for cross border and domestic mergers and acquisitions transactions. The announcement impact was separately analysed for the target firm, the acquiring firm and the combined firm (Zhu *et al.*, 2012). The authors found that from the target firms' perspective, the average three-day target firm cumulative average abnormal return amounted to 1.5%, whilst that for the cross border mergers and acquisitions amounted to 2.1%. These were both calculated to be statistically significant. This was explained by way of the acquisition premium paid for the target (Zhu *et al.*, 2012). From an acquiring firm's perspective, it was found that the cross border transactions resulted in a statistically significant positive return at acquisition, which was not the case with domestic transactions. Finally, cross border mergers and acquisitions resulted in positive significant returns for the combined firms (Zhu *et al.*, 2012).

Overall, the authors found that cross border acquisitions significantly reduce target firm risk in the long-term. They attributed the reduction in risk to an increase in the international shareholder base of the target firm and hence, improved investor protection. These benefits thus translate into positive long-term risk adjusted stock performance (Zhu *et al.*, 2012).

2.6.2 Operating financial performance

Based on a review of the available literature it would appear that there is a limitation on academic studies relating specifically to the analysis of the operating financial performance for cross border mergers and acquisitions.

Song *et al.* (2011) studied the pre- and post-merger or acquisition performance of target companies involved in cross border mergers and acquisitions in five East Asian countries using conventional financial ratios. Return on assets, return on equity, operating income return on total capital, free cash flow and free cash flow per share

were used to measure profitability (Song *et al.,* 2011). Leverage was assessed by utilising long-term debt to equity, total debt to equity and total debt to total assets, while growth was assessed by measuring relative growth to the size of the firm (Song *et al.,* 2011). Song *et al.* (2011) applied a two-tailed Wilcoxon sign rank test and did not find evidence of a significant positive improvement in operating efficiencies in return on assets or growth in operating income post the merger or acquisition. Based on the results, the improvement in return on assets (using the two-tailed Wilcoxon sign rank test) resulted in an insignificant increase of 0.416 across the five countries. The mean return on equity for the merged companies reflected inconclusive results with an insignificant result of 0.583 (using the two tailed Wilcoxon sign rank test) (Song *et al.,* 2011). The mean free cash flow, which is a measure of the health of a firm and indicates its ability to generate revenue to cover costs, investment activities, dividends, debt etc., increased significantly post-merger (Song *et al.,* 2011). Debt to equity ratios post-merger were found to be in excess of 100%, indicating high levels of gearing and hence an increased risk of companies not be able to repay debts (Song *et al.,* 2011).

Chari *et al.* (2010) examined post-acquisition financial accounting performance by way of a study of return on assets (defined as earnings before interest and tax divided by total assets) in the second year following the acquisition. The same sample of 594 observations used to test cumulative average abnormal returns noted in section 2.6.1 above was applied. The authors obtained similar results to those obtained by Song *et al.* (2011), noting that accounting returns displayed weak statistical significance.

In comparison, Shukla and Gekara (2010) studied the impact of the multi-national merger between Tata Steel and Corus Steel by analysing the impact on net operating profit after tax, return on assets, return on capital employed, earnings per share and economic value added. The key findings are included in table 2-7.

Table 2-7: Pre and post-merger financial performance data of Tata Steel

Measure	Pre-merger (2005 to 2006)	Post-merger (2006 to 2007)
Net operating profit after tax	Rs 2,630.00	Rs 2,790
Return on assets	Rs 107.98	Rs 110.15
Return on capital employed	Rs 40.76	Rs 49.69
Earnings per share	Rs 35.38	Rs 41.69
Economic value added	Rs 1,240.00	Rs 1,742.00

Source: Shukla and Gekara (2010) adapted

Based on the outcomes in table 2-7, all operating financial measures increased. These measures were supplemented by a study of abnormal returns and cumulative abnormal returns in the share price. Shukla and Gekara (2010) noted that the results displayed a negative abnormal return in all intervals tested around the announcement date. They therefore concluded that the results of the merger indicated that the acquiring firm did not generate positive net present values from the perspective of the acquiring firm. In addition, the market reaction was not consistent with the increased value generated by management (Shukla & Gekara, 2010). Cognisance should however be taken that the study only considers one merger and acquisition and is therefore limited in nature; it would be dangerous to generalise the results of this study.

One of the constraints associated with studies that have investigated the performance of cross border mergers and acquisitions transactions in emerging economies is that there are a limited number of listed companies, resulting in potential sample selection bias. In addition, emerging economies are also associated with market structural deficiencies with stock markets experiencing low liquidity. Reliance on accounting-based performance data has been one of the methods employed to overcome this limitation (Bertrand & Betschinger, 2011). South Africa has a well-established financial market, with a modern stock exchange through which large volumes are traded on a daily basis, however cognisance should still be taken of the extent of availability of information relating to mergers and acquisitions transactions.

2.7 Event study methodology

A seminal work relating to event study methodology was famously undertaken by Fama, Fisher, Jensen and Roll (1969), which has become the standard empirical methodology to apply when undertaking finance related studies (Binder, 1998). More recently, Aktas, de Bodt and Cousin (2007) indicated their support for the use of event study methodology when undertaking finance studies. Duso, Gugler and Yurtoglu (2010) undertook a study to assess whether event study methodology is useful for analysing mergers. Whilst the primary focus of this study was to understand the impact of the competitive implications of mergers, the authors noted that event study methodology is useful for understanding the impacts on merging firms' post-merger profits.

Mackinlay (1997) noted that event study methodology is central to measuring abnormal returns in a share price, whereby abnormal returns are the difference between the share's expected return and the actual return. Aktas *et al.* (2007) however suggested

that caution should be applied when undertaking event studies given that the results can be sensitive to, or contaminated by, unrelated confounding events. Various methods have therefore arisen from the seminal work undertaken by Fama *et al.* (1969) to estimated abnormal returns, which include the Mean Adjusted Model, Market Model, Market Adjusted Model and Control Portfolio Model (Mushidzhi & Ward, 2004). According to standard event study methodology, expected normal returns for the relevant share in relation to the market are estimated using equation 1 (Krishnakumar & Sethi, 2012):

$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$ **(Equation 1)**

- R_{it} is the expected return on the firm.
- R_{mt} is the return on the market portfolio.
- α_i is the intercept term.
- β_i is the sensitivity of the return on the firm to market returns.
- ε_{it} is the zero mean disturbance term.

Krishnakumar and Sethi (2012) indicated that daily returns are used for estimation purposes, and the researcher has the choice of which event study window to apply. Typically, event study windows of approximately -250 to -50 days prior to the event date and 200 days post the event are utilised (Krishnakumar & Sethi, 2012). This is because longer-term event studies tend to be more sensitive to confounding events when compared to short-term event studies (McWilliams & Siegel, 1997). Once the expected returns have been estimated, the cumulative abnormal returns are estimated around the event date by applying the market model (Krishnakumar & Sethi, 2012).

According to Ward and Muller (2010), when applying event study methodology, the choice of benchmark against which abnormal returns are compared is important. Furthermore, many event study investigations have used only a single parameter capital asset pricing model to create a benchmark, and Ward and Muller (2010) were of the view that this is inadequate. This is because the capital asset pricing model does not account for expected returns based on company size and growth versus value (Ward & Muller, 2010). Accordingly, they designed a multi-factor control portfolio to measure expected returns from the acquiring firm's perspective. The multi-factor model was built on 12 control portfolios of shares, where the classification of a share into one of the control portfolios is determined based on three criteria:

1. The company's size measured by its market capitalisation. All companies listed on the JSE were ranked in descending order based on market capitalisation; the companies with the 40 largest market capitalisations were included in a large capitalisation control portfolio. Shares with a market capitalisation ranked 41 to 100 made up the medium capitalisation control portfolio, with the remainder constituting the small capitalisation control portfolio.

2. Whether the company is a growth or value investment according to its price/ earnings ratio.

3. Whether the company falls into the resources or non-resources sectors of the Johannesburg Stock Exchange (Ward and Muller, 2010).

Given that the focus of this study was on companies listed on the Johannesburg Stock Exchange, which includes sector delineation into resource and non-resource shares, the above provides a rationale for the application of the multi-factor control portfolio model as part of this study.

2.8 Measuring abnormal operating financial performance

According to Krishnakumar and Sethi (2012), operational financial reporting studies are typically performed by analysing key accounting performance measures of the combined entity. The accounting performance measures typically include return on assets, return on equity and/ or operating cash flows. Two to three years of data post the acquisition are usually analysed and typically compare results for the sample firms with control firms (Krishnakumar & Sethi, 2012). Table 2-8 includes a summary of studies that have applied accounting returns methodology, together with key measures applied and period of the study.

Table 2-8: Review of studies that used accounting returns methodology

Researcher	Sample Size and scope	Period of Study	Post acquisition time frame of study	Variables considered
Healy, Palepu &Ruback, (1992)	50 US	1979-1983	Year 1 to Year 5	Ratio of operating cash flow to market value of equity + book value of debt
Harrison, Hitt, Hoskisson & Ireland (1991)	1100 US	1970-89	Year 3 to Year 5	Return on Assets
Guest, Bild & Runsten (2010)	303 UK	1985-1996	Year 1 to Year 3	Return on Equity
Krishnan, Miller &Judge (1997)	147 US	1986-1988	3 Years	Return on Assets
Melicher & Rush, (1974)	132 US	1960-69	5 Years	EBIT/Total Assets, Net Profit /Total Assets, Net Profit/Net Sales, Net Profit/Common equity, Total Debt/Total Assets, Total Leverage/Total Assets, Price Earnings Ratio
Sharma, (2010)	5 US	No specific period 5 mega mergers	2.5 Years	Return on Equity, Operating Cash Flow and Absolute Cash Flow
Zollo & Singh (2004)	228 US	1986-1994	3 Years	Return on Assets

Source: Krishnakumar and Sethi (2012)

Of the seven studies included in table 2-8, four utilised return on assets, three utilised return on equity, two applied operating cash flow and one used earnings per share. It is therefore evident that return on assets is the most popular measure of merger and acquisitions performance (Krishnakumar & Sethi, 2012). Return on assets measures the profitability of a company in relation to its total asset base, and therefore reflects how efficient a company has been in utilising its assets to generate earnings.

In section 2.2.2 it was noted that Healy *et al.*, (1992) and Ghosh (2001) defined operating cash flows as sales minus cost of goods sold, minus selling and administrative expenses, plus depreciation and amortisation. Smit and Ward (2007) utilised the approach followed by Healy *et al.*, (1992) and Ghosh (2001) as a basis for calculating abnormal cash flow return on assets. This was done by comparing the cash flow return on assets for an individual merger or acquisition transaction to the median cash flow return on assets of the acquiring company's industry sector on the Johannesburg Stock Exchange. The cash flow return on assets of the acquiring company was however excluded from that of the industry sector (Smit & Ward, 2007). In addition, the cash flows for the financial year in which the mergers or acquisitions occurred were excluded from the data analysis (Smit & Ward, 2007). These exclusions were done to exclude the influence of accounting impacts in the year of acquisition. The consolidation of financial results for the acquiring and target companies takes place only from the merger date, which makes comparison across firms and industries

difficult (Healy *et al,* 1992). Once-off merger costs incurred in the year of the merger also impact the ability to compare results across firms and industries (Healy *et al,* 1992).

Equation 2 was applied by Smit and Ward (2007) to calculate abnormal cash flow returns on asset for the years prior to the merger or acquisition transaction:

(Equation 2)

$$\boldsymbol{ACRA_{a+t,y} = \frac{(CF_{a,y} + CF_{t,y})}{(A_{a,y} + A_{t,y})} - ICFA_y}$$

$ACRA_{a+t,y}$ = the abnormal cash flow return on assets for the acquiring company *a*, and the target company *t*, for year *y* (before the acquisition), combined on a pro forma basis;

$CF_{a,y}$ = the operating cash flow for the acquiring company *a* for year *y* (before the acquisition);

$CF_{t,y}$ = the operating cash flow for the target company *t* for year *y* (before the acquisition);

$A_{a,y}$ = the assets of the acquiring company *a*, at the end of year.

$A_{t,y}$ = the assets of the target company *t*, at the end of year *y* (before acquisition).

$ICFA_y$ = the median industry cash flow return on assets for year *y* (before the acquisition) (Smit & Ward, 2007).

Equation 3 was used to determine the abnormal cash flow return on assets for the years post the merger or acquisition (Smit & Ward, 2007):

(Equation 3)

$$\boldsymbol{ACRA_{c,y} = \frac{CF_{c,y}}{A_{c,y}} - ICFA_y}$$

Where:

$ACRA_{c,y}$ = the abnormal cash flow for the combined entity *c*, for year *y* (after the acquisition);

$CF_{c,y}$ = the operating cash flow for the combined company *c*, for year *y* (after

the acquisition);

$A_{c,y}$ = the assets of the combined company *c*, at the end of year *y* (after the acquisition); and

$ICFA_y$ = the median industry cash flow return on assets for year y (after the acquisition).

Based on the application of the above, Smit and Ward (2007) found that the median industry adjusted cash flow return on assets declined by 1.90% from the pre-acquisition period to the post-acquisition period. This was not statistically significant.

2.9 Summary and conclusion to the literature review

In summary, based on a review of the available literature, it is evident that there are various approaches that can be adopted to measure the performance of mergers and acquisitions, including short-term share performance, long-term share performance and operating financial performances.

Despite the popularity of mergers and acquisitions, there is debate as to whether they conclusively create value. This is also applicable to cross border mergers and acquisitions transactions where empirical studies are still very limited, specifically in the case of emerging markets.

The application of Event Study Methodology is regarded as the standard methodology to be employed when undertaking financial studies, for example in the case of understanding abnormal share returns. Short-term event studies are less sensitive to confounding events than long-term studies, hence it is suggested that they are more statistically reliable. Operating financial performance studies have mostly focused on return on asset, return on equity and operating cash flow. This study therefore aimed to apply event study methodology for the purposes of analysing abnormal share returns. In order to test operating financial performance, the approach adopted by Smit and Ward (2007) for testing abnormal cash flow return on assets was applied. This was supplemented by an analysis of the impact on return on equity and earnings per share.

CHAPTER 3 - RESEARCH HYPOTHESES

The purpose of the research was to determine whether cross border merger and acquisition transactions concluded by listed acquiring companies had a positive or negative impact on the short-term share price and operating financial performance of the listed acquirer. The literature provided an overview of the types of studies that have been conducted, including those particular to short-term share price performance and operating financial performance.

The literature review advocates that event study methodology is the preferred approach for the purposes of analysing short-term share price performance, by analysing cumulative average abnormal returns. In addition, the literature review suggests that operating financial performance is analysed by testing the abnormal cash flow return on assets, return on equity and/ or earnings per share. The hypotheses will therefore focus on analysing cumulative average abnormal returns, abnormal cash flow return on assets, return on equity and earnings per share. The following hypotheses are proposed for testing:

Hypothesis 1:

Ho: The null hypothesis states that the cumulative average abnormal return (CAAR) of the acquiring firm involved in a cross border merger or acquisition on a post-acquisition basis is less than or equal to the cumulative average abnormal return of the acquiring firm involved in a cross border merger or acquisition on a pre-acquisition basis.

$H1$: The alternate hypothesis states that the cumulative average abnormal return of the acquiring firm involved in a cross border merger or acquisition on a post-acquisition basis is greater than the cumulative average abnormal return of the acquiring firm involved in a cross border merger or acquisition on a pre-acquisition basis.

$H1_o$: $CAAR_{(post)} \leq CAAR_{(pre)}$

$H1_1$: $CAAR_{(post)} > CAAR_{(pre)}$

Hypothesis 2:

Ho: The null hypothesis states that the operating margin (OM) of the acquiring firm post the merger or acquisition transaction is less than or equal to the operating margin of the acquiring firm pre the transaction.

H1: The alternate hypothesis states that the operating margin of the acquiring firm post the merger to acquisition transaction is greater than the operating margin of the acquiring firm pre the transaction.

$H2_o$: $OM_{(post)} \leq OM_{(pre)}$

$H2_1$: $OM_{(post)} > OM_{(pre)}$

Hypothesis 3:

Ho: The null hypothesis states that the net margin (NM) of the acquiring firm post the merger or acquisition transaction is less than or equal to the net margin of the acquiring firm pre the transaction.

H1: The alternate hypothesis states that the net margin of the acquiring firm post the merger or acquisition transaction is greater than the net margin of the acquiring firm pre the transaction.

$H3_o$: $NM_{(post)} \leq NM_{(pre)}$

$H3_1$: $NM_{(post)} > NM_{(pre)}$

Hypothesis 4:

Ho: The null hypothesis states that earnings per share (EPS) of the acquiring firm post the merger or acquisition transaction is less than or equal to the earnings per share of the acquiring firm pre the transaction.

H1: The alternate hypothesis states that earnings per share of the acquiring firm post the merger or acquisition transaction is greater than the earnings per share of the acquiring firm pre the transaction.

$H4_o$: $EPS_{(post)} \leq EPS_{(pre)}$

$H4_1$: $EPS_{(post)} > EPS_{(pre)}$

Hypothesis 5:

Ho: The null hypothesis states that return on equity (ROE) of the acquiring firm post the merger or acquisition transaction is less than or equal to the return on equity of the acquiring firm pre the transaction.

H1: The alternate hypothesis states that return on equity of the acquiring firm post the merger or acquisition transaction is greater than the return on equity of the acquiring firm pre the transaction.

$H5_o$: $ROE_{(post)} \leq ROE_{(pre)}$

$H5_1$: $ROE_{(post)} > ROE_{(pre)}$

Hypothesis 6:

Ho: The null hypothesis states that return on assets (ROA) of the acquiring firm post the merger or acquisition transaction is less than or equal to the return on assets of the acquiring firm pre the transaction.

H_1: The alternate hypothesis states that return on assets of the acquiring firm post the merger or acquisition transaction is greater than the return on assets of the acquiring firm pre the transaction.

$H6_o$: $ROA_{(post)} \leq ROA_{(pre)}$

$H6_1$: $ROA_{(post)} > ROA_{(pre)}$

Hypothesis 7:

Ho: The null hypothesis states that the average industry adjusted operating cash flow return on assets (IACRA) of the combined acquirer and target post the cross border merger or acquisition transaction is less than or equal to the average industry adjusted operating cash flow return on all assets of the combined companies pre the transaction.

H_1: The alternate hypothesis states that the average industry adjusted operating cash flow return on assets of the combined acquirer and target companies post-acquisition is greater than the average industry adjusted operating cash flow return on all assets of the combined companies pre the transaction.

$H7_o$: $IACRA_{(post)} \leq IACRA_{(pre)}$

$H7_1$: $IACRA_{(post)} > IACRA_{(pre)}$

CHAPTER 4 - RESEARCH METHODOLOGY

4.1 Introduction to the research methodology

The purpose of this research was to determine the impact that cross border merger or acquisition transactions have on the operating financial and short-term share price performance of acquiring companies listed on the Johannesburg Stock Exchange. Historical studies were reviewed in order to investigate how relevant methods were applied in order to measure and analyse operating financial and short-term share price performance on a pre- and post-acquisition basis.

In order to test the hypothesis identified, precise measurement procedures and data sources were required. In such cases, Saunders and Lewis (2012) suggested the use of secondary data sources, given that they often provide access to larger data sets and are often convertible into software compatible formats for statistical analysis. The research was therefore quantitative in nature, and hence a qualitative approach, including interviews and surveys, was not utilised (Saunders & Lewis, 2012). Operating financial and share price data was obtained for a sample of acquiring companies listed on the Johannesburg Stock Exchange which had participated in cross border mergers or acquisitions transactions.

The relevant population from which the sample for testing was drawn was the MergerMarket database. Secondary data, including share prices, financial ratios and company specific information, was obtained from the McGregorBFA database. This database was available through the Gordon Institute of Business Science Information Centre. Where necessary this data was supplemented by publicly available information, annual financial statements and financial press releases. The data collected included share price information and key financial ratio data (including return on assets, return on equity, operating profit margin, net profit margin and earnings per share).

In order to analyse the impact of cross border merger and acquisition activity on short-term share price performance, event study methodology was applied. Operating financial performance was analysed using financial ratios measuring profitability and industry adjusted operating cash flow return on assets.

In analysing the listed short-term share price performance the remainder of this chapter sets out:

- The classification of confounding events that may have a significant impact on the listed acquirers' share prices during the event window.
- The length of the event study window; and
- The application of control portfolios.

The analysis of operating financial performance includes:

- The calculation of the abnormal cash flow return on assets; and
- Financial ratios that were used in evaluating post-merger operating financial performance.

The research design including the method and unit of analysis, population, sampling method, data collection and analysis process is also discussed.

4.2 Listed short-term share price performance

In analysing the listed share price performance, this study aimed to apply event study methodology to analyse and compare share price performance around the event or announcement date of the cross border merger or acquisition transaction.

Event study methodology enables a researcher to assess whether there was an "abnormal" effect on a share price as a result of the unanticipated occurrence of an event. This has been the most popular methodology applied by researchers in determining the performance of mergers and acquisitions (Krishnakumar & Sethi, 2012). Binder (1998) suggested that event study methodology is the standard method that should be applied for analysing the reaction of shares to an announcement. Based on a review of 88 research papers on merger and acquisition performance undertaken between 1970 and 2006, Zollo and Meier (2007) found that 41% used short-term event study methodology and 16% applied long-term event study methodology.

Certain assumptions must first be valid in order to apply the event study framework to identify the true measure of the financial impact of an event (in other words, abnormal returns) (McWilliams & Siegel, 1997):

- Markets are efficient: share prices reflect all available information and adjust to the public release of new information instantaneously;
- The event is unanticipated: the market becomes aware of the event only once it is announced; and

- There are no confounding effects: the event that is being considered must be ring-fenced from other events that may have an impact on the event under consideration.

In the context of this study, confounding events are those events that could have a significant or abnormal impact on the price of a share or value of a company during the event window. McWilliams and Siegel (1997) noted that as the time of the event window increases, confounding events become more difficult to control. Confounding events which may impact the study, are classified as follows:

- Audited or unaudited annual or interim financial statements that are released during the event window;
- Trading statements or cautionary announcements released during the event window;
- Corporate actions, for example, the announcement of, or distribution of, a dividend during the event window;
- Equity issues or share repurchases, or an announcement thereof, within the event window; and
- Other information released into the public domain during the event window, which may have a material or abnormal impact on the share price of a company.

McWilliams and Siegel (2007) advocated that the length of the event window applied in the event study is crucial. The length of the event window should be short enough to capture the significant effect of the event, but long enough to capture the full effect of the event. In addition, the effect of the confounding event should also be minimised. Considering the above, the following windows were applied to study mergers and acquisitions performance:

- A short-term event window ranging from announcement day to one day after announcement date.
- A longer-term event window ranging from 10 days before the announcement date to 10 days post the announcement date (McWilliams & Siegel, 2007).

In a study performed by Smit and Ward (2007) to determine the impact of large acquisitions on the share price of acquiring companies listed on the Johannesburg Stock Exchange, four event study windows around announcement date were applied, including a:

- three day window;
- five day window;
- 11 day window; and a
- 21 day window.

Given that the focus of this study is on short-term performance, and accounting for the event study windows above, the study aimed to utilise event study windows of three, five, 11 and 21 days. In addition, in order to provide perspective for these windows, a [-21;+200] day window was incorporated into the event study.

In order to calculate an expected benchmark return, Smit and Ward (2007) applied a control portfolio model, which was based on the methodology applied by Mordant and Muller (2003). Mordant and Muller (2003) formed control portfolios based on three categories - a share based on size is either large or small; a share is either a growth or value share, or the share is either a resource or non-resource share. Based on a review by Thaver (2009) on studies undertaken to assess the adequacy of models for calculating expected returns, the outputs of the control portfolio are comparable to more complicated models. Ward and Muller (2010) advocated that the control portfolio model is superior when compared to the capital asset pricing model.

4.3 Operating financial performance

4.3.1 Cash flow return on assets

Various methods have been applied to analyse operating financial performance including the use of key financial ratios and abnormal cash flow return on assets.

Healy, Palepu and Ruback (1992) undertook one of the most notable studies on the impact of mergers and acquisitions on operating financial performance. The focus of the study included estimating “acquisition-induced improvements in cash flow performance as intercepts of the regression of post-acquisition industry-adjusted cash flow of merging firms’ on the corresponding pre-acquisition number” (Ghosh, 2001, p. 151). Ghosh (2001) however raised a concern with the methodology employed by Healy *et al.,* (1992) on the use of industry-median firms. Ghosh (2001) was of the view that the use of industry median firms introduced bias into the inferences made from the regression analysis. This is because measurement errors are unlikely to be random, given that firms undertaking acquisitions often do so after a period of superior performance.

Accordingly, Ghosh (2001) followed an approach whereby the pre- and post-acquisition performance of companies involved in mergers or acquisitions were compared to matched firms. Operating cash flow performance was analysed to determine whether it improved post the acquisition (Ghosh, 2001). The criteria on which firms were matched included pre-acquisition performance and size.

In a study of South African companies listed on the Johannesburg Stock Exchange, Smit and Ward (2007) utilised abnormal cash flow return on assets to analyse post-acquisition operating financial performance. The abnormal cash flow return on assets was calculated by utilising the cash flow return on assets for the individual acquisition, which was compared to the median cash flow return on assets for the acquiring companies industry sector (Smit & Ward, 2007). The approach followed by Ghosh (2001) was not utilised given that a number of companies selected by Smit and Ward (2007) did not have industry peers for the purpose of matching. As a result, narrow industry sub-sectors were used as a reference against which individual acquisitions could be matched (Smit & Ward, 2007).

As noted in the literature review, in the years before the merger or acquisition transaction Equation 2 is used to determine the abnormal cash flow return on assets:

(Equation 2)

$$\boldsymbol{ACRAa+t,y = \frac{(CFa,y + CFt,y)}{(Aa,y + At,y)} - ICFAy}$$

Where:

$ACRA_{a+t,y}$ = the abnormal cash flow return on assets for the acquiring company *a*, and the target company *t*, for year *y* (before the acquisition), combined on a pro forma basis;

$CF_{a,y}$ = the operating cash flow for the acquiring company *a* for year *y* (before the acquisition);

$CF_{t,y}$ = the operating cash flow for the target company *t* for year *y* (before the acquisition);

$A_{a,y}$ = the assets of the acquiring company *a*, at the end of year.

$A_{t,y}$ = the assets of the target company *t*, at the end of year *y* (before acquisition).

$ICFA_y$ = the median industry cash flow return on assets for year *y* (before the acquisition) (Smit & Ward, 2007).

The abnormal cash flow return on assets for the years post the merger or acquisition are determined by Equation 3:

(Equation 3)

$$ACRAc,y = \frac{CFc,y}{Ac,y} - ICFAy$$

Where:

$ACRA_{c,y}$ = the abnormal cash flow for the combined entity c, for year y (after the acquisition);

$CF_{c,y}$ = the operating cash flow for the combined company c, for year y (after the acquisition);

$A_{c,y}$ = the assets of the combined company c, at the end of year y (after the acquisition); and

$ICFA_y$ = the median industry cash flow return on assets for year y (after the acquisition) (Smit & Ward, 2007).

