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Impact of mergers and acquisitions on the operating performance of South African companies

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in partial fulfilment of the requirements for the degree of

Master of Commerce

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Abstract

Most of the literature on mergers and acquisitions (M&A) has been based on studies that have been carried out in the Western world. Countries such as the United Kingdom as well as the United States boast of a lot of literature in this regard. There has however been little or limited research on the same topic in developing countries. This study investigates the determinants of the performance of companies that have been involved in mergers and acquisitions in South Africa from 1999 to 2016. Seventy-one transactions were chosen for this study. All the acquiring companies were listed on the Johannesburg Stock Exchange. The study used six diverse measures of operating performance. The performance measures employed in this study were the raw sales margin (RAWMARGIN), raw return on assets (RAWROA), industry-adjusted sales margin (IAMARGIN), the sales margin adjusted for industry, size and pre-M&A performance (ISPAMARGIN), the industry-adjusted return on assets (IAROA) as well as the return on assets adjusted for industry, size and pre-M&A performance (ISPAROA). Using these measures, data was compared three years prior to the merger as well as three years after the merger. An ordinary least squares regression model was then employed to ascertain how the different factors of post-M&A performance affected these six measures. The study found that the industry-adjusted return on assets model was the best model to predict post-merger operating performance. In this model, pre-M&A performance and being in the same industry were the only significant variables.

KEYWORDS: Mergers and acquisitions, operating performance, South Africa, return on assets, sales margin.

Declaration

I declare that this thesis is my own work. It is submitted in partial fulfillment of the requirements for the Master of Commerce degree in Accounting at the University of Witwatersrand. The thesis has not been submitted before at any other university. I also declare that I have obtained the necessary authorization and consent to perform this research thesis.

_____

Munyaradzi Amos Chigwedere

03 August 2018

Acknowledgements

I would like to thank my supervisors, Andres Merino and Sandra Jooste. Without your guidance and input this thesis would not have been possible.

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CHAPTER 1: Introduction

Mergers and acquisitions (M&A) is a term commonly used to denote the amalgamation of companies. Strictly speaking, a merger occurs when two separate entities come together to form one entity that did not exist before. On the other hand, an acquisition is the buying of one company by another. The company that buys the other generally retains its identity while the one being purchased assumes the identity of its purchaser (Cartwight and Schoenberg, 2006). Capital flows into emerging markets are occurring more regularly than ever before as the opportunity to produce significantly better returns than can be achieved in competitive first world economies provide opportunities for investors. The Global Transactions Forecast supplied by global law firm Baker McKenzie in association with Oxford Economics has projected that the South African M&A market will rise by 66% in the next two years up to 2019 (Rawlinson, 2017). The report predicts that around 190 M&A deals will be concluded in 2017, rising to 274 in 2018, and growing to 295 finalized deals by 2019. South Africa is also included in the 10 countries predicted to see the most growth in the M&A and initial public offering markets in the next two years (Business Tech, 2017).

In South Africa alone, we have seen Wal-Mart buying a 51% stake in Massmart (USD 2083m), Industrial and Commercial Bank of China buying a 20% stake in Standard Bank (USD 5413m) and Barclays buying a 60% stake in ABSA Bank (USD 5484m), all within the last ten years. Another major M&A deal that took place in South Africa of late was the merger between Kagiso Trust Investment and The Tiso Group. The major highlight of this deal was that it created an enormous black-owned business that has an asset base of over R13 billion. With this trend of increased M&A transactions occurring within the emerging market context, it becomes increasingly necessary to understand the dynamics at play. It is also important to understand whether research conducted in other countries holds true in these emerging markets where many argue that information flows are less efficient. Notwithstanding such notable deals that have taken place in South Africa, research on M&A

activity remains largely constrained to the United Kingdom and the United States of America (Rothenbuecher and von Hoyningen-Huene, 2010).

This report investigates if South African companies improve their profitability following the completion of M&A deals. Research on the improvement of post-merger performance has yielded conclusions that are contradictory (Martynova and Renneboog, 2007). Some studies portray a significant improvement in the operating performance of companies following M&A (Healey and Ruback, 1992, Heron and Lie, 2002) whilst other studies show that there is a significant decline in post-acquisition operating performance (Kruse, Park and Suzuki, 2007, Yeh and Hoshino, 2002). In addition to this there are also some studies that portray insignificant changes in the post-merger operating performance of M&A (Moeller and Schlingemann, 2004). The study will test whether characteristics of the M&A transaction such as the means of payment, deal hostility, target share acquired, geographic diversification as well as industry-relatedness have an impact on the long-term performance of the merged company.

Companies employ M&A for a variety of reasons. In this present day in age M&A have clearly become a very important strategy that companies can use in their large arsenal of different strategies (Hitt, Krishnana, Schijven, Shimizu and Zhu, 2008). There is great cause for companies to explore other strategic mechanisms to achieve synergies and profitability goals but in today's market companies are opting for M&A as their main growth strategy (Weber, Tarba and Oberg, 2014).

M&A allow companies to access markets that they would ordinarily have taken years to access much quicker and in addition they also provide an avenue for the enhancement of income (Cartwight and Schoenberg, 2006). However, scholars over the years have postulated that the failure rate of most M&A is quite high, exceeding the 50% mark of all M&A deals that are concluded (Weber *et al.*, 2014). In 2016 there were rumors that Walmart, which acquired a 51% controlling stake in Massmart, could be considering pulling out of the

South African operations. Shamil Ismail, an analyst at Prime Research warned that the US retail giant may sell its 51% stake it acquired in 2011 of Massmart if the South African based company failed to turn its lukewarm performance by 2018 (Ntingi, 2016). Given the above assertions, it seems highly relevant to conduct further research in the South African context to explore to what extent M&As actually create value.

1.1 Statement of the problem

When a firm is merged with another or is acquired by a profit-making firm, the expectation is that the new entity will increase shareholder value. However, the question that often arises is whether all the firms that are merged/acquired end up with an increase in financial performance as some firms end up with a negative impact on financial performance after M&A (Pawaskar, 2000). This paper is an attempt to seek answers to the stated question by analyzing the impact of M&A by studying selected firms in South Africa, which are listed on the Johannesburg Stock Exchange (JSE), which have gone through M&A. The study will seek to find out if results that have been obtained from other jurisdictions also hold in the South African context in order to counter the Western countries' bias when it comes to reporting on M&As (Thanos and Papadakis, 2012).

1.2 Purpose of the study

The key objective of the study is to investigate the determinants of post M&A performance in South Africa, including the impact of the recent global financial crisis on M&As conducted during that period. The study seeks to test the post-merger operating performance of the merged entity and to find out if the determinants being investigated significantly affect post-merger operating performance.

1.3 Significance of the study

Given the influence the M&A market has in the global economy, with billions of dollars being spent on M&As yearly, the outcome of this study can shed light on the impact of the

variables that affect post-M&A operating performance. These variables include the method of payment, industry relatedness, geographic diversification, target share acquired as well as the friendliness of the M&A transaction. This in turn may guide future investment decisions by firms involved in this type of transaction. The study may also act as a reference point for other researchers interested carrying out further research on the financial performance of M&As.

1.4 Research hypotheses

The study will test the following hypotheses for M&A that have taken place in South Africa:

H1 Mergers and acquisitions of firms in the same industry are likely to have a positive effect on the post-operating performance of the merged entity.

H2 Mergers and acquisitions of firms that are financed by cash are likely to have a positive effect on the post-operating performance of the merged entity when compared to M&A financed by debt.

H3 Mergers and acquisitions that are of a friendly nature are likely to have a positive effect on the post-operating performance of the merged entity.

H4 Mergers and acquisitions between cross-border entities are likely to have a positive effect on the post-operating performance of the merged entity.

H5 The percentage of target share acquired has a positive impact on post M&A operating performance.

H6 Mergers and acquisitions concluded during the 2007-2009 financial crisis are likely to have a positive effect on the post-operating performance of the merged entity when compared to M&As done outside this period.

1.5 Assumptions, limitations and delimitations

The study will be restricted to M&As for acquiring firms that are listed on the JSE that were completed between 1994 and 2016. Transactions that involve financial institutions are excluded from the study. Companies with more than one purchase bid in the study period are excluded. The study will have a number of limitations. In particular, companies selected in this study will be restricted to publicly listed companies. This therefore will not help identify the differences between the M&A dynamics of private and public acquirers. The determinants of post-merger operating performance will be limited to the method of payment employed in the M&A, target share acquired in the merger, whether the merger is friendly or not, whether the M&A is of a cross-border nature or not, the industry-relatedness of the merging entities as well as whether the M&A took place within or outside the 2007-2009 financial crisis period. The study will use extant methodology to analyze changes in operating performance three years before and three years after the transaction. It is not clear whether merging companies can derive all synergistic benefits within this period.

CHAPTER 2: Literature review

Every year large sums of money are invested in M&As, yet evidence suggests that only some of these transactions realize synergies. Various studies, including those by Bradley, Desai and Kim (1988), and KPMG (2001) have demonstrated that while M&As can lead to synergies this is by no means guaranteed. In fact, many M&As fail to generate synergies (Sirower and Sahni, 2006) and a large proportion is later divested as described in a seminal paper by Porter (1987); and also by Kaplan and Weisbach (1992).

An added concern is that some not only fail to generate synergies but actually destroy value. Prahalad and Bettis (1986) argue that value may be destroyed when resources are removed from the areas of operation that management knows best. Also, value may be destroyed if the main purpose of the merger is to achieve goals such as sales-revenue maximization and asset growth maximization as opposed to profit maximization. In this case managers are concerned about sales and assets growth more than profit maximization because the size of their salaries as well as their influence and status are primarily linked to the size of the firm (Palmer, 1971). In this regard profits are still imperative, but they are viewed as causal to the attainment of some other objective rather than as an end in themselves. Viewed in this manner M&A have a negative impact on merged/acquirer firm's financial performance and profitability specifically (Ghatak, 2012).

There is also empirical evidence that merger and acquisition deals do not significantly influence the profitability and financial performance of corporate firms (Al-Hroot, 2016, Poornima and Subhashini, 2013). Studies that have been done so far give conflicting results on whether there is an improvement in the operating performance of companies after M&As. Studies on the post-operating performance of companies after a merger transaction can therefore be classified into three differing groups: studies that report a significant deterioration in the post-acquisition performance, those that yield insignificant changes in

post-acquisition performance as well as studies that find insignificant changes in performance (Martynova and Renneboog, 2007).

Sharma and Ho (2002) postulate that the contradiction in previous studies might be due to different measures used to measure changes in operating performance. Literature on developing countries is limited despite the rapid evolution of M&A motion in these countries (Martynova and Renneboog, 2007). Congruent with overseas studies, this literature does not yield a consistent answer. Two Indian studies (Mantravadi and Reddy, 2008, Pawaskar, 2000) postulate a profitability decline of bidding firms following a M&A transaction, whereas Kumar and Bansal (2008) show momentous enhancement in post-M&A profitability of acquirers. The literature on developing countries is somehow inadequate notwithstanding the evolution of M&A in these nations.

Previous studies have shown that deal M&A features such as method of payment (Bradley *et al.*, 1988), industry relatedness (Healey and Ruback, 1992), geographic diversification (Wang and Boateng, 2007, Chen, 2011) as well as the percentage of the target that is acquired (Mantravadi and Reddy, 2008), all have an influence on the performance of M&As. Some studies have also concluded that commotions in the business atmosphere also have a huge influence on a bidder's returns (Nicholson, Salaber and Cao, 2015, Wan and Yiu, 2009). This therefore gives rise the need for the researcher to look at the influence of the 2007-2009 financial crises on the operating performance of South African companies involved in M&A activity.

2.1 Definition of M&A

A merger is a combination of two corporations in which only one corporation survives and the acquired corporation stops trading (Gaughan, 2007). In a merger, the acquiring company assumes the assets and liabilities of the merged company. A merger differs from a consolidation, which is a business combination whereby two or more companies join to form an entirely new company. All the combining companies are dissolved and only the new entity

continues to operate. In general, when the combining firms are approximately the same size, the term consolidation applies; when the two firms differ significantly by size, merger is the more appropriate term. In practice, however, this distinction is often blurred, with the term merger being broadly applied to combinations that involve firms of both different and similar sizes. Ullrich, Wieseke and Van Dick (2005) believe that mergers consist of two separately owned companies that become a single larger company but are jointly owned. The terms M&As will be used interchangeably in this study.

2.2 M&A waves in the history of the world

Researchers have noted that there have been five merger waves in the history of the world. These waves have been recorded as early as the late 1800s. It is however not crystal clear when these waves actually begun but researchers have however note that some of these waves end up in some form of tragedy. As an example, the 1929 crash which resulted in a World War is clearly defined. By the same token another wave end which also ended in disaster was the bursting of the Millennium Bubble. It can therefore be argued that mergers have always existed since time in memorial (Lipton, 2006). The first merger wave is recognized to have taken occurrence after the Depression of 1883. Although the exact time of the wave is not clear, it is imagined having taken place between the years of 1897 and 1907. During this time most of the merger activities were concentrated in a few industries which were mainly the dealers in petroleum products, metals, mining, transportation, and food products. These industries were left with a few players that participated in the market as most of the larger players had amalgamated (Cleverism, 2017).

The next merger wave occurred between 1916 and 1929. It started during the World War I and continued until the stock market crash of October 29, 1929. This led to the United States Government enacting laws to curb destructive as well as uncompetitive mergers. Laws that were passed during that time included the Sherman Antitrust Act. This wave of mergers however resulted in in more vertical mergers as opposed to the horizontal ones that had been a huge factor of the first one (Cleverism, 2017). The wave that followed next was from

1965 to 1969. This was a period in which the United States of America experienced a lot of progress economically. During this time many companies in the United States were so prosperous that they could afford to buy-out other companies. A lot of conglomerate mergers took place in this period. Unrelated entities began to merge in mass. All horizontal mergers that occurred during this period were subjected to stringent antitrust law enforcement. The Celler-Kefauver Act (1950) – which reaffirmed the Clayton and Sherman Acts – was the main weapon used for this purpose (Cleverism, 2017). A lot of firms during this period appreciated these conglomerate mergers. It resulted in a lot of companies diversifying from their core business as they sought to merge with other entities that were in a different line of business. However, the conglomerate "bull-run" crashed in 1969-70 and the conglomerate companies failed to achieve the benefits that were perceived to be inherent in this diversification strategy (Lipton, 2006).

The fourth merger wave took place in the 1980s. This was during time of the presidency of Ronald Reagan in the United States. Most of the M&A deals that occurred during this period were of a very friendly nature. Regardless of the fact that this period saw the formation of most friendly mergers, it was also the period where there were a greater number of aggressive takeovers than in any of the previous merger waves. This later led to the coining of the term 'corporate raider'. During this period mergers that occurred were quite huge in terms of value. They exceeded all the previous merger deals that had taken place in the previous waves. In this period, M&A could be seen topping the US billion dollar mark (Cleverism, 2017). The last of the waves was from 1993 to 2000, a period after the economic slump of 1990 to 1991. This was the era of the mega-deal. It ended with the bursting of the Millennium Bubble and the great scandals, like Enron, which gave rise to the revolution in corporate governance that is continuing today. During the fifth wave firms of extraordinary size and global sweep were created on the assumption that size matters, a belief bolstered by market leaders' premium stock-market valuations. High stock prices simultaneously emboldened companies and pressured them to do deals to maintain heady trading multiples.

