An analysis of the effect of changes in Chief Executive Officers on the share prices of JSE listed companies

---

A research report submitted by

Rhys Carolissen

Student Number: 510072

Ethics Clearance Number: CACCN/1075

Cell: 0798811907

Email: rhyscarolissen@gmail.com

A research report submitted to The School of Accountancy, Faculty of Commerce, Law and Management, University of Witwatersrand

in partial fulfilment of the requirements for the degree of

Masters of Commerce in Accounting

Supervisor: Andres Merino

Table of Contents

DECLARATION

I declare that this research report is my own original work and that all sources have been accurately reported and acknowledged. It is submitted for the degree of Masters of Commerce to the University of Witwatersrand, Johannesburg. This research has not been submitted before for any degree or examination at this or any other university.

Rhys Carolissen

31 March 2015

Acknowledgement

I would like to express my acknowledgement and gratitude to Andres Merino for his strong encouragement and relentless support in supervision of this research paper.

Abstract

The role and importance of a company's CEO has become an increasingly important topic of research. The executive leadership has an important role to play in defining the strategy of the firm and its ability to compete. The value relevance of the CEO of a company and thus any changes pertaining thereto is understood to be due to developments in information technology and reporting requirements. This characterizes an information environment whereby investors are better equipped at making more informed investment decisions. The current business has become increasingly more competitive and volatile. In response to this, market participants place greater value on the importance of the CEO of the company. The CEO of a company may possess the ability to lever the company above its competitors through the development and implementation of company strategy.

This research report assesses how market participants react in response to CEO appointment announcements using a sample of 105 announcements using an event study methodology. The value relevance pertaining hereto can be ascertained by observing the abnormal returns of the company's share price on the date of the announcement. In furtherance of this assessment, the sample is disaggregated in accordance to event specific, firm-specific and non-event specific factors. Prior research suggests that this analysis facilitates more robust inferences to be made on how market participants react to CEO appointment announcements. In both Africa and South Africa, a strong body of literature is yet to be established on this effect.

In general, findings display significant market reactions in response to the CEO change, thus suggesting that market participants perceive the CEO change as a significant event in the life of the firm. On the day of the event strong positive abnormal returns were generating thereby indicating that investors react positively to the appointment of a new CEO. However, the negative cumulative abnormal returns displayed in the periods before and after the event can be interpreted as the contrary. In addressing these conflicting views, the analysis of share performance in relation to firm-specific, event-specific and non-event related factors proves useful. The findings in this part of the section explain that negative returns are due to increased uncertainty over the future of the company, the positive returns on announcement date are found to be strongly associated with the type of successor appointed. These findings further reveal market participants react significantly strongly to a CEO change as seen by high negative cumulative abnormal returns. These findings contextualize how the value attached to CEOs by market participants vary in relation to different conditions.

Chapter 1: Introduction

1.1 Purpose and context

In terms of agency theory, the agency, in general terms consists of the relationship between the principal and the agent. This relationship occurs when the principal hires the agent to perform a service on behalf of the principal and in doing so they would commonly delegate decision-making authority to the agent. Several studies have indicated that the dominant normative mandate for directors is the maximization of shareholder wealth. The creation of shareholder wealth is inferred mostly from increases in share prices, dividends and equity issued. Managing a company with the focus of creating value is argued to begin with strategy and end with financial results and it is the responsibility of the executive leadership of an organization to plan and implement a strategy that creates shareholder wealth (Knight 1998). It seems that the creation of shareholder value is to a large degree influenced by the performance of executive leadership.

1.1.1 The importance of a Chief Executive Officer

The way in which the market interprets the future performance of the company is said to be one of the key factors that determine the respective company's share price (Meckel 2007). (Clayton 2003) lends support to this view, as he argues that changes in executive leadership are significant events in the life of a firm. This can be characterized by the capacity of the leadership of a firm to choose projects, set the financial policy of the firm and establish a corporate culture. Across the globe, stock markets react to various corporate announcements. Given the importance of Chief Executive Officers (CEO), any changes hereto is argued to be one of the significant announcements that markets react to (Nthoesane 2014). Previous studies approach understanding this effect by analysing how the share prices react in response to the CEO appointment announcement.

1.1.2 The Investor perspective

It is important to recognise that the market reaction in response to a CEO appointment announcement may be influenced by factors specific to the company or CEO appointment announcement. This understanding is corroborated by prior research which evidence that factors such as the origin of the successor, reason for the change, firm size, and whether or not the company is in financial distress influence share price performance in response to the CEO appointment announcement (Bonnier 1989).

1.2 Statement of the problem

The objective of this study is to develop an understanding on how a change in the CEO of a company will affect its share performance for JSE listed companies. Existing literature is argued to provide inconclusive results on this subject matter (Nthoesane 2014). These studies have produced findings which indicate that the markets across the globe react either negatively, positively or insignificantly to a change in CEO. Furthermore, several studies reveal that factors such as: origin of successor (internal or external), the reason for CEO change (voluntary or involuntary), firm size, and whether not the company is in financial distress or not influence the markets' reaction to CEO appointment announcements. This research report assesses the effect CEO appointment announcements on share prices of JSE listed companies.

