Gordon Institute of Business Science
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The short and long term effects of retrenchment announcements on South African share prices

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

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ABSTRACT

The body of literature relating to staff retrenchment announcements is both extensive and broad and covers the impact of staff layoffs from an employee, company and wider society perspective. This paper takes the form of an event study and sets out to investigate whether investors on the Johannesburg Stock Exchange (JSE), are able to make abnormal returns, 35 days prior to a staff retrenchment announcement, and over a 180 day window, after an announcement has been made. The stock exchange news service (SENS) database was used as a source for all of the retrenchment announcements made over the period 2001 to 2014. All announcements containing confounding events were removed, before a final population of 60 announcements was selected.

After stratifying the list of companies by market capitalisation and frequency of announcements, statistical tests were run on the five datasets to test for abnormal returns.

The study observed significant abnormal returns on the first day after an announcement (Day 1) in three of the five datasets. Companies with small market capitalisations produced significant abnormal returns 25 to 35 days prior to the announcement, whilst the short-term effects of the announcement were less pronounced in the group of companies that made multiple announcements.

KEYWORDS

Share price, Staff Retrenchment, Efficient Market Hypothesis (EMH), Behavioural Finance

DECLARATION

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

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1 INTRODUCTION TO THE RESEARCH PROBLEM

1.1 Introduction

Staff layoffs have traditionally been associated with negative connotations. Much has been written about the adverse societal effects brought about by large-scale retrenchments (Agwu, Carter, & Murray, 2014; Classen & Dunn, 2012; Liu & Zhao, 2014) and labour unions are often particularly vocal in their opposition to companies making staff retrenchment announcements (Abraham, 2006; Pouder, Hindman, & Cantrell, 2004; Tsai & Shih, 2013). From a financial perspective, the reasons behind the staff layoff announcement can have a material effect on the performance of the company and ultimately the share price of an organisation (Cascio, Young, & Morris, 1997; Lin & Rozeff, 1993; Palmon, Sun, & Tang, 1997).

Whilst companies may have no other option but to lay off staff members in times of economic difficulty, rationalisation of an organisation's workforce can also be undertaken strategically in order to reduce a firm's operating costs and improve its overall profitability (Iqbal & Shetty, 2011; Robbins & Pearce, 1992). Upgraded technology in certain instances has enabled businesses to reduce their headcounts, and still improve overall productivity and financial performance.(Pinsonneault & Kraemer, 1997; Pinsonneault & Kraemer, 2002; Sarkar & Guin, 2003)

A decision to reduce a firm's workforce might therefore result in adverse social consequences, but ultimately improve an organisation's operating performance. For listed companies undertaking a retrenchment process, it is therefore essential to clarify the reasons for the staff layoffs and to make this known to the public (Bayardo, Reche, & De La Cabada, Marie Leiner, 2013; Fama, Fisher, Jensen, & Roll, 1969). This is of particular importance in those instances where the staff rationalisation process has been undertaken due to productivity improvements.

1.2 Research problem and purpose

This research paper will focus on companies listed on the Johannesburg stock exchange (JSE), that make staff retrenchment announcements, and the influence that this has on a firm's share price over a long and short term time horizon. The effects of corporate downsizing, will have consequences across a multitude of different industries and affect a large variety of internal and external stakeholders in different forms. Considerable volumes of academic research have been dedicated to the broader topic of corporate downsizing and staff retrenchments. Whilst the primary focus amongst researchers has been on the human and social impact of companies laying off employees, there is a growing body of research focusing on the financial impact of staff retrenchment announcements. Increased emphasis has been placed on trying to understand the factors that motivate a firm to rationalise/downsize its workforce, and how this can often have a substantial positive or negative impact on an organisation's short/long term financial performance.

1.2.1 Current macro-economic climate

The "Great Recession" of 2007-2009, coupled with increased downward pressure on global commodity prices in the six years post-recession (2010 - 2015), have placed significant pressure on organisations to refine their operating processes and streamline organisational structures (Elsby, Hobijn, & Sahin, 2010; Iakova, Cubeddu, Adler, & Sosa, 2015). The exponential rate of technological change and innovation during the corresponding period, has reduced barriers to entry in many industries and allowed new entrants to compete with reduced fixed asset bases and smaller pools of permanent employees (Stringham, Miller, & Clark, 2015). Established organisations within these industries are having to adapt and increase operational efficiencies in order to compete. Downsizing a firm's labour force is seen as a necessity within some organisations in order to remain solvent, whilst other businesses have chosen to leverage off new technologies in order to create labour efficient processes, boosting productivity and reducing overall costs (Lin & Rozeff, 1993).

1.2.2 The efficiency of the Johannesburg stock exchange

How effectively this information is communicated to investors and ultimately reflected in the share price of entities listed on the JSE, is the second dimension to the research problem. The seminal research paper by (Fama, 1965) proposes the efficient market hypothesis (EMH), the theory that investors are unable to consistently achieve gains over a short or long-term period, on entities that have either been over or under valued. The hypothesis states that all available information about a listed company is efficiently communicated to the market, and reflected in a business's existing share price. In this scenario there is no opportunity for investors to achieve abnormal returns through information they have received prior to other participants in the market. By the time the new information becomes available, it has already been reflected in the current share price.

How efficient is the dispersion of information on the JSE? In a relatively efficient market, there would be little opportunity for investors to consistently outperform the market, over a sustained period. Research to date is rather divided. Thompson and Ward (1995) propose that holding a well-diversified portfolio of shares, that is index linked, will outperform an active investment strategy over the long term, whilst more recent event studies (Bhana, 2007; Bhana, 2008; Ward & Muller, 2010) suggest that investors are able to make abnormal returns on the JSE when public announcements are made on matters such as black economic empowerment, capital expenditure announcements and open market share repurchases.

1.2.3 Impact of retrenchment announcements on share prices

Numerous pages of research have been dedicated to the topics of staff retrenchment and the efficient market hypothesis, but most of this research tends to look at each subject in isolation. (Bhana, 2002) study of share price reaction and long term financial performance of companies listed on the JSE, post staff retrenchment announcement, looks at the period between 1980 and 1997. Whilst the research covers an extended period of time, of almost two decades, there have been considerable changes in a South African stock market context, which are not extensively covered by this study. Most

notably, the JSE's trading systems were automated in June 1996 and SENS (Stock Exchange News Services), a real-time news service was launched in 1997, with the aim of improving disclosure of information on companies listed on the JSE (Yartey, 2008). The political landscape within South Africa has also changed significantly post 1994, with the lifting of economic sanctions, opening up the South African economy to increased international investment. This is evidenced by the JSE being listed on the Morgan Stanley index and the IFC Emerging Markets and Global indices in 1995. During the same period, an increase of 35.2% in gross foreign purchases was observed on the JSE (Brooks, Davidson, & Faff, 1997).

1.2.4 Need for further research

A strong case can therefore be made to study staff retrenchment announcements post 2000, to ascertain whether the long and short term effects of such disclosures are consistent with previous research and if the JSE is more or less efficient at disseminating information about listed entities, post automation of its trading platform, and launch of its real-time news service – SENS. As an established stock exchange in a developing economy, this study aims to build on the existing base of research and provide insights that are applicable to listed exchanges in countries that are at a similar stage of their development.

1.3 Structure of the research report

The remainder of this paper is split into six chapters:

Chapter 2: Review of the relevant theory base

The first section of this chapter takes an in depth look at the relevant theories and frameworks regarding staff retrenchment and staff retrenchment announcements. Specific focus is given to literature regarding the financial impact of staff retrenchment announcements and the effect that this form of company declaration has on the share prices of JSE listed entities.

The body of literature relating to efficient markets and behavioural finance are analysed from a global and South African perspective.

The final section of the chapter provides an overview of some of the key event studies and concludes with an examination of the main frameworks which will be used to analyse the impact of staff retrenchment announcements.

Chapter 3: Research hypotheses

In this chapter, three core research questions are outlined. The aim of this section is to present a comprehensive set of hypotheses, which will be used in Chapters 5 -7, to assess whether investors can make abnormal returns, prior to a staff retrenchment announcement and over a short and long term window after an announcement.

Chapter 4: Research Methodology

The research methodology employed in this study, is presented in Chapter 4. A detailed breakdown is provided of the research design, data collection processes and event study methodologies followed.

Building on both classic (Fama et al., 1969) and current (Ward & Muller, 2010) event study frameworks, a comprehensive explanation of the databases, financial models and mathematical equations used to test for abnormal share price returns, is outlined in the latter part of the chapter.

In the final section, the potential limitations of the study are presented and discussed in detail.

Chapter 5: Results

Using the methodology outlined in Chapter 4, a comprehensive step by step breakdown of the findings is provided.

A key area of focus, is the significance testing of the daily average cumulative abnormal returns (ACARs). This is carried out on the full population of events and

four subsets of announcements, which have been stratified in terms of market capitalisation and the frequency of company announcements.

Chapter 5 concludes by revisiting the hypotheses that were presented in Chapter 3. Based on the results of the statistical tests, each of the null hypotheses is then either upheld or rejected.

Chapter 6: Discussion of Results

Using prior event studies and theory discussed in Chapter 2 to provide context, the findings from Chapter 5 are critically analysed and interpreted.

In this section, clear trends start to emerge, and parallels are drawn with other staff retrenchment and JSE event study research.

The questions posed in Chapter 3, are used as a litmus test to ascertain whether investors on the JSE can make abnormal returns, in the build up to an announcement and in the long and short term periods after an announcement.

Chapter 7: Conclusion

The paper concludes with a brief recap and summary of the previous six chapters, and aims to reinforce the academic and managerial relevance of the study's findings.

The key conclusions from Chapter 5 and 6 are revisited, and particular focus is given to the applicability of these findings to the theory discussed in Chapter 2, relating to retrenchments, market efficiency and event studies.

In the final section of Chapter 7, the limitations of the study are re-examined and recommendations for future research are provided.

2 RELEVANT THEORY BASE

2.1 Staff retrenchments and staff retrenchment announcements

Robbins and Pearce (1992) define retrenchment as “a term that denotes a strong emphasis by the firm on cost and asset reductions as a means to mitigate the conditions responsible for financial downturn” and that it relates to activities such as “restructuring”, “downsizing” and “downscoping” (p. 287). For the purpose of this paper staff retrenchments will include those scenarios where an organisation has reduced its staff headcount due to operational efficiency, as well as employee layoffs in response to declining demand and adverse economic conditions. This is consistent with the research of (Bhana, 2002) which cited two primary reasons for staff layoffs, the decreased demand hypothesis and the pure efficiency hypothesis (discussed in section 2.1.6)

The body of literature relating to company staff retrenchment announcements is both extensive and broad and covers the impact of staff layoffs from an employee, company and wider society perspective. The reach of these studies extends across countries in both developed and developing markets and a variety of different industries. In order to effectively understand staff retrenchment announcements it is important to analyse the perceived impacts of staff layoffs at each level – employees, companies, investors and the broader community, including key stakeholders like trade unions.

2.1.1 Effects of retrenchments on key stakeholders

Historically, retrenchments have been associated with negative connotations, particularly when viewed in the context of employees that have been affected by staff layoffs – both those that have lost their jobs and those that have remained employed during a restructuring process (survivors). Classen and Dunn (2012) study the link between employment status and suicide risk and find a positive association between the period of unemployment and the risk of suicide, for both men and woman. A study by (Liu & Zhao, 2014) on the effects of parental job loss on a child’s health, in China, between 1991 and 2006, found that paternal job loss had severely adverse effects on the health of children. The link between maternal job loss and health problems amongst children was less pronounced, possibly as families in China are less reliant on the

income of the maternal parent and those mothers that had lost their jobs during this period were able to spend more time at home with their children. Agwu et al.(2014) look at the welfare impact associated with job loss during the economic downturn (2008 – 2009) in Latvia and Turkey and develop a simulation model that measures the social impact associated with the loss of household income over this period. Their study infers a substantial increase in poverty, and widening of the inequality gap as a result of a 5.8% increase in unemployment within the region.

A large proportion of retrenchment literature has tended to focus on the adverse consequences of staff layoffs and the direct impact that this has on employees and their communities. Company declarations regarding large scale employee layoffs are therefore often received with a fair amount of trepidation. Trade unions are routinely cited as key stakeholders in an organisation's retrenchment process. (Tsai & Shih, 2013) conducted a study on 154 firms in Taiwan that had undergone corporate downsizing, and found the involvement of trade unions in the negotiation process to have both positive and negative consequences. Firms that had positively sought to co-opt with trade unions experienced on average higher downsizing performance than firms that chose not to engage with trade unions. However negotiations with labour unions were found to have negative effects on the downsizing performance of an organisation when the influence of the trade unions was seen to overpower or neutralise the effects of a responsible downsizing strategy.

2.1.2 Trade union involvement in retrenchments

Abraham (2006) and Pouder et al.(2004) look at staff retrenchment announcements of companies with both unionised and non-unionised labour forces, and assess the impact that this has on investors and company share prices. Both sets of research found the market reaction to staff retrenchment announcements to be more favourable where employees have been unionised. A possible explanation cited by (Pouder et al., 2004) for the outperformance of companies with unionised labour forces, is the fact that many investors associate labour unions with inefficiency. The decision taken to layoff off unionised staff members, may therefore be perceived as an initiative to reduce operational inefficiencies. Investors would regard this as a positive signal to the market, and hence the improvement in company share price post a staff retrenchment announcement.

2.1.3 The use of technology to facilitate retrenchments

The role of technology and its impact on improving operating efficiencies within an organisation, has a major role to play in the pure efficiency hypothesis. Pinsonneault and Kraemer (2002) propose the slack resource theory, whereby investment in information technology helps to facilitate downsizing within organisations. Increased investment on information technology, reduces a firm's reliance on human capital to perform certain administrative tasks. In times of economic prosperity these resources often remain slack within the organisation or are redirected to new departments. When economic conditions deteriorate, these resources are generally the first to be targeted by a company retrenchment process. Sarkar and Guin's (2003) case study on a steel manufacturing business in India, looks at how the organisation was able to improve its financial performance and become more competitive, through a process of technical upgrades to existing manufacturing equipment, a review of all operational processes, followed by the outsourcing of all non-core activities to external third parties. This enabled the business to effectively downsize its workforce without diminishing its operational and financial performance.

2.1.4 Staff retrenchment announcements as a signal to the market

When a firm chooses to go public with their intention to rationalise their employee headcount, it is extremely important that the reasons behind their decision are clearly and accurately motivated. Not only do staff retrenchment announcements send signals to current and potential investors but they can also have a strong impact on the motivation and performance of internal stakeholders. Bayardo et al. (2013) look at the impact of retrenchment communications on employee performance from an internal communications perspective, and find that effective internal communication surrounding staff layoffs has a positive effect on employee job satisfaction, which in turn results in improved staff commitment. Whilst this paper does not look expressly at internal staff retrenchment announcements, it is important to acknowledge the potential impact that staff layoffs can have on a firm's performance, from both an internal and an external stakeholder perspective.

2.1.5 Financial impact of retrenchments

A key distinction needs to be made between the consequences that staff layoffs have on employees and broader social community, and their impact on an organisations overall financial performance. An emerging theory in this field is that staff retrenchment announcements have either a negative or a positive impact on an organisation's financial performance. Previous research on this topic has produced conflicting results, with (Blackwell, Marr, & Spivey, 1990; Worrell, Davidson, & Sharma, 1991) both having found a negative relationship between staff layoff announcements, share price and overall financial performance. Cascio et al. (1997) observed that a combination of employee downsizing and asset restructuring resulted in superior financial performance in the American corporations which they analysed over the period 1980 -1994. This was highlighted by improved return on assets (ROA) and positive share price growth. Iqbal and Shetty (2011) also observed a positive link between employee retrenchments and share price performance, however they propose that the positive gains on the share prices of listed entities are less pronounced in firms that are financially healthy than in firms that are financially weak.

Lin and Rozeff (1993) and Palmon et al. (1997) both observed that the impact of staff retrenchment announcements on company share price and financial performance can be either negative or positive, and draw a distinction between the reasons behind a firm's decision to implement staff retrenchments. If the staff layoffs are motivated by unforeseen adverse market conditions, they propose a decline in company share price and overall financial performance. However a reduction in staff headcount stemming from improved efficiency, should result in improved financial performance and growth in company share price.

Lin and Rozeff's study looks at companies announcing cost cutting measures, which they divide into three major categories – worker layoffs, operation closings and employee pay cuts. Their research presents two hypotheses on the effects of cost cutting announcements – the reduced demand hypothesis and the pure efficiency hypothesis.

The reduced demand hypothesis looks at companies with declining unit sales. When a firm's sales volumes decrease, there is generally a delay before a business can react and adjust their production levels downwards. The production costs therefore have to be allocated over a decreased number of units and the average cost per unit increases. In order to reduce unit costs, a firm may choose to lay off staff or close down some of its

existing operations. Whilst this may have the desired effect of reducing unit costs, the net effect will be reduced operating profits, due to the business's decreased sales volumes. Lin and Rozeff propose that staff layoffs motivated by reduced demand send a negative signal to investors and the share price should therefore decrease.

The pure efficiency hypothesis relates to firms that are able to decrease their labour costs without reducing their sales or production volumes. This might take place where new technology has been introduced which enables a company to produce its existing product lines with less labour input. In this scenario the firm would able to reduce its cost per unit, whilst maintaining/growing its sales volumes, and therefore increasing profitability. Staff layoffs motivated by the pure efficiency hypothesis should therefore be viewed positively by the market and the share price should therefore increase.

2.1.6 The Impact of retrenchment announcements on share price

In a South African context, research by (Bhana, 2002) looks at the impact of employee layoff announcements on the share prices of listed entities, and the effect that this has on a firm's financial performance. Bhana's study looks at companies listed on the JSE that have made staff retrenchment announcements between 1980 and 1997. Abnormal returns are calculated over a 12 day period, from t-1 (the day before the staff retrenchment announcement) to t10 (10 days post staff retrenchment announcement). The primary database used for the study is Reuters Business Briefing, which is cited as a potential limitation of the study, due to Reuters' tendency to focus primarily on large news stories. In order to overcome this shortcoming, the Bureau of Financial Analysis at the University of Pretoria was also used as an additional database.

During the late 1990's significant changes were made to the investment landscape in South Africa. Most notably, the bulk of Bhana's research covers a period prior to these developments and it is not yet known whether these alterations would have a material impact on the efficient market hypothesis (see section 2.2), and the dissemination of information relating to staff retrenchment announcements in South Africa.

Some of the key JSE developments post 1994 (in chronological order):

- **1994 -1995:** Lifting of economic sanctions and increased exposure to foreign investment, through measures like the listing of the JSE on the Morgan Stanley index and the IFC Emerging Markets and Global indices (Brooks et al., 1997).

- **1996**: The automation of the JSE's trading systems (Yartey, 2008)

- **1997:** Launching of the Stock Exchange News Service (SENS) by the JSE. The primary objective of the listing being to improve disclosure of information of listed companies on the JSE. (Yartey, 2008)

Further research is therefore required to ascertain whether Bhana's original findings can still be upheld post 1997. This study aims to build on the existing base of knowledge, by extending the scope of previous research and incorporating both the long and short-term effects of staff retrenchment announcements on share prices. This research paper will also incorporate the control portfolio model as devised by (Ward & Muller, 2010) with the aim of overcoming some of the potential shortcomings of the CAPM model (see section 4.6)

2.2 The theory of efficient markets & behavioural finance

2.2.1 Introduction

There are two primary schools of thought regarding stock markets and their ability to integrate information into listed share prices:

1) The Efficient Market Hypothesis (EMH)

2) Behavioural Finance

The study of these two theories is important in order to understand whether the informational content which is distributed to the public, during a retrenchment announcement is accurately and timeously reflected in the organisation's share price, and whether the market (specifically the JSE) is efficient.

2.2.2 The efficient market hypothesis (EMH)

Fama's (1965) efficient market hypothesis (EMH), is the seminal theory relating to the efficiency of stock markets at disseminating financial information and is generally regarded as an extension of the random walk and martingale theories (Sewell, 2011).

The term random walk was first used by (Pearson, 1905) and relates to a series of random steps that cannot be anticipated or predicted with any degree of accuracy. In terms of stock market pricing, random walk theory refers to the inability of investors to predict future share prices, based on historical share price information. Any movement in a listed entities share price is random and unpredictable. (Sewell, 2011)

Samuelson (1965) describes the efficiency of stock markets in terms of martingale theory, a probability model which is borne out of research by French mathematician Louis Bachelier (1900), and relates primarily to gambling and speculation. In martingale theory, the knowledge of historical events cannot be used to predict future winnings.

The EMH proposes that stock prices are a fair and accurate representation of an organisation's intrinsic value, and all available information is fully reflected in a company's share price. Investors have no opportunity to achieve abnormal returns through information which they have received prior to other market participants. As soon as new information becomes available, it is already reflected in the latest share price of an entity (Sewell, 2011)

Fama et al. (1969) build on the initial EMH study and propose three forms of market efficiency:

1) Weak form EMH;

2) Semi-strong form EMH; and

3) Strong form EMH.

Weak form EMH considers the market to be extremely inefficient at incorporating available information into a company share price. As per the random walk and martingale theories, previous events and performance cannot be used as a predictor of what share prices are likely to be in the future.

Semi-strong EMH occurs when markets adjust quickly to new information, in order to integrate all publically available information into company share prices. Participants are unable to make returns in excess of the rest of the market, as by the time an investor chooses to transact, all available information has already been incorporated into the latest share price.

Strong form EMH assumes the market to be perfectly efficient. All market participants have access to both public and private information and all available information is automatically reflected in a company's share price. In this scenario it is also not possible for investors to make returns in excess to the rest of the market.

The debate over the efficiency of markets is a lively one, and over the years countless research has been devoted to the topic. The EMH remained largely unchallenged throughout the 1960's and 1970's, with Fama and Samuelson being the primary advocates of efficient markets over this period. Sewell (2011) suggests that Samuelson is the person responsible for providing "the first formal economic argument for 'efficient markets'" (p. 4), whilst (Fama et al., 1969) are credited for undertaking the first ever event study.

