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The value of directors on the Johannesburg Stock Exchange

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ABSTRACT

Directors of listed companies are seen as key individuals in the running of their organisations. The loss of a key individual could have significant effect on the profitability and sustainability of a company. The loss of such an individual could cause harm to the share price of an organisation, due to the instability that may exist in the immediate to short term period after the death of a director.

The purpose of this research paper was to investigate the effect that the death of a director of a JSE listed company has on the company's share price. The research aimed to identify whether an abnormal return was experienced prior to, or post the death of the director, and whether it could be possible to predict abnormal returns based on the death of directors. The research further aimed to identify whether a difference existed in the abnormal returns experienced after the death of a non-executive director as opposed to an executive director or whether this differed in the JSE's resource rich companies as opposed to non-resource companies. Ultimately, the research also tested the efficiency of the JSE as a market.

The research study ultimately found that there is a statistically significant effect on share price following the death of a director. The magnitude of the effect differs based on a number of variables, including whether the director was independent or executive. Where a director was independent, a negative abnormal return was experienced. However, where a director was an executive director, a positive abnormal return was experienced. The magnitude of the effect also differed significantly between the resources and non-resource companies on the JSE.

Evidence was observed in the analysis, in support of the literature review, which confirms that the death of a director leads to abnormal returns on the share price.

KEYWORDS

Event Study, Death of Director, Value of Director, Effect of Death on Share Price, JSE as efficient market

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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Anton Jaffe

9 November 2015

TABLE OF CONTENTS

ABSTRACT ..... **I**
KEYWORDS ..... **I**
DECLARATION ..... **II**
LIST OF GRAPHS ..... **V**
LIST OF TABLES ..... **VI**
CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM **1**
1.1 Research title 1
1.2 Introduction 1
1.3 Research problem 2
1.3.1 Introduction to the research problem 2
1.3.2 Market Efficiency of the JSE 2
1.3.3 Prior research into the announcement of the death of a director on the JSE 3
1.3.4 Requirement for further research 3
1.4 Theory base for research 4
CHAPTER 2: LITERATURE REVIEW **5**
2.1 Introduction 5
2.2 Importance of directors to companies and their shareholders 6
2.3 Death of Directors 8
2.4 Efficient Markets 9
2.4.1 Efficient Market Hypothesis (EMH) 9
2.4.2 EMH and the Johannesburg Stock Exchange (JSE) 11
2.4.3 Johannesburg Stock Exchange 12
2.4.4 Johannesburg Stock Exchange (JSE) – Resource & Non Resource Shares 13
2.5 Event Studies 13
2.6 Conclusion 15
CHAPTER 3: RESEARCH QUESTIONS **17**
CHAPTER 4: RESEARCH METHODOLOGY AND DESIGN **18**
4.1 Research Purpose 18
4.2 Research Method 18
4.3 Population 19
4.4 Sampling method 20
4.5 Unit of Analysis 20
4.6 Data Collection 20
4.7 Data Analysis Approach 21
4.8 Research Limitations 25
4.9 Data Integrity 26
4.10 Data gathering process 26
4.11 Statistical Tests 27
CHAPTER 5: ANALYSIS OF DATA **28**
5.1 Data gathering 28
5.2 Data Preparation 30
5.3 Data Analysis 30
5.3.1 Average Abnormal Returns (AARs) 30
5.3.2 Cumulative Abnormal Returns 39
5.3.3 Average Cumulative Abnormal Returns (ACAR) 40

CHAPTER 6: DISCUSSION OF RESULTS OF RESEARCH.....48
6.1 Introduction to results discussion.....48
6.2 Discussion of results for Research Question 1: Does the death of a director of a listed company have an effect on the share price of that company?.....48
6.2.1 Positioning.....48
6.2.2 Results.....49
6.2.3 Findings.....50
6.3 Discussion of results for Research Question 2: Is there a difference between the effect experienced based on whether the director who has died was an executive or independent director?.....51
6.3.1 Positioning.....51
6.3.2 Results.....51
6.3.3 Findings.....54
6.4 Results for Research Question 3: Is there a difference between the effect experienced based on whether the director who has died was in the resource or non-resource sector?.....55
6.4.1 Positioning.....55
6.4.2 Results.....55
6.4.3 Findings.....57
6.5 Overall study limitations.....57
6.6 Future Research.....59
7.1 Introduction.....60
7.2 Research findings.....60
7.3 Recommendations for companies.....61
7.4 Recommendations for academics in this field of research.....62
7.5 Research conclusion.....62
REFERENCES.....63
APPENDICES.....67

LIST OF GRAPHS

Graph 1: Full Sample AARs (Researcher Generated Graph) 31
Graph 2: T Test - Full Sample AARs (Researcher Generated Graph) 31
Graph 3: Independent Director AARs (Researcher Generated Graph) 32
Graph 4: T-Test Independent Director AARs (Researcher Generated Graph) 33
Graph 5: Executive Director AARs (Researcher Generated Graph).....34
Graph 6: T-Test – Executive Director AARs (Researcher Generated Graph) 35
Graph 7: Non-Resources AARs (Researcher Generated Graph) 36
Graph 8: T-Test - Non-Resources AARs (Researcher Generated Graph) 36
Graph 9: Resources AARs (Researcher Generated Graph) 38
Graph 10: T-Test - Resources AARs (Researcher Generated Graph) 38
Graph 11: Cumulative Abnormal Returns – Full Sample (Researcher Generated Graph) 40
Graph 12: ACAR – Full Sample (Researcher Generated Graph).....44
Graph 13: ACAR vs. Weighted ACAR– Full Sample (Researcher Generated Graph)..45
Graph 14: ACAR Executive & Independent Directors (Researcher Generated Graph) 46
Graph 15: Weighted ACAR Executive & Independent Directors (Researcher Generated Graph).....46
Graph 16: ACAR Resource vs. Non Resource (Researcher Generated Graph) 47

LIST OF TABLES

Table 1: Control Portfolios 21
Table 2: T-Test data – Full Sample AARs 32
Table 3: T-Test data – Independent Director AARs 33
Table 4: T-Test data – Executive Director AARs 35
Table 5: T-Test data – Non-Resource AARs 37
Table 6: T-Test data –Resource AARs 39
Table 7: Monte Carlo analysis 43

CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM

1.1 Research title

The value of Executive & Independent directors to shareholders on the JSE.

1.2 Introduction

This paper seeks to identify whether the death of a director on a JSE (Johannesburg Stock Exchange) listed company has an effect on the share price of the company. The research investigates the performance of companies which have experienced the death of a director while serving on the board of directors, and what the effect on the share price was over set periods under investigation. The research determines whether one could accurately predict the behaviour of the share price of companies based on the death of a director.

The research in particular seeks to identify whether the shareholders place different emphasis on the value of executive directors as opposed to independent directors.

The question that the researcher of this study aimed to address was: Does the death of a director have an effect on the share price of a company.

This question has validity, as recent studies have previously indicated that the JSE does not operate as an efficient market (Bhana, 2002; Esterhuysen, 2011; Ward & Muller, 2010; Oni & Ward, 2014), and suggest that the potential for abnormal returns on the JSE exists when certain announcements are made. When an announcement is made on the JSE via the Stock Exchange News Service (SENS), the public is made aware of an issue which could have an impact on future sustainability or profitability of a company. Given that the JSE is known to respond timeously to information available to it, this research aimed to identify whether the market responded to the announcements of deaths of directors of listed companies.

1.3 Research problem

1.3.1 Introduction to the research problem

This research aimed to identify a positive association between the death of a director of a listed company on the JSE and corporate performance, as measured by total shareholder returns. For the purposes of this research, corporate performance was measured using abnormal share price returns, as will be further described within this paper. Recent studies, including Nyugen and Nielsen; 2010, Johnson, Magee, Nagarajan, & Newman, 1985; Haynes & Schaeffer, 1999; Salas, 2010 have indicated a relationship between the death of a director and share price performance. The research problem highlighted within this research was to ascertain the extent to which the JSE responds to the death of a director of a listed company.

However, the focus of this research was to expand the underlying theory base upon which this paper is based, and to extend it to identify whether the death of a director has an effect on the share performance, as well as whether the effect differs based on whether the director was in an executive or independent role.

Identifying whether the death of a director has an effect on share price performance – has not to the knowledge of the writer been tested or researched previously – specifically within the South African context.

In order to achieve its purpose and objectives, this research looked into previous research into the value of directors of listed companies, as well as event study information. It thereafter expands on existing research by demonstrating whether an association exists between a company that experiences a death of a director, and abnormal shareholder returns, as per the event study methodology.

1.3.2 Market Efficiency of the JSE

Fama (1965), in his ground-breaking research paper, proposed the efficient market hypothesis. In essence, he opined that information that is publicly available to the shareholder is reflected in the share price of the company at any given point in time. As such, there is no opportunity to benefit from abnormal returns in the short or long term, as the value of any given information is already catered for in the share price of the company.

This research will test the market efficiency of the JSE in its response to SENS announcements relating to the deaths of directors of listed companies.

Fama proposes that once any new information becomes publicly available, it is already reflected in the current share price. This research sought to identify whether this held true for JSE listed companies, and the reaction to the share price post the announcement of the death of a director.

Were the JSE an efficient market, there would be scant opportunity for investors to benefit, via outperformance of the market over a long period of time. Much of the research into the market efficiency of the JSE points to the fact that the JSE is not an efficient market. Bhana, 2002; Esterhuysen, 2011; Ward & Muller, 2010; Oni & Ward, 2014 all suggest that there is evidence for the opportunity for investors to make abnormal returns on the JSE – when public announcements are made across a multitude of matters. The prior research has focussed on the effect of share price performance to customer satisfaction index reporting, Top Companies rankings, black economic empowerment announcements.

1.3.3 Prior research into the announcement of the death of a director on the JSE

The researcher did not find any prior research on the impact on share price performance of the announcement of the death of a director on the JSE. Internationally there have been many studies including Johnson, Magee, Nagarajan, & Newman, 1985; Haynes & Schaeffer, 1999; Nguyen & Nielsen, 2010 and Salas, 2010 that focus on this particular subject matter. Apart from the studies listed above, the international research on this topic has focussed largely on board composition, without providing an estimated value of directors based on them no longer contributing to the company due to their death or on the value of independent directors to market capitalisation of the company.

1.3.4 Requirement for further research

There is a valid argument for the initiation of this research. The JSE's market efficiency needs to be tested once again, and there is no evidence of any previous studies in South Africa that relate to the value of directors, as measured by their deaths. This research contributes not only to research in the field of market

efficiency, but too towards board composition, as well as director and executive understanding.

1.4 Theory base for research

This research utilises existing research in the field of boards of directors in general, as well as market efficiencies to determine the extent to which the JSE responds to announcements relating to directors deaths. Event study theory is used to quantify the effect of each announcement. The theory was investigated and analysed with the intent of tackling the research problem and the research objectives and ultimately answering the question: Does the death of a director have an effect on the share price of a listed company on the JSE?

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Directors, as key individuals in the companies that they represent, are assumed to hold significant value to shareholders. However, empirical research into the value that is directly associated to directors is relatively scarce. In their 2010 research paper, Nguyen and Nielsen attempt to quantify the value associated with independent directors, based on the share price movement of companies based on the announcement of the death of an independent director. Johnson, Magee, Nagarajan, & Newman, 1985; Haynes & Schaeffer, 1999; Salas, 2010 have conducted research into the field of director's death and value, and have focussed largely on executive directors.

Research into the value of directors often splits the roles of independent and executive directors. In their research paper on Separation of ownership and control, Fama and Jensen note that directors who are independent of the company, are more likely to take greater care regarding their reputations, and as such will apply decisions in a more appropriate way as they have less direct dealings within the company (Fama & Jensen, 1983). Independent directors are seen to have a greater sense of autonomy and are "less likely to be affected by the classic agency problem" (Nguyen & Nielsen, 2010 p. 551). Agency problem is described as "that there is potential for mischief when the interests of owners and those of managers diverge" (Dalton, Hitt, Certo, & Dalton, 2007). The fundamental tenant of solving agency problem revolves how owners and those that they employ or empower can minimise the tendency of managers to act in their own interests when these diverge from the interests of owners themselves (Dalton et al., 2007).

Independent directors and executive directors are by definition are supposed to perform vastly different roles. An executive director is actively involved in the day to day running of a business, while an independent director is supposed to be independent of the company itself. The South African Companies Act of 1998, section 66, prescribed that the business affairs of a company must be managed under the board of directors (South African Government, 1998).

The Supreme Court in Victoria, Australia, in 2014, provided some key definitions and requirements for executive and independent directors. It defines and executive director as one who discharges executive functions of management, while in the role of an

employee. This is contrasted to an independent director, who are independent of corporate management (Australian Institute for Company Directors, 2014).

An independent director is described by Ravina and Spienza as “someone who has never worked at the company or any of its subsidiaries or consultants, is not related to any of the key employees, and does not/did not work for a major supplier or customer” (Ravina & Sapienza, 2010).

The Chief Executive Officer (CEO) is the director to whom the board of directors would generally have delegated authority to, in order to run the company. This is also applicable to the Managing Director role, has the powers for day to day running of a company (Australian Institute for Company Directors, 2014).

2.2 Importance of directors to companies and their shareholders

The question of why a board of directors exists in the first place is questioned in (Hermalin & Weisbach, 2001) who identify that a board of directors, comprised executives and independent directors exists as “an endogenously determined institution that helps to ameliorate the agency problems that plague any large organization” (Hermalin & Weisbach, 2001).

However, the true independence and oversight of independent directors is not necessarily a given. There are many instances where independent directors have themselves traded shares in a manner that provides them with substantial abnormal returns (Ravina & Sapienza, 2010).

Revina & Sapienza (2010) found that both executive directors and independent directors themselves also had been found to trade shares in a manner that provided abnormal returns to them as shareholders.

Nguyen & Nielsen (2010) therefore postulate that the value that directors and independent directors provide needs to be quantified. Their research paper identified the deaths of 229 directors, who held executive status in 279 companies in the United States of America (USA) over the 1997-2004 period. This research provided a view on the quantitative value that is associated with directors based on their sudden death. The

study found that an abnormal negative return of 0.85% was experienced post the sudden death of an independent director in the USA.