In this period there was the general belief that for a company to succeed it needed to be very huge in size. What also made such mergers possible was the fact that the United States Government had also reduced its anti-competitive laws, hence companies merged in unparalled terms. In the United States there was quite a lot of mergers that took place in this period. mergers between Citibank and Travelers, Chrysler and Daimler Benz, Exxon and Mobil, Boeing and McDonnell Douglas, AOL and Time Warner, and Vodafone and Mannesmann occurred in this time frame. From a modest $342 billion of deals in 1992, the worldwide volume of mergers marched steadily upward to $3.3 trillion worldwide in 2000 (Lipton, 2006).

2.2.1 Causes of M&A waves

It is argued that merger waves tend to move in tandem with high stock market values. Shleifer and Vishny (1992) as well as Rhodes-Kropf and Wiswanathan (2004) developed models in which merger waves result from managerial timing of market overvaluations of firms. Other explanations of merger waves, by Gort (1969) and later examined by Mitchell and Mulherin (1996), postulate that merger waves result from shocks to an industry's economic, technological, or regulatory environment. The authors argue that these waves are a response by the market for a requirement of some kind of asset re-allocation. The authors argue that there needs to be adequate capital liquidity to accommodate the asset reallocation. The upsurge in capital liquidity and lessening in financing limitations that is interrelated with high asset values must be present for the shock to proliferate a wave. Variables that distinctly measure capital fluidity and market estimates advocate that the detected relation between high stock market valuations and merger waves has been misallocated to behavioural mis-valuation factors. Rather, the relation is actually driven by the higher capital liquidity (lower transaction costs) that accompany an economic expansion (Harford, 2003).

2.3 Types of M&A

There are fundamentally three types of mergers. These are the, horizontal, vertical and conglomerate types. Horizontal M&As combines two similar organizations in the same industry. Chartterjee (2000) states that horizontal mergers are more associated with companies that want to seek to control the market. By combining whilst in the same industry such companies gain an advantage over their competitors as they are much bigger in size and can be able to engage in unfair practices such as price-fixing. They are regularly referred to as mergers of equals because they comprise the amalgamation of two firms of comparatively identical assembly (Epstein, 2004). Equally, the main aim of a vertical M&A is to improve productivity or decrease expenses. A vertical merger describes a situation when companies that operate at differing stages of the production process come together. It takes occurs between two companies that have a buyer seller type relationship and combine under a solitary proprietorship (Arnold, 2013). A good South African example of a vertical merger is that of Famous Brands. The company was initially into earning income through the sale of its franchises only. However, lately, the company has diversified and is now supplying its franchisees with various inputs (Fin 24, 2017). Further afield one of the most distinguished examples of a vertical M&A took place between AOL and Time Warner. Through this business deal Time Warner supplied data to customers via CNN and Time magazine whilst AOL shared such data via their Internet business. A conglomerate M&A occurs when two or more companies in dissimilar markets connect to form a single company (Economywatch, 2010). These companies are normally not opponents. A very good example of a horizontal merger is the merger between Proctor & Gamble, a consumer goods company and Gillette, a man's personal care company in 2005. The M&A can be perceived as a diversification policy permitting the businesses to venture into new markets and spread risk (Gaughan, 2007).

2.4 Reasons for M&A

2.4.1 Growth

As the company grows slowly through internal expansion, opponents may respond quickly and take market share. Advantages that a company may have can dissipate over time or be whittled away by the actions of competitors. The only answer may be to acquire another company that has the resources, such as established offices and facilities, management, and other resources, in place. There are many prospects that must be acted on immediately lest they disappear. It could be that a company has developed a new product or process and has a time advantage over competitors. Even if it is possible to patent the product or process, this does not prevent competitors from possibly developing a competing product or process that does not encroach upon the patent (Gaughan, 2007). As an example, over the period 1994-2005 Johnson and Johnson a producer of a wide range of health care products concocted over fifty acquisitions as part of its growth approach. The company sought to follow those companies who had developed fruitful products. Examples of companies acquired by Johnson and Johnson include Neutrogena in 1994 as well as Peninsula Pharmaceuticals for $0.9 billion and $0.3 billion respectively (Gaughan, 2007).

When demand in an industry deteriorates, it becomes more and more difficult to keep up with historic growth. M&As is therefore a way to continue to grow. However, it is important to note that as the company becomes larger, it will also become progressively multifaceted to manage (Gaughan, 2007). Many empirical studies suggest that the general view is that mergers tend to increase shareholder wealth but decreases efficiency for the target firm. Inversely shareholder wealth is decreased for an acquiring firm as an excessive bid premium is paid over the pre-bid price to persuade target shareholders to sell their shares to the acquiring firm. This being said, the acquiring firm is more likely to see an overall increase in efficiency. This is largely due to substantial cost cutting by removing duplicate processes when firms have merged (Arnold, 2013).

2.4.2 Attainment of synergies

Synergy is a term that basically means that when two companies come together they are able to produce more profits together than they would have been able to if they were apart. (Gaughan, 2007). The predicted presence of synergistic benefits allows firms to incur the incidentals of the acquisition course and still be able to give target shareholders a premium for their shares. Operating synergies refer to either income enhancement or cost decreases while financial synergies imply the dropping of the weighted average cost of capital of the combined entity. Sources of operating synergies are many and varied. They could either be income enhancing or cost reducing. A revenue enhancing synergy might transpire when a company with good products, but poor market channels combines with a firm with a robust delivery system. According to Gaughan (2007) revenue improving synergies are difficult to accomplish and quantify since they are hard to calculate in valuation models. Cost related synergies are commonly more highlighted in the acquisition procedure. Cost reducing operating synergies are generally reflective of either economies of scale or economies of scope. Economies of scale reduce the average cost of production when the scale of company operations increases. Economies of scope on the other hand refer to the ability of a firm to utilize one set of inputs to provide a broader range of products and services. Economies of scope can potentially generate cost advantages when output is increased, not in one product but in a number of products offered (Halpern, 1983), Gaughan (2007) states that these kind of synergies are common arguments explaining the rationale behind banking industry acquisitions.

2.4.3 Diffusion of know-how

If the merging establishments have dissimilar high-tech competences, human capital, structural cultures, or simply know-how and it turns out that they are harmonizing to each other; then, by putting them together, they will most probably accomplish a technological advancement. Such a technological advancement can take the formula of product or process revolution (Roller, Stennek and Verboven, 2006). As well as knowledge, exploration

and development (R&D) is a very powerful non-saleable asset that combined in better ways (by merging with a complement) may allow for a technological progress and an increase in the firms' joint manufacture possibilities. According to Roller *et al.* (2006), a company may acquire another on the basis of the fact that the company being purchased has invested a lot in R&D. This not only helps the purchasing company as the purchasing company now benefits from the know-how of the acquired company and therefore there will be no need for the acquiring company to invest a lot of money in R&D.

2.4.4 Market Power

Market power, is defined as the ability to set and maintain price above competitive levels (Gaughan, 2007). A fundamental question in the analysis of M&As is the potential tradeoff between increased market power and efficiency gains. The evidence on this tradeoff, however, is far from conclusive. Case studies of M&As find mixed evidence, and estimation in more general settings is hampered by the difficulty of separately identifying productivity from markups (Blonigen and Pierce, 2016). However in their study of manufacturing companies from 1997 to 2007 Blonigen and Pierce (2016) find significant evidence of increased markups after M&A, but no evidence of any average impact on plant-level productivity. In the South African market, there have been proposed mergers that have been set aside due to the amount of market power the new company would assume. An illustration of an amalgamation that was forbidden by the Competition Commission is the merger amongst three huge oil establishments. In this case BP, Shell and Caltex wanted to combine their delivery grids. This would then have resulted in the three companies attaining sizable economies of scale, which according to the three companies was supposed to be "beneficial the final consumer" (Theron, 2015).

2.4.5 Hubris

Hubris as one of the proponents of merger causes was postulated by Roll (1986). The hypothesis is based on the premise that some manager believe that they can manage other

companies better. It is premised on the fact that managers sometimes become overconfident of their own abilities. This over-confidence sometimes results in managers bidding for companies which do not add any value to the entire organization. It also results in some managers paying too much for a target as they believe that they will turn the organization around. Roll (1986) states that the hubris hypothesis would imply a price decline in the bidder's equity price on announcement of a bid.

2.4.6 Empire building

This is also called the executive discretion motive: it states that managers' goal is to upsurge the size of the organization they want to lead. Their goal is to grow. The quickest way that most managers can achieve this growth is by amalgamating with other companies. Executives are therefore under pressure to ensure that their organizations continue on an upward trajectory with regards to company size. It gives managers a sense of pride to know that they are running a very huge organization. In addition, another motive for company executives to pursue extensive growth would be that their reward would be unswervingly connected to the size of the company they manage. In this regard company executives would try by all means necessary to ensure that the companies that they manage grow. Such growth is easily attainable by the use of mergers and acquisitions. This hypothesis was first been formulated by Mueller (1969).

2.4.7 Free cashflow

The free cashflow proposition was articulated by Jensen in 1988. It positions that managers will assume investments in adverse NPV projects rather than dispense cash as dividends when they have free cashflow available in the company (Jensen, 1988). Lang, Stultz and Walking (1991) investigated this premise on a sample of M&A transactions and found that firms with high cashflow and low investment opportunities will take part in value destroying M&As. Harford (1999) in collaboration with Jensen also supports the idea that company with a lot of cash at their disposal tend to take part in merger and acquisition activities that do not

add any value to the organization. The author terms these transactions as “value-destroying” transactions Evidenced by such studies, it can be determined that firms with high cash holdings and low investment opportunities tend to engage in value decreasing M&As. The problem with high free cashflow is correlated to the problem of managers’ hubris and empire building. As managers have cash available in their coffers, they then tend to have a lot of confidence resulting in them acquiring companies that will not add to the bottom line of the organization. This also is related to empire building, which in most cases is fueled by the existence of extra cash available in the company coffers which at times forces some managers to want to expand their companies without looking at whether any M&A transactions they undertake will be quite viable.

2.5 Regulation of M&A activity in South Africa

Mergers in South Africa are governed by a sophisticated legal framework which encompasses both statute and common law. In private M&A deals, where much is controlled by agreement between the parties, the uncodified common law of contract plays a particularly momentous role. In public mergers, once an offer is made, the process is highly controlled by the provisions of the Companies Act (including the takeover regulations) and the listings requirements of the Johannesburg Stock Exchange (JSE). It is emblematic for transactions to be initiated by one CEO linking with another. This is often followed by a formal approach to the board of the target by one chairman to another. The Companies Act, in relation to listed companies, contains extensive provisions regarding accountability, corporate social responsibility and stakeholders’ rights. The Act simplified and made significant changes to the existing law governing takeovers and mergers, and replaced previous takeover rules with a more comprehensive, modernized set of regulations. The Companies Act of 2008 regulates all takeover and public M&A activity in South Africa. The Companies Act and the Regulations thereto contain provisions regulating M&A. These are collectively known as the Takeover Regulations. If a company intends concluding any transaction contemplated in Chapter 5 of the Companies Act, it is important to ascertain

whether the Takeover Regulations apply to that transaction. If so, various disclosures, approvals and reporting requirements will then need to be met or sought from the Takeover Regulation Panel (TRP). The TRP is the regulatory body that was established under the Companies Act to regulate certain transactions (Dommisse Attorneys, 2016). As an example under the JSE listing requirements the bidders' shareholders must approve an acquisition if the offer consideration is larger than 25% of the market capitalization of the bidder (Global Legal Group Limited, 2017).

The Competition Act of 1998 essentially rehabilitated the country's competition legislature, considerably firming the powers of the competition authorities along the lines of the European Union, US and Canadian models (Brand South Africa, 2013). Competition law is governed by the Competition Act, 1998 (the Act) which consists of an independent competition consultant, namely the Competition Commission (Commission), Competition Tribunal (Tribunal) and Competition Appeal Court (Appeal Court) (Vdma corporate and commercial attorneys, 2017). The Act also deliberates on the competition authority extensive powers designed to prevent anti-trust behavior. Such behavior comprises, preventive horizontal and vertical practices; exploitation of a leading position; and horizontal and vertical mergers (Vdma corporate and commercial attorneys, 2017). The Competition Commission is a constitutional body constituted in terms of the Competition Act, No. 89 of 1998 by the Government of South Africa sanctioned to examine, control and appraise obstructive business practices, misuse of leading positions and mergers in order to accomplish equity and efficacy in the South African economy. The directive of the Commission is to encourage and maintain rivalry in South Africa in order to promote the efficiency, adaptability and development of the economy; provide consumers with competitive prices and product choices; endorse employment and promote the social and economic welfare of South Africans; enlarge openings for South African contribution in world markets and identify the role of external rivalry in the Republic; safeguard that small- and medium-sized enterprises have an impartial chance to partake in the economy; and Encourage a greater spread of

ownership, in particular to increase the ownership stakes of historically disadvantaged persons (The Competition Commission, 2017).

For the “not so large” and small mergers, upon conclusion of the merger enquiry, the Competition Commission will provide a certificate sanctioning the merger, sanctioning the merger subject to conditions or barring a merger. In terms of Section 16(1)(a) of the Act, if the Competition Commission takes a verdict, with which the merging parties do not approve, they can plea the decision before the Competition Tribunal. If the decision that is taken by the Tribunal is still not agreeable to the merging parties, they can appeal before the Competition Appeal Court (The Competition Commission, 2017).

When it comes to the matter of huge mergers, the Commission will forward its approvals to the Competition Tribunal, the Minister of Trade and Industry, and the merging parties. The endorsements must stipulate whether the merger should be permitted, permitted subject to conditions or barred. Then, the Competition Tribunal takes a concluding decision on the matter. If the merging parties do not agree with the verdict taken by the Tribunal, they can put a petition before the Competition Appeal Court who will then ascertain if their case does indeed have any merit (The Competition Commission, 2017).

2.6 M&A activity in the world

In 2015, companies worldwide announced over 44’000 transactions with a total value of more than 3.7 trillion USD. Compared to 2014, the numbers of deals grew only marginally by 2.7% while the value rose at 16%. The year 2015 recorded a very impressive number of mergers and acquisitions. Notwithstanding this performance the following saw activity in mergers and acquisitions still remaining buoyant (Thacher and Bartlett, 2017). In the year 2016 there was a total of US$4.5 trillion recorded deals with regards to mergers and acquisitions according to Thomson Reuters, representing a 16 per cent decrease from the previous year. This made 2016 the third sturdiest annual period for worldwide M&A since mergers and acquisition figures began being tabulated in 1980. Although the number of M&A

deals decreased, 2016 saw a 1 per cent increase in the number of announced deals as compared to 2015, with 46,055 deals announced globally in 2016. Conspicuously, this high level of M&A activity took place in spite of the outcome of the United Kingdom's EU referendum, ambiguity regarding the US presidential election, augmented supervisory scrutiny and apprehensions regarding economies in Europe and Asia. Continued low interest rates, large corporate cash reserves and limited prospects for organic growth fostered conditions for M&A activity in 2016 (Thacher and Bartlett, 2017).