Malkiel (2003), a prominent supporter of the EMH, famously stated in his book *A Random Walk Down Wall Street*, that the "market prices stocks so efficiently that a blindfolded chimpanzee throwing darts at the Wall Street Journal can select a portfolio that performs as well as those managed by the experts" (p. 60).

2.2.3 Behavioural finance

Behavioural finance formally emerged in the mid-1980s, and is defined as "the study of the influence of psychology on the behaviour of financial practitioners and the subsequent effect on markets" (Sewell, 2007) (p. 1)". The theory of behavioural finance has evolved over time, and advocates of the philosophy are considered to be the first significant body of scholars to openly question the validity of the EMH.

Amos Tversky and Daniel Kahneman are routinely cited as two of the most influential contributors to the field behavioural finance, and their cognitive psychology research still provides some of the core principles on which modern behavioural finance theory is underpinned today. Tversky and Kahneman's (1974) research into the heuristics employed by people during times of ambiguity, is a fundamental philosophy not only in behavioural finance but a across numerous different fields of research:

1) **Representativeness Bias** – occurs when objects or events are categorised and it is assumed that all members of the same category share the same features. (Sewell, 2007)

2) **Availability Bias** – occurs when decisions are made based on information that is most easily accessible. This may be due to the memorability or the recentness of a particular event. (Sewell, 2007)

3) **Anchoring Bias –** occurs when too much reliance is placed on the first piece of information that a person receives about an object or event (the anchor). All subsequent decisions made are based on this initial piece of information. (Sewell, 2007)

Perhaps the most the most famous research conducted in the field of behavioural economics relates to prospect theory (Kahneman & Tversky, 1979; Tversky & Kahneman, 1992). Prospect theory analyses the process used to make decisions between a range of different alternatives, where each alternative involves an element of risk and the probability of each occurrence is known. Kahneman and Tversky's study observed that people's attitudes towards gains and losses are fundamentally different. Individuals tend to be risk averse when making a decision between profit-making scenarios, placing an excess weighting on the certainty of an outcome, whilst the inverse holds true for decisions made between loss-making alternatives. In these instances, Kahneman and Tversky found people to be willing to take on greater risk, and that people generally placed a far lower weighting on alternatives where the outcomes were deemed to be a certainty.

Whilst Kahneman and Tversky's research covers cognitive psychology at a broad level, the formal origination of behavioural finance can be traced back to (Thaler, DeBondt Werner F Richard H, 1985), whose research looks at share price overreactions, and proposes that stock markets generally exhibit fundamentally weak forms of market efficiency. The field of behavioural finance has continued to evolve in the years subsequent to the publication by Thaler et al., with Kahneman and Tversky continuing to make fundamental contributions to the body of literature (Kahneman, 2003; Tversky & Kahneman, 1986; Tversky & Kahneman, 1991). Other prominent advocates of behavioural finance, including Robert Shiller, Andrew Lo and Craig MacKinlay, whose publications have significantly impacted the field of research in more recent years.

Shiller (2003) argues that the inclusion of social sciences in the study of financial markets has broadened our understanding of how investors react to new information. Shiller goes on to state that theoretical models like the EMH can serve a purpose, to illustrate how stock markets would operate in an ideal world, but should not be upheld as an accurate depiction of how markets react to new information in reality.

Publications by Massachusetts Institute of Technology (MIT) professors (Lo & MacKinlay, 1988; Lo & MacKinlay, 2011) have also looked to question the validity of the random walk hypothesis. *A Non-Random Walk Down Wall Street,* a reference to the seminal publication on market efficiency by (Malkiel, 1973), looks to disprove the theory that future stock prices cannot be accurately predicted, and provides empirical testing to suggest the existence of patterns and market trends, which can be used to predict future stock market prices with some degree of accuracy. Lo (2004) goes on to develop a model known as the adaptive market hypothesis, a qualitative framework which incorporates human behaviour characteristics, like loss aversion, overconfidence, overreaction, mental accounting and various other forms of behavioural biases as a predictor of how future stock prices are likely to react.

2.2.4 The JSE as an efficient stock market

The debate between supporters of both the efficient market hypothesis and behavioural finance is a long standing one, and in a South African context, substantial research has been undertaken to analyse the efficiency of the JSE as a stock market.

The South African economic landscape and by extension the Johannesburg stock exchange have undergone noteworthy transformation since the mid 1990's and it is important to consider some of the fundamental changes which have occurred over the past two decades (see section 2.1.6), when analysing the current level market efficiency on the JSE.

Gilbertson and Roux (1977) conducted one of the first studies into the efficiency of the JSE as stock market. The research findings of their publication indicated that the JSE primarily exhibited strong forms of market efficiency, upholding the fundamental principles of the EMH, and concluded that investors are unable to consistently make returns in excess of the market, via the application of different trading rules. The findings of the study were later challenged by (Strebel, 1977), who questioned the validity of Gilbertson and Roux's research, citing that the EMH at best only applied to half of all the shares listed on the JSE. In response to Strebel's criticism, a second paper was published (Gilbertson & Roux, 1978), which raises questions about the accuracy of the dataset used in Strebel's study, and maintains that the principles of strong form market efficiency still apply to the stock market in a South African context.

In the intervening period since Gilbertson, Roux and Strebel's research, various studies have been published which analyse the applicability of the EMH and behavioural finance frameworks, and assess their relevance as indicative models of the predictability/volatility of share price movements in a South African context.

Thompson and Ward (1995) conducted a study into the body of empirical research carried out on the market efficiency of the JSE over the period 1974 – 1993. The research findings were mixed in terms of weak form and semi-strong form market efficiency, but concluded that the JSE was reasonably operationally efficient. The paper goes on to propose that an investor who holds a portfolio of shares, that is well diversified and index-linked, is likely to outperform a market participant that pursues an active investment strategy, over a longer time horizon.

Subsequent studies have expanded on the scope of research by undertaking a cross-sectional analysis (Lewis & Saunders, 2012) on a basket of different African stock exchanges, with the view to understand the efficiency of these markets, as well as their progression/regression towards more/less efficient share pricing mechanisms. Jefferis and Smith (2005) look at stock exchanges in seven different markets: South Africa, Egypt, Morocco, Nigeria, Zimbabwe, Mauritius and Kenya between 1990 and 2001. Their research upholds that the JSE maintains weak form efficiency throughout the period of the of the study, whilst the Egyptian, Moroccan and Nigerian stock exchanges gradually evolve towards weak form efficiency. The Zimbabwean and Kenyan markets were observed to have shown no progression towards a weak form of market efficiency, whilst the Mauritian stock exchange displayed early signs of development towards improved levels of market efficiency (weak form). The results of this study indicate that stock exchanges on the African continent display different degrees of market efficiency, which have evolved over time, towards a more efficient state, albeit weak - form market efficiency.

A growing body of research into the efficiency of the South African stock market has been through the application of event studies (see section 2.3), which look at the informational impact of various types of announcements. The purpose of these studies is to ascertain how timeously and accurately information is absorbed by the market and reflected in the latest company share prices. One of the first publications regarding the impact of company announcements and their effect on the share prices of JSE listed entities is (Bhana, 1989). The study aims to build on the research of (Thaler, DeBondt Werner F Richard H, 1985) and looks at the JSE's reaction to unexpected or extreme events over the period 1970 - 1984. Bhana's research observes that the JSE's short term

reaction to such announcements differs, depending on the positive or negative nature of the news being conveyed. For announcements relaying negative information, the results of the study were consistent with the overreaction hypothesis developed by (Thaler, DeBondt Werner F Richard H, 1985), whilst for positive announcements of extreme/unexpected events, only weak evidence was observed of short term market overreaction.

Over the past three decades numerous event studies have looked at the impact of JSE company announcements and the effect that these declarations have had on the share prices of companies in different industries, over various time periods. The findings of the majority of studies, indicate that South African markets display signs of inefficiency, and that potential exists for positive or negative abnormal returns, depending on the type of announcement.

The Table 1 (below) is a summary of some the key South African event studies, conducted between 1989 and 2012, and relates to announcements such as: company earnings, sponsorship deals, black economic empowerment (BEE) and management buyouts.

A significant proportion of the research carried out in this field, was conducted by Narendra Bhana (14 out of 19 studies). The majority of the studies, with the exception of (Kruger & Goldman, 2012), all observed some measure of abnormal returns, either in the days building up to the announcement (Bhana, 1994), or in the period after the announcement. In the case of the black economic empowerment announcements (Ward & Muller, 2010), the largest abnormal returns were observed between 100 and 180 days after the BEE announcement was made.

Table 1: Key South African event studies

Year of Publication	Author	Type of Announcement	Time Period of Study	Effect on Share Price
1989	Bhana	Unexpected or extreme events	1970 - 1984	Negative events - Short term overreaction Positive events - No short term overreaction.
1994	Bhana	Potential takeovers	1980 - 1997	Positive abnormal share price returns for the target company - up to 20 days before the public announcement
1995	Bhana	Earning Announcements	1975 - 1989	Negative earnings - Short term overreaction
1997	Bhana	Share (stock dividends)	1986 - 1995	Significant increase in share price at the time of the announcement
1997	Bhana	Management buyouts	1983 - 2002	Significant abnormal returns for the shareholders of the parent company
1997	Henn & Smit	Economic news events	1990 - 1995	Significant correlation between volumes of shares traded on the JSE and number of economic news events
1997	van der Merwe & Smit	Political news events	1990 - 1995	Dependent on the price index, the number of political news stories explains 1% -23% of share price volatility
1998	Bhana	Equity financing	1980 -1995	Increased Equity Financing - Negative abnormal returns
2001	Bhana	Research and development expenditure	1995 - 2004	Short term positive abnormal returns for company making the announcement. Short term negative abnormal returns for competitors of the company making the announcement
2002	Bhana	Staff layoffs	1980 - 1997	Layoffs motivated by decreased demand - Negative abnormal returns Layoffs motivated by efficiency improvements - Positive abnormal returns
2003	Bhana	Key executive dismissals	1975 - 1999	Positive abnormal returns, where market previously aware of poor performance
2007	Bhana	Share repurchase announcements	2000 - 2003	Short term under reaction
2007	Bhana	Special extra dividends	1974 -1994	Positive abnormal returns
2008	Bhana	Capital expenditure	1995 -2004	Significant positive abnormal returns
2010	Bhana	Criticism of corporate governance practices in the press	2003 - 2006	Significant negative abnormal returns - Short and long term
2010	de la Port & Saville	Financial Mail or Finance Week Cover stories	2000 - 2009	Positive cover stories - Positive holding period returns (contrarian effect) Negative cover story - Positive holding period returns
2010	Ward & Muller	Black Economic Empowerment	2000 - 2008	Positive abnormal returns between 100 and 180 days post announcement
2011	Kruger & Goldman	Sponsorship	1998 - 2011	No impact on share price
2012	Ward & Esterhuysen	Financial Mail "Top Company"	2003 - 2009	Significant positive abnormal returns

2.3 Event studies

The event study methodology was first developed by (Fama et al., 1969), and is based on the principle of semi – strong market efficiency, whereby market prices change rapidly and without bias, in order to incorporate newly available public information into the latest listed value of a share.

Binder (1998) states that event studies are used for two primary reasons:

1. To test the null hypothesis that a particular stock market efficiently incorporates information into a company share price

2. To assess the impact of various events and forms of public announcements on the share prices of listed companies

According to (Park, 2004), an event study is a framework which can be used to assess whether specific forms of events or announcement generate abnormal returns. An abnormal return is defined as the difference between the estimated returns and the actual returns that are observed when a particular event or announcement takes place.

In a South African context, event studies have been the prominent methodology used to assess the impact of company announcements on the share prices of JSE listed companies. Table 1 includes a list of 19 case studies carried out on the JSE over a period in excess of 20 years.

The methodology used in this research paper will incorporate an event study framework, in order to ascertain whether company share price returns differ substantially from predicted returns, when a company makes a staff retrenchment announcement. For the purpose of this study, these differences will be referred to as Average Cumulative Abnormal Returns (ACARs).

The first step in determining an ACAR is to calculate what the predicted returns for a stock should be over the event window. Historically there have been four primary models used to predict the expected returns of shares (Mushidzhi & Ward, 2004):

1) Mean Adjusted Model: The returns made by a firm are expected to be the same as those returns observed during the estimation period.

2) Market Model: The firm's expected returns are calculated by taking into consideration the risk of the firm in comparison to the market.

3) Market Adjusted Model: The firm's returns are expected to be the same as the rest of the market.

4) Control Portfolio Model: The firm is included in a portfolio of similar companies, which are grouped together based on shared characteristics. The expected return of the firm is forecast to be the same as the control portfolio.

The methodology of this research paper follows the event study model employed by (Ward & Muller, 2010), in their analysis of black economic empowerment announcements, and their impact on the share prices of companies listed on the JSE. Ward and Muller state that the framework employed for their study was an adaption of the standard methodology used and developed in event studies by (Bhana, 1998b; Bowman, 1983; Madura & Akhigbe, 1995). A fundamental addition to their event study methodology is the inclusion of a control portfolio model that stratifies companies into 12 portfolios, based on company size, growth versus value and resource versus non resource.

1) **Company size:** This is based on the market capitalisation of firms, which are ranked from the largest firm, in terms of market capitalisation to the smallest firm. The largest 40 firms are classified "Large", firms ranked between 41 and 100 are classified as "Medium" and the remaining companies in the population are classified as "Small".

2) **Value and growth:** These are both measures of a firm's price earnings ratio (P/E ratio) The P/E ratios of all firms are ranked from largest to smallest. The median P/E is then selected. All those firms that have P/E ratios that are larger than the median are classified as "Value", whilst the remaining companies are classified as "Growth".

3) **Resource and Non Resource:** Mining resource companies and non – mining resource companies (based on the broad JSE sector groupings) are both classified as resource companies for the purpose of this methodology, whilst all remaining shares are classified as non-resource companies.

Ward and Muller argue that the use of a CPM overcomes many of the limitations of a market or single parameter CAPM model, which fails to account for expected returns, based on key variables like company size or P/E measures like growth versus value. Their model builds on the factor-mimicking control portfolio frameworks of (Fama & French, 1993; Mordant & Muller, 2003) and adds the additional dimension of resource versus non resource companies, which is of particular relevance in a South African context (Ward & Muller, 2010).

After stratifying the shares into portfolios, alpha and beta coefficients are then calculated for each of the individual shares against the 12 control portfolios. This is used as base to calculate the expected returns of the shares selected, against which the ACARs can be measured.

2.4 Conclusion

Based on the literature reviewed in this section, this event study aims expand on the knowledge, by analysing both the long and short term share price reactions to staff retrenchment announcements in a South African context over the period 2000 - 2014. A key observation of the study will be to analyse whether the market efficiency of the JSE at incorporating staff layoff information into company share prices has altered over time, and specifically in the intervening years since Bhana concluded his study (1997). The report will follow the event study methodology used by (Ward & Muller, 2010), and will incorporate 12 control portfolios in order to calculate the expected share price returns, against which ACARs will be calculated. The SENS and JSE Bulletin databases will be used as the primary source of staff retrenchment announcements.

3 RESEARCH HYPOTHESES

The research hypotheses aim to establish whether abnormal returns can be achieved by JSE investors, prior to a staff retrenchment announcement and in the short and long term periods after an announcements has been made. The hypothesis testing methodology was adapted from an event study by (Ward & Muller, 2010).

3.1 Hypothesis 1

The null hypothesis states that investors can't make significant average cumulative abnormal returns (ACARs) in the 35 day period prior to a staff retrenchment announcement

The alternate hypothesis states that investors can make significant average cumulative abnormal returns (ACARs) in the 35 day period prior to a staff retrenchment announcement

$$H_0: ACAR_{35PRA} \neq 0$$

$$H_A: ACAR_{35PRA} = 0$$

The event window used to test for abnormal returns prior to a staff retrenchment announcement is 35 days.

$ACAR_{35PRA}$ represents the average cumulative abnormal returns of shares in the 35 day period prior to a staff retrenchment announcement.

3.2 Hypothesis 2

The null hypothesis states that investors can't make significant average cumulative abnormal returns (ACARs) in the 20 day (short term) period after a staff retrenchment announcement

The alternate hypothesis states that investors can make significant average cumulative abnormal returns (ACARs) in the 20 day (short term) period after a staff retrenchment announcement

$H_0: ACAR_{20POA} \neq 0$

$H_A: ACAR_{20POA} = 0$

The event window used to test for short term abnormal returns after a staff retrenchment announcement is 20 days.

$ACAR_{20POA}$ represents the average cumulative abnormal returns of shares in the 20 day period after a staff retrenchment announcement.

3.3 Hypothesis 3

The null hypothesis states that investors can't make significant average cumulative abnormal returns (ACARs) in the period between Day 21 and Day 180 (long term period), after a staff retrenchment announcement

The alternate hypothesis states that investors can make significant average cumulative abnormal returns (ACARs) in the period between Day 21 and Day 180 (long term period), after a staff retrenchment announcement

$H_0: ACAR_{180POA} \neq 0$

$H_A: ACAR_{180POA} = 0$

The event window used to test for long term abnormal returns after a staff retrenchment announcement is the period between Day 21 and Day 180.

$ACAR_{180POA}$ represents the average cumulative abnormal returns of shares in the period between Day 21 and Day 180 after a staff retrenchment announcement.

4 RESEARCH METHODOLOGY

4.1 Unit of Analysis

The unit of analysis is any company listed on the JSE that has made a retrenchment announcements over the period 1 January 2001 to 31 December 2014.

4.2 Population of Relevance

The population of relevance consists of all companies listed on the JSE that made a retrenchment announcement over the period 1 January 2001 to 31 December 2014.

The population of relevance was sourced from the stock exchange news service (SENS) announcements made over the period 1 January 2001 to 31 December 2014. The data was supplied by Chris Muller (Gordon Institute of Business Science)

In order for a company to meet the selection criteria, the following conditions have to be met:

1) The announcement made reference to one of the following phrases in its description:

    i. Retrenchment
    ii. Layoff
    iii. Job Loss
    iv. Downsizing

2) The company making the retrenchment announcement must be listed on the JSE for at least 300 days prior to the SENS announcement and at least 180 days after the SENS announcement. This methodology was adapted from (Ward & Muller, 2010)

3) The company has not made any other retrenchment announcements, been involved in any large scale mergers, acquisitions, disposals or incurred any significant restructuring costs in the 180 day period prior to the SENS announcement. This is to remove any confounding events from the study.

Data Collection Process:

1) The SENS database for the period 1 January 2001 to 31 December 2014 was exported into Microsoft Excel, courtesy of Chris Muller (Gordon Institute of Business Science).

2) All the announcements that meet the requirements (listed above), were be selected from the SENS database.

3) The SENS data for the selected companies were reviewed for the 180 day period preceding the announcement. Any confounding events were identified and removed from the population.

4) Companies that were not listed in the 300 days prior to or the 180 days post the retrenchment announcement were removed from the population.

5) JSE Bulletin daily closing share price data for the period 1 January 2001 to 31 December 2014 was exported into Microsoft Excel, courtesy of Mike Ward and Chris Muller (Gordon Institute of Business Science).

4.3 Research Design

This research takes the form of a quantitative event study that is deductive by nature and uses archival data:

1) The quantitative study looks to establish whether a causal relationship exists between staff retrenchment announcements and the movement in companies share price.

2) (Fama et al., 1969) and (Ward & Muller, 2010) event study methodologies were used to analyse the share price performance of a company making a retrenchment announcement.

3) The research takes a deductive approach and attempts to test the theoretical proposition that staff retrenchment announcements have an effect on a company's share price. (Lewis & Saunders, 2012)

4) The data obtained for the study is archival in nature. All relevant administrative information was extracted from the SENS announcement and JSE Bulletin databases. (Lewis & Saunders, 2012)

4.4 Sampling Method and Size

From the SENS database, all companies that made retrenchment announcements over the period 1 January 2001 to 31 December 2014, that met the selection requirements as stipulated in section 4.2 were included in the research population. 60 announcements met the final criteria, and were included in the staff retrenchment announcement population.

The study used two criteria to stratify the full list of announcements into data subsets:

1) A firm's market capitalisation (JSE Bulletin data)

    i. The 30 largest companies in the population were classified as large market capitalisation companies

    ii. The 30 smallest companies in the population were classified as small market capitalisation companies

2) The number of announcements made over the event window (SENS data)

    i. 27 Firms made a single announcement over the event window

    ii. 11 Firms made multiple announcements over the event window (27 announcements in total)

4.5 Data Collection

The company retrenchment announcement data for the period 1 January 2001 to 31 December 2014, and daily closing share prices of the companies that met the criteria, set out in section 4.2, were extracted from the following two secondary data sources:

1) Stock exchange news service (SENS) database
2) JSE Bulletin

These secondary databases provided the following information:

1) The list of companies that made retrenchment announcements over the period of the study

2) The closing share prices of the companies over the 216 day event window (Day -35 to Day 180)

4.6 Data Analysis Approach

The standard event study model as developed by (Fama et al., 1969) was used as the basis for this study and incorporates the event study methodology of (Ward & Muller, 2010), who used a portfolio control model to calculate abnormal returns.

The event date for the purposes of this study was defined as the date that the SENS announcement was first published. This date is denoted as "t_0"

The impact of the retrenchment announcements were measured over three event windows. This methodology was adapted from the model used by (Ward & Muller, 2010):

1) 35 days prior to the staff retrenchment announcement

2) 20 days after the staff retrenchment announcement

3) The period between Day 21 and Day 180 after a staff retrenchment announcement

In order to calculate the daily returns of share prices, the log-function return of each share in the population was calculated using the following formula (Ward & Muller, 2010):

(Equation 1)

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

R_{it} = share i's return on day t, and

P_{it} = the closing share price of share i on day t

(Ward & Muller, 2010) highlighted a number of inadequacies with the CAPM model as benchmarking tool. The primary reasons cited were, the CAPM model does not take into consideration the size an organisation, earnings yield measures like growth versus value and whether the company is in a resource or non-resource industry.