The majority of international research into the value that directors bring to companies, shows that independent directors add relatively little to the performance of companies (Hermalin & Weisbach, 2001; Bhagat & Black, 1999; Bhagat & Black, 1998). The majority of boards of directors have changed internationally over the past few decades, as growing focus on independence has been required. While previously the majority of board members were internal executive management, this has shifted to the majority of boards being independent with only a few executive directors (Bhagat & Black, 1999). Between 1950 and 2005, the proportion of independent directors to executive directors shifted from a proportion of 20:80 to 75:25 (Gordon, 2007). Gordon argues that this shift in proportions has no empirical evidence supporting the proposition that independent directors provide greater firm returns (Gordon, 2007).

However, in the local context, there has been a strong focus on corporate governance and the 1994 and 2002 King reports have placed a reliance on independent directors to actively promote good governance. In his 2011 paper Ntim argued that there was indeed a positive value that was association between the presence of independent directors and overall share performance on the Johannesburg Stock Exchange. Ntim's paper examined 169 companies over the period of 2003 – 2007 and found that there was a statistically significant association between independent directors and overall company performance and company valuation on the JSE (Ntim, 2011).

Ntim's research identifies that independent directors who meet a stringent independence test have a greater influence on overall firm performance. Ntim differentiated between independent executive directors and non-independent executive directors. This enabled a distinct focus on corporate governance. The research found no statistically significant relationship between non-independent executive directors and company performance over the sample period between 2003 and 2007 (Ntim, 2011).

There exists the potential that the CEO is actively involved in board selection, thereby mitigating the ability of true independence of the board of directors. This would have an effect on the value that the board could contribute toward the company, as it is not necessarily a function of shareholder voting patterns, but influenced deeply by the executive management of the company (Shivdasani & Yermack, 1999).

It is argued that the value in independent directors is their ability to stand up to the CEO due to the very nature of their independence. However, executive directors may be able

to select independent directors who meet legislative requirements but may not be fully independent (Duchin, Matsusaka, & Ozbas, 2010).

In 2003 in the USA, the NYSE and the NASDAQ adopted rules that required boards of directors to be majority independent. This was done in order to create a climate of corporate governance where there was an independence between the management of the company and the board of directors (Duchin et al., 2010).

2.3 Death of Directors

Literature demonstrating the value associated with the death of a director shows contrasting effects based on a number of variables, including executive or non-executive status of the director, founder or non-founder status and level of entrenchment (Nguyen & Nielsen, 2010). In some instances, the death of directors leads to share value increases and in other instances share value decreases.

Nguyen and Nielsen (2010) provide a view on the quantitative effect experienced by the death of a director. Their research specifically focussed on the sudden death of a director in the USA over the 1997-2004 period. The death of an independent executive was found to have a negative impact on the share price of 0.85% (Nguyen & Nielsen, 2010).

Prior research into the impact of deaths of executive directors has shown conflicting effects. In their 1985 research Johnson, Magee, Nagarajan, and Newman identified that the death of founder-CEOs leads to an increase in the share price by of 3.5%, while the death of non-founder CEOs caused a 1.16% share price decrease (Johnson, Magee, Nagarajan, & Newman, 1985). Research conducted by Haynes and Schaeffer in 1999 has shown that the death of a CEO can caused share price increases of 2.84% (Haynes & Schaeffer, 1999).

Salas (2010) identified that entrenchment status was a key factor in the effect experienced by the death of an executive director. The data demonstrated an average positive impact of 0.9% for the death of an executive, but that this was different for entrenched or new CEOs. The effect for an entrenched CEO was a positive growth of 6.76% but a decline in share price of 1.81% for new CEOs (Salas, 2010).

None of the empirical studies focus on the South African market and in particular the JSE. Ntim identified a positive association between independent directors and corporate

valuation on the JSE (Ntim, 2011), but no research has been found on the effect experienced post the death of a director on the JSE.

2.4 Efficient Markets

2.4.1 Efficient Market Hypothesis (EMH)

Fama (1965) initiated the concept of "Efficient Market Hypothesis" ("EMH"). EMH was used as a descriptor/metric for the level to which the market would respond to information that was available to it. The hypothesis proposes that at any point in time, the share price is an accurate reflection of a company's true value. An efficient market would therefore be one where the current share prices accurately reflect information already available to the market (Fama, 1965).

The EMH is a theory that suggests that share price movements are at all times a fair and reflective view of a company's value, and all publicly available information is already fully reflected in that company's share price. EMH therefore asserts that stock market investors do not have opportunity to achieve abnormal returns through information which they have received prior to other investors. The theory purports that as soon as any new qualitative information becomes available, the latest share price has already incorporated the effect that the information would have (Sewell, 2011).

EMH therefore upholds one could not achieve returns, above the market average, on a consistent basis, as the market uses information efficiently to instantly adjust share prices (Esterhuysen, 2011).

Fama refined his work, publishing again in 1970, prescribing that the theory of efficient markets is based on empirical data. The empirical data has certain assumptions that underpin them, notably that that the conditions of market equilibrium are able to be expressed in terms of expected returns (Fama, 1970). Fama's empirical work can be split into three levels.

The three levels are:

- Strong form EMH
- Semi-strong form EMH
- Weak form EMH

Strong form EMH

Strong-form efficiency is where investors or groups have monopolistic access to any data or business information that could be relevant to price setting of the share price (Fama, 1970). In this form of EMH the price accurately reflects all private and public information and there are no excess returns in the long term.

Semi-strong form EMH

In semi-strong EMH, the market responds very quickly to new information that is provided to it. Due to the fact that the market responds as a whole, and without bias, there is no opportunity for long term abnormal returns / excess returns in semi-strong EMH (Fama, 1970).

Weak form EMH

In weak form EMH, the market responds abnormally to information that is presented to it. The price is not adjusted for the information, and there is the ability to make long term excess returns based on information availability (Fama, 1970).

Fama argued that the before the research into efficient markets, there was an assumption around the volume of private information available to investors. However, the efficiency research put forward that private information was rare (Fama, 1991).

Esterhuysen (2011) identifies that the stronger the EMH, the less likely the opportunity to potentialise excess returns in the long term. In weak form EMH, opportunity exists to create additional returns by making use of information that has not been priced in to the share price (Esterhuysen, 2011).

Efficient Market Hypothesis has had such an impact on investment finance over the recent past that it has been postulated that most of today's modern investment finance can be linked to it (Lo, 2005).

However, EMH has also had its fair share of critics, particularly at the time of the tech-bubble of the late 1990' and early 21st century. The prevailing thought is that market prices in that instance failed to reflect available publicly available information. The contra thought at the time was that this was clear evidence that the EMH should be rejected (Malkiel, 2005).

2.4.2 EMH and the Johannesburg Stock Exchange (JSE)

The body of work into the JSE as an efficient market dates back to the 1970's, with initial views espoused by Gilbertson & Roux in 1997 that the JSE acted as an efficient market. The research conducted indicated market efficiency based on available information and that there was not the ability to make regular abnormal returns in the long term. The Gilbertson & Roux research argued that the JSE displayed evidence of EMH (Gilbertson & Roux, 1977).

Over the next few years, there was a challenge and response to the Gilbertson & Roux research by Strebel. Strebel opined that the Gilbertson & Roux's research was not fully representative of the JSE's full portfolio of shares, and only reflected the efficiency of certain shares (Strebel, 1977). Subsequent to the Strebel study, in 1978, Gilbertson and Roux once again affirmed their research and challenged the findings of Strebel in their 1978 paper titled "Some further comments on the Johannesburg Stock Exchange as an efficient market", claiming that the JSE was indeed an efficient market that did not allow one to make consistent abnormal returns. Gilbertson & Roux once again asserted that the JSE displayed signs of strong form EMH (Gilbertson & Roux, 1978).

In 1995, Thompson & Ward conduced a meta-analysis of all the studies that had been conducted in to the market efficiency of the JSE, between 1974 and 1993. The outcome of the study showed evidence of both weak form and semi-strong form of market efficiency (Thompson & Ward, 1995).

Since the Thompson & Ward research, there have been a multitude of studies that have investigated the market efficiency of the JSE. The bulk of these studies have been in the form of Event Studies, looking into the impact of certain market announcements on share performance on the JSE. The bulk of these studies, including Muller & Ward, 2010; Esterhuysen 2010; Muller & Ward, 2011; Kruger, 2011; Stafford, 2012; Oni & Ward, 2014 have displayed evidence of weak or semi-strong EMH. As such, these studies suggest the possibility of procuring abnormal returns based on share price performance, and that the share price is not at all times adjusted for publicly available information.

Oni (2014) states that “studies have shown the JSE to be inefficient as it does not react rapidly by setting its share price when provided with new qualitative news” (Oni, 2014).

In addition to the research above, research conducted by Bhana, 1998; Bhana, 1999; Bhana, 2005; Bhana, 2003 all display evidence of weak or semi-weak EMH on the JSE (Oni, 2014). The JSE has proven to be a market in which it is possible to make abnormal returns due to information not being priced in to the share price.

Bhana (2005) and Muller and Ward (2010) used event study methodology for the announcement of Black Economic Empowerment deals. Both of these studies identified the JSE has having weak EMH.

Esterhusyen states “appear that although initially found to be operationally efficient, recent studies have found the JSE to be reasonably inefficient with information” (Esterhuysen, 2011).

2.4.3 Johannesburg Stock Exchange

The Johannesburg Stock Exchange (JSE) is the largest stock exchange on the African continent and is ranked the 19th largest in the world by market capitalisation. The JSE offers primary and secondary capital markets and provides a full service offering in terms of trading, post-trade servicing and regulatory services (Johannesburg Stock Exchange, 2015a).

The JSE was founded in 1887 at the time of South Africa’s first gold rush, and remains to this day largely influenced by resources shares (Correia & Uliana, 2004).

The JSE services South Africa and the wider continent and has an overall market capitalisation in excess of $1000 billion. The JSE main board has over 400 companies listed, although the individual market capitalisation of these companies ranges from very small to extremely large. The JSE was ranked 1st in terms of regulation and 2nd for local market capital raising according to the World Economic Forum in 2013-2014. Almost 20% of companies listed on the JSE are dual listed, with a second listing on an exchange in a different country (Johannesburg Stock Exchange, 2015b).

2.4.4 Johannesburg Stock Exchange (JSE) – Resource & Non Resource Shares

The JSE is different to many indices that have previously been analysed in terms of the death of directors in that it is heavily weighted towards the resources sector, including mining companies. Due to the high dominance of resource stocks on the JSE, results can easily be skewed and non-reflective of other markets (Correia & Uliana, 2004). Companies on the JSE are often split into two categories, resources and non-resources with resources accounting for as much as 40% of the market capitalisation of the JSE in the early parts of the 21st century (Correia & Uliana, 2004).

The resources sector on the JSE in itself has its own set of risks which differentiate it from other shares. It has been argued that investors consider investments in mining as a different type of risk altogether and consider resources as a market on its own (Bowie & Bradfield, 1993).

Given the unique nature of the JSE and the fact mining and resources companies make up such a large proportion of the market, it would be prudent to ensure that a view of these different segments is provided. It is argued that much of the JSE's performance can therefore be linked to the gold price, which would have little to no effect on other non-resource companies. Factors that impact each of the resource and non-resource sectors would therefore be different with different short and long term effect (Gilbertson & Goldberg, 1981).

2.5 Event Studies

While many attribute the first event study to Fama, French, Jensen and Roll in 1969, the first event study dates back to James Dolley in 1933 (MacKinlay, 1997). The research of Fama et al. (1969) used event study to categorise indices and markets and create the Efficient Market Hypothesis, described more fully above. This methodology of event study has become the benchmark for assessing the effect of events on the share price of companies.

The purpose of an event study is to identify the effect that an event has on the price of equity of a firm (MacKinlay, 1997).

Park 2004 identified two reasons for making use of event studies. The first tests the ability of a stock market to incorporate publicly available information into the share prices of the companies listed on that stock market (this tests the EMH theory of Fama et. al (1969). The second is to assess various events, often public announcements and their effect on specific companies. This test assesses whether information is already priced in to the share price before the public announcement is made (Park, 2004).

Event studies have become popular in economics and finance in that they do not use traditional accounting methodologies. The use of event studies is linked to earnings announcements, external announcements, issuing of debt or equity and a multitude of other uses (MacKinlay, 1997).

In order for an event study to be a true reflection of the effect that an event has had on the share price of a company, the research design must be correctly established and three assumptions must be met. The three assumptions include: that markets are efficient (this is in relation to the EMH of Fama et al. (1969); the event was not anticipated (if the event was anticipated, then the effect could already have been priced into the share price); and lastly, that there no confounding effects occurred during the event window (McWilliams & Siegel, 1997).

Four models to predict share returns have generally been accepted as the main methods of predicted returns (Mushidzhi & Ward, 2004). The Mean Adjusted Model, the Market Model, the Market Adjusted Model and the Control Portfolio Model:

Muller and Ward (2010) utilised a methodology for testing event-based study to test efficiency of the JSE, which was used to further test the efficiency of the JSE to the announcement of the death of a director in this research paper.

The control portfolio model, used in Muller and Ward (2010) makes use of 12 control portfolios based on company size, value or growth shares, and type of industry. The portfolio definitions are fully described below according to the Muller & Ward methodology (Muller & Ward, 2010).

Portfolio Categorisation Definitions

Company size: Large companies includes those on the JSE top 40. Medium includes those companies by ranked in size by market capitalisation between 41 and 100. Small includes companies ranked in size by market capitalisation between 100 and 160. Companies outside of the top 160 companies will be excluded from the control portfolios.

Value or Growth: "Growth" shares are classified where the Price to Earnings ratio is higher than the median, while those lower than the medium are denoted as "Value" shares.

Type of industry – This classifies companies into either Resource based companies or Non-resource based companies based on the market in which they operate and the basis of their core business.

2.6 Conclusion

The literature reviewed in this chapter identified numerous research studies into the value of directors in international markets. A gap was identified in South African research relating to empirical evidence and research into the death of directors on the share price of listed companies. Using the methodology of Muller and Ward (2010), the researcher extended the research of Johnson et al. (1985), Haynes and Shaeffer (1999), Nguyen and Nielsen (2010) and Salas (2010) and empirically tested the value of directors on the JSE based on share price movement and abnormal returns after the announcement of their deaths. The above authors all found abnormal returns related to the death of directors, albeit in specific areas of research:

Abnormal returns related to independent directors:

Nguyen and Nielsen (2010)

Abnormal returns related to executive directors

Johnson et al. (1985)

Haynes and Shaeffer (1999)

Salas (2010)

The JSE was found to be a unique market worldwide due to its high concentration of resource shares, with previous researchers describing the phenomenon as creating an environment of two markets in one (Bowie & Bradfield, 1993; Correia & Uliana, 2004).