M&A activity in 2016 reflected a balanced distribution across business sectors. The top industries in terms of M&A activity for 2016 were energy and power, which accounted for 16.6 per cent of deal value in 2016, followed by technology, materials, industrials, real estate and financials, each of which accounted for 13.3 per cent, 10.7 per cent, 10 per cent, 9.8 per cent and 9.6 per cent, respectively, of deal value in 2016. Ten of the top 15 announced transactions of 2016 involved a target in one of these industries (Thacher and Bartlett, 2017).

The largest M&A transaction worldwide so far has been the merger between Vodafone AirTouch PLC and Mannesmann AG with a value of 202.79 billion US dollars completed in 1999. The acquisition of SAB Miller by Anheuser-Busch Inbev in the year 2015 is ranked fourth in corporate history with the deal being valued at 101.48 billion US dollars (Nurin, 2016). Because the merger combined the world's two leading beer companies, shareholders had to agree with courts around the world to spin off many popular beer brands before proceeding (Nurin, 2016). According to published reports, Japan's Asahi expressed interest in following up its purchase of Peroni, Grolsch and Meantime with the purchase of additional beer brands. After this merger deal speculation grew that AB InBev could make Coca-Cola its next takeover target (Nurin, 2016). Corporate and private equity executives foresee an acceleration in M&A activity in 2018, both in the number of deals and the size of the transactions (Deloitte, 2017).

2.7 M&A activity in South Africa

In South Africa, cross-border opportunities have helped to buttress domestic activity and keep M&A buoyant in South Africa, despite a slowing domestic economy and energy concerns (Institute for Mergers Acquisitions and Alliances, 2017). In South Africa, the forecast shows that growing political risk and a sluggish economy contributed to a halving in total M&A in 2017 versus 2016. However, the forecast predicts that economy should improve in 2018 thanks to the impact of monetary policy easing and stronger commodity prices (Businesstech, 2017). Morne van der Merwe, managing partner of law firm Baker McKenzie in Johannesburg commented that: “Current conditions have slowed M&A growth in that international investors are reluctant to invest in South Africa due to the political and economic uncertainty. This uncertainty has caused a reduction in Foreign Direct Investment, which, in turn, hindered deal-making.”(Businesstech, 2017).

Merger and acquisition activity by JSE-listed companies during the first three months of 2017 was, unsurprisingly and off a low base, up on 2016 levels with 110 transactions announced compared with 92 for Q1 2016 as a pipeline of deals spilled over into 2017 (Marylou, 2017). The dip in transactions announced in the comparable 2016 period was largely due to the upheaval caused by “Nenegate”. This was the day South African President Jacob Zuma, removed the then Finance Minister Nhlanhla Nene, replacing him with Des van Rooyen. Van Rooyen became the shortest serving finance minister in South African history as within a week the President had replaced him with another former Finance Minister in the name of Pravin Gordhan. The aftermath of the event has been well documented and Biznews.com founder Alec Hogg calculated the immediate loss to the country as R500 billion (Biznews.com, 2016). The resultant political instability, regulatory uncertainty and the subsequent investment status downgrades all contributed to the current slowdown in M&A deals in South Africa (Marylou, 2017).

2.8 The performance of mergers and acquisitions

A number of studies were conducted between 1970-2006 to identify the factors that cause M&A to either perform or fall down dismally. Zollo and Meier (2008) recognized 12 different methods for calculating the influence of takeovers. Methods for evaluating M&A performance differ along numerous magnitudes, these being: subjective to objective assessments; expected returns to realized returns; short-term to long-term perspectives; basing on public information to private information; task level, to acquisition project level, and to firm level; and returns to acquiring firms separately from returns to the combination.

Fundamentally, there are five frequently used performance assessment methods in M&A field. These are specifically; Event studies, both in the short run and long run (Haleblian and Finkelstein, 1999, Surdarsanam and Mahate, 2006); accounting-based measures (Zollo and Singh, 2004), managers' subjective assessments (Brock, 2005); expert informants' assessment (Hayward, 2002); as well as divesture (Mitchell and Lehn, 1990).

Cording, Christmann and Weigelt (2010) identified that 92 percent of observed studies used event study and accounting-based methods. Zollo and Meier (2008) found that while 41 percent of the total studied articles used short-term event study, only 28 percent of researches used accounting-based measures. Scholars diverged on characterization of operating performance, ratios chosen, benchmarks raised, time frame and methodology design when they were using accounting-based method. The interpretation that resulted from the varied measures also differed quite a lot. Tuch and O'Sullivan (2007) resolved that the announcement effect of takeovers is inconsequential on short-run event study, and performance measured on long-run event studies is overpoweringly negative, and results are mixed when using accounting methods. Therefore, "success paradox" and some abstruse conclusions, such as culture-performance, experience-performance relationship, and diversification discount, can be ascribed to defective performance measures or incorrect application of them. At the same time, for accounting "success paradox", other scholars postulate that some mergers fail to be successful due to the fact that they are initially taken

up for the wrong reasons. Wrong reasons that come to mind include the company executives wish to control a very huge company, thus in way contributing to managers taking up every other merger opportunity that comes their way without properly evaluating if that merger will add any value to the bottom line of the company (empire building) and illogical decision making (e.g., hubris and imitation); second, designation of performance measures should be linked to their preliminary motives, as the motivations direct the acts and lastly lead to diverse consequences.

2.8.1 Comparison of performance measures

Performance procedures have intrinsic restrictions that should be deliberated. One performance measure is superior to others only when its hypothetical logic is more coupled to the theoretical dimension of the question under study (Cording *et al.*, 2010).

2.8.1.1 Event studies

Event study has been the major approach since the 1970s (Martynova and Renneboog, 2008) and is largely used in M&A studies. The postulation underlying this method is that the market is efficient. However, this assumption does not always hold. For some M&As, it may take time for some information to be revealed to the market. Stock price then will correct as supplementary data is exposed. Besides, stockholders typically respond to a market event irrationally, for example “Monday Effect” (Bromiley, Govekar and Marcus, 1988). The “Monday effect” is a theory that states that returns on the stock market on Mondays will follow the predominant trend from the previous Friday. Therefore, if the market was up on Friday, it should endure through the weekend and, come Monday, resume its rise. The benefits of event studies comprise the fact that data is easy to get overtly, permitting studies on large sample, short-term event study can shade the influence of outside factors to a large extent and the fact that abnormal return is determined mathematically, therefore, data is not subject to industry sensitivity, permitting a wide-range of firms to be studied. However, its admonitions cannot be ignored. The expectations are difficult to be met; it assesses the

predicted synergy not the actual synergy that will have been realized. While share data is very accessible in nature, its application is intricate; the fact that this measure cannot be utilized for unlisted companies lead to the problem of sampling bias. Event studies also flop in that they do not consider the numerous reasons for companies to be involved in M&A. The method also pressures academics and students to assess M&A performance on firm level, if M&As only influence a particular unit of a firm (Wang and Moini, 2012).

2.8.1.2 Accounting based measures

Accounting-based techniques of performance often take a longstanding viewpoint of acquisition performance like long-term event study but embody ex-post, real, realized returns. Accounting based techniques normally look at the performance of an organization some time prior to the occurrence of the merger and acquisition transaction. This is then contrasted with the same performance of the merged entity for an equal period after the merger has taken place. The justification behind these studies is that the premeditated aim of a business is to earn a satisfactory return on capital, pay its shareholders in the process and continue as a going concern for the foreseeable future and therefore any profit emanating from mergers and takeovers will eventually echo in the firm's accounting statements, largely reflecting a profitable organisation (Tuch and O'Sullivan, 2007). Accounting measures are quite varied in that they tend to look at variables such as profitability, employing earning-based measures and cash flow performance measures (Healey and Ruback, 1992). A diverse possibility of accounting ratios in M&A performance assessment can be found in Martynova and Renneboog (2008) research. Return on assets (ROA) is broadly used in the M&A research (Bertrand and Betschinger, 2012). Meeks (1988) related profit/sales ratio, return on equity (ROE) and ROA and determined that ROA is the most suitable ratio for gauging M&A performance. However, Barber and Lyon (1996) postulated that operating cash flows is supreme in computing the performance of firms after momentous events, such as mergers and takeovers, as earnings can be easily played around with in order to portray a picture of a company that is doing extremely well. Research

does contrast in terms of meanings of operating performance, deflator choice (e.g., market value of assets or equity, book value of assets or sales), performance benchmarks, and procedure. Like long-term event studies, accounting based measures also integrate the effects of external influences; it echoes the historical rather than present-day performance anticipation; accounting data can be made inaccurate by manipulation. Managers who want to portray a different outlook about their company will always find some way to massage their figures so that they suit their own needs. Diverse accounting standards across different jurisdictions in the world and transformation overtime disturb the legitimacy of data obtained using this measure (Hult, Ketchen, Griffith, Chabowski, Dykes, Pollite and Cavusgi, 2008).

2.8.1.3 Managers' perceived performance

In employing this technique, managers are asked to evaluate to what extent they have realized their initial aims after a lengthy period following the completion of M&As. This period can extend to a number of years after the transaction has occurred. Their original aims are demarcated using some financial and/or non-financial ratios. Typically, managers are also required to provide an "overall" rating about the entire performance of M&A to create convergent validity (Cartwright and Schoenberg, 2006). Zollo and Meier (2008) postulate that this particular measure has been used in 12 of the 87 papers (14 percent) that they studied. The rewards of using this measure is that secluded data can be used. The technique diminishes outside noise. Performance can be assessed in a multidimensional way with financial and non-financial information (Brouthers, Hastenburg and Ven, 1998). Multiple motives of M&As can be taken into account. It is also appropriate to use the managers' discernment of M&A performance, as their observation of accomplishment will impact their actions (Papadakis and Thanos, 2010).

2.8.1.4 Divestment measure

This method assesses the number of companies that have later divested after a M&A transaction. The logic behind this method is that if a company decides to divest after it

initially went into a M&A transaction, it therefore follows that the M&A deal did not serve its intended purpose. Due to this line of reasoning it will then imply that the M&A deal was a failure. (Ravenscraft and Scherer, 1987). Ravenscraft and Scherer (1987) account to the fact that 33 percent of acquisitions between the 1960s and 1970s were in the future divested. The disadvantage of this method is that it does not look at other reasons why a firm could have divested. The method only assumes that divestment shows that a company has failed. There may be other reasons as to why a company decided to divest besides the fact that the M&A deal was indeed a failure.

2.9 Factors affecting Operating Performance in M&A

2.9.1 Method of Payment

In making an acquisition, the bidder or acquiring firm can choose either cash and equity financing or some combination of the two (Chemmanur, Paeglis and Simonyan, 2009). Myers and Majluf (1984) hypothesized the pecking order theory in the determination to clarify how businesses choose to finance various investments including M&A transactions. Firstly, managers will use reserved funds that are available within the company if they have the latitude and luxury to do so. If the company does not have any excess funds in its coffers the next port of call will be the capital markets where the company would have to seek extra funds from units in the economy that have surplus cash. Hence executives will use debt, hybrid securities and finally equity as a last resort. He points to the fact that a secondary issue of equity will be regarded by the markets as mutually a negative indication and a pricey one. Buying organizations select to use equity as a method of compensation when the firm's equity is overvalued and cash when the equity is underestimated (Heron and Lie, 2002). Academics in their studies have found that cash purchases tend to impact positively on the performance of the acquiring firms. Fuller, Netter and StegeMoller (2002), Hazelkorn, Zenner and Shivdasani (2004) found that cash acquisitions often create the inducement for acquiring firms to grasp the projected synergies and meticulously manage the merger

incorporation process. The authors further supplement that cash purchases direct an optimistic gesture to investors, signifying that the firm is poised of reclaiming monetary reimbursements in surplus of the price of the transaction.

In times of crises there may exist a valuation disparity between the purchaser and the target firm leading to stock-financed M&A. Observed studies propose that the type of payment is an important factor of the long-term post-acquisition performance: cash payment in M&A transactions are linked with tougher enhancements than M&A relating to other arrangements of compensation (Moeller and Schlingemann, 2004). A possible explanation according to the authors is that outright money transactions are further expected to lead to the replacement of (underachieving) target administration, which could consequence into performance enhancement (Parrino and Harris, 1999). Martynova and Renneboog (2007) also postulate that a cash transaction is most of the time bankrolled by debt. This consequently limits the accessibility of business coffers at the managers' disposal and hereafter diminishes the opportunity for free cash flow problems (Jensen, 1986). It therefore follows that merger and acquisition transaction funded by hard cash will force the purchasing management company to be very careful on how they spend their cash since they will have borrowed funds in order to fund the M&A transaction. Viewed in this manner it would then imply that the acquiring company would me more diligent in the use of cash and chances are that they will not delve into buying other companies so that the build an empire since they are restricted in terms of the cash that is available to them. Despite this, the observed published works on M&A does not find a substantial association among the technique of payment as well as post M&A performance (Powell and Stark, 2005). If it so happens that there are two companies bidding for the same target it has been discovered that the acquiring company that is willing to pay for the transaction in cash usually takes up the dal (Berkovitch and Narayanan, 1990).This is because cash deals are very quick and do not have the disadvantage of delay that other payment methods have. Schwert (1996) recognized that equity bids were more commonly used in tender offers compared to all-cash ones, and all-cash bids are more lucrative for

target stockholders than are all-equity ones. These conclusions were collaborated by Ghosh (2001) in the United States of America. His results showed that a cash funded M&A largely does a lot well than a M&A bankrolled through debt. Goergen and Renneboog (2004) also found robust signs that the means of compensation has a great bearing on the prosperity consequence of M&As.

2.9.2 Geographic diversification

Authors have alluded to the fact that geographic diversification can help a merger post positive post-merger performances (Bertrand and Betschinger, 2012). Wang and Boateng (2007) argue that cross-border mergers are more insulated from the ever-changing economic environment as they tend to be well diversified in term of geography. Hence if the economy is not doing so well in one part of the country chances are that the other company in a different geographic jurisdiction will be facing a different economic environment altogether. According to the authors it therefore follows that cross-border mergers would result in more profitable mergers and acquisitions (Wang and Boateng, 2007). This the authors postulate that it mainly emanates from the new resources and customers as well as the opportunity for firms to learn new knowledge as well as improve on their competences. However, on the other hand (Weber *et al.*, 2014) point out the imperativeness of multiethnic consideration and communication in cross-border M&A. Companies that are not well-vexed in these matters would face a number of challenges as integrating people of different cultures is never easy. In the same vein other empirical studies also show that when going abroad companies may face a lot of challenges which could potentially impede the accomplishment of expected synergistic value and also possibly deteriorate the performance of acquiring companies (Weber *et al.*, 2014).The authors highlight the importance of cross-cultural sensitivity as well as communication in cross-border M&As as without these there could be integration issues resulting in the failure of such M&As. The lack of administrative competences has been revealed to destructively distress global M&As of Russian companies (Bertrand and Betschinger, 2012). During economic crisis, regional contagion

may therefore impede value accrual. Gugler, Mueller, Yurtogu and Zulehner (2003) did not find noteworthy variance in revenue amongst cross-border M&As and domestic M&As. Goergen and Renneboog (2004) determined that local M&As prompt advanced wealth effects than cross-border M&As. Correspondingly, Moeller and Schlingemann (2004) highlight that US firms who take part in cross-border M&As have expressively inferior announcement share yields of roughly one percent and largely lesser fluctuations in operating performance. Conn, Cosh, Guet and Hughes (2005) also found UK firms' cross-border M&As resulted in inferior announcement and long run returns as compared to local M&As. But earnings were higher than technological firms, non-technological experience zero announcement returns in cross-border M&As.