4.3.2 Financial ratios

Shukla and Gekara (2010), in their study of the impact of multi-national mergers and acquisitions on corporate performance, studied the following variables on a pre-merger and post-merger basis: Net Operating Profit After Tax; Return on Assets; Return on Capital Employed; Earnings per Share; and Economic Value Add. They defined the variables as follows:

NOPAT = Net Operating Profit after Tax/ Sales **(Equation 4)**
Return on Assets = EBIT/ Total Assets **(Equation 5)**
Return on Capital Employed = EBIT/ (Total Assets – Current Liabilities) **(Equation 6)**
Earnings per share = Profit after Tax / Number of equity shares in issue **(Equation 7)**
Economic Value Add = NOPAT – Cost of Capital x Capital Employed **(Equation 8)**

Ismail, Abdou and Annis (2011) extended this to a study of 26 financial ratios measuring profitability, efficiency, liquidity, solvency and cash flow position over a three-year period before and after the acquisition. These ratios are included below:

Table 4-1: Financial ratios - evaluating Post-merger Operating Performance

Measures	Ratio	Calculation
Profitability	**Return on sales**	
	Gross profit margin	Gross income / Net sales
	Operating profit margin	Operating income / Net sales
	Net profit margin	Net income / Net sales
	Return on investment	
	Return on assets	(Net income + After tax interest cost) / Average total assets
	Return on equity	Net income / Average stockholders' equity
	Earnings per share	(Net income – dividends) / Weighted average number of shares
Efficiency	**Investment efficiency ratios**	
	Fixed asset turnover	Net sales / Average fixed assets
	Total asset turnover	Net sales / Average total assets
	Operating efficiency ratios	
	Inventory turnover	Cost of goods sold/ Average inventory
	Working capital turnover	(Current assets – current liabilities) / Net sales
Liquidity	Net working capital	Current assets - current liabilities
	Current ratio	Current assets / current liabilities
	Quick ratio	(Cash + marketable securities + accounts receivable) / Current liabilities
	Cash ratio	(Cash + marketable securities) / Current liabilities
Solvency	Debt ratio	Total debt / Total assets
	Debt to total capital	Total dent / Total capital
	Debt to equity ratio	Long-term debt / Stockholders equity
Cash flow	**Sufficiency ratios**	
	Cash flow adequacy ratio	Cash flow from operations / (Long-term debt paid + purchases of assets + dividends)
	Long-term debt payment ratio	Long-term debt payment / Cash from operations
	Dividend payout ratio	Dividends/ Cash from operations
	Reinvestment ratio	Purchases of assets / Cash from operations
	Debt coverage ratio	Total debt / Cash from operations
	Efficiency ratio	
	Cash flow to sales ratio	Cash flow from operations / Sales
	Operating index ratios	Cash flow from operations / Income from continuing operations
	Cash flow returns ratios	Cash flow from operations / Total assets

Source: Ismail *et al.* (2011)

Given that the focus of the study included operating financial performance, the study focused on an analysis of the profitability ratios. These ratios together with their definition are included in table 4-2:

Table 4-2: Financial ratios to be utilised in testing

Measures	Ratio	Calculation
Profitability	**Return on sales**	
	Operating profit margin	Operating income / Net sales
	Net profit margin	Net income / Net sales
	Return on investment	
	Return on assets	(Net income + After tax interest cost) / Average total assets
	Return on equity	Net income / Average stockholders' equity
	Earnings per share	(Net income – dividends) / Weighted average number of shares

4.4 Research design

Based on Saunders and Lewis (2012), a causal approach was adopted in order to understand the interactions and relationships between dependent and independent variables. The causal analysis considered the *ex-ante* and subsequent *ex-post* (given the date of the cross border merger and acquisition transaction) relationships between variables including short-term share price performance at announcement date, operating cash flow, return on equity and earnings per share.

In order to analyse the impact of cross border mergers and acquisitions transactions on the share price and operating financial performance of listed acquiring firms, the research was based on publicly available daily share trading data for shares traded on the Johannesburg Stock Exchange and financial and accounting data sourced from McGregorBFA. In addition, cross border mergers and acquisitions transactions were identified and sourced from the MergerMarket database.

The research was broken down into the following key phases:

1. The identification of listed acquiring companies that entered into cross border mergers and acquisitions transactions based on the MergerMarket database.
2. A clean up of data to obtain a final sample of companies for statistical analysis.
3. Based on those listed acquiring companies identified, performance was analysed to determine whether there were abnormal returns from the perspective of share price performance.

4. Based on those listed acquiring companies identified, financial operating performance was analysed based on financial ratio and cash flow return on assets.

4.5 Method of analysis

The Data Analysis tool and Data Analysis Plus add-in in Microsoft Excel (Excel) were utilised to perform the statistical analysis. The hypotheses were tested by employing one-tailed t-tests, at the 5% level of significance, in order to test whether differences between the means (pre- and post-acquisition) were statistically significant. Given that the variance of the population was not known, t-tests assuming unequal variance were applied. This approach was adopted so as to be more conservative from a statistical perspective.

The application of paired t-tests was considered for testing the pre- and post-acquisition financial ratios. Given the small sample size, limited time period (13 years' worth of financial ratios), and some mergers and acquisitions taking place towards the end of the 13 year period, it was not always possible to test paired data. Non-parametric testing in the form of Wilcoxon signed rank sum tests were therefore utilised as an alternative mechanism for statistical testing and to adopt a conservative approach.

4.6 Unit of analysis

The unit of analysis constituted a single company that was listed on the Johannesburg Stock Exchange that had entered into and completed either a merger or acquisition as an acquirer, where the merger or acquisition was cross border in nature. The unit of analysis for phases 2 and 3 constituted the listed acquirer's share price and audited annual financial statements (from which financial ratios were derived).

4.7 Population

The population included all companies listed on the Johannesburg Stock Exchange, which acted in the capacity of acquirer in a cross border merger and acquisition transaction. The MergerMarket database, which is a global database of historical merger and acquisition transactions, was used as the data source from which the sample was selected.

4.8 Sampling method

The preferred approach was to apply probability sampling, however given that the population was limited in size, samples were selected based on purposive sampling (non-probability sampling). Given the above, the researcher was cognisant that the research would potentially have limitations, given the existence of possible sampling

bias and that the sample was not statistically representative of the population (Saunders & Lewis, 2012).

Criteria for sampling included:

- The merger or acquisition transaction was cross border in nature.
- The acquiring company was listed on the Johannesburg Stock Exchange for a period of at least one year prior to and post the transaction.
- Annual financial statements, including balance sheet, income statements and cash flow statements, together with relevant disclosures, were available for the acquiring company.
- According to the International Accounting Standards Board (2012), if the acquiring firm holds at least 20% of the voting power of a target, it has significant influence over the target firm. From a sampling perspective, the acquiring company was therefore required to have acquired at least 20% of the target company.

4.9 Data collection process

This study utilised secondary data, obtained primarily from electronic databases to which the Gordon Institute of Business Science had access, with the exception of the MergerMarket database, which was available through the Rand Merchant Bank InfoZone.

The following sources of secondary data were utilised during the research:

- The MergerMarket database was used to identify cross border merger and acquisition transactions for acquiring companies listed on the Johannesburg Stock Exchange.
- The McGregorBFA database was utilised to obtain listed company information such as share prices.
- The Johannesburg Stock Exchange's Security Exchange News Service was used to identify announcements relating to cross border mergers and acquisitions. These announcements also assisted in identifying confounding events.

4.10 Data analysis process

As noted above in section 4.4 above, the analysis of the data took place in three phases:

Phase one – Identification of cross border merger and acquisition transactions

The MergerMarket database was used to identify and isolate all mergers and acquisitions transactions that were cross border in nature, and where the acquiring company was a South African company. This included both listed and unlisted companies. Based on this data, a further step was undertaken to identify only those acquiring companies, which were listed on the Johannesburg Stock Exchange. The announcement date for each of the applicable cross border merger and acquisition transactions was recorded.

For those listed companies identified, and based on the announcement date of the cross border merger or acquisition transaction, confounding events were identified via the Johannesburg Stock Exchange News Service (SENS), so as to allow for the correction thereof.

The detailed steps followed for obtaining and cleaning the data are described below:
An Excel extract was obtained from the MergerMarket database (courtesy of Rand Merchant Bank). This included all mergers and acquisitions involving South African acquiring companies for the period 1 January 2000 to 30 April 2013. The following steps were then applied to the data:

1. The Excel extract was used to identify companies acting in the capacity of acquirer (or bidder) as well as companies, which were targets. The acquiring companies, which were listed on the Johannesburg Stock Exchange, were identified and flagged. Those companies acting in the capacity of acquirer but not listed were excluded.
2. The MergerMarket database contains an indicator field that enabled the identification of mergers and acquisitions transactions, which were cross border in nature. This indicator was therefore utilised to isolate the cross border mergers and acquisitions transactions.
3. The initial sample obtained was reviewed to ensure that those companies included met the following criteria:
    - The acquiring company had purchased at least 20% of the target company.
    - Acquiring companies which were banks were excluded. The underlying rationale was that banks have unique financial ratios, layouts and line items in their annual financial statements. This made comparison across various industries difficult.

- Where more than one acquiring company was involved in the acquisition of the same target company, these were excluded. The rationale was that it was difficult to isolate the financial impact on the individual acquiring companies post-acquisition.
- Where the acquirer was listed on more than one stock exchange (for example the South African and London Stock Exchanges), the transaction was reviewed to ensure that it was in fact cross border in nature. The possibility existed that the dual listing of the acquiring company created the illusion of a cross border merger or acquisition, when in actual fact it was domestic in nature.
- Where it was not possible to obtain financial information for an acquiring company, the company was excluded from the sample.
- Confounding events were identified for each of the cross border merger or acquisition transactions in the revised sample. This was done for a period of 11 days prior to, and 11 days post, the announcement of the merger or acquisition transaction. SENS was used to identify confounding events for the abovementioned window period using the criteria noted by McWilliams and Siegel (1997). These included:
    - Restructuring or divestitures.
    - Price changes.
    - New product announcements or launches.
    - Dividend/ earnings announcements.
    - Litigation.
    - Labour unrest or significant layoffs.
    - Major changes to executive management.
    - Forecasted changes in earnings or sales.
    - Debt or equity related events.

Phase two – Calculation and analysis of normal and abnormal returns relating to short-term share price

For those listed companies identified in phase one, it was necessary to calculate the daily returns and daily benchmarked expected returns. The difference between the two indicated the existence of abnormal returns. When undertaking event studies, consideration must be given to the choice of benchmark against which abnormal returns are measured (Ward & Muller, 2010). The Capital Asset Pricing Model is often applied as a benchmark, however according to Ward and Muller (2010), control portfolios are considered to be superior. This is because the Capital Asset Pricing

model does not account for size of the company or differentiate between growth and value companies.

Given the above, the researcher applied a multi-factor control portfolio model advocated by Ward and Muller (2010). Ward and Muller (2010) constructed the multi-factor model based on 12 control portfolios that are classified according to the company's size based on market capitalisation (small, medium or large); value or growth companies; and resource based or non-resource based companies. The multi-factor control portfolio model is included below:

Table 4-3: Multi-factor control portfolio model

Control Portfolio	Resource or non-resource company	Value or growth company	Company size
SGN	Non-resource	Growth	Small
SGR	Resource	Growth	Small
SVN	Non-resource	Value	Small
SVR	Resource	Value	Small
MGN	Non-resource	Growth	Medium
MGR	Resources	Growth	Medium
MVN	Non-resources	Value	Medium
MVR	Resources	Value	Medium
LGN	Non-resources	Growth	Large
LGR	Resources	Growth	Large
LVN	Non-resources	Value	Large
LVR	Resources	Value	Large

Source: Ward and Muller (2010)

Ward and Muller (2010) placed each share listed on the Johannesburg Stock Exchange, based on its characteristics, into one of the portfolios. In order to create the portfolios, the list of all companies listed on the Johannesburg Stock Exchange was ranked in descending order based on market capitalisation (Ward & Muller, 2010). The 40 largest firms were used to create the large company portfolio. The medium company portfolio was created based on market capitalisations ranked between 41 and 100. The small company portfolio contained the remaining shares (Ward & Muller, 2010).

Companies were classified as either growth or value companies according to their price-earnings ratio. The median price-earnings ratio was then calculated. Companies with a price-earnings ratio in excess of the median were classified into the growth

portfolio, whilst those with a price-earnings ratio less than the median were classified into the value portfolio (Ward & Muller, 2010). Mining and non-mining resource shares were classified as resource companies, while the remainder were classified as non-resource companies (Ward & Muller, 2010).

On a quarterly basis, the portfolios were rebalanced to ensure the changes in relevant company characteristics were accounted for in each portfolio (Ward & Muller, 2010).

Daily indices were calculated for each of the 12 control portfolios based on log returns:

(Equation 9)

$$\boldsymbol{R_{it} = \log \frac{P_{it}}{P_{it-1}}}$$

Where:

R_{it} = the equal weighted share return for portfolio *i* for day *t*; and

P_{it} = the equal weighted share value of portfolio *i* at the end of day *t*

P_{it-1} = the equal weighted share value of the portfolio *i* at the end of day *t-1*. (Ward & Muller, 2010).

For each share, beta coefficients were calculated based on a regression. Each share's monthly log-function share price return (preceding 48 months) was regressed against the monthly returns of each of the 12 control portfolios (Equation 5) (Ward & Muller, 2010). Furthermore, "the resultant regression equation measures the expected return of share *i* in period *t*, as the sum of the sensitivity of share *i* to the returns on the 12 control portfolios and calculated alpha estimate in period *t* (Ward & Muller, 2010, p. 30).

(Equation 10)

$$\boldsymbol{E(R_{it}) = \alpha_{it} + \beta_1(SGN_t) + \beta_2(SGR_t) + \beta_3(SVN_t) + \beta_4(SVR_t) + \beta_5(MGN_t) + \beta_6(MGR_t) + \beta_7(MVN_t) + \beta_8(MVR_t) + \beta_9(LGN_t) + \beta_{10}(LGR_t) + \beta_{11}(LVN_t) + \beta_{12}(LVR_t)}$$

Where:

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

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

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

SGN_t...SGR_t = the log-function share price returns on each of the twelve control portfolios set out in table 4-3 on day *t*. (Ward & Muller, 2010).

Actual returns were compared to the expected returns to determine any abnormal returns.

(Equation 11)

$$\boldsymbol{rit = Rit - E(Rit)}$$

Where:

r_{it} = abnormal return of share *i* on day *t.*

R_{it} = the actual return of share *i* on day *t*.

$E(R_{it})$ = the expected return on share *i* on day *t.* (Ward & Muller, 2010)

The cumulative average abnormal returns were calculated utilising the Control Portfolio model methodology advocated by Ward and Muller (2010). An Excel model containing an event engine, constructed by Muller and Ward (2013), was utilised to perform the event study. This model contained abnormal returns for all listed shares on the Johannesburg Stock Exchange for the period 1 January 2000 to 14 June 2013. The share code of the acquiring company, together with the announcement date of the acquisition were key inputs into the model. There was therefore no need to perform any further calculations in order to calculate abnormal returns. The performances of each of the listed acquirer shares in the sample were calculated by using the average abnormal returns to obtain the cumulative average abnormal return (Ward & Muller, 2010). Due to time constraints, the underlying data in the model provided by Muller and Ward (2013) was not validated but assumed to be accurate and complete. As the model had been utilised in various studies such as Smit and Ward (2007), Thaver (2009), and Halfer (2011), this provided further support to the abovementioned assumption.

The calculation of abnormal average returns and cumulative average abnormal returns was performed in Excel. The event date used was the announcement date of the cross border merger or acquisition and was reflected as “t”. Event windows of [-3;+3], [-5;+5];[–11;+11] and [-21;+21] were used to calculate the abnormal returns for each listed acquirer in the sample. Only trading days were applied in the calculation of cumulative average abnormal returns, hence weekends and public holidays were excluded.

Significance testing was performed at the 5% error level using one-tailed t-tests for unequal variance. Given that it was unlikely that the sampling distribution of the cumulative average abnormal returns would be zero, a boot strapped distribution was applied to the cumulative average abnormal return to test the significance of the results of the event study (Ward & Muller, 2010).

In addition to the statistical work done in Excel to calculate average abnormal returns and cumulative average abnormal returns, charts and graphs were also created in Excel.

Phase 3 – Analysis of financial ratios and abnormal cash flow return on assets

Financial Ratios

For the sample of listed acquiring companies identified that were involved in cross border mergers and acquisitions, the McGregorBFA database was used to calculate financial ratios (shown in table 4-2). The financial ratios for the sampled companies were extracted to Excel. In addition, the relevant consolidated industry sector financial ratios (to which the sampled companies belonged) were obtained by using the financial ratio consolidation engine available in the McGregorBFA database. Financial ratios for the period 2000 to 2013 were extracted for both the sampled company and the relevant industry.

As per Mantravadi and Reddy (2008), the year in which the merger or acquisition is completed is denoted as year zero. Accordingly, the financial ratios were base lined to year zero for the year in which the cross border merger or acquisition announcement took place. For the years prior to the merger or acquisition, only the financial ratios for the acquiring company were considered. The financial ratios for the combined firm were considered for the years post the merger or acquisition.

Descriptive statistics for the financial ratios in the sample were obtained by utilising the Descriptive Statistics function in the Data Analysis tool in Excel (for the period t-5 to t+5) to obtain the mean, median and standard deviation. The results of the descriptive statistics were graphed in Excel. The pre- and post-merger performance was tested for significance using t-tests assuming unequal variance at a confidence level of 5% for the following event windows:

- [-1;+1]
- [-1;+2]
- [-1;+3]

Where possible, paired t-tests were calculated at the 5% level of significance. Alternatively, Wilcoxon Signed Rank sum tests were calculated at the 5% level of significance given the non-parametric test's advantage for the application to small sample sizes.

Industry adjusted cash flow return on assets

In order to measure the industry adjusted cash flow return on assets, the McGregorBFA database was utilised to download the pre- and post-acquisition balance sheets and cash flow statements for the period 2000 to 2013 for the acquiring companies within the sample.

In section 2.2.2, Healy *et al.* (1992) defined operating cash flow as sales minus cost of goods sold, minus selling and administrative expenses, plus depreciation and goodwill amortisation expenses. There is, however, difficulty associated with separating financial information for the acquiring and target company post-acquisition in the context of this equation. Accordingly, the calculation of cash flow was substituted by utilising the "cash ex-operations" figure obtained from the acquiring company's financial statements extract from the McGregorBFA database. Total assets were obtained from the respective company's balance sheet. This information was then used to calculate the individual company's cash flow return on assets.

The industry category for each company in the sample was obtained from the McGregorBFA database. The researcher defined the industry category for each company in the sample as the lowest level industry category classification on the Johannesburg Stock Exchange. For example, Aspen Pharmacare Holdings Limited is listed in the Health Care sector on the Johannesburg Stock Exchange, with the lowest level in this sector being Pharmaceuticals and Biotechnology. The industry cash flow and total asset values were obtained by extracting the industry consolidated balance sheets and cash flow statements for each industry category, by applying the industry consolidation functionality available in the McGregorBFA database. This information was then used to calculate the industry cash flow return on assets or benchmark return.

The abnormal return for industry adjusted cash flow return on assets was calculated by applying the following equation in order to treat abnormal returns as a multiplicative:

(Equation 12)

$$AR = \frac{(1 + Rcit)}{(1 + Rbt)} - 1$$

Where:

AR = Abnormal Return

R_{cit} = Individual company cash flow return on assets

R_{bt} = Industry adjusted cash flow return on assets

4.11 Data integrity

Although data was sourced from reputable databases and sources, it was not possible to obtain complete and perfect data. The following issues with the data were identified:

- Financial ratios were sourced from the McGregorBFA database, per company, for the period 2000 to 2013. It was noted however that certain years for certain companies did not contain data.
- The data contained in, and the output of, the "event engine" provided by Muller and Ward (2013) was not verified from an accuracy and completeness point of view. The integrity of the data and tool were deemed to be reliable.

4.12 Limitations

The following limitations apply to this study:

1. Judgemental sampling was applied to select the sample, given that it was not possible to apply probability-sampling techniques. This approach introduced sampling bias resulting in the study not being statistically representative of the population. The results of the study therefore cannot be used to infer post-acquisition performance to all acquiring firms.
2. The study was restricted to acquisitions listed on the Johannesburg Stock Exchange, limited to the period 2000 to 2013. This allowed only 13 years of data to be tested.
3. The study analysed only a few key financial ratios, which focused on the financial performances of the merger and acquisition transactions. Financial ratios relating to efficiency, solvency, and liquidity were excluded, which resulted in a limited view of the complete nature of the overall company performance.
4. Given that three years of post-merger or acquisition financial ratio data was tested, a limitation arose for those transactions where the announcement date occurred in 2011, 2012 or 2013. This led to either zero, one or two years of financial ratio information being available for these transactions.

5. Given the limited sample size and period covered, difficulties were experienced in applying paired t-tests. Non-parametric testing was therefore applied and thus the data was used less efficiently when compared to parametric tests, and hence the power of the test is lower (Weiers, 2011).

CHAPTER 5 - RESULTS

5.1 Introduction

This chapter sets out the results of the study, where the results are used to either reject or accept the hypotheses described in Chapter 3. The chapter includes the results of the analysis undertaken, while the detailed discussion of the results is contained in Chapter 6.

Chapter 5 presents the sample obtained, which was utilised for statistical testing purposes. The results of the event study analysis performed on the short-term share price performances are presented first. This is followed by the results obtained from testing key financial ratios described in table 4-2 above, on a pre- and post-acquisition basis. Finally, the results obtained from the analysis of cash flow return on assets are shown.

5.2 The selection of the sample

The sample generated included three distinct phases. Firstly, as discussed in Chapter 4.10, the MergerMarket database was utilised to obtain mergers and acquisitions transactions involving South African companies for the period 1 January 2000 to 30 April 2013. The extract included 500 such transactions. Next, all mergers and acquisitions transactions that were cross border in nature, where the acquiring company was listed on the Johannesburg Stock Exchange, were selected for the period 1 January 2000 to 30 April 2013. This led to a population of 82 transactions.

Based on the population of 82 cross border mergers and acquisitions transactions, a preliminary review was performed to ensure the following:

- The acquiring company had purchased more than 20% of the target company.
- Transactions involving banks as the acquirer were excluded for the reasons included in Chapter 4.10.
- In instances where more than one acquiring company was involved in purchasing a target, these were excluded for the reasons included in Chapter 4.10.
- Where the acquirer was a dual listed share, the acquisition was reviewed to ensure that the transaction was a cross border acquisition. In certain instances it was noted that although the acquisition was flagged as a cross border transaction in the MergerMarket database, the dual listing of the acquirer

created an illusion of a cross border transaction, when in essence it was a domestic transaction. These instances were excluded.

The process followed above led to an initial sample of 44 transactions. SENS announcements were reviewed for each of the 44 transactions for a period of 11 days pre and post the announcement date. This was done to identify confounding events (as noted in Chapter 4.10). A data clean-up was subsequently performed to isolate abnormal returns generated as a result of the merger or acquisition transaction from the effects of other events. All transactions where the announcement was impacted by confounding events within the 11-day window pre and post the announcement were disqualified. This led to a further reduction of the sample size resulting in a final sample of 29 transactions.

Table 5-1 reflects the sample of 44 transactions, with the final set of 29 transactions individually flagged in the last column of the table. Table 5-2 reflects the descriptive statistics for both the initial sample of 44 transactions and the final sample of 29 transactions. It should be noted that not all transactions extracted from the database had an associated deal value, and hence the descriptive statistics under the heading “Deal Size” in table 5-2 only reflect those transactions with an associated value

Statistical testing was performed on the sample of 29 transactions as the primary source of analysis to test the hypotheses included in Chapter 3. Given the small size however, statistical testing was extended to the 44 transactions identified as part of the initial sample for comparative purposes. Although there were confounding events associated with 15 of the additional transactions, an assumption was made that the announcement of a merger or acquisition transaction would have a greater impact on financial performance, than would the impact of the confounding events indicated in Chapter 4.10.

Table 5-1: Sample selected

Number	MergerMarket Deal ID	Announcement Date	Target Company	Bidder Company	Deal Value USD(m)	Included in Final Sample of 29 companies
1	427939	18/04/2013	Nestle SA (Infant Nutrition Business)	Aspen Pharmacare Holdings Limited	215	Included
2	427164	25/03/2013	Goschem Proprietary Limited; Tetralon Chemical Consultancy Proprietary Limited (70% Stake); PWM Anticor (Pty) Ltd.; PWM Group (Pty) Ltd. (Water Purification and Treatment Business)	Rolfes Holdings Limited	5,821	Included
3	399832	14/11/2012	Foodcorp (Proprietary) Limited (64.2% Stake)	Rainbow Chicken Limited	119,05	Included
4	388128	04/09/2012	Elopak South Africa (Pty) Ltd (50% Stake)	Nampak Ltd	13,7	Included
5	374749	27/06/2012	General Electric Company (Chemical and Monitoring Solutions business)	AECI Limited	20	Included
6	369982	30/05/2012	Caterpillar Inc. (Bucyrus equipment distribution and support business South Africa)	Barloworld Limited	115	Included
7	360133	02/04/2012	Ezulwini Mining Company (Pty) Limited	Gold One International Limited	70	
8	360002	29/03/2012	Chayton Africa (Pty) Ltd (81% Stake)	Zeder Investments Limited	9,7	Included
9	355525	02/03/2012	Mine Waste Solutions (Proprietary) Limited	AngloGold Ashanti Limited	335	Included
10	353652	21/02/2012	Pharmaplan Pty Ltd	Litha Healthcare Group Limited	76,745	Included
11	340772	12/12/2011	SA Block (Proprietary) Limited	Afrimat Limited	15,34	Included
12	335930	16/11/2011	Nampak Wiegand Glass (50% Stake)	Nampak Ltd	118,3	
13	316178	20/07/2011	Grindrod Perishable Cargo Agents (Pty) Ltd	Lonrho Plc	7,21	
14	302036	24/05/2011	Rand Uranium (Pty) Ltd	Gold One International Limited	250	
15	329759	08/03/2011	Metcash Limited (Franchise Division)	Shoprite Holdings Ltd	Not Available	Included
16	289914	15/02/2011	Davita Trading (Proprietary) Limited	Tiger Brands Limited	224,707	Included
17	289464	11/02/2011	AFEX Group	Lonrho Plc	8	Included
18	273236	17/11/2010	Vostochnaya Technica (50% Stake)	Barloworld Limited	52	Included
19	260020	30/08/2010	Diagonal Insurance	PSG Konsult Ltd	Not Available	Included
20	253941	13/07/2010	CIC Holdings Limited	Imperial Holdings Limited	95,831	Included
21	208758	22/05/2009	Nestle SA (Crosse & Blackwell mayonnaise production business)	Tiger Brands Limited	Not Available	
22	194652	09/12/2008	Elsburg Gold Mining Company Ltd (35% Stake)	DRDGOLD Limited	17,1	Included
23	189037	09/10/2008	Fine Chemicals Corporation Pty Ltd (50% Stake)	Aspen Pharmacare Holdings Limited	Not Available	
24	185712	12/09/2008	Safair Technical (Pty) Limited (77.5% Stake)	1Time Holdings Limited	7,15	Included

Number	MergerMarket Deal ID	Announcement Date	Target Company	Bidder Company	Deal Value USD(m)	Included in Final Sample of 29 companies
25	177765	25/06/2008	Verizon South Africa (Pty) Ltd	MTN Group Limited	174,09	
26	197684	10/06/2008	Doosan Infracore South Africa Pty Limited	Invicta Holdings Limited	Not Available	
27	162083	18/02/2008	Mooiplaats Coal Project (30% Stake)	Coal of Africa Limited	23,841	Included
28	154210	10/09/2007	Sasol Dia Acrylates (Pty) Limited (50% Stake)	Sasol Limited	31,34	
29	123836	17/04/2007	Clover Danone Beverages (Pty) Ltd (39.7% Stake)	Clover Industries Limited	21,38	Included
30	121423	02/04/2007	Global Forest Products	The York Timber Organization Limited	232	Included
31	115197	16/02/2007	African Platinum PLC	Impala Platinum Holdings Ltd	499,6241	
32	104984	15/11/2006	AfriOre Ltd	Lonmin Plc	370,6708	
33	116297	10/11/2006	Funerary Management Services (Pty) Ltd	Adcorp Holdings Limited	30,627	
34	97915	11/09/2006	Barrick Gold South Africa (Pty) Limited	Gold Fields Limited	1524,89	Included
35	89367	19/06/2006	Little Swift Investments 36 Pty Ltd	Kagiso Media Limited	18,03	Included
36	80132	04/04/2006	Bromor Foods (Pty) Ltd	Tiger Brands Limited	191,2732	
37	75892	15/02/2006	Barplats Investments Limited (69.9% Stake)	Eastern Platinum Limited	111,46	Included
38	64351	13/10/2005	Kumba Iron Ore Limited	Kumba Resources Limited	2131	Included
39	137643	26/09/2005	Cipla Medpro (Pty) Ltd ~	Cipla Medpro South Africa Ltd	172,2383	Included
40	58848	02/09/2005	Concor Limited (49% Stake)	Murray & Roberts Holdings Limited	20,26	
41	37343	19/10/2004	Tiscali South Africa	Vodacom Group Limited	6,6242	Included
42	31935	22/07/2004	The Cementation Company (Africa) Ltd. (79% Stake)	Murray & Roberts Holdings Limited	19,0397	Included
43	31659	14/07/2004	Afcab Holdings Ltd. (50% Stake)	Reunert Limited	26,8638	
44	138790	31/12/2003	Glacier Management Company Ltd (33.33% Stake)	Sanlam Ltd	13,35	Included

Table 5-2: Summary of descriptive statistics

Descriptive Statistics	Initial Sample	Final Sample
Population size	**500**	**500**
Population start date	**1 January 2000**	**1 January 2000**
Population end date	**30 April 2013**	**30 April 2013**
Sample Size	**44**	**29**
Number of acquisitions per year (frequency)	**44**	**29**
2000	0	0
2001	0	0
2002	0	0
2003	1	1
2004	3	2
2005	3	2
2006	6	3
2007	4	2
2008	6	3
2009	1	0
2010	3	3
2011	7	4
2012	8	7
2013	2	2
JSE Sector – acquiring firm per sample	**44**	**29**
Agriculture	2	2
Chemicals and Materials	1	1
Construction	4	2
Consumer: Foods	4	3
Consumer: Other	2	1
Consumer: Retail	1	1
Energy	1	1
Financial Services	3	3
Industrial Products and Services	5	4
Industrial: Electronics	1	0
Internet/ E-commerce	1	0
Manufacturing (other)	1	1
Media	1	1
Medical: Pharmaceuticals	3	2
Mining	8	4
Real Estate	1	1
Services (other)	2	0
Telecommunications: Carriers	1	1
Transportation	1	0
Utilities (other)	1	1
Deal size (US Dollars)		
Mean	189.60	207.56
Median	52.00	23.84
Standard Deviation	408.99	482.65
Range	2125.18	2125.18
Minimum	5.82	5.82
Maximum	2131.00	2131.00
Count	39.00	27.00

5.3 Short-term share price performance

Average Abnormal Returns (AARs) and Cumulative Average Abnormal Returns (CAARs) were calculated for the sample of 29 acquiring companies utilising a Control Portfolio event model provided by Muller and Ward (2013). For comparative purposes, the CAARs for the extended sample of 44 acquiring companies were also calculated.