The factors that affect each of resource and non-resource shares could therefore be different (Gilbertson & Roux, 1978).

This research paper focused on directors as a whole, as well as identifying whether the effect on the share price differs based on independent versus executive status, and resource versus non-resource shares.

This research paper tested research questions, in order to confirm the status of efficiency within the JSE relating to the death of a director.

CHAPTER 3: RESEARCH QUESTIONS

This chapter aims to define the specific research proposition that this research paper intended to answer. The literature review in Chapter 2 highlighted the value of directors to a listed company, as well as indicating the link between sudden deaths and share returns.

The effect of the death of both executive and non-executive directors needs to be determined in order to quantify whether abnormal returns are experienced after such an event. The analysis in subsequent chapters answers the question: Does the death of the director of a listed company have a material effect on the share price?

In light of the question postulated by the researcher and the existing theory and information brought to the fore in the literature review, the following research questions were answered in this research:

1. Research Question 1:
   Does the death of a director of a listed company have an effect on the share price of that company?

2. Research Question 2:
   Is there a difference between the effect experienced based on whether the director who has died was an executive or independent director?

3. Research Question 3:
   Is there a difference between the effect experienced based on whether the director who has died was in the resource or non-resource sector?

In order to answer the three research questions above, various hypothesis were tested. These are further explained within this paper, when referring specifically to the findings in Chapter 6.

CHAPTER 4: RESEARCH METHODOLOGY AND DESIGN

4.1 Research Purpose

The research sought to answer the research question: Does the death of a director of a listed company have an effect on the share price of that company. The research sought to identify the effect of shareholder behaviour on the share price prior to and post the announcement of a death of a director.

In analysing share performance before and after the announcement of a death, the researcher was able to ascertain the abnormal share price returns experienced by companies where a death of a director had occurred.

The purpose of the research was to establish the perceived market valuation to directors, and whether there would be any abnormal effect whatsoever from the death of a director.

In undertaking the research, the researcher aimed to answer the research question and to identify the value to which investors place on the directors of listed companies.

4.2 Research Method

This research will take the form of a quantitative event study and make use of existing publicly available data:

a) The quantitative event study will look to establish whether a causal relationship exists between the sudden death of a director and the movement in a company's share price (Saunders & Lewis, 2012).

b) The Event Study methodology, put forward by Fama, Fisher, Jensen and Roll (Fama, Fisher, Jensen, & Roll, 1969) will be used to analyse the share price performance of the company that experienced the death of an independent director.

c) The research will take a deductive approach and will test the research which asserts that the death of a director has an effect on a company's share price.

d) The data obtained for the study will be archival in nature (Saunders & Lewis, 2012). All relevant administrative information will be extracted from the SENS announcement and McGregor's BFA databases.

4.3 Population

The population of relevance consists of all companies listed on the JSE that have experienced the death of a director of the company, between the period of 1 January 2000 and 31 July 2015. For the purpose of this study, a death will expand the definition originally found in Nguyen and Nielsen (2010) which specifically looked at sudden deaths.

The population of relevance was identified by searching the stock exchange news service (SENS) announcements made over the period 1 January 2000 and 31 July 2015 for the death of directors. This data was supplied by Mike Ward and Chris Muller from the Gordon Institute of Business Science.

Thereafter, the death was classified into various overall categories of death, including that of "sudden death". Unfortunately, insufficient detail regarding the death was available in order to ascertain whether particular causes of death were more impactful than others.

Various third party web sources were utilised to identify the directorship status (independent or executive director) of certain directors if not specifically mentioned in the SENS announcement.

In order for the company and the event to meet the selection criteria, the following conditions need to be met:

a) A death of a director of the company listed on the JSE occurred over the review period
b) The SENS announcement made reference to one of the following phrases related to a director in its description:

    i. Death
    ii. Passed Away
    iii. Died

iv. Passing
v. Condolences

c) The company that made the SENS announcement related to the death of the director must have been listed on the JSE for at least 12 months after the SENS announcement and at least 12 months prior to the SENS announcement.
d) The company did not experienced the death of any other directors over the 12 months prior and 12 months post the SENS announcement. This was to remove any confounding events from the study. No instances of more than one director's death (in the same company) in any 12 months period was found in the data.

4.4 Sampling method

If the sample used can be proven to be statistically relevant, the output of the analysis can be used to extrapolate the sample to the full population (Saunders & Lewis, 2012).

Due to liquidity of shares traded, only companies that are included in the top 160 companies (by market capitalisation) on the JSE will be included in the sample. Thereafter, from the SENS database, all companies that have made notices regarding the death of director's via announcements, and are within the top 160 companies (by market capitalisation) during the period of 01 January 2000 to 31 July 2015 will be included in the research sample.

4.5 Unit of Analysis

The unit of analysis of the research was a company on the Johannesburg Stock Exchange (JSE) that has experienced the death of director during the period of 1 January 2000 to 31 July 2015.

4.6 Data Collection

Data relating to the death of directors over the review period (1 January 2000 and 31 July 2015) and published share price information relating to these companies that

meet the criteria set out above will be extracted from the following two secondary data sources:

a) Stock exchange news service (SENS) database
b) McGregor's BFA database

These secondary databases will provide following information:

a) The list of companies making announcements related to the death of directors over the period of the study.
b) The share price of the company before and after the announcement date.

4.7 Data Analysis Approach

The event study model will be used as developed by Fama et al (1969), while it will also include the research of Muller and Ward (2010) using both the CAPM and control portfolio models in order to calculate abnormal returns.(Muller & Ward, 2010)

Muller and Ward (2010) identify that in solely using the CAPM model for benchmarking share performance exposes various shortcomings – notably that the benchmark does not factor in the size of the company which experiences the event, nor factors of earnings yield such as growth versus value or whether the company in question is non-resource or resource. Each of the above aspects could have a distinct impact on the benchmark. Twelve control portfolios were created, based on the Muller and Ward (2010) research – see Table 1 below.

Table 1: Control Portfolios

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

Portfolio Categorisation Definitions

Company size: Large companies includes those on the JSE top 40. Medium includes those companies by ranked in size by market capitalisation between 41 and 100. Small includes companies ranked in size by market capitalisation between 100 and 160. Companies outside of the top 160 companies will be excluded from the control portfolios.

Value or Growth: "Growth" shares are classified where the Price to Earnings ratio is higher than the median, while those lower than the medium are denoted as "Value" shares.

Type of industry – This classifies companies into either Resource based companies or Non-resource based companies based on the market in which they operate and the basis of their core business.

The impact of the death of a director is to be measured over a single period – although the time periods have been adjusted to provide a longer view prior to the announcement taking place.

1. t_{-10} to t_{180} for the longer-term (a total of 196 days).

The effect of the announcement is to be measured in daily returns on shares for each of the impacted companies over a period of 196 days, from the publishing date t_0 backward for 10 days to t_{-10} and from the SENS announcement date forwards for 180 days to t_{180}.

The event date for the purposes of this study will be defined as the date that the SENS announcement was first published. This date will be denoted as "T_0"

Using the methodology in Muller and Ward (Muller & Ward, 2010) to calculate the daily returns on share price, the return of each share in the sample will be calculated using the following formula:

$$R_{it} = \ln [P_{it} / P_{it-1}] \qquad \text{(Equation 1)}$$

R_{it} = return of share i on day t, and

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

To calculate abnormal returns, the CAPM model will be used as a benchmark, by applying the following formula:

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt} \qquad \text{(Equation 2)}$$

Where:

α_i and β_i = estimate the alpha and beta for share i, and

R_{mt} = the return on the JSE All Share Index (ASI) equally weighted index

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

$$AR_{it} = R_{it} - \alpha_{it} - \beta_{i,1} SGN_t - \beta_{i,2} SGR_t - \beta_{i,3} SVN_t - \beta_{i,4} SVR_t - \beta_{i,5} MGN_t -$$

$$\beta_{i,6} MGR_t - \beta_{i,7} MVN_t - \beta_{i,8} MVR_t - \beta_{i,9} LGN_t - \beta_{i,10} LGR_t - \beta_{i,11} LVN_t -$$

$$\beta_{i,12} LVR_t$$

(Equation 3)

Where:

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

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

SGN_t … LVR_t = the log-function share price returns on each of the twelve control portfolios set out in Table 1 on day t.

To calculate the average abnormal return of all of the shares listed in the control portfolios on a specific date, can be calculated by applying the following formula:

$$AAR_t = \frac{1}{n}\sum_{i=1}^{n} AR_i \qquad \text{(Equation 4)}$$

Where:

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

n = the number of companies.

To test the performance of a specific share over each of the two event windows, a cumulative abnormal return (CAR) will be calculated using the following formula:

$$CAR_i = \sum_{t=-d}^{d} AR_{it} \qquad \text{(Equation 5)}$$

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 each of the shares included in the sample, an average cumulative abnormal return ($ACAR$) figure can be calculated by applying the following formula:

$$ACAR = \frac{1}{n}\sum_{t=-d}^{d} CAR_i \qquad \text{(Equation 6)}$$

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 the ACAR for all of the shares in the sample was calculated, statistical analysis on the significance of the results was performed. A Monto Carlo simulation, creating 100 samples with random event dates prior to the event dates, was run in order to statistically test the ACAR. This is a better form of testing for ACAR as it does not assume normality (Muller & Ward, 2010; Rice, 2006).

Further statistical tests were run for both AARs and ACARs to determine if the abnormal returns were significantly different from zero.

Using a variety of descriptive statistics and graphs the researcher proceeded to comprehend the data.

4.8 Research Limitations

The study only includes instances where companies have recorded the death of a director by means of announcement via SENS – the possibility remains that certain instances are missed due to non-publishing of the death announcement.

While all efforts are made to capture the deaths of all directors, various synonyms are used for the passing of a director – and as such, the search criteria may overlook specific instances unintentionally.

The study only includes death announcements that take place over the period 1 January 2000 and 31 July 2015 and therefore takes a view over a 15 year period and not the full history of the JSE.

While the death of a director is certainly an event that may impact the share price of a company, various company specific events could have occurred in and around the time of the death of the director – which could impact the results of this study.

Various market related factors, such as the global financial crisis of 2007-2008, and the drop in resource prices in 2014, have a significant effect on company share price movement – which are independent of the events being researched.

This research was not able to assess certain instances of the death of a director due to incomplete data on the available databases. This was due to delisting of company during the review period as well as incomplete financial data being available.

4.9 Data Integrity

Data integrity issues that are expected – and which were mitigated as far as possible included:

a) Companies with missing/incomplete share price information.
b) Lack of clarity as to the designation of independent or executive directorship
c) Inaccurate share data for a share under review

4.10 Data gathering process

Data that is to be used for the purposes of research can be classified into either primary or secondary data (Saunders & Lewis, 2012). Primary data is classified as data that is collected with the specific research that is being conducted, while Secondary data is data

that either exists already, or was collected for a different purpose, and is then reused for the purposes of the research project (Saunders & Lewis, 2012).

Due to the specific requirements of this research project, secondary data was collected, in order to perform the research.

Data Collection Process:

a) The SENS database for the period 1 January 2000 and 31 July 2015 has previously been exported into Microsoft Excel, courtesy of Chris Muller and Mike Ward from the Gordon Institute of Business Science.
b) SENS announcements were identified where reference to “death”, “died”, “condolences”. These will then be selected from the data set.
c) A clean up of data was required in order to remove the multitude of references to death, and including the words “director” in the announcement, but where the SENS announcement was not referring specifically to the death of a director.
d) SENS data for the selected companies (related to the particular event or death) was reviewed for the immediate 12 months preceding the announcement. Any confounding events were identified and removed from the sample.
e) Companies that were not listed 12 months prior or 12 months post the announcement were removed from the sample.
f) The director in question was identified as either an independent or executive director (either via the announcement itself, or via further third-party research).

4.11 Statistical Tests

Apart from the methodology utilised to identify abnormal returns for a particular company, statistical methods were used to investigate the link between the death of a director and the effect on the share price of the particular company.

The statistical tests that were used by the researcher included:

- Hypothesis testing

Hypothesis testing is a statistical method, used to in an attempt to prove that a particular statement or its alternative true. Hypothesis testing can be either one or two sided; the

testing in this research used both the one-sided and two-sided hypothesis tests at a 95% confidence level (Rice, 2006).

The 2 sided T-test was used to either prove the null hypothesis or alternate hypothesis in this research study. In addition, when analysing Average Cumulative Abnormal Returns (ACAR), the researcher has used a boot-strapping distributions were created for testing purposes in order to test for significance. This method of testing is seen as superior to solely using a t-test, as no assumption of normality is made (Muller & Ward, 2010; Rice, 2006).

CHAPTER 5: ANALYSIS OF DATA

5.1 Data gathering

In order for the research questions in Chapter 3 to be answered, the researcher followed the outline as per Chapter 3.

The first step in the process was to gather the required data and then create a sample which would be used for analysis. As espoused in Chapter 4, the researcher set about identifying all instances of the death of a director from 1 January 2000 to 31 July 2015 in companies listed on the JSE.

The researcher utilised a tool provided by Mike Ward and Chris Muller from the Gordon Institute of Business Science that was able to parse all SENS announcements during the period under review. The researcher ensured that the sample included as many instances as was possible, by using the word “death” as well as many aliases for this. In addition, all references to “condolences” were identified. The data initially yielded in excess of 1500 records, although this would need to be analysed on a record by record basis. The analysis of each record was vital to ensure the reliability of the data in the sample in order to produce results in Chapter 5 and analysis of these in Chapter 6.

Data was extracted for the period under investigation: 2000 to 2015. This date range was used due to availability of data, and due to the availability abnormal returns data in the database used.

In order to extract the required data, the data extract was cleaned of all records that did not relate to the deaths of directors. In total, over 1400 records were removed as they

did not relate to the deaths of directors. Of the remaining 98 records in the initial sample, only 66 records had sufficient data with which to calculate all the required analysis.

The researcher extracted the required data based on the variable required, which was guided largely by the literature review in Chapter 2. The process required manually extracting information from the SENS announcements identified, and coding them into an Excel worksheet. Care was taken to ensure the accuracy of the coding of the data as well as ensuring that the information was comparable and would allow for thorough analysis.