2.9.3 Target share acquired

The amount of shares bought by the acquiring company determine how much control the bidding company would have on the target company (Agrawal, Jaffe and Gershon, 1992). M&As that result in the bidder acquiring a large portion of the target generally result in successful mergers (Fowler and Schmidt, 1989)**.** In crises times, this consequence is expected to be more severe than when purchasers want to descend latent synergies from their M&A activities. When the buying company possesses huge equity shares, buying companies get more returns (Agrawal and Mandelker, 1987). Ben-Amar and Andre (2006) did not find that withdrawal of ownership and control has an unwelcome stimulus on the performance but detailed governance machineries have an optimistic effect on the purchasing firm performance. Yen and Andre (2007) discovered a non-linear rapport between focused proprietorship and operating cash flow returns, increased echelons of proprietorship were related with optimistic post-purchase performance. The more investor protection has a positive bearing on operating performance from purchases. Dutta and Jog (2009) exhibited organizations with more than 25 percent director ownership meaningfully outclassed organizations with lesser director possession. Their report also confirmed the same result when looking at CEO equity ownership as well. In addition, they detailed that

acquiring firms with more inside directors achieved well than firms with directors who do not own a significant portion of the company.

2.9.4 Friendly versus unfriendly M&A

Kruse *et al.* (2007) argue that friendly M&As are more expected to produce synergies when equated to other categories of M&As. The writers discovered that 38% of the target administration took impartial positions as contrasted to 49% of target administration who articulated auspicious attitude. Friendly deals can assist with swift acclimatization of synergies amongst the amalgamating corporations. In economic collapses organizations are also able to obtain companies at an inferior price due to hostile financial environments (Wan and Yiu, 2009). Nevertheless, conversely, unfriendliness in business takeovers and mergers could be linked with healthier long-term operating performance of the amalgamated company. The lucidity for this is that antagonistic propositions are more costly for the purchasing corporations, such that only mergers that have extremely high synergy latency are expected to thrive (Burkart and Panunzi, 2006). Nevertheless, the observed literature on mergers and acquisitions discovers no suggestion of this inference (Powell and Stark, 2005).

2.9.5 Industry relatedness

Companies that merge within related industries do this mainly for the sack of obtaining some form of competitive advantage over their rivals as well as to increase their profitability prospects as they will in effect be cutting out a lot of competition in the industry. The conclusions on trade cohesion and takeover effect on operating performance tend to advocate that M&As of businesses functioning in unalike trades are usually associated with shoddier performance when likened to industry-related comparable companies (Healey and Ruback, 1992). Nevertheless, Kruse *et al.* (2007) find contradictory outcomes. Additionally other researches show no association amongst M&A and the combined firms' operating performance (Fowler and Schmidt, 1989). M&A between companies in the same industry can also have an impact on the business environment for surviving firms (Haleblian, Devers,

McNamara, Carpenter and Davison, 2009). Customers of the acquired firm who were previously “brand-loyal” may scout the market for new suppliers. This may then create new business for the surviving firms in the same industry. Such behavior will therefore influence the viability of the merged firms after the M&A deal has been concluded (Berger, Saunders, Scalise and Udell, 1998). Within the South African market there is a high possibility that acquiring companies that participate in M&A activity with industry associated targets could rapidly exploit their reputable understanding and knowledge of the indigenous markets and influence their joint competences for communal benefit, thereby improving M&A performance. During a financial disaster time-frame, being diversified could benefit in incapacitating industry-level contamination. Thus M&A could have a negative impact on post M&A operating performance. Haugen and Udell (1972) and Eckbo (1986) both settled that dissimilar takeovers outdid the interrelated ones, but both studies discuss their outcomes with reference to the conglomerate M&As wave that took place earlier. Seth (1990) however, found the opposite result. Similarly, Kaplan and Weisbach (1992) offered diverse signals on the achievement of dissimilar versus related acquisitions and mergers. Nevertheless, substantial body of evidence points to the fact that corporate diversification strategies extinguish value in mergers and acquisitions (Berger and Oferk, 1995).

2.9.6 2007-2009 Financial Crisis

Though characteristically, a financial catastrophe can have an adverse consequence on a company’s revenues, writers have also documented respectable M&A prospects that present themselves in such an atmosphere which can lead to enhancement in company viability (Wan and Yiu, 2009). A study conducted on the long-term performance of M&A in the Association of Southeast Asian Nations (ASEAN), (Nicholson, Salaber and Cao, 2015) advocate that M&A finalized in a financial calamity are more money-making than those instigated formerly or subsequent to the crisis. The authors maintain that this is chiefly due to the synergies formed amongst the firms’ capitals in the crisis which promise well for firms’ commercial performance. The study similarly discovers that during the calamity particular

features of the organizations like the cross-border nature of the deals and friendly nature of the deals are central causes of enduring post M&A operating performance. Nevertheless for M&A finalized in the disaster, there seems to be no connection amongst firm performance and firms' characteristics linked to M&A activity that include payment method, industry affiliation and percentage of target's share purchased (Nicholson *et al.*, 2015).

CHAPTER 3: Methodology

3.1 Data and data sources

The key objective of the study was to investigate the determinants of post M&A performance in South Africa and also examine the impact of the 2007-2009 global financial crisis on the performance of M&A deals. The researcher did this by testing six hypotheses. The hypotheses tested were as follows:

H1 Mergers and acquisitions of firms in the same industry are likely to have a positive effect on the post-merger operating performance of the merged entity.

H2 Mergers and acquisitions of firms that are financed by cash are likely to have a positive effect on the post-merger operating performance of the merged entity when compared to M&A financed by debt.

H3 Mergers and acquisitions that are of a friendly nature are likely to have a positive effect on the post-merger operating performance of the merged entity.

H4 Mergers and acquisitions between cross-border entities are likely to have a positive effect on the post-merger operating performance of the merged entity.

H5 The percentage of target share acquired has a positive impact on post-merger operating performance of the merged entity.

H6 Mergers and acquisitions concluded during the 2007-2009 financial crisis are likely to have a positive effect on the post-merger operating performance of the merged entity when compared to M&As done outside this period.

These hypotheses are based on the literature review presented in the previous section. The study approach was quantitative in nature and involved a cross-sectional regression analysis to examine the effect of each of the variables considered in the hypotheses.

The researcher employed a quantitative research methodology to identify the factors that affect post-merger operating performance. This was done by performing a cross-sectional ordinal least squares regression analysis.

3.2 Calculation of "raw" performance measures

The study used secondary data gathered from financial statements of the various companies involved in M&As transactions. The accounting information required was obtained from the Bloomberg database. Secondary data collected from audited published annual financial statements for the period 1994-2016 was used. The author compared companies' post-merger financial health with the pre-merger financial health of the acquirer and the company being acquired. This was done with the help of accounting ratios as well as regression analysis. Performance was measured three years prior to the merger. This performance was then contrasted with the performance of the merged entity three years after the merger. The "raw" performance of the M&As was defined as the change in both the return on assets (ROA) as well as the sales margin (MARGIN) three years prior and after the merger. This was termed "raw" as the researcher did not make any adjustments for industry trends as well as industry, size and pre-M&A performance on the two performance measures.

Past studies were considered in order to examine how pertinent approaches were applied in order to quantity and analyse the post-merger operating performance of mergers on the Johannesburg Stock Exchange. Numerous post M&A accounting based performance measures have been used in the prevailing works (Papadakis and Thanos, 2010, Zollo and Meier, 2008). The motivation for using accounting-based measures to assess the post M&A performance trusts on the premise that most deals are geared towards deriving higher performance for merging firms and this synergy between firms is best observed by looking at

long-term accounting measures such as the return on assets (Thanos and Papadakis, 2012). Thanos and Papadakis (2012) hypothesize that one of the purposes of M&As is to use the synergies amongst the merging companies and most of these synergies take a number of years to be realised. The authors consequently settle that M&A performance is observable in accounting-based measures over a while. A number of studies on post-acquisition operating performance outline operating performance as "pre-tax operating cashflow". *EBITDA* margin is well-thought-out to be the cash operating profit margin of an entity. It eradicates the properties of non-cash income and non-cash expenses as well as taxes (Corporate Finance Institute, 2017). Shareholders and depositors of funds can easily comprehend how much money is created for every Rand of income made and use the margin as a yardstick in equating innumerable corporations.

EBITDA can be used to analyse and compare profitability between companies and industries because it eliminates the effects of financing and accounting decisions. A small *EBITDA* ratio shows that an entity has viability complications as well as problems with cash flow. Conversely, a relatively high *EBITDA* means that the entity earnings are steady. However, as *EBITDA* eliminates debts, non-cash expenses, interest and taxes, some entities misappropriate this as a technique to upsurge their economic performance (Corporate Finance Institute, 2017). In addition, this quantifier is not a "pure" cash flow performance as it does not take into consideration fluctuations in working capital (Martynova and Renneboog, 2007). A positive *EBITDA* does not automatically imply a business is producing money. This is so as *EBITDA* overlooks deviations in working capital, which is typically required in increasing a business's capital disbursements when needed to substitute assets that have broken down, as well as in taxes and interest (Corporate Finance Institute, 2017). Nevertheless, it is characteristically contended that such a performance measure is unaffected by either the accounting method employed to compute depreciation or non-operating activities i.e. interest and tax expenses (Corporate Finance Institute, 2017).

The writers have also contended that using multiple measures in a single study gives a more realistic interpretation of the post M&A performance (Thanos and Papadakis, 2012). Using methods developed by Bertrand and Betschinger (2012) and Papadakis and Thanos (2010) the researcher calculated two measures of post M&A performance, namely the combined return on assets (ROA), measuring the firms' viability and the combined sales margin, providing a picture of the firms' effectiveness.

The researcher used the pre-tax cashflow as an accounting-based performance measure which is demarcated as sales minus cost of goods sold and selling, general administrative expenses plus depreciation (Sudarsanam, 2003). The researcher then calculated two cash-flow earnings of the combined firm*(i)* for each year*(t)*. The performance measures used are as follows:

Return on assets $RO_{i,t} = \frac{CF_{i,t}}{ASSETS_{i,t}}$

Sales margin $MARGIN_{i,t} = \frac{CF_{i,t}}{SALES_{i,t}}$

CF is the before-tax cashflow (*EBITDA*), *ASSETS* is the value of total assets and *SALES* is the total incomes of the combined firm at year end for the amalgamated company.

Following test techniques developed by Martynova and Renneboog (2007), as the researcher's investigation concentrates on the fluctuations in profitability of the combined firm for the period prior the takeover, the researcher summed cashflows of both the purchasing as well as the target firm and scaled it by the total of their total assets or sales. Hence, *the "raw" pre-acquisition profitability of the combined firm* is calculated as follows:

$$CF_{firm,t} = \frac{CF_{A,t} + CF_{T,t}}{BASE_{A,t} + BASE_{T,t}}$$

For the years subsequent to the acquisition, the *"raw" profitability of the combined firm* is calculated as the realised cashflow of the amalgamated entity divided by its total assets or sales as below:

$$CF_{firm,t} = \frac{CF_{AT}}{BASE_{AT}}$$

In order to evaluate the deviations in the profitability of the amalgamated firm triggered by the M&A transaction, the researcher employed the *change model.* This computes the variation in profitability for each entity whereby the median profitability of the 3 years prior to the takeover is equated to the median profitability over the three years consequent to the merger. As the research used two measures of returns, calculations for both the ROA as well as the MARGIN were carried out for three years prior to the merger as well as three years after the merger was completed. These variables were coded as RAW_ROA and RAW_MARGIN respectively. The ordinary least squares regression model used to ascertain which independent variable had an impact on the post- operating performance as measured by both return on assets (ROA) as well as the margin (MARGIN) was as follows:

$$PERF_{i(post)} = \alpha_0 + \alpha_1 PERF_{i(pre)} + \alpha_2 EQUITY_i + \alpha_3 SAMEIND_i + \alpha_4 CB_i + \alpha_5 FRIENDLY_i + \alpha_6 PERC_OWNED_i + \alpha_7 CRISIS_i + \xi_i$$

Where $PERF_{i(post)}$ ***= (RAW_MARGIN or RAW_ROA) after the deal***

$PERF_{i(pre)}$ ***= ROA or MARGIN before the deal***

$EQUITY_i$ **=** dummy variable to one when the M&A deal is all equity financed, zero otherwise

$SAMEIND_i$ **=** dummy variable taking the value of one when both bidder and target firms are in the same industry

CB_i **=** dummy equal to one for cross border deals, otherwise 0,

$PERC_OWNED_i$ = the percentage of target shares owned after the transaction,

$FRIENDLY_i$ = dummy recording whether the deal was friendly or not with one for friendly deals, zero otherwise.

$CRISIS_i$ **=** dummy variable capturing the effect of the 2007-2009 global financial crisis.

Two performance measures then provide the researcher with two measures of operating performance. The model was run separately for the ROA measure and for the MARGIN measure of performance.

3.3 Peer company selection & calculation of adjusted performance measures

The results of the above analysis however could be affected by growth or a decline that could have taken place in a particular industry. As a result of this, it could be concluded that M&A deals are generating value when the value that has been measured has not been generated necessarily by the merger. To isolate the M&A takeover effect, from the growth or decline of an industry an adjustment for industry trend is effected in the researcher's calculations. To isolate this take-over effect, literature recommends an adjustment for the industry trend (Healey and Ruback, 1992). As a representation for industry inclinations the researcher considered for each buying as well as for each firm being acquired from the sample the performance of a median company that operated in a similar industry. The industry median was identified from all the companies recorded on the Bloomberg database that had the same 4-digit industry code as our sample firm in the year prior to the acquisition. The firm with the median EBITDA to assets ratio was then selected as the researcher's industry median peer. This is in line with earlier research conducted by Martynova and Renneboog (2007). In addition, the researcher also matched the sample of companies entangled in M&As by industry, asset size and EBITDA.

Extant research indicates that operating performance improves following M&As relative to industry-median firms. Such performance outcomes are probably biased because acquiring firms assume acquisitions subsequent to a period of superior performance and they are generally larger than industry-median firms (Ghosh, 2001). Due to this, the researcher also used the Bloomberg database to identify the industry, size and performance matched peer for each bidder as well as each target firm from the sample companies. For each purchasing and target firm with the same industry code and available EBITDA to assets ratio the

researcher further filtered down to the list of firms that fall within the same size quartile (as measured by total assets as both the bidding and target firms). The researcher then selected the company with an EBITDA to assets ratio that was nearest to the firm being investigated. To come up with industry, size and pre-M&A peers the researcher initially grouped all companies on the JSE by industry. Only entities with sizes (book value of total assets) that were within the same quartile as the sample firms were kept. Lastly, the companies with the profitability return nearest to the sample firms were then carefully chosen as peer companies.