In order to obtain an understanding of the overall trend in CAARs, the Control Portfolio model provided by Muller and Ward (2013) was used to calculate abnormal returns for the event window of [-21;+200], with the announcement date being classified as the event date. The overall event window was then narrowed down to focus on a short-term window of [-21;+21]. The trends were plotted in Excel.

5.3.1 Sample of 29 companies

Figure 5-1 reflects the AARs and CAARs for all shares for the sample of 29 companies over a long-term period [-21;+200]. Three main event window periods are reflected in figure 5-1, which includes the estimation window [-21;-1], the event window [-1;0] and the post event window [+1;+200].

Estimation window period [-21;-1]: The estimation period reflects a declining trend in the CAARs. A downward trend begins seven days prior to the announcement.

Event window period [-1;0]: Within the event window, the CAARs stabilised at t+0 (the announcement date of the transactions is shown by the vertical green line in figure 5-1). An abnormal positive return of 0.92% was calculated at t+0.

Post event window period [+1;+200]: In the post event window the CAARs reflect an increasing trend from t+1 to t+3, peaking at 2.43% (t+3), The CAARs subsequently reflect a declining trend from t+4 to t+14 (the CAAR at t+14 amounts to 0.35%). A distinct spike in CAARs was experienced for the period t+15 to t+17, which was followed by a declining trend to a low point at t+45 (-2.24%). From t+45 onwards, distinct waves in the performance of the acquiring firm were experienced. The first of these waves (trough to trough) occurred for the 45 day period commencing at t+45 (CAAR of -2.24%), peaked at t+79 (CAAR of 3.26%) and ended at t+89 (CAAR of -1.09%). The second wave commenced at t+89, peaked at t+111 (CAAR of 3.95%) and ended at t+135 (-0.19%). The third wave commenced at t+155 (CAAR of -0.55%), peaks at t+175 (CAAR of 6.46%) and ends at t+202 (-2.06%). The first wave (trough to

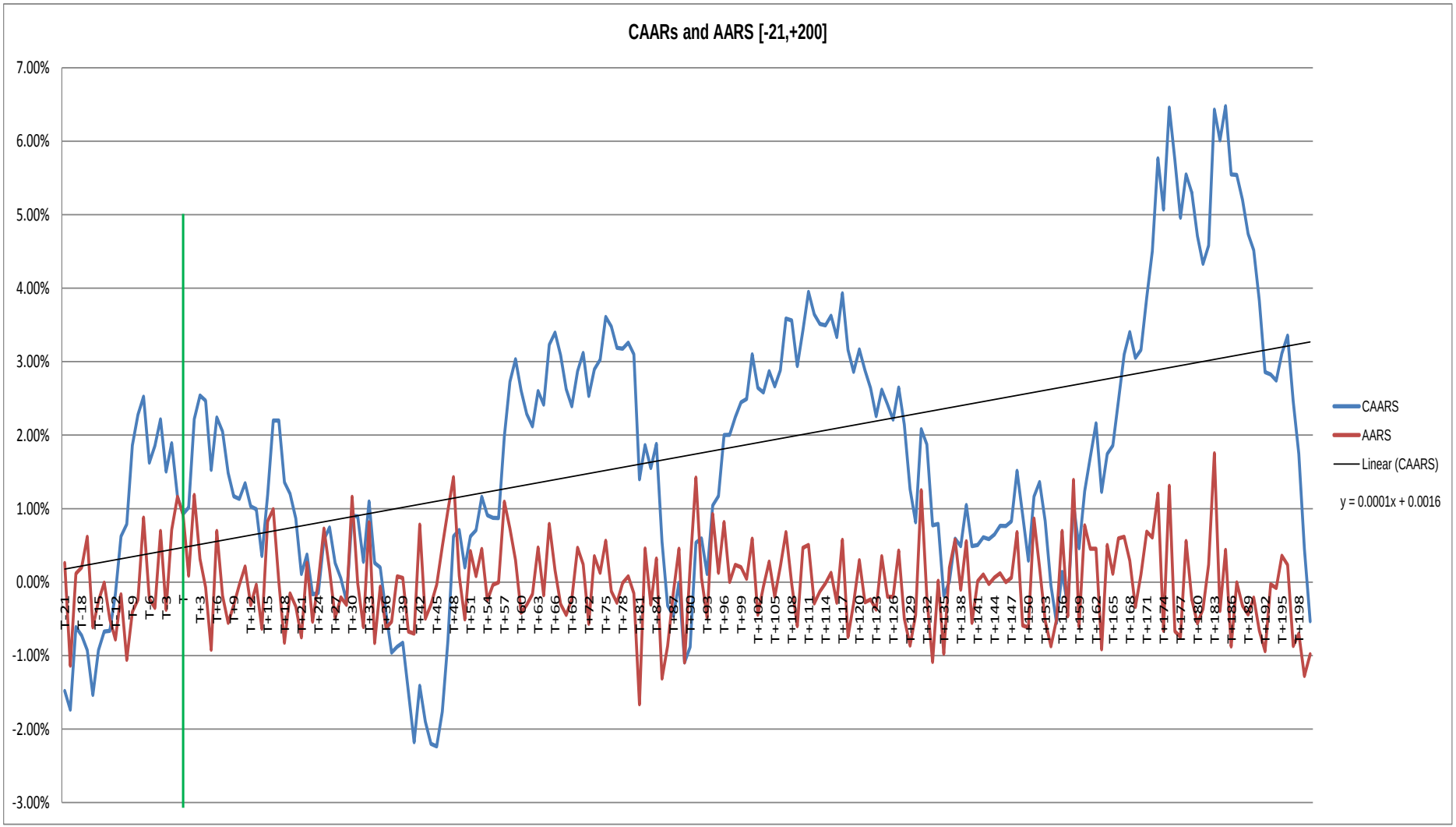


Figure 5-1: Average Abnormal Returns and Cumulative Average Abnormal Returns (sample of 29 companies) for $CAAR_{[-21;\ 200]}$

trough) lasted for 44 days, the second wave for 46 days and the final wave for 45 days. The duration of each wave was similar from a performance perspective.

A linear trend line has been added to figure 5-1 to reflect the trend in CAARs. From an overall perspective, the linear trend line for the CAARs for the sample of 29 companies shows an upward trend.

A short-term view of the AARs and CAARs is reflected in figure 5-2. AARs and CAARs are shown for a period of 21 days prior to announcement date and 21 days post the announcement date. The green vertical line represents t+0 (announcement date). The decreasing trend in CAARs, commencing at t-7 (2.52%) and ending at t-1 (1.17%) is evident. This is followed by the distinct upward trend for the three-day period immediately after announcement of the cross border merger or acquisition transaction. The trend decreases to t+14, where after it increases for three days and then declines to t+21 where the cumulative abnormal return is 0.32% (slightly greater than 0%).

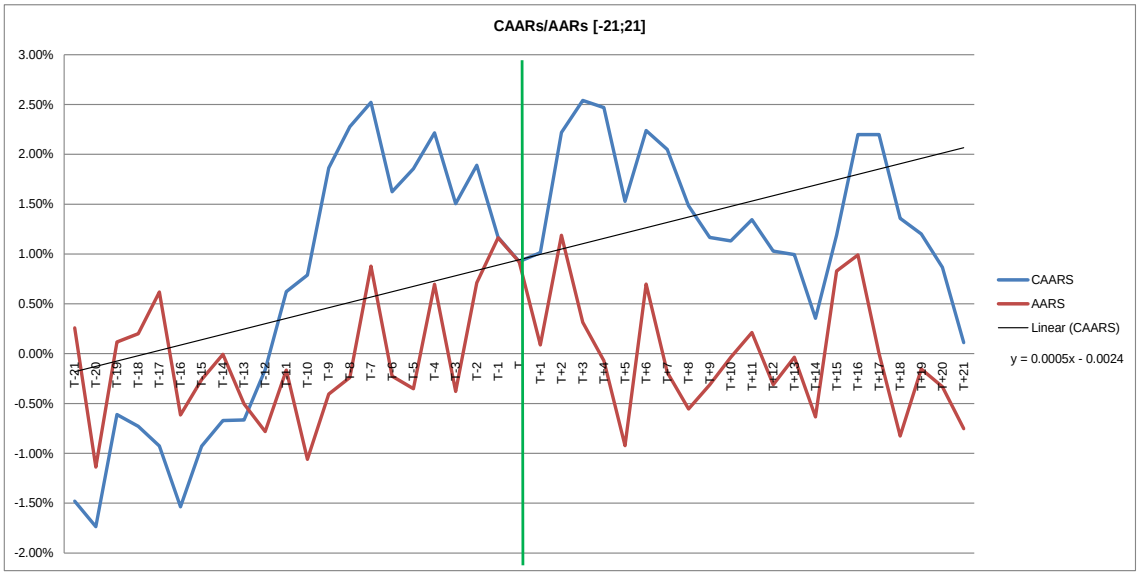


Figure 5-2: Cumulative Average Abnormal Returns (sample of 29 companies) for $CAAR_{[-21;21]}$

5.3.2 Sample of 44 companies

When the sample was expanded to 44 companies, a similar trend was noted with respect to the occurrence of specific waves in performance of the acquirer. The trends in the various event windows are described below.

Estimation window period [-20;-1]: The estimation period reflected a declining trend in the CAARs. The declining trend began eight days before the announcement of the cross border merger or acquisition.

Event window period [-1;0]: Within the event window, the CAARs stabilised at t+0 (announcement date). The abnormal positive return calculated at t+0 amounted to 0.92%.

Post event window period [+1;+200]: A similar trend in CAARs, with three distinct waves, was noted in the extended sample size. Post the event date, an increasing trend in CAARs to T+19 was noted, whereafter the trend fell to a low at T+43 (CAAR of -1.89%). The first wave in performance, with a duration of 43 days, commenced at T+43. It subsequently peaked at T+76 (CAAR of 2.28%) and ended at T+86 (-1.31%). The second wave with a duration of 50 days commenced at T+86, peaked at T+107 (2.07%) and ended at T+136 (-0.41%). The final wave with a duration of 43 days commenced at T+157, peaked at T+183 (2.78%) and ended at T+200 (-1.56%).

A short-term view of the CAARs and AARs is reflected in figure 5-4 below for a period of 21 days prior to announcement date and 21 days post the announcement date. A declining trend in CAARs was noted eight days prior to the announcement date of the cross border merger or acquisition announcements. The CAAR at this point amounted to 2.6%, which decreased to 0.53%. Post the announcement date the CAAR increased to t+4, amounting to 1.7%. The CAAR oscillated around 1.5% for the period t+4 to t+16, whereafter the trend in CAAR declined to t+21 at 0.32% (slightly greater than 0%).

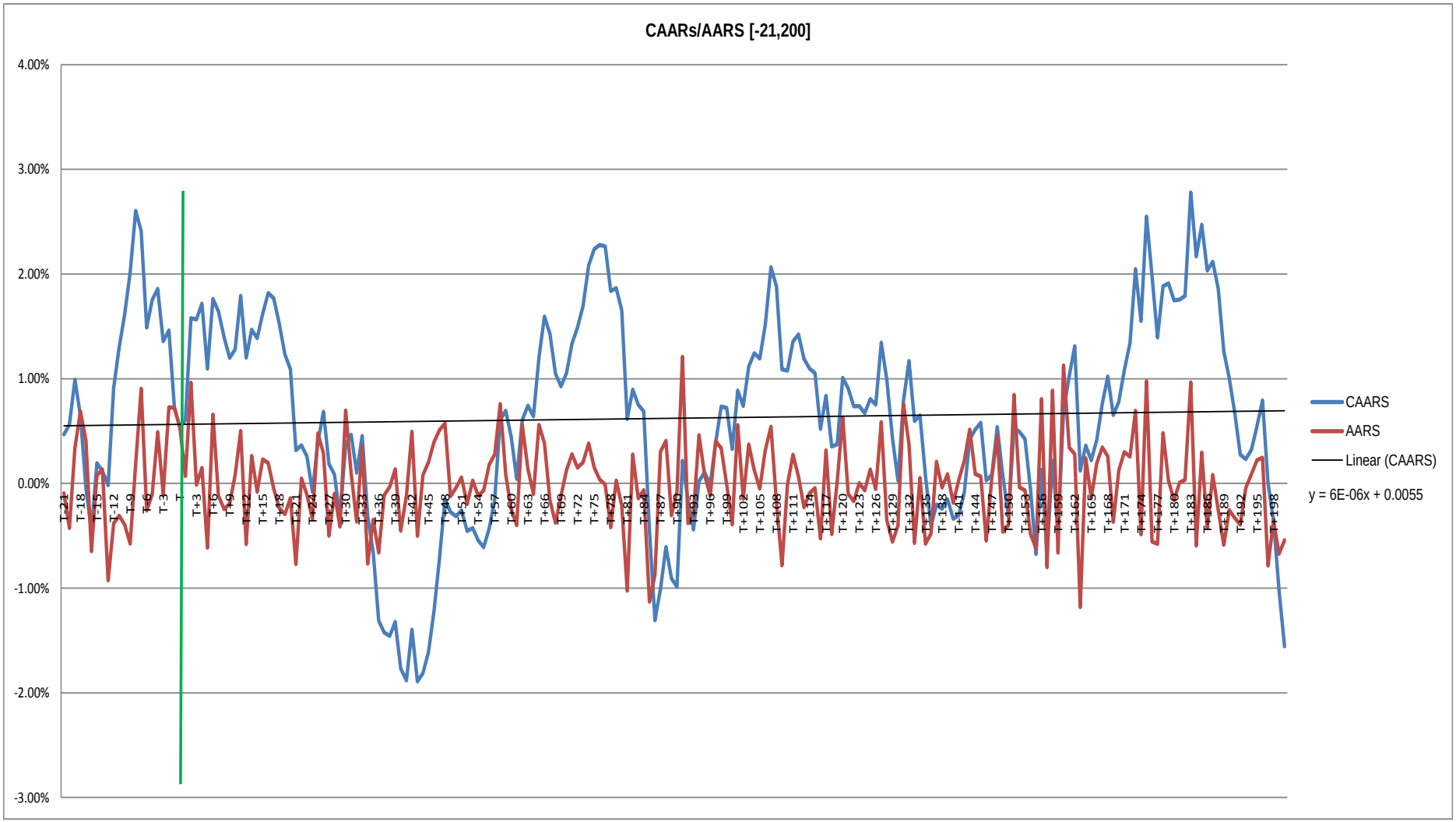


Figure 5-3: Cumulative Average Abnormal Returns (sample of 44 companies) for $CAAR_{[-21;\ 200]}$

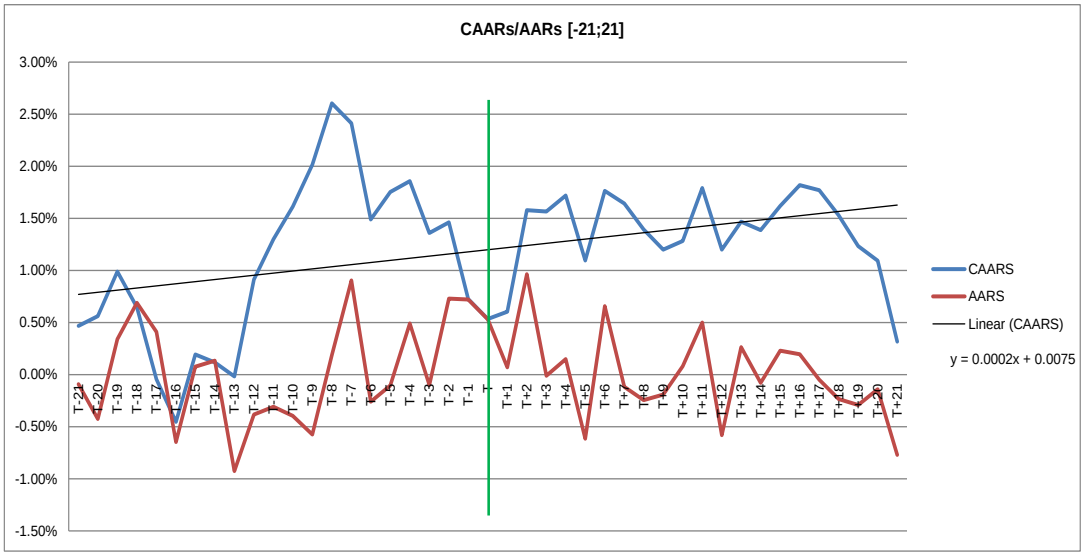


Figure 5-4: Cumulative Average Abnormal Returns (sample of 44 companies) for $CAAR_{[-21;21]}$

In summary, in the longer term event window [-21;+200], the variation between peaks and troughs in CAAR for the sample of 29 companies was greater than that for the sample of 44 companies. For the sample of 29 companies, CAAR peaked at 6.46% at t+175, while for the sample of 44 companies CAAR peaked at 2.78% at t+183. This resulted in a more distinctive upward trend line for the sample of 29 companies. The troughs were, however, similar in both samples. Over the short-term window [-21;+21], the CAAR for the sample of 44 companies was not as pronounced post the announcement date when compared to the CAAR for the sample of 29 companies.

5.3.3 Waves in abnormal returns

Table 5-3 indicates the descriptive statistics for the periods noted in sections 5.3.1 and 5.3.2 relating to the waves in performance. The median duration of the wave (from trough to trough) amounted to 45 days in the case of the sample of 29 companies and 43 days in the case of the sample of 44 companies.

Table 5-3: Descriptive statistics on waves in performance [-1;+200]

Descriptive Statistics	Sample of 29 companies	Sample of 44 companies
Mean	45	45.3
Median	45	43
Standard Deviation	1	4.04
Range	2	7
Minimum	44	43
Maximum	46	50

5.3.4 Results of t-tests performed on CAARs

The mean CAARs pre- and post-announcement are shown in table 5-4 Panel A. The means are based on the results of the t-tests for unequal variance and paired-tests. The trend in the mean pre- and post-announcement date for the sample of 29 companies and the extended sample of 44 companies are also reflected.

Table 5-4 Panel A: Mean Cumulative Average Abnormal Returns

Sample of 29 companies	**Mean**	**Mean**	**Trend in mean**
	t-3	**t+3**	
Paired t-test and t-test for unequal variance	1.521%	1.924%	Increasing
	t-5	**t+5**	
Paired t-test and t-test for unequal variance	1.727%	1.954%	Increasing
	t-10	**t+10**	
Paired t-test and t-test for unequal variance	1.771%	1.784%	Increasing
	t-11	**t+11**	
Paired t-test and t-test for unequal variance	1.667%	1.744%	Increasing
	t-21	**t+21**	
Paired t-test and t-test for unequal variance	0.423%	1.461%	Increasing
Sample of 44 companies			
	t-3	**t+3**	
Paired t-test and t-test for unequal variance	1.181%	1.250%	Increasing
	t-5	**t+5**	
Paired t-test and t-test for unequal variance	1.431%	1.313%	Decreasing
	t-10	**t+10**	
Paired t-test and t-test for unequal variance	1.729%	1.384%	Decreasing
	t-11	**t+11**	
Paired t-test and t-test for unequal variance	1.690%	1.421%	Decreasing
	t-21	**t+21**	
Paired t-test and t-test for unequal variance	1.046%	1.384%	Increasing

For the sample of 29 companies, the means for each event window post announcement were greater than those pre-announcement, while in the case of the extended sample the results were mixed. In both samples, however, the event window [-3;+3] and [-21;+21] show an increasing trend.

Table 5-4 Panel B reflects the results of the t-tests (t-tests assuming unequal variance) performed for the following event windows [-3;+3]; [-5;+5]; [-10;+10]; [-11;+11]; and [-21;+21], for the sample of 29 and 44 companies respectively. Based on the results of the t-tests for the sample of 29 companies, insignificant negative CAARs were obtained

for the three, five, 10 and 11-day event windows, whilst a significant negative CAAR (p-value of 0.003) was obtained for the 21-day event window.

In comparison, the extended sample of 44 companies resulted in insignificant positive CAARs were obtained for the five, 10 and 11-day event windows, whilst insignificant negative CAARs were obtained for the three and 21-day event windows.

In order to supplement the t-tests (given the small sample size), the results of the Wilcoxon signed rank sum test are included in table 5-4 Panel B. Statistically significant CAARs were obtained for the [-21;+21] event window for the sample of 29 companies, and the [-10;+10] and [-21;+21] event windows for the sample of 44 companies.

Table 5-4 Panel B: Summary of statistical tests for CAARs

Event Window	Sample Size	t–test (assuming unequal variance)		Paired t-test		Wilcoxon signed rank sum test	
		t-stat	p-value	t-stat	p-value	z-stat	p-value
[-3;+3]	29	-0.791	0.243	-1.166	0.182	-1.069	0.143
[-5;+5]	29	-0.657	0.266	-0.720	0.256	-0.944	0.173
[-10;+10]	29	-0.051	0.480	-0.123	0.452	-0.255	0.399
[-11;+11]	29	-0.308	0.381	-0.352	0.366	-0.178	0.429
[-21;+21]	29	-2.986	0.003*	-2.570	0.009*	-2.068	0.019*
[-3;+3]	44	-0.173	0.436	-0.148	0.448	-0.535	0.297
[-5;+5]	44	0.413	0.345	0.422	0.347	0.135	0.446
[-10;+10]	44	1.687	0.060	2.221	0.027*	1.784	0.037*
[-11;+11]	44	1.396	0.090	1.424	0.092	1.600	0.055
[-21;+21]	44	-1.671	0.053	-1.789	0.044*	-1.582	0.057

* - Significant at the 5% level

5.3.5 Results for the research hypothesis – Hypothesis 1

In summary, based on the results of the statistical test performed in table 5-4 Panel B, the cumulative average abnormal returns for the sample of 29 acquiring firms involved in a cross border merger or acquisition displayed insignificant results for the event windows [-3:+3]; [-5;+5]; [-10;+10] and [-11;+11]. The only event window to show consistent significant cumulative abnormal returns for all statistical tests performed was the [-21;+21] window. In the case of the sample of 44 acquiring companies, the event windows [-10;+10] and [-21;+21] contained statistically significant results, but these were not consistently statistically significant across the various statistical tests performed.

In summary, evidence supporting the rejection of the null hypothesis was inconclusive. In order to avoid making a type 1 error, the null hypothesis was not rejected. Therefore, the statistical testing concluded that:

- $CAAR_{(post)} \leq CAAR_{(pre)}$.

5.3.6 Bootstrap distributions

Given that it was unlikely that the sampling distribution for CAARs was normal, bootstrap distributions were generated for $CAAR_{t+3}$; $CAAR_{t+5}$; $CAAR_{t+10}$; and $CAAR_{t+11}$ and $CAAR_{t+21}$ by utilising random dates, instead of using the actual announcement dates. Bootstrapping was therefore applied to estimate the sampling distribution by sampling with replacement. This was done with the assistance of the event engine obtained from Muller and Ward (2013), by generating random dates from the sample based on the original announcement date of the cross border merger or acquisition. In order to generate the CAARs, the RANDOM function in Excel was utilised to generate random dates (as opposed to the actual event date) (Muller & Ward, 2013). This allowed the generation of abnormal returns for input into an Excel data table using an array of 650 cells. Muller and Ward (2013) suggested that the LOOKUP function in Excel is used to determine into which percentile the $CAAR_{t+3}$, $CAAR_{t+5}$; $CAAR_{t+10}$; $CAAR_{t+11}$ and $CAAR_{t+21}$ fall.

Table 5-5 (Panel A and B) reflects the CAARs that were calculated and the respective values at the fifth and 95^{th} percentiles. The p-values for t-tests assuming unequal variance are reflected in table 5-5. Based on the sample of 29 companies, acquirers earned negative abnormal returns, although none of results were found to be statistically significant (reflected in table 5-4 Panel A). Table 5-5 Panel B reflects the CAARs for the sample of 44 companies, which indicates that acquirers earned negative abnormal returns, with none of the results being statistically significant. The graphs of the bootstrap distributions for the sample of 29 and 44 companies are included in Appendix A.

Table 5-5 Panel A: Actual CAARs calculated based on the sample of 29 companies

CAAR	Actual CAAR Value	5th Percentile	95th Percentile	p-value
$CAAR_{t+3}$	-0.57%	-14.69%	6.49%	0.546
$CAAR_{t+5}$	-0.26%	-21.22%	5.73%	0.375
$CAAR_{t+10}$	-1.73%	-35.06%	7.79%	0.712
$CAAR_{t+11}$	-1.01%	-37.40%	6.27%	0.120
$CAAR_{t+21}$	-3.87%	-57.10%	11.34%	0.737

Table 5-5 Panel B: Actual CAARs calculated based on the sample of 44 companies

CAAR	Actual CAAR Value	5th Percentile	95th Percentile	p-value
$CAAR_{t+3}$	-0.86%	-10.74%	4.08%	0.634
$CAAR_{t+5}$	-1.56%	-14.62%	4.98%	0.818
$CAAR_{t+10}$	-0.84%	-26.79%	4.36%	0.366
$CAAR_{t+11}$	-1.06%	-28.00%	4.33%	0.274
$CAAR_{t+21}$	-3.48%	-43.10%	4.45%	0.685

The results of the bootstrap distributions further supported the conclusion reached above. The statistical testing of the bootstrap distribution provided further corroborative evidence for the following conclusion:

$CAAR_{(post)} \leq CAAR_{(pre)}$.

5.4 Operating financial performance

Financial ratios based on the annual financial statements were obtained for Earnings per Share, Operating Margin, Net Profit Margin, Return on Assets and Return on Equity. The financial ratios were sourced from the McGregorBFA database on a company-by-company basis. The means of the financial ratios on a pre- and post-acquisition basis are shown in table 5-6. The table compares the means for the financial ratios for the event windows [-1;+1]; [-1;+2] and [-1;+3] based on t-test assuming unequal variance and paired t-tests.

Table 5-6: Means for financial ratios

Sample of 29 Companies	Financial Ratios	t-1	t+1	t-1	t+2	t-1	t+3
T- test assuming unequal variance	Return on Equity	-11.768	24.173	-11.768	16.380	-11.768	-0.514
Paired t-test	Return on Equity	-25.731	17.775	-45.447	10.744	-57.901	-17.133
T- test assuming unequal variance	Return on Assets	12.860	14.041	12.860	11.299	12.860	10.089
Paired t-test	Return on Assets	12.591	12.848	11.805	7.846	12.846	1.007
T- test assuming unequal variance	Net Profit Margin	3.795	9.082	3.795	0.008	3.795	-0.739
Paired t-test	Net Profit Margin	1.553	14.124	-0.128	-4.545	-0.704	-8.544
T- test assuming unequal variance	Operating Margin	7.341	10.128	7.341	2.532	7.341	6.041
Paired t-test	Operating Margin	7.420	4.665	7.757	-3.301	10.248	12.462
T- test assuming unequal variance	Earnings per share	76.018	433.123	76.018	122.367	76.018	-13.988
Paired t-test	Earnings per share	-56.231	17.099	32.562	-0.850	50.480	16.956
Sample of 44 Companies	**Financial Ratios**	**t-1**	**t+1**	**t-1**	**t+2**	**t-1**	**t+3**
T- test assuming unequal variance	Return on Equity	1.795	23.820	1.795	20.338	1.795	8.508
Paired t-test	Return on Equity	-3.456	21.063	-8.780	18.240	-10.718	3.294
T- test assuming unequal variance	Return on Assets	14.494	15.737	14.494	14.724	14.494	13.416
Paired t-test	Return on Assets	14.308	15.017	15.840	13.776	16.711	10.161
T- test assuming unequal variance	Net Profit Margin	6.788	10.164	6.788	4.445	6.788	2.988
Paired t-test	Net Profit Margin	5.878	13.145	5.633	4.008	6.341	1.074
T- test assuming unequal variance	Operating Margin	11.167	13.747	11.167	9.432	11.167	9.486
Paired t-test	Operating Margin	12.608	12.361	13.976	8.878	15.953	13.171
T- test assuming unequal variance	Earnings per share	-2.960	254.659	-2.960	70.558	-2.960	-10.526
Paired t-test	Earnings per share	-56.231	17.099	20.242	5.375	29.121	2.277

Based on table 5-6, for the sample of 29 companies there was inconsistent evidence of improvement in the means of the selected financial ratios as the event window increased post-acquisition. A similar result was noted for the sample of 44 companies.