In order to overcome these short-comings, twelve portfolios were created using the following three factors:

1) Size of company (Market Capitalisation) – Small, medium or large

2) Earnings Yield – High earnings yield shares are classified as growth shares, whilst shares with low earnings yields are classified as value shares

3) Type of industry – Resource based companies and non-resource based companies

Table 2: Portfolio Control Model

Control Portfolio	Company Size	Value or Growth	Resource or Non-Resource
SGN	Small	Growth	Non-Resource
SGR	Small	Growth	Resource
SVR	Small	Value	Non-Resource
SVN	Small	Value	Resource
MGN	Medium	Growth	Non-Resource
MGR	Medium	Growth	Resource
MVN	Medium	Value	Non-Resource
MVR	Medium	Value	Resource
LGN	Large	Growth	Non-Resource
LGR	Large	Growth	Resource
LVN	Large	Value	Non-Resource
LVR	Large	Value	Resource

Using the control portfolio model, the abnormal return for share i on day t, is estimated as:

(Equation 2)

$$AR_{it} = R_{it} - \alpha_{it} - \beta_{i,1} SGN_t - \beta_{i,2} SGR_t - \beta_{i,3} SVN_t - \beta_{i,4} SVR_t - \beta_{i,5} MGN_t - \beta_{i,6} MGR_t - \beta_{i,7} MVN_t - \beta_{i,8} MVR_t - \beta_{i,9} LGN_t - \beta_{i,10} LGR_t - \beta_{i,11} LVN_t - \beta_{i,12} LVR_t$$

Where:

α_{it} = the alpha intercept of share i on day t, and

$\beta_{i,1} \ldots\ldots \beta_{i,12}$ = the beta coefficients of each control portfolio return and

$SGN_t \ldots LVR_t$ = the log-function share price returns for each of the twelve control portfolios set out in Table 2 on day t.

The average abnormal return of all of the shares listed in the control portfolios on a specific date, was calculated by applying the following formula (Ward & Muller, 2010):

(Equation 3)

$$AAR_t = \frac{1}{n}\sum_{i=1}^{n} AR_i$$

Where:

AAR_t = the average abnormal return for all shares listed in the control portfolios on day t, and

n = the number of companies.

In order to test the performance of a specific share over each of the three event windows, a cumulative abnormal return (CAR) was calculated using the following formula (Ward & Muller, 2010):

(Equation 4)

$$CAR_i = \sum_{t=-d}^{d} AR_{it}$$

Where:

CAR_i = the cumulative abnormal returns for share i for the period from t = –d to t = d.

Once the cumulative annual return (CAR) has been calculated for all the shares included in the sample, an average cumulative abnormal return ($ACAR$) figure is calculated by applying the following formula (Ward & Muller, 2010):

(Equation 5)

$$ACAR = \frac{1}{n}\sum_{t=-d}^{d} CAR_i$$

Where:

$ACAR$ = the average cumulative abnormal return for all shares in the sample for the period from t = -d to t = d, and

n = the number of companies

After $ACAR$s for the full population and data subsets were calculated, independent two tailed t Tests, with a 5% level of significance were run in order to ascertain whether the $ACAR$s were significantly different to zero.

To make the significance testing more robust, a bootstrapping exercise was also undertaken. Daily closing share price data was taken from the JSE Bulletin database, for all of the companies included in the population, for a 300 day period prior to each announcement. Using this data, a Monte Carlo simulation (Mooney, 1997) was run for each of the announcements. A 100 random dates were selected from the 300 day period prior to an announcement, this provided a random spread of 100 ACARs for each day in the event window. Upper and lower confidence levels were then set at 2.5%. Any daily ACARs falling outside these confidence intervals were deemed to be statistically significant.

Although the main aim of the research was to test the statistical significance of the $ACAR$s over 216 day event window, statistical tests were run for both the AARs and $ACAR$s in order to gain a better understanding of the $ACAR$ test results at more granular level (Esterhuysen, 2011).

4.7 Research Limitations

1) The size of the staff retrenchment announcement population was not as large as initially hoped. Considerable time was spent scanning announcements to ensure that confounding events were not present in the press releases used for the study. As a result of this, two key sets of SENS announcements were removed from the population.

    i. Annual, Half-Yearly and Quarterly financial and trading statements
    ii. Staff retrenchment announcements relating to mergers and acquisitions

2) Since the study looked at both the short and long term effects of staff retrenchment announcements on JSE traded shares, a 216 day event window was used. As discussed in section 7.2.3, this raises the potential issue of confounding events, when longer event window used (McWilliams & Siegel, 1997).

3) For the bootstrapping distribution exercise, 480 days' worth of trading results were required in order to run an effective Monte Carlo simulation. In certain instances, this meant that there were incomplete records, for shares that had not traded throughout the 480 window.

4) The database used for the portfolio control model (Equation 2), is more comprehensive for firms with large market capitalisations. Shares of smaller entities are generally thinly traded, and as a result the database is less robust.

5) A key differentiator in the research of (Bhana, 2002) is the distinction between staff layoffs motivated by reduced demand and staff layoffs motivated by pure efficiency. In the data that was analysed for this study, no evidence was found of companies citing pure efficiency as the primary reason for headcount reductions. As discussed in Chapter 6, a possible reason for this could be as a result of slack resource theory or the fact that companies are cautious to cite pure efficiency gains as a reason for staff retrenchments, due to the negative social consequences associated with staff layoffs.

6) In (Ward & Muller, 2010), both the portfolio control and CAPM models were used to test for the presence of abnormal returns. Due to time constraints, and limited market beta data prior to 2005, the CAPM model was not used in this study. This should however not limit the findings of this research too significantly. As was illustrated in Ward and Muller's study, the CAPM model and the portfolio control model broadly follow the same pattern. The portfolio control model does however overcome some of the limitations of the CAPM model (see section 4.6), which fails to take into consideration factors like firm size, value versus growth, and resource versus non-resource.

5 RESULTS

5.1 Introduction

In this chapter, the results of the study will be presented and each of the research hypotheses, presented in Chapter 3 will be tested against the full set of data as well as four data subsets. This will result in the null hypotheses either being upheld or rejected.

5.2 Discussion of the secondary data

All listed companies on the JSE, between 1 January 2001 and 31 December 2014, that met the relevant criteria as set out in Chapter 4 were considered for this study. The primary criteria to be included in the study were:

1) The company made an announcement relating to staff retrenchment. Careful consideration needs to be given to the fact that the announcement relates solely to staff retrenchments and that there are no other confounding factors included in the announcement.

2) The company needs to have been listed on the JSE 300 days prior to the staff retrenchment announcement and 180 days post the staff retrenchment announcement.

The initial sample drawn from the SENS database consisted of 1358 announcements, which included either the words “retrenchment”, “layoff”, “downsizing” or “job loss”. A number of these reports, although containing at least one of, or a combination of the four key words/phrases, did not relate specifically to a firm’s intention to implement staff retrenchment policies, and were therefore excluded from the sample. Furthermore as many of the SENS announcements formed part of a general report relating to a company’s quarterly, half yearly or annual trading results, these announcements were also excluded from the population. The reason for excluding these announcements was because reports of this nature can potentially contain confounding factors, and it is uncertain how much of the movement in the company share price can be attributed to the staff retrenchment announcement and how much of the stock price fluctuation is as

a consequence of the other information disclosed in the trading report. After extracting all these announcements, the population was curtailed to 88 announcements. The final population of 60 events was selected, after removing all companies with incomplete share data and secondary announcements, where a company made more than one announcement over a 180 day period.

A breakdown by industry of the 60 announcements included in the study is detailed in Table 3. The industry classifications used are consistent with JSE's Industry Classification Benchmark (ICB), which consists of ten industries: Oil & Gas, Basic Materials, Industrials, Consumer Goods, Health Care, Consumer Services, Telecommunications, Utilities, Financials and Technology. Of these ten industries, six are represented in the study population, with "Basic Materials" accounting for 36 out of the 60 (60%) staff retrenchments analysed.

Table 3: Retrenchment Announcements by Industry

Retrenchment Announcement Sample (2001 -2014)	
Industry	**No. of Announcements**
Basic Materials	36
Consumer Goods	8
Financials	8
Industrials	3
Technology	3
Telecommunications	2
Grand Total	**60**

A detailed breakdown of all 60 announcements making up the total population, is depicted in Table 4. Company names are arranged alphabetically (in descending order) and the columns provide detail on the year in which a particular announcement was made. 11 of the companies included in the list made more than one retrenchment announcement. Harmony GM Co Ltd and DRD Gold Ltd were responsible for the most staff retrenchment announcements, with four announcements each. The year with the highest number of retrenchment announcements was 2009, when 10 announcements were observed

Table 4: Staff Retrenchment Announcements by Company (2001 – 2014)

Retrenchment Announcement Sample (2001 - 2014)														
Share Code	2001	2002	2003	2004	2005	2007	2008	2009	2010	2011	2012	2013	2014	Grand Total
ABL - African Bank Inv Ltd		1						1						2
ACL - ArcelorMittal SA Limited			1						1					2
AFE - AECI Limited						1	1							2
AGL - Anglo American plc								1						1
AMS - Anglo American Plat Ltd			1		1							1		3
ANG - Anglogold Ashanti Ltd											1			1
APK - Astrapak Limited													1	1
AQP - Aquarius Platinum Ltd							1				1			2
BAW - Barloworld Ltd						1								1
BIL - BHP Billiton plc								1						1
BRN - Brimstone Inv Corp Ltd-N								1						1
CDZ - Cadiz Hldgs Ltd	1													1
CVN - ConvergeNet Holdings												1		1
CZA - Coal of Africa Ltd											1			1
DDT - Dimension Data Holdings PLC	1													1
DLV - Dorbyl Ltd			1											1
DRD - DRD Gold Ltd			1	1			1	1						4
EHS - Evraz Highveld Steel & Van											1			1
EPS - Eastern Platinum Ltd												1		1
EXX - Exxaro Resources Ltd										1			1	2
GFI - Gold Fields Ltd							1							1
GMB - Glenrand MIB Ltd						1								1
GRF - Group Five Ltd		1												1
HAR - Harmony GM Co Ltd				1					1			1	1	4
HDC - Hudaco Industries Ltd				1										1
LON - Lonmin plc								1						1
MTX - Metorex Ltd MTX							1							1
NED - Nedbank Group Ltd		1												1
PAM - Palabora Mining Company Ltd	1													1
RDI - Rockwell Diamonds Inc											1			1

Retrenchment Announcement Sample - Continued (2001 - 2014)														
Share Code	2001	2002	2003	2004	2005	2007	2008	2009	2010	2011	2012	2013	2014	Grand Total
RTN - Rex Trueform Clothing Company Ltd					1									1
SAB - SABMiller plc			1											1
SAH - South African Coal Mining											1			1
SAL - Sallies Ltd								1						1
SAP - Sappi Ltd								1						1
SBK - Standard Bank Group Ltd									1		1			2
SER - Seardel Inv Corp Ltd			1									1		2
SGL - Sibanye Gold Limited												1		1
SIM - Simmer and Jack Mines Ltd							1							1
SPS - Spescom Ltd								1						1
TIW - Tiger Wheels Ltd				1										1
TKG - Telkom SA SOC Ltd			1		1									2
TON - Tongaat Hulett Ltd			1											1
YRK - York Timber Holdings Ltd								1						1
Grand Total	3	3	8	4	3	3	6	10	3	1	7	6	3	60

5.3 Average Abnormal Returns (AARs)

Although the hypotheses presented in Chapter 3 were tested using average cumulative abnormal returns (ACARs) as the primary unit of measurement, a review of the average abnormal returns (AARs) is also necessary in order to gain a deeper understanding of the ACARs at a granular level. This methodology is consistent with (Ward & Muller, 2010)

The methodology used for calculating AARs is detailed in section 4.6 (equation 3) and measures the deviation between the actual share price return versus the share price return that was forecasted using the portfolio control model (Ward & Muller, 2010).

After calculating the daily AARs, independent t Tests are run, using 5% level of significance. The aim of these tests is to ascertain whether the AARs observed on a specific day, differ significantly from zero.

For the purposes of this study, AARs will be analysed in three sections:

Section 5.3.1 - AARs for the entire sample (60 announcements)

Section 5.3.2 – The full list of announcements is stratified into two subsets, based on a firm's market capitalisation. The largest 30 companies in terms of market capitalisation are classified as "Large Cap" and the smallest 30 companies in terms of market capitalisation are classified as "Small Cap"

Section 5.3.3 – The full list of announcements is stratified into two subsets, based on the number of retrenchment announcements made by each company during the study. 33 of the companies made a single announcement, whilst 11 companies made multiple announcements, which accounted for 27 announcements in total.

5.3.1 AARs: Full list

Figure 1 provides a detailed spread of the t Values for the daily AARs, over the duration of the event window. For a population of 60 announcements, using 5% level of significance, the critical t Value is set at 2.000. All t Scores greater than 2.0 or less than -2.0 are deemed to be significantly different to zero. (Field, 2013).

The study of the full list of announcements observed 10 days, where the t Scores are deemed to be significantly different to zero. A summary of these 10 days is included in Table 5.

- 3 days produced positive significant AARs (+2,+106,+168)
- 7 days produced negative significant AARs (-33,-20,+1,+19,+54,+78,+15)
- 2 days occur prior to the announcement (-33,-20)
- 8 days occur after the announcement (+1,+2,+19,+54,+78,+106,+159,+168)
- The largest observed t Value (as an integer) is on day -20 (-2.943)

Figure 1: T-test AARs - Full list [-35,+180]

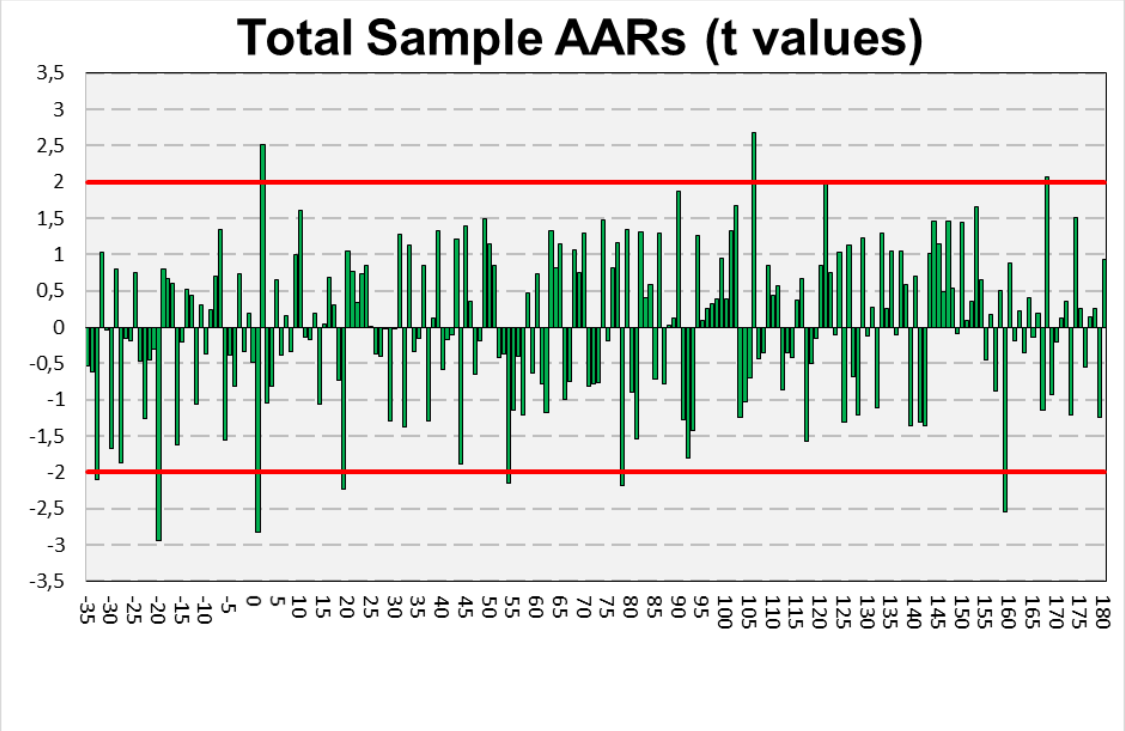


Table 5: Full list AARs [-35,+180]

One-Sample Test (Test value = 0)						
Day	t Value	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
-33	-2,095	59	0,041	-0,007	-0,015	-0,000
-20	-2,943	59	0,005	-0,011	-0,019	-0,004
1	-2,829	59	0,006	-0,016	-0,027	-0,005
2	2,516	59	0,015	0,014	0,003	0,024
19	-2,237	59	0,029	-0,012	-0,022	-0,001
54	-2,151	59	0,036	-0,010	-0,019	-0,001
78	-2,180	59	0,033	-0,009	-0,018	-0,001
106	2,680	59	0,010	0,011	0,003	0,020
159	-2,541	59	0,014	-0,009	-0,016	-0,002
168	2,065	59	0,043	0,008	0,000	0,016

5.3.2 AARs: Large and small market capitalisation

After separating the population into two subsets: organisations with large market capitalisation and organisations with small market capitalisation, t Tests are run in order to ascertain whether any of the AARs are significantly different from zero. Figure 2 provides a detailed graphical illustration of the daily t Values for organisations with large market capitalisations. As the subset of organisations with large market capitalisations is 30 announcements, the critical t Value used was 2.042.

In total there are 5 days which are deemed to have a significant difference to zero. A summary of these 5 days is included in Table 6:

- 2 days produced positive significant AARs (+102,+110)
- 3 days produced negative significant AARs (+29,+92,+159)
- None of the days occur prior to the announcement
- 5 days occur after the announcement (+29,+92,+102,+110,+159)
- The largest observed T Value (as an integer) is on day 92 (-3.261)

Figure 2: T-test AARs – Large Cap [-35,+180]

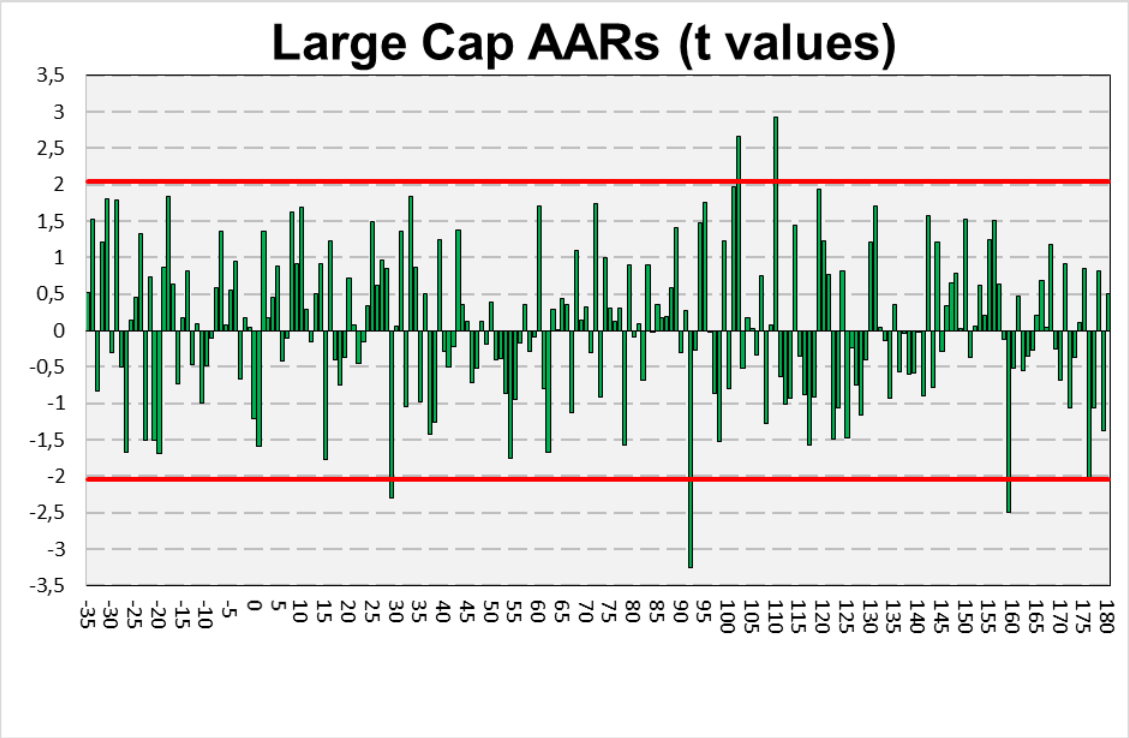


Table 6: Large Cap AARs [-35,+180]

One-Sample Test (Test value = 0)						
Days	t Value	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
29	-2,305	29	0,029	-0,010	-0,019	-0,001
92	-3,261	29	0,003	-0,011	-0,018	-0,004
102	2,662	29	0,013	0,008	0,002	0,014
110	2,921	29	0,007	0,011	0,003	0,019
159	-2,494	29	0,019	-0,011	-0,019	-0,002

When t Tests were run on the sample of 30 companies with small market capitalisation, 10 days returned AARs that can be deemed significantly different to zero at a 5%. The detailed distribution of the t Values is included in Figure 3. Table 7 provides a summary of the 10 days which exhibited significant differences:

- 4 days produced positive significant AARs (+2,+44,+49,+90)
- 6 days produced negative significant AARs (-34,-20,+1,+19,+106,+142)
- 2 days occur prior to the announcement (-34,-20)
- 8 days occur after the announcement (+1,+2,+19,+44,+49,+90,+106,+142)
- The largest observed T Value (as an integer) is on day 106 (-3.818)

Figure 3: T-test AARs Small Cap [-35,+180]

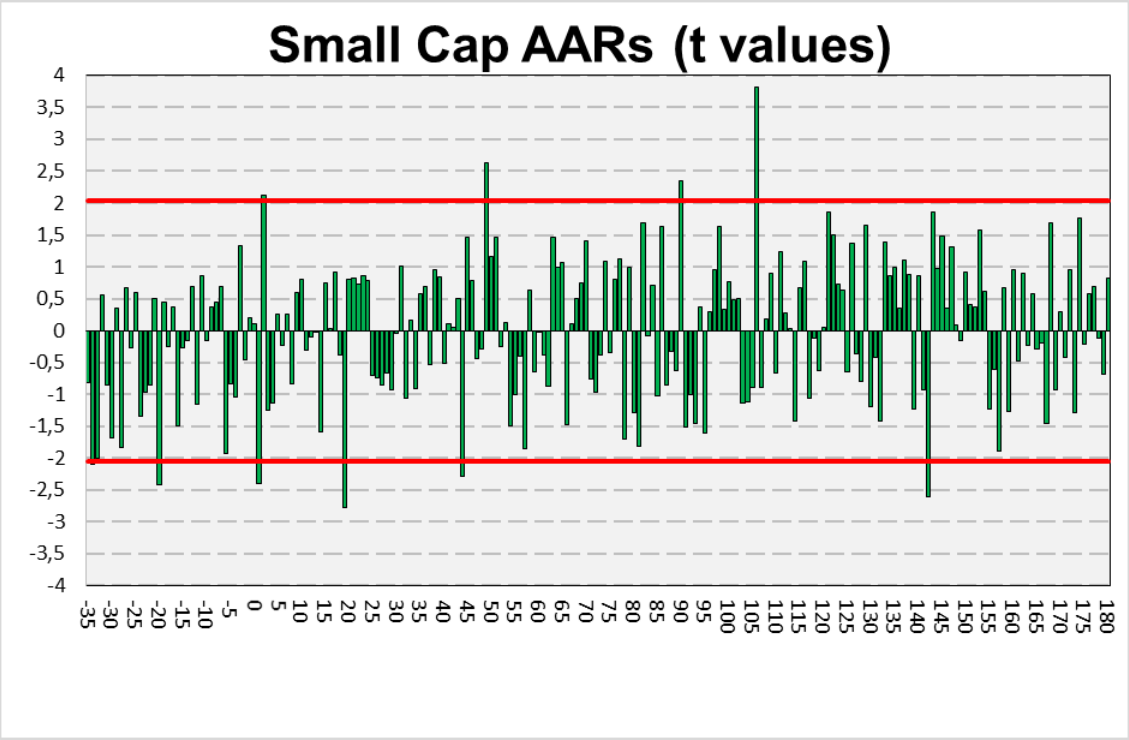


Table 7: Small Cap AARs [-35,+180]

One-Sample Test (Test value = 0)						
Days	t Value	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
-34	-2,091	29	0,045	-0,011	-0,023	-0,000
-20	-2,414	29	0,022	-0,015	-0,027	-0,002
1	-2,395	29	0,023	-0,024	-0,044	-0,003
2	2,114	29	0,043	0,019	0,001	0,037
19	-2,785	29	0,009	-0,021	-0,036	-0,006
44	-2,284	29	0,030	-0,020	-0,038	-0,002
49	2,627	29	0,014	0,013	0,003	0,023
90	2,348	29	0,026	0,028	0,004	0,053
106	3,818	29	0,001	0,024	0,011	0,037
142	-2,608	29	0,014	-0,018	-0,032	-0,004

5.3.3 AARs: Single and multiple announcements

After separating the population into a single announcement subset and a multiple announcement subset, t Tests were run in order to ascertain the days on which there are significant differences.