Following test techniques developed by Martynova and Renneboog (2007) the peer pre-acquisition profitability of the combined firm was calculated as a weighted average of the profitability of the purchaser's and the target's peer entities; where the relative size of the buyer's and target's relative assets or sales were the weights:

$$CF_{peer,t}= \left(\frac{BASE_{A,t}}{BASE_{A,t}+BASE_{T,t..}} \right) x \frac{CF_{peerA,t}}{BASE_{peerA,t}} + \left(\frac{BASE_{T,t}}{BASE_{A,t}+BASE_{T,t}} \right) x \frac{CF_{peerT,t}}{BASE_{peerT,t}}$$

The *peer post-acquisition profitability of the combined entity* was premeditated in a parallel way as for the pre-acquisition years: a weighted average of the profitability of the acquirer's and target's peers. Nevertheless, the weights used to calculate the peer post-acquisition profitability of the combined entity were the ones that were also used to calculate the peer pre-acquisition profitability. That is, the peer post-acquisition profitability of the combined firm was as per the below mathematical representation:

$$CF_{peer,t}= \left(\frac{BASE_{A,t-1}}{BASE_{A,t-1}+BASE_{T,t-1}} \right) x \frac{CFpeer_{A,t}}{BASE_{peerA,t}} + \left(\frac{BASE_{T,t-1}}{BASE_{A,t-1}+BASE_{T,t-1}} \right) x \frac{CF_{peerT,t}}{BASE_{peerT,t}}$$

A *company's profitability adjusted for industry trend* was the change between the company's "raw" and peer profitability.

$CF_{ind\text{-}adjusted,t} = CF_{firm,t} - CF_{peer\ industry,t}$

A *company's profitability adjusted for industry, size and pre-M&A performance* was the change between the company's "raw" and peer profitability.

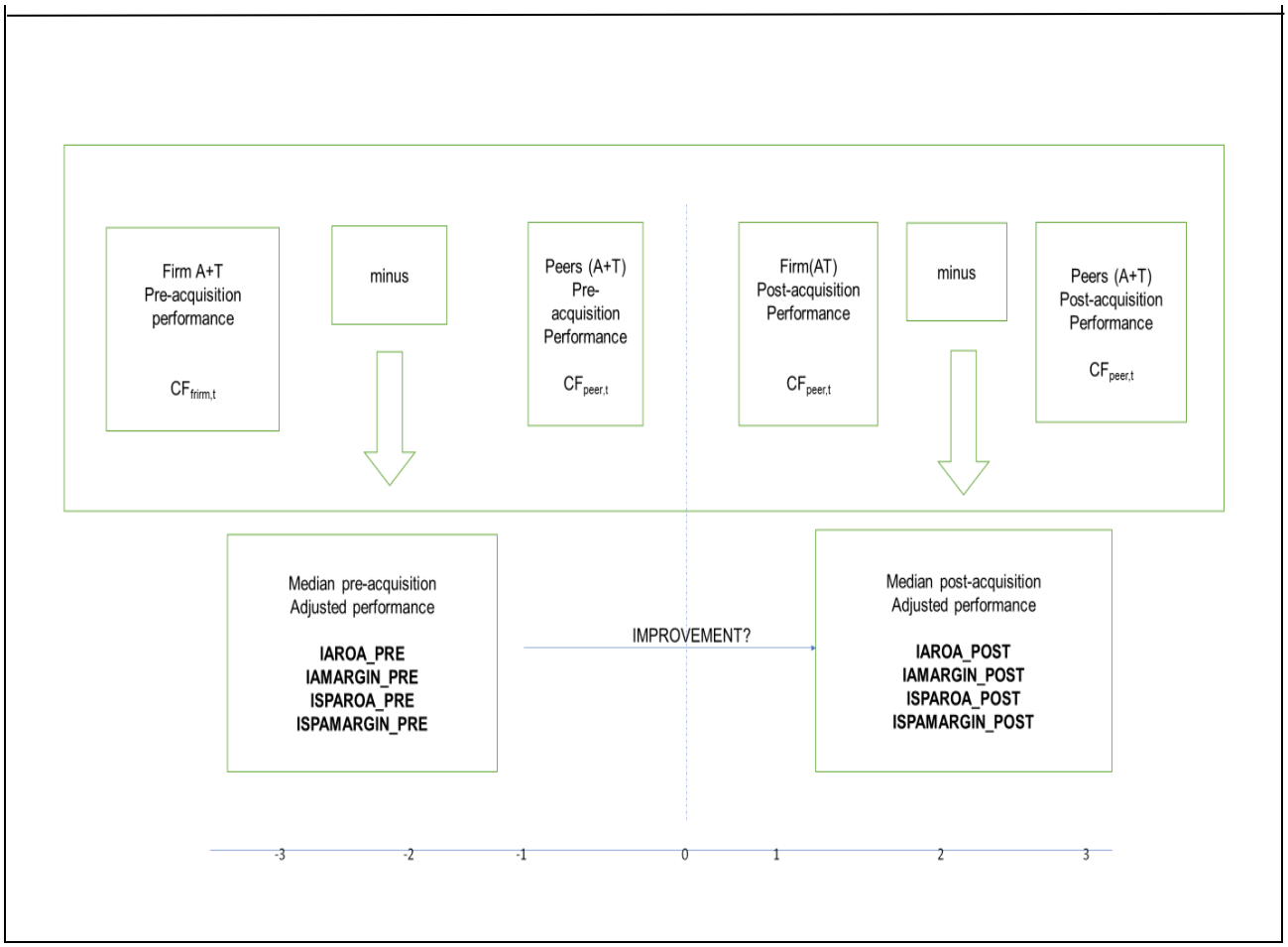
$CF_{ind,size,perf\text{-}adjusted,t} = CF_{firm,t} - CF_{peer\ ind,size,perf\text{-}adjusted,t}$

These calculations were performed for the industry-adjusted and industry, size and pre-M&A performance measures resulting in four adjusted measures of performance. This resulted in two performance measures and two peer control benchmarks which then then provide the researcher with four additional adjusted measures of operating performance.

IAROA is the industry adjusted return on assets
IAMARGIN is the industry adjusted sales margin
ISPAROA is the return on assets adjusted for industry, size and pre-M&A performance
ISPAMARGIN is the sales margin adjusted for industry, size and pre-M&A performance

Figure 1 on the following page, depicts how the adjusted performance measures were calculated.

Figure 1: Diagrammatical representation of how the changes in post-merger operating performance were obtained



A= acquiring firm, T= target

Adapted from: (Martynova and Renneboog, 2007)

3.4 Cross-sectional study

The researcher performed a multivariate investigation to analyze the effect of each variable on the adjusted performance measures. The researcher then regressed the four measures of post M&A operating performance on various deal characteristics and control variables, based on the following cross-sectional OLS model:

$$ADJ_PERF_{i(post)}=\alpha_0+\alpha_1 ADJ_PERF_{i(pre)}+\alpha_2 EQUITY_i+\alpha_3 SAMEIND_i+\alpha_4 CB_i+\alpha_5 FRIENDLY_i+\alpha_6 PER$$

$$C_OWNED_i+\alpha_7 CRISIS_i+\xi_i$$

Where $\boldsymbol{ADJ_PERF_{i(post)}}$ is the post M&A adjusted performance of the combined firm (measured by $IAROA_i$, $IAMARGIN_i$, $ISPAROA_i$ *and* $ISPMARGIN_i$) *and* $\boldsymbol{ADJ_PERF_{i(pre)}}$ is the pre-M&A adjusted performance of the combined firm. $\boldsymbol{EQUITY_i}$ is a dummy variable equal to one when the deal is all equity financed, zero otherwise, $\boldsymbol{SAMEIND_i}$ is a dummy variable taking the value of one when both bidder and target firms are in the same industry, $\mathbf{CB_i}$ is a dummy equal to one for cross border deals, otherwise 0, while $\mathbf{PERC_OWNED_i}$ represents the percentage of target shares owned after the transaction. $\boldsymbol{FRIENDLY_i}$ is a dummy capturing whether the deal was friendly or not with one for friendly deals, zero otherwise. $\boldsymbol{CRISIS_i}$, will be a dummy variable capturing the effect of the global crisis. It will be equal to one for deals completed in 2007 and 2009.

CHAPTER 4: Data analysis

4.1 Sample selection procedure

Data for the purposes of this research was collected from the Bloomberg database. Initially all M&A that occurred in South Africa between January 1994 and December 2016 was gathered. The acquirer's primary exchange was the Johannesburg Stock Exchange whereas the target company could be located in any exchange in the world. However, both the target as well as the acquirer was listed entities in order to ensure that financial data to be analyzed would be readily accessible. The following criteria were selected in Bloomberg in order to come up with the final sample of companies to be analyzed:

- All deal sizes were considered
- All deal status' in Bloomberg were to be "completed"
- All deal types were under the category "M&As"
- All deal payment types were considered (cash, stock, debt and a mixture of the fore-going)
- The primary exchange of the acquirer company was the JSE
- All JSE industry sectors were selected with the exception of transactions involving banks as the acquirer. The rationale for this was that banks and companies in the financial sector have unique financial ratios, layouts and line items in their financial statements. This would therefore make comparison across industries difficult
- Both the acquirer as well as the target companies were all publicly listed companies
- All nature bids were included (friendly, hostile or a combination of the fore-going)

After applying the above criteria in the Bloomberg database, a total number of 101 M&As deals were reported. From the 101 M&A deals, acquirers that had bids/transactions that overlapped within a three-year period were excluded from the final sample of M&A to be analyzed. The rationale for this was to exclude any confounding effects that the previous bid would have had on the following bid. Thirty acquirers had overlapping bids/ transactions

within a three-year period and were thus excluded from the final sample list. The final sample list consisted of 71 M&A transactions. Table 1 gives a breakdown of the final sample list of M&A that were analyzed.

Table 1: Procedure to select sample

Sum of deals that were completed (1994 to 2016) (excluding financial deals)	101
Acquirers that have overlapping bids/transactions (within 3-year period)	30
Number of transactions to be analyzed	**71**

Of the 71 analyzed transactions 9 of the acquirers had multiple bids during the period analyzed but these did not overlap within a three-year period and were therefore included in the study.

The research tested whether post-acquisition performance of the combined firm varied across M&As with different characteristics mentioned in the Literature review section of this report. In the sample of the 71 M&As that constituted the research sample it was found that all the 71 M&A transactions in the sample were of a friendly nature. Therefore the *"FRIENDLY"* variable was dropped in the regression analysis.

4.2 Statistical analysis procedure

The following procedure was followed in carrying out the statistical analysis for the sample. The process was carried out using the EViews. The same process was repeated for all the six post M&A operating performance models that were used in the data analysis.

- For the "raw' data (analyzed as *RAWROA* and *RAWMARGIN*) as well as the four measures of operating performance, namely *IAROA, IAMARGIN, ISPAROA* and *ISPAMARGIN* a correlation matrix was computed. The purpose of examining these correlations was to identify collinearity in the sample data.

- Outliers in each of the six regression models were then identified.

- Diagnostics tests were conducted for each of the six regression models to ascertain if the residuals in each regression model complied with the assumption of normality.

- Six different regression models were used to analyze the data using the formula adopted in the methodology section with the exception that the *FRIENDLY* variable had now been dropped due to the non-existence of *UNFRIENDLY* deals in the sample.

- Diagnostics tests were conducted for each of the six regression models to ascertain if the data in each regression model has heteroscedasticity or not. If heteroscedasticity was identified the models were run again using robust estimates (Nicholson *et al.*, 2015)

4.2.1 Testing for multicollinearity

Multicollinearity is a statistical spectacle in which there is a picture-perfect or exact relationship amongst the predictor variables (Joshi, 2012). One of the assumptions underlying a linear regression model is that the independent variables should not exhibit correlation with one another. When there is a picture-perfect or precise association between the predictor variables, it is problematic to come up with dependable approximations of their individual coefficients. It will consequence in improper deductions about the association amongst the outcome variable and predictor variables (Joshi, 2012). A diagnostic tool that can be used to test for multicollinearity is the use of a correlation matrix (Porter and Gujarati, 2010). Huge correlation coefficients in the correlation matrix of predictor variables specify multicollinearity. If there is a multicollinearity amongst any two predictor variables, then the correlation coefficient between these two variables will be close to the number one (Joshi, 2012). Correlation is a bivariate analysis that measures the strength of association amongst two variables and the path of the relationship. In terms of the power of relationship, the value of the correlation coefficient varies between +1 and -1. A figure of +/- 1 indicates a perfect degree of association between two variables. As the correlation coefficient value

goes towards 0, the relationship amongst the two variables will be weaker (Maiwada Samuel and Okey, 2015). The course of the relationship is indicated by the sign of the coefficient; a positive sign indicates a positive relationship and a negative sign indicates an inverse relationship. The aim of correlation analysis is to find out if two measurement variables co-vary, and to compute the power of the association amongst the variables. Based on the correlation matrix in the Appendix A there is no evidence of multicollinearity in the researcher's model. The highest correlation coefficient between explanatory variables is 0.408 between ISPAROA_PRE and PERC_OWNED. This is sufficiently small to be safely ignored.

4.2.2 Outliers in the models

An outlier is an extreme observation in a dataset. Typically points further than, say, three or four standard deviations from the mean are considered as "outliers" (University of Pennsylvania, 2013). To determine whether data contains an outlier the following process was employed:

- Identify the point furthest from the mean of the data.
- Determine whether that point is further than 1.5* the interquartile range away from the mean.
- If so, that point is an outlier and should be eliminated from the data resulting in a new set of data.
- The above steps were repeated to determine if the new data set contains an outlier until dataset no longer contains outliers (Roberts, 2018).

There were outliers in some of the data sets that were analyzed. The above procedure for dealing with outliers can only serve to identify points that are suspicious from a statistical perspective. With reference to the Appendix B which shows a visual appreciation of the outliers, the distance between the first and third quartiles is known as the interquartile range

(IQR). Near outliers were calculated as any observations falling outside the 1.5* interquartile range (the solid lines in the figures), while far outliers are calculated as any observations falling outside the 3.0*IQR (the shaded areas in the figures). Near (minor) outliers are any data points outside the solid lines, while far (major) outliers are any data points beyond the shaded areas. These data points could distort the empirical results yet removing too many of them may adversely affect the conclusions to be drawn. There was thus a trade-off between maintaining the richness and information content of the data set and obtaining useful statistical results. For the latter reason, only the far outliers were removed in the preceding analysis. Table 1 below shows the total number of major outliers that were excluded in the analysis whilst at the same time depicting some minor outliers that were kept within the dataset in order not to distort the empirical results of the study.

Table 2: Outliers by data series

Variable	Minor outliers	Major outliers
IAMARGIN_POST	29, 60, 71	8, 15, 24, 65
IAMARGIN_PRE	6, 26	8, 15, 60
IAROA_POST	none	15, 25, 65
IAROA_PRE	1, 60, 68	8, 15, 25
ISPAMARGIN_POST	55	8, 24, 68
ISPAMARGIN_PRE	4, 11, 26, 27	6, 7, 8, 55
ISPAROA_POST	16, 20	25
ISPAROA_PRE	16, 21	7, 25
MARGIN_POST	4, 14, 32	8
MARGIN_PRE	4, 15, 26, 32	7, 8
ROA_POST	21	None
ROA_PRE	4, 8, 15, 17, 21	None

4.2.3 Testing for normality of residuals

The Jarque–Bera test is a goodness-of-fit test of whether a sample data has the skewness and kurtosis (which measures the peakedness of the distribution of a particular series) matching a normal distribution. This test statistic was used to measure each model's normality of the residuals. The Jarque-Bera is a test statistic that measures the difference of the skewness and kurtosis of the series with those from the normal distribution. A sample that follows the normal distribution is divided into the most common intervals (or segments): one, two, and three standard deviations from the mean. With a normally distributed random variable, approximately 68 percent of the measurements are within one standard deviation of the mean, 95 percent are within two standard deviations, and 99.7 percent are within three standard deviations (Porter and Gujarati, 2010). The normally presumed "normality", helps to evaluate and make inferential contrasts and decisions. However, violation of this assumption might produce misleading inferences and the result of using unreliable inferences is to produce misleading interpretations. The Jarque Bera statistic has an asymptotic chi-square distribution with two degrees of freedom (Mantalos, 2010). All the six models used in this research process underwent the Jarque Bera test to test for normality.