Statistical testing was performed on the sample of 29 companies and the extended sample of 44 companies. The results of testing are shown in tables 5-7; 5-8 and 5-9 respectively. Statistical testing included the following:

- Performing t-tests (assuming unequal variance) pre- and post the announcement date of the cross border merger or acquisition transaction. The financial ratios were base lined to the year of the announcement for each company. Table 5-7 indicates the results of testing performed for the following annual event windows - [-1;+1]; [-1;+2] and [-1;+3]. [-1] represents the year immediately preceding the year of the announcement of the cross border merger or acquisition transaction, while [+1]; [+2] and [+3] represent the first, second and third year immediately following the year of announcement of the cross border merger or acquisition transaction.
- Paired t-tests were performed for the same event windows as noted above for the sample of 29 and 44 companies respectively. The results of the paired t-tests are contained in table 5-8. Panel A of table 5-8 reflects the number of paired observations available for testing, whilst Panel B reflects the results of testing.
- Given the limited number of paired observations which could be obtained for paired t-tests noted above, non-parametric Wilcoxon Signed Rank Sum tests for paired samples (table 5-9) were also performed.

Table 5-7: Results of t-tests (assuming unequal variance) for financial ratios

Sample Size 29

Event Window	Operating Margin		Net Margin		Earnings Per Share		Return on Assets		Return on Equity	
	t-stat	p-value	t-stat	p-value	t-stat	p-value	t-stat	p-value	t-stat	p-value
[-1;+1]	-0.322	0.375	-0.716	0.240	-0.868	0.198	-0.241	0.405	-1.214	0.117
[-1;+2]	0.531	0.302	0.589	0.281	-0.456	0.327	0.262	0.398	-0.961	0.173
[-1:+3]	0.137	0.447	0.648	0.263	1.429	0.082	0.334	0.371	-0.345	0.366

Sample Size 44

Event Window	Operating Margin		Net Margin		Earnings Per Share		Return on Assets		Return on Equity	
	t-stat	p-value	t-stat	p-value	t-stat	p-value	t-stat	p-value	t-stat	p-value
[-1;+1]	-0.458	0.325	-0.688	0.247	-1.054	0.149	-0.378	0.353	-1.203	0.118
[-1;+2]	0.302	0.382	0.579	0.283	-0.902	0.185	-0.061	0.476	-1.023	0.156
[-1:+3]	0.297	0.384	0.843	0.203	0.110	0.456	0.216	0.415	-0.338	0.368

Table 5-8: Results of paired t-tests for financial ratios

Panel A - Number of Paired Observations

Sample Size 29

Event Window	Operating Margin	Net Margin	Earnings Per Share	Return on Assets	Return on Equity
[-1;+1]	14	15	28	15	16
[-1;+2]	9	10	10	11	11
[-1:+3]	6	8	7	9	9

Sample Size 29

Event Window	Operating Margin	Net Margin	Earnings Per Share	Return on Assets	Return on Equity
[-1;+1]	27	29	28	29	29
[-1;+2]	20	23	21	22	22
[-1:+3]	17	19	18	20	20

Panel B - Results of Testing

Sample Size 29

Event Window	Operating Margin		Net Margin		Earnings Per Share		Return on Assets		Return on Equity	
	t-stat	p-value	t-stat	p-value	t-stat	p-value	t-stat	p-value	t-stat	p-value
[-1;+1]	0.284	0.391	-1.073	0.151	-0.965	0.172	-0.044	0.483	-1.046	0.156
[-1;+2]	0.900	0.197	0.398	0.350	0.510	0.311	0.502	0.311	-0.911	0.192
[-1:+3]	-0.417	0.347	0.716	0.248	0.344	0.371	1.098	0.144	-0.526	0.307

Sample Size 44

Event Window	Operating Margin		Net Margin		Earnings Per Share		Return on Assets		Return on Equity	
	t-stat	p-value	t-stat	p-value	t-stat	p-value	t-stat	p-value	t-stat	p-value
[-1;+1]	0.048	0.481	-1.190	0.122	-0.965	0.172	-0.554	0.292	-1.067	0.148
[-1;+2]	0.922	0.184	0.344	0.367	0.469	0.322	1.103	0.141	-0.876	0.195
[-1:+3]	0.781	0.223	1.061	0.151	0.718	0.241	2.148	0.022*	-0.408	0.344

* - Significant at the 5% level

Table 5-9: Results of Wilcoxon Signed Rank Sum tests for financial ratios

Sample Size	29

Event Window	Operating Margin		Net Margin		Earnings Per Share		Return on Assets		Return on Equity	
	z-stat	p-value	z-stat	p-value	z-stat	p-value	z-stat	p-value	z-stat	p-value
[-1;+1]	-0.910	0.181	-0.852	0.197	-0.341	0.367	-0.341	0.367	-0.517	0.303
[-1;+2]	0.533	0.297	0.051	0.480	-0.968	0.166	0.711	0.239	-0.089	0.465
[-1:+3]	-0.524	0.300	0.560	0.288	-0.676	0.250	1.481	0.069	0.533	0.297

Sample Size	44

Event Window	Operating Margin		Net Margin		Earnings Per Share		Return on Assets		Return on Equity	
	z-stat	p-value	z-stat	p-value	z-stat	p-value	z-stat	p-value	z-stat	p-value
[-1;+1]	-1.538	0.062	-1.070	0.142	-1.002	0.158	-1.121	0.131	-0.551	0.291
[-1;+2]	0.560	0.288	-0.183	0.428	-1.025	0.153	0.536	0.296	0.536	0.296
[-1:+3]	0.118	0.453	-0.040	0.484	0.196	0.422	1.344	0.090	1.568	0.058

Operating margin: Negative statistically insignificant operating margins were obtained for the event window [-1;+1] in both the case of the sample of 29 companies and the sample of 44 companies (reflected in panel A and B of figure 5-5.1 respectively). The sample of 29 companies and the sample of 44 companies reflected statistically insignificant positive returns for the [-1;+2] and [-1;+3] event windows.

Panel A **Panel B**

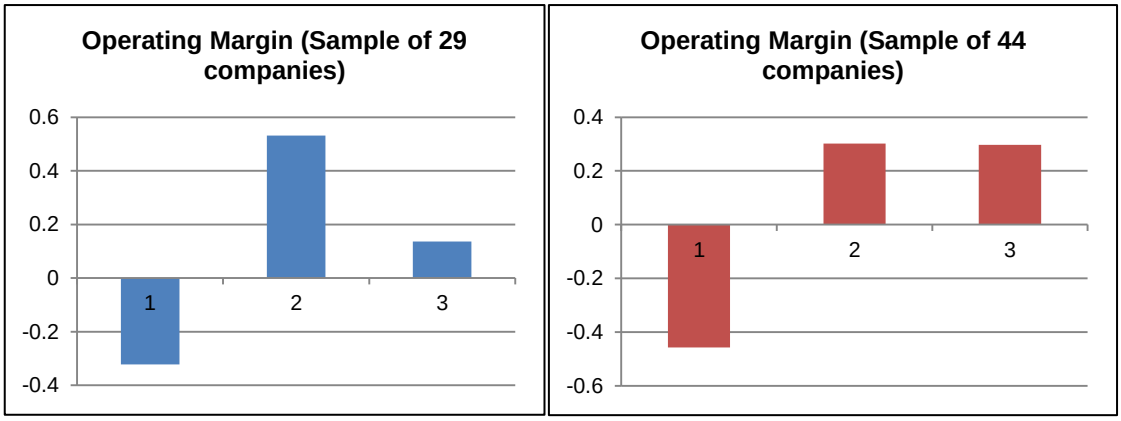


Figure 5-5.1: T-stat for Operating Margins

Based on the results of testing, there was insufficient evidence to reject the null hypothesis. Given the statistical evidence obtained, the following was concluded:

$OM_{(post)} \leq OM_{(pre)}$

Net Margins: Statistically insignificant negative operating margins were obtained for the event window [-1;+1] for both the sample of 29 companies and 44 companies

reflected in figure 5-5.2 (Panels A and B). Statistically insignificant positive margins were obtained for the event windows [-1;+2] and [-1;+3].

Panel A **Panel B**

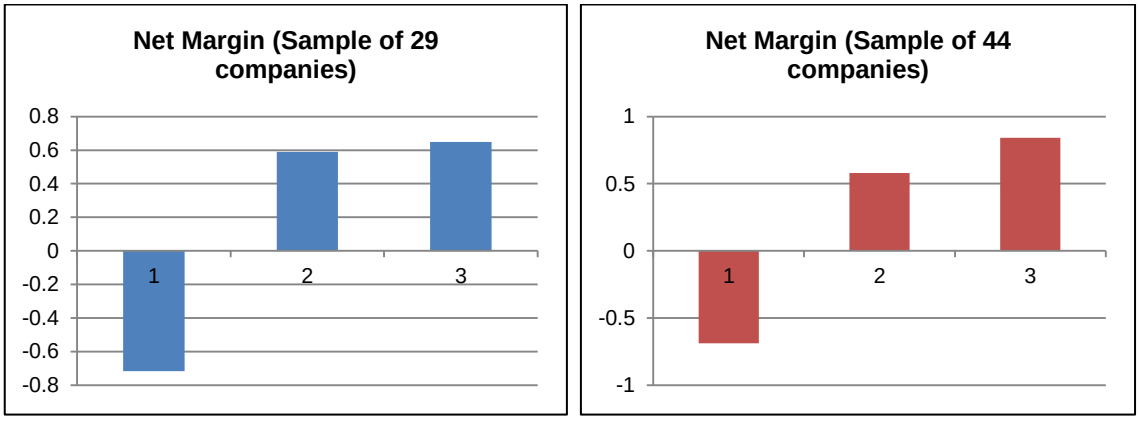


Figure 5-5.2: T-stat for Net Margins

Based on the results of testing, there was insufficient evidence to reject the null hypothesis. Given the statistical evidence obtained, the following was concluded:

$NM_{(post)} \leq NM_{(pre)}$

Earnings per Share: Statistically insignificant negative earnings per share were obtained for the event windows [-1:+1] and [-1;+2] in the case of both the sample of 29 and 44 companies (reflected in figure 5-5.3 - Panel A and B). Statistically insignificant positive earnings per share were obtained for the event window [-1;+3].

Panel A **Panel B**

Figure 5-5.3: T-stat for Earnings per Share

Based on the results of testing, there was insufficient evidence to reject the null hypothesis. Given the statistical evidence obtained, the following was concluded:
$EPS_{(post)} \leq EPS_{(pre)}$

Return on Equity: A statistically insignificant negative return on equity was obtained for all three window periods ([-1;+1]; [-1;+2] and [-3;+3]) as reflected in figure 5-5.4, Panel A and B. Statistically insignificant negative returns on equity occurred across all three event windows for both the sample of 29 and 44 companies.

Panel A **Panel B**

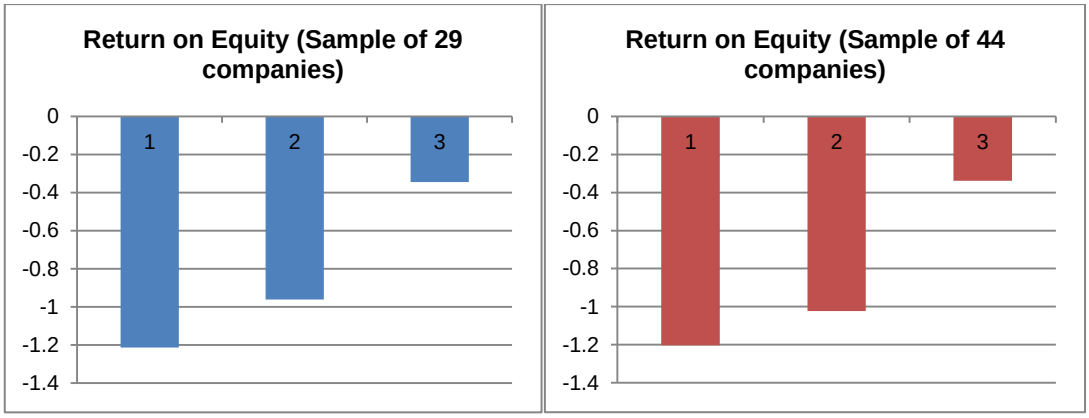


Figure 5-5.4: T-stat for Return on Equity

Based on the results of testing, there was insufficient evidence to reject the null hypothesis. Given the statistical evidence obtained, the following was concluded:
$ROE_{(post)} \leq ROE_{(pre)}$

Return on Assets: A statistically insignificant negative return on assets was reflected for the event period [-1;+1] for both samples shown in figure 5-5.5 (Panel A and B). In the case of the sample of 29 companies, statistically insignificant positive returns were obtained for the event window [-1;+2] and [-1:+3]. In the case of the sample of 44 companies, statistically insignificant negative returns were obtained for the event window [-1;+2], whilst statistically insignificant positive returns were earned for the event window [-1;+3].

Panel A **Panel B**

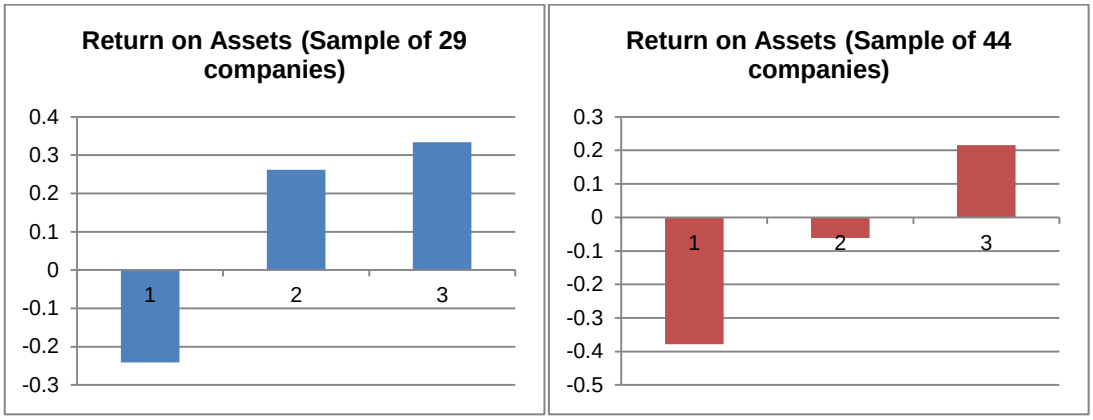


Figure 5-5.5: T-stat for Return on Assets

Based on the results of testing, there was insufficient evidence to reject the null hypothesis. Given the statistical evidence obtained, the following was concluded:
$ROA_{(post)} \leq ROA_{(pre)}$

In summary, based on the above it appears that there is variation in the financial ratios with respect to either positive or negative returns, with the exception of return on equity. In all three event windows tested, and for both sample sizes, return on equity consistently displayed a negative result.

5.4.1 Results of paired t-tests

With reference to table 5-8 (Panel A), a limited number of paired observations were obtained for the sample of 29 companies. The largest number of paired observations was obtained for Earnings per Share for the event window [-1;+1], with a total of 28 paired observations. The smallest number of paired observations was obtained for Net Turnover Margin and Operating Margin, with six paired observations for the event window [-1;+3].

A greater number of paired observations were obtained for the sample of 44 companies (table 5-8, Panel A). The largest number of paired observations noted was for Return on Assets and Return on Equity with 29 paired observations each (for the event window [-1;+1]). The least number of paired observations related to Operating Margin with 17 paired observations were for the event window [-1;+3].

For the sample of 29 companies for the event window [-1;+1], net margin, earnings per share, return on assets and return on equity all reflected statistically insignificant

negative returns. Operating Margin reflected a statistically insignificant positive result. In comparison, the sample of 44 companies yielded positive returns for operating margin and negative returns for the remaining ratios (all statistically insignificant).

Therefore, for the event window [-1;+1], based on the results of testing there is insufficient evidence to reject the null hypotheses. Given the statistical evidence obtained, the following was concluded:

- $OM_{(post)} \leq OM_{(pre)}$
- $NM_{(post)} \leq NM_{(pre)}$
- $EPS_{(post)} \leq EPS_{(pre)}$
- $ROE_{(post)} \leq ROE_{(pre)}$
- $ROA_{(post)} \leq ROA_{(pre)}$

For the event window [-1;+2], operating margin, net margin, earnings per share and return on assets all reflected statistically insignificant positive results, with return on equity reflecting a statistically insignificant negative result. In comparison, all ratios for the sample of 44 companies yielded insignificantly positive results with the exception of return on equity.

Therefore, for the event window [-1;+2], based on the results of testing there was insufficient evidence to reject the null hypotheses. Given the statistical evidence obtained, the following was concluded:

- $OM_{(post)} \leq OM_{(pre)}$
- $NM_{(post)} \leq NM_{(pre)}$
- $EPS_{(post)} \leq EPS_{(pre)}$
- $ROE_{(post)} \leq ROE_{(pre)}$
- $ROA_{(post)} \leq ROA_{(pre)}$

For the event window [-1;+3], net margin, earnings per share and return on assets all displayed statistically insignificant positive results. Operating margin and return on equity both displayed statistically insignificant negative results. For the sample of 44 companies, all the financial ratios with the exception of return on equity yielded statistically insignificant positive results.

For the event window [-1;+3], based on the results of testing there was insufficient evidence to reject the null hypotheses. Given the statistical evidence obtained, the following was concluded:

- $OM_{(post)} \leq OM_{(pre)}$
- $NM_{(post)} \leq NM_{(pre)}$
- $EPS_{(post)} \leq EPS_{(pre)}$
- $ROE_{(post)} \leq ROE_{(pre)}$
- $ROA_{(post)} \leq ROA_{(pre)}$

In summary, for the paired t-tests performed, variation was noted in the financial ratios tested with the exception of return on equity. In all three event windows, and in both sample sizes tested, return on equity consistently displayed negative returns. It was however noted that the paired test performed for return on assets reflected a statistically significant positive result (p value = 0.022) at the 5% level in the sample of 44 companies.

5.4.2 Results of the Wilcoxon Signed Rank Sum test

The Wilcoxon Signed Rank Sum Test applied to the financial ratios produced either statistically insignificant positive or negative results dependent on the ratio tested. For the event window [-1;+1], all ratios displayed statistically insignificant negative results with the exception of net turnover margin in the sample of 44 companies, which was statistically insignificant positive.

For the event window [-1;+2] for the sample of 29 companies operating margin, net margin and return on assets displayed statistically insignificant positive results, with the remainder displaying statistically insignificant negative results. In the case of the sample of 44 companies, operating margin, return on assets and return on equity all displayed statistically insignificant positive results, with the remainder displaying statistically insignificant negative results.

For the event window [-1;+3], the results obtained for net margin and return on assets in the sample of 29 companies were statistically insignificant and positive, with the remainder being negative. For the sample of 44 companies, all financial ratios tested with the exception of net margin produced statistically insignificant positive results.

In summary, for all three event windows noted above, there was insufficient evidence to reject the null hypotheses. Given the statistical evidence obtained, the following was concluded:

- $OM_{(post)} \leq OM_{(pre)}$
- $NM_{(post)} \leq NM_{(pre)}$
- $EPS_{(post)} \leq EPS_{(pre)}$
- $ROE_{(post)} \leq ROE_{(pre)}$
- $ROA_{(post)} \leq ROA_{(pre)}$

5.5 Industry adjusted operating cash flow return on assets

The mean industry adjusted operating cash flow return on assets obtained from t-tests for unequal variance is shown in table 5-10. The mean industry adjusted operating cash flow return on assets obtained from paired t-tests is shown in table 5-11. The number of paired observations obtained for the [-1;+1]; [-1;+2] and [-1;+3] event windows for the sample of 29 companies amounted to 24, 20 and 14 respectively. In the case of the extended sample of 44 companies, the paired observations amounted to 37, 30 and 24 observations respectively.

Table 5-10 – Means of Operating Cash flow Return on Assets: t-tests for unequal variance

Sample	Event Window			
	[-1]	[+1]	[+2]	[+3]
29 companies	-0.040	-0.037	-0.027	-0.022
44 companies	-0.047	-0.064	-0.056	-0.058

Table 5-11 – Means of Operating Cash flow Return on Assets: Paired t-tests

Sample	Event Window	Pre Acquisition [-1]	Post Acquisition [+1]; [+2] or [+3]
29 Companies	[-1;+1]	-0.046	-0.039
29 Companies	[-1;+2]	-0.054	-0.029
29 Companies	[-1;+3]	-0.077	-0.023
44 Companies	[-1;+1]	-0.053	-0.065
44 Companies	[-1;+2]	-0.063	-0.058
44 Companies	[-1;+3]	-0.079	-0.059

The results of statistical testing for the sample of 29 and 44 companies are included in tables 5-12 and 5-13 respectively. For the sample of 29 companies, statistically insignificant negative results were obtained for all event windows tested. In the extended sample, the t-test performed for samples of unequal variance reflected

statistically insignificant negative positive results for all event windows tested. The results of the paired t-test and Wilcoxon Signed Rank Sum test reflected statistically insignificant positive results for the [-1;+1] event window, however reflected statistically insignificant results for the [-1;+2] and [-1;+3] event windows.

Table 5-12: Results of statistical tests for the sample of 29 companies

Test	[-1,+1]		[-1;+2]		[-1;+3]	
	t stat	p-value	t stat	p-value	t stat	p-value
t-Test: Unequal variance	-0.061	0.476	-0.285	0.389	-0.384	0.352
t-Test: Paired	-0.339	0.369	-0.691	0.249	-1.075	0.151
	z- stat	p-value	z- stat	p-value	z- stat	p-value
Wilcoxon Signed Rank Sum Test	-0.543	0.294	-0.597	0.275	-0.596	0.276

Table 5-13: Results of statistical tests for the sample of 44 companies

Test	[-1,+1]		[-1;+2]		[-1;+3]	
	t stat	p-value	t stat	p-value	t stat	p-value
t-Test: Unequal variance	0.492	0.312	0.210	0.417	0.225	0.412
t-Test: Paired	0.701	0.244	-0.191	0.425	-0.581	0.284
	z- stat	p-value	z- stat	p-value	z- stat	p-value
Wilcoxon Signed Rank Sum Test	0.324	0.373	-0.257	0.399	-0.543	0.294

Accordingly, based on the various statistical tests performed for both the samples of 29 and 44 companies, insufficient evidence was obtained to reject the null hypothesis. Given the statistical evidence obtained the following was concluded:

- $IACRA_{(post)} \leq IACRA_{(pre)}$

5.6 Summary of hypothesis testing

In summary, statistical testing was performed on CAARs, financial ratios measuring performance and operating cash flow return on assets for a sample of acquiring firms involved in cross border merger or acquisition transactions. An initial sample of 29 companies was obtained, but due to the small sample size this was extended to a sample of 44 companies, which was tested for comparative purposes.

In the case of the CAARs, the trend was analysed for both the samples of 29 and 44 companies for a longer term event window [-21;+200] and a shorter term event window [-21;+21]. In terms of both samples a decline in CAARs was noted approximately seven days prior to the announcement date. Immediately post the announcement date there was a short-term increase in CAARs, followed by a decreasing trend, which ended approximately 45 days post-acquisition. Three distinct waves in abnormal

returns were noted after this initial 45 day period, each lasting for approximately 45 days.

Statistical testing of CAARs involved the application of t-tests for unequal variance, paired t-tests and Wilcoxon signed rank sum tests. Statistically significant negative results were obtained for the event window [-21;+21] for the sample of 29 companies for all three abovementioned statistical tests. In the case of the sample of 44 companies, statistically significant positive results were obtained for the event window [-10;+10] when applying paired t–tests and the Wilcoxon signed rank sum test. A statistically significant negative result was obtained for the event window [-21;+21] when applying a paired t-test. These tests were supplemented by generating bootstrap distributions, given that it was unlikely that the underlying distributions were normal. Statistically insignificant results were, however, obtained. Based on the tests performed, insufficient evidence was gained to reject the null hypothesis.

Similarly, financial ratios and operating cash flow returns were tested by applying t-tests for unequal variance, paired t-tests and Wilcoxon signed rank sum tests. Based on the various statistical tests performed for both the sample of 29 and 44 companies, insufficient evidence was obtained to reject the null hypotheses. Accordingly, a summary of results as they pertain to the null hypotheses included in Chapter 3 has been included below:

Hypothesis	**Result**
$H1_o$: $CAAR_{(post)} \leq CAAR_{(pre)}$	Do not reject
$H2_o$: $OM_{(post)} \leq OM_{(pre)}$	Do not reject
$H3_o$: $NM_{(post)} \leq NM_{(pre)}$	Do not reject
$H4_o$: $EPS_{(post)} \leq EPS_{(pre)}$	Do not reject
$H5_o$: $ROE_{(post)} \leq ROE_{(pre)}$	Do not reject
$H6_o$: $ROA_{(post)} \leq ROA_{(pre)}$	Do not reject

CHAPTER 6 – DISCUSSION OF RESULTS

In Chapter 1, the researcher indicated that this research aims to determine whether cross border mergers and acquisitions concluded by acquiring companies listed on the Johannesburg Stock Exchange have a positive or negative impact on the operating financial performance and short term share price performance of the listed acquirer. The essence of a merger or acquisition transaction is to create shareholder value (Papadakis & Thanos, 2010), however the impact of cross border mergers and acquisitions remains largely unexplored in the emerging market context (Bhagat *et al*., 2011). Based on the literature review undertaken in Chapter 2, this limitation also appears to be relevant to cross border mergers and acquisition transactions concluded by acquiring companies listed on the Johannesburg Stock Exchange. Given the limitation in available literature relating to the performance of cross border mergers and acquisitions transactions, the discussion of the results obtained was extended to include literature relating to the performance of mergers and acquisitions in general. The purpose thereof was to assist in creating a broader understanding of the performance of cross border mergers and acquisitions given limited comparative information.

Chapter 2 highlighted that there is debate not only with respect to how to measure the financial performance of mergers and acquisitions transactions (Zollo & Meier, 2008), but also whether these transactions create shareholder value (Papadakis & Thanos, 2010). Furthermore, in Chapter 2 it was noted that Andrade *et al.* (2001) suggested that the most statistically reliable evidence as to whether mergers and acquisitions create wealth and value for shareholders is derived from short-term event studies.

This study therefore attempted to expand on the body of knowledge by considering the post-acquisition impact of cross border mergers and acquisition transactions in the South African context, based on three areas of measurement including:

- Short term share price performance;
- Financial ratios specifically aimed at measuring financial performance; and
- Industry adjusted operating cash flow return on assets.

Based on a high level overview of the results of statistical testing reflected in Chapter 5, it would appear that in the short term, cross border mergers and acquisitions for acquirers listed on the Johannesburg Stock Exchange do not create significant value, at least in the short term.

6.1 Short term share price performance

Chapter 3 indicated that hypothesis 1 would be used to test short-term share price performance. The aim of the design of hypothesis 1 was to test the difference between pre-acquisition cumulative average abnormal returns and post-acquisition cumulative average abnormal returns for the sample of acquiring companies involved in cross border mergers and acquisitions. The outcome of the testing of the hypothesis would prove or disprove whether cross border merger or acquisition transactions create value for the shareholders of the listed acquiring firms in the short term.

Hypothesis 1 ($H1_0$): The null hypothesis states that the cumulative average abnormal return (CAAR) of the acquiring firm involved in a cross border merger or acquisition on a post-acquisition basis is less than or equal to the cumulative average abnormal return of the acquiring firm involved in a cross border merger or acquisition on a pre-acquisition basis.

6.1.1 Cumulative Average Abnormal Returns at announcement date

Figure 5-1 and figure 5-3 show the CAARs and AARs for the event window [-21;+200] for the samples of 29 companies and 44 companies respectively. The event window was adjusted in figures 5-2 and 5-4 for the abovementioned sample sizes, to reflect a short-term event window of 21 days pre- and post the announcement date of the cross border merger or acquisition transaction.