The single announcement subset consists of 33 announcements. A critical t Value of 2.035 was therefore used in order to test for significance. Figure 4 shows the distribution of AARs by day for companies making a single staff retrenchment announcement.

Over the 216 day event window (t-35 to t180), 7 days were observed to have AARs that are significantly different to zero. A summary of these 7 days are included in Table 8:

- 3 days produced positive significant AARs (+2,+90,+106)
- 4 days produced negative significant AARs (+1,+78,+142,167)
- None of the days occur prior to the announcement
- 7 days occur after the announcement (+1,+2,+78,+90,+106,+142,167)
- The largest observed T Value (as an integer) is on day 1 (-2.573)

Figure 4: T-test AARs - Single announcement [-35,+180]

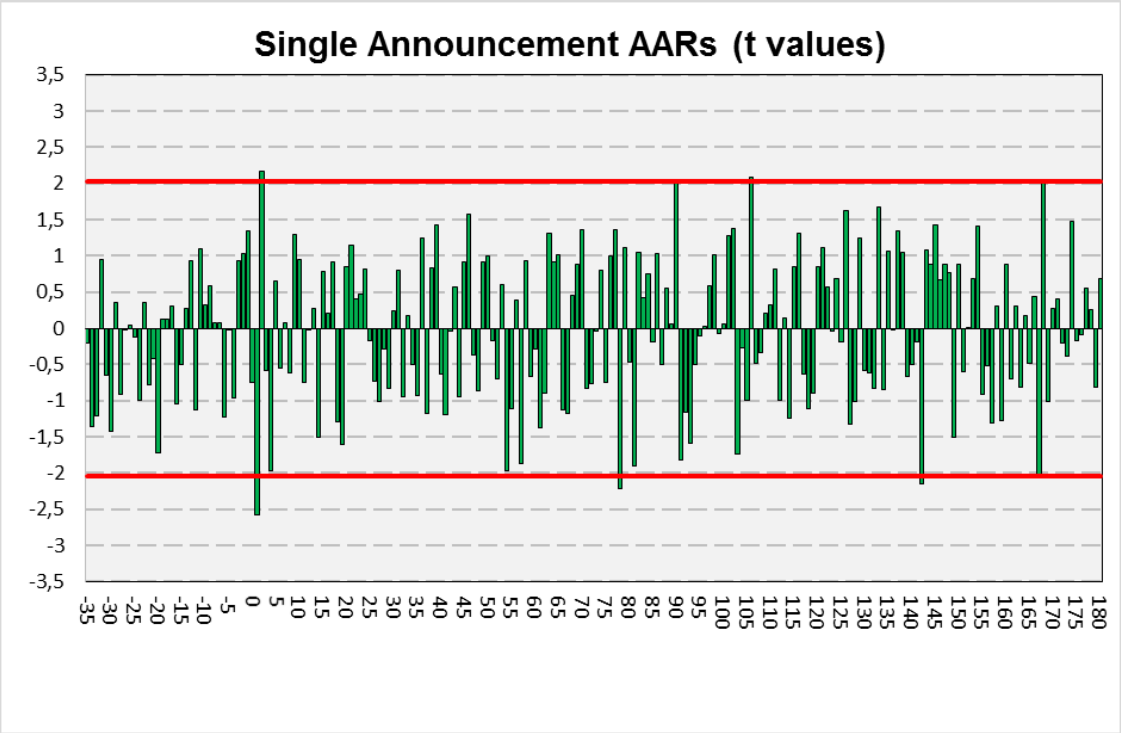


Table 8: Single announcement AARs [-35,+180]

One-Sample Test (Test value = 0)						
Days	t Value	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
1	-2,573	32	0,015	-0,023	-0,041	-0,005
2	2,178	32	0,037	0,019	0,001	0,036
78	-2,221	32	0,034	-0,015	-0,030	-0,001
90	2,052	32	0,048	0,023	0,000	0,046
106	2,086	32	0,045	0,013	0,000	0,027
142	-2,141	32	0,040	-0,014	-0,028	-0,001
167	-2,064	32	0,047	-0,018	-0,036	-0,000

The subset of companies that made multiple announcements, consists of 11 entities, who in total were responsible for 27 out of the 60 announcements. A critical t Value of 2.052 was used in order to test for significance. Figure 5shows the Test values by day over the 216 day event window.

In total 11 of the days were observed to have AARs that were significantly different to zero. These 11 days are included in Table 9:

- 6 days produced positive significant AARs (-7,+10,+60,+94,+119,+131)
- 5 days produced negative significant AARs (-28,-20,+29,+44,+159)
- 3 of the days occur prior to the announcement (-7,-28,-20)
- 8 days occur after the announcement (+10,+29,+44,+60,+94,+119,+131,+159)
- The largest observed T Value (as an integer) is on day 10 (2.880)

Figure 5: T-test AARs - Multiple announcements [-35,+180]

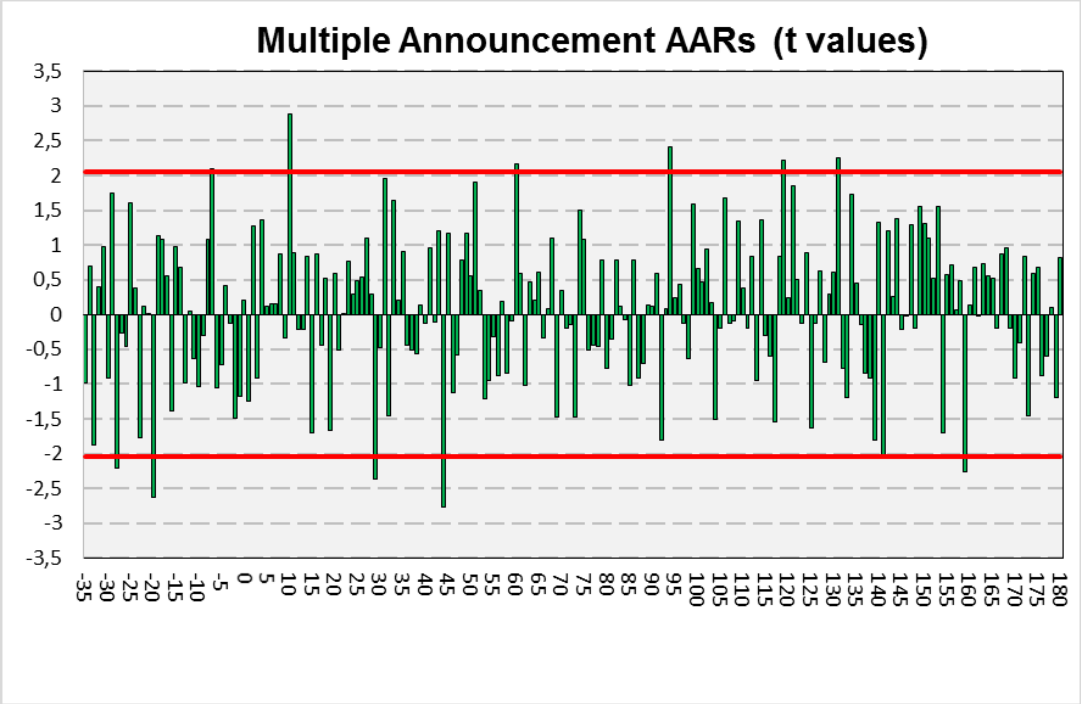


Table 9: Multiple announcement AARs [-35,+180]

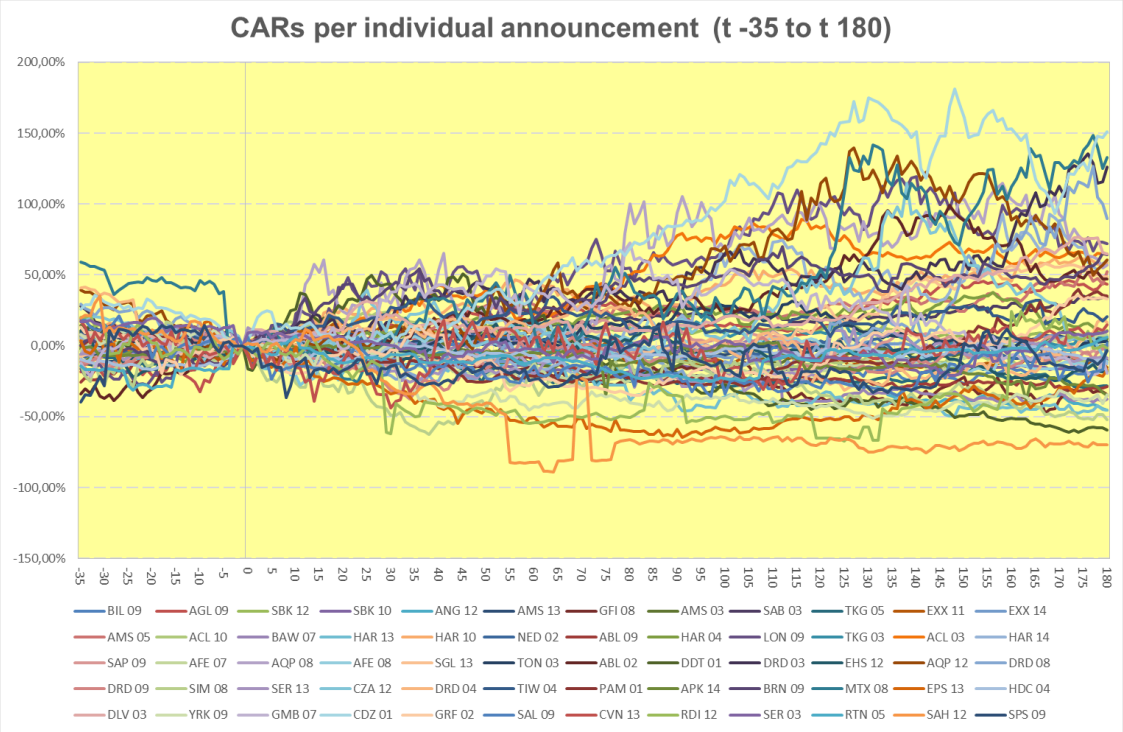
One-Sample Test (Test value = 0)						
Days	t Value	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
-28	-2,208	26	0,036	-0,010	-0,019	-0,001
-20	-2,625	26	0,014	-0,013	-0,023	-0,003
-7	2,091	26	0,046	0,012	0,000	0,024
10	2,880	26	0,008	0,009	0,003	0,016
29	-2,371	26	0,025	-0,014	-0,026	-0,002
44	-2,775	26	0,010	-0,011	-0,019	-0,003
60	2,169	26	0,039	0,011	0,001	0,022
94	2,407	26	0,024	0,014	0,002	0,027
119	2,215	26	0,036	0,011	0,001	0,022
131	2,261	26	0,032	0,011	0,001	0,020
159	-2,262	26	0,032	-0,013	-0,025	-0,001

5.4 Average Cumulative Abnormal Returns (ACARs)

After calculating the ARs for the full population of announcements over the 216 day event window (t-35 to t180), cumulative average returns (CARs) are calculated for all of the announcements in the population. A graphical representation of the CARs for all 60 of the announcements made during the event study is included in Figure 6.

Each staff retrenchment announcement is represented by the three letter share code and the year of the announcement, as provided in Table 3 (section 5.1) - for example BIL09 represents the staff retrenchment announcement made by BHP Billiton Plc in 2009. Although the graph is relatively busy representation of all 60 staff retrenchment announcements, it accurately depicts the heterogeneous nature of the share price reactions to each of the announcements. It also validates the integrity of the data used, since are no extreme outliers in the study's population.

Figure 6: CARs retrenchment announcements population



Once CARs have been calculated for each of the announcements, the average cumulative abnormal return (ACAR) is calculated for the full list of announcements and the four subsets of announcements, using the methodology outlined in Section 4.6 (equation 4).

Staff retrenchment announcement subsets:

1) Large Market Capitalisation (30 announcements)

2) Small Market Capitalisation (30 announcements)

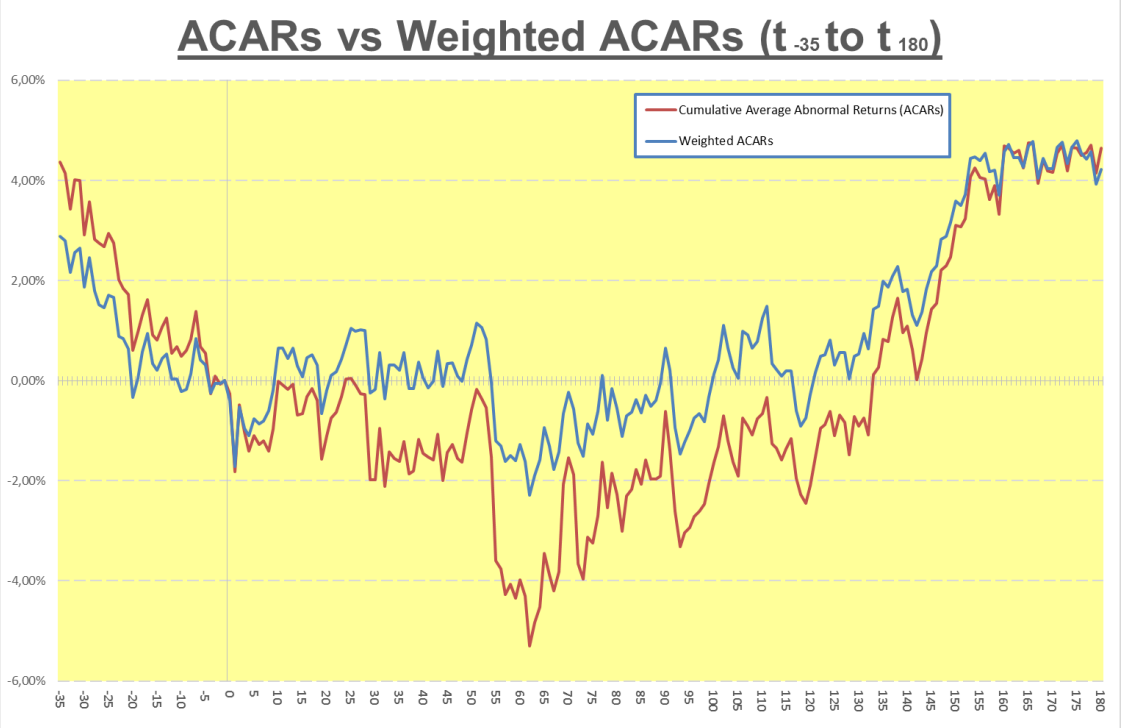
3) Single Announcement (33 announcements)

4) Multiple Announcements (27 announcements)

Figure 7 is a graphical illustration of the ACARs for the full list of announcements over the 216 day event window. The graph illustrates steady downward ACARs in the 35 day period leading up to the announcement (-4.47%). Post the announcement, the ACARs fluctuate between 0% and 2%, leading up to Day 54, when a steady decline in ACARs is observed. This eventually tapers out at -5.45% on Day 62. From Day 63 onwards there is an upwards trend in the ACARS, peaking on Day 168 at 4.31%. The ACAR at the close of the event window is 4.16%.

To reduce the effects of firm size, a weighted average ACAR was also calculated, as per Section 4.6 (equation 7). The shape of this curve (blue) closely resembles that of the original ACAR graph (red), but the effect of the weighting means that the ACARs observed in the 35 days leading up to the announcement are reduced to -2.92%. In the 53 day period following the announcement, ACARs fluctuate between -1.72% and 1.14%, but decline to their lowest level of -2.31% by Day 62. From Day 63 onwards, an upward trend in the ACARs is observed, peaking on Day156 at 4.58%. The event window closes on day 180 with an ACAR of 3.73%.

Figure 7: ACARs vs Weighted ACARs [-35,+180]



The full list of staff retrenchment announcements was then stratified according to market capitalisation and frequency of announcements, and new ACARs were calculated for each of the data subsets.

Figure 8 provides a graphical comparison of the ACARs of the full list of announcements versus the large market capitalisation, small market capitalisation, single announcement and multiple announcement subsets.

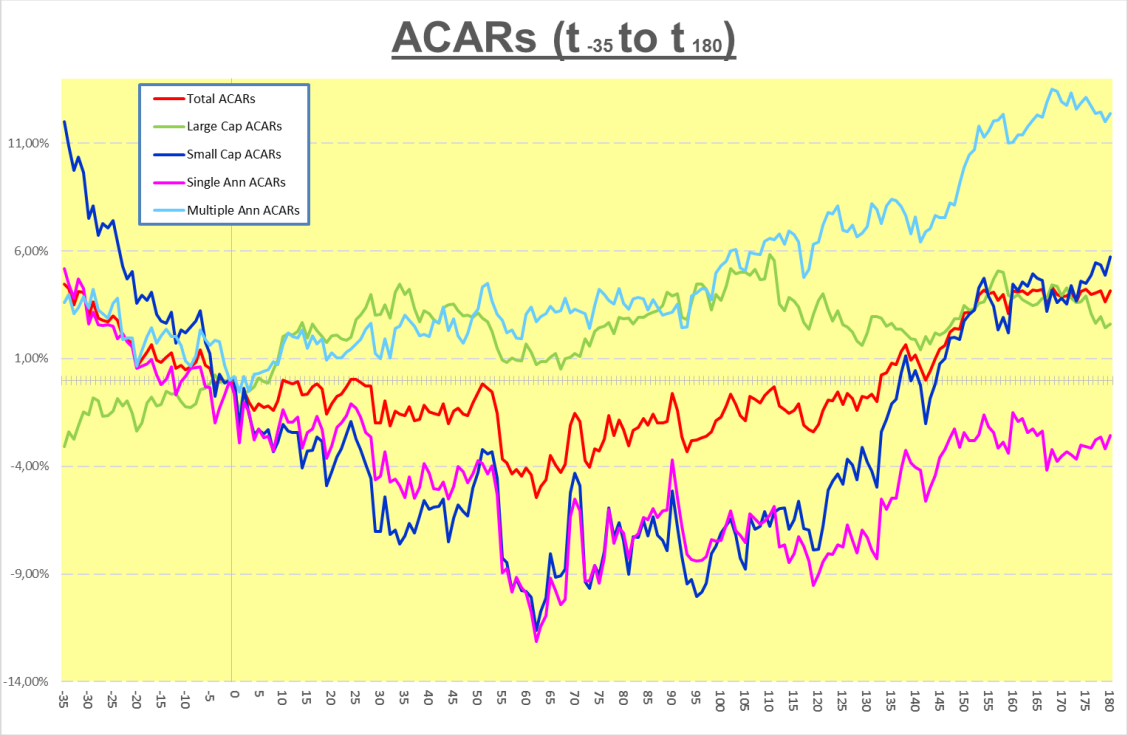
The shape of the small market capitalisation and single announcement ACAR curves broadly mimics that of the ACAR curve of the full population. The downward trajectory of the ACARs between t-35 and t 62, and the corresponding upward arc in the slope between t 63 and t 180 are however far more pronounced in the case of the small market capitalisation subset than in the full list of announcements.

The curves for the large market capitalisation and multiple announcement subsets both differ significantly from the ACAR curve of the full population.