4.2.4 Testing for heteroskedasticity

Heteroscedasticity arises when the variance of a variable is not constant from observation to observation over a period of time (Porter and Gujarati, 2010). To test for heteroskedasticity the White test was employed in all six models tested in this research. Typically, one applies the White test by assuming that heteroskedasticity may be a linear function of all the independent variables, a function of their squared values and a function of their cross products. Although the White test provides a flexible functional form that's useful for identifying nearly any pattern of heteroskedasticity, it's not useful for determining how to correct or adjust the model for heteroskedasticity (Porter and Gujarati, 2010). Should heteroskedasticity be present in any of the models to be used then this will have to be

addressed. In the occurrence of heteroscedasticity, ordinary least squares approximations are impartial, but the usual assessments of significance are inconsistent. The estimated standard errors can be either too large or too small, in either case resulting in incorrect inferences (Long and Ervin, 1998). As heteroskedasticity is a common problem in data analysis, approaches that seek to normalize for heteroscedasticity are imperative for careful data scrutiny. In instances where any of the models to be used exhibited signs of heteroscedasticity an alternative estimation with robust standard errors was then carried out (Nicholson *et al.*, 2015).

CHAPTER 5: Analysis and findings

5.1 Sample description

The final sample of M&A to be analysed incorporates a total of 71 deals (see Table 3). 100 % of the deals were of a completely friendly nature. Cash acquisitions accounted for 47.88 % of the sample, whilst 28.17% are equity or stock funded. 21.13% of the sample consists of deals that are funded using both cash as well as stock. Only two deals in the analysed sample did not specify the method of acquisition that was used. This represents 2.82% of the total sample in question. 66.20% of the sample companies involved in M&A in the period are transactions that involve bidding and target firms operating in the same industry. The JSE ICB industry code is used to define whether purchasing and purchased firms are operating in the same industry. The Industry Classification Benchmark (ICB) is a universally documented standard, worked and managed by FTSE Russell for classifying corporations and shares across four levels of classification (FTSE Russell, 2017). 38 of the deals in the sample were completed prior to the 2007-2009 financial crisis period. This accounts for 53.52% of the sample. Deals that were concluded during the financial crisis period of 2007-2008 amount to 6, representing 8.45% of the sample. The remainder of the 27 deals which represent 38.03% of the sample were completed after the 2007-2009 financial crisis period.

The sample had 53 transactions that relate to both purely domestic deals, implying that both the bidder as well as the acquirer are from the South African market. This represents 74.65% of the size of the analysed sample. The remainder of 18 deals which constitute 25.35% of the sample size relate to cross-border deals. In this instance the acquirer is domiciled in South Africa whilst the target firm is from a jurisdiction outside of South Africa.

Of the sample to be analysed 65 of the M&A deals resulted in the acquiring company owning 100% of the target company. Two deals resulted in the ownership structure of the target company ranging between 71% and 99%. This accounted to 2.82% of the sample. 4.23% of the deals in the sample had resulted in the acquirer owning between 50 and 70% of the

target shares whilst only one deal resulted in the acquiring company owning between 20 and 49% of the target firm.

Table 3: Sample description

	No. of deals	Percentage
Method of payment		
Cash	34	47.88%
Stock	20	28.17%
Cash &Stock	15	21.13%
Undisclosed	2	2.82%
TOTAL	**71**	**100%**
Cross-border deals		
Domestic	53	74.65%
Cross-border	18	25.35%
TOTAL	**71**	**100%**
Deal atmosphere		
Friendly	71	100%
TOTAL	**71**	**100%**
Industry relatedness		
Same industry	47	66.20%
Unrelated Industries	24	33.80%
TOTAL	**71**	**100%**
Completion year		
Pre- 2007-2009	38	53.52%
2007-2009	6	8.45%
Post 2007-2009	27	38.03%
TOTAL	**71**	**100%**
Target share acquired after deal		
Between 20%-49%	1	1.41%
Between 50-70% after deal	3	4.23%
Between 71%-99%	2	2.82%
100% owned after deal	65	91.55%
TOTAL	**71**	**100%**

5.2 *RAWMARGIN* analysis

The RAWMARGIN_POST dataset visually depicted the fact that the sample data only had one major outlier with three of the outliers being classified as minor. The

RAWMARGIN_PRE dataset had a total of six outliers of which two were considered to be major as shown in Table 2. Appendix C shows a cross-sectional analysis of the *RAWMARGIN_POST* data gives us an R^2 value of approximately 0.39. The R^2 is a goodness of fit measure for linear regression models. This statistic indicates the percentage in the dependent variable that the independent variables can explain collectively. In this instance the RAWMARGIN_POST model shows that approximately 38% of the variance in the MARGIN_POST is explained by all the independent variables in the regression model. Therefore, the higher the R^2 the more the regression model explains the variance in the dependent variable. The *MARGIN_PRE* is the only significant variable at a significance level of 1% that affected the outcome of the post- M&A *MARGIN* operating performance. The other variables in the regression analysis were not statistically significant at all.

The diagnostics test of normality as reflected in the Appendix points to the fact that the residuals for this series were not normally distributed. The Jarque-Bera test statistic of 24.40650 and the accompanying P-value of 0.000005, reflect that the residuals are not normally distributed. We can therefore conclude non-normality of the residuals. The White's test for heteroscedasticity points to the fact that heteroscedasticity was not present.

5.3 *RAWROA* analysis

An inspection of Table 2 shows that the RAWROA_POST dataset only had one minor outlier whilst the RAWROA_PRE dataset had five outliers all of which were not considered to be major. The results of the regression in Appendix D show that RAWROA_PRE is the major determinant of post-merger operating performance. The RAWROA_PRE was significant at the 1% level whilst the other variables' coefficients were not significant at all. From these results it is therefore evident that all the other variables do not positively influence the post-merger operating performance of M&As except for the only variable that has so far done so - the *RAWROA_PRE.* The R^2 of the *RAWROA*_POST in this case was 0.393937 implying that our model's independent variables collectively explain approximately 39% of the variance in

the RAWROA_POST figure. Diagnostic tests that were conducted to test for normality reveals that this dataset was not normally distributed as shown by the histogram in Appendix D. Based on the Jarque-Bera test statistic of 18.26308 and the accompanying P-value of 0.000108, the researcher rejected the null hypothesis that the residuals are normally distributed. Tests for heteroscedasticity revealed that heteroscedasticity was not present.

5.4 *IAMARGIN* analysis

A visual inspection of the *IAMARGIN* highlighted the fact that the sample data contained some outliers as exhibited in Table 1. In the *IAMARGIN_PRE* analysis five outliers were identified in the data. Two of these outliers were considered to be minor outliers while the remaining three which fell outside the 1.5X interquartile range were dropped from the analysis. The outlying M&As transactions were removed from the data analysis as it was not possible to determine the exact causes of the outliers. The *IAMARGIN_POST* visual analysis of the M&As data points reflected that there was a total of 7 outliers. Three of these were considered to be minor whilst four of the outliers were regarded as major and were dropped from the data analysis. The appendix shows a visual analysis of the data points in a graphical format. A cross-sectional analysis of the *IAMARGIN_POST* as done through the EViews package is depicted in Appendix E. This model includes 66 observations as five of the outliers had been dropped. The R^2 which is a statistic that will give some information about the goodness of fit of a statistical model was 0.409772, indicating that about 41% of the variance in the IAMARGIN_POST can be collectively described by all the independent variables.

The diagnostics tests for the *IAMARGIN_POST* model showed that the data-set under scrutiny was not normally distributed as depicted by in the Appendix. Based on the Jarque-Bera test statistic of 14.53124 and the accompanying P-value of 0.000699 as depicted in Appendix E, the researcher rejected the null hypothesis that the residuals are normally distributed. The researcher therefore concluded non-normality of the residuals.

Based on the results from the White's test shown in Appendix E, the researcher rejected the null hypothesis of homoscedasticity. The researcher therefore concluded that heteroscedasticity is present in the residual series. Re-estimating the model with robust covariances according to Nicholson *et al.* (2015) in order to correct for heteroscedasticity yields the results in Appendix E. It was found that the independent variable *IAMARGIN_PRE was* the only variable that had a significant influence on the *IAMARGIN_POST* at a significance level of 1%. The PERC_OWNED variable had a significant negative effect on the IAMARGIN_POST at the level of 5%. The other variables of *EQUITY, SAME_IND, CB* as well as the 2007-2009 crisis did not have a significant effect of the post-merger operating performance of the firms in question.

5.5 *ISPAMARGIN* analysis

A visual inspection of both the *ISPAMARGIN_PRE* and *ISPAMARGIN_POST* highlighted the fact that the sample data contained some outliers as exhibited in Table 2 and Appendix B. The *ISPAMARGIN_PRE* had a total of eight outliers four of which were major whilst the remainder were minor. On the other had the dataset for the *ISPAMARGIN_POST* had a total of four outliers, one of which was minor. A total number of six outliers were dropped from the analysis for reasons stated earlier. A cross-sectional analysis of the *ISPAMARGIN_POST* as done through the EViews package is depicted in Appendix F with an R^2 figure of 0.401847. The cross-sectional analysis of post-M&A operating performance as depicted by the *ISPAMARGIN_POST* model also has similar results to that obtained for the *IAMARGIN*. *IAMARGIN_PRE* is the only variable that had a significant influence on the *IAMARGIN_POST* at a significance level of 1%. The other variables of *EQUITY, SAME_IND, CB, PER_OWNED* as well as the 2007-2009 crisis did not have a significant effect on the post-merger operating performance of the firms in question. The diagnostic tests for normality points in the same direction as of that obtained in the analysis for the

IAMARGIN_POST. The histogram in Appendix F clearly explains this. Based on the Jarque-Bera test statistic of 18.74085 and the accompanying P-value of 0.000085, the researcher rejects the null hypothesis that the residuals are normally distributed as depicted in Appendix F. The researcher can therefore conclude non-normality of the residuals.

Based on the results from White's test the researcher cannot reject the null hypothesis of homoscedasticity. The researcher also concludes that heteroscedasticity is not present in the residual series.

5.6 *IAROA* analysis

The *IAROA* visual inspection of the datasets to be analyzed in Appendix G shows that the *IAROA-POST* data set did not have any minor outliers. However, the IAROA_POST data had three major outliers as shown in Table 2. On the other hand, the *IAROA_PRE* data had both three minor and major outliers. In compiling a cross-sectional analysis of the *IAROA* post analysis, four observations were dropped due to them being outliers. This therefore meant that only 67 out of the 71 total observations were included. The R^2 figure of 0.316487 implies that 31.6% of the variance in the dependent variable is collectively explained by all the independent variables. An analysis of the independent variables being analyzed shows that *IAROA_PRE* was still the main driver of post-M&A performance as depicted in the Appendix. This variable was significant at the 1% level. The results further suggest that only SAMEIND significantly impact post-M&A operating performance at the 5% level. These consequences are in agreement with previous empirical evidence obtained by Martynova and Renneboog (2007), Moeller and Schlingemann (2004) as well as Kruse *et al.* (2007).

Diagnostics tests carried out to measure normality imply that the data using this model is normally distributed as exhibited in Appendix G. The Jarque-Bera test statistic of 6.918114 and the accompanying P-value of 0.031459, supports that the data is indeed normally distributed. We can therefore conclude normality of the residuals.

5.7 *ISPAROA* analysis

The *ISPAROA_POST* post model only had three outliers. Two of these outliers were minor whilst there was only one major outlier as shown in Appendix B as well as Table 2. The *ISPAROA_PRE* data analysis exhibited four outliers of which two were considered to be major whilst the other two were minor. A cross-sectional analysis of the variables that influence post- acquisition operation performance show that *ISPAROA_PRE was* again the major driver of post-merger operating performance. The *ISPAROA_POST* cross-sectional analysis yields an R^2 value of 0.439095 as depicted in Appendix H. This is slightly higher that the R^2 values that were exhibited using all the MARGIN models. This therefore implies that of the two models, the ROA captures the post-merger operating performance better. The *ISPAROA_PRE* is significant at the 1% level. At a significance level of 1% ISPAROA_PRE is the major driver of ISPAROA_POST. The independent variable SAMEIND is also statistically significant at the level of 5% implying the fact that same industry M&As have a significant positive influence on the return on assets of merging entities. The independent variable PERC_OWNED was also statistically significant at the level of 10%.

Diagnostic tests were also conducted to test for normality as well as heteroscedasticity. The histogram shown in Appendix H shows that the data for this analysis is not normally distributed. However, the White test for heteroscedasticity does show that heteroscedasticity is not present in the residual series.

5.8 Summary of diagnostics results

The table below shows a summary of the diagnostics tests that the researcher conducted for all the six models.

Table 5: Summary of diagnostics tests

Test	Normality of Residuals	Heteroscedasticity
RAWMARGIN_POST	Not normal	Not present
RAWROA_POST	Not normal	Not present
IAMARGIN_POST	Not normal	Present
ISPAMARGIN_POST	Not normal	Not present
IAROA_POST	Normal	Not present
ISPAROA_POST	Not normal	Not present

From the table above, it is evident that both the "raw" data as well as the MARGIN tests exhibited signs of the residuals being not normal. The only model that exhibited normality and did not have any heteroscedasticity was the IAROA_POST test. The researcher will mainly base his conclusion based on the IAROA_POST test which exhibits both normality of residuals and does not have heteroscedasticity present in the residuals that were analyzed. The IAROA_POST model suggests that IAROA_PRE had a significant impact on the IAROA_POST at the significance level of 1% whilst SAMEIND was also significant at the 5 % level. A quick comparison with all the other models even though they did not exhibit "normality of residuals" does show that all post-M&A transactions on the JSE for the period that was analyzed have been heavily influenced by the pre-merger performance of the entities. This would therefore mean that if an entity was performing well before the merger chances of the entity doing well after a M&A transaction were high. The other independent variables except SAME_IND did not have a significant impact on the post M&A performance of the firms. The IAROA_POST analysis indicates that the independent variable SAMEIND was also significant at the 5 % level. The CRISIS variable did not significantly have an effect on the post-merger performance of the mergers. Previous studies by Martynova and Renneboog (2007) as well as Kruse *et al.* (2007) also come to a similar conclusion as obtained in this research. The researchers also conclude that not even one of the merger features such as means of payment and industry-relatedness affect the post-operating

performance of mergers. Based on these results that have been obtained the researcher therefore rejects all the other hypotheses tested in this study. The only hypothesis that remains true is H1 which states that "*Mergers and acquisitions of firms in the same industry are likely to have a positive effect on the post-operating performance of the merged entity".*

The other five hypotheses are therefore rejected.

CHAPTER 6: Conclusion and recommendations for future research

This paper explored post-M&A performance of South African companies between the years 1994 and 2016. Using numerous measures of adjusted operating performance, the paper concludes that the Industry Adjusted Return on Assets model (*IAROA)* provides the best measure of post-merger operating performance of merging companies as compared to the other models tested.