The upward sloping trend lines and supporting equations included in figures 5-1 to 5-4 suggest that the market sees some value in cross border mergers or acquisitions transactions on a post-acquisition basis. When one examines figures 5-2 and 5-4 at a more granular level, it becomes apparent that in the last week leading up to the announcement of the merger or acquisition transaction, there is a downward trend in the CAAR. This initial downward trend in CAAR indicates that the market displays initial uncertainty or negativity towards the merger or acquisition transaction given risks associated with these transactions, but also suggests that there is possible evidence of leakage of information of the cross border merger or acquisition transaction to the market prior to the announcement. Song *et al.* (2011), who studied the impact of cross border merger and acquisition transactions on target firms in Thailand and the Philippines, found evidence of leakage of information. This was indicated by a significant positive abnormal return for the target firms, two weeks before the announcement of the cross border merger or acquisition transaction. The finding aligns to Chapter 2.1 where it was noted that target firms often reap positive returns (as

indicated by the significant positive abnormal returns noted by Song *et al*. (2011) above) whilst the performance of acquiring firms is mixed (Uddin & Boateng, 2009). From the perspective of the acquirer, this suggests that in the case of corporate control market competition together with increased risk quickly erodes abnormal returns (Uddin & Boateng, 2009). Post a merger or acquisition transaction, target firms are in a better position to pursue shareholder value enhancing activities such as developing new products, implementing new technologies or paying dividends (Song *et al.,* 2011).

The results of this study suggest an early concern by the market in the light of acquiring firms listed on the Johannesburg Stock Exchange which are involved in cross border mergers and acquisitions. In Chapter 1.1 and Chapter 2.4 it was noted that firms engaging in cross border mergers or acquisitions are exposed to various risks such as "liability of foreignness" and "double layered acculturation" (Shimizu *et al.,* 2004, p. 310). Given the complexity associated with cross border mergers and acquisitions, risks materialise as a result of difficulties associated with the post-acquisition integration of the acquired companies (Aybar & Ficici, 2009). These risks are also the result of differences in culture, legal, economic, or regulatory circumstances that exist in the different environments in which the acquiring and target firms are domiciled (Shimizu *et al.*, 2004).

At announcement date, the CAAR for the sample of 29 companies amounted to 0.92%. By comparison, the CAAR at announcement date for the extended sample of 44 companies amounted to 0.53%. Bhagat *et al.* (2011) found that emerging market acquirers partaking in cross border mergers and acquisitions transactions generated a significant positive CAAR of 1.09% at announcement date. Part of the sample of emerging market multi-nationals contained in the study undertaken by Bhagat *et al.* (2011) included 50 South African firms, for which the authors obtained an insignificant mean CAAR of 1.07%. The authors only tested the South African firms for an event window of [-1;+1] around announcement date. Based on an examination of the studies set out in table 2-6, only the study undertaken by Bris and Cabolis (2008, as cited by Bhagat *et al*., 2011) contained evidence of the selection of acquiring companies from emerging markets. The authors found statistically significant negative returns amounting to -1.12% around announcement date. This result is however skewed to some degree given the presence of acquiring companies domiciled in developed countries. Smit and Ward (2007), in their study on South African acquiring firms, obtained an insignificant CAAR of -0.02% around announcement date. As pointed out in Chapter 1.6, Smit and Ward (2007) did not specifically address the performance of

cross border mergers and acquisitions. Given the studies above, there are similarities in the results relating to South African firms in that the results are all statistically insignificant around the announcement date.

In the context of the overall 21-day period post announcement (per figures 5-2 and 5-4), the CAAR became positive 12 to 13 days prior to the announcement date and remained positive over the period to t+21. Whilst the results were statistically insignificant (as noted in Chapter 5.3.5), this is contradictory to evidence obtained by Uddin and Boateng (2009). Their study of short run performance of cross border mergers and acquisitions involving UK acquiring firms indicated that CAARs over a 21 day period surrounding the announcement date are negative. This led the authors to conclude that cross border mergers and acquisitions do not generate value for the acquiring firm, which in their view was surprising given the expectation that cross border mergers and acquisitions should lead to some level of diversification.

The comparison above suggests that from a South African acquiring firm perspective, cross border mergers and acquisitions do not significantly create or destroy value around the announcement date. This is consistent with the results obtained in Chapter 5. There is, however, some discrepancy when comparing the results of this study to those that focus on developed economies or emerging markets as a whole, such as in the case of significant positive CAARs obtained by Bhagat *et al.* (2011) or the significant negative returns obtained by Bris and Cabolis (2008, as cited by Bhagat *et al*., 2011)

The event windows tested in Chapter 5 are discussed below. The results for each event window are compared to available academic studies.

6.1.2 Event windows

6.1.2.1 Mean Cumulative Average Abnormal Returns

Table 5-4, Panel A, reflects the trend in mean CAAR for the [-3;+3]; [-5;+5]; [-10;+10]; [-11;+11]; and [-21;+21] event windows. In the case of the 29 companies, which were identified based on the exclusion of confounding events, the mean CAAR increased for all event windows post acquisition. In the case of the extended sample, only the [-3;+3] and [-21;+21] event windows showed an increase. The results for the mean CAARs for the 44 companies would however have to be discounted, given that 15 companies within this sample were influenced to some degree by the occurrence of confounding events. Accordingly, the results of table 5-4 suggest that the market does see some

degree of benefit in the acquiring company partaking in a cross border merger or acquisition.

6.1.2.1.1 Event window [-3:+3]

Table 5-4, Panel B, summarises the results of statistical testing for CAARs for the sample of 29 companies and the extended sample of 44 companies. The results obtained for the event window [-3;+3], as shown by the p-values, were statistically insignificant and negative. Furthermore, the results of the bootstrap distribution as reflected in table 5-5 were statistically insignificant and negative for both sample sizes.

As noted in Chapter 2.6.1, Mantecon (2009) found that the CAAR for acquiring firms involved in cross border merger or acquisition transactions amounted to 0.29% for a three-day event window around the acquisition date. The results obtained were not considered to be statistically significant. Zhu and Jog (2012) however found that cross border mergers and acquisitions result in a statistically significant positive return at acquisition for the acquiring firm. Furthermore, Chari *et al.* (2010) found positive significant abnormal returns of 1.16% over a three-day period. These studies were broad based in that they covered cross border mergers and acquisitions in both developed and emerging markets.

These results confirmed the view expressed by Bruner (2002) in Chapter 2.2, who suggested that there are conflicting results as to the performance and value created by mergers and acquisitions. Whilst two of the academic studies found statistically significant positive evidence for abnormal returns, one academic study found statistically insignificant returns. In comparison, this study returned statistically insignificant negative returns for this event window, suggesting that South African acquiring companies do not benefit in the short term post-acquisition by partaking in cross border mergers or acquisitions transactions. Caution should, however, be applied in making direct inferences from these studies, given that this research focused purely on acquirers domiciled in a single emerging market (i.e. South Africa). Accordingly, the null hypothesis ($H1_0$) was not rejected for the event window [-3;+3].

6.1.2.1.2 Event window [-5;+5]

Per table 5-4, panel B, insignificant negative results were obtained for all tests performed for this event window for the sample of 29 companies. In comparison, insignificant positive results were obtained for all tests performed relating to the sample of 44 companies. According to the results of the bootstrap distribution, the actual CAAR calculated for $CAAR_{t+5}$ (table 5-5, Panel A for the sample of 29 companies)

amounts to -0.26% (insignificant). Table 5-5 Panel B indicates that the actual $CAAR_{t+5}$ for the sample of 44 companies amounted to -1.56% (insignificant).

Aybar and Ficici (2009) found a statistically insignificant mean CAAR of -5.44% in their study of 433 cross border acquisitions by emerging market multi-nationals, and concluded that in their view, cross border mergers and acquisitions do not create value. Their sample included only two South African companies. Smit and Ward (2007) studied large mergers and acquisitions transactions on the Johannesburg Stock Exchange but did not differentiate between domestic and cross border transactions. They obtained an insignificant positive CAAR of 3.79% for this event window at the 10% level of significance. Uddin and Boateng (2009) tested the performance of UK acquiring firms involved in cross border mergers and acquisitions for the [-5;+5] window based on various criteria. These included (1) cash versus non-cash acquisitions; (2) acquisitions involving private versus public target companies; (3) related and unrelated company acquisitions (or acquisition strategy); (4) geographic region; and (5) deal size. At the 5% level of significance, the Z statistics obtained were insignificant. This led Uddin and Boateng (2009) to conclude that acquirers domiciled in the UK do not earn positive abnormal returns given the announcement of a cross border merger or acquisition. The results of these studies are aligned to the results of this study, which suggest that overall cross border mergers and acquisitions transactions do not create significant value post-acquisition for this event window.

Smit and Ward (2007), as noted above, did not differentiate based on domestic and cross border transactions, suggesting that from a South African perspective domestic mergers and acquisitions may create greater value for South African listed acquirers. Smit and Ward (2007) obtained an insignificant positive CAAR of 3.79%, whilst this study obtained a CAAR of 0.92% for the sample of 29 companies, and 0.53% for the sample of 44 companies. There are a number of factors that can influence this. As noted in Chapter 6.1.1, there are various risks associated with cross border mergers and acquisitions which can negatively impact cash flows of the acquiring firm or values of assets exchanged (Shimizu *et al.*, 2004). Aybar and Ficici (2009) pointed out in their study on cross border acquisitions that the relative size of the target; diversity of corporate structures; bids for privately owned companies; relatedness of the target and the degree of technological advancement of the targ*et* all have a role to play in post-acquisition performance. Aybar and Ficici (2009) specifically noted that cross border merger and acquisition announcements involving high tech or related targets are often associated with value destruction. In addition, Roll (1986, as cited by Smit and Ward,

2007) suggested that we do not fully understand whether mergers or acquisitions create value or the motives behind these transactions. Accordingly, these factors may all have a role to play in the difference in short term share price performance between domestic and cross border mergers and acquisition transactions. The null hypothesis ($H1_0$) was therefore not rejected for the event window [-5;+5].

6.1.2.1.3 Event window [-10;+10]

Per table 5-4, Panel B, insignificant negative results were obtained for all tests performed for this event window for the sample of 29 companies. In comparison, positive insignificant results were obtained for the t-tests assuming unequal variance for the sample of 44 companies. Statistically significant positive results were however obtained from the paired t-test and Wilcoxon signed rank sum test. Given that the sample available to perform the paired t-test only amounted to 10 observations, greater weight was placed on the results of the non-parametric Wilcoxon signed rank sum test, which is better suited to small samples. Caution should be exercised in accepting this result, given the potential impact of confounding events inherent in this sample. For the sample of 29 companies, the results of the bootstrap distribution for the actual $CAAR_{t+10}$ amounted to -1.73% (table 5-5, Panel A). This is statistically insignificant. In comparison, the actual $CAAR_{t+10}$ for the sample of 44 companies (table 5-5, Panel B) amounted to -0.84% (statistically insignificant).

In comparison to the above results, Aybar and Ficici (2009) obtained an insignificant Z-statistic of -1.12 for the [-10;+10] event window, leading them to conclude that cross border mergers and acquisitions do not create value. Furthermore, Uddin and Boateng (2009) tested the performance of UK acquiring firms involved in cross border mergers and acquisitions for the [-10;+10] event window, based on the same criteria as used for the [-5;+5] event window. An insignificant Z statistic was obtained at the 5% level of significance for all criteria tested, with the exception of acquisitions involving private versus public companies (where a statistically significant Z statistic of -1.99 was obtained). In addition, Smit and Ward (2007) obtained an insignificant CAAR of 4.35% for the [-10;+10] event window.

The overall results of this study are similar to the results of those academic studies noted above, in that they all produced statistically insignificant results post-acquisition. The consistent theme for this event window is therefore that cross border mergers and acquisitions do not appear to result in a significant increase in abnormal returns post-

acquisition. Accordingly, the null hypothesis ($H1_0$) was not rejected for the event window [-10;+10].

6.1.2.1.4 Event window [-11;+11]

Per table 5-4, Panel B, insignificant negative results were obtained for all tests performed for this event window for the sample of 29 companies. In comparison, insignificant positive results were obtained for the sample of 44 companies. Based on table 5-5, the bootstrap distribution indicated that the actual $CAAR_{t+11}$ amounted to -1.01% for the sample of 29 companies and -1.06% for the sample of 44 companies. These values are statistically insignificant.

As noted in Chapter 2.6.1, Gubbi *et al.* (2009) analysed 425 cross border mergers and acquisitions undertaken by Indian firms and obtained a significant CAAR of 2.58% at a 1% level of significance. They concluded that cross border mergers and acquisitions undertaken by Indian firms generate significant abnormal returns. In contrast, the results of this study returned statistically insignificant results for the 11-day event window at a 5% level of significance, hence resulting in a level of inconsistency when making a direct comparison. The results however point to the possibility that cross border mergers and acquisitions may be more effective in specific emerging markets when compared to others. It should also be noted that Gubbi *et al.* (2009) were able to obtain a far larger sample compared to this study, suggesting that the results of this study may be limited. Overall, this study returned statistically insignificant negative returns for the event window [-11;+11]. Accordingly, the null hypothesis ($H1_0$) was not rejected for the event window [-11;+11].

6.1.2.1.5 Event window [-21;+21]

Per table 5-4, Panel B, statistically significant negative results were obtained for all tests performed for the sample of 29 companies. The following p-values were obtained:

- t-test assuming unequal variance – 0.003
- Paired t-test – 0.009
- Wilcoxon signed rank sum test – 0.019

In comparison, for the sample of 44 companies the following p-values were obtained:

- t-test assuming unequal variance – 0.053 (some level of significance)
- Paired t-test – 0.044 (statistically significant)
- Wilcoxon signed rank sum test – 0.057 (some level of significance)

It should however be noted that the sample of 44 companies was impacted by confounding events to some degree. Based on the results of the bootstrap distribution however, the actual $CAAR_{t+21}$ amounted to a statistically insignificant value of -3.87% for the sample of 29 companies (table 5-5, Panel A). In comparison, the actual $CAAR_{t+21}$ for the sample of 44 companies amounted to a statistically insignificant value of -3.48%. There is therefore some conflict between the outputs of the parametric and non-parametric tests performed, and the results of the bootstrap distribution with reference to the level of statistical significance of the results.

The findings however show some similarity with the results obtained by Halfer (2011) who studied the long-term effect of mergers and acquisitions on acquirers listed on the Johannesburg Stock Exchange. It should be noted that Halfer (2011) did not differentiate based on cross border transactions, and focussed on the long-term financial performance effects of mergers and acquisitions. The author noted that for a period of 252 days post the merger or acquisition (which was the shortest event window tested), the CAAR for 26 of 29 companies tested amounted to -1.3%. According to t-tests performed this result was statistically significant at the 5% level. Similarly, Uddin and Boateng (2009) in their analysis of cross border mergers and acquisitions involving UK acquirers found that CAARs for the 21-day window were negative. This led them to conclude that cross border mergers and acquisitions for acquiring UK firms do not generate value.

As one extends the event window it is likely that the impacts of integration between the acquiring and target firm start to become pronounced. According to Aybar and Ficici (2009) cultural proximity, relatedness of the target, the acquirer's governance processes and international experience all play a role in influencing the CAAR. The risks, complexities and difficulties associated with integration as suggested by Aybar and Ficici (2009) and Shimizu *et al.* (2004) begin to materialise, hence partially explaining the significant negative CAAR for the 21 day event window obtained as part of this research. Similarly, this may also reflected in the 252 day window studied by Halfer (2011).

The similarities of the studies included above therefore suggest that cross border mergers and acquisitions do not create value in the short to medium term. Accordingly, the null hypothesis ($H1_0$) was not rejected for the event window [-21;+21].

In summary, the overall results indicate that cross border mergers and acquisitions involving acquirers listed on the Johannesburg Stock Exchange do not appear to add significant value to the short term share price performance on a post-merger or acquisition basis. This has led to the overall rejection of the null hypothesis ($H1_0$).

6.1.3 Waves in Cumulative Average Abnormal Return

As noted in section 5.3.3, there are three distinct waves in CAAR, each of which last for a mean of 45 days; the first wave commences at t+45. Whilst the intention of this research is not to investigate the cause of these waves given time limitations, it is relevant to note that there are distinct periods of investor confidence and potential profit taking, as shown by the increase in CAAR. This phase of increased investor confidence is followed by a period of investor uncertainty. This may point to investors testing the waters post the announcement and adopting a short-term speculative view in order to assess whether the cross border merger or acquisition transaction is successful in the longer term. This may point to an area of future academic study about whether or not the duration of these waves is significant.

6.2 Financial performance ratios

As noted in Chapter 2, table 2-5, most operating financial performance studies have focussed on return on assets, return on equity and operating cash flow. It should however be noted that the studies included in table 2-5 do not specifically focus on cross border mergers and acquisitions. Only two studies in table 2-5 included an analysis of profitability ratios other than return on assets or equity. Mueller (1980, as cited in Bruner, 2002) found that based on a study on return on sales, firms engaging in merger activity were less profitable. In comparison, Chatterjee and Meeks (1996, as cited in Bruner, 2002) found that there were no significant increases in profitability post-merger prior to 1985, but did find evidence of significant increases in profitability returns post-merger after 1985.

Based on the review of literature undertaken in Chapter 2, there is a scarcity of academic studies relating to the operating financial performance specific to cross border mergers and acquisitions. This research has extended the study to include the impact of cross border mergers and acquisitions transactions on operating margin, net margin and earnings per share (in addition to return on assets and return on equity), specifically from a South African acquirer point of view.

The means for the financial ratios reflected for the event windows [-1;+1]; [-1;+2] and [-1;+3] are included in table 5-6. Due to the limited sample size and a limitation in the

number of matched pairs (pre and post-acquisition) that could be obtained as the event window increased, means for both paired t-tests and t-tests assuming unequal variance were calculated. The number of paired observations obtained is included in table 5-8, Panel A. A high level review of table 5-6 results in inconsistent evidence of improvement in the means across all financial ratios as the event window increases. This is the case for both the sample of 29 and 44 companies. A graphical representation of table 5-6 has been included in Appendix B. A discussion on each of the financial ratios tested is included below.

6.2.1 Operating margin

As indicated in Chapter 3, Hypothesis 2 ($H2_0$) states that the operating margin of the acquiring firm post the merger or acquisition transaction is less than or equal to the operating margin of the acquiring firm pre the transaction.

When one considers the means for the sample of 29 companies (included in table 5-6 and Figure 9-1 in Appendix B) in the case of both statistical tests, the mean operating margin is greater at t+1 when compared to t-1. This benefit is however eroded for both t+2 and t+3, where the mean operating margin for both periods falls below that of t-1.

In the case of the sample of 44 companies (included in table 5-6 and Figure 9-2 in Appendix B), the results of the t-test assuming unequal variance show that the mean operating margin increases at t+1 when compared to that for t-1 (whilst little difference is reflected in the case of the paired t–test). Similar to the above, the mean operating margin for t+2 is less than that for t-1. There is disparity between the two statistical tests in the period t+3 where the t-test assuming unequal variance indicates that the mean operating margin is less than at t-1, whilst the paired t-test indicates the operating margin at t+3 is greater than t-1. For the period t+3 a limited number of paired observations were available (six as per table 5-8 panel B). As a result more emphasis is placed on the result of the t-test for unequal variance.

Based on the increase in mean operating margin in the first year post the merger or acquisition transaction, it would appear that benefit is derived in the short term (either in the form of some improvement in efficiencies associated with the costs of running the business, or alternatively as a result of increased sales). The benefits do not however flow through to the second or third year post the transaction, hence indicating that operational synergies of the combined firms may not be forthcoming as the event window increases. The trend in mean operating margin is included in figures 10-1 and

10-2 in Appendix C. From inspection of the graphs, there is evidence of an increasing trend in operating margin from year t+4 onwards. This may indicate that the benefits from the cross border merger and acquisition only start to materialise in the longer term.

In comparison, Ismail *et al.* (2011) found that in a study of post-merger corporate performance of Egyptian firms, mean operating margin increased from 14.1% for the three years immediately preceding the merger to 22.1% for the first three years post the merger. This increase was statistically insignificant. It should however be noted that the authors studied broad based mergers and acquisitions transactions, and did not make reference to cross border mergers and acquisitions. Whilst the results of the study undertaken by Ismail *et al.* (2011) were not directly comparable with this study, it is interesting to note that in both cases, operating margins did not increase significantly on a post-acquisition basis. Sharma and Ho (2002), in their study on broad based mergers and acquisitions transactions undertaken by Australian companies, analysed what they have termed “profit margins”. The authors did not, however, define whether profit margins relate to gross margins, operating margins or net margins. This causes complications when attempting to make a direct comparison to operating margin as tested in this study. In addition, their study did not differentiate based on cross border mergers and acquisitions. The results obtained by Sharma and Ho (2002) have therefore been included for discussion purposes only. The authors found that the mean three-year post acquisition profit margin performance of merged firms was greater than that on a pre-acquisition basis. This difference was however not statistically significant.

One of the complexities associated with mergers and acquisitions transactions is the integration of the operations of the two companies post the transaction (Aybar & Ficici, 2009). A three-year period post acquisition may therefore not be sufficient to allow for proper integration of the operations, resulting in insignificant increases in operating margin as identified in this study and the academic studies noted above. As pointed out, there are signs that operating margin starts to increase from t+4 onwards, suggesting that benefits are only derived in the longer term. This aligns to Smit and Ward’s (2007) argument that a two to three year period of study post acquisition may be insufficient to see substantial benefit being derived from the transaction.

In the context of the above, and given that the results of statistical testing as noted in section 5.4 are insignificant, it would appear that the short term operating margin post the cross border merger or acquisition transaction is not significantly greater than on a

pre-merger or acquisition basis for acquiring companies listed on the Johannesburg Stock Exchange. In addition, the findings of this study reflect similarities with the academic studies noted above. Accordingly, based on the results of testing, there is insufficient evidence to reject the null hypothesis ($H2_0$).

6.2.2 Net margin

As indicated in Chapter 3, the null hypothesis ($H3_0$) states that the net margin of the acquiring firm post the merger or acquisition transaction is less than or equal to the net margin of the acquiring firm pre the transaction.

For the samples of 29 and 44 companies, the mean net margin (reflected in table 5-6 and figure 9-1 of Appendix B) displays similar characteristics to those described in section 6.2.1.1. For both samples the mean net margin at t+1 was greater than at t-1, displaying initial profit generation and benefit from the cross border merger or acquisition transaction. The mean net margin for t+2 and t+3 was less than that at t-1. This indicates that there is potential profit destruction as a result of the cross border merger or acquisition transaction. A visual representation of the mean for the samples of 29 and 44 companies is reflected in figures 10-3 and 10-4 in Appendix C The results of statistical testing applied to net margin in section 5.4 were insignificant at the 5% level.

Ismail *et al.* (2011), as noted in Chapter 6.2.1.1, found that net margins increased from a mean of 7.3% for the three years immediately preceding a merger or acquisition to 9.3% for the three years post-acquisition. This increase was however found to be statistically insignificant, as were the results of this study. As noted in Chapter 6.2.1.1, Sharma and Ho (2002) analysed profit margin and found a statistically insignificant increase post-acquisition. Once again, caution must be taken in making a direct comparison with the results of these studies given than the authors studied broad based mergers and acquisitions transactions, and did not make reference to cross border mergers and acquisitions.

In the context of the above, and given that the results of statistical testing as noted in section 5.4 were insignificant, it would appear that the short term net margin post the cross border merger or acquisition is not significantly greater than on a pre-merger or acquisition basis for acquiring companies listed on the Johannesburg Stock Exchange. Accordingly, based on the results of testing, the null hypothesis ($H3_0$) cannot be rejected.

6.2.3 Earnings per share

The null hypothesis ($H4_0$) states that earnings per share of the acquiring firm post the merger to acquisition transaction is less than or equal to the earnings per share of the acquiring firm pre the transaction.

According to table 5-6 and figures 9-1 and 9-2 in Appendix B, the mean earnings per share for t+1 and t+2 exceeded the meanings earnings per share for t-1. This was the case for the sample of 29 companies, and the extended sample of 44 companies. Mean earnings per share for t+3 declined when compared to that for t+2, and in the case of the t-test for unequal variance, the mean earnings per share at t+3 was less than the mean at t-1 (less reliance is placed on the paired t-test at t+3 given the limited number of observations). It would therefore appear that some value from an earnings per share perspective is created via the cross border merger or acquisition in the short term (t+1 and t+2). This however appears to be eroded as the event window increases. A visual representation of the trend in means for the sample of 29 and 44 companies is shown in figures 10-5 and 10-6 in Appendix C. The results of statistical testing included in tables 5-7, 5-8 and 5-9 for earnings per share are, however, statistically insignificant.

Based on the review of literature, the analysis of the impacts of cross border mergers and acquisitions on earnings per share are limited. Nevertheless, in comparison to the above, Sharma and Ho (2002) found that in their study of Australian firms involved in broad based mergers and acquisitions, earnings per share was insignificantly lower on a post-acquisition basis. In their study of the merger between Tata Steel and Corus Steel, Shukla and Gekara (2010, p.52) found that “earnings per share showed a remarkable increase” of 17.8% post the merger transaction. The results of this study were limited given that it only included one firm and hence was discounted in terms of this study.

There are therefore similarities between the results of this research and the study conducted by Sharma and Ho (2002), which show that earnings per share benefits very little post a merger or acquisition. This research therefore suggests that short-term earnings per share for acquiring companies listed on the Johannesburg Stock Exchange is not significantly greater on a post-merger or acquisition basis. Accordingly, based on the results of testing the null hypothesis ($H4_0$) cannot be rejected.

6.2.4 Return on equity

As noted in Chapter 3, the null hypothesis ($H5_0$) states that return on equity of the acquiring firm post the merger or acquisition transaction is less than or equal to the return on equity of the acquiring firm pre the transaction.

According to table 5-6 and figures 9-1 and 9-2 in Appendix B, the mean return on equity for the samples of 29 and 44 companies is greater on a post-merger or acquisition basis than on a pre-merger or acquisition basis. The mean return on equity does nevertheless displays a declining trend as the event window increases post acquisition. A graphical representation of the mean and median return on equity for the samples of 29 and 44 companies is shown in figures 10-7 and 10-8 respectively (Appendix C). The event window was extended to five years to provide perspective. A visual inspection of the mean reflects a declining trend for the three year period post acquisition, however an improvement is noted at t+4 and t+5. In addition, the results of statistical testing undertaken in tables 5-6, 5-7 and 5-8 were not statistically significant.
In comparison, Ferrer (2011) obtained statistically significant negative results that showed that broad based mergers and acquisitions involving companies listed on the Philippines Stock Exchange negatively impacted return on equity. In table 2-5, Salter and Weinhold (1979, as cited in Bruner, 2002) found that firms engaging in broad based mergers and acquisitions were less profitable. Mueller (1980, as cited in Bruner, 2002) reached a similar conclusion. Sharma and Ho (2002) found that at the 5% level of significance, acquiring firms show significant deterioration in return on equity on a post-acquisition basis. Given that these studies focused on broad based mergers and acquisitions, caution should be exercised in drawing direct comparisons with this study.

In Chapter 2.6.2 it was noted that Song *et al.* (2011) applied a two tailed Wilcoxon signed rank test in order to test the mean return on equity for East Asian companies who had entered into cross border merger or acquisition transactions. They found that testing return on equity pre- and post-acquisition delivered insignificant results. The results of this study cannot be directly compared with the results obtained by Song *et al.* (2011), because this study applied a one-tailed Wilcoxon signed rank sum test for acquiring firms. It does however highlight that overall, cross border mergers and acquisitions struggle to create value.

Given the importance of return of equity as a financial ratio and driver of share price performance, the results of this study indicate that cross border mergers and acquisitions do not appear to generate significant value on a post cross border merger

or acquisition basis for acquiring companies listed on the Johannesburg Stock Exchange. The results obtained from this study reflect some differences from the academic studies included above, given that the results of this study show that cross border mergers or acquisitions do not significantly create or destroy value. The academic studies mentioned above reflect deterioration in Return on Equity post-merger or acquisition, however some are statistically significant. The results obtained in this research support Ferrer's (2011) argument that return on equity does not increase significantly post acquisition due to disruptions in operations or the occurrence of "desynergistic effects" (Ferrer, 2011, p. 51). Based on the results of testing, the null hypothesis ($H5_0$) cannot be rejected.

6.2.5 Return on assets

The null hypothesis ($H6_0$) states that return on assets of the acquiring firm post the merger to acquisition transaction is less than or equal to the return on assets of the acquiring firm pre the transaction.