1.3 Purpose of the study

The purpose of this study is to investigate the effect CEO appointment announcements have on share price performance of JSE listed companies, and thereby determine the extent to which investors value the role of a CEO in relation to the future of the company.

1.4 Significance of study

Research on this topic is well documented across the globe. The findings of (Nthoesane 2014) which indicate that investors generally react negatively in response to announcements over changes in CEOs. These findings were consistent with (Lassoued 2013) in Tunisia, (Kang 2009) in Asia, (Charitou 2010), (Van Doom 2011), (Vafeas 2009) in Europe and (Lubatkin 1989) in America. There is however, limited research in this area in Africa to ascertain whether there is any emerging trend on how investors react to announcements of CEOs (Nthoesane 2014). Given that earlier views provided by researchers such as (Warner 1988) who found a significant association between poor stock performance and the frequency of management turnover. There appears to be a strong ground to argue that changes in CEOs could result in changes in share price performance of JSE listed companies. This research report fills the gap in the current body of knowledge in South Africa and Africa by investigating the share price performance in response to a CEO appointment announcement.

1.5 Definition of Terms

- Event Study Methodology: an empirical study performed on a security that has experienced a significant catalyst occurrence, and has subsequently changed dramatically in value as a result of that catalyst. The event can either have a positive or negative effect on the value of the security.
- Abnormal Returns: returns generated by a given security over a period of time that is different from the expected rate of return.
- Change in CEO: it is brought about as a result of the death, resignation, hiring or removal of the CEO.
- Value relevance can be described as the ability of information disclosed about a company to reflect in the firm value of that company (Kargin, 2013).

1.6 Research Question

The research questions addressed in this report are as follows:

Research question 1: To what extent do changes in CEO result in changes in the share price of companies listed in the JSE?

Research question 2: To what extent does the reason for CEO change (voluntary or involuntary), nature of CEO successor (internal or external), firm size and health of the company undergoing a CEO change influence share price performance in response to CEO appointment announcements?

1.7 Assumptions

Event study methodology assumes that capital markets reflect the economic implications that the analysed event has for the firm in question. In other words, event studies, using the market model are underpinned by the presumption that the market is efficient. The applicability of this event study methodology is thus dependent on whether or not the share price of the firm promptly responds to new information released to the capital market (Warner 1980). For the purposes of this study, new information would constitute the CEO change announcement.

In assessing the market's reaction to changes in CEOs, it has been assumed that the dominant normative mandate for managers is the maximization of wealth for shareholders, primarily through the maximization of profit. The market model has been used to calculate the normal returns of the individual security. Although the market model is the most commonly used method of estimating normal returns, it is subject to a number of assumptions. The market model assumes that the market is efficient, this means that share prices at all times reflect all available information (Durlauf 2007). From (Fama 1970), the strong form of the Efficient

Market Hypothesis (EMH) states that an equity market efficiently converts all information into accurate security prices. The semi-strong form of the hypothesis states that equity markets will be able to process all publically available information. The market model used in event studies are to a large degree influenced by the assumptions underpinning the capital asset pricing model (CAPM), these include: the market is perfectly competitive, there are many small investors and they are price takers, there are no taxes or transaction costs, all investors analyse information in the same way and all investors have access to the same information.

The following assumptions are considered relevant in addition to the above mentioned, these include: management decisions are made with the intention of creating shareholder wealth (Cao 2006), (Cao 2010), (Zhao 2011), (Hagel III 2000), (Bowman 1993). The JSE's Stock Exchange News Service (SENS) announcements are complete in terms of announcements pertaining to CEO changes. Share price volatility is an appropriate measure to assess the market response to CEO turnover announcements (Fama 1969), (McWilliams 1997). The market processes information in an unbiased and efficient manner (Fisher 2011). The CEO turnover announcement is unanticipated, and the abnormal returns are a result of reaction to CEO turnover announcements. The data collected from the JSE is accurate and complete.

1.8 Scope Limitations

This research report analyses how share prices of JSE listed companies react in response a change in CEO. A change in CEO is a significant event in the life of a firm. A CEO's knowledge, ability and decisions will affect the performance of the corporation. To the extent that these characteristics and resulting decisions differ across individuals, changes in management can alter the course of the firm and its performance (Clayton 2003). This report

does not analyse the impact of the individual characteristics of the CEO's on the share prices of listed companies. The focus is rather on the effect of the announcement.

Chapter 2: Literature Review

The literature review has been divided into three sections. The first will shed light on the role executive leadership in a company and how the knowledge possessed by the CEO assists in creating shareholder value. The second section will discuss the reasoning why share price volatility can be expected in companies undergoing a CEO change. In this section, the value relevance of CEO appointment announcements will be discussed and empirical evidence will be used to substantiate these notions. The third section will discuss the effect of CEO changes on share price performance in relation to its constituents, that being the information effect of the announcement and the real effect of the CEO change. This effect is further explained in relation to non-event specific factors, and these factors may influence market reaction in response to a CEO change. The final section will discuss the information efficiency of the JSE, as the efficiency of the market contextualizes share price returns in response to the CEO appointment announcement when considering how new information is reflected in share prices.