The research notes that these conclusions are also in agreement with the work of Moeller and Schlingemann (2004) as well as that of Ghosh (2001). The other variables that have been analyzed in the study do not seem to have a noteworthy impact on the post-merger performance of most South African mergers with the exception of the "industry relatedness" variable. The other variables which include the percentage owned by the acquiring company after the merger, whether there was a cross border transaction, the impact of the financial crisis as well as whether the deal was equity financed or not do not significantly affect the post-merger operating performance of the merged entity. The study did not evaluate whether a friendly or hostile deal affected the post-merger performance of M&As due to the fact that all the deals that were evaluated for the purposes of this study were of a friendly nature. These results consequently imply that not all companies that engage in M&A activities will ultimately have an improvement in their post-merger operating performance. The first hypothesis which states that M&As of firms in the same industry are likely to have a positive effect on the post-operating performance of the merged entity is therefore accepted. The second hypothesis which states that M&A of firms that are financed by cash are likely to have a positive effect on the post-operating performance of the merged entity when compared to M&A financed by debt is rejected. The third hypothesis which states that M&As of a friendly nature are likely to have a positive effect on the post-operating performance of the merged entity was not tested as all mergers were friendly. The fourth hypothesis which states that M&As between cross-border entities are likely to have a positive effect on the

post-operating performance of the merged entity is rejected. The fifth hypothesis which states that the percentage of target share acquired has a positive impact on post M&A operating performance is also rejected. The sixth hypothesis which states that M&As concluded during the 2007-2009 financial crisis are likely to have a positive effect on the post-operating performance of the merged entity when compared to M&As done outside this period is also rejected.

The author recognizes that this study also has some limitations. This will therefore limit the study's results in providing a generalizable viewpoint in the understanding of the long-term operating performance of M&As. Firstly, the firms that the author analyzed for this study were all publicly listed companies. This was done deliberately in order to ensure that there was ease of access in obtaining data to be analyzed. Studies to be done in the future should therefore strive to include non-publicly listed companies so that a much clearer picture of the determinants of post-merger operating performance can be derived. The study also utilized an existing procedure of investigating fluctuations in operating performance taking into account the performance of companies for three years after the occurrence of the M&A transaction. It is however not certain whether all the synergistic benefits that are associated with M&As can be realized in three years (Nicholson *et al.*, 2015). Future research can therefore extend the period of study to ascertain if longer periods will provide divergent results from those obtained in this study.

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Appendix A: Correlation matrices

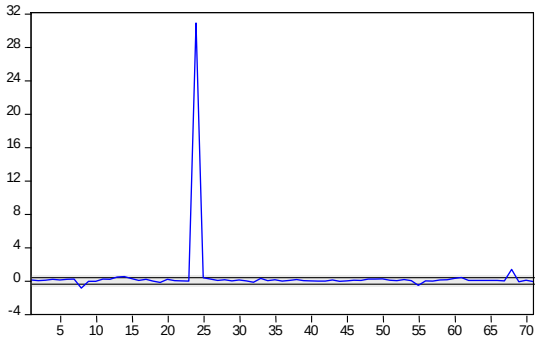
Correlation	IAROA_PRE	IAROA_POST	IAMARGIN_PRE	IAMARGIN_POST	ISPAROA_PRE	ISPAROA_POST	ISPAMARGIN_PRE	ISPAMARGIN_POST	EQUITY	SAMEIND	CB	PERC_OWNED	CRISIS
IAROA_PRE	1.000000												
IAROA_POST	0.502809	1.000000											
IAMARGIN_PRE	0.272801	0.301101	1.000000										
IAMARGIN_POST	0.016725	0.042001	0.048211	1.000000									
ISPAROA_PRE	0.666920	0.364094	0.096576	0.044560	1.000000								
ISPAROA_POST	0.497123	0.494132	0.115833	0.040038	0.623365	1.000000							
ISPAMARGIN_PRE	-0.033687	0.109887	0.464092	0.077104	0.075514	0.168717	1.000000						
ISPAMARGIN_POST	0.007526	0.003598	0.026789	0.997200	0.046847	0.047106	0.088382	1.000000					
EQUITY	0.043239	0.006262	-0.143686	-0.078702	-0.125313	0.060502	0.013872	-0.074206	1.000000				
SAMEIND	0.151469	0.074371	0.166564	0.092014	0.038189	0.220157	0.115901	0.094956	0.074227	1.000000			
CB	0.077294	-0.052285	0.095552	0.208705	-0.125360	-0.041761	0.107552	0.220041	-0.116352	0.279556	1.000000		
PERC_OWNED	-0.280388	-0.191882	0.021947	0.026845	-0.408105	-0.178531	-0.080765	0.037810	0.063188	-0.077661	0.031710	1.000000	
CRISIS	-0.034795	-0.007739	0.161402	-0.033601	-0.218813	-0.046508	0.119587	-0.034194	0.201901	-0.122016	0.201901	0.108863	1.000000

Correlation matrix (raw data)

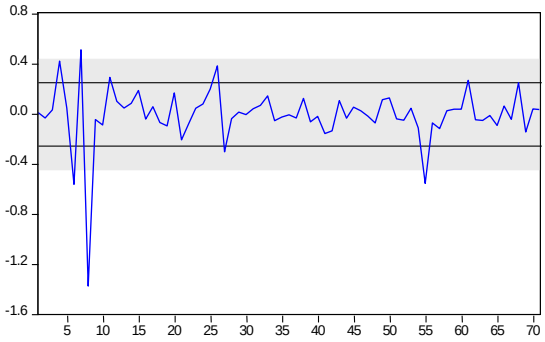
Correlation	ROA_PRE	ROA_POST	MARGIN_PRE	MARGIN_POST	EQUITY	SAMEIND	CB	PERC_OWNED	CRISIS
ROA_PRE	1.000000								
ROA_POST	0.598353	1.000000							
MARGIN_PRE	0.538046	0.361201	1.000000						
MARGIN_POST	0.479864	0.616550	0.856569	1.000000					
EQUITY	-0.080660	-0.060617	-0.147506	-0.176370	1.000000				
SAMEIND	-0.065127	0.074154	-0.022188	0.070700	0.074227	1.000000			
CB	-0.054024	-0.136803	-0.101143	-0.044045	-0.116352	0.279556	1.000000		
PERC_OWNED	-0.070783	-0.073272	-0.027327	-0.110181	0.063188	-0.077661	0.031710	1.000000	
CRISIS	0.010824	-0.084966	0.166446	0.098524	0.201901	-0.122016	0.201901	0.108863	1.000000

Appendix B: Outliers Analysis

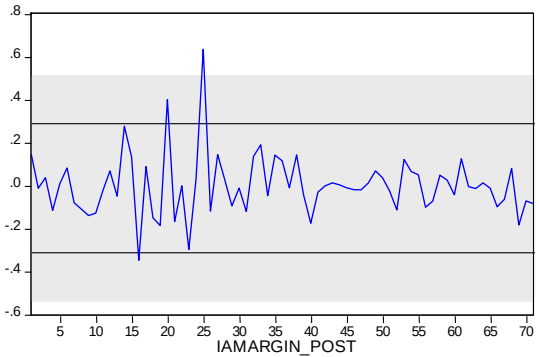
ISPAMARGIN_POST



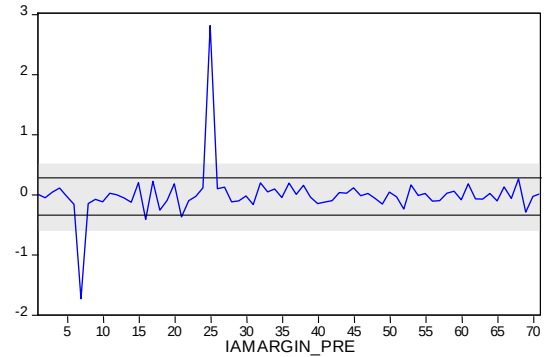
ISPAMARGIN_PRE



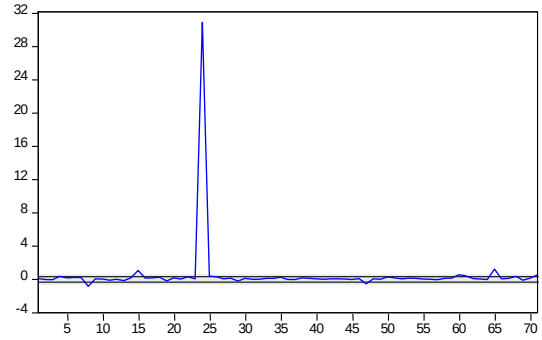
ISPAROA_POST



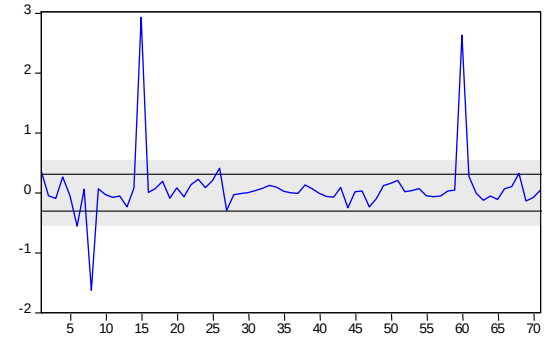
ISPAROA_PRE



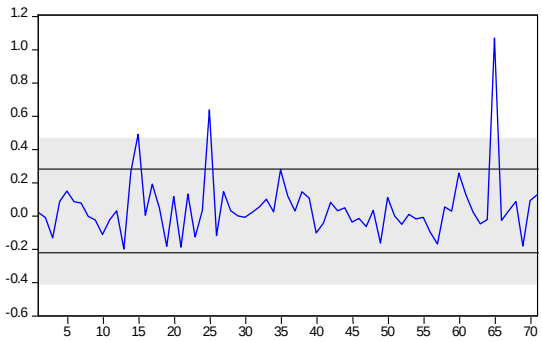
IAMARGIN_POST



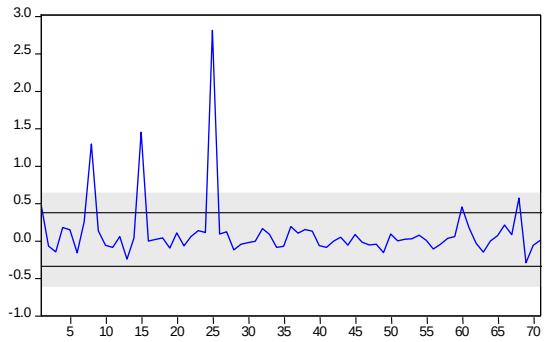
IAMARGIN_PRE



IAROA_POST



IAROA_PRE



Appendix C: RAWMARGIN_POST analysis

Cross-sectional analysis of post-M&A OP

Dependent Variable: MARGIN_POST
Method: Least Squares
Date: 03/01/18 Time: 23:13
Sample: 1 7 9 71
Included observations: 70

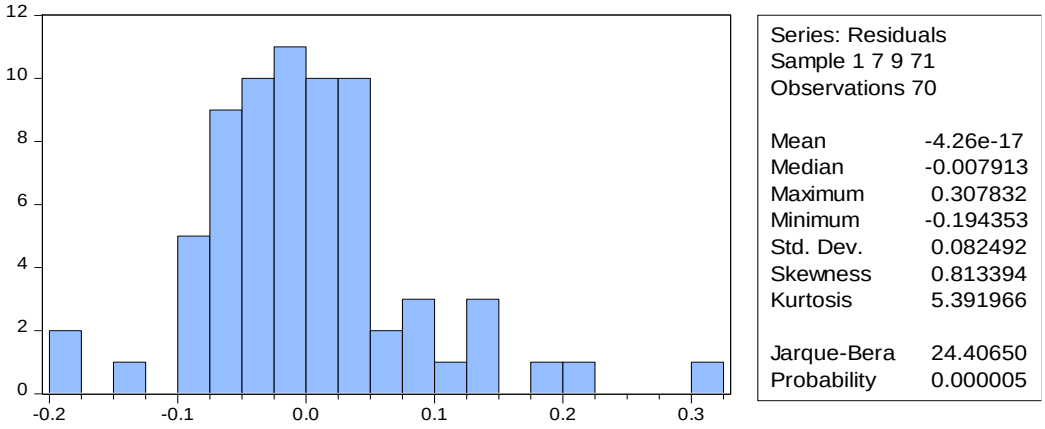
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MARGIN_PRE	0.592968	0.106708	5.556919	0.0000
EQUITY	-0.016348	0.025673	-0.636774	0.5266
SAMEIND	0.027098	0.023556	1.150400	0.2543
CB	0.008677	0.026949	0.321979	0.7485
PERC_OWNED	-0.000973	0.000810	-1.201740	0.2340
CRISIS	-0.010772	0.036688	-0.293605	0.7700
C	0.138587	0.081318	1.704258	0.0933

R-squared	0.389877	Mean dependent var	0.142471
Adjusted R-squared	0.331770	S.D. dependent var	0.105609
S.E. of regression	0.086330	Akaike info criterion	-1.966629
Sum squared resid	0.469536	Schwarz criterion	-1.741779
Log likelihood	75.83202	Hannan-Quinn criter.	-1.877316
F-statistic	6.709654	Durbin-Watson stat	2.310605
Prob(F-statistic)	0.000016		

RAWMARGIN_POST Diagnostic tests:

Normality

Histogram of residuals and descriptive statistics (residuals)



White's test for heteroscedasticity(RAWMARGIN_POST)

Heteroskedasticity Test: White

F-statistic	0.807093	Prob. F(21,48)	0.6977
Obs*R-squared	18.26706	Prob. Chi-Square(21)	0.6320
Scaled explained SS	32.49246	Prob. Chi-Square(21)	0.0522

Appendix D: RAWROA_POST analysis

Cross-sectional analysis of post-M&A OP

Dependent Variable: ROA_POST
Method: Least Squares
Date: 03/01/18 Time: 23:09
Sample: 1 71
Included observations: 71

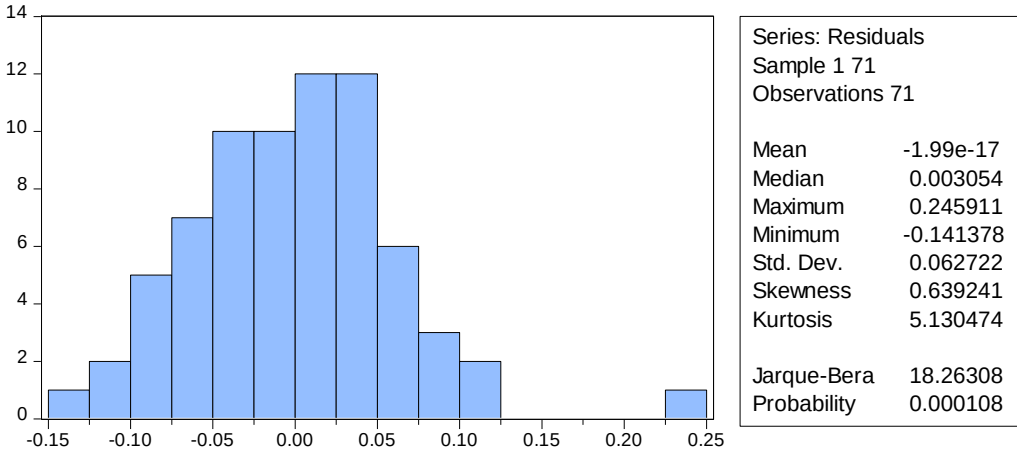
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ROA_PRE	0.598214	0.098328	6.083845	0.0000
EQUITY	-0.005908	0.018872	-0.313077	0.7552
SAMEIND	0.025386	0.017767	1.428878	0.1579
CB	-0.026203	0.019711	-1.329378	0.1884
PERC_OWNED	-5.47E-05	0.000617	-0.088735	0.9296
CRISIS	-0.009338	0.026600	-0.351063	0.7267
C	0.049253	0.063665	0.773630	0.4420