Based on the results contained in table 5-6 and figures 9-1 and 9-2 respectively, the mean return on assets is greater at t+1 than t-1, potentially indicating that initial synergies are obtained based on the efficient use of assets of the combined firms involved in the cross border merger or acquisition. Similar to the ratios above, the mean return on assets tapers off as the event window increases (i.e. the mean return on assets for t+2 and t+3 fall below the mean for t-1). This was the case in both the samples of 29 and 44 companies respectively. A visual inspection of Figures 10-9 and 10-10 in Appendix C show that there is almost no upward movement in the mean for return on assets for the first three years post acquisition. The beginnings of an upward trend in the mean were noted in both figures from year 4 onwards, indicating that there are possible synergies that are derived from the combined assets in the longer term, but not in the short term. In addition, the results of statistical testing undertaken in tables 5-6, 5-7 and 5-8 for return on assets were not statistically significant.

Sharma and Ho (2002) found that Australian firms involved in mergers and acquisitions displayed a statistically insignificant declining trend in return on assets post the merger or acquisition for the three-year window tested. The results obtained by Sharma and Ho (2002) were similar to the results of the academic studies contained in table 2-5, which indicated that return on assets decline post-acquisition. The exception in table 2-5 is the most recent of the studies undertaken by Ghosh (2001), which showed that return on assets remains the same post-acquisition. Likewise, Ferrer (2011) concluded

that mergers and acquisitions have an insignificant relation to return on assets. These studies did not however differentiate based on the financial operating performance of cross border mergers and acquisitions. In contrast, in the case of cross border mergers and acquisitions transactions, Song *et al.* (2011) and Chari *et al*. (2010) found an insignificant increase in mean return on assets post acquisition.

The results of this research are in alignment with the academic studies, which suggest that return on assets does increase significantly post a merger or acquisition transaction. In the context of the above it would appear that for acquiring companies listed on the Johannesburg Stock Exchange, the short term return on assets, post the cross border merger or acquisition, is not significantly greater than on a pre- merger or acquisition basis. Accordingly, based on the results of testing, the null hypothesis ($H6_0$) cannot be rejected.

In summary, despite testing a number of performance related financial ratios, evidence of significant improvement in operating financial performance on a post-merger or acquisition basis was not forthcoming. Therefore, from the perspective of the acquiring firm listed on the Johannesburg Stock Exchange and involved in a cross border merger or acquisition transaction, the null hypotheses $H2_0$, $H3_0$, $H4_0$, $H5_0$ and $H6_0$ cannot be rejected.

6.3 Industry adjusted operating cashflow return on assets

The purpose of Hypothesis 7 ($H7_0$) set out in Chapter 3 was to compare the operating cashflow return on assets generated by the acquirer to the industry adjusted cashflow return on assets (IACRA). Three window periods were analysed in this regard which included [-1;+1]; [-1;+2] and [-1;+3]. This was done for both the sample of 29 companies and the extended sample of 44 companies. In all cases, as reflected in tables 5-10 and 5-11, the mean industry adjusted operating cashflow return on assets for the t-tests assuming unequal variance and paired t-tests was negative on a pre and post-acquisition basis suggesting that acquirers involved in cross border mergers and acquisitions do not outperform the industry. As indicated in Chapter 5-5, the number of paired observations was limited, therefore reducing the power of this test. Accordingly, more reliance was placed on the results of the t-tests for unequal variance.

The pre-acquisition period designated by [-1] represented one financial year prior to the cross border merger or acquisition transaction. For the sample of 29 companies, the mean industry adjusted operating cash flow return on assets for [-1] amounted to -4%

(table 5-10). The mean industry adjusted operating cash flow return on assets amounted to -3.7% for the first year post the cross border merger or acquisition transaction [+1]. For the second year post the cross border merger or acquisition transaction, designated by [+2], the mean industry adjusted cash flow return on assets amounted to -2.7%. Finally, for the third year post the cross border merger or acquisition transaction [+3], the mean industry adjusted cash flow return on assets amounted to -2.2%. An improving trend in mean industry adjusted operating cash flow return on assets was therefore apparent post the cross border merger or acquisition transaction.

Similarly, for the extended sample of 44 companies, the mean industry adjusted operating cash flow return on assets [-1] amounted to -4.7%. The mean industry adjusted operating cash flow return on assets for [+1]; [+2] and [+3] amounted to -6.4%, -5.6% and -5.8% respectively.

In Chapter 2.2.2 it was noted that Healy *et al.* (1992) undertook seminal work in measuring the operating financial performance by applying operating cashflow as a measure of performance. In their study, they noted a statistically insignificant return of 2.8%. Further studies undertaken by Healy *et al.* (1997) and Ghosh (2001) did not find evidence of a significant improvement in operating cashflow return on assets post-acquisition. In addition, Chapter 2.8 indicated that Smit and Ward (2007), in their study of large acquisitions on the Johannesburg Stock Exchange, found that the median industry adjusted operating cashflow return on assets declined post acquisition by 1.90%. This was statistically insignificant. In a study of long term financial performance of mergers and acquisitions transactions undertaken by firms listed on the Johannesburg Stock Exchange, Halfer (2011) found that the industry adjusted cashflow return on assets remained insignificantly different from zero for the event windows [-1;+1]; [-2;+2] and [-3;+3].

The results of statistical testing performed on operating cashflow return on assets (for the event windows noted above, for the sample of 29 companies, and the extended sample of 44 companies) are summarised in tables 5-12 and 5-13. In all three of the statistical tests performed the results were insignificant. This is similar to the results of the academic studies noted above. Accordingly, based on the results of testing the null hypothesis ($H7_0$) cannot be rejected.

6.4 Summary

Whilst this research did not find overall evidence of statistically significant results in the short term share price and operating financial results of cross border mergers and acquisitions, the paper attempted to add to the body of knowledge given the current limitations in research available in this area, especially in the context of South Africa. Statistically significant negative Cumulative Average Abnormal Returns were however obtained for the 21 day event window tested. Three avenues, as noted in Chapter 1.5, were applied to research the impact of cross border mergers and acquisitions, including analysing short term share price performance; operating financial performance based on key financial performance ratios; and industry adjusted operating cash flow return on assets.

Tables 6.1 and 6.2 include a summary of the key studies used for comparative purposes and their unique areas of focus. These tables show that where studies were undertaken, they either focused on broad based cross border mergers and acquisitions (e.g. considered both developed and emerging economies), or were country or region specific such as in the case of India or East Asia. Furthermore, there are no studies specific to South African cross border mergers or acquisitions which include an analysis of all measures including short term share price performance, operating financial performance and industry adjusted operating cash flow return on assets. This research therefore attempts to close this gap.

Table 6-1: Summary of results from the analysis of short-term share price performance

Event Window	Other Studies	Comment
[-3;+3] $H1_0$ – Do not reject	Mantecon (2009) Chari *et al.* (2010) Zhu and Jog (2012)	Focus on broad based cross border mergers and acquisitions in both developed and emerging economies.
[-5;+5] $H1_0$ – Do not reject	Smit and Ward (2007)	No focus on cross border transactions in academic studies for this event window. Smit and Ward (2007) focused on South African merger and acquisition transactions in general.
	Aybar and Ficici (2009)	Broad based study of emerging market multinationals. The sample incorporated only two South African companies.
	Uddin and Boateng (2009)	Study focussed on UK acquiring firms involved in cross border mergers and acquisitions.
[-10;+10] $H1_0$ – Do not reject	Smit and Ward (2007)	No focus on cross border transactions in academic studies for this event window. Smit and Ward (2007) focused on South African merger and acquisition transactions in general.
	Aybar and Ficici (2009)	Broad based study of emerging market multinationals. The sample incorporated only two South African companies.
	Uddin and Boateng (2009)	Study focussed on UK acquiring firms involved in cross border mergers and acquisitions.
[-11;+11] $H1_0$ – Do not reject	Gubbi *et al.* (2009)	Focus of study on Indian firms involved in cross border mergers and acquisitions.
[-21;+21] $H1_0$ – Do not reject	Uddin and Boateng (2009)	Study focussed on UK acquiring firms involved in cross border mergers and acquisitions.

Table 6-2: Summary of results from the analysis of key financial performance ratios

Financial Ratio	Conclusions based on this research	Outcomes from this research	Other studies
Operating Margin H20 - do not reject	Short-term operating margin post the cross border merger or acquisition transaction is not significantly greater than on a pre- merger or acquisition basis (for acquiring companies listed on the Johannesburg Stock Exchange).	Benefits from increased mean operating margin obtained in the short term (t+1) but this did not flow into t+2 and t+3.	Ismail *et al.* (2011) - Studied Egyptian firms but did not differentiate on cross border mergers and acquisitions transactions. Sharma and Ho (2002) - Studied mergers and acquisitions involving Australian firms but did not differentiate on cross border mergers and acquisitions transactions.
Net Margin H30 – do not reject	Short-term net margin post the cross border merger or acquisition is not significantly greater than on a pre-merger or acquisition basis (for acquiring companies listed on the Johannesburg Stock Exchange).	Benefits from increased mean net margin obtained in the short term (t+1) but this does not flow into t+2 and t+3.	Ismail *et al.* (2011) - As above. Sharma and Ho (2002) - As above.
Earnings per Share H40 - do not reject	Short-term earnings per share post the cross border merger or acquisition is not significantly greater than on a pre-merger or acquisition basis (for acquiring companies listed on the Johannesburg Stock Exchange).	Earnings per share increased for both t+1 and t+2 however decreased for t+3.	Sharma and Ho (2002) - As above. Shukla and Gekara (2010) - Study limited to the merger of Tata Steel with Corus Steel.
Return on Equity H50 - do not reject	Cross border mergers and acquisitions do not appear to generate significant increases in Return on Equity on a post merger or acquisition basis for acquiring companies listed on the Johannesburg Stock Exchange.	Return on equity does not show a large amount of variation on a pre and post announcement basis.	Salter and Weinhold (1979, as cited in Bruner, 2002) and Mueller (1980, as cited in Bruner, 2002) focused on broad based mergers and acquisitions. Not specific to cross border mergers and acquisitions. Statistically insignificant results. Sharma and Ho (2002) - As above. Ferrer (2011) - Studied mergers and acquisitions of companies listed on the Philippines Stock Exchange but did not differentiate based on cross border mergers and acquisitions. Song *et al.* (2011) - Focus on Return on Equity for East Asian Companies. Applied two tailed Wilcoxon signed rank tests as opposed to one-tailed Wilcoxon Signed Rand Sum tests. Statistically insignificant results for return on equity.
Return on Assets H60 - do not reject	Cross border mergers and acquisitions do not appear to generate significant increases in Return on Assets on a post merger or acquisition basis for acquiring companies listed on the Johannesburg Stock Exchange.	Mean return on assets is greater at t+1 than t-1. The mean return on assets for t+2 and t+3 are less than for t-1.	Ghosh (2001) - Study focused on broad based mergers and acquisitions. Sharma and Ho (2002) and Song *et al.* (2011) - As above. Chari *et al.* (2011) - Focus on broad based cross border mergers and acquisitions in both emerging and developed markets. Results displayed weak statistical significance.

This study therefore contributed to the body of knowledge in the following ways:

1. Focussing specifically on cross border mergers and acquisitions transactions for acquirers listed on the Johannesburg Stock Exchange and applying three distinct metrics to measure performance. These included short-term share price performance, operating financial performance and industry adjusted operating cash flow return on assets. Multiple event windows were tested in order to understand the impact of cross border mergers and acquisitions across various time frames. On an overall basis for each of the three measures, cross border mergers or acquisitions transactions involving acquirers listed on the Johannesburg Stock Exchange, do not add statistically significant value on a post merger or acquisition basis.
2. Analysing the impact of cross border mergers and acquisitions transactions on operating margin, net margin and earnings per share (in addition to the more favoured return on assets and return on equity), specifically from a South African acquirer point of view.
3. Statistically significant negative results were obtained for the 21-day event window when testing cumulative average abnormal returns of the acquiring firm involved in a cross border merger or acquisition transaction. Both the parametric tests (which included t-tests assuming unequal variance and paired t-tests) and non-parametric tests (Wilcoxon signed rank sum test) showed either significant results or some level of significance for the 21 day event window for the sample of 29 and 44 companies tested.
4. Distinct waves in cumulative average abnormal returns were identified. These waves commence 45 days after the announcement of the cross border merger or acquisition transaction, where each of these waves lasts for a mean duration of 45 days.

CHAPTER 7 - CONCLUSION

The purpose of this research was to determine whether acquiring companies listed on the Johannesburg Stock Exchange benefit from a short term share price and operating financial performance perspective, by partaking in cross border mergers and acquisitions. The research was therefore undertaken by evaluating the pre- and post-acquisition performance based on specific event windows.

This study was undertaken so as to add to the body of knowledge, given that academic studies into the discipline of cross border mergers and acquisitions are limited, especially in the South African context. Different lenses were applied to the study by testing financial performance through the utilisation of three performance measures - abnormal share price returns, key financial performance ratios and operating cash flow return on assets.

Two samples were tested as part of this study, which included a base sample of 29 companies and an extended sample of 44 companies. For the sample of 29 companies confounding events were removed. The extended sample of 44 companies included 15 companies where confounding events were identified, but which were not considered to be material. Given the small sample, various statistical tests were applied in order to analyse the results. These included parametric tests, i.e. t-tests for unequal variance, paired t-tests and a non-parametric test, namely the Wilcoxon Signed Rank Sum Test.

The results of this research were limited in a number of ways. Only a small sample of cross border mergers and acquisitions transactions for acquirers listed on the Johannesburg Stock Exchange was available for statistical testing purposes. Furthermore, a limited time frame (2000 to 2013) was applied when selecting the sample. In addition, only financial ratios focusing on performance were tested, whilst ratios measuring efficiency, solvency and liquidity were excluded. Given that a number of the transactions tested occurred recently, a limited amount of financial information was available post the transaction. Finally, as a result of the limited amount of academic research currently available for cross border mergers and acquisition transaction, it was not always possible to make direct comparisons with the results of this study.

This research concluded that both the short-term share price and operating financial performance of acquiring companies listed on the Johannesburg Stock Exchange do

not improve significantly in the short-term post the cross border merger or acquisition transaction. From a short term share price perspective there are similarities with the findings of this research and that concluded by Smit and Ward (2007), based on their research involving the impact of large acquisitions on share price and operating financial performance of Johannesburg Stock Exchange listed acquirers. In addition, the results of studies undertaken by Uddin and Boateng (2009) and Aybar and Ficici (2009), reflect similarities to the results of this study. Gubbi *et al.* (2009) did, however, manage to find evidence of statistically significant positive returns for acquiring firm shareholders, but used a much larger sample size.

The findings of this research, which were based on an analysis of short term operating financial performances, reflect similarities with research undertaken by Sharma and Ho (2002) and Ismail *et al.* (2011) for Operating Margin and Net Margin; Sharma and Ho (2002) on Earnings per Share; and Ghosh (2001), Sharma and Ho (2002), Chari *et al.* (2010) and Ferrer (2011) on Return on Assets. There were some differences in results noted with respect to Return on Equity, where the results of this study showed that cross border mergers or acquisitions do not significantly create value. Sharma and Ho (2002) and Ferrer (2011) highlighted a significant decrease in Return on Equity post acquisition. It should be noted however that the studies completed by Sharma and Ho (2002) and Ferrer (2011) were broad based studies of mergers and acquisitions and did not differentiate based on cross border transactions.

The results from the testing of industry adjusted cash flow return on assets were statistically insignificant. These results showed similarities with the results of those studies undertaken by Healy *et al.* (1997), Ghosh (2001), Smit and Ward (2007) and Halfer (2011).

Smit and Ward (2007) suggested that synergistic benefits from mergers and acquisitions are only achieved a number of years after acquisition, hence providing motivation for a study on the performance of cross border mergers and acquisitions from the perspective of acquirers listed on the Johannesburg Stock Exchange over a longer time frame.

7.1 Short-term share price performance

Event study methodology was applied to various event windows, which included a three day; five day; 10 day; 11 day; and 21 day event window, for which cumulative average abnormal returns were calculated. In order to provide perspective for these

short term event windows, the cumulative average abnormal return was calculated over a [-21;+200] day period.

For the [-21;+200] event window evidence was obtained that the mean cumulative average abnormal return shows an increasing trend post acquisition. In the context of this longer term event window, the [-21;+21] window (which is inclusive of the various event windows tested) reflected a positive cumulative average abnormal return on a post-acquisition basis. This however proved to be statistically insignificant.

In the case of both the samples of 29 and 44 companies, three distinct waves in cumulative average abnormal return were noted. Each of these waves lasted for a mean of 45 days, the first of which commenced 45 days post the cross border merger or acquisition announcement.

Each event window was tested where it was found that the [-3;+3] event window showed statistically insignificant negative results for both sample sizes. This suggests that South African listed acquiring companies do not benefit in the short-term post the cross border merger or acquisition announcement. The results of this event window reflected discrepancies with those of other academic studies performed, hence contributing to the view that there are conflicting views with respect to the performance of cross border mergers and acquisitions. These discrepancies in performance are as a result of multiple factors that can impact the profitability of mergers and acquisition transactions. These factors include the extent of diversification or focus created by the transaction; the extent to which synergies have been achieved; the mix of cash and stock used to pay for the transaction; and the extent to which the transaction is impacted by regulatory costs (Bruner, 2002). The [-5;+5] event window returned statistically insignificant negative results, where the results of comparative studies were also statistically insignificant. The [-10;+10] event window showed differences in the outcomes of the various statistical tests performed for both the samples of 29 and 44 companies. The results on an overall basis were however found to be statistically insignificant. Various academic studies confirmed a similar outcome for the [-10;+10] event window. The [-11;+11] event window showed statistically insignificant negative results, which reflected alignment with various academic studies performed. The [-21;+21] event window did show evidence of statistically significant negative results based on the t-test for unequal variance, paired t-tests and the Wilcoxon Signed Rank Sum Test, however given the existence of conflicting results with those from the bootstrap distribution, the null hypothesis for this event window was rejected.

7.2 Financial performance ratios

The study of the financial performance ratios included an analysis of Operating Margin, Net Margin, Earnings per Share, Return on Equity, and Return on Assets. More reliance was placed on the results of t-tests assuming unequal variance than the paired t-tests given the small sample size. The analysis involved testing three event windows, including [-1;+1]; [-1;+2] and [-1:+3].

The analysis showed that cross border mergers and acquisitions transactions undertaken by South African acquiring companies create short term value for the first year post acquisition, however this value is eroded in years two and three. In the analysis of the sample of 29 companies, mean Operating Margin, Net Margin and Return on Assets were all lower in the second year post acquisition than in the year immediately preceding the acquisition. In the third year post the acquisition, Return on Equity was the only financial ratio that was greater than that in the year immediately preceding the cross border merger or acquisition transaction. In the case of the sample of 44 companies, both the mean Operating Margin and Net Margin were lower in the second year post the cross border merger or acquisition transaction when compared to the year immediately preceding the transaction. In the third year post the merger or acquisition transaction, Return on Equity was the only financial ratio that was greater than in the year preceding the cross border merger or acquisition transaction.

The analysis of Operating Margin and Net Margin reflected statistically insignificant results for all event windows tested. This included statistically insignificant negative results for the event window [-1;+1] and statistically insignificant positive results for the event windows [-1;+2] and [-1;+3]. Insignificant negative earnings per share were obtained for the event windows [-1;+1] and [-1;+2], while an insignificant positive result was obtained for the [-1;+3] event window. Insignificant negative results were obtained for Return on Equity for all three event windows, whilst Return on Assets showed an insignificant negative result for the event window [-1;+1] and an insignificant positive result for the remaining two windows.

7.3 Industry adjusted operating cash flow return on assets

Industry adjusted operating cash flow return on assets was tested for three event windows which included [-1;+1]; [-1;+2] and [-1;+3]. The mean industry adjusted operating cashflow return on assets showed an improving trend post-acquisition for the sample of 29 companies tested where the mean industry adjusted cashflow return on assets for the period [+1]; [+2] and [+3] exceeded that for the period [-1]. Similarly, the

mean industry adjusted cashflow return on assets for the sample of 44 companies reflected an improving trend post-acquisition, however in all cases the mean result was less than that for the period [-1]. Academic studies analysing industry adjusted operating cash flow return on assets undertaken by Healy *et al.* (1992); Healy *et al.* (1997), Ghosh (2001) and Smit and Ward (2007) did not find evidence of significant returns post acquisition. None of these studies however specifically analysed industry adjusted operating cash flow return on assets from a cross border perspective. The results of this research however attempt to shed light on the impact of cross border mergers on acquisition on industry adjusted operating cash flow return on assets. The results obtained in this study for mean industry operating cash flow return on assets were however statistically insignificant and hence similar to the results of the abovementioned academic studies.

7.4 Areas for future research

The focus of this study was on the short-term share price and operating financial performance of acquiring companies which were listed on the Johannesburg Stock Exchange and which had partaken in cross border mergers or acquisitions. A future study could therefore be undertaken to understand the long-term implications of these transactions on share price and operating financial performance. A long-term study could incorporate an analysis of whether the waves in the abnormal returns identified in Chapter 5.3.3 are a long-term phenomenon, with reference to any underlying significance to these waves each lasting for a mean of 45 days.

As noted in Chapter 4.12, the sample applied in this study was small and limited to cross border mergers and acquisitions that took place in the period 2000 to 2013, which was a limiting factor. An extended study could therefore be undertaken by increasing the sample size or the time frame over which data is collected. An increased sample size will improve the results obtained from parametric statistical testing and reduce potential sampling bias, which may have impacted this study.

In addition, this study only focused on key financial performance ratios. Accordingly, the testing of financial ratios can be extended to include leverage, efficiency, liquidity or other market ratios. Given that this study focussed only on financial performance ratios, the complete nature of the impact of cross border mergers and acquisitions on the acquirer was limited.

An in-depth study could be undertaken by comparing the performance of cross border mergers and acquisitions of acquiring companies listed on the Johannesburg Stock Exchange to domestic mergers and acquisitions of acquiring listed companies on the Johannesburg Stock Exchange. This could serve as a basis to understand whether domestic or cross border mergers and acquisitions create more value to shareholders, especially in the longer term.

8. Appendix A – Graphs showing Bootstrap Distributions for the samples of 29 and 44 companies

Figure 8-1: Bootstrap Distribution for $CAAR_{t+3}$ (sample of 29 companies)

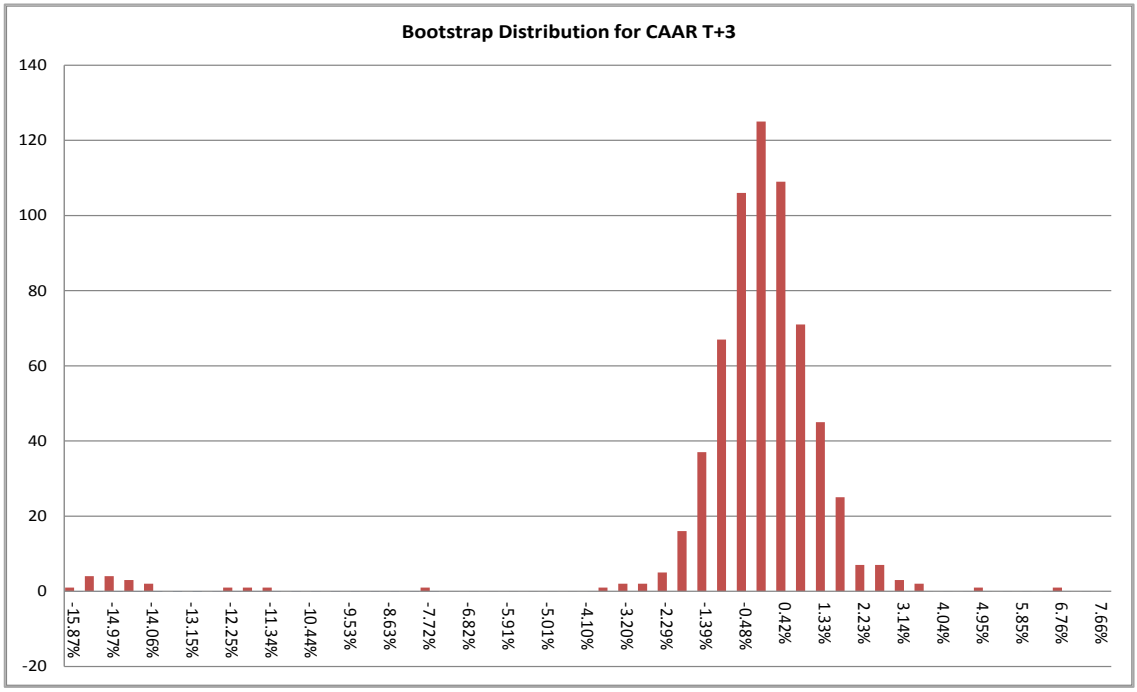


Figure 8-2: Bootstrap distribution for $CAAR_{t+5}$ (sample of 29 companies)

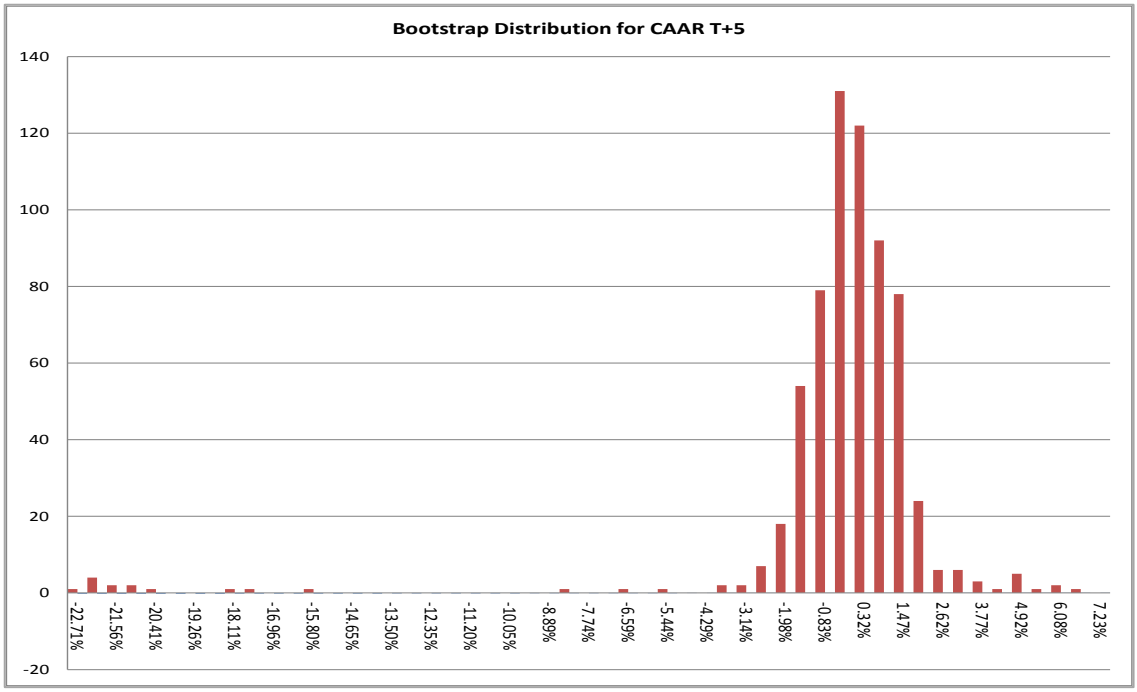


Figure 8-3: Bootstrap distribution for CAAR $_{t+10}$ (sample of 29 companies)