The researcher coded the data into a database, with each variable being a column and the company being a row. Where required, the companies were grouped into industries based on their primary nature of business. Primary nature of business was extracted using a formula on JSE data, which extracts the company nature of business, based on the share code and date. The nature of business is as per the date of the death announcement. While it is possible that the nature of the business may have subsequently changed, it was felt that this would have no impact on the overall data.

The researcher identified each of the data records for the sample company by completing the required variables. Where it was not possible to identify the required information in the SENS announcement itself, additional research was conducted via web searches.

The researcher then undertook the process as described in Chapter 4, identifying abnormal returns on the company in question. The announcement date was deemed T_0 and abnormal returns were calculated up to 10 days prior to the announcement T_{-10} and 180 days post the announcement T_{180}.

The process of identifying abnormal returns was to use a database provided by Mike Ward and Chris Muller of the Gordon Institute of Business Science. By using the control portfolios descried in Chapter 4, the excel calculation was able to establish what the share price behaviour would have been under normal circumstances. The actual share return on the day is thereafter compared to this expected return and where a difference is observed, an abnormal return is recorded. Where there is no difference in expectation to actuals, abnormal returns are recorded as 0%.

5.2 Data Preparation

The aim of this research was to examine the impact of death announcements of directors of JSE listed companies over the period 2000-2015. The data was prepared in order to perform the event study around which this research paper was designed.

5.3 Data Analysis

5.3.1 Average Abnormal Returns (AARs)

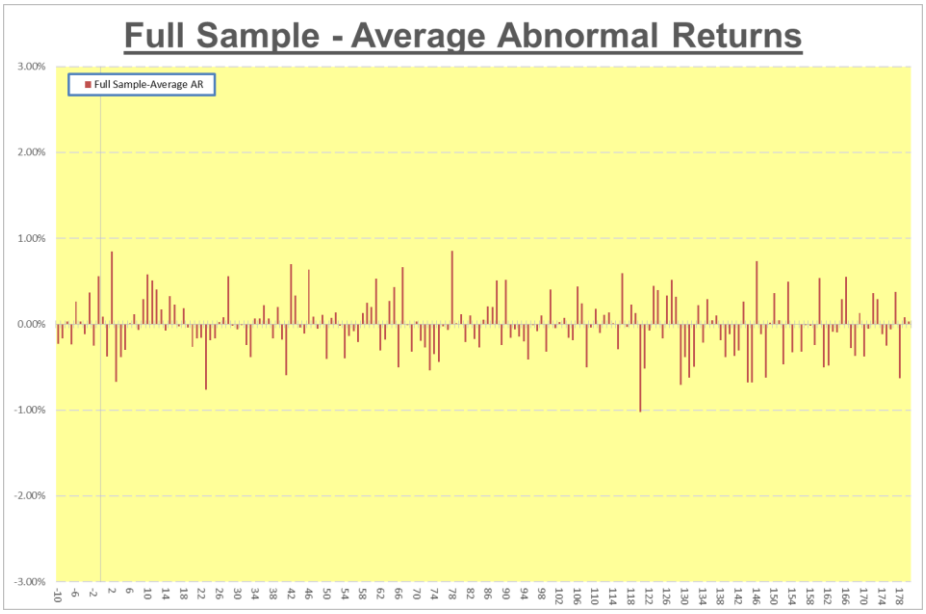
Although both Hypothesis 1 and 2 were formulated to test ACARs over the event window, and not AAR, it is important to understand AARs for the event window is in order to better understand the Hypotheses and the statistical outcomes. AARs were calculated as per Chapter 4 above.

The results below are for the event window spanning T_{-10} to T_{180}.

The Tables below show the Average Abnormal Returns (AARs) in detail for each day of the 196 day event window for the particular stratified view. The window period commences on T_{-10}. This corresponds to 10 days prior to the announcement of the death of the director. The date of announcement is referred to as T_0. The event window extends to T_{180}, which is 180 post the announcement of the death of the director.

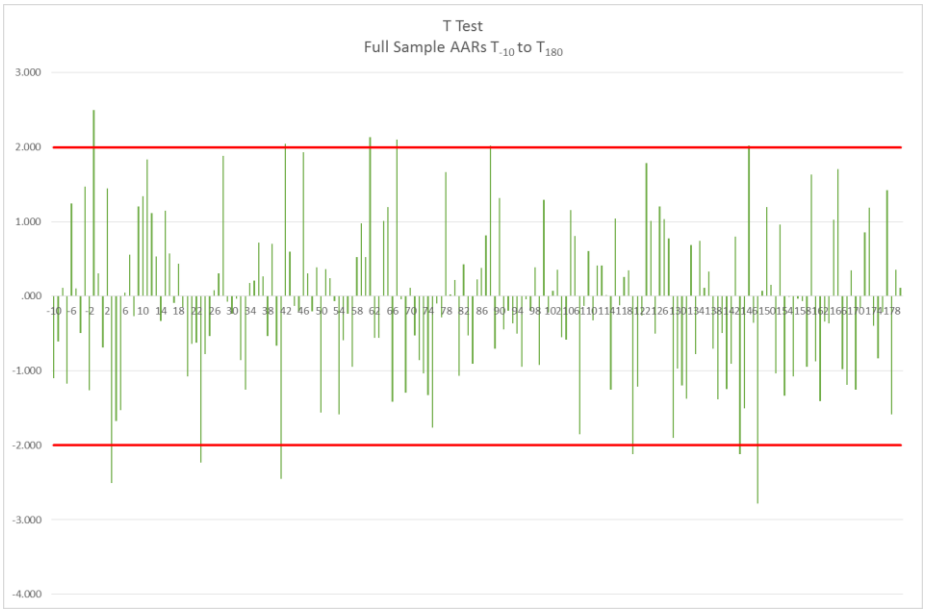
5.3.1.1 Full Sample

Graph 1 below shows that the AARs across the full sample remained between 1% and -1% for the duration of the window period, bar the 1.02% on day 120. While AARs did remain within the 1% to -1% band throughout, the behaviour was erratic.



Graph 1: Full Sample AARs (Researcher Generated Graph)

Graph 2 below reflects the T-test for the full sample. The critical value for the t-test was 1.997 given that the sample size was 65 and the t-test was two tailed. The T-test below indicated that there were certain days that were significant, i.e. the t-value exceeded 1.997. The first significant day is T_{-1} followed by T_3.



Graph 2: T Test - Full Sample AARs (Researcher Generated Graph)

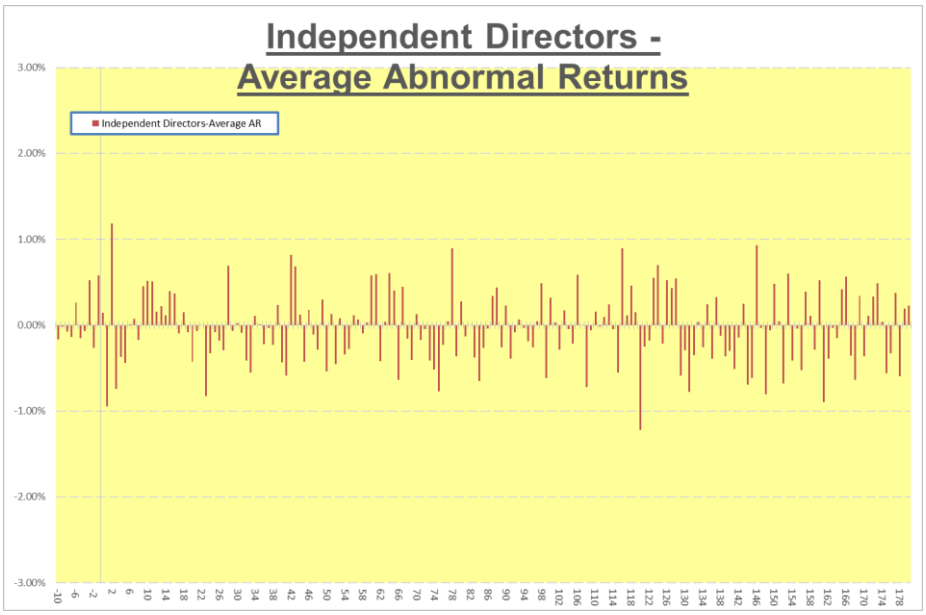
Table 2 below indicates the days where the T-test produced significant results at a 95% confidence level. As can be seen, there were 12 days in the window period where results were significant.

Day	T	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
-1	2.499	65	.015	.005572	.001119	.010024
3	-2.510	65	.015	-.006713	-.012055	-.001372
23	-2.232	65	.029	-.007624	-.014445	-.000803
41	-2.451	65	.017	-.005974	-.010842	-.001106
42	2.047	65	.045	.006965	.000171	.013760
61	2.131	65	.037	.005309	.000333	.010284
67	2.100	65	.040	.006662	.000327	.012998
88	2.021	65	.047	.005091	.000060	.010122
120	-2.123	65	.038	-.010231	-.019857	-.000605
144	-2.119	65	.038	-.006789	-.013187	-.000391
146	2.020	65	.048	.007340	.000082	.014598
148	-2.780	65	.007	-.006266	-.010767	-.001764

Table 2: T-Test data – Full Sample AARs (Researcher generated table)

5.3.1.2 Independent Directors

Graph 3 below demonstrates the AARs of independent directors, and excluding executive directors. The results remain largely within the 1% to -1% range. Overall, the results are erratic, with much volatility. Independent directors made up 48 out of the 65 director sample over the review period. Immediately after the announcement of a death, there seemed to be a large spike in abnormal returns (both positive and negative).



Graph 3: Independent Director AARs (Researcher Generated Graph)

Graph 4 below reflects the T-test for the stratification of independent directors. The critical value for the t-test was 2.0177 given that the sample size was 48 and the t-test was two tailed with a 95% confidence level. The T-test below indicated that there were certain days that were significant, i.e. the t-value exceeded 2.0177. The first significant day is T_{-1} followed by T_3 and T_5.

Graph 4: T-Test Independent Director AARs (Researcher Generated Graph)

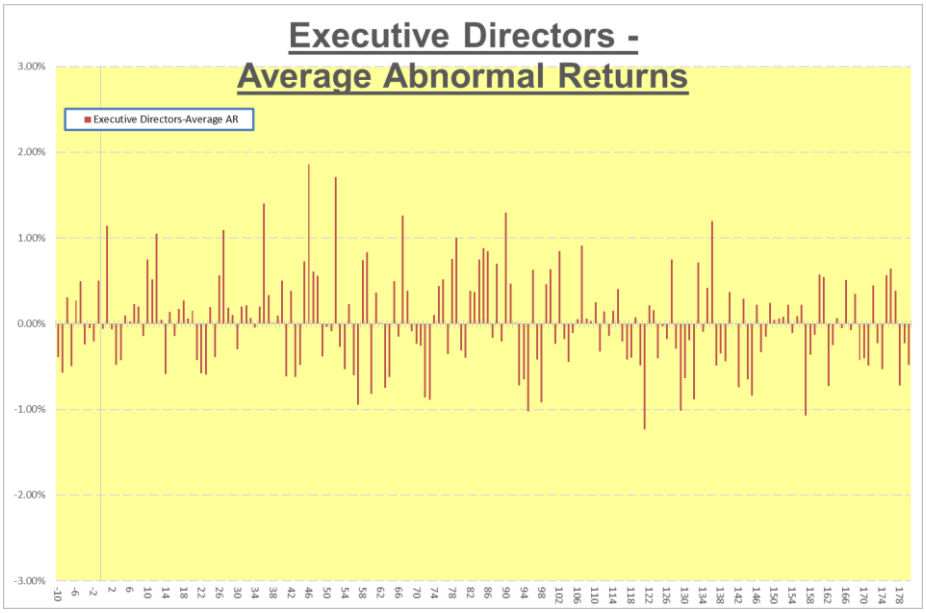
Table 3 below indicates the days where the T-test produced significant results at a 95% confidence level. As can be seen, there were 11 days in the window period where results were significant.

day	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
-1	2.209	47	.032	.005777	.000515	.011038
3	-2.220	47	.031	-.007410	-.014126	-.000694
5	-2.071	47	.044	-.004431	-.008735	-.000126
41	-2.059	47	.045	-.005909	-.011683	-.000135
42	2.382	47	.021	.008145	.001267	.015024
75	-3.025	47	.004	-.007730	-.012870	-.002589
108	-2.026	47	.048	-.007184	-.014317	-.000052
120	-2.065	47	.044	-.012231	-.024145	-.000316
146	2.162	47	.036	.009270	.000644	.017896
148	-3.082	47	.003	-.008055	-.013313	-.002798
175	-2.108	47	.040	-.005585	-.010917	-.000254

Table 3: T-Test data – Independent Director AARs (Researcher generated table)

5.3.1.3 Executive Directors

Graph 5 below demonstrates the AARs when looking specifically at executive directors, and excluding independent directors. The results remain largely within the 2% to -1% range. Overall, the results are erratic, with much volatility.



Graph 5: Executive Director AARs (Researcher Generated Graph)

Graph 6 below reflects the T-test for the stratification of executive directors. The critical value for the t-test was 2.1098 given that the sample size was 17 and the t-test was two tailed with a 95% confidence level. The T-test below indicated that there were certain days that were significant, i.e. the t-value exceeded 2.1098. The first significant day is T_1 followed by T_{27}.