Unlike the other curves, the large market capitalisation subset displays steadily increasing ACARs in the 35 day period prior to an announcement (3.08%), and over the 34 day period after the announcement has been made (4.46%). From day 35 through to the close of the event window, the observed ACARs fluctuate between 0.51% and 5.83%.

In the case of the multiple announcement subset, the 35 days leading up to the announcement are categorised by steadily decreasing ACARs, not too dissimilar to the curves of the full population and single announcement subset. From Day 2 onwards there is a steep but fairly steady increase in ACARs, which eventually peaks on Day 168 at 13.52%.

Figure 8: ACARs for all 5 data subsets [-35,+180]



A summary of the key ACAR figures for the full list of announcements and each of the data subsets is detailed in Table 10:

Table 10: Summary of the key ACAR values [-35,+180]

SUMMARY OF THE KEY ACAR VALUES (T-35 TO T180)						
	ACAR T-35 to T0	Highest ACAR Day	Highest ACAR Value	Lowest ACAR Day	Lowest ACAR Value	ACAR as at T180
Full Sample	-4,47%	168	4,31%	62	-5,45%	4,16%
Large Market Cap	3,08%	110	5,83%	1	-1,42%	2,60%
Small Market Cap	-12,01%	180	5,71%	62	-11,61%	5,71%
Single Announcement	-5,16%	0	-0,61%	62	-12,14%	-2,56%
Multiple Announcements	-3,61%	168	13,52%	1	-0,54%	12,36%

After calculating ACARs for the full population and each of the data subsets, t Tests are run to assess whether abnormal returns can be made:

1) In a period of up to 35 days prior to a retrenchment announcement

2) In a short term period of up to 20 days post a retrenchment announcement

3) Over a long term period of up to 180 days post a retrenchment announcement.

Two types of analysis were run in order to test the significance of the daily ACARs, observed over the 216 day event window:

1) Independent t Tests

2) A bootstrapping exercise (Ward & Muller, 2010)

5.4.1 ACARs: Full list

The first batch of t Tests were run using the full list of staff retrenchment announcements. Figure 9 provides a visual illustration of the t Values for each of the daily ACARs at a 5% level of significance. Of the 216 days included in the event window, only Day 1 produced an ACAR which was deemed to be significant at a 95% confidence interval. Table 11 provides a summary of the key ACAR t Test values, observed over the event window for the full population of staff retrenchment announcements.

Bootstrap distribution tests were then carried out on the entire population of staff retrenchment announcements, as per Figure 10 below. The full list of significant ACARs has been included in appendices. (Appendix A)

- There were 0 days with significant ACARs prior to a staff retrenchment announcement
- There was 1 day with a significant ACAR in the 20 day period after the staff retrenchment announcement (Including Day 1)
- There were 111 days with significant ACARs in the period between Day 21 and Day 180 of the event window

Figure 9: T-tests ACARs – Full list [-35,+180]

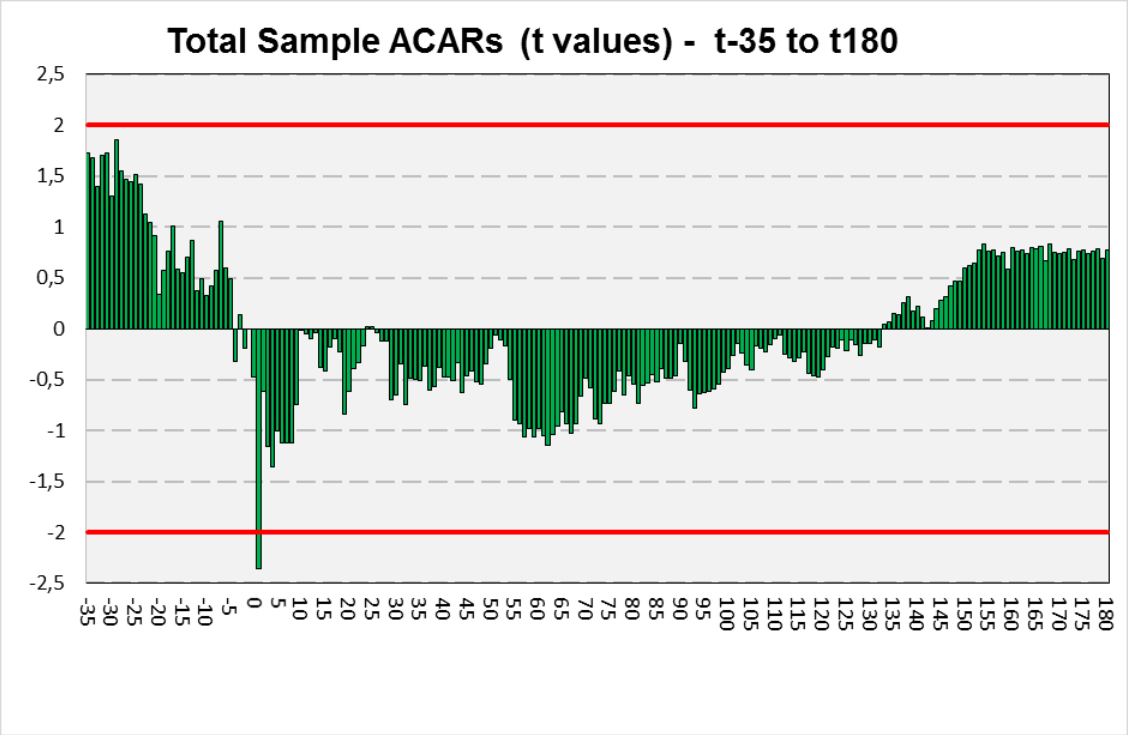
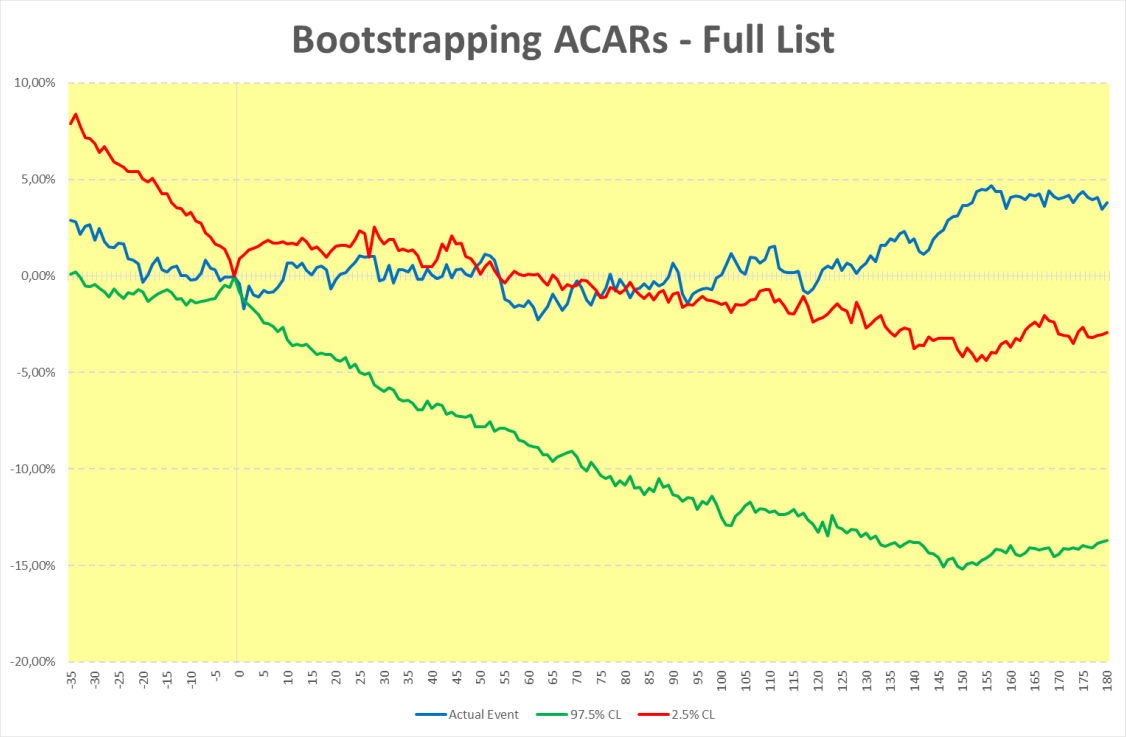


Table 11: Summary of t Tests - Full sample ACARs [-35,+180]

One-Sample Test (Test value = 0)						
Days	t Value	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
-35	1,727	59	0,089	0,045	-0,007	0,096
1	-2,363	59	0,021	-0,018	-0,034	-0,003
180	0,774	59	0,442	0,042	-0,066	0,149

Figure 10: Bootstrapping – Full list [-35,+180]



5.4.2 ACARs: Large and small market capitalisation

When independent t Tests are conducted on the subset of announcements made by companies with large market capitalisation (Figure 11), only Day 1 of the event window produces an ACAR which is deemed to be significant at a 95% confidence interval. This is consistent with what was observed in the full sample. A summary of the key t Values is included in Table 12.

Bootstrap distribution tests were then carried out on the subset of announcements with large market capitalisations, as per Figure 12 below. The full list of significant ACARs has been included in appendices. (Appendix A)

- There were 13 days with significant ACARs prior to a staff retrenchment announcement
- There were 14 days with significant ACARs in the 20 day period post the staff retrenchment announcement (including Day 1)
- There were 82 days with significant ACARs in the period between Day 21 and Day 180 of the event window

Figure 11: T-tests ACARs – Large Cap [-35,+180]

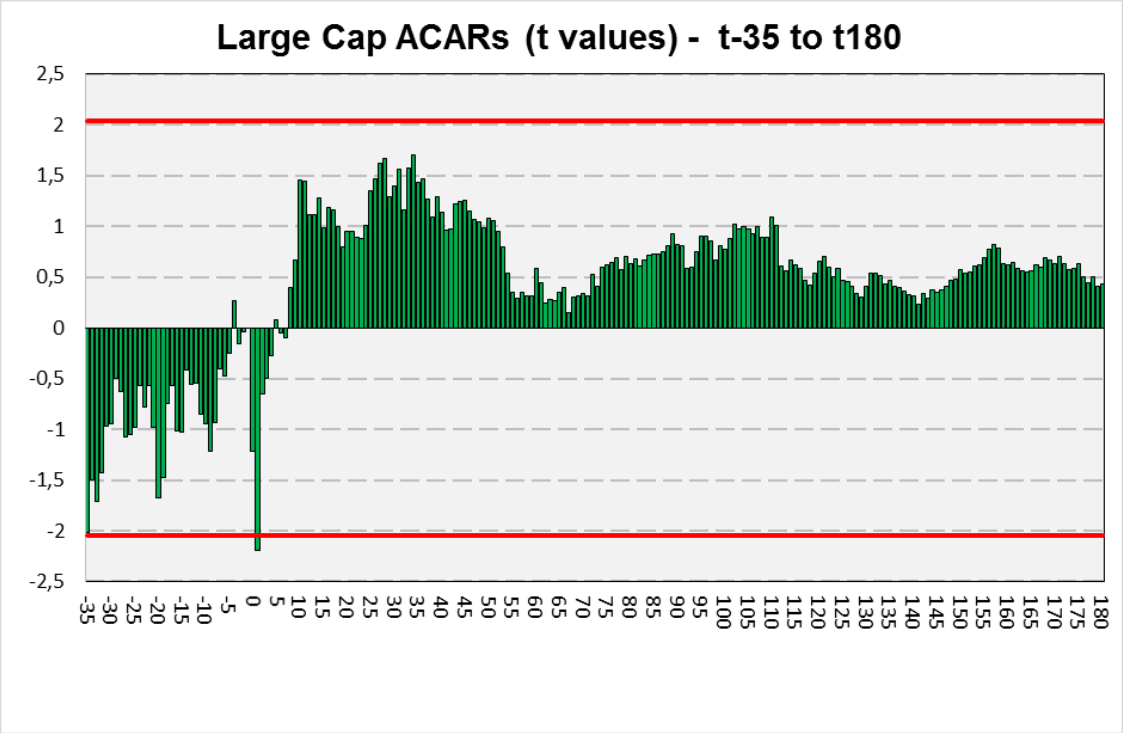
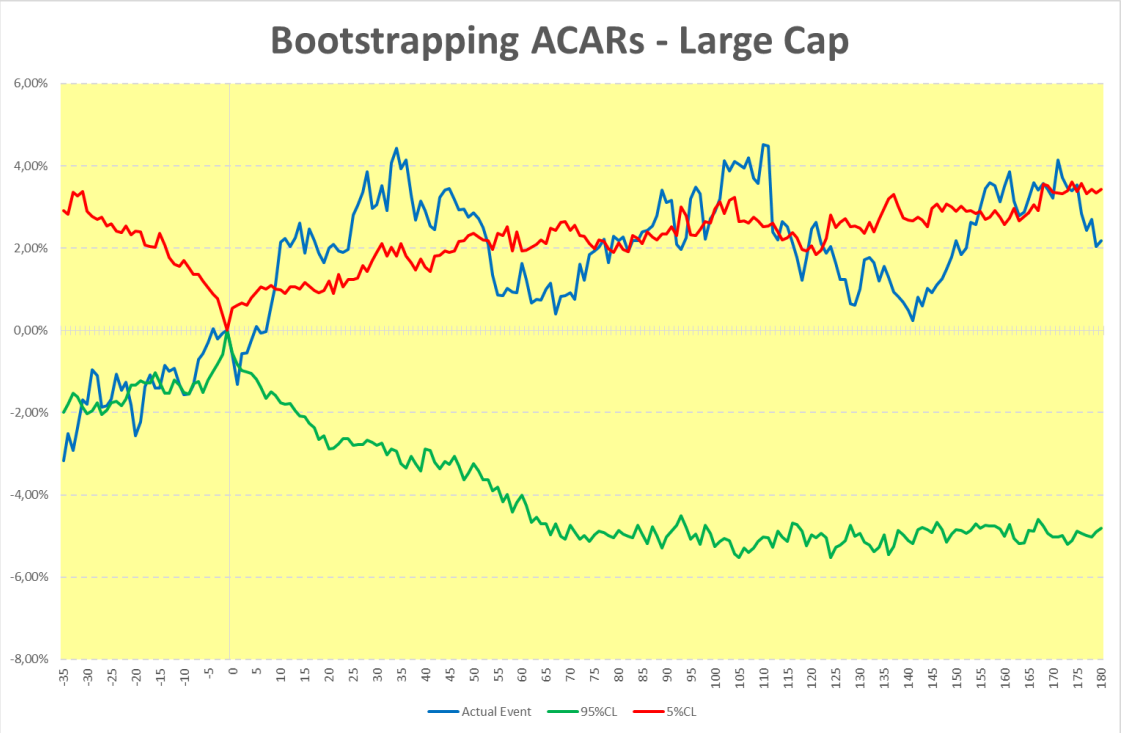


Table 12: Summary of t Tests - Large Cap ACARs [-35,+180]

One-Sample Test (Test value = 0)						
Days	t Value	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
-35	1,727	59	0,089	0,045	-0,007	0,096
1	-2,363	59	0,021	-0,018	-0,034	-0,003
180	0,774	59	0,442	0,042	-0,066	0,149

Figure 12: Bootstrapping – Large Cap [-35,+180]



When independent t Tests are run on the subset of announcements made by companies with the small market capitalisation (Figure 13), the spread of significant ACARs is markedly different from the other datasets. There are 10 significant ACARs in the 35 day period prior to the announcement and zero significant ACARs in the 180 period post the announcement. Table 13 provides a summary of the key dates taken from the t Tests.

Bootstrap distribution tests were then carried out on the subset of announcements with small market capitalisations, as per Figure 14 below. The full list of significant ACARs has been included in appendices. (Appendix A)

- There were 18 days with significant ACARs prior to a staff retrenchment announcement (including Days -35,-34,-33,-32,-31,-29,-28,-27,-26,-25)
- There were 10 days with significant ACARs in the 20 day period post the staff retrenchment announcement
- There were 61 days with significant ACARs in the period between Day 21 and Day 180 of the event window

Figure 13: T-tests ACARs – Small Cap [-35,+180]

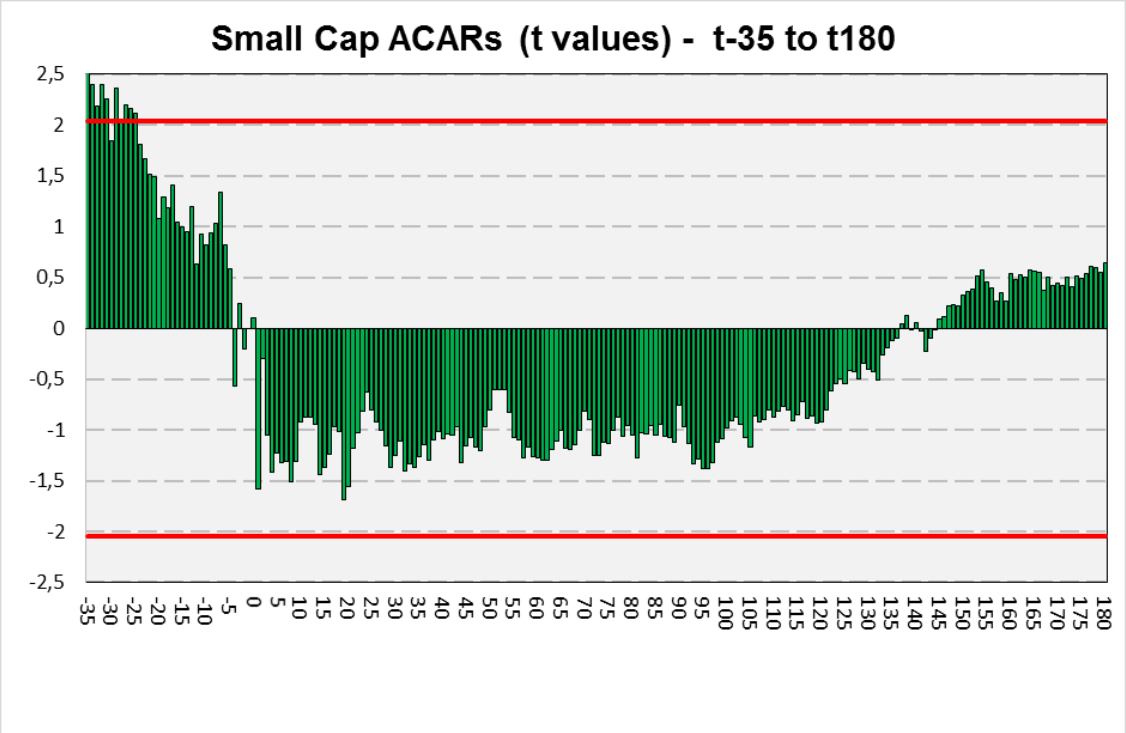
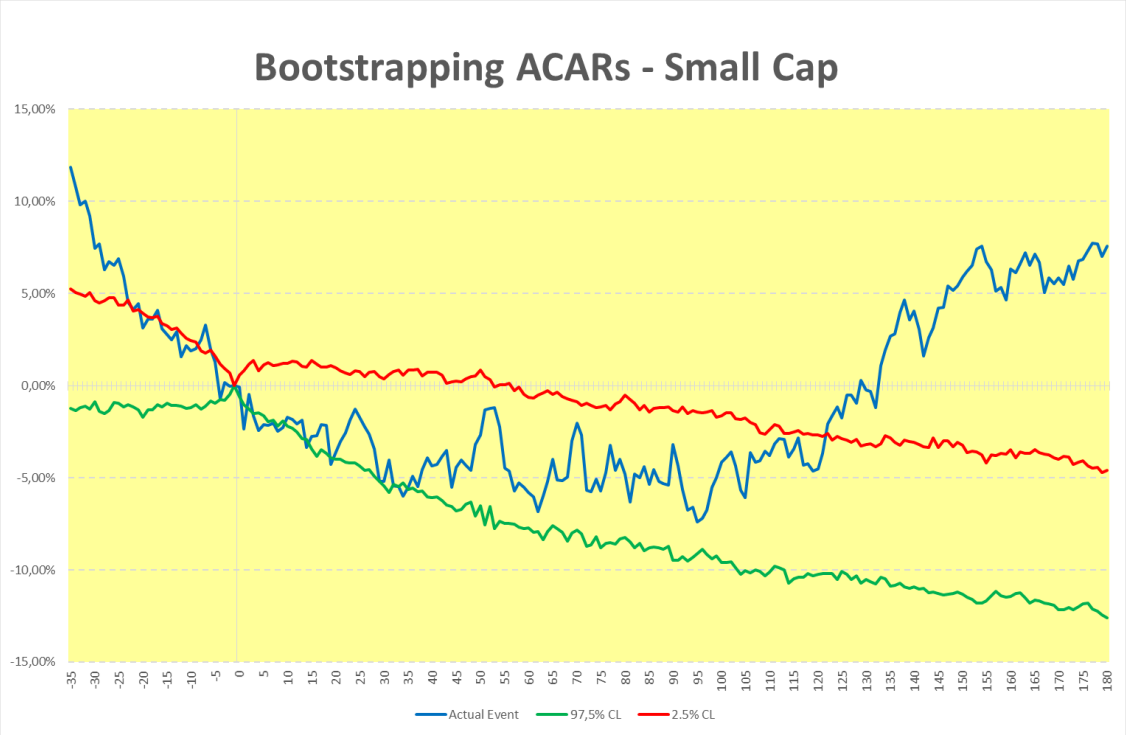


Table 13: Summary of t Tests - Small Cap ACARs [-35,+180]

One-Sample Test (Test value = 0)						
Days	t Value	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
-35	2,623	29	0,014	0,120	0,026	0,214
-34	2,402	29	0,023	0,109	0,016	0,201
-33	2,180	29	0,038	0,097	0,006	0,189
-32	2,403	29	0,023	0,103	0,015	0,191
-31	2,256	29	0,032	0,096	0,009	0,184
-29	2,363	29	0,025	0,081	0,011	0,151
-28	2,055	29	0,049	0,067	0,000	0,134
-27	2,197	29	0,036	0,073	0,005	0,140
-26	2,165	29	0,039	0,071	0,004	0,137
-25	2,110	29	0,044	0,074	0,002	0,146
180	0,638	29	0,529	0,057	-0,126	0,240

Figure 14: Bootstrapping – Small Cap [-35,+180]



5.4.3 ACARs: Single and multiple announcements

When independent t Tests are conducted on the subset of companies making a single staff retrenchment announcement (Figure 15), only Day 1 of the event window produces an ACAR which is deemed to be significant at a 95% confidence interval. This is consistent with the full population and large market capitalisation subset. A summary of the key t Values is included in Table 14.