2.1 Executive leadership of an organization

The executive leadership of an organization in modern economics is becoming an increasingly important topic of research. The executive leadership has an important role to play in defining the strategy of the firm and its ability to compete. If the executive leadership of the organization changes this may lead to changes in the firms' strategy. Moreover, the person who replaces the departing executive also has the capacity to change firm structures (Agrawal 2000), fix previous unprofitable investment decisions (Weisbach 1995) and increase internal controls (Denis 1995). The findings from these studies argue that changing a CEO may result in a change in firm value.

2.1.1 Knowledge Assets and Knowledge Management

In today's economy the value of companies is increasingly dependent on intangible assets. Results obtained from traditional factors such as labour, land and capital are becoming more dependent on effective usage of knowledge and therefore knowledge management (Volkov 2007). The current business environment is characterised by fast, volatile and extreme competition. Therefore in order for an organization to survive it must be agile, responsive and flexible. Further, the new economy is argued to be characterized by a shift to knowledge as the main determinant of economic growth and success (Hamel 1994). The shift to knowledge as the primary source of value lends support to the importance of developing and managing intellectual capital of organizations to create distinctive and sustainable value (Kaplan 2001).

From an organizational standpoint, knowledge is available from sources both internal and external to the entity. Therefore, in order to capture and effectively utilize such knowledge there appears to be a requirement for knowledge management initiatives, for quality improvement, innovation, efficiency and for improved decision making. (Davenport 2000) argues that the only source of competitive advantage which can be leveraged is the ability to create, find and combine knowledge into new products and services faster than competitors.
From a market perspective, knowledge has started to be viewed as an asset in its own right and not only as an enhancement of other kinds of assets (Constantinos 2003) and can take the form of "anything without physical substance embedded in people, derived from process, firm culture, brands, patents, etc." (Bukowitz 1999). It is clear that the knowledge of a CEO can result in improved decision making in discharging their duties. However, the value-relevance of the CEO knowledge is viewed in relation to how this knowledge results in improved decision making on the part of the rest of the company, (Crawford 2011) argues that the CEO of the company plays a key role in shaping and expanding knowledge systems.

It is clear from the above that the knowledge of the CEO has bearings on CEO decision making and their duties in developing and implementing company strategy. This corroborates the understanding that changing the CEO of a company could impact the organizations' perceived future prospects and thus its share price performance.

2.2 Value- relevance of CEO appointment announcements

The value-relevance of CEO appointment announcements examines how CEO changes may result in a change to the share price performance of the company undergoing a CEO change. In addition, this section, empirical evidence of prior studies investigating this relationship is presented.

2.2.1 Value- relevance to market participants

The first step in analysing the effect a change in a company CEO has on share price performance requires an understanding on how market expectations change in response to new information. This is explained by (Clayton 2003), who states that equity volatility is largely associated with new information being incorporated into prices, given market efficiency. A company's share price reflects the value capital market participants attach to that company. It is the market participants' perceptions, opinions, recommendations and decisions that determine a company's share price (Meckel 2007). A change to the CEO of a company, may be interpreted as a signal to the market that the company is either in need of or has undertaken measures to improve firm performance (Setiawan 2008).

2.2.2 Empirical Evidence

Several studies have been undertaken in assessing market reactions to changes to the company CEO; these findings however, are mixed. In the US, (Weisbach 1995), (Denis 1995) and (Huson 2003) found positive reactions to announcements regarding changes in the CEO. Research about market reaction to CEO turnover in Asia, i.e. in Japan conducted by Kang and Shivdasani (1996) shows positive abnormal returns. Dahyaa and McConnel (2003) show that there is evidence that market react favourable to CEO turnover announcement and find positive abnormal returns around CEO turnover announcements. This indicates that market perceives CEO succession as an improvement of a firm's performance, or good news, and therefore investors were observed to react positively.

Conversely, (Reinganum 1985) did not find any market reactions in the US. In the UK, there have been similar cases of mixed reactions to changes in CEOs. However, Dedmen and Lin (2002) found negative abnormal returns around CEO turnovers and claim that markets react negatively to CEO turnover announcements. Richard, Sing and Barr (2001) support these findings using Australian data, as investors in Australia reacted negatively to CEO change announcements.

In summary, there appears to be a strong body of knowledge supporting the view that a change in CEO of an organization may result in a change in the value market participants attach to the company.

2.3 The effect of CEO changes on share price returns

Several studies have revealed that changes of CEO can have a significant impact on shareholder wealth and on firms operations (Denis 1995). The effect on a company's share price as in response to a change in company's CEO can be decomposed into an information

effect (e.g. change is a signal that the firms' prospects are worse than previously believed) and a real effect (the successor is expected to improve performance). (Furtado 1990) found that the abnormal returns of the company share performance was typically around 25-50 basis points, (Bonnier 1989), found a stronger positive return of 2.5% by isolating the real effect by focusing on the share price performance of financial distressed firms listed on the New York Stock Exchange (where an announcement is unlikely to signal significant information about the state of the firm).

The above explains that the share price reaction in response to CEO changes can be attributed to an information effect and real effect. The information effect is how market participants react to the CEO change announcement in relation to the how the announcement makes a signal pertaining to the health of the company. The real effect resulting from the CEO change is how market participants perceive the value of the company in relation to the replacement CEOs ability to create shareholder value in the future.