Graph 6: T-Test – Executive Director AARs (Researcher Generated Graph)

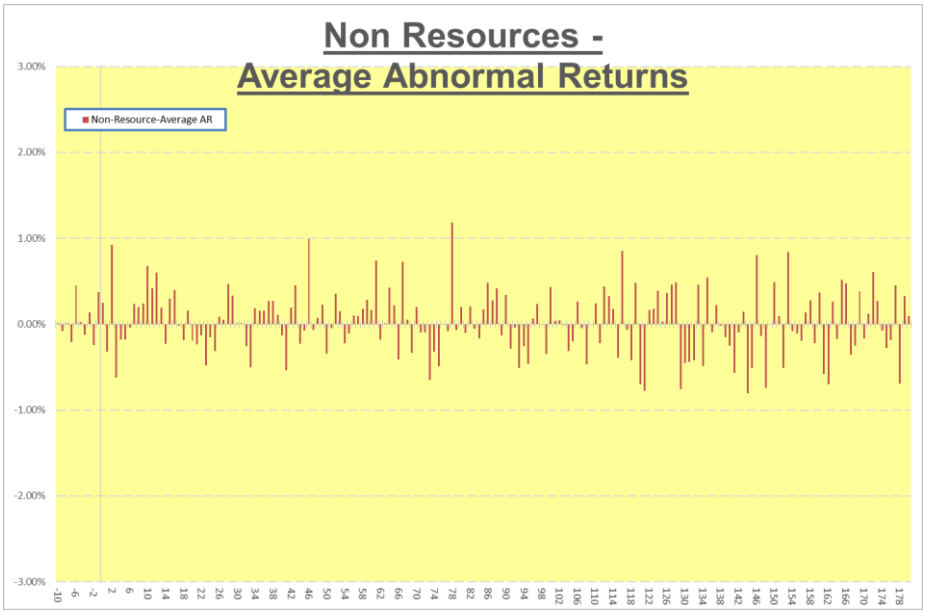
Table 4 below indicates the days where the T-test produced significant results at a 95% confidence level. As can be seen, there were 7 days in the window period where results were significant.

day	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
1	2.756	17	.013	.011415	.002678	.020151
27	3.029	17	.008	.010941	.003320	.018561
36	2.685	17	.016	.013991	.002996	.024986
46	2.466	17	.025	.018576	.002683	.034469
85	2.435	17	.026	.008810	.001176	.016444
98	-2.632	17	.017	-.009200	-.016574	-.001827
129	-2.619	17	.018	-.010203	-.018423	-.001982

Table 4: T-Test data – Executive Director AARs (Researcher generated table)

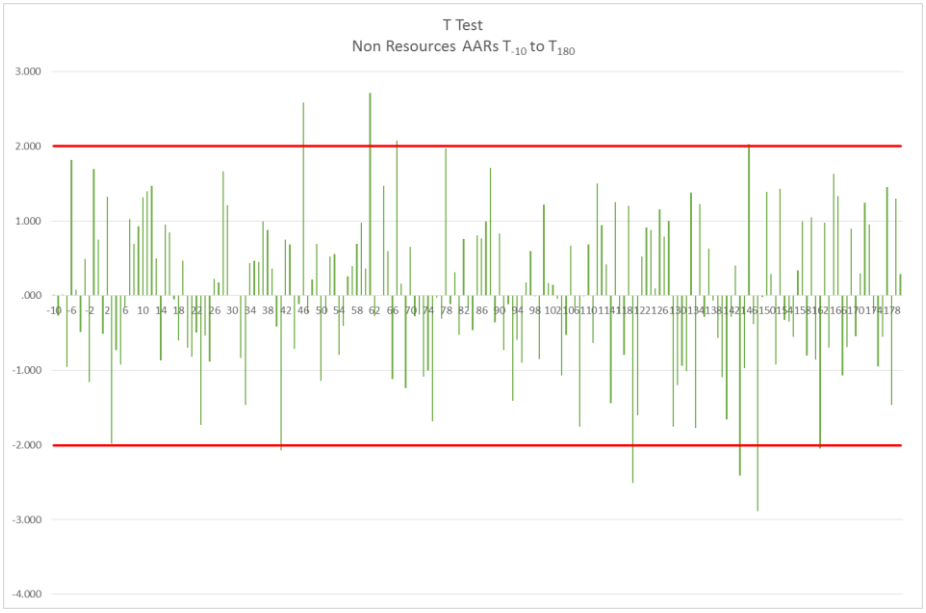
5.3.1.4 Non-Resource Companies

Graph 7 below demonstrates the AARs of Non-Resource companies that experience the death of a director. The results remain almost entirely within the 1% to -1% range. Overall, the results are erratic, with much volatility. Non Resource companies made up 54 out of the 65 director sample over the review period. No discernible patterns emerge from the graph below.



Graph 7: Non-Resources AARs (Researcher Generated Graph)

Graph 8 below reflects the T-test for the stratification of Non-Resource companies. The critical value for the t-test was 2.0057 given that the sample size was 54 and the t-test was two tailed with a 95% confidence level. The T-test below indicated that there were certain days that were significant, i.e. the t-value exceeded 2.0057 – however, this was far further in the window period. The first significant day is T_{41}.



Graph 8: T-Test - Non-Resources AARs (Researcher Generated Graph)

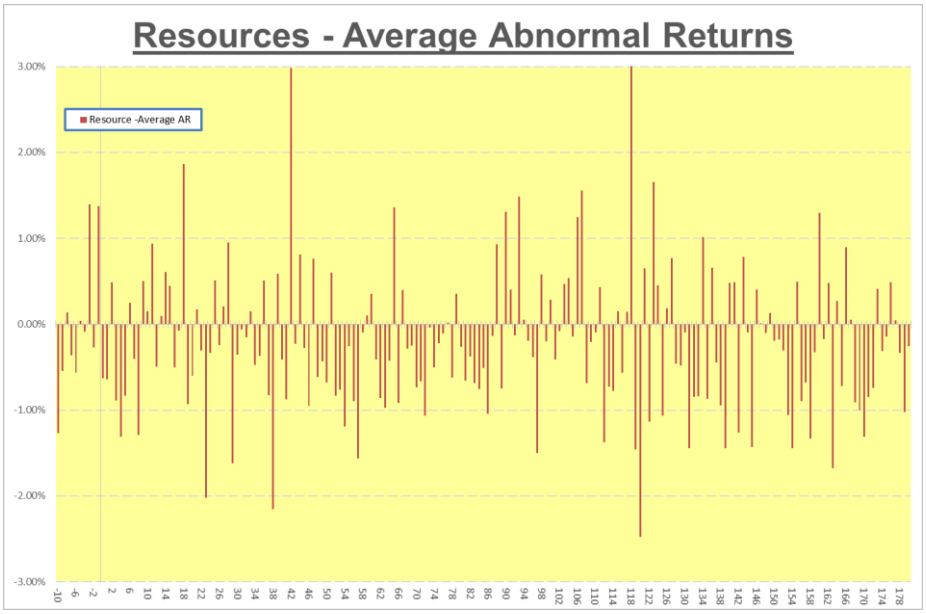
Table 5 below indicates the days where the T-test produced significant results at a 95% confidence level. As can be seen, there were 11 days in the window period where results were significant.

day	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
41	-2.070	53	.043	-.005359	-.010553	-.000165
46	2.587	53	.012	.009928	.002229	.017627
61	2.714	53	.009	.007408	.001934	.012882
67	2.075	53	.043	.007265	.000241	.014289
120	-2.507	53	.015	-.006991	-.012586	-.001397
144	-2.409	53	.019	-.008091	-.014827	-.001355
146	2.030	53	.047	.008067	.000096	.016038
148	-2.889	53	.006	-.007422	-.012574	-.002269
162	-2.043	53	.046	-.006979	-.013831	-.000126
148	-3.082	47	.003	-.008055	-.013313	-.002798
175	-2.108	47	.040	-.005585	-.010917	-.000254

Table 5: T-Test data – Non-Resource AARs (Researcher generated table)

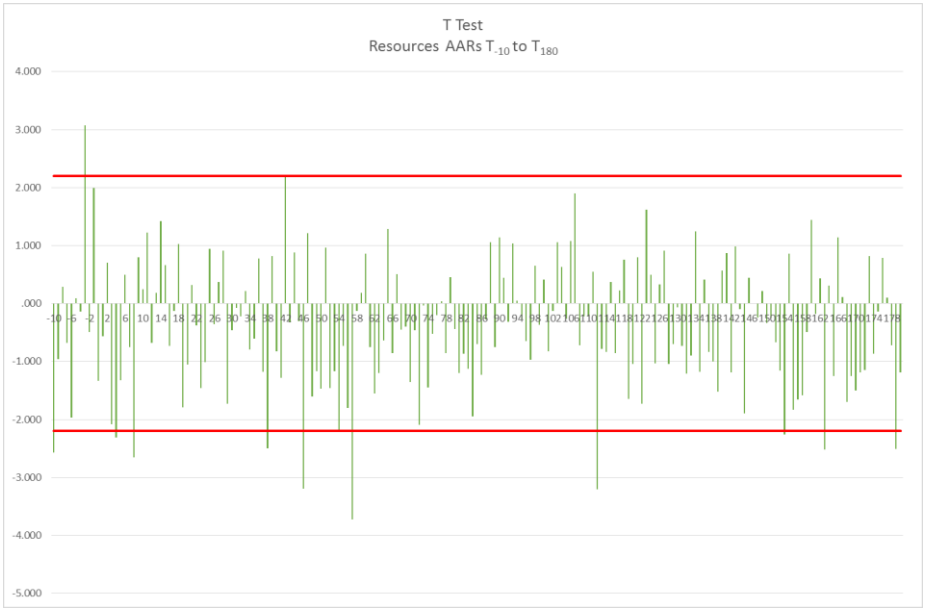
5.3.1.5 Resource Companies

Graph 9 below demonstrates the AARs of Resource companies that experience the death of a director. The results are extremely volatile and range between the 3% to -3% range. Overall, the results are erratic. Resource companies made up 11 out of the 65 director sample over the review period. While the sample size is relatively small, the abnormal returns are more extreme than any other stratification tested.



Graph 9: Resources AARs (Researcher Generated Graph)

Graph 10 below reflects the T-test for the stratification of Resource companies. The critical value for the t-test was 2.201 given that the sample size was 11 and the t-test was two tailed with a 95% confidence level. The T-test below indicated that there were certain days that were significant, i.e. the t-value exceeded 2.201. The first significant day is $T_{-10\ followed}$ by day $T_{3.}$



Graph 10: T-Test - Resources AARs (Researcher Generated Graph)

Table 6 below indicates the days where the T-test produced significant results at a 95% confidence level. As can be seen, there were 11 days in the window period where results were significant.

Day	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
-10	-2.576	11	.026	-.012679	-.023512	-.001845
-3	3.074	11	.011	.013953	.003964	.023942
4	-2.315	11	.041	-.013112	-.025579	-.000644
8	-2.656	11	.022	-.012921	-.023628	-.002215
38	-2.495	11	.030	-.021557	-.040575	-.002538
42	2.215	11	.049	.029804	.000186	.059422
46	-3.197	11	.008	-.009557	-.016136	-.002978
54	-2.207	11	.050	-.011912	-.023794	-.000030
57	-3.730	11	.003	-.015671	-.024917	-.006425
112	-3.203	11	.008	-.013736	-.023175	-.004298
154	-2.254	11	.046	-.014425	-.028508	-.000342
163	-2.523	11	.028	-.016778	-.031415	-.002141
179	-2.511	11	.029	-.010205	-.019151	-.001260

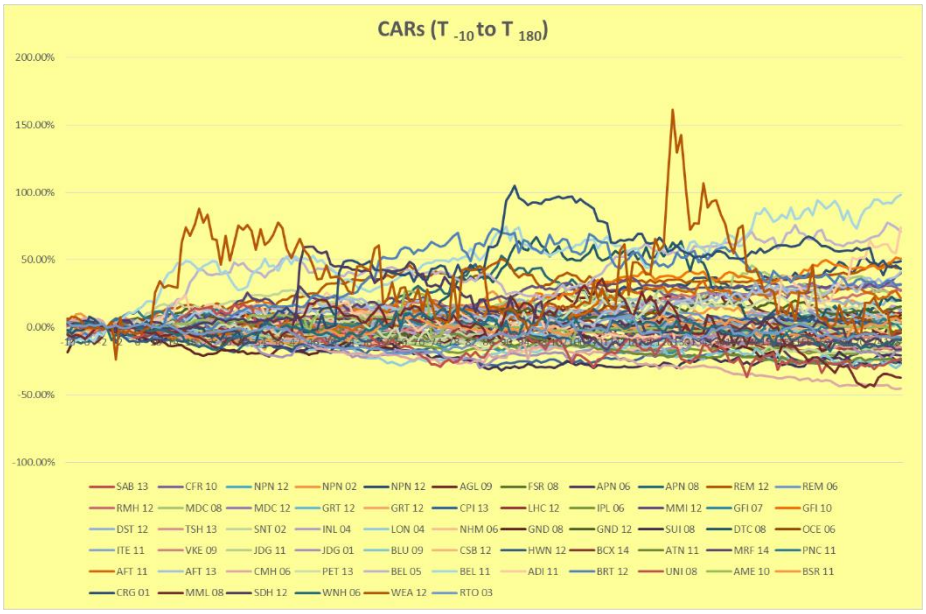
Table 6: T-Test data –Resource AARs (Researcher generated table)

5.3.2 Cumulative Abnormal Returns

5.3.2.1 Full Sample

Cumulative Abnormal Returns (CARs) were calculated by accumulating the daily AARs over the window period of T_{-10} to T_{180}. These are displayed below in Graph 11. The graph shows each of the companies in the sample and their CAR over the window period.

As can be seen, the events converge on 0% at day T_0 and their performance thereafter differs based on the specific company performance. Certain companies had drastic abnormal performance, although these were limited to small and very small cap companies. The overall layout of the graph is as per expectations, with certain companies having positive returns, and others having negative returns.



Graph 11: Cumulative Abnormal Returns – Full Sample (Researcher Generated Graph)

5.3.3 Average Cumulative Abnormal Returns (ACAR)

5.3.3.1 Monte Carlo Boot-strapped process output

Confidence levels of 95% and 5% were extrapolated using the Monte Carlo method and boot-strapping process.

100 different simulations were run to create returns for the sample selected, using random dates before the event occurred for each company, in order to create random return and thereafter a 95% confidence and 5% confidence level selected based on the 95th biggest and 5th smallest simulation result for each day. This thereafter provides us with confidence levels of 95% and 5%, which are indicated as the green and red line graphs in Graph 12 below. This test is more thorough than a t-test as it makes no assumption of normality (Rice, 2006).

Where the ACAR of the sample is between the two confidence levels, it is deemed to be “not significant”.