Bootstrap distribution tests were then carried out on the subset of companies making a single staff retrenchment announcement, as per Figure 16 below. The full list of significant ACARs has been included in appendices. (Appendix A)

- There were 6 days with significant ACARs prior to a staff retrenchment announcement.
- There were 3 days with significant ACARs in the 20 day period post the staff retrenchment announcement (including Day 1)
- There were 50 days with significant ACARs, 21 to 180 days after the staff retrenchment announcement

Figure 15: T-tests ACARs – Single Announcement [-35,+180]

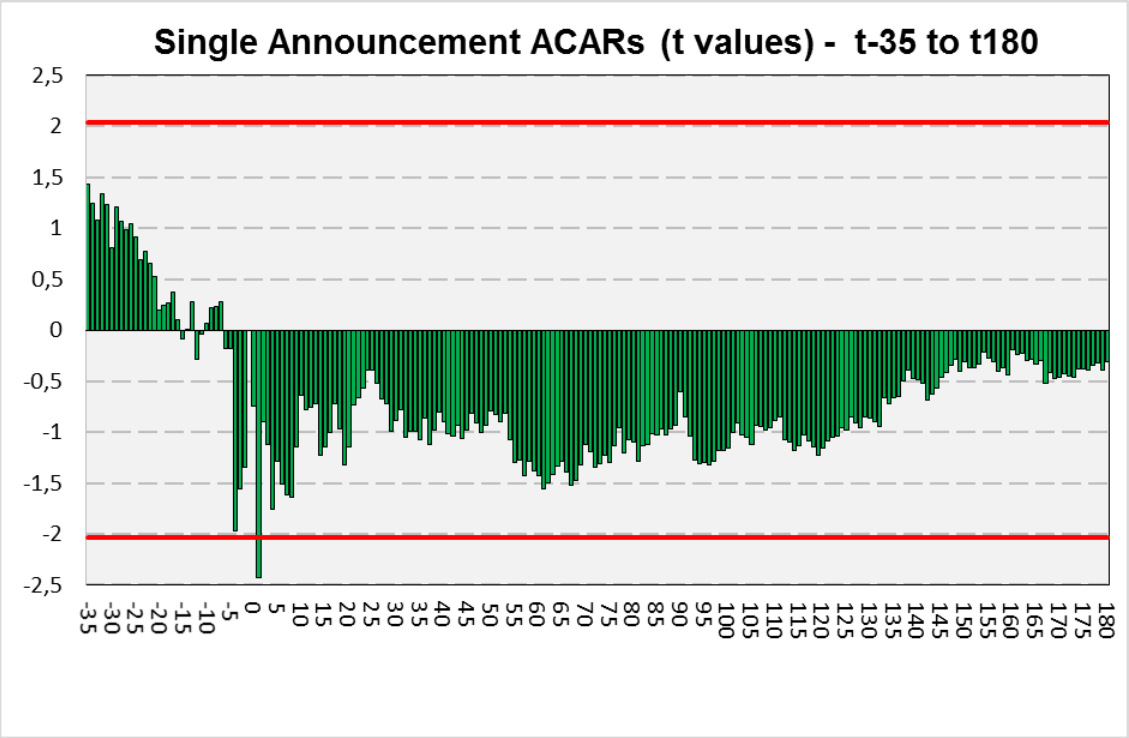
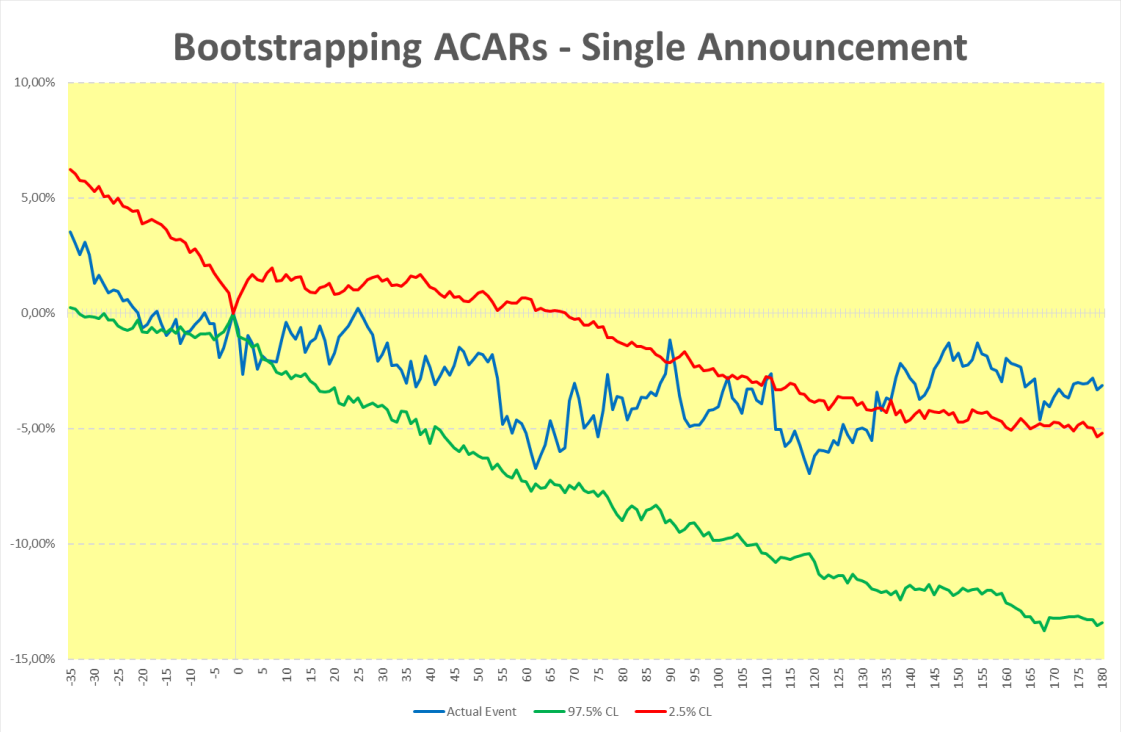


Table 14: Summary of t Tests - Single announcements ACARs [-35,+180]

One-Sample Test (Test value = 0)						
Days	t Value	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
-35	1,433	32	0,162	0,052	-0,022	0,125
1	-2,435	32	0,021	-0,029	-0,053	-0,005
180	-0,314	32	0,756	-0,026	-0,192	0,141

Figure 16: Bootstrapping - Single announcements [-35,+180]



Finally independent t Tests are run on the group of companies that made multiple retrenchment announcements (Figure 17). Only Day 168 produces an ACAR which is deemed to be significant at a 95% confidence interval, which is considerably later than what was observed in the other datasets. A summary of the key t Values is included in Table 15.

Bootstrap distribution tests were then carried out on the subset of companies making multiple staff retrenchment announcements, as per Figure 18 below. The full list of significant ACARs has been included in appendices. (Appendix A)

- There were 13 days with significant ACARs prior to a staff retrenchment announcement.
- There were 7 days with significant ACARs in the 20 day period post the staff retrenchment announcement
- There were 108 days with significant ACARs, 21 to 180 days after the staff retrenchment announcement (including Day 168)

Figure 17: T-tests ACARs – Multiple Announcements [-35,+180]

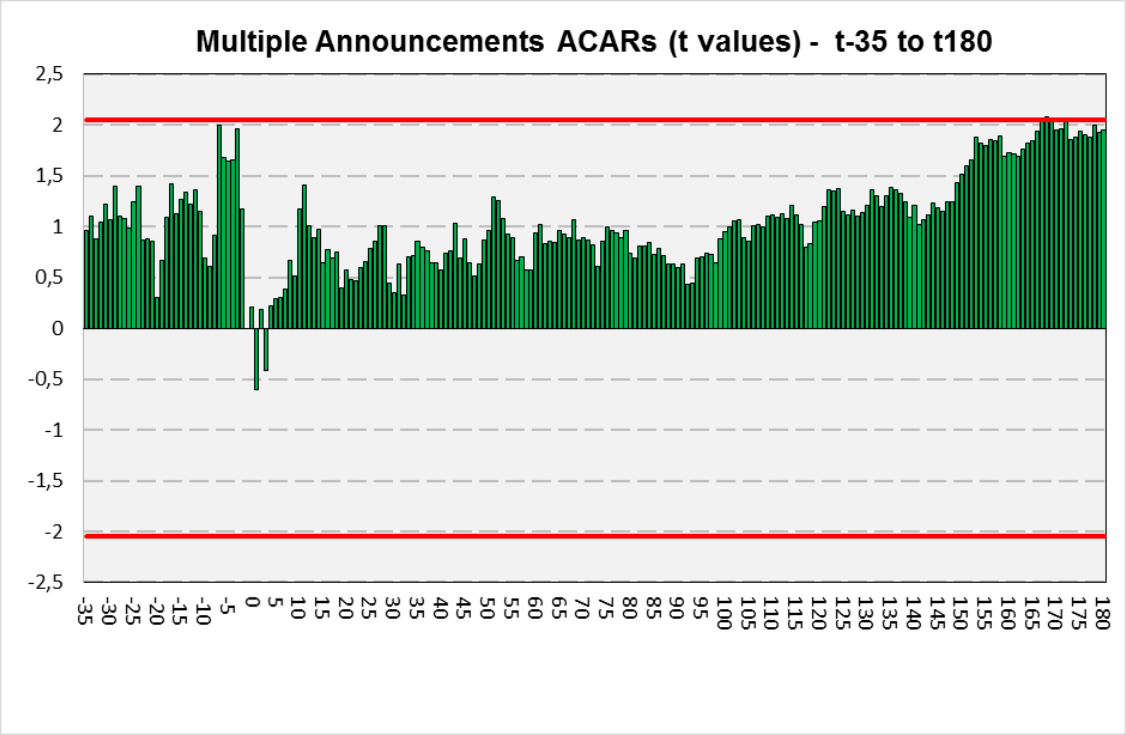
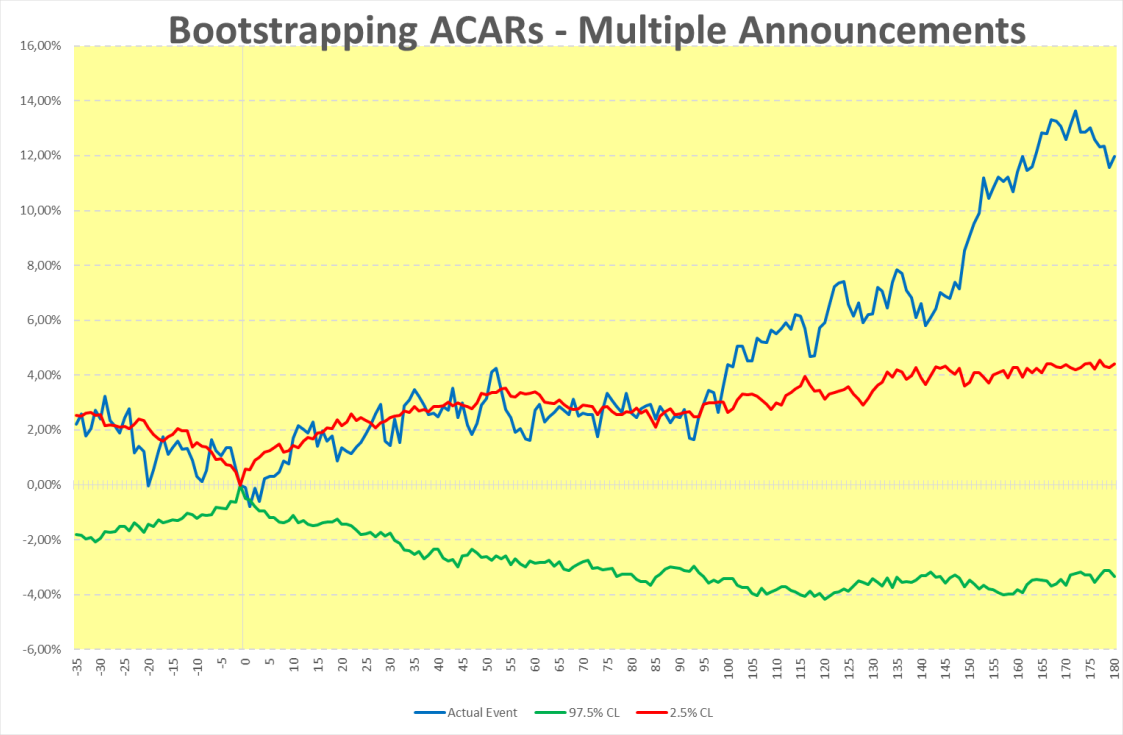


Table 15: Summary of t Tests - Multiple announcements ACARs [-35,+180]

One-Sample Test (Test value = 0)						
Days	t Value	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
-35	0,961	26	0,345	0,036	-0,041	0,113
168	2,074	26	0,048	0,135	0,001	0,269
180	1,948	26	0,062	0,124	-0,007	0,254

Figure 18: Bootstrapping - Multiple announcements [-35,+180]



5.5 Hypothesis Testing

Based on the findings in section 5.4, a decision can be taken as to whether the null hypotheses should be rejected or upheld. An ACAR needs to be deemed significant by both the independent t Test and bootstrapping methodologies, in order for the null hypothesis to be rejected.

The three research hypotheses from Chapter 3 are summarised below:

a) Investors can't make abnormal returns in the 35 day period prior to a staff retrenchment announcement - $H_0: ACAR_{35PRA} \neq 0$

b) Investors can't make abnormal returns in the 20 day period post a staff retrenchment announcement (short term) - $H_0: ACAR_{20POA} \neq 0$

c) Investors can't make abnormal returns in the period between Day 21 and Day 180 days post a staff retrenchment announcement (long term) - $H_0: ACAR_{180POA} \neq 0$

A summary of the decisions to either reject or uphold the null hypotheses is included in Table 16 below.

Table 16: Summary of decisions: Uphold or reject null hypotheses

SUMMARY OF NULL HYPOTHESES:	No ACARs: Prior to Announcement (35 Days)	No ACARs: Post Announcement (20 Days)	No ACARs: Post Announcement (21 - 180 Days)
Full Sample		Reject	
Large Market Cap		Reject	
Small Market Cap	Reject		
Single Announcement		Reject	
Multiple Announcements			Reject

1) H_0: $ACAR_{35PRA} \neq 0$, is rejected for companies making staff retrenchment announcements with small market capitalisation

2) H_0: $ACAR_{20POA} \neq 0$, is rejected for companies making staff retrenchment announcements for the full list of companies, companies with large market capitalisation and companies making single staff retrenchment announcements

3) H_0: $ACAR_{180POA} \neq 0$, is rejected for companies making multiple staff retrenchment announcements

6 DISCUSSION OF RESULTS

6.1 Introduction

Based on the findings in Chapter 5, a detailed analysis of the results is undertaken in this section, against the backdrop of the literature reviewed in Chapter 2, which relates to staff retrenchment announcements and efficiency of global stock markets.

Using the research hypotheses from Chapter 3 as a reference point, comparisons will be drawn between this study's results and those of prior event studies, conducted in the context of the JSE.

A recap of the research hypotheses is presented below:

1) Investors can't make abnormal returns in the 35 day period prior to a staff retrenchment announcement - $H_0: ACAR_{35PRA} \neq 0$

2) Investors can't make abnormal returns in the 20 day period post a staff retrenchment announcement (short term) - $H_0: ACAR_{20POA} \neq 0$

3) Investors can't make abnormal returns in the period between 21 and 180 days post a staff retrenchment announcement (long term) - $H_0: ACAR_{180POA} \neq 0$

6.2 Hypothesis 1

6.2.1 Analysis of Results

The only subset of announcements in which statistically significant ACARs were observed prior to a staff retrenchment announcement was:

1) Announcements made by the group of companies with 30 smallest market capitalisations

As seen in section 5.4, no significant ACARs were observed prior to a staff retrenchment announcement, in the following four datasets:

1) Full list of companies (60 announcements)

2) Announcements made by the group of companies with 30 largest market capitalisations

3) Organisations making a single staff retrenchment announcement

4) Organisations making multiple staff retrenchment announcements

When the staff retrenchment announcements were stratified into groups based on the market capitalisation, significant (negative) ACARs were observed for the subset of announcements made by companies with the 30 smallest market capitalisation. 10 significant ACARs were achieved over the period t-25 and t-35, with the only exception being on Day t-30. The event window used for the study stops 35 days prior to an announcement. If the window was to be lengthened, it would be interesting to observe whether the abnormal ACAR trend extends back beyond 35 days.

Although none of the other data subsets show significant ACARs prior to an announcement, it is worth noting that both the large market capitalisation and multiple announcement subsets produced ACARs that are just below the required threshold at a 95% confidence interval.

Table 17: List of ACARs just below 5% level of significance

List of ACARs just below threshold of significance				
Sample	Day	t Value	Critical t Value - 5%	Critical t Value - 10%
Large Market Capitalisation	-35	-2,016	2,042	1,697
Multiple Announcements	-7	2,003	2,052	1,703

The existence of ACARs in the 35 day period prior to a staff retrenchment announcements, in the small market capitalisation subset, raises some interesting questions.

1) Are the ACARs made prior to the announcement an indication of insider trading? (Ward & Muller, 2010)

2) In Ward & Muller's study, significant abnormal returns occurred on Day -1. Can the existence of significant ACARs between Day -25 and Day -35 still be considered as a result of insider trading or are there other confounding factors at work?

3) Bhana (2002) states that there is a negative correlation between the size of a firm and the impact of the information effect. Why are significant ACARs observed before a staff retrenchment announcement but not after the announcement, in the small market capitalisation subset?

6.2.2 Review of the results against relevant theory

Table 1 in section 2.2.4 provides a summary of some of the key event studies in the context of the Johannesburg stock exchange between 1989 and 2012. All of the studies observed abnormal returns at various stages of the event window, with the exception of sponsorship announcement study (Kruger & Goldman). The results of the study into retrenchment announcements made by companies with small market capitalisations suggests that investors can make abnormal returns (prior to an announcement), which is consistent with many of the other JSE event studies.

Bhana's (2002) study of share price reactions to staff layoff announcements analyses ACARs over a number of different time horizons:

Table 18: Staff layoff announcement event window (Bhana, 2002)

Bhana (2002) - Event Windows	
Start	End
t-1	t0
t-1	t1
t-1	t10
t-1	t60
t-1	t504

Unfortunately the time frames used for Bhana's study do not extend beyond t-1, and it is therefore difficult to make a meaningful comparison of the abnormal returns made prior to a staff retrenchment announcement with this study.

Returning to the questions raised in section 6.2.1, previous event study research by (Mushidzhi & Ward, 2004; Ward & Muller, 2010) found the existence of abnormal returns in the two day period prior to an announcement, which they suggest is indicative of potential insider trading. As was observed in section 5.4.2, the ACARs in the context of companies with smaller market capitalisation are at their most significant 25 to 35 days prior to a staff retrenchment announcement.

A possible explanation for the occurrence of abnormal returns earlier in the event window, could be linked to the reduced demand hypothesis (Lin & Rozeff, 1993). In the event study by (Bhana, 2002), the population of announcements was split into two groupings based on one of two drivers: reduced demand or pure efficiency.

None of the SENS announcements that were reviewed in this study cite pure efficiency as the primary driver behind the staff layoffs. A possible explanation could be linked to the theory of slack resources (Pinsonneault & Kraemer, 2002). Slack resource theory proposes that companies don't necessarily reduce their headcounts when efficiency gains are achieved, resulting in resources that remain slack within organisations during times of economic prosperity. When these resources are eventually made redundant, in certain instances, a considerable time after the efficiency gains were initially achieved, declining economic conditions are generally cited, rather than pure efficiency gains.

For the purposes of this study, the reasons for retrenching staff are stratified into four categories, all of which are broadly related to the reduced demand hypothesis:

Table 19: Reasons for retrenching staff

Retrenchment Announcement Sample (2001 -2014)	
Industry	**No. of Announcements**
Decreased Demand	50
Decreased Demand -Currency Appreciation	3
Decreased Supply	2
Strikes	5
Grand Total	**60**

Deteriorating financial and operational performance are a unifying theme behind all of the announcements included in the population of this study. Another possible explanation for the abnormal returns observed in the lead up to the announcement, could be due to the efficiency of the market (Fama et al., 1969; Fama & French, 1993). In a semi-efficient market, investors should be cognisant of the financial pressures that an organisation faces, and this should start to reflect in a decline in the firm's share price, prior to an official announcement being made.

(Bhana, 2002) refers to the information effect, as the impact that an announcement has on the value of the firm making the announcement. According to Bhana, there is generally a negative correlation between the size of an organisation and the information effect. Large organisations are often followed more closely by investors than smaller firms, hence an announcement made by a large entity should be more predictable. The findings of this study contradict this theory, with significant abnormal returns taking place in the small market capitalisation subset over the 35 day period prior to an announcement. An explanation for this may be linked to the reduced demand hypothesis, the efficient market hypothesis or insider trading, all of which have been discussed above.

6.3 Hypothesis 2

6.3.1 Analysis of Results

Three of the five datasets, returned ACARs that are statistically significant, in the 20 day period immediately after a staff retrenchment announcement. The following three datasets all produced returns that were deemed to be significant at a 95% confidence interval:

1) Full list of companies (60 announcements)

2) Announcements made by the group of companies with 30 largest market capitalisations

3) Organisations making a single staff retrenchment announcement

Two of the datasets produced ACARs that were not deemed to be significant at a 95% confidence interval:

1) Announcements made by the group of companies with 30 smallest market capitalisations

2) Organisations making multiple staff retrenchment announcements

Significant short term (20 day) ACARs were achieved for the full population, large market capitalisation and single announcement subsets, on Day 1 of the event window. From these findings, one might infer that investors view a staff retrenchment announcement as a strong signal of a firm's future performance, hence the robust (negative) market reaction on the first day following on from a staff retrenchment announcement.