2.3.1 Information effect

The first point in understanding the effect a CEO change has on share price returns of a company requires decomposition of the effect into the information effect of the announcement and the real effect. The information effect can be interpreted to be the signal effect the announcement has on the health of the company. This is often observed through the reason for the CEO change. As such, a forced turnover typically follows a period of poor performance (Clayton 2003). Therefore, when a CEO change is not at the discretion of the departing CEO, this is often due to the CEO not meeting certain performance requirements thereby signalling to the market that the company has not achieved its targets.

Since a firm that experiences a forced turnover is likely to be smaller and more levered than its peers, it is also more likely to be more volatile (Clayton 2003). This is consistent with the

findings of Roll (1988) who observes that a significant portion of stock return variation is not attributable to general market and industry movements and suggests that these residual movements represent the impounding of firm-specific information into prices. This corroborates prior research on event returns on different management positions as explained by (Warner 1980), (Beatty 1987), (Coughlan 1985) and (Weisbach 1995).

Ciccone (2006) develops three hypotheses about how changes in CEO might affect share price volatility. He tests these hypotheses using a sample of 872 CEO turnovers over the 1979-95 periods. He found that volatility increases following a CEO turnover, even when the CEO leaves voluntarily and is replaced by someone from inside the firm. Forced turnovers increase volatility more than voluntary turnovers; a finding consistent with the view that forced departures implies a higher probability of large strategy change. For voluntary departures, outside successions increase volatility more than inside successions. This volatility change can be attributed to increased uncertainty over the successor CEO's skill in managing the firm's operations (Clayton 2003).

Forced turnovers can be defined as turnover that results from reasons other than customary retirement (Weisbach 1995). Generally forced turnovers can be divided into two types, that being board initiated turnovers and CEO initiated turnovers. Research focusing on this area suggests that markets react differently to board initiated and CEO initiated turnovers (Furtado 1990). Friedman and Singh (1989) predict that CEO initiated turnovers will lead to a positive market reaction, but at a lower level than that of board initiated turnovers. The origin of the CEO i.e. internal or external to the firm will typically depict whether there is a CEO succession programme in place. When this is the case, CEO initiated turnovers will either signal that the CEO wishes to change his organizational affiliation or position and market himself to external parties. Here, a negative market reaction is expected due to unwelcomed change and disruptions in external relations.

It is important to recognize that the CEO appointed is not the sole reason for any changes to investor expectations. The information effect of the CEO appointment announcement indicates that the reason behind the change of the CEO can be interpreted as a signal to the market on the state of company affairs.

2.3.2 Real effect

The real effect of the CEO change on share price returns is evidenced from the change in value that market participants place on the company in relation to its future prospects. The likelihood of future success, ability to meet forecasts and implement strategies depends largely on the quality of company's management. An important aspect of management quality is experience, which affects a manager's knowledge of the company. The tenure of the CEO is something the financial community will take to consideration regarding future prospects. A high level of continuity generally increases the likelihood of positive business developments. Frequent fluctuations on the other hand, may require plausible explanations in order to avoid market uncertainty (Meckel 2007).

Companies often implement CEO succession programmes whereby the replacement CEO will either be someone internal to the organization, thus already having the knowledge about the company and industry as well as being familiar with the company's processes and procedures. (Bonnier 1989) explains that the succession program for the departing manager is a critical variable in explaining a firms performance. Inside successions are understood to be less disruptive than external successions and thus are hypothesized to result in less volatility. After a turnover event, there may be increased uncertainty about the future prospects of the firm because the skill and strategy of the successor are not known with absolute precision (Clayton 2003).

Conversely, there may be cases where an outside successor has a well-known track record; here the market would have more precise estimates. This may occur whereby the board hires an outsider from the same industry. Here, outside successions may not have significantly different uncertainty than inside successions. If the new CEO has a good track record, then the market may react positively to an outside succession (Clayton 2003). In this instance, the market would perceive the future prospects of the company to be better than before the CEO change and would thus attach greater value to the company.

The real effect focuses more closely on how the market perceives the CEO of the company to be relevant in relation to how the succeeding CEO influences the future of the company. Any change to the CEO of a company therefore has the potential to effect market expectations of the future of the company, thereby impacting the value market participants place on the company. This change in value can be observed from the resulting change in share price performance in response to the CEO appointment announcement.

2.3 Non-event specific factors responsible for share price performance

In order to better understand the effect a change in CEO has on share price performance, it is important to control for non- event related factors. The equity volatility observed may be due to confounding events. (Meznar 1994) explains this as other significant events that have occurred during the period subject to CEO change which could impact share price performance. For example, an announcement on a change in CEO following an earnings announcement cannot be argued to be the sole reason for any observed volatility.

Firm size is understood to be another important variable in analysing equity volatility as (Reinganum 1985) suggests that small firms may have less complex control structures and

that the effect of a CEO change may result in greater share price volatility. Share price volatility in reaction to CEO appointment announcements is understood to vary across different industries. Each industry type is considered to have its own inherent risk; this is known as systematic risk. It is argued that systematic risk and average equity volatility risk indicators are highly correlated, since they both reflect the aggregate uncertainty faced by investors at a given point in time. This volatility effect is argued to be incorporated into share prices (Poterba 1986).