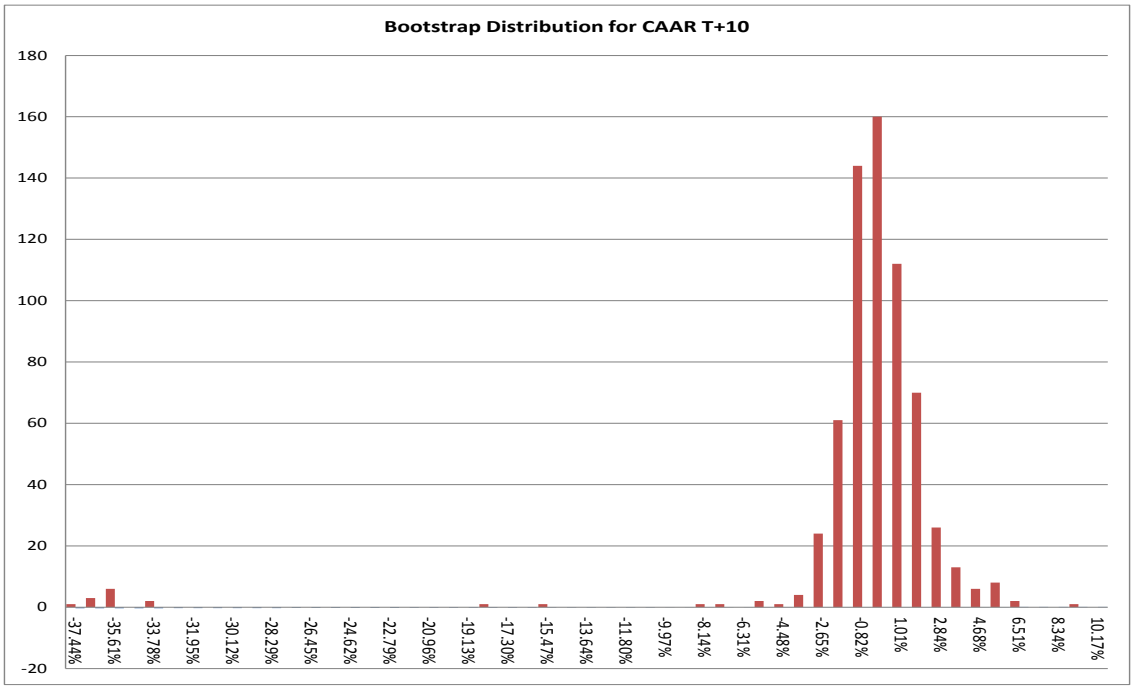


Figure 8-4: Bootstrap distribution for CAAR $_{t+11}$ (sample of 29 companies)

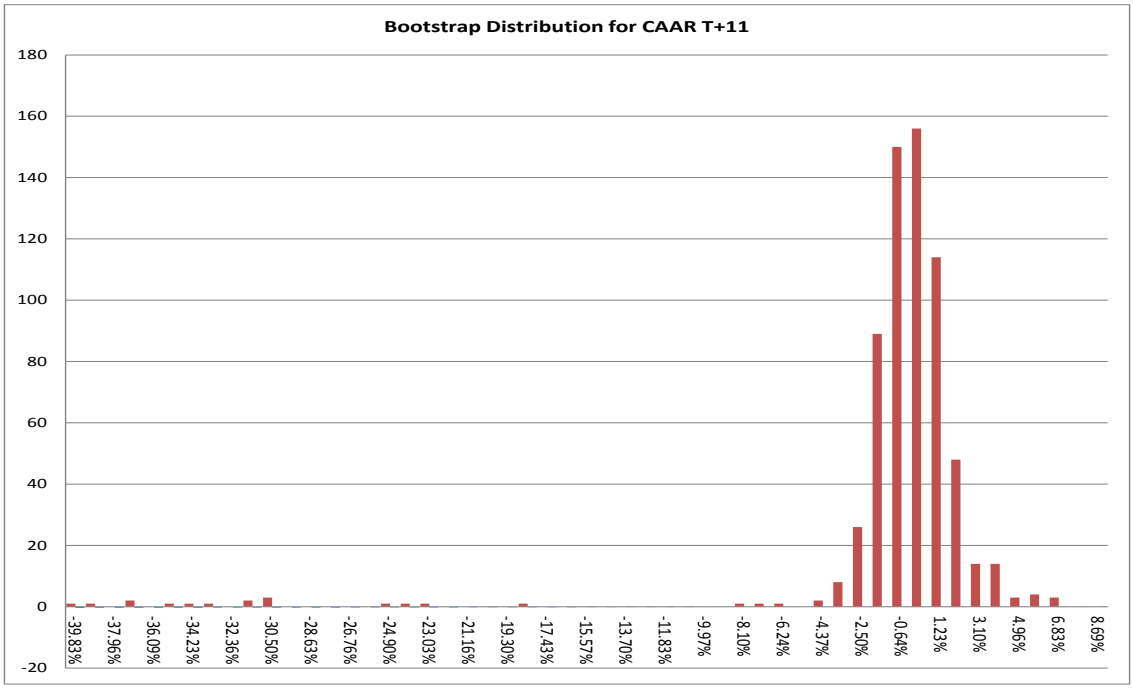


Figure 8-5: Bootstrap distribution for CAAR $_{t+21}$ (sample of 29 companies)

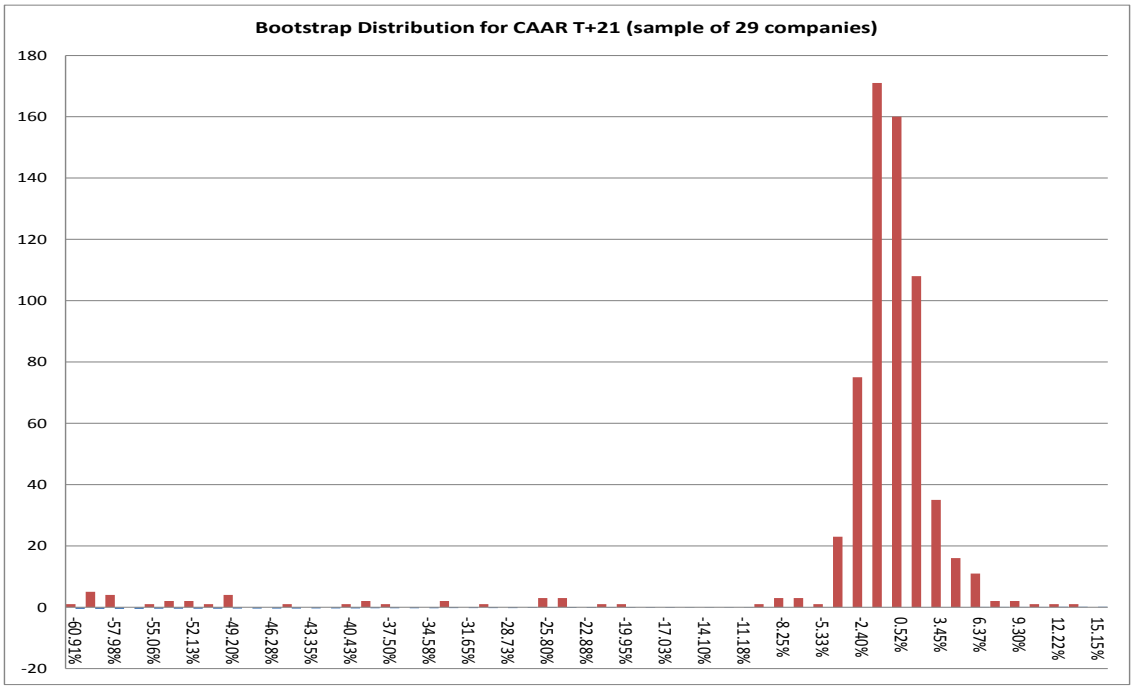


Figure 8-6: Bootstrap distribution for CAAR $_{t+3}$ (sample of 44 companies)

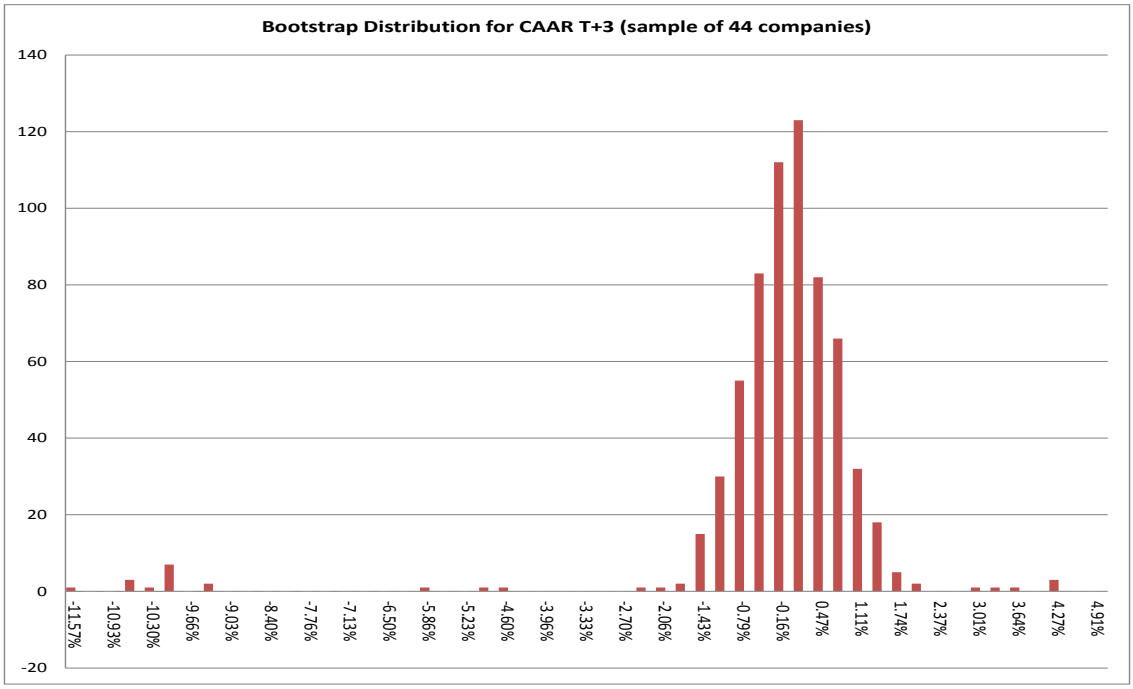


Figure 8-7: Bootstrap distribution for CAAR $_{t+5}$ (sample of 44 companies)

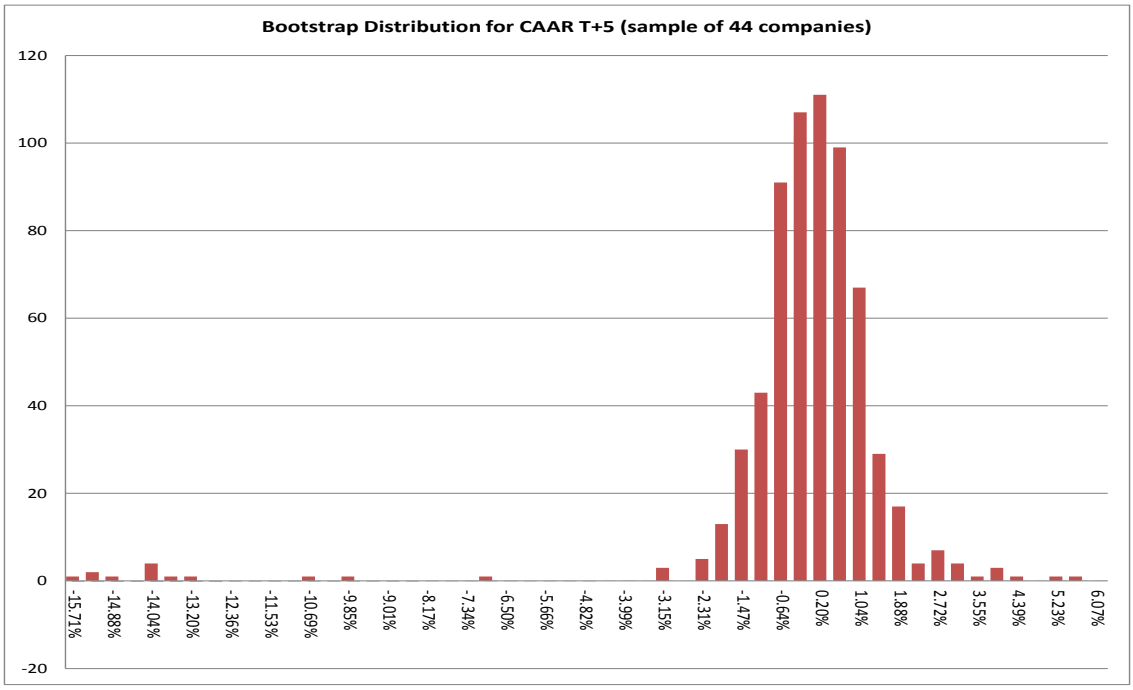


Figure 8-8: Bootstrap distribution for CAAR $_{t+10}$ (sample of 44 companies)

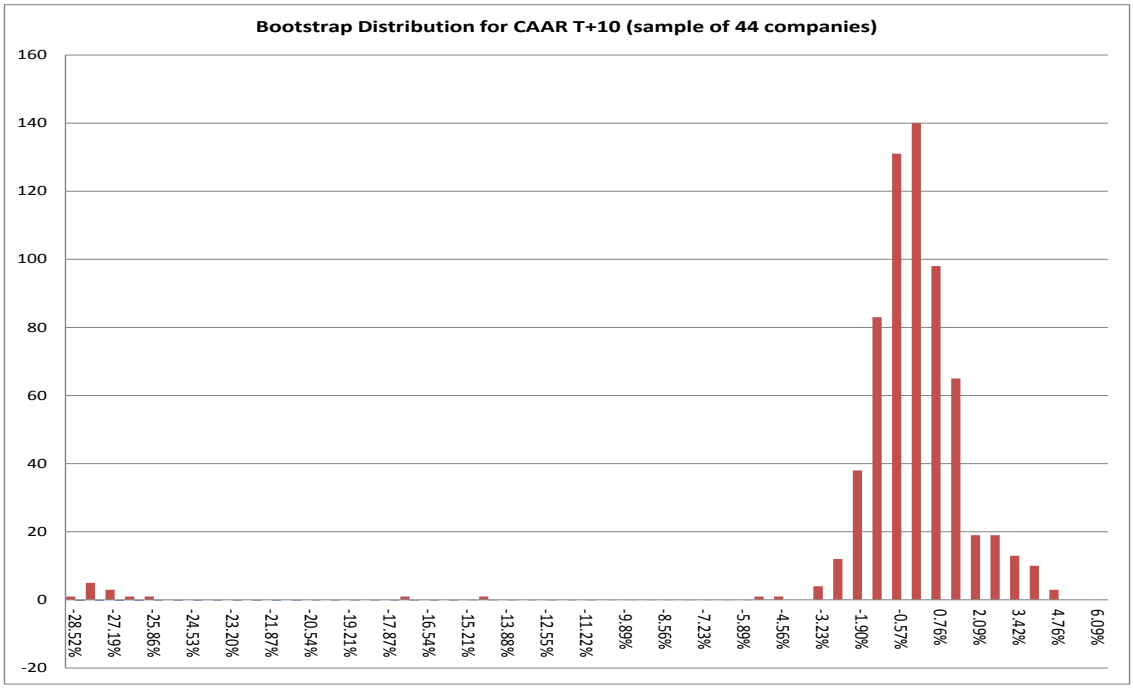


Figure 8-9: Bootstrap distribution for CAAR $_{t+11}$ (sample of 44 companies)

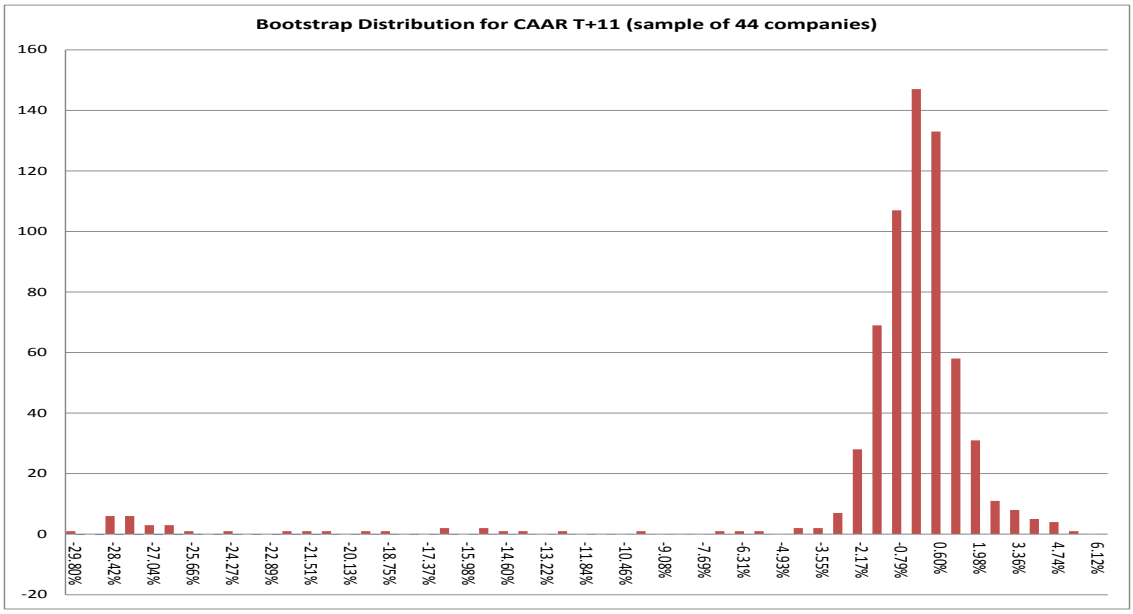
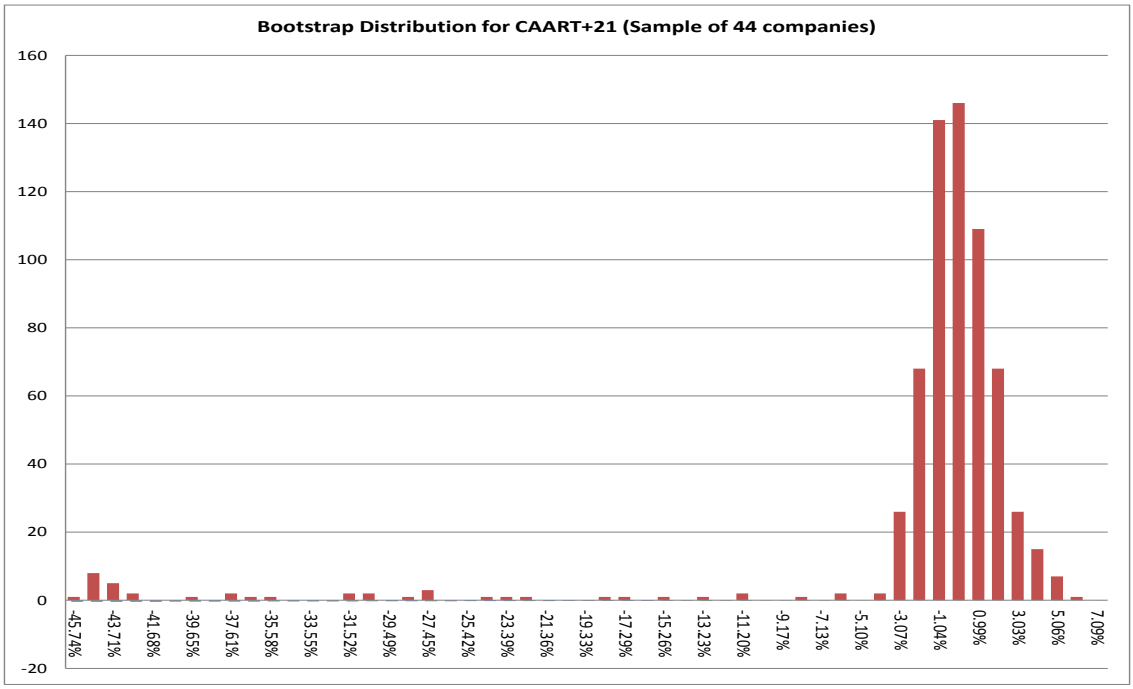


Figure 8-10: Bootstrap distribution for CAAR $_{t+21}$ (sample of 44 companies)



9. Appendix B – Means for financial ratios tested

Figure 9-1: Financial ratio means for the sample of 29 companies

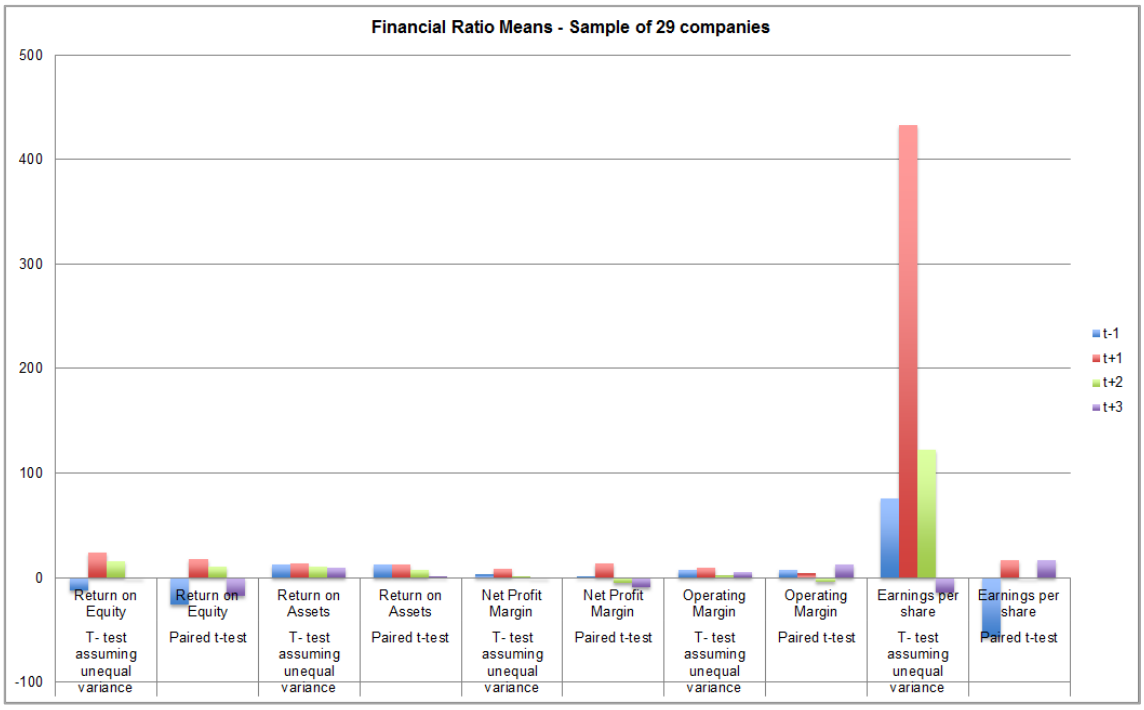
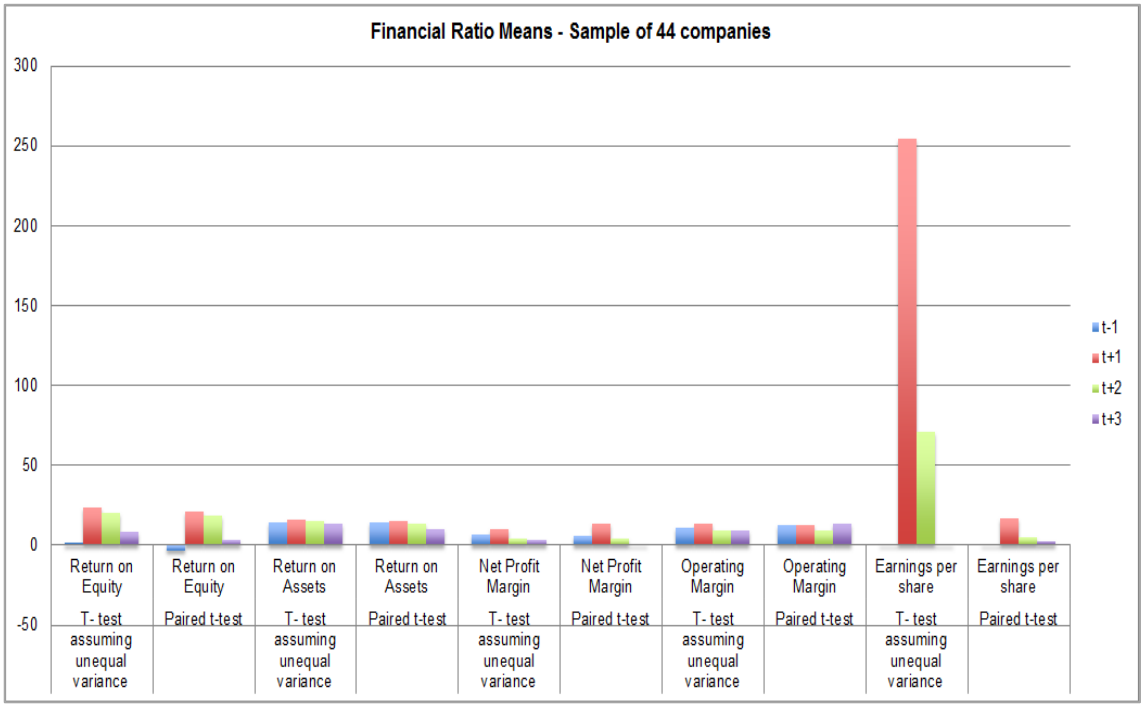


Figure 9-2: Financial ratio means for the sample of 44 companies



10. Appendix C – Descriptive statistics for financial ratios tested

Figure 10-1: Descriptive statistics for Operating Margin (sample of 29 companies)

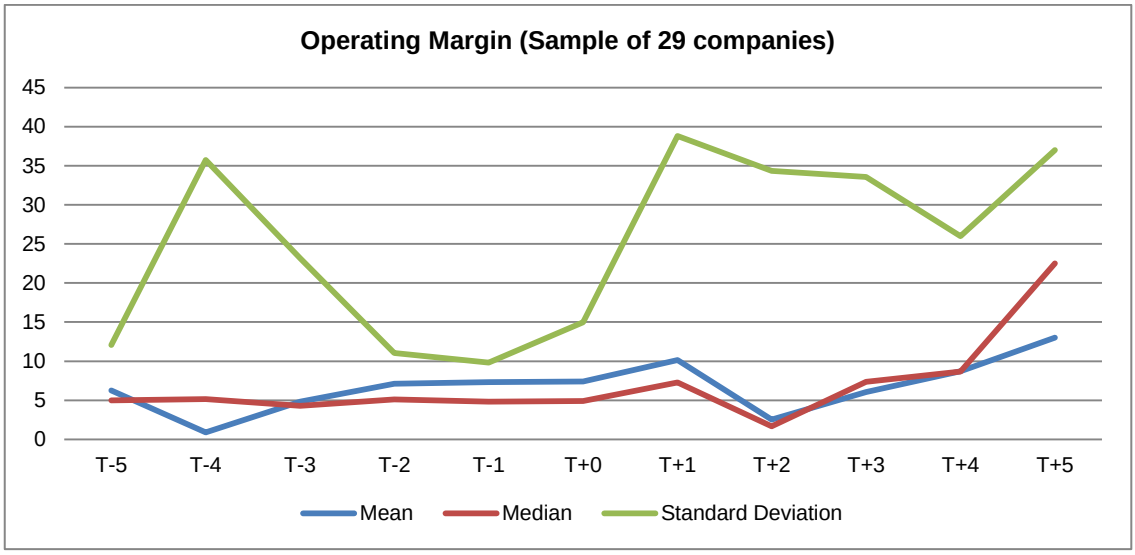


Figure 10-2: Descriptive statistics for Operating Margin (sample of 44 companies)

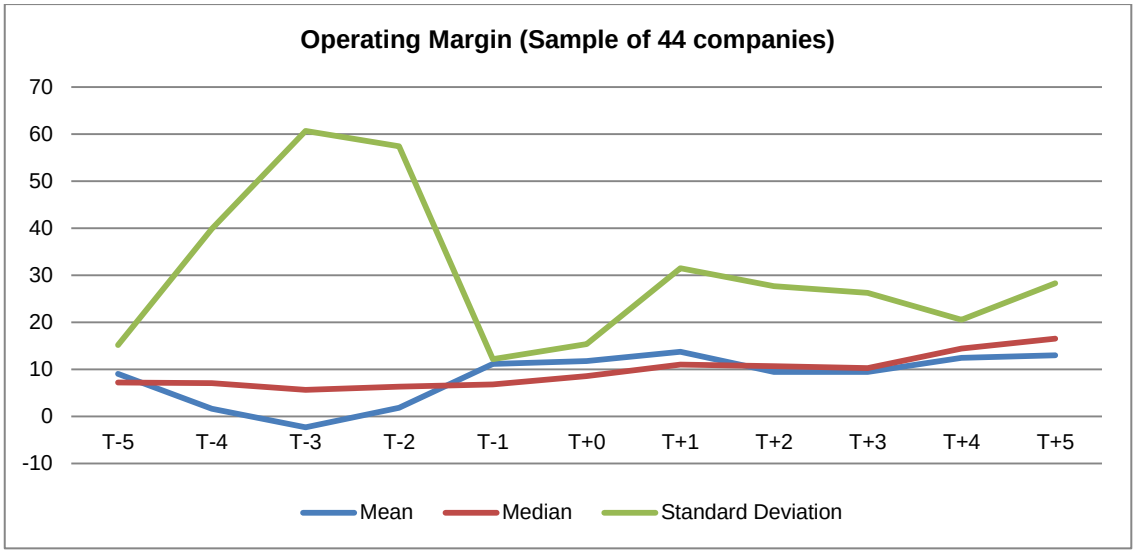


Figure 10-3: Descriptive statistics for Net Margin (sample of 29 companies)