Although a significant negative reaction were observed on Day 1 in each of the datasets, the share price reactions differ considerably between Day 2 to Day 180 of the event window.

The negative trend in the ACARs is sustained in the full list of announcements until Day 133, at which point the curve crosses the x axis and positive ACARs are observed until the close of the event window.

Companies making a single staff retrenchment announcement display negative ACARs throughout the 216 day event window.

1) Is the sustained trend of negative ACARs a result of declining demand being cited as the primary driver for the staff headcount reductions in the majority of the announcements? (Bhana, 2002)

A narrow window of negative ACARs is observed either side of the announcement (Day -2 to Day 7), in the subset of companies with large market capitalisations. Prior to Day -2 and post Day 7, a consistent trend of positive ACARs was observed. This raises the question:

2) Does the market initially overreact to the announcement (Bhana, 1989; Bhana, 1995), and subsequently adjust throughout the remainder of the event window?

6.3.2 Review of the results against relevant theory

As observed in (Bhana, 2002), with the declining demand subsample, significant negative abnormal returns are made in the short-term period immediately after a staff retrenchment announcement. When the period is extended out to 60 days post the retrenchment announcement, the ACARs are deemed to be less significant, which is consistent with what was observed in the full list, large market capitalisation and single announcement subsets.

For all three of these datasets, Day 1 is the date when the largest (negative) ACAR is registered. After Day 1, the largest divergence between the three datasets is observed, with both the full list and single announcement subset showing sustained periods of negative ACARs.

For the subset of companies with the 30 largest market capitalisations, there is an extremely narrow window in which negative ACARs are achieved (Day -2 to Day 7). From Day 8 of the event window, the trajectory of the ACARs is consistently positive, until the close of the event window. (Bhana, 1989; Bhana, 1995) propose that in the instance of unexpected or extreme events, and negative earnings announcements, that investors initially overreact, leading to large abnormal returns in the period immediately after an announcement. The overreaction is then corrected in the medium to long term, when positive ACARs are observed.

6.4 Hypothesis 3

6.4.1 Analysis of Results

The final hypothesis looks at abnormal returns between Day 21 and Day 180 of the event window. Of the 5 datasets that were tested, only one set of data produces an ACAR that is deemed to be significant at a 95% confidence interval:

1) Organisations making multiple staff retrenchment announcements

The remaining four datasets produced ACARs that were not deemed to be significant at a 95% confidence interval:

1) Full list of companies (60 announcements)

2) Announcements made by the group of companies with 30 largest market capitalisations

3) Announcements made by the group of companies with 30 smallest market capitalisations

4) Organisations making single staff retrenchment announcements

A breakdown of companies making multiple retrenchment announcements is included in Table 20 below:

Table 20: Multiple announcements (2001 – 2014)

Multiple Announcement Subset (2001 -2014)	
Company	**No. of Announcements**
DRD - DRD Gold Ltd	4
HAR - Harmony GM Co Ltd	4
AMS - Anglo American Plat Ltd	3
ABL - African Bank Inv Ltd	2
ACL - ArcelorMittal SA Limited	2
AFE - AECI Limited	2
AQP - Aquarius Platinum Ltd	2
EXX - Exxaro Resources Ltd	2
SBK - Standard Bank Group Ltd	2
SER - Seardel Inv Corp Ltd	2
TKG - Telkom SA SOC Ltd	2
Grand Total	**27**

Significant long-term (positive) ACARs are recorded in the multiple announcement subset, on Day 168 of the event window. Much like the large market capitalisation subset, there is an extremely narrow window in which negative ACARs are detected (Day 1 to Day 5), either side of which, increasing ACARs were observed.

The existence of positive ACARs so late in the event window raises some interesting questions?

1) Does the market react differently to companies that have a history of staff retrenchment announcements? (Ursel & Armstrong-Stassen, 1995)

2) Are these retrenchment announcements a strategic means of shedding slack resources and improving operational efficiency? (Iqbal & Shetty, 2011; Robbins & Pearce, 1992)

3) Are significant ACARs so late in the event window a result of confounding factors? Can the abnormality still be attributed to the staff retrenchment announcement? (McWilliams & Siegel, 1997)

6.4.2 Review of the results against relevant theory

A comparison with (Bhana, 2002) is difficult, as his study does not consider a 180 day event window, post the retrenchment announcement. As per Table 18, Bhana's study analyses the period between t-1 and t 60 (62 days) and between t-1 and t 504 (506 days). As Day 168 is the only day that produces a significant ACAR, it is hard to gauge if this would overlap with the 62 and 506 day event windows. Bhana found the ACARs in the 62 day event window to be less significant than the two short term event windows (t-1 to t1 and t-1 to t10), but still significant at a 95% confidence interval. The ACARs in the 506 day event window were not deemed to be significant.

Reverting back to the questions posed in section 6.4.1, it is interesting to note why companies making multiple announcements did not produce significant ACARs over a short term period, and why the observed abnormal returns are positive in nature?

A possible explanation as to why the ACARs observed on Day 1 are less significant, is provided by (Ursel & Armstrong-Stassen, 1995), who observed that investor reaction is more pronounced in the first instance of a firm announcing staff layoffs than when subsequent announcements are made.

Iqbal and Shetty (2011) refer to the potential benefit hypothesis, whereby investors view staff retrenchments as a favourable means to reduce inefficiency and increase overall profitability. According to the hypothesis, the potential benefit's effect on a firm's share price is more pronounced in financially weak firms than in organisations that have historically delivered a strong financial performance.

Robbins and Pearce (1992) support this theory, citing staff retrenchment as a key tool in an effective turnaround strategy. Firms making multiple retrenchment announcements, would generally have a history of avoiding insolvency. This should be an important consideration for investors, when analysing a firm's future earnings potential.

Although the theories presented above, provide plausible insights into trends observed in the multiple staff retrenchment announcement subset, careful consideration needs to be given to the fact that 168 days (business days), is more than eight months after the date of the announcement. Mc Williams and Siegel (1997) argue that the longer the period used for an event window, the greater the potential influence of confounding factors on the results of a study. As JSE listed entities are required to publish their financial results on a bi-annual basis, consideration needs to be given as to how these disclosures affect company share prices.

7 CONCLUSION

7.1 Introduction

The final section of this paper aims to build on and summarise the key findings and results from Chapters 1 - 6. Areas for future research will be highlighted, in conjunction with a critical review of the study's limitations and potential blind spots.

In order to draw any meaningful conclusions, it is important to revisit the primary reason for this study: To ascertain the short and long term effects of staff retrenchment announcements on the share prices of firms listed on the JSE.

Prior research was conducted by (Bhana, 2002), whose study covered a period between 1980 and 1997. Although the methodology and findings of his study are fairly robust, a number of fundamental changes to the JSE and the South African political and economic landscape in the intervening years, provide an extremely strong case in favour of a new study.

Bhana's research focused on the reduced demand and pure efficiency hypotheses, which he observed produced different reactions from the market, due to the signal that each form of announcement conveys to investors. When reviewing the staff retrenchment announcements, extracted from the SENS database (2001 – 2014), it became apparent that none of the announcements over this period explicitly cite factors relating to pure efficiency as a primary reason for staff retrenchment.

Drawing on the research findings of prior event studies by (Bhana, 2002; Ursel & Armstrong-Stassen, 1995; Ward & Muller, 2010), a decision was made to stratify the total population into firms making either a single announcement or multiple announcements. The full list of staff retrenchment announcements was then segmented for a second time, into either large or small market capitalisation.

A review of prior event studies was undertaken to ascertain the most efficient methodology to use for the analysis and interpretation of the datasets. Drawing on methods employed in global event study literature (Binder, 1998; Fama et al., 1969; Park, 2004), and the latest techniques adopted in more recent South African studies (Mushidzhi & Ward, 2004; Ward & Muller, 2010), a robust set of financial and statistical models was devised in order to test for the presence of abnormal returns over a 216 day event window (Day -35 to Day 180).

The results of the study, were then presented in Chapter 5 and a detailed analysis was undertaken using the literature reviewed in Chapter 2 to contextualise the findings and draw comparisons with prior event studies. The key findings and observations are summarised in the sections below, along with highlighted areas for future research and potential limitations of the study.

7.2 Summary of findings

This study set out to observe whether investors on the JSE are able to make abnormal returns, prior to and post a staff retrenchment announcement. The population of 60 announcements was divided into the following five datasets:

1) Full list of companies

2) Announcements made by the group of companies with 30 largest market capitalisations

3) Announcements made by the group of companies with 30 smallest market capitalisations

4) Organisations making a single staff retrenchment announcement

5) Organisations making multiple staff retrenchment announcements

After running independent t Tests and bootstrapping distribution tests on the average cumulative abnormal returns (ACARs) of the five datasets, significant test scores were observed in all five of the groupings. At a 95% confidence interval, this is strong indication of the potential to make abnormal returns.

7.2.1 Event Window – Day 1 Abnormal Returns

The full set of announcements, large market capitalisation and single announcement subsets all produced a significant ACARs on Day 1 of the event window. Not only is this consistent with the findings of (Bhana, 2002) but the results are comparable with prior South African event studies, which found evidence of semi-strong market efficiency (Table 1).

An interesting observation in the large market capitalisation subset, is a spike in abnormal returns, the day after a retrenchment announcement is made, and the subsequent period of increased ACARs. This phenomenon was observed in event studies relating to abnormal or unexpected events and negative earnings announcements (Bhana, 1989; Bhana, 1995), and suggests an element of stock market overreaction.

A possible explanation for this overreaction could be linked to research by (Iqbal & Shetty, 2011; Robbins & Pearce, 1992). After the market has had sufficient time to analyse an announcement, a decision made to retrench staff, could be viewed as a proactive step to streamline an ailing organisation's operations and boost to long term profitability.

7.2.2 Event Window – Day -35 Abnormal Returns

Significant ACARs were observed in the small market capitalisation subset, in the 35 day period prior to a staff retrenchment announcement. This raises questions about potential insider trading and the possibility of news being leaked, prior to information going public (Ursel & Armstrong-Stassen, 1995).

Shares of smaller companies are generally thinly traded, which means a handful of investors acting on inside knowledge are likely to have a greater impact on a firm's share price than in a larger organisations, where greater volumes of shares are traded.

An alternate explanation could be linked to market efficiency. When investors become aware of a firm's financial distress, a semi efficient market will reflect this information in the latest share prices. Declining share prices would therefore be expected in the build up to a staff retrenchment announcement, when a firm is known to be experiencing financial difficulties.

7.2.3 Event Window – Day 20 to Day 180 Abnormal Returns

For companies making multiple staff retrenchment announcements, significant ACARs were observed on Day 168 of the event window.

The fact that the ACARs on Day 1 of the event window were less significant than other datasets, is consistent with (Ursel & Armstrong-Stassen, 1995), who observed that investor reaction is more pronounced in the first instance of a firm announcing staff layoffs than when subsequent announcements are made.

The existence of positive abnormal ACARs so late in the event window, can also be linked to (Iqbal & Shetty, 2011; Robbins & Pearce, 1992). Once market participants have had sufficient opportunity to assess the implications of the proposed staff layoffs, they may view a reduction in headcount as an effective tool to improve operational efficiency and a firm's overall financial performance.

Real consideration needs to be given to the likelihood of confounding events within the study. The longer a study's event window, the greater the probability of other factors having a material impact on a firm's share price (McWilliams & Siegel, 1997). This is a real concern when large abnormal ACARs are observed more than eight months after an announcement.

7.2.4 Relevance of the research findings

The results of the study support the theory that South African markets display a semi strong form of market efficiency (Fama et al., 1969). Over time, share prices should update to reflect all available public information. This is consistent with what was observed in prior South African event studies (Table 1).

In a business context, short term opportunities exist for investors to make abnormal returns. In majority of the cases, this opportunity exists on the day after a staff retrenchment announcement is made (Day 1).

For large firms, there tends to be a market overreaction to staff retrenchment announcements. This provides investors with an additional opportunity to generate favourable returns, in the period subsequent to an announcement, when the prices readjust themselves.

It is unclear whether long term abnormal returns generated by organisations making multiple retrenchment announcement can be attributed to a retrenchment announcement or the presence of other confounding events.

Correspondingly, in the absence of prior insider knowledge on small entities, it is uncertain whether investors can make abnormal returns in the 35 day period leading up to a retrenchment announcement.

7.3 Research Limitations

Although considerable care was taken to make this study as comprehensive and as robust as possible, certain key limitations need to be noted in regards to the study:

1) The size of the staff retrenchment announcement population was not as large as initially hoped. Considerable time was spent scanning announcements to ensure that confounding events were not present in the press releases used for the study. As a result of this, two key sets of SENS announcements were removed from the population.

    i. Annual, Half-Yearly and Quarterly financial and trading statements
    ii. Staff retrenchment announcements relating to mergers and acquisitions

2) Since the study looked at both the short and long term effects of staff retrenchment announcements on JSE traded shares, a 216 day event window was used. As discussed in section 7.2.3, this raises the potential issue of confounding events, the longer the event window used (McWilliams & Siegel, 1997).

3) For the bootstrapping distribution exercise, 480 days' worth of trading results were required in order to run an effective Monte Carlo simulation. In certain instances, this meant that there were incomplete records, for shares that had not traded throughout the 480 window.

4) The database used for the portfolio control model (Equation 2), is more comprehensive for firms with large market capitalisations. Shares of smaller entities are generally thinly traded, and as a result the database is less robust.

5) A key differentiator in the research of (Bhana, 2002) is the distinction between staff layoffs motivated by reduced demand and staff layoffs motivated by pure efficiency. In the data that was analysed for this study, no evidence was found of companies citing pure efficiency as the primary reason for headcount reductions. As discussed in Chapter 6, a possible reason for this could be as a result of slack resource theory or the fact that companies are cautious to cite pure efficiency gains as a reason for staff retrenchments, due to the negative social consequences associated with staff layoffs.

6) In (Ward & Muller, 2010), both the portfolio control and CAPM models were used to test for the presence of abnormal returns. Due to time constraints, and limited market beta data prior to 2005, the CAPM model was not used in this study. This should however not limit the findings of this research too significantly. As was illustrated in Ward and Muller's study, the CAPM model and the portfolio control model broadly follow the same pattern. The portfolio control model does however overcome some of the limitations of the CAPM model (see section 4.6), which fails to take into consideration factors like firm size, value versus growth, and resource versus non-resource.

7.4 Future research

Building on the research limitations presented in section 7.3 and the findings presented in Chapter 5 and 6, there are a number of areas where future research can expand on the results of this study.

Key areas for potential future research are listed below:

1) A large number of staff layoff announcements in the SENS database, cite merger and acquisition activity as the primary reason for retrenching staff. Whilst this study did not include these announcements in the population due to confounding events, the potential for a study exists whereby the long and short term effects of companies making staff retrenchment announcements are compared with companies that don't make staff retrenchment announcements, after a merger or an acquisition has taken place.

2) An event study into the effects of insider trading, in the period leading up to a significant announcement on the JSE, using abnormal returns in a 35 to 60 day period prior to the announcement to test for potential insider trading.

3) A study into the reasons cited by South African firms for staff retrenchments, looking at factors like slack resource theory (Pinsonneault & Kraemer, 2002) and the impact of strikes as a motivating factor for staff layoffs.

4) An event study which looks at the impact on share price of firms retrenching staff during times of macro-economic prosperity versus macro-economic downturn (bull versus bear markets).

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APPENDICES

Appendix A: Bootstrapping distribution - Significant ACARs

Full List:

Full List				
Day	Actual Event	97.5%CL	2.5%CL	Test for significance
1	-1,71%	-1,28%	1,08%	Significant
27	1,02%	-5,01%	0,97%	Significant
50	0,71%	-7,80%	0,11%	Significant
51	1,15%	-7,83%	0,47%	Significant
52	1,05%	-7,53%	0,75%	Significant
53	0,82%	-8,04%	0,30%	Significant
54	-0,05%	-7,88%	-0,09%	Significant
70	-0,23%	-9,39%	-0,47%	Significant
75	-1,07%	-10,33%	-1,12%	Significant
76	-0,61%	-10,47%	-1,07%	Significant
77	0,10%	-10,36%	-0,60%	Significant
79	-0,16%	-10,62%	-0,89%	Significant
80	-0,55%	-10,83%	-0,70%	Significant
82	-0,70%	-10,98%	-0,72%	Significant
83	-0,63%	-10,95%	-0,97%	Significant
84	-0,38%	-11,33%	-1,15%	Significant
85	-0,65%	-10,97%	-0,91%	Significant
86	-0,30%	-11,18%	-1,24%	Significant
87	-0,51%	-10,48%	-0,86%	Significant
88	-0,39%	-10,95%	-0,75%	Significant
89	-0,06%	-10,83%	-1,34%	Significant
90	0,65%	-11,33%	-0,94%	Significant
91	0,21%	-11,40%	-0,84%	Significant
92	-0,94%	-11,66%	-1,63%	Significant
93	-1,43%	-11,47%	-1,48%	Significant
94	-0,94%	-11,54%	-1,52%	Significant
95	-0,78%	-12,09%	-1,27%	Significant
96	-0,66%	-11,68%	-1,07%	Significant
97	-0,62%	-11,83%	-1,24%	Significant
98	-0,70%	-11,39%	-1,27%	Significant
99	-0,09%	-11,81%	-1,34%	Significant
100	0,07%	-12,52%	-1,46%	Significant
101	0,57%	-12,89%	-1,41%	Significant
102	1,18%	-12,93%	-1,88%	Significant
103	0,76%	-12,44%	-1,48%	Significant

104	0,26%	-12,19%	-1,50%	Significant
105	0,10%	-11,90%	-1,48%	Significant
106	0,99%	-11,71%	-1,25%	Significant
107	0,93%	-12,23%	-1,21%	Significant
108	0,67%	-12,07%	-0,77%	Significant
109	0,85%	-12,10%	-0,71%	Significant
110	1,47%	-12,23%	-0,69%	Significant
111	1,55%	-12,17%	-1,36%	Significant
112	0,41%	-12,35%	-1,19%	Significant
113	0,21%	-12,37%	-1,54%	Significant
114	0,17%	-12,26%	-1,95%	Significant
115	0,18%	-12,11%	-1,97%	Significant
116	0,27%	-12,43%	-1,55%	Significant
117	-0,75%	-12,28%	-1,07%	Significant
118	-0,90%	-12,64%	-1,54%	Significant
119	-0,67%	-12,85%	-2,38%	Significant
120	-0,21%	-13,28%	-2,23%	Significant
121	0,32%	-12,75%	-2,15%	Significant
122	0,53%	-13,45%	-1,98%	Significant
123	0,41%	-12,41%	-1,70%	Significant
124	0,88%	-13,02%	-1,45%	Significant
125	0,28%	-13,07%	-1,70%	Significant
126	0,67%	-13,31%	-1,80%	Significant
127	0,55%	-13,12%	-2,43%	Significant
128	0,12%	-13,18%	-1,35%	Significant
129	0,44%	-13,52%	-1,87%	Significant
130	0,66%	-13,30%	-2,69%	Significant
131	1,05%	-13,61%	-2,48%	Significant
132	0,73%	-13,46%	-2,23%	Significant
133	1,58%	-13,93%	-2,06%	Significant
134	1,58%	-14,00%	-2,61%	Significant
135	1,94%	-13,90%	-2,91%	Significant
136	1,82%	-13,82%	-3,09%	Significant
137	2,20%	-14,02%	-2,82%	Significant
138	2,30%	-13,90%	-2,70%	Significant
139	1,76%	-13,74%	-2,75%	Significant
140	1,95%	-13,83%	-3,77%	Significant
141	1,27%	-13,83%	-3,55%	Significant
142	1,13%	-14,01%	-3,61%	Significant
143	1,35%	-14,34%	-3,14%	Significant
144	1,89%	-14,40%	-3,33%	Significant
145	2,20%	-14,57%	-3,24%	Significant
146	2,39%	-15,07%	-3,21%	Significant
147	2,88%	-14,68%	-3,24%	Significant

148	3,06%	-14,60%	-3,22%	Significant
149	3,11%	-15,05%	-3,80%	Significant
150	3,65%	-15,19%	-4,17%	Significant
151	3,65%	-14,92%	-3,73%	Significant
152	3,82%	-14,84%	-4,03%	Significant
153	4,36%	-14,94%	-4,39%	Significant
154	4,49%	-14,72%	-4,11%	Significant
155	4,45%	-14,61%	-4,36%	Significant
156	4,69%	-14,41%	-3,96%	Significant
157	4,37%	-14,17%	-4,00%	Significant
158	4,39%	-14,20%	-3,54%	Significant
159	3,49%	-14,34%	-3,38%	Significant
160	4,06%	-13,98%	-3,69%	Significant
161	4,14%	-14,42%	-3,22%	Significant
162	4,10%	-14,49%	-3,35%	Significant
163	3,95%	-14,36%	-2,79%	Significant
164	4,21%	-14,09%	-2,57%	Significant
165	4,14%	-14,13%	-2,37%	Significant
166	4,25%	-14,20%	-2,62%	Significant
167	3,61%	-14,11%	-2,05%	Significant
168	4,40%	-14,07%	-2,29%	Significant
169	4,09%	-14,56%	-2,38%	Significant
170	4,00%	-14,41%	-3,00%	Significant
171	4,07%	-14,11%	-3,09%	Significant
172	4,19%	-14,16%	-3,10%	Significant
173	3,80%	-14,07%	-3,49%	Significant
174	4,17%	-14,17%	-2,88%	Significant
175	4,39%	-13,96%	-2,66%	Significant
176	4,06%	-14,04%	-3,15%	Significant
177	3,96%	-14,09%	-3,20%	Significant
178	4,06%	-13,84%	-3,08%	Significant
179	3,47%	-13,78%	-3,04%	Significant
180	3,80%	-13,69%	-2,92%	Significant