Boot-strap Output:

All bold values are statistically significant

Monte Carlo Boot-strapping process			
Day	Full Sample-Average Cumulative Abnormal Return	95% Confidence Level	
		Lower	Upper
-10	-0.48%	-2.91%	0.50%
-9	-0.65%	-3.25%	0.13%
-8	-0.62%	-2.79%	-0.05%
-7	-0.86%	-1.50%	0.51%
-6	-0.59%	-1.53%	0.52%
-5	-0.56%	-1.03%	0.55%
-4	**-0.68%**	-0.49%	0.98%
-3	**-0.31%**	-0.20%	1.18%
-2	**-0.56%**	-0.05%	1.38%
-1	0.00%	0.00%	0.00%
-	0.09%	0.00%	1.14%
1	-0.29%	-0.53%	0.87%
2	0.55%	-1.18%	1.03%
3	-0.12%	-1.05%	1.59%
4	-0.50%	-0.98%	1.26%
5	-0.80%	-0.75%	1.76%
6	-0.79%	-1.44%	1.64%
7	-0.67%	-1.64%	1.51%
8	-0.74%	-1.08%	1.78%
9	**-0.45%**	-0.32%	2.74%
10	0.13%	-0.21%	2.88%
11	0.64%	-0.49%	2.89%
12	1.05%	-0.26%	3.32%
13	1.22%	0.02%	3.79%
14	1.14%	-0.28%	3.76%
15	1.47%	-0.21%	4.06%
16	1.71%	0.06%	4.26%
17	1.68%	0.23%	4.65%
18	1.87%	-0.47%	3.97%
19	1.83%	-0.52%	3.73%
20	1.55%	-0.97%	3.56%
21	1.39%	-1.16%	3.69%
22	1.22%	-1.31%	3.48%
23	0.45%	-1.48%	3.45%
24	0.27%	-2.05%	3.18%
25	0.10%	-1.90%	3.29%
26	0.13%	-1.93%	3.16%
27	0.21%	-1.74%	3.24%
28	0.77%	-1.59%	3.32%
29	0.75%	-1.79%	3.19%
30	0.69%	-1.55%	3.42%
31	0.68%	-1.93%	3.13%
32	0.43%	-1.75%	3.16%
33	0.05%	-1.92%	3.11%
34	0.11%	-1.70%	3.31%
35	0.18%	-1.61%	3.10%
36	0.40%	-1.14%	3.65%
37	0.47%	-0.92%	3.95%
38	0.30%	-1.30%	3.83%
39	0.49%	-1.13%	3.81%
40	0.31%	-2.02%	2.96%
41	-0.28%	-1.47%	3.61%
42	0.41%	-1.01%	4.01%
43	0.74%	-1.34%	3.81%
44	0.70%	-0.99%	3.82%
45	0.59%	-1.25%	4.14%
46	1.24%	-1.31%	4.19%
47	1.32%	-1.53%	3.66%
48	1.27%	-1.70%	3.29%
49	1.38%	-1.41%	3.74%

50	0.97%	-1.46%	3.57%
51	1.04%	-1.41%	3.27%
52	1.18%	-1.25%	3.73%
53	1.16%	-1.36%	3.66%
54	0.76%	-1.14%	3.58%
55	0.62%	-1.00%	4.05%
56	0.54%	-0.77%	4.13%
57	0.33%	-1.18%	3.75%
58	0.46%	-1.58%	3.34%
59	0.72%	-1.70%	3.45%
60	0.91%	-1.46%	3.59%
61	1.45%	-1.62%	3.43%
62	1.14%	-1.58%	3.22%
63	0.96%	-1.40%	3.69%
64	1.24%	-0.97%	4.20%
65	1.67%	-0.52%	4.22%
66	1.16%	-0.56%	3.92%
67	1.84%	-0.95%	3.46%
68	1.82%	-0.60%	3.63%
69	1.50%	-1.32%	3.32%
70	1.53%	-1.78%	3.03%
71	1.33%	-1.73%	2.60%
72	1.06%	-1.56%	2.74%
73	0.51%	-1.61%	2.94%
74	0.16%	-1.85%	2.84%
75	-0.29%	-1.94%	2.73%
76	-0.31%	-1.75%	2.54%
77	-0.38%	-1.67%	2.40%
78	0.48%	-1.64%	2.73%
79	0.49%	-1.64%	2.59%
80	0.60%	-1.81%	2.32%
81	0.40%	-2.04%	2.56%
82	0.49%	-1.61%	2.78%

83	0.32%	-2.13%	2.10%
84	0.05%	-2.12%	2.42%
85	0.10%	-2.29%	2.01%
86	0.30%	-2.59%	1.84%
87	0.51%	-2.36%	2.42%
88	1.02%	-2.04%	2.91%
89	0.77%	-1.86%	2.97%
90	1.30%	-1.95%	3.08%
91	1.14%	-1.83%	3.60%
92	1.08%	-1.85%	3.58%
93	0.93%	-1.63%	3.60%
94	0.72%	-1.82%	3.58%
95	0.31%	-2.09%	3.65%
96	0.29%	-2.06%	3.50%
97	0.21%	-2.03%	4.00%
98	0.31%	-2.30%	3.80%
99	-0.01%	-1.94%	3.82%
100	0.39%	-1.91%	3.72%
101	0.35%	-1.41%	3.94%
102	0.37%	-1.38%	4.36%
103	0.45%	-0.83%	4.50%
104	0.29%	-0.83%	4.65%
105	0.10%	-0.79%	4.64%
106	0.54%	-0.23%	4.85%
107	0.78%	-0.03%	5.23%
108	0.28%	-0.38%	5.02%
109	0.24%	-0.34%	5.32%
110	0.42%	-0.42%	4.91%
111	0.32%	-0.77%	4.54%
112	0.42%	-0.69%	4.74%
113	0.56%	-0.59%	4.86%
114	0.57%	-0.79%	4.81%
115	0.27%	-0.87%	4.67%

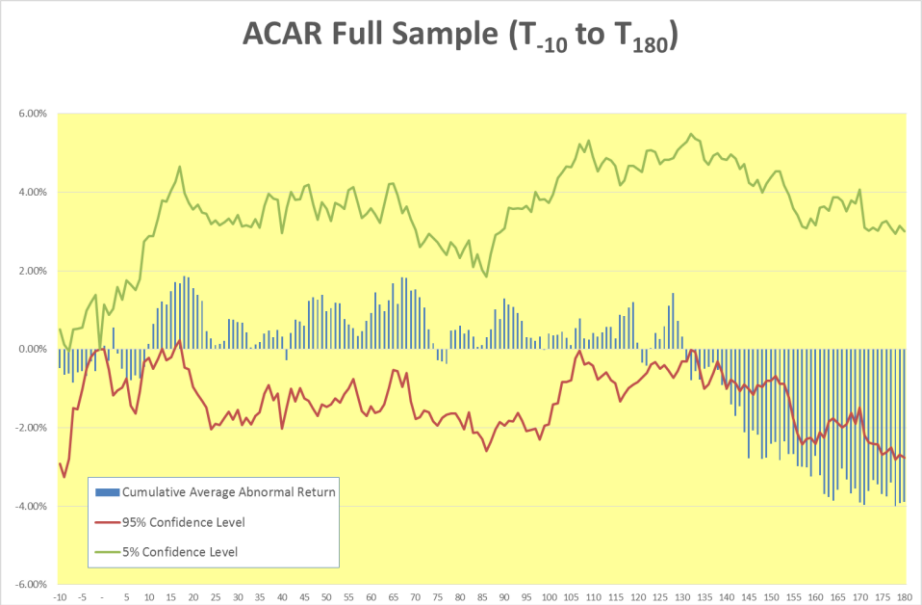
116	0.87%	-1.33%	4.18%
117	0.84%	-1.14%	4.30%
118	1.07%	-0.99%	4.66%
119	1.20%	-0.90%	4.66%
120	0.17%	-0.84%	4.59%
121	-0.35%	-0.72%	4.52%
122	-0.42%	-0.61%	5.05%
123	0.02%	-0.38%	5.08%
124	0.42%	-0.32%	5.03%
125	0.25%	-0.49%	4.72%
126	0.58%	-0.40%	4.83%
127	1.11%	-0.54%	4.83%
128	1.43%	-0.72%	4.86%
129	0.72%	-0.56%	5.08%
130	0.33%	-0.32%	5.17%
131	-0.29%	-0.32%	5.28%
132	**-0.79%**	-0.02%	5.49%
133	**-0.57%**	-0.07%	5.36%
134	**-0.78%**	-0.57%	5.31%
135	-0.49%	-1.01%	4.83%
136	-0.45%	-0.90%	4.70%
137	-0.35%	-0.61%	4.93%
138	**-0.53%**	-0.31%	4.99%
139	**-0.92%**	-0.57%	4.86%
140	**-1.03%**	-1.01%	4.82%
141	**-1.40%**	-0.78%	4.96%
142	**-1.71%**	-0.86%	4.85%
143	**-1.45%**	-1.07%	4.59%
144	**-2.12%**	-0.90%	4.71%
145	**-2.78%**	-1.02%	4.24%
146	**-2.07%**	-1.16%	4.16%
147	**-2.18%**	-0.92%	4.32%
148	**-2.79%**	-0.96%	4.00%
149	**-2.77%**	-0.81%	4.22%
150	**-2.42%**	-0.81%	4.37%
151	**-2.37%**	-0.69%	4.53%
152	**-2.83%**	-0.89%	4.53%
153	**-2.35%**	-0.89%	4.17%
154	**-2.67%**	-1.24%	3.93%
155	**-2.67%**	-1.77%	3.58%
156	**-2.98%**	-2.14%	3.42%
157	**-2.99%**	-2.43%	3.13%
158	**-3.01%**	-2.29%	3.09%
159	**-3.25%**	-2.25%	3.33%
160	**-2.73%**	-2.41%	3.15%
161	**-3.22%**	-2.12%	3.61%
162	**-3.68%**	-2.26%	3.64%
163	**-3.77%**	-1.84%	3.53%
164	**-3.86%**	-1.76%	3.87%
165	**-3.58%**	-1.89%	3.87%
166	**-3.05%**	-2.00%	3.77%
167	**-3.32%**	-1.91%	3.52%
168	**-3.68%**	-1.62%	3.79%
169	**-3.55%**	-1.91%	3.71%
170	**-3.91%**	-1.49%	4.07%
171	**-3.96%**	-2.20%	3.09%
172	**-3.62%**	-2.39%	3.02%
173	**-3.33%**	-2.41%	3.09%
174	**-3.45%**	-2.42%	3.02%
175	**-3.69%**	-2.69%	3.22%
176	**-3.75%**	-2.62%	3.27%
177	**-3.39%**	-2.51%	3.08%
178	**-4.00%**	-2.81%	2.94%
179	**-3.92%**	-2.70%	3.15%
180	**-3.89%**	-2.77%	3.01%

Table 7: Monte Carlo analysis

5.3.3.2 ACAR Full Sample

After calculating CAR, the next step is to average the CAR across all the companies in the sample for each day in the sample window. This is represented by the blue column graph in the Graph 12 below.

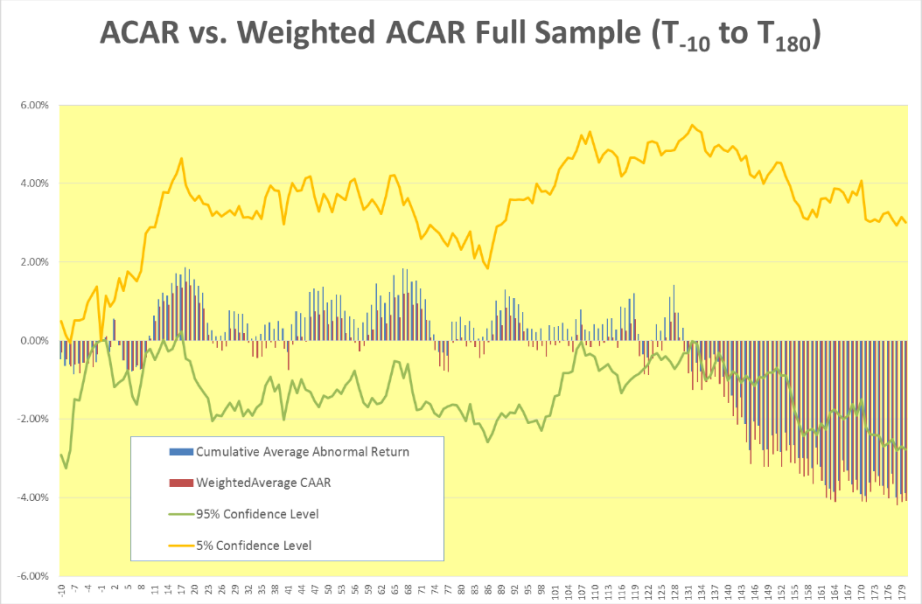
As can be seen in Graph 12, within the full sample, there is a significant ACAR shortly before T_0, and thereafter only again from $T_{130.}$ The majority of the abnormal returns between T_0 and T_{132} are not statistically significant. Thereafter, the ACAR is statistically significant.



Graph 12: ACAR – Full Sample (Researcher Generated Graph)

5.3.3.3 ACAR vs. Weighted ACAR – Full Sample

Graph 13 below accounts for the market capitalisation of shares, and demonstrates the different effect on share price based not only on the shares themselves, but also based on a weighting of market capitalisation. This view aims to remove the impact of small market capitalisation shares skewing the overall results. Graph 13 demonstrates that the market capitalisation has little impact on the overall results.

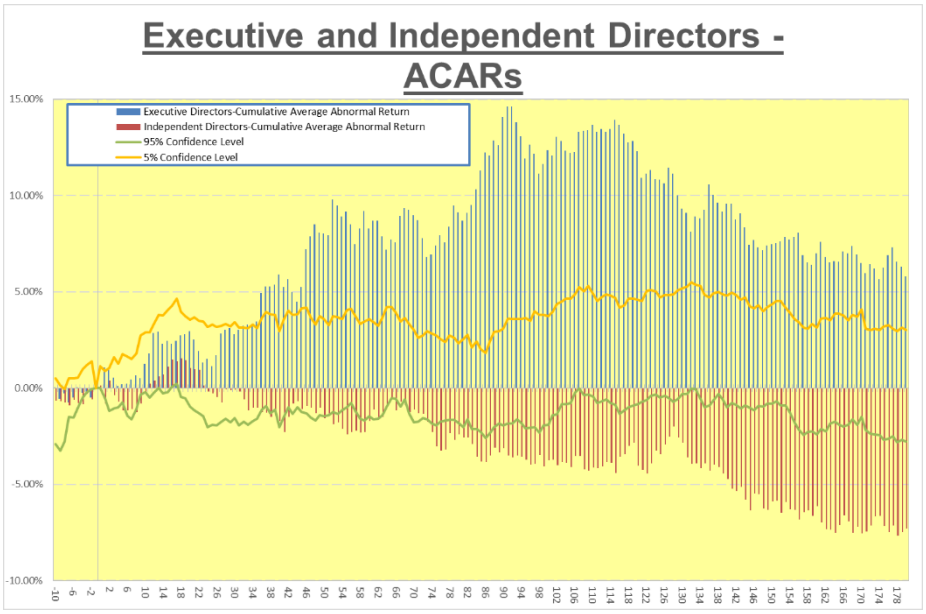


Graph 13: ACAR vs. Weighted ACAR– Full Sample (Researcher Generated Graph)

5.3.3.4 ACARs Executive and Independent Directors

Graph 14 below displays the results of a stratified view of the abnormal returns relating to the death of an executive director as opposed to an independent director. These are displayed in blue and red column graphs below. The yellow and green lines are the indicators of the 5% and 95% confidence levels, achieved by simulation of the sample selection over random dates, outside of the event window.