According to the common sense view, changes in firms' CEOs are expected to improve firm performance when that firm is performing poorly. Poorly performing firms typically dismiss the underperforming CEO and replace them with someone external to the firm. This is because external successors are more likely to introduce new strategies and policies to enhance the value and image of the firms. Thus, based on common sense theory, it is expected that changing CEOs who are responsible for poor past performance with outsiders will contribute to better performance in the future.

From the above it can be seen that non-event specific variables may influence share price volatility. It is believed that reaction of the market in response to the CEO change can better be understood by isolating these firm specific variables. The benefit of this approach is understood to be attributable to the increased probability in establishing relationships previously not hypothesized, thereby enhancing the value of this study.

2.4 Information efficiency of the Johannesburg Stock Exchange (JSE).

Capital markets react to various types of announcements, and one such significant announcement is an earnings announcement. In an efficient market, if the announcement

conveys important information, then it is assumed that such information shall be reflected in share price movements as soon as the information is released into the market (Hussin 2010) (Mlonzi 2011). Earnings for example, is an interesting phenomena, this is because earnings carry inside information about the company's future prospects (Aharony 1980). Researchers argue that earnings announcements are one of the most important signalling devices used by managers to convey information to the public about the future of the company (Lonie 1996). Earnings announcements are thus argued to be one of the critical components of testing market efficiency (Mlonzi 2011).

If the market is efficient, the share price should instantaneously reflect the effect of the earnings announcement. In support of the efficiency of the JSE, reference shall be made to a study conducted by (Rono 2013) which analyses share price reaction to earnings announcements for JSE listed companies. The results of this study showed positive and significant returns on the month of announcement. This suggests that earnings contain important information to the market. These results are consistent with the efficient market hypothesis, which suggests that the JSE is informationally efficient to earnings announcements.

(Watson 2012), found that companies making financial restatement announcements experience significant negative standardised abnormal returns. As evidenced by the significance of the abnormal returns, it appears that these announcements convey new information to the market. It should, however, be noted that this study finds the JSE not to be efficient in semi-strong form, Thompson and Ward (1995), in performing an extensive review of studies examining the efficiency of the JSE, conclude that no conclusive answer as to the efficiency of the JSE could be reached. Further research on the efficiency on of the JSE in semi-strong form has been recommended.

It has been argued by (Fama 1991) and (Jensen 1978) that in reality the strong form efficiency is probably not achievable, however, it is an ideal standard for the EMH. In practice, it seems that markets are likely to be efficient at weak and semi-strong form of efficiency only. Therefore, "a more sensible version of the EMH is that prices reflect information to the point where acting on it does not exceed the marginal cost of obtaining the information" (Fama 1991). In essence, it seems that share prices are predictable only to a certain degree. Consequently, the predictability of stock returns is an assumed stylised fact within the event study methodology framework.

The JSE is ranked in the world's top 20 largest exchanges (by market capitalization), and is the largest securities exchange in Africa. In an attempt to enhance efficiency, the JSE has undertaken major technological upgrades over the past few years on a consistent drive to improve efficiency of trading, which has resulted in trades being executed up to 400 times faster than under the previous system. The JSE is also regarded as the frontline regulator for the exchanges, by setting and enforcing listing and membership requirements and trading rules. The Financial Services Board (FSB) supervises the JSE in the performance of its regulatory duties and South Africa is currently ranked 1st in the world in terms of regulation of securities exchanges in the World Economic Forum's Global Competitiveness Survey for 2013-2014. Notwithstanding the limited research supporting the efficiency of the JSE, there appears to be reasonable grounds to argue that robustness of JSE regulation and technological infrastructure is representative of adequate market efficiency for the purpose of this study.

Chapter 3: Methodology: Event Studies

The first published study using event methodology was by Dolley (1933) who examined the price effects of stock split ups, this methodology was further developed by Ball (1968).According to Peterson (1989), event study methodology is the most frequently used analytical tool in financial research. Using financial market data, an event study will aim to measure the impact of a specific event on the value of the firm.

In order to investigate the effect the CEO appointment announcement on share price performance of JSE listed companies, an event study methodology has been used to establish whether the CEO appointment announcement results in an abnormal share price return. To enhance the understanding of this effect, the dataset was further analysed according to the following categories: reason for change, origin of successor, firm size and whether the company undergoing a CEO change is financially distressed or not.

3.1 Event Study Time Line

The event study time line can be defined as the time period over which the event study will run its course. This time line can be broken down into the estimation window and event window. The estimation window can be defined as the time period over which parameters have been estimated to determine the expected returns of a share. This equals a period of 126 business days as recommended by Benninga (2008).