R-squared	0.393937	Mean dependent var	0.129418
Adjusted R-squared	0.337118	S.D. dependent var	0.080568
S.E. of regression	0.065597	Akaike info criterion	-2.517198
Sum squared resid	0.275387	Schwarz criterion	-2.294117
Log likelihood	96.36054	Hannan-Quinn criter.	-2.428486
F-statistic	6.933255	Durbin-Watson stat	2.248019
Prob(F-statistic)	0.000010		

RAWROA_POST Diagnostic tests

Normality

Histogram of residuals and descriptive statistics (residuals)



Series: Residuals
Sample 1 71
Observations 71

Mean	-1.99e-17
Median	0.003054
Maximum	0.245911
Minimum	-0.141378
Std. Dev.	0.062722
Skewness	0.639241
Kurtosis	5.130474
Jarque-Bera	18.26308
Probability	0.000108

White's test for heteroscedasticity(RAWROA_POST)

Heteroskedasticity Test: White

F-statistic	0.741582	Prob. F(21,49)	0.7698
Obs*R-squared	17.12318	Prob. Chi-Square(21)	0.7036
Scaled explained SS	28.73411	Prob. Chi-Square(21)	0.1205

Appendix E: IAMARGIN_POST analysis

Dependent Variable: IAMARGIN_POST
Method: Least Squares
Date: 03/01/18 Time: 22:54
Sample: 1 7 9 14 16 23 25 59 61 64 66 71
Included observations: 66

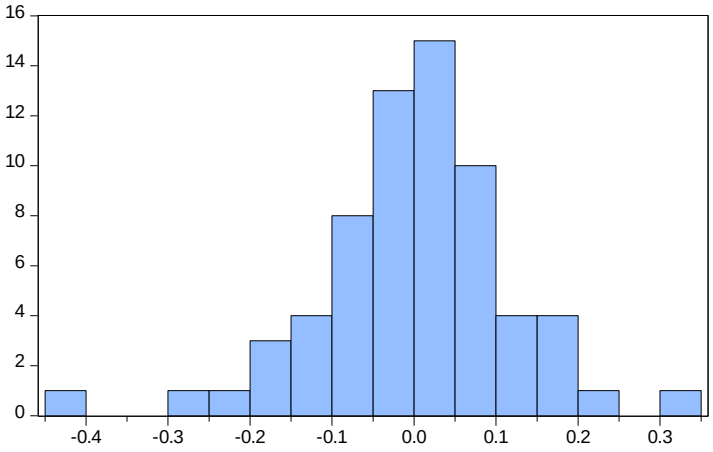
Variable	Coefficient	Std. Error	t-Statistic	Prob.
IAMARGIN_PRE	0.485931	0.117427	4.138156	0.0001
EQUITY	0.002139	0.039592	0.054020	0.9571
SAMEIND	0.043596	0.036702	1.187814	0.2397
CB	0.029738	0.044109	0.674209	0.5028
PERC_OWNED	-0.003289	0.001219	-2.699068	0.0091
CRISIS	0.113981	0.057374	1.986625	0.0516
C	0.275576	0.121091	2.275780	0.0265

R-squared	0.409772	Mean dependent var	0.013107
Adjusted R-squared	0.349749	S.D. dependent var	0.160573
S.E. of regression	0.129483	Akaike info criterion	-1.150532
Sum squared resid	0.989184	Schwarz criterion	-0.918296
Log likelihood	44.96755	Hannan-Quinn criter.	-1.058764
F-statistic	6.826903	Durbin-Watson stat	2.395390
Prob(F-statistic)	0.000016		

IAMARGIN_POST Diagnostic test

Normality

Histogram of residuals and descriptive statistics (residuals)



Series: Residuals
Sample 1 7 9 14 16 23 25 59 61 64 66 71
Observations 66

Mean	-2.10e-17
Median	0.004218
Maximum	0.348908
Minimum	-0.443390
Std. Dev.	0.123362
Skewness	-0.462700
Kurtosis	5.104215
Jarque-Bera	14.53124
Probability	0.000699

White's test for heteroscedasticity(IAMARGIN_POST)

Heteroskedasticity Test: White

F-statistic	1.851239	Prob. F(21,44)	0.0426
Obs*R-squared	30.95970	Prob. Chi-Square(21)	0.0743
Scaled explained SS	50.77069	Prob. Chi-Square(21)	0.0003

Cross-sectional analysis of post-M&A OP (robust standard errors)

Dependent Variable: IAMARGIN_POST
Method: Least Squares
Date: 03/01/18 Time: 22:57
Sample: 1 7 9 14 16 23 25 59 61 64 66 71
Included observations: 66
White heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
IAMARGIN_PRE	0.485931	0.171624	2.831364	0.0063
EQUITY	0.002139	0.037503	0.057030	0.9547
SAMEIND	0.043596	0.034260	1.272474	0.2082
CB	0.029738	0.034525	0.861365	0.3925
PERC_OWNED	-0.003289	0.001593	-2.064973	0.0433
CRISIS	0.113981	0.079091	1.441143	0.1548
C	0.275576	0.161013	1.711520	0.0922

R-squared	0.409772	Mean dependent var	0.013107
Adjusted R-squared	0.349749	S.D. dependent var	0.160573
S.E. of regression	0.129483	Akaike info criterion	-1.150532
Sum squared resid	0.989184	Schwarz criterion	-0.918296
Log likelihood	44.96755	Hannan-Quinn criter.	-1.058764
F-statistic	6.826903	Durbin-Watson stat	2.395390
Prob(F-statistic)	0.000016	Wald F-statistic	3.498820
Prob(Wald F-statistic)	0.005002		

Appendix F: ISPAMARGIN_POST analysis

Cross-sectional analysis of post-M&A OP

Dependent Variable: ISPAMARGIN_POST
Method: Least Squares
Date: 03/10/18 Time: 09:56
Sample: 1 5 9 23 25 54 56 67 69 71
Included observations: 65

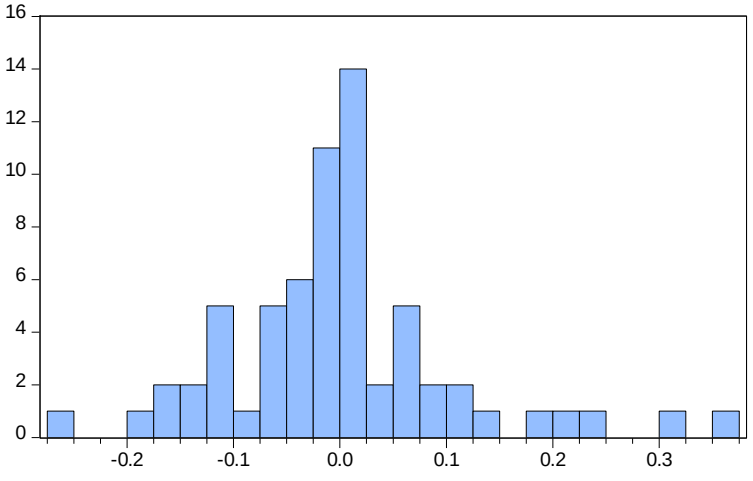
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ISPAMARGIN_PRE	0.541462	0.123602	4.380680	0.0001
EQUITY	0.002279	0.034822	0.065453	0.9480
SAMEIND	0.047867	0.031014	1.543405	0.1282
CB	0.053399	0.038365	1.391846	0.1693
PERC_OWNED	0.001008	0.001054	0.956325	0.3429
CRISIS	0.013290	0.052179	0.254694	0.7999
C	-0.124214	0.104190	-1.192185	0.2380

R-squared	0.401847	Mean dependent var	0.022817
Adjusted R-squared	0.339969	S.D. dependent var	0.136892
S.E. of regression	0.111214	Akaike info criterion	-1.453279
Sum squared resid	0.717377	Schwarz criterion	-1.219114
Log likelihood	54.23156	Hannan-Quinn criter.	-1.360886
F-statistic	6.494186	Durbin-Watson stat	1.672932
Prob(F-statistic)	0.000028		

ISPAMARGIN_POST Diagnostic tests:

Normality

Histogram of residuals and descriptive statistics (residuals)



Series: Residuals
Sample 1 5 9 23 25 54 56 67 69 71
Observations 65

Mean	2.86e-17
Median	-0.002320
Maximum	0.352179
Minimum	-0.253496
Std. Dev.	0.105873
Skewness	0.861658
Kurtosis	4.987431
Jarque-Bera	18.74085
Probability	0.000085

White's test for heteroscedasticity(ISPAMARGIN_POST)

Heteroskedasticity Test: White

F-statistic	0.474521	Prob. F(20,44)	0.9632
Obs*R-squared	11.53248	Prob. Chi-Square(20)	0.9312
Scaled explained SS	18.30691	Prob. Chi-Square(20)	0.5672

Appendix G: IAROA_POST analysis

Cross-sectional analysis of post-M&A OP

Dependent Variable: IAROA_POST
Method: Least Squares
Date: 03/10/18 Time: 09:59
Sample: 1 7 9 14 16 24 26 64 66 71
Included observations: 67

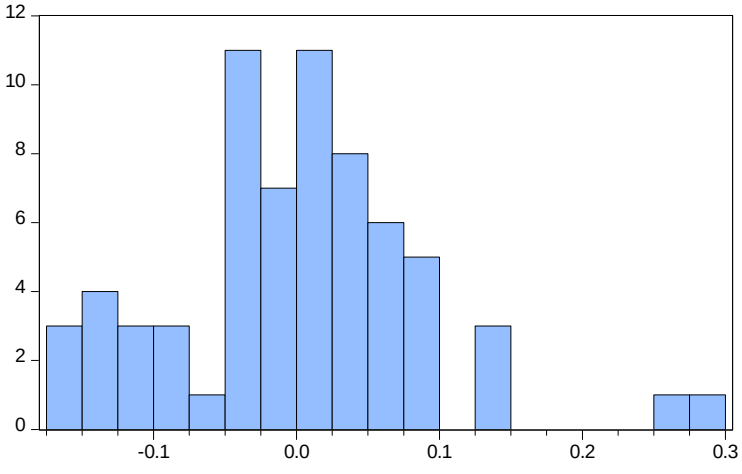
Variable	Coefficient	Std. Error	t-Statistic	Prob.
IAROA_PRE	0.348886	0.082281	4.240172	0.0001
EQUITY	0.015368	0.028598	0.537400	0.5930
SAMEIND	0.053155	0.025791	2.060965	0.0436
CB	-0.028724	0.030574	-0.939503	0.3512
PERC_OWNED	-0.001309	0.000953	-1.372910	0.1749
CRISIS	0.033141	0.038240	0.866653	0.3896
C	0.097208	0.094529	1.028343	0.3079

R-squared	0.316487	Mean dependent var	0.015227
Adjusted R-squared	0.248135	S.D. dependent var	0.107198
S.E. of regression	0.092952	Akaike info criterion	-1.814864
Sum squared resid	0.518402	Schwarz criterion	-1.584523
Log likelihood	67.79794	Hannan-Quinn criter.	-1.723717
F-statistic	4.630289	Durbin-Watson stat	2.035468
Prob(F-statistic)	0.000629		

IAROA_POST Diagnostic tests:

Normality

Histogram of residuals and descriptive statistics (residuals)



Series: Residuals
Sample 1 7 9 14 16 24 26 64 66 71
Observations 67

Mean	5.75e-18
Median	0.007979
Maximum	0.281427
Minimum	-0.174566
Std. Dev.	0.088626
Skewness	0.488860
Kurtosis	4.233773
Jarque-Bera	6.918114
Probability	0.031459

White's test for heteroscedasticity (IAROA_POST)

Heteroskedasticity Test: White

F-statistic	0.468113	Prob. F(21,45)	0.9688
Obs*R-squared	12.01222	Prob. Chi-Square(21)	0.9393
Scaled explained SS	15.57599	Prob. Chi-Square(21)	0.7930

Appendix H: ISPAROA_POST analysis

Cross-sectional analysis of post-M&A OP

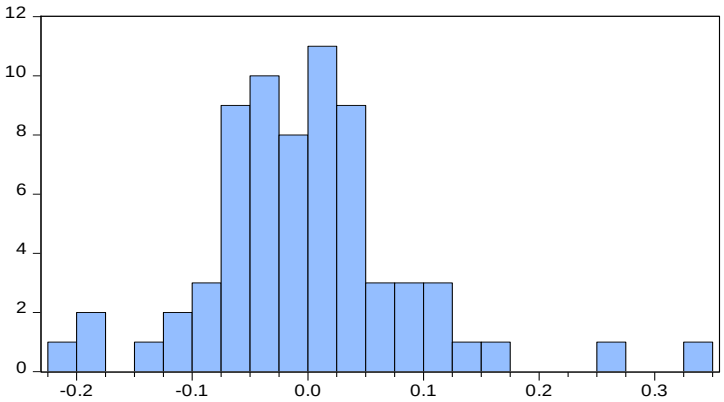
Dependent Variable: ISPAROA_POST
Method: Least Squares
Date: 03/10/18 Time: 09:18
Sample: 1 6 8 24 26 71
Included observations: 69

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ISPAROA_PRE	0.572249	0.089063	6.425218	0.0000
EQUITY	0.004380	0.028055	0.156120	0.8764
SAMEIND	0.063143	0.025960	2.432352	0.0179
CB	-0.036310	0.029319	-1.238447	0.2202
PERC_OWNED	0.001970	0.000996	1.977492	0.0524
CRISIS	0.030895	0.040336	0.765932	0.4466
C	-0.216897	0.098000	-2.213229	0.0306

R-squared	0.439095	Mean dependent var	-0.007550
Adjusted R-squared	0.384814	S.D. dependent var	0.121377
S.E. of regression	0.095200	Akaike info criterion	-1.769742
Sum squared resid	0.561912	Schwarz criterion	-1.543093
Log likelihood	68.05609	Hannan-Quinn criter.	-1.679823
F-statistic	8.089283	Durbin-Watson stat	2.164870
Prob(F-statistic)	0.000002		

ISPAROA_POST Diagnostic tests

Normality



Series: Residuals
Sample 1 6 8 24 26 71
Observations 69

Mean	2.42e-17
Median	-0.003037
Maximum	0.347683
Minimum	-0.207268
Std. Dev.	0.090903
Skewness	0.849818
Kurtosis	5.776379
Jarque-Bera	30.46649
Probability	0.000000

White's test for heteroscedasticity(ISPAROA_POST)

Heteroskedasticity Test: White

F-statistic	0.669128	Prob. F(21,47)	0.8406
Obs*R-squared	15.88108	Prob. Chi-Square(21)	0.7763
Scaled explained SS	30.62203	Prob. Chi-Square(21)	0.0802