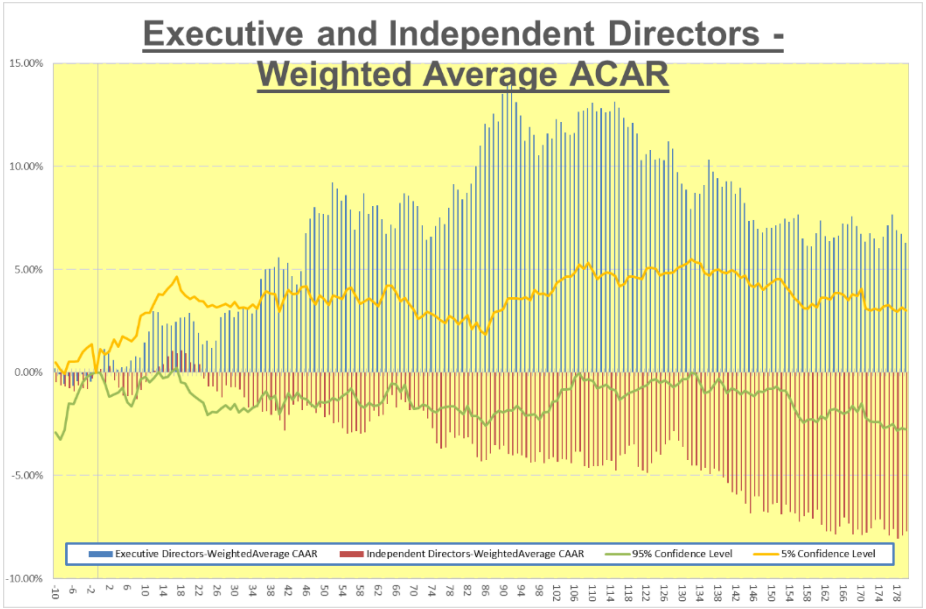
As can be seen, there is an initial abnormal return shortly before T_0, followed by behaviour that is within the expected confidence level. After day 34, executive directors deaths, have abnormal performance is that consistently statistically significant. However, with independent directors, this occurs at a later stage in the event window.



Graph 14: ACAR Executive & Independent Directors (Researcher Generated Graph)

5.3.3.5 Weighted ACARs Executive and Independent Directors

Graph 15 demonstrates that adjusting the ACAR for market capitalisation and weighting accordingly, does not have a major impact on the overall results. There is an initial abnormal return shortly before T_0, followed by behaviour that is within the expected confidence level. After a month, there are abnormal returns that are statistically significant.

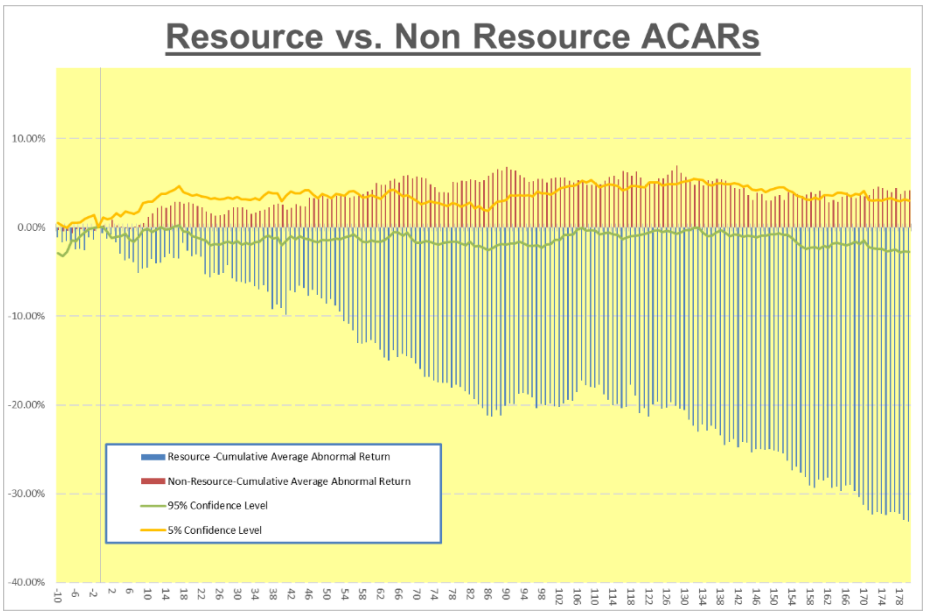


Graph 15: Weighted ACAR Executive & Independent Directors (Researcher Generated Graph)

5.3.3.6 Resource vs. Non Resources ACARs

Graph 16 demonstrates that there is a large impact felt in the resources sector, there is an initial abnormal return shortly before T_0.

The behaviour of the share price for resources and non-resources clearly differs based on Graph 16. As can be seen, non-resources have an overall positive abnormal return while resources have a negative abnormal return that begins earlier in the event window and is more drastic in nature. While both non-resource and resource shares appear to have abnormal returns that are statistically significant, it is clear that the effect is far larger in resource stocks.



Graph 16: ACAR Resource vs. Non Resource (Researcher Generated Graph)

CHAPTER 6: DISCUSSION OF RESULTS OF RESEARCH

6.1 Introduction to results discussion

The researcher intended to answer the research question posed in the initial chapters: Does the death of a director have an effect on the share price of a company? The analysis presented in Chapter 5 is as per the methodology in chapter 4. Chapter 6 is an interpretation of the analysis performed.

As was demonstrated in Chapter 2, there is a broad base of literature that focusses on the efficiency of the JSE in terms of the Efficient Market Hypothesis. Various authors including Bhana (1998), Bhana (1999), Bhana (2003), Bhana (2005) Muller and Ward (2010), Esterhuysen (2010), Muller and Ward (2011), Kruger (2011), Stafford (2012), Oni (2014) have all commented on the weak or semi-strong EMH of the JSE.

This research the results presented below builds on the research of the above researchers but creates a specific focus on the effect of the share price based on the death of a director – something which usually cannot be predicted or be public knowledge, long before the event date T_0.

Chapter 6 positions each of the research questions posed in Chapter 3, followed by an analysis of the results highlighted in Chapter 5. Findings of the research are presented per research question.

6.2 Discussion of results for Research Question 1: Does the death of a director of a listed company have an effect on the share price of that company?

6.2.1 Positioning

The first research question: Does the death of a director of a listed company have an effect on the share price of that company?

This question is of vital importance as it underpins the understanding of the value that shareholders place on the directors of companies that they invest in. Nguyen and

Nielsen (2010), Haynes and Schaeffer (1999) and Salas (2010) all associated the death of a director with an effect on the share price.

6.2.2 Results

The hypothesis tested in order to answer the research question is stated below:

The null hypothesis suggests that shareholders earn no cumulative abnormal returns before or after the announcement date – indicating that announcement of death of a director and the shareholder return for companies listed on the JSE did not lead to any change in the share price.

The alternative hypothesis suggests that the shareholders earn significant positive or negative cumulative abnormal returns around the announcement dates.

H_0: $ACAR_{AD} = 0$
H_a: $ACAR_{AD} \neq 0$

Here, $ACAR_{AD}$ represents the average cumulative abnormal returns from the date of the SENS announcement of the death of a director to $_{T180}$.

While the hypothesis itself is based on Average Cumulative Abnormal Returns (ACAR), it is also important to note the results of the Average Abnormal Returns (AAR). For the full sample, the AAR had 12 days where the t-test was statistically significant as per Chapter 5.3.1.1. At a 90% confidence level, with the sample of 66 announcements, the t-test produced its first significant t-value of 2.499 on $T_{-1.}$ It had been thought suitable to perform a 2-sided t-test with equal variances to test for significance of the results (Rice, 2006).

From a practical perspective, the death of a director may become public knowledge before a SENS announcement is made. Given that it is unlikely that a company would announce the death of a director within a few hours, the death can be assumed to be the day before the announcement is made. As such, it would be reliable to say that the information could become public knowledge and publicly available information before the announcement. As per the EMH theory espoused by Fama, this information would thereafter be priced into the value of the share if the market was a strong form efficient

market (Fama, 1965). Given that there was significant abnormal returns on day T_{-1} it can be postulated that there is an element of market efficiency on the JSE when responding to the death of a director.

Table 1 provides a view of the T-test for abnormal returns on the full sample. There were 12 instances of significant abnormal returns during the event window. Initially these were on day T_{-1} and day T_3 and thereafter have a rather random time incidence before accumulating around day T_{144}.

To ensure that there was reliability of the results, a thorough analysis of the ACARs was produced, including the use of a Monte Carlo analysis and a boot-strapping process. 100 simulations using random dates for each announcement in the sample was run. This created 100 daily ACARs based on random dates. From this, it was possible to create confidence levels.

The overall ACAR for the full sample over the full event window was -3.89%. This was 180 days post the announcement date. The maximum impact that was felt was day T_{178}, where ACAR reached -4.00%. Based on these results, ACAR ≠ 0.

The boot-strapping provided confidence levels in order to test the significance of the findings. As can be seen in Graph 12 – Full Sample ACARS, the ACAR is statistically significant as it falls outside of the 90% confidence level. The result is therefore statistically significant.

Therefore, it can be concluded that at a 90% confidence level, ACAR ≠ 0.

Given that the hypothesis was as follows:

H_0: $ACAR_{AD} = 0$
H_a: $ACAR_{AD} \neq 0$

In this instance, the null hypothesis is rejected in favour of the alternative.

6.2.3 Findings

The contribution of this research study in the area of value of directors is as follows:

The research corroborates the work of Nguyen and Nielsen (2010), Haynes and Schaeffer (1999) and Salas (2010), albeit in a South African context. In a 180 day event window, the ACAR for the full sample was -3.89%. This result indicates that companies

that experienced the death of a director, on average, had negative abnormal returns of -3.89%. This finding in itself is important as it shows that there is a value that is attributed to directors of listed companies. When a death occurs, there is an abnormal return that occurs over the 180 day window period.

6.3 Discussion of results for Research Question 2: Is there a difference between the effect experienced based on whether the director who has died was an executive or independent director?

6.3.1 Positioning

The second research question: Is there a difference between the effect experienced based on whether the director who has died was an executive or independent director?

This question is of vital importance as the research of Nguyen and Nielsen (2010) demonstrated that the abnormal returns are negative for independent directors while Haynes and Schaeffer (1999) Johnson, Magee, Nagarajan, and Newman (1985), and Salas (2010) have all identified a positive abnormal return when a death of an executive director occurs. The purpose of this research study was to identify whether this stood true on the JSE.

6.3.2 Results

The hypothesis tested in order to answer the research question is stated below:

The null hypothesis suggests that the ACAR for independent directors is the same as the ACAR for executive directors – stating that the abnormal returns for both independent and executive directors would be the same. This would indicate that shareholders earn the same cumulative abnormal returns regardless of whether the director whose death has been announced is an independent or executive director.

The alternative hypothesis suggests that ACAR for independent directors is the not the same as the ACAR for executive directors – stating that the abnormal returns for both independent and executive directors would be the different. This would indicate that shareholders earn different cumulative abnormal returns based on whether the director whose death has been announced is an independent or executive director.

H_0: $ACAR_{Ind} = ACAR_{Ex}$

H_a: $ACAR_{Ind} \neq ACAR_{Ex}$

Here, $ACAR_{Ind}$ and $ACAR_{Ex}$ represent the average cumulative abnormal returns from the date of the SENS announcement of the death of a director to T_{180}.

While the hypothesis itself is based on Average Cumulative Abnormal Returns (ACAR), it is also important to note the results of the Average Abnormal Returns (AAR).

For the independent directors in the sample, the AAR had 11 days where the t-test was statistically significant as per Chapter 5.3.1.2. At a 90% level of confidence, with a sample of 48, the t-test produced a t-value of 2.209 on $T_{-1.}$ It had been thought suitable to perform a 2-sided t-test with equal variances to test for significance of the results (Rice, 2006).

For the executive directors in the sample, the AAR had 7 days where the t-test was statistically significant as per Chapter 5.3.1.3. At a 90% confidence level, the t-test produced a t-value of 2.756 on $T_{1.}$ It had been thought suitable to perform a 2-sided t-test with equal variances to test for significance of the results (Rice, 2006). This result is different from independent directors, as the abnormal returns only took place a day after the announcements, as opposed to the day before the announcements. Reasons postulated for the delayed abnormal share price movements could be the fact that independent directors are often better known or recognised, and their death may be more widely reported.

As previously discussed, the death of a director may become public knowledge before a SENS announcement is made. However, this may differ between independent and executive directors.

Within the realm of independent directors, the findings concur with Nguyen & Nielsen (2010), which show a negative abnormal return resulting from the death of an independent director. The findings also seem to validate that the JSE operates at a level of efficiency in terms of EMH theory (Fama, 1965), Given that there was significant abnormal returns on day T_{-1} it can be postulated that there is an element of market efficiency on the JSE when responding to the death of an independent director.

Within the realm of executive directors, the findings seem to concur with Haynes and Schaeffer (1999) Johnson, Magee, Nagarajan, and Newman (1985), and Salas (2010)

which all demonstrated positive abnormal returns after the death of an executive director. The fact that the first statistically significant abnormal returns occurs at day T_1 indicates that information on executive may not become public knowledge as quickly, or adjusted into the share price as quickly. This would indicate a weak or semi-strong EMH and align with many of the recent studies into the JSE (Bhana, 1998; Bhana 1999; Bhana 2003; Bhana 2005; Muller & Ward, 2010; Esterhuysen, 2010; Muller & Ward, 2011; Oni, 2014).

Table 3 and Table 4 provide a view of the T-test for abnormal returns on the independent and executive directors in the sample. There were 11 instances of significant abnormal returns during the event window for independent directors and 7 instances of significant abnormal returns for executive directors.