The second component of the time line is the event window. This is the period in which the expected returns of a share are compared to actual returns in order to determine whether any abnormal returns are observed as a result of the event under study. The event window used is a period of 20 days before the event and 20 days after the event. Therefore, the total event

window, including the day of the event equals 41 business days. This can be observed in **Figure 1.**

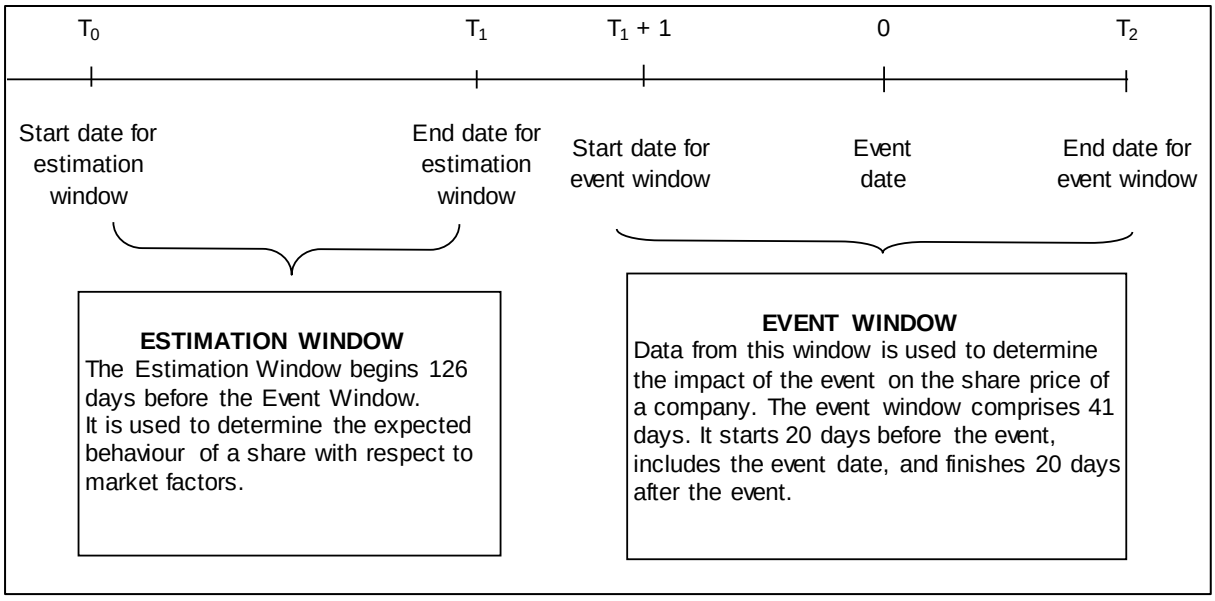

Figure 1. Event Study Time Line

3.2 Parameters of the market model

A parameter, in terms of statistics can be defined as a constant or variable term in a function that determines the specific form of the function but not its general nature; this can be observed as any measurable characteristic of a population, such as the mean or a standard deviation. The parameter provides an estimate for the normal returns which are not influenced by the returns around the event. The parameters of the market were first determined in order to estimate abnormal returns (Binder 1998). Parameters are estimates using a pre-event period sample with Ordinary Least Squares (OLS) regression. The parameter estimates and the event period stock and market index returns were then used to estimate abnormal returns (MacKinlay 1997). Brown and Warner (1985) found in their simulation tests that OLS performs as well as other complex regression models. Parameter estimation addresses the proper treatment of outliers and leverage points that occur at the

peaks of market volatility. This approach is expected to better deal with biases which may occur as a result of extreme values among independent variables (Sorokina 2013).

3.3 Expected Normal Returns

For the purposes of this study, the abnormal returns on a share in response to an event are calculated in order to determine whether the event has impacted the share price of the specific entity. Before the abnormal return could be calculated, first the expected normal returns were calculated in order to establish whether there were any abnormal fluctuations during the period. The market model has been used in determining the normal returns. The market model is based on the assumption that there is a constant and linear relationship between individual asset returns and the return of the market index (Sorokina 2013). For each asset, "i", the market model assumes that the normal returns on a security can be determined by:

$R_{it} = \alpha_i + \beta j R_{mt} + \varepsilon_{it,}$ where:

- R_i = the expected return for security "i" on month "t"
- α_i = the index alpha (the intercept of the function), in period "t"
- β_i = index beta (the slope of the function)
- R_{mt} = the return on the market, on month "t".
- $\varepsilon_{it,}$ = random error term, or random variable uncorrelated with R_{it} and R_{mt}

The state of the economy and common conditions in the market which affect the market as a whole are factored in the determination of the normal returns of the respective security. Any conditions that may exist or trends which have occurred which cause the price of a share to move against the trend is factored in the random error term using the market model equation (Gilbertson 1981).

3.4 Abnormal Returns

The idea of this measure is to isolate the effect of the event from other general market movements. The abnormal return of the firm at event date is defined as the difference between the realized return and the expected return (normal return). The normal return is estimated using the market model. The abnormal return for each company is calculated within the event window. In the context of the research question, an abnormal return would be observed if the realized return as a result of the change in CEO differs from the expected return. The market model parameter estimates is used to measure and analyse the abnormal returns of the sample as follows:

$$AR_{it} = r_{it} - (\alpha_i + \beta_i r_{Mt})$$

Where: r_{it} is the actual stock return in event window day t, and $(\alpha_i + \beta_i r_{Mt})$ is the expected stock return.