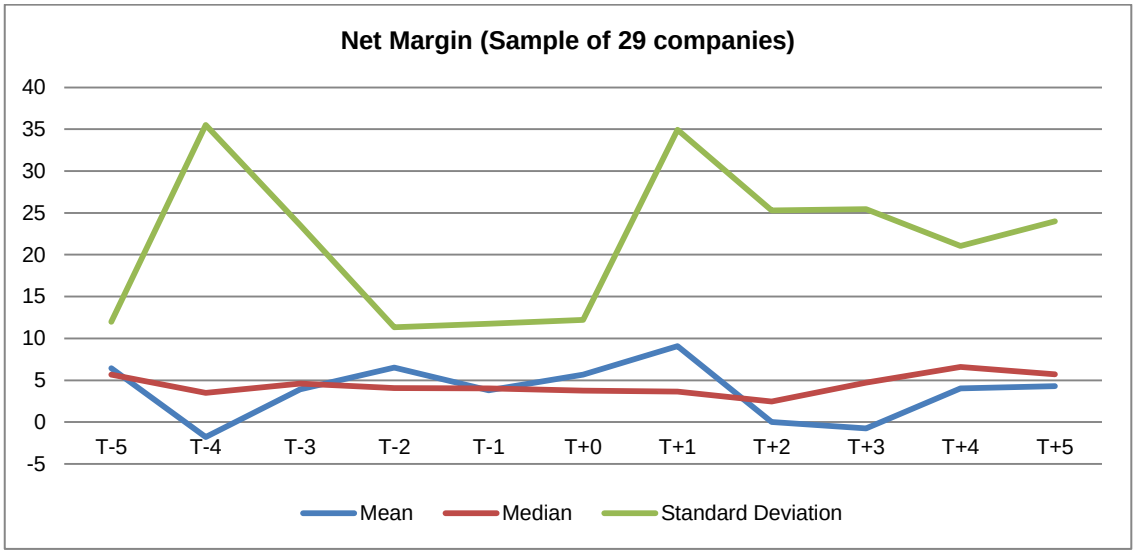


Figure 10-4: Descriptive statistics for Net Margin (sample of 44 companies)

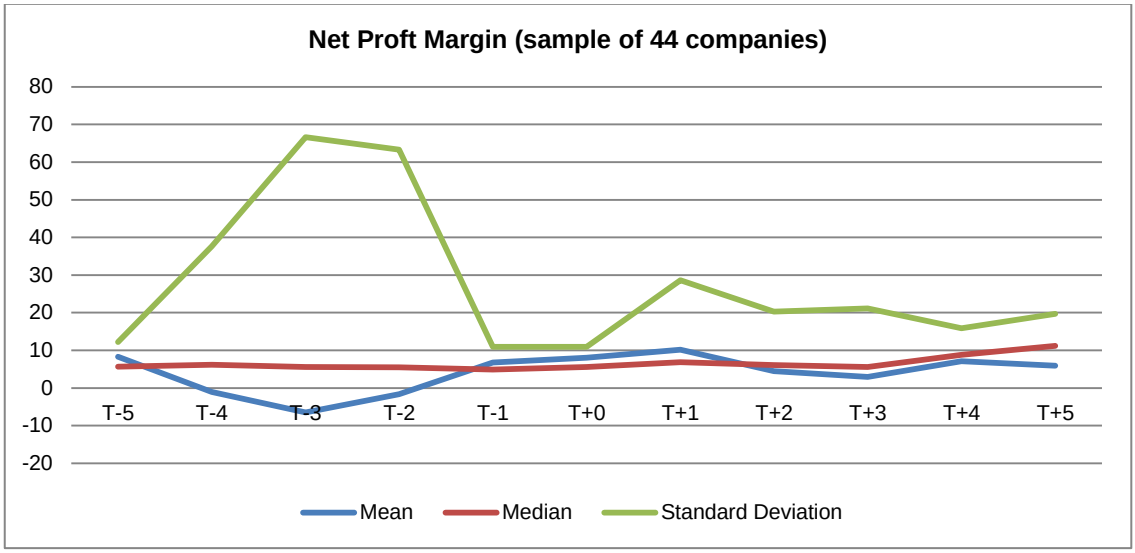


Figure 10-5: Descriptive statistics for Earnings Per Share (sample of 29 companies)

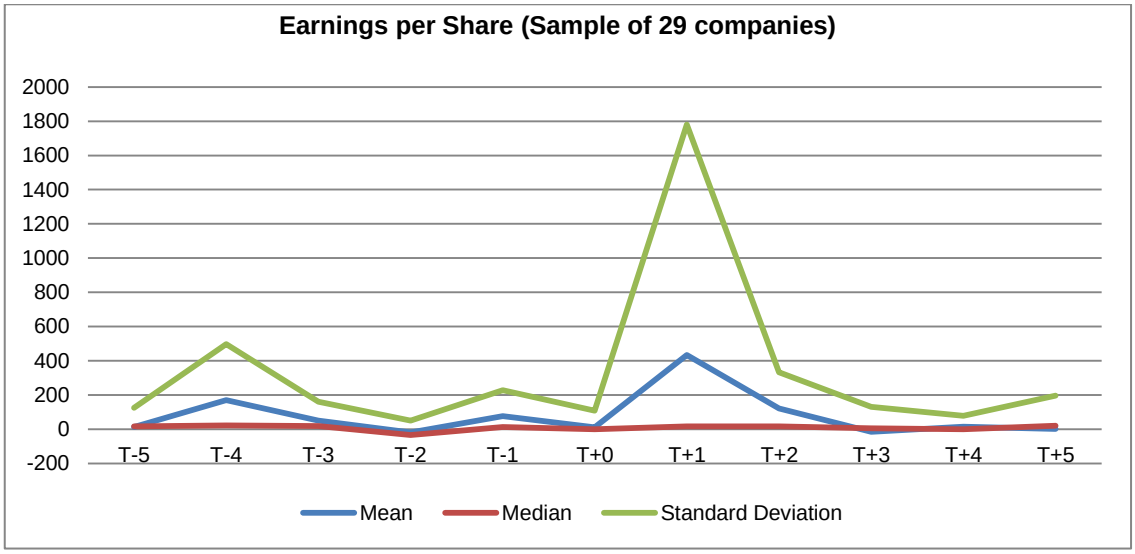


Figure 10-6: Descriptive statistics for Earnings Per Share (sample of 44 companies)

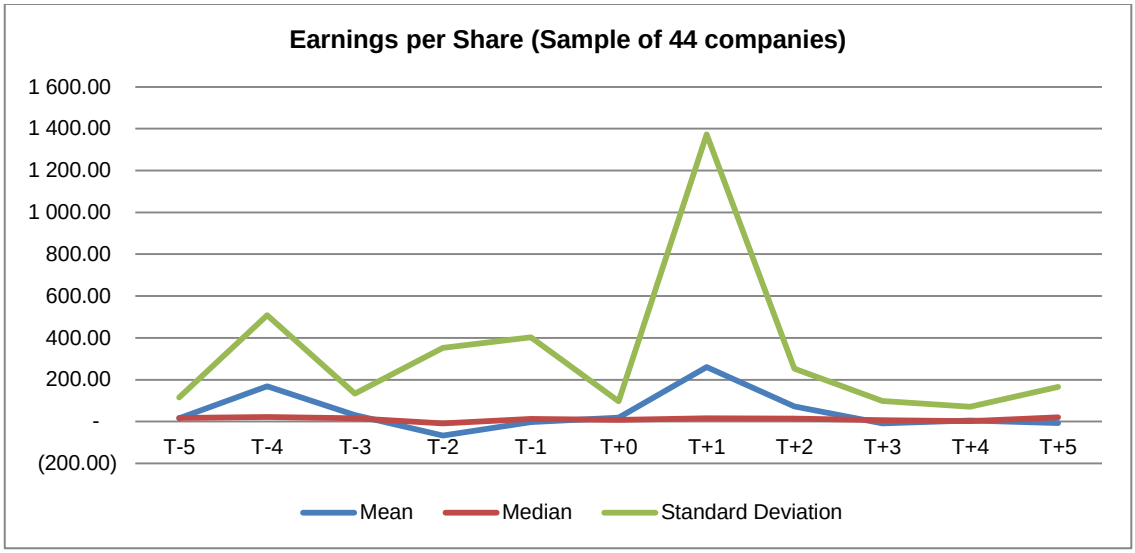


Figure 10-7: Descriptive statistics for Return on Equity (sample of 29 companies)

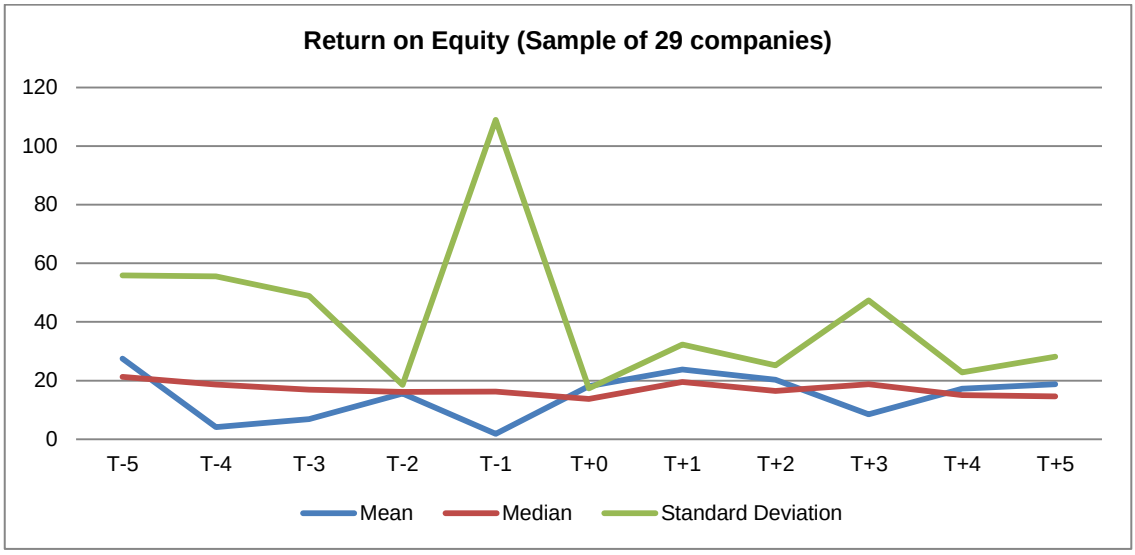


Figure 10-8: Descriptive statistics for Return on Equity (sample of 44 companies)

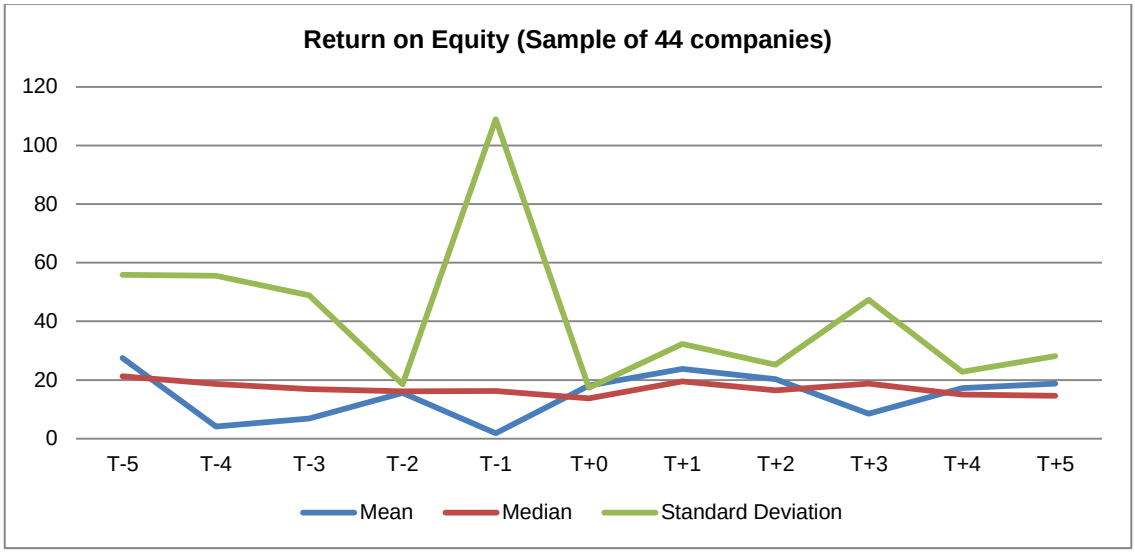


Figure 10-9: Descriptive statistics for Return on Assets (sample of 29 companies)

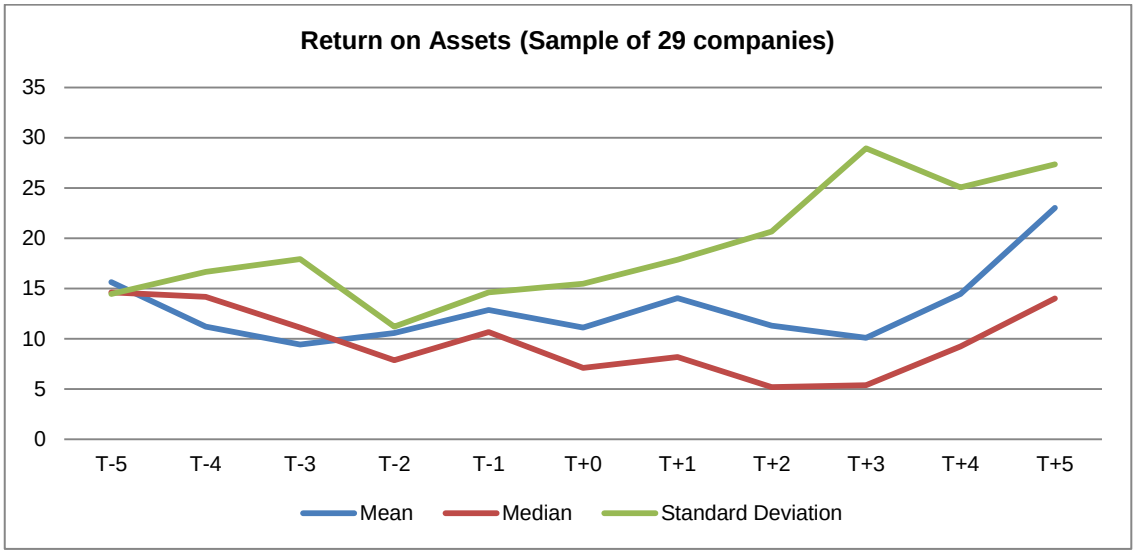
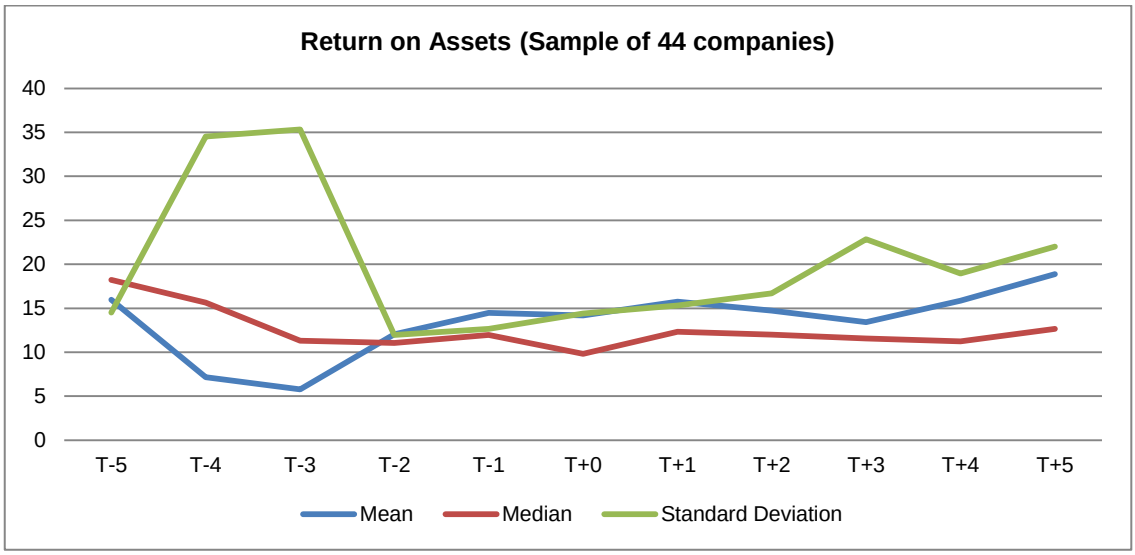


Figure 10-10: Descriptive statistics for Return on Assets (sample of 44 companies)



LIST OF REFERENCES

African Development Bank. (2013). *Mergers and Acquisitions in Africa*. Retrieved from http://www.afdb.org. Date accessed 10/01/2013.

Agbloyor, E. K., Abor, J., Adjasi, C. K. D., & Yawson, A. (2012). Domestic banking sector development and cross border mergers and acquisitions in Africa*. Review of Development Finance, 2*, 42-42.

Andrade, G., Mitchell, M., & Stafford, E. (2001). New evidence and perspectives on mergers*. Journal of Economic Perspectives, 15(2)*, 103-120.

Aktas, N., de Bodt, E., & Cousin, J. (2007). Event studies with a contaminated estimation period*. Journal of Corporate Finance, 13(1),* 129-145.

Aybar, B., & Ficici, A. (2009). Cross-border acquisitions and firm value: An analysis of emerging-market multinationals*. Journal Of International Business Stud*ies, *40(8)*, 1317-1338.

Bhagat, S., Malhotra, S., & PengCheng, Z. (2011). Emerging country cross border acquisitions: Characteristics, acquirer returns and cross sectional determinants*. Emerging Markets Review, 12*, 250-271.

Ben-Amar, W., & Andre, P. (2006). Separation of ownership from control and acquiring firm performance: The case of family ownership in Canada*. Journal of Business Finance and Accounting*, *33*, 517-543.

Bertrand, M., & Betschinger, M. (2011). Performance of domestic and cross-border acquisitions: Empirical evidence from Russian acquirers. *Journal of Comparative Economics, 40(2012)*, 413-437.

Binder, J. (1998). The Event Study Methodology Since 1969*. Review of Quantitative Finance and Accounting*, *11(2)*, 111-137.

Bruner, R. F. (2002). *Does M&A pay?* A survey of evidence for the decision maker*. Journal of Applied Finance*, *12(1)*, 48-68.

Cartwright, S., & Schoenberg, R. (2006). 30 years of mergers and acquisitions research: Recent advances and future opportunities. *British Journal of Management, 17(S1)*, 1-5.

Chari, A., Ouimet, P., & Tesar, L. (2010). The value of control in emerging markets. *Review of Financial Studies*, *23(4)*, 1741-1770.

Delong, G. (2001). Stakeholder gains from focusing versus diversifying bank mergers. *Journal of Financial Economics*, *59*, 221-252.

Deshpande, D., Svetina, M., & Zhu, P. (2012). Analyst coverage of acquiring firms and value creation in cross-border acquisitions. *Journal of Multinational Financial Management*, 212-229.

Duso, T., Gugler, K., & Yurtoglu, B. (2010). Is the event study methodology useful for merger analysis? A comparison of stock market and accounting data. *International Review of Law and Economics, 30(2)*, 186-192.

Fama, E., Fisher, L., Jensen, M., & Roll, R. (1969). The adjustment of stock prices to new information. *International economic review*, *10 (February),* 1-27.

Ferrer, R. C. (2011). An empirical investigation of the effects of mergers and acquisitions on firms profitability. *Academy of Studies in International Business*, *11*(2), 9.

Figueira, C., Nellis, J., & Schoenberg, R. (2007). Travel abroad or stay at home? Investigating the patterns of bank industry M&As in the EU. *European Business Review, 19(1)*, 23-39.

Ficery, K., Herd, T., & Pursche, B. (2007). Where has all the synergy gone? The M&A puzzle. *Journal of Business Strategy*, *28*(5), 29-35.

Ghosh, A. (2001). Does operating performance really improve following corporate acquisitions? *Journal of Corporate Finance*, *7*, 151-178.

Grant Thornton, (2012). *Cross border mergers and acquisitions: building momentum*. Grant Thornton International Business Report 2012. Retrieved from http://www.gta.co.bw/publications/international.../IBR2012-MA-report.pdf. Date accessed 21/03/2013.

Grant Thornton, (2013). *The risk of the cross-border transaction*. Grant Thornton International Business Report 2012. Retrieved from http://www.internationalbusinessreport.com/files/ibr2013_m_a_report.pdf. Date accessed 10/06/2013

Gubbi, S. R., Aulakh, P. S., Ray, S., Sarkar, M. B., & Chittoor, R. (2009). Do international acquisitions by emerging-economy firms create shareholder value. The case of Indian firms*. Journal of International Business Studies*, 41(3), 397-418

Guillien, M. F., & Garcia-Canal, E. (2009). The American model of the multinational firm and the new multinationals from emerging economies. *The Academy of Management Perspectives, 23*, 23-35.

Harding, D., Harris, K., Jackson, R., & Shankar, S. (2013). *The renaissance in mergers and acquisitions: What to do with all that cash?* Bain & Company. Retrieved from http://www.bain.com/publications/articles/the-renaissance-in-mergers-and-acquisitions-what-to-do-with-all-that-cash.aspx. Date accessed 21/03/2013.

Haleblian, J., Devers, C. E., McNamara, G., Carpenter, M. A., & Davison, R. B. (2009). Taking stock of what we know about mergers and acquisitions: A review and research agenda*. Journal of Management*, *35 (3)*, 469-502.

Halfer, D. B. (2011). *The effect of mergers and acquisitions on long-run financial performance of acquiring companies.* MBA Thesis. Gordon Institute of Business Science, University of Pretoria.

Healy, P. M., Palepu, K. G., & Ruback, R. S. (1992). Does corporate performance improve after mergers? *Journal of Financial Economics*, *(31),* 135-175.

Healy, P. M., Palepu, K. G., & Ruback, R. S. (1997). Which takeovers are profitable? Strategic or financial? *Sloan Management Review, 38(4)*, 45-57.

Institute of Mergers, Acquisitions and Alliances. (2012). *Statistics*. Retrieved from http://www.imaa-institute.org/statistics-mergers-acquisitions.html. Date accessed 10/01/2013.

International Accounting Standards Board. (2012). *International Accounting Standard 28: Investments in Associated and Joint Ventures*. International Financial Reporting Standards. London, England: IASB.

Ismail, T. H., Abdou, A. A., & Annis, R. M. (2011). Review of literature linking corporate performance to mergers and acquisitions*. The Review of Financial Accounting Studies*, 89-104.

Ismail, T. H., Abdou, A. A., & Annis, R. M. (2011). Exploring improvements of post-merger corporate performance: The case of Egypt. *The IUP Journal of Business Strategy, 8(1)*, 7-24.

Jayesh, C. (2012). Why do Mergers and Acquisitions quite often fail? *Advances in Management*, *5(5)*, 21-28.

Krishnakumar, D., & Sethi, M. (2012). Methodologies used to determine mergers and acquisitions performance. *Academy of Accounting and Financial Studies Journal*, *16(3)*, 75-91.

Kyei, K. (2008). *The long-term impact of large acquisitions on the share price performance of acquiring companies listed on the JSE.* MBA Thesis. Gordon Institute of Business Science, University of Pretoria.

La Porta, R., Lopez-de-Silanes, F., Schliefer, A., & Vishny, R. (2000). Investor protection and corporate governance*. Journal of Financial Economics*, *58*, 3-28.

MacKinlay, A. C. (1997). Event studies in economics and finance. *Journal of economic literature*, *35*(1), 13-39.

Mantecon, T. (2009). Mitigating risks in cross-border acquisitions. *Journal of Banking & Finance, 33(4)*, 640-651.

Mantravadi, P., & Reddy, A. (2008). Post-merger performance of acquiring firms from different industries in India. *International Research Journal of Finance and Economics*, (22).

Martynova, M., & Renneboog, L. (2008). Spill over of corporate governance standards in cross border mergers and acquisitions. *Journal of Corporate Finance*, 14, 200-223.

McWilliams, A. & Siegel, D. (1997). Event studies in management research: Theoretical and empirical issues. *The Academy of Management Journal, 40(3)*, 626-657.

MergerMarket (2012). *Deal Drivers Africa 2012. A comprehensive review of African M&A*. Retrieved from http://mergermarketgroup.com/publication/deal-drivers-africa/. Date accessed 15/04/2013.

Mordant, N. & Muller, C. (2003). Profitability of director's share dealings on the JSE. *Investment Analysts Journal*, *57*,17-31.

Muller, C., & Ward, M. (2013). The event study model.

Mushidzi, T. B., & Ward, M. (2004). Abnormal returns for cash versus share-funded acquisitions. *Investment Analysts Journal, 60*, 17-32.

Papadakis, V. M., & Thanos, I. (2010). Measuring the performance of acquisitions: An empirical investigation using multiple criteria*. British Journal of Management*, *21*, 859-873.

Rossi, S., & Volpin, P., (2004). Cross country determinants of mergers and acquisitions*. Journal of Financial Economics, 74*, 277-304.

Saunders, M., & Lewis, P. (2012). *Doing research in business & management*. Edinburgh Gate, Essex, England: Pearson.

Sharma, D. S., & Ho, J. (2002). The impact of acquisitions on operating performance: Some Australian evidence*. Journal of Business Finance and Accounting, 29(1)*, 155-200.

Shimizu, K., Hitt, M. A., Vaidyanath, D., & Pisano, V. (2004). Theoretical foundations of cross border mergers and acquisitions: A review of current research and recommendations for the future. *Journal of International Management, 10(2004)*, 307-353.

Shukla, A., & Gekara, M. G. (2010). Effects of multinational mergers and acquisitions on shareholders wealth and corporate performance. *The IUP Journal of Accounting Research & Audit Practice*, *(9)(1 & 2)*, 44-62.

Smit, C. J. B., & Ward, M. J. D. (2007). The impact of large acquisitions on the share price and operating financial performance of acquiring companies listed on the Johannesburg Stock Exchange*. Investment Analysts Journal, 65*, 5-14.

Song, S. I., Kueh, D. C. C., Abdul Rahman, R., & Chu, E. Y. (2011). Wealth effects and financial performance of cross-border mergers and acquisitions in five East Asian countries. *American Journal of Finance and Accounting, 2(3)*, 219-240.

Stiebale, J., & Trax, M. (2011). The effects of cross-border M&As on the acquirers' domestic performance: Firm-level evidence*. Canadian Journal of Economics, August, 44(3)*, 957-990.

Sudarsanam, S., & Mahate, A. A. (2003). Glamour acquirers, method of payment and post-acquisition performance: the UK evidence*. Journal of Business Finance and Accounting*, *30*, 299-342.

Thaver, K. (2009). *Abnormal volumes traded as an indication of insider trading in JSE listed companies*. MBA Thesis. Gordon Institute of Business Science, University of Pretoria.

Uddin, M. & Boateng, A. (2009). An analysis of short-run performance of cross-border mergers and acquisitions: Evidence from UK acquiring firms*. Review of Accounting and Finance, 8*(4), 431-453.

United Nations Conference on Trade and Development. (2000). *World Investment Report 2000: Cross-border Mergers and Acquisitions and Development*. Switzerland: United Nations Publication.

United Nations Conference on Trade and Development. (2011). *World Investment Report 2011: Non-equity modes of international production and development*. Switzerland: United Nations Publication.

United Nations Conference on Trade and Development. (2012). *World Investment Report 2012: Towards a new generation of investment policies.* Switzerland: United Nations Publication.

Vazirani, N. (2012). Mergers and acquisitions evaluation. A literature review*. SIES Journal of Management, 8*(2), 37-42.

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

Weiers, R. M. (2011). *Introductory Business Statistics (7th ed.)*. Cengage Learning: South Western

Zhu, P., & Jog, V. (2012). Impact on target firm risk-return characteristics of domestic and cross border mergers and acquisitions in emerging markets*. Emerging Markets Finance & Trade, 48*(4), 79-101.

Zollo, M., & Meier, D. (2007). *Understanding the performance of corporate acquisitions*. INSEAD Business School Research Paper, 2007(25ST). Retrieved from http://0-dx.doi.org.innopac.up.ac.za/10.2139/ssrn.1032168. Date accessed 15/04/2013.

Zollo, M., & Meier, D. (2008). What is M&A performance? *Academy of Management Perspectives*, *22*, 55-77.