Large Cap:

Large Cap				
Day	Actual Event	97.5%CL	2.5%CL	Test for significance
-35	-3,17%	-1,99%	2,92%	Significant
-34	-2,52%	-1,80%	2,83%	Significant
-33	-2,91%	-1,53%	3,35%	Significant
-32	-2,36%	-1,62%	3,27%	Significant
-21	-1,82%	-1,33%	2,32%	Significant
-20	-2,57%	-1,34%	2,41%	Significant
-19	-2,23%	-1,22%	2,40%	Significant
-18	-1,37%	-1,28%	2,07%	Significant
-16	-1,41%	-1,02%	2,01%	Significant
-15	-1,40%	-1,26%	2,35%	Significant
-10	-1,57%	-1,51%	1,70%	Significant
-9	-1,54%	-1,54%	1,52%	Significant
-8	-1,34%	-1,29%	1,36%	Significant
0	-0,58%	-0,54%	0,54%	Significant
1	-1,31%	-0,83%	0,61%	Significant
9	1,11%	-1,59%	1,00%	Significant
10	2,15%	-1,76%	0,99%	Significant
11	2,23%	-1,80%	0,91%	Significant
12	2,04%	-1,78%	1,05%	Significant
13	2,25%	-1,95%	1,06%	Significant
14	2,62%	-2,08%	1,00%	Significant
15	1,87%	-2,09%	1,16%	Significant
16	2,46%	-2,26%	1,08%	Significant
17	2,19%	-2,37%	0,98%	Significant
18	1,88%	-2,65%	0,92%	Significant
19	1,64%	-2,56%	0,97%	Significant
20	2,00%	-2,89%	1,20%	Significant
21	2,10%	-2,87%	0,90%	Significant
22	1,92%	-2,76%	1,36%	Significant
23	1,89%	-2,63%	1,07%	Significant
24	1,96%	-2,64%	1,24%	Significant
25	2,81%	-2,80%	1,23%	Significant
26	3,04%	-2,78%	1,27%	Significant
27	3,35%	-2,77%	1,58%	Significant
28	3,86%	-2,67%	1,44%	Significant
29	2,96%	-2,72%	1,70%	Significant
30	3,06%	-2,79%	1,89%	Significant
31	3,52%	-2,73%	2,12%	Significant
32	2,91%	-3,02%	1,80%	Significant
33	4,08%	-2,89%	2,03%	Significant

34	4,43%	-2,94%	1,81%	Significant
35	3,93%	-3,24%	2,12%	Significant
36	4,14%	-3,35%	1,81%	Significant
37	3,29%	-3,06%	1,64%	Significant
38	2,68%	-3,25%	1,48%	Significant
39	3,14%	-3,42%	1,73%	Significant
40	2,90%	-2,88%	1,53%	Significant
41	2,53%	-2,92%	1,43%	Significant
42	2,45%	-3,20%	1,80%	Significant
43	3,24%	-3,37%	1,82%	Significant
44	3,41%	-3,19%	1,94%	Significant
45	3,44%	-3,25%	1,90%	Significant
46	3,18%	-3,05%	1,92%	Significant
47	2,94%	-3,29%	2,17%	Significant
48	2,94%	-3,64%	2,19%	Significant
49	2,75%	-3,47%	2,30%	Significant
50	2,87%	-3,25%	2,36%	Significant
51	2,71%	-3,43%	2,27%	Significant
52	2,50%	-3,64%	2,20%	Significant
77	2,22%	-4,92%	2,17%	Significant
79	2,29%	-5,04%	1,89%	Significant
80	2,19%	-4,86%	2,13%	Significant
81	2,27%	-4,95%	1,96%	Significant
82	1,92%	-5,00%	1,91%	Significant
85	2,40%	-4,95%	2,11%	Significant
86	2,43%	-5,18%	2,39%	Significant
87	2,54%	-4,77%	2,27%	Significant
88	2,79%	-4,98%	2,20%	Significant
89	3,41%	-5,29%	2,35%	Significant
90	3,11%	-5,02%	2,34%	Significant
91	3,17%	-4,88%	2,52%	Significant
95	3,20%	-5,08%	2,32%	Significant
96	3,48%	-4,96%	2,31%	Significant
97	3,33%	-5,20%	2,46%	Significant
99	2,72%	-4,93%	2,61%	Significant
101	3,20%	-5,13%	3,12%	Significant
102	4,13%	-5,05%	2,84%	Significant
103	3,88%	-5,11%	3,16%	Significant
104	4,10%	-5,44%	3,23%	Significant
105	4,03%	-5,52%	2,64%	Significant
106	3,96%	-5,30%	2,66%	Significant
107	4,19%	-5,40%	2,61%	Significant
108	3,69%	-5,29%	2,76%	Significant
109	3,57%	-5,13%	2,66%	Significant

110	4,52%	-5,02%	2,52%	Significant
111	4,49%	-5,05%	2,53%	Significant
114	2,65%	-5,01%	2,19%	Significant
115	2,51%	-5,13%	2,25%	Significant
120	2,47%	-4,97%	2,05%	Significant
121	2,62%	-5,04%	1,85%	Significant
122	2,12%	-4,93%	1,94%	Significant
155	2,99%	-4,81%	2,89%	Significant
156	3,46%	-4,75%	2,70%	Significant
157	3,59%	-4,75%	2,75%	Significant
158	3,52%	-4,75%	2,92%	Significant
159	3,12%	-4,82%	2,76%	Significant
160	3,50%	-5,00%	2,57%	Significant
161	3,86%	-4,72%	2,74%	Significant
162	3,15%	-5,05%	2,96%	Significant
163	2,78%	-5,19%	2,66%	Significant
164	2,88%	-5,16%	2,78%	Significant
165	3,20%	-4,86%	2,85%	Significant
166	3,59%	-4,88%	3,05%	Significant
167	3,42%	-4,59%	2,91%	Significant
168	3,57%	-4,75%	3,56%	Significant
171	4,14%	-5,03%	3,34%	Significant
172	3,72%	-4,99%	3,32%	Significant
173	3,46%	-5,20%	3,39%	Significant
175	3,54%	-4,88%	3,37%	Significant

Small Cap:

Small Cap				
Day	Actual Event	97.5%CL	2.5%CL	Test for significance
-35	11,87%	-1,25%	5,24%	Significant
-34	10,78%	-1,36%	5,05%	Significant
-33	9,80%	-1,20%	4,95%	Significant
-32	10,01%	-1,13%	4,86%	Significant
-31	9,22%	-1,26%	5,06%	Significant
-30	7,47%	-0,89%	4,61%	Significant
-29	7,70%	-1,41%	4,51%	Significant
-28	6,28%	-1,50%	4,61%	Significant
-27	6,72%	-1,36%	4,76%	Significant
-26	6,53%	-0,91%	4,78%	Significant
-25	6,91%	-0,96%	4,38%	Significant
-24	5,93%	-1,14%	4,38%	Significant
-22	4,12%	-1,14%	4,04%	Significant
-21	4,46%	-1,33%	4,13%	Significant
-17	4,11%	-1,05%	3,75%	Significant
-8	2,48%	-1,26%	1,91%	Significant
-7	3,29%	-1,09%	1,78%	Significant
-6	1,98%	-0,85%	1,93%	Significant
1	-2,35%	-1,03%	0,80%	Significant
3	-1,63%	-1,53%	1,35%	Significant
4	-2,44%	-1,48%	0,82%	Significant
5	-2,11%	-1,63%	1,11%	Significant
6	-2,16%	-1,96%	1,25%	Significant
7	-2,02%	-1,87%	1,08%	Significant
8	-2,49%	-2,18%	1,13%	Significant
9	-2,26%	-1,93%	1,22%	Significant
14	-3,34%	-2,91%	1,02%	Significant
19	-4,26%	-3,92%	1,10%	Significant
32	-5,42%	-5,34%	0,76%	Significant
34	-5,98%	-5,28%	0,58%	Significant
122	-2,09%	-10,18%	-2,58%	Significant
123	-1,64%	-10,19%	-2,95%	Significant
124	-1,16%	-10,53%	-2,77%	Significant
125	-1,77%	-10,06%	-2,89%	Significant
126	-0,51%	-10,25%	-2,97%	Significant
127	-0,50%	-10,53%	-3,07%	Significant
128	-0,94%	-10,34%	-2,91%	Significant
129	0,27%	-10,73%	-3,27%	Significant
130	-0,23%	-10,53%	-3,19%	Significant
131	-0,31%	-10,66%	-3,15%	Significant

132	-1,18%	-10,77%	-3,32%	Significant
133	1,09%	-10,40%	-3,16%	Significant
134	1,93%	-10,49%	-2,73%	Significant
135	2,68%	-10,89%	-2,84%	Significant
136	2,80%	-10,83%	-3,07%	Significant
137	3,96%	-10,73%	-3,23%	Significant
138	4,66%	-10,91%	-2,97%	Significant
139	3,57%	-11,00%	-3,05%	Significant
140	4,05%	-10,93%	-3,09%	Significant
141	3,05%	-11,02%	-3,20%	Significant
142	1,60%	-11,01%	-3,32%	Significant
143	2,62%	-11,22%	-3,35%	Significant
144	3,12%	-11,21%	-2,83%	Significant
145	4,23%	-11,29%	-3,36%	Significant
146	4,26%	-11,37%	-2,99%	Significant
147	5,39%	-11,33%	-2,98%	Significant
148	5,18%	-11,29%	-3,29%	Significant
149	5,41%	-11,20%	-3,08%	Significant
150	5,89%	-11,34%	-3,25%	Significant
151	6,22%	-11,47%	-3,64%	Significant
152	6,52%	-11,62%	-3,57%	Significant
153	7,40%	-11,81%	-3,60%	Significant
154	7,58%	-11,81%	-3,75%	Significant
155	6,72%	-11,68%	-4,18%	Significant
156	6,30%	-11,40%	-3,74%	Significant
157	5,14%	-11,17%	-3,81%	Significant
158	5,34%	-11,40%	-3,68%	Significant
159	4,65%	-11,50%	-3,73%	Significant
160	6,32%	-11,43%	-3,49%	Significant
161	6,12%	-11,30%	-3,93%	Significant
162	6,61%	-11,25%	-3,60%	Significant
163	7,22%	-11,53%	-3,68%	Significant
164	6,55%	-11,81%	-3,66%	Significant
165	7,14%	-11,64%	-3,46%	Significant
166	6,70%	-11,67%	-3,63%	Significant
167	5,07%	-11,78%	-3,73%	Significant
168	5,87%	-11,86%	-3,76%	Significant
169	5,54%	-11,93%	-3,93%	Significant
170	5,87%	-12,16%	-4,01%	Significant
171	5,50%	-12,14%	-3,85%	Significant
172	6,48%	-12,04%	-3,88%	Significant
173	5,76%	-12,17%	-4,29%	Significant
174	6,76%	-12,01%	-4,14%	Significant
175	6,83%	-11,83%	-4,06%	Significant

176	7,33%	-11,81%	-4,35%	Significant
177	7,74%	-12,12%	-4,46%	Significant
178	7,68%	-12,23%	-4,45%	Significant
179	7,02%	-12,44%	-4,72%	Significant
180	7,58%	-12,61%	-4,58%	Significant

Single Announcement:

Single Announcement				
Day	Actual Event	97.5%CL	2.5%CL	Test for significance
-15	-0,96%	-0,82%	3,64%	Significant
-14	-0,74%	-0,68%	3,29%	Significant
-12	-1,31%	-0,56%	3,22%	Significant
-4	-1,91%	-0,94%	1,43%	Significant
-3	-1,51%	-0,81%	1,16%	Significant
-2	-0,70%	-0,42%	0,89%	Significant
1	-2,64%	-1,09%	1,01%	Significant
4	-2,43%	-1,36%	1,45%	Significant
6	-2,05%	-2,04%	1,75%	Significant
90	-1,16%	-8,95%	-2,14%	Significant
102	-2,76%	-9,76%	-2,84%	Significant
111	-2,61%	-10,60%	-2,81%	Significant
133	-3,42%	-12,01%	-4,11%	Significant
135	-3,66%	-12,04%	-4,29%	Significant
136	-3,75%	-12,21%	-3,76%	Significant
137	-2,76%	-12,04%	-4,41%	Significant
138	-2,16%	-12,43%	-4,21%	Significant
139	-2,44%	-11,91%	-4,72%	Significant
140	-2,80%	-11,79%	-4,61%	Significant
141	-3,07%	-11,99%	-4,35%	Significant
142	-3,73%	-11,94%	-4,22%	Significant
143	-3,53%	-12,02%	-4,55%	Significant
144	-3,19%	-11,77%	-4,20%	Significant
145	-2,41%	-12,19%	-4,27%	Significant
146	-2,08%	-11,82%	-4,29%	Significant
147	-1,64%	-11,93%	-4,20%	Significant
148	-1,28%	-12,01%	-4,38%	Significant
149	-2,04%	-12,22%	-4,30%	Significant
150	-1,73%	-12,11%	-4,72%	Significant
151	-2,29%	-11,91%	-4,73%	Significant
152	-2,22%	-12,05%	-4,62%	Significant
153	-2,02%	-11,98%	-4,18%	Significant

154	-1,28%	-11,94%	-4,30%	Significant
155	-1,74%	-12,18%	-4,32%	Significant
156	-1,86%	-12,01%	-4,26%	Significant
157	-2,40%	-12,01%	-4,48%	Significant
158	-2,48%	-12,19%	-4,58%	Significant
159	-2,96%	-12,15%	-4,69%	Significant
160	-1,95%	-12,55%	-4,95%	Significant
161	-2,17%	-12,64%	-5,08%	Significant
162	-2,23%	-12,78%	-4,83%	Significant
163	-2,33%	-12,90%	-4,56%	Significant
164	-3,18%	-13,15%	-4,74%	Significant
165	-2,99%	-13,14%	-5,01%	Significant
166	-2,82%	-13,40%	-4,92%	Significant
167	-4,62%	-13,39%	-4,77%	Significant
168	-3,82%	-13,75%	-4,86%	Significant
169	-4,05%	-13,20%	-4,87%	Significant
170	-3,64%	-13,23%	-4,73%	Significant
171	-3,29%	-13,21%	-4,76%	Significant
172	-3,56%	-13,20%	-4,93%	Significant
173	-3,67%	-13,16%	-4,84%	Significant
174	-3,07%	-13,17%	-5,10%	Significant
175	-2,98%	-13,12%	-4,85%	Significant
176	-3,07%	-13,22%	-4,73%	Significant
177	-3,03%	-13,29%	-4,95%	Significant
178	-2,79%	-13,29%	-4,98%	Significant
179	-3,32%	-13,53%	-5,37%	Significant
180	-3,11%	-13,42%	-5,18%	Significant

Multiple Announcements:

Multiple Announcements				
Day	Actual Event	97.5%CL	2.5%CL	Test for significance
-34	2,59%	-1,84%	2,51%	Significant
-31	2,73%	-2,08%	2,53%	Significant
-29	3,23%	-1,70%	2,15%	Significant
-28	2,35%	-1,73%	2,18%	Significant
-25	2,46%	-1,52%	2,13%	Significant
-24	2,76%	-1,67%	2,05%	Significant
-17	1,75%	-1,37%	1,59%	Significant
-7	1,65%	-1,09%	1,19%	Significant
-6	1,24%	-0,83%	0,93%	Significant
-5	1,06%	-0,85%	0,94%	Significant
-4	1,34%	-0,88%	0,75%	Significant
-3	1,35%	-0,60%	0,70%	Significant
-2	0,58%	-0,64%	0,47%	Significant
1	-0,79%	-0,55%	0,56%	Significant
10	1,69%	-1,11%	1,44%	Significant
11	2,15%	-1,37%	1,37%	Significant
12	2,01%	-1,29%	1,58%	Significant
13	1,90%	-1,44%	1,72%	Significant
14	2,28%	-1,48%	1,68%	Significant
16	1,97%	-1,37%	1,91%	Significant
27	2,60%	-1,89%	2,08%	Significant
28	2,95%	-1,72%	2,28%	Significant
33	2,88%	-2,38%	2,70%	Significant
34	3,10%	-2,41%	2,65%	Significant
35	3,48%	-2,54%	2,86%	Significant
36	3,24%	-2,42%	2,70%	Significant
37	2,91%	-2,70%	2,76%	Significant
43	3,53%	-2,73%	2,87%	Significant
45	2,99%	-2,57%	2,91%	Significant
51	4,11%	-2,76%	3,37%	Significant
52	4,26%	-2,58%	3,37%	Significant
68	3,12%	-3,00%	2,76%	Significant
75	3,33%	-3,07%	2,87%	Significant
76	3,06%	-3,04%	2,68%	Significant
77	2,87%	-3,34%	2,56%	Significant
78	2,64%	-3,26%	2,56%	Significant
79	3,33%	-3,27%	2,66%	Significant
82	2,78%	-3,52%	2,61%	Significant
83	2,89%	-3,52%	2,73%	Significant
84	2,92%	-3,66%	2,44%	Significant

85	2,41%	-3,37%	2,10%	Significant
86	2,85%	-3,25%	2,51%	Significant
91	2,74%	-3,13%	2,65%	Significant
94	2,53%	-3,22%	2,47%	Significant
96	3,45%	-3,57%	2,98%	Significant
97	3,36%	-3,47%	2,98%	Significant
99	3,62%	-3,42%	3,03%	Significant
100	4,39%	-3,42%	2,64%	Significant
101	4,29%	-3,43%	2,78%	Significant
102	5,05%	-3,65%	3,10%	Significant
103	5,06%	-3,73%	3,32%	Significant
104	4,52%	-3,75%	3,28%	Significant
105	4,51%	-3,96%	3,31%	Significant
106	5,35%	-4,02%	3,23%	Significant
107	5,22%	-3,77%	3,09%	Significant
108	5,18%	-3,97%	2,95%	Significant
109	5,63%	-3,90%	2,74%	Significant
110	5,50%	-3,81%	2,99%	Significant
111	5,68%	-3,71%	2,91%	Significant
112	5,91%	-3,72%	3,27%	Significant
113	5,66%	-3,84%	3,37%	Significant
114	6,21%	-3,91%	3,51%	Significant
115	6,16%	-4,00%	3,60%	Significant
116	5,70%	-4,05%	3,96%	Significant
117	4,67%	-3,87%	3,62%	Significant
118	4,70%	-4,05%	3,43%	Significant
119	5,73%	-3,96%	3,45%	Significant
120	5,91%	-4,18%	3,12%	Significant
121	6,53%	-4,05%	3,30%	Significant
122	7,24%	-3,92%	3,36%	Significant
123	7,37%	-3,89%	3,42%	Significant
124	7,42%	-3,79%	3,46%	Significant
125	6,59%	-3,87%	3,59%	Significant
126	6,14%	-3,67%	3,31%	Significant
127	6,63%	-3,50%	3,12%	Significant
128	5,91%	-3,55%	2,90%	Significant
129	6,21%	-3,64%	3,14%	Significant
130	6,23%	-3,41%	3,42%	Significant
131	7,19%	-3,56%	3,62%	Significant
132	7,06%	-3,69%	3,74%	Significant
133	6,44%	-3,40%	4,12%	Significant
134	7,39%	-3,74%	3,94%	Significant
135	7,84%	-3,38%	4,20%	Significant
136	7,70%	-3,54%	4,11%	Significant

137	7,08%	-3,53%	3,85%	Significant
138	6,83%	-3,55%	3,97%	Significant
139	6,10%	-3,47%	4,27%	Significant
140	6,60%	-3,32%	3,90%	Significant
141	5,81%	-3,32%	3,65%	Significant
142	6,10%	-3,18%	3,97%	Significant
143	6,42%	-3,36%	4,29%	Significant
144	7,00%	-3,34%	4,24%	Significant
145	6,88%	-3,59%	4,33%	Significant
146	6,79%	-3,40%	4,18%	Significant
147	7,39%	-3,28%	4,02%	Significant
148	7,14%	-3,39%	4,26%	Significant
149	8,53%	-3,72%	3,60%	Significant
150	9,08%	-3,47%	3,74%	Significant
151	9,52%	-3,60%	4,09%	Significant
152	9,90%	-3,79%	4,08%	Significant
153	11,18%	-3,65%	3,94%	Significant
154	10,43%	-3,79%	3,71%	Significant
155	10,81%	-3,81%	4,01%	Significant
156	11,22%	-3,92%	4,09%	Significant
157	11,06%	-3,99%	4,17%	Significant
158	11,23%	-3,97%	3,89%	Significant
159	10,69%	-3,98%	4,27%	Significant
160	11,40%	-3,83%	4,27%	Significant
161	11,96%	-3,91%	3,93%	Significant
162	11,47%	-3,64%	4,26%	Significant
163	11,59%	-3,48%	4,09%	Significant
164	12,14%	-3,45%	4,24%	Significant
165	12,82%	-3,46%	4,10%	Significant
166	12,81%	-3,49%	4,42%	Significant
167	13,32%	-3,68%	4,41%	Significant
168	13,24%	-3,60%	4,30%	Significant
169	13,06%	-3,45%	4,27%	Significant
170	12,58%	-3,65%	4,39%	Significant
171	13,10%	-3,30%	4,27%	Significant
172	13,64%	-3,23%	4,20%	Significant
173	12,85%	-3,17%	4,28%	Significant
174	12,86%	-3,28%	4,41%	Significant
175	13,02%	-3,29%	4,44%	Significant
176	12,59%	-3,54%	4,23%	Significant
177	12,31%	-3,31%	4,55%	Significant
178	12,36%	-3,13%	4,34%	Significant
179	11,56%	-3,12%	4,27%	Significant
180	11,96%	-3,33%	4,40%	Significant

Appendix B: Ethical Clearance

Gordon Institute of Business Science
University of Pretoria

Dear Louis de Wet

Protocol Number: **Temp2015-01840**

Title: **The short and long term effects of retrenchment announcements on the share price performance of companies listed on the JSE**

Please be advised that your application for Ethical Clearance has been APPROVED.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

Kind Regards,

Adele Bekker