3.5 Cumulative abnormal returns (CAR)

CAR is the measure of the sum of the total abnormal returns observed during the event window. The aggregation of abnormal returns is important for the purposes of deriving inferences for the event of interest.

The CAR is used to illustrate to what extent a change in CEO of the entity impacts the corporations share price during the event window. After applying these measures to the rest of the sample using Excel, an inference can be made on the overall impact of CEO changes of the organization on the sample. These observations were made on a daily basis by analysing the closing share price of each day during the events window. Therefore, CAR can be calculated as follows:

$$CAR_t = \sum_{j=1}^{t} AR_{T1+j}$$

3.6 Average Abnormal Returns and Cumulative Average Abnormal Returns

In order to enhance the value of this study and to control for firm specific characteristics, certain company specific characteristics were controlled for. This required careful reconstruction and categorisation of the data set. The objective was to identify conceptual categories into which the phenomena observed could be grouped into (Strauss 1990). The data set was coded according to the following variables: firm size, [measured by market capitalization (5 intervals were used)], turnover type i.e. reason for change, this could be either voluntary or involuntary and origin of successor, which included either internal or external successor, as well as understanding this effect for firms under financial distress and dual listed companies.

The returns of the companies in each of the sub-categories specified above were averaged to find the Average Abnormal Returns (AAR) for each sub-category. The Cumulative Average Abnormal Returns (CAAR) for each of the sub-categories were then calculated. The formulas used to calculate the AAR and the CAAR were as follows:

$$\mathrm{AAR_t} = \frac{1}{n}\sum_{i=1}^{n} \mathrm{AR_{it}}$$

$$\mathrm{CAAR_t} = \sum_{j=1}^{t} \mathrm{AAR_{T1+j}}$$

Having calculated the CAAR for each sub-category, graphs of each CAAR were prepared and analysed to try to assess the impact of the event on each sub-category.

3.7 Data

3.7.1. Population and sample

The population used for this study included all companies listed on the JSE, these companies included companies whose shares are dual listed on the JSE and any other reputable stock exchanges. In order to be included in the sample, the company of interest would have had to

have an announcement pertaining to a CEO appointment in the period 1 March 2011 to 28 February 2014. The total sample used for this study equalled 105 CEO appointment announcements. This was established by identifying all the CEO appointments that took place from 1 March 2011 to 28 February 2014. **Table 1** in the Appendix contains a list of the CEO appointment announcements used in this study. The number of companies identified under each sub-category is shown in **Figure 2.**

Sub-categories on CEO announcement effect									
Reason for change		Origin of sucessor		Financially distessed?		Firm Size		Listing type	
Voluntary	75	Internal	67	YES	10	Code 1	52	JSE listed	10
Involntary	30	External	38	NO	95	Code 2	`13	Dual Listed	95
						Code 3	19		
						Code 4	5		
						Code 5	16		
105		105		105		105		105	

Codes series	Share price at 28/02/2014
Code 1	0-500
Code 2	501-1000
Code 3	1000-5000
Code 4	5001-10000
Code 5	10000<

Figure 2 Companies in each sub-category

3.7.2 Sources of data

The collection of the data is of high importance with regard to the research methodology used in this study. The data obtained is classified as secondary data, since the data was accumulated by persons other than the researcher for purposes other than this study. This study utilizes two sources of secondary data, that being information pertaining to the changes of CEO's of JSE listed companies and the market price of these companies.

Information regarding announcements of changes in JSE listed company CEO's has been obtained from SENS announcements. The closing share prices for each of the companies in

the study were obtained directly from the JSE. This has been done by analysing the daily closing rates of the corporation during the test period. Microsoft Excel has been used to calculate the normal returns, estimating parameters as well as calculating the abnormal and cumulative abnormal returns of the share.

3.8 Validity and Reliability

Validity consists of both internal and external validity. Internal validity refers to how the study has measured what it has intended to measure. For the purposes of this study, internal validity refers to how the study has captures the effect a change to a CEO of a company will have on a company's share price. The secondary data used in this study were sourced directly from the JSE and from the SENS database; these sources are well reputed for providing accurate data. The methodology and statistical models applied in this study are commonly used, have produced reliable findings and have evidenced applications in other areas of study (Bonnier 1989; Clayton 2003; Nthoesane 2014). Since the methodology used includes parameter estimation, which is understood to better deal with biases which may exist as a result of extreme market conditions (Bonnier 1989). This approach lends support to the internal validity of the study. External validity deals with the issue of generalizability of the results of the study. The research focusses on the JSE and uses a well-established research methodology. The results of the study can therefore be generalised in a South African context.

Reliability is concerned with consistency of the findings. The findings are understood to be reliable if repeated applications would result in similar findings, this will be validated through estimation of the t-statistic. The crux of interpretive research is to gain insight into the underlying subject matter in a fashion other than scientific. The fact that exact replication of a study may be difficult does not diminish the reliability of the findings (Merkl-Davies 2011;

Maroun 2012). Finally, in ensuring that the findings were not distorted due to some or other event occurring in the event window, confounding events have been controlled for.