To ensure that there was reliability of the results, a thorough analysis of the ACARs was produced, including the use of a Monte Carlo analysis and a boot-strapping process. 100 simulations using random dates for each announcement in the sample was run. This created 100 daily ACARs based on random dates. From this, it was possible to create confidence levels. These confidence levels were then overlaid on the ACARs for both independent and executive directors (separately).

The ACAR for the independent directors over the full event window was -7.28%. The ACAR for executive directors over the full event window was 5.8%. This was 180 days post the announcement date. This ties into the various research in Chapter 2 which demonstrates negative abnormal returns for independent directors (Nguyen & Nielsen, 2010) and positive abnormal returns for executive directors (Haynes & Schaeffer, 1999; Johnson et al., 1985; Salas, 2010).

Within the realm of independent directors, the day with the maximum abnormal return was day T_{178}, where ACAR reached -7.68%. Within executive directors, the day with the maximum abnormal return was day T_{92}.

The boot-strapping provided confidence levels in order to test the significance of the findings. As can be seen in Graph 14 in Chapter 5 – ACAR Executive & Independent Directors, the 180 day ACAR is statistically significant as it falls outside of the 90% confidence level for both independent directors and executive directors, albeit in different directors. Post the announcement of the death of independent directors, negative abnormal returns are achieved. Post the announcement of the death of executive directors, positive abnormal returns are achieved. The results are therefore statistically significant.

Therefore, it can be concluded that at a 90% confidence level, the ACAR of independent directors are different to the ACAR of executive directors.

Given that the hypothesis was as follows:

H_0: $ACAR_{Ind} = ACAR_{Ex}$
H_a: $ACAR_{Ind} \neq ACAR_{Ex}$

In this instance, the null hypothesis is rejected in favour of the alternative.

6.3.3 Findings

The contribution of this research study in the area of value of directors is as follows:

The research corroborates the work of Nguyen and Nielsen (2010), Haynes and Schaeffer (1999) and Salas (2010), in a South African context. In a 180 day event window, the ACAR for independent directors was negative, as per the previous research, while the ACAR for executive directors was positive.

This results of this study indicate that ACAR are achieved on markets outside of the USA, on smaller indices such as the JSE, when a director of a listed entity dies. The research indicates that regardless of the perceived efficiency of the market (Fama, 1965; Fama, 1970; Fama et al., 1969; Malkiel, 2005), there exists an opportunity to achieve abnormal returns in the short term.

This research has indicated that there is a level of efficiency in the JSE, when dealing with the issue of the death of a director, as abnormal returns are experienced often on day T_{-1}. This is contrary to much of the previous JSE research, which finds that the JSE is on the whole rather inefficient as a market (Esterhuysen, 2011; Muller & Ward, 2010; Oni, 2014).

6.4 Results for Research Question 3: Is there a difference between the effect experienced based on whether the director who has died was in the resource or non-resource sector?

6.4.1 Positioning

The third research question: Is there a difference between the effect experienced based on whether the director who has died was in the resource or non-resource sector?

This question is of importance as there are a multitude of studies that indicate that there is a different in the market conditions that cause effect to resource and non-resource shares (Bowie & Bradfield, 1993; Correia & Uliana, 2004; Gilbertson & Roux, 1978). Given the unique nature of the JSE, it is therefore important to test a stratification of results based on the resources and non-resources sectors on the JSE.

6.4.2 Results

The hypothesis tested in order to answer the research question is stated below:

The null hypothesis suggests that the ACAR for resource companies is the same as the ACAR for non-resource – stating that the abnormal returns for both resource and non-resource companies would be the same post the death of a director.

The alternative hypothesis suggests that ACAR for resource companies is the not the same as the ACAR for non-resource companies, post the death of a director – stating that the abnormal returns for both resource companies and non-resource companies would be the different.

H_0: $ACAR_{Res} = ACAR_{NRes}$
H_a: $ACAR_{Res} \neq ACAR_{NRes}$

Here, $ACAR_{Res}$ and $ACAR_{NRes}$ represent the average cumulative abnormal returns from the date of the SENS announcement of the death of a director to $_{T180}$.

While the hypothesis itself is based on Average Cumulative Abnormal Returns (ACAR), it is also important to note the results of the Average Abnormal Returns (AAR).

For the resource companies in the sample, the AAR had 11 days where the t-test was statistically significant as per Chapter 5.3.1.2. At a 90% level of confidence, with a sample of 12, the t-test produced a t-value of 2.201 on $T_{-1.}$ It had been thought suitable to perform a 2-sided t-test with equal variances to test for significance of the results (Rice, 2006).

For the non-resource company directors in the sample, the AAR had 11 days where the t-test was statistically significant as per Chapter 5.3.1.3. At a 90% confidence level, the t-test produced a t-value of 2.0057 - with the first statistically significant abnormal return being on day $T_{41.}$ It had been thought suitable to perform a 2-sided t-test with equal variances to test for significance of the results (Rice, 2006).

The non-resource results are different from the resource results, as the abnormal returns only took place well after the announcement of the death of the director – in contrast to resource companies, where there were abnormal returns far sooner.

Within the realm of non-resource versus resource stocks on the JSE, the finding concur with the research of Correia and Uliana (2004) and Gilberson and Roux (1978) who contended that the JSE is unique due to its high concentration of resource companies and that the factors that impact non-resource companies are different to the factors that impact resource companies. (Correia & Uliana, 2004; Gilbertson & Roux, 1978)

Table 5 and Table 6 provide a view of the T-test for abnormal returns on the non-resource and resource deaths in the sample. There were 11 instances of significant abnormal returns during the event window for resource companies and 7 instances of significant abnormal returns for non-resource company directors.

Using the boot-strap process mentioned previously, confidence levels were then overlaid on the ACARs for both resource and non-resource company director deaths (separately).

The ACAR for the resource company directors over the full event window was -33.12%. The ACAR for non-resource directors over the full event window was 4.18%. This was 180 days post the announcement date. This ties into the various research in Chapter 2 which demonstrates factors that affect resource companies differ from non-resource companies (Correia & Uliana, 2004; Gilbertson & Roux, 1978).

Within the realm of resource directors, the day with the maximum abnormal return was day T_{180}, where ACAR reached -33.12%. Within executive directors, the day with the maximum abnormal return was day T_{128} with abnormal returns of 6.95%.

The boot-strapping provided confidence levels in order to test the significance of the findings. As can be seen in Graph 16: ACAR Resource vs. Non Resource, the 180 day ACAR is statistically significant as it falls outside of the 90% confidence level for both independent directors and executive directors, albeit in different directors. Post the announcement of the death of resource directors, negative abnormal returns are achieved. Post the announcement of the death of non-resource directors, positive abnormal returns are achieved. The results are therefore statistically significant.

Therefore, it can be concluded that at a 90% confidence level, the ACAR of resource directors are different to the ACAR of non-resource directors.

Given that the hypothesis was as follows:

H_0: $ACAR_{Res} = ACAR_{NRes}$
H_a: $ACAR_{Res} \neq ACAR_{NRes}$

In this instance, the null hypothesis is rejected in favour of the alternative.

6.4.3 Findings

The contribution of this research study in the area of value of directors is as follows:

The research corroborates the work Correia and Uliana (2004) and Gilbertson & Roux (1978) who contended that the factors that impact resource and non-resource shares is different and that the JSE is unique in its high concentration of resource stocks. In a 180 day event window, the ACAR for the death of resource directors was negative, while the ACAR for resource directors deaths was positive.

6.5 Overall study limitations

The research took the form of quantitative research, which lacks human intervention, and is based solely on empirical data. The sample size, although statistically acceptable, was not overly large.

The study only included instances where companies have recorded the death of a director by means of announcement via SENS – the possibility remains that certain instances are missed due to non-publishing of the death announcement. While it is a

requirement to make an announcement via SENS, there remains the possibility that these instances were missed.

While all efforts were made to capture the deaths of all directors including the various synonyms that were used for the passing of a director, it is possible that certain instances may have been missed, and therefore excluded from the sample. Such instances, while unintentional, could impact on the overall event study.

The study only includes death and announcements that take place over the period 1 January 2000 and 31 July 2015 and therefore takes a view over a 15 year period and not the full history of the JSE. The selection criteria in terms of dates was due to availability of data required in order to assess abnormal returns. There remains the possibility that the 2000-2015 period is different to pre-2000 on the JSE.

While the death of a director is certainly an event that may impact the share price of a company, various company specific events could have occurred in and around the time of the death of the director – which could impact the results of this study. It was not possible in the scope of this research to identify company specific events which may have occurred at the same time as the death of the director.

Various market related factors, such as the global financial crisis of 2007-2008, and the drop in resource prices in 2014, have a significant impact on company share price movement – which are independent of the events being researched. While the control portfolio should account for most of the abnormal returns due to external factors, these cannot be totally overlooked.

This research did not exclude companies outside of the top 160 companies ranked by market capitalisation. There remains the possibility that the impact on those smaller companies outside of the top 160 could be different from those within the top 160.

Data integrity issues were experienced on certain companies that experienced the death of a director, which required them to be excluded from the overall sample of 66 companies. Inaccurate share data was also identified, and where required, these companies were excluded from the research sample.

The research attempted to identify whether sudden death had a different ACAR to natural deaths, however there was insufficient data (both within the SENS announcements and publicly available information) to identify the causes of all deaths.

The researcher made an assumption that all companies were affected by extraneous factors equally. This was done to remove any bias in the data.

6.6 Future Research

The researcher investigated the research questions for all companies listed on the JSE over the period of 2000-2015. Future research could identify whether the impact experienced by companies differs at different times during the lifespan of the JSE.

Future research could delve into the difference in ACAR experienced between independent directors and executive directors on the JSE. As perceived valued employees, the fact that the death of an executive director results in positive ACARs deserves greater analysis.

The research identified that the ACAR experienced in the resources sector was dramatic as opposed to non-resources, which although statistically significant, was not nearly as dramatic. Further research can look into the factors that lead to such negative ACARs for companies in the resources sector post the death of a director.

Future opportunities for research include the analysis of sudden deaths as opposed to natural deaths. Nguyen and Nielsen (2010) identified that sudden deaths had different ACARs to natural deaths, and this could be further investigated on the JSE.

CHAPTER 7: CONCLUSION AND RECOMMENDATIONS

7.1 Introduction

The death of a director, while a sensitive topic, has a material impact on the share price of a company. While various international research has identified that adding directors to a board does little the share price, all identified international studies have concluded that the death of a director has a statistically significant impact on the share price (Haynes & Schaeffer, 1999; Johnson et al., 1985; Nguyen & Nielsen, 2010; Salas, 2010).

The question that the researcher sought to answer was: Does the death of a director have an effect on the share price of a listed company on the JSE?

The researcher first investigated, in Chapter 2, the concept of directors and the difference between independent and executive directors, and the different roles and responsibilities that each hold.

The research then identified value that directors add to companies, either in terms of profits or market value.

Thereafter, the researcher identified existing research into the field of deaths of directors, and the impact on share price. In these research papers, a link between a directors deaths and abnormal returns was established.

The results of the research study are provided below. Thereafter, recommendations are provided. The research study is then concluded.

7.2 Research findings

Three research questions were identified in Chapter 3 to answer the principle research question: Does the death of a director have an effect on the share price of a listed company on the JSE?

The first research question tested: Does the death of a director of a listed company have an effect on the share price of that company? Through the analysis and hypothesis testing conducted in Chapter 5 and Chapter 6, the conclusion was reached that the death of a director does have an effect the share price of that company. This research has

concurred with the existing research on this field, and confirmed that this applies in the South African context.

The second research question posed: Is there a difference between the effect experienced based on whether the director who has died was an executive or independent director? Through the statistical analysis and hypothesis testing in Chapter 5 and Chapter 6, the conclusion was reached that effect of the death of a director does differ based on whether the director was independent or executive. The impact was negative abnormal returns for independent directors and positive abnormal returns for executive directors.

The third research question posed: Is there a difference between the effect experienced based on whether the director who has died was in the resource or non-resource sector?

Through the analysis and hypothesis testing in Chapter 5 and Chapter 6, the conclusion was reached that effect of the death of a director does differ based on whether the director was from a resource or non-resource company. The impact was significantly negative abnormal returns for directors from resource companies and positive abnormal returns for directors from resource companies.

7.3 Recommendations for companies

The research has identified that the death of directors have material impacts on their share price. The research has identified that the death of independent directors across all industries leads to statistically significant negative abnormal returns. The recommendation for companies would be to try and ensure and encourage the health and well-being of independent directors – as their death would have a negative on overall shareholder value.

Within the resources sector, the value of directors is shown to be particularly high. The death of directors of companies within the resources sector has been shown to have an overall negative abnormal return of over 30% in a six month period. This information is key for companies, and is evidence for companies to encourage and ensure the health of directors, in order to protect shareholder value.

7.4 Recommendations for academics in this field of research

From the research it was established that the death of directors does have an abnormal effect on the share price of companies on the JSE. This reaffirms international body of work, which has identified abnormal returns post the death of a director (Haynes & Schaeffer, 1999; Johnson et al., 1985; Nguyen & Nielsen, 2010; Salas, 2010).

The reasons behind the reasons for positive abnormal returns post the death of an executive director have not been fully investigated and require further analysis. The reasons behind the large discrepancy between the effect experienced in the resource and non-resource companies can be further explored.

The main contribution of this paper has been to create a foundation for work into the deaths of directors in South Africa. Future studies should therefore build on the work of this research paper.

7.5 Research conclusion

The research study has proven that the death of directors has an effect on the share price of that company. The research also identified that abnormal returns were experienced for independent directors, executive directors, directors of resource companies and directors of non-resource companies. The overall effect based on the full sample was negative abnormal returns based on the ACAR over the full event window.

This study identified that while abnormal returns were experienced for both independent and executive directors – the ACARs were in opposite directions. The death of independent directors led to negative ACARs over the event window. The death of executive directors led to positive ACARs over the event window.

The study also identified that the impact on resource and non-resource companies was different, post the death of a director. The death of a director in resource companies led to substantial negative ACARs over the event window, while non-resource companies experienced positive ACARs post the death of a director.

The research identified that the JSE displayed evidence of semi-strong market efficiency, as abnormal returns were experienced on the full sample at day T_{-1}, i.e. before the death announcement.

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APPENDICES

Gordon Institute of Business Science
University of Pretoria

Dear Anton Jaffe

Protocol Number: **Temp2015-01936**

Title: **The Value of Independent Directors**

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