Chapter 4: Findings and Discussions

4.1 General Discussion

The results will be presented in the following sequence. The first part will involve a discussion on the findings pertaining to the first research question: the effect CEO appointment announcements have on share price returns of JSE listed companies. The second part will address the second research question 2: the effect CEO appointment announcements have on share price returns of JSE listed companies in relation to firm specific and non-event related factors. The final section to this chapter summarises part 1 and 2 and discusses the findings on an overall level.

4.2 The Effect CEO appointment announcements has on share price returns of JSE listed companies

The first point in understanding the effect that announcements of CEO appointments have on the share prices of companies involved analysing the Abnormal Returns (AR) for the sample at the date the announcement was made on the appointment of the new CEO. The direction of the AR provides evidence as to whether or not the market reacted positively or negatively to the announcement. The significance of these AR was tested for significance using t-statistics at a 95% confidence level.

Hereafter, the Cumulative Average Abnormal Returns (CAAR) for the sample as a whole were analysed to determine the cumulative effect of the CEO announcements. Given that announcement on the CEO appointment may have occurred after the announcement was made on the departure of the previous CEO, the observation of CAAR allows inferences on market expectations on the future of the company for periods both before and after the event to be made.

4.2.1 CAAR of CEO appointments

The CAAR's presented in this and the following sections are analysed with respect to pre and post announcement reactions as well as the reaction on the date of the announcement. The total number of announcements on CEO appointments for JSE listed companies amounted to 105 for the period 1 March 2011 to 28 February 2014. These companies were ranked in alphabetical order see **Table 1**.

As seen in **Figure 3**, the CAAR for the announcement of the appointment of the CEO show a degree of uncertainty in the market as depicted by the negative CAR's observed throughout the 20 day event window preceding the announcement on the CEO appointment. Empirical evidence supports the hypothesis that investors react unfavourably to announcements over appointments of CEOs on the JSE (Nthoesane 2014).

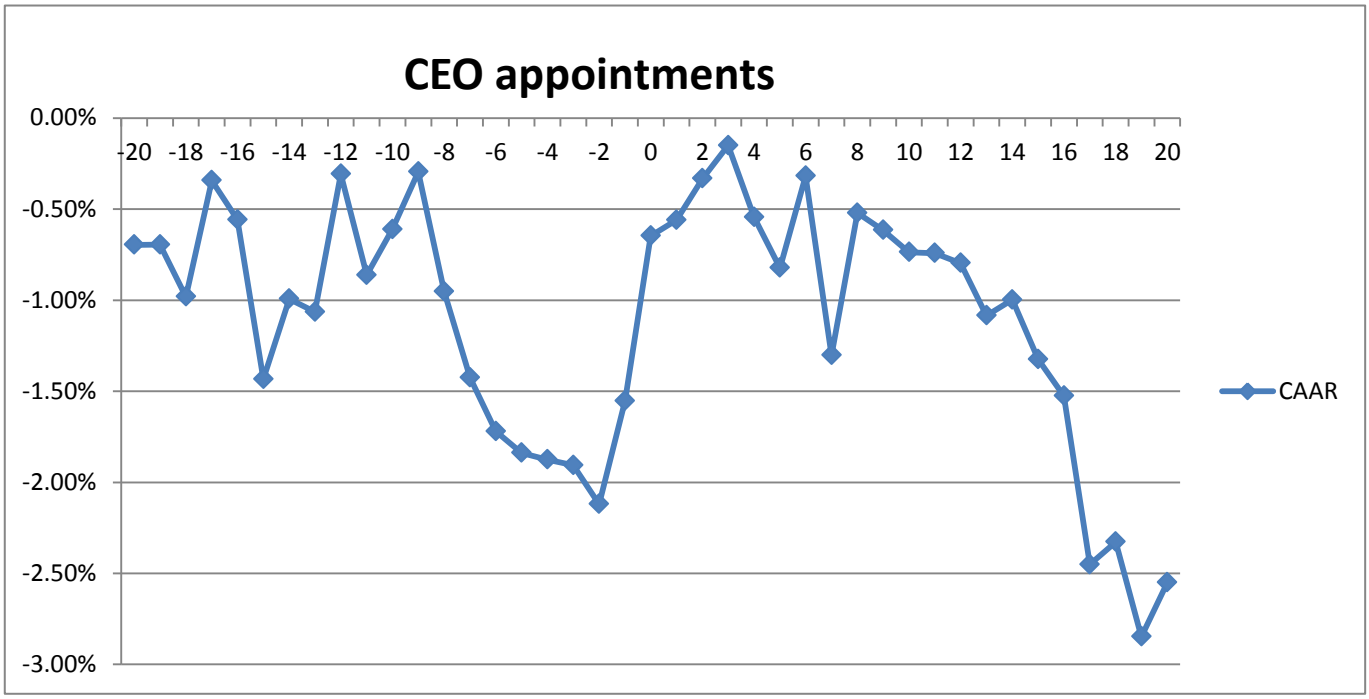

Figure 3. CAAR for all the CEO Announcements

It can be seen that the CAAR are predominantly negative. This is as expected given that the announcement on the departing CEO is typically made before the announcement on the

appointment of the succeeding CEO. These negative CAAR observed before the announcement may be argued to be due to investors having an expectation of a CEO change thus conferring upon a degree of uncertainty on the future of the company. This can be seen from the volatility observed in the AAR in **Figure 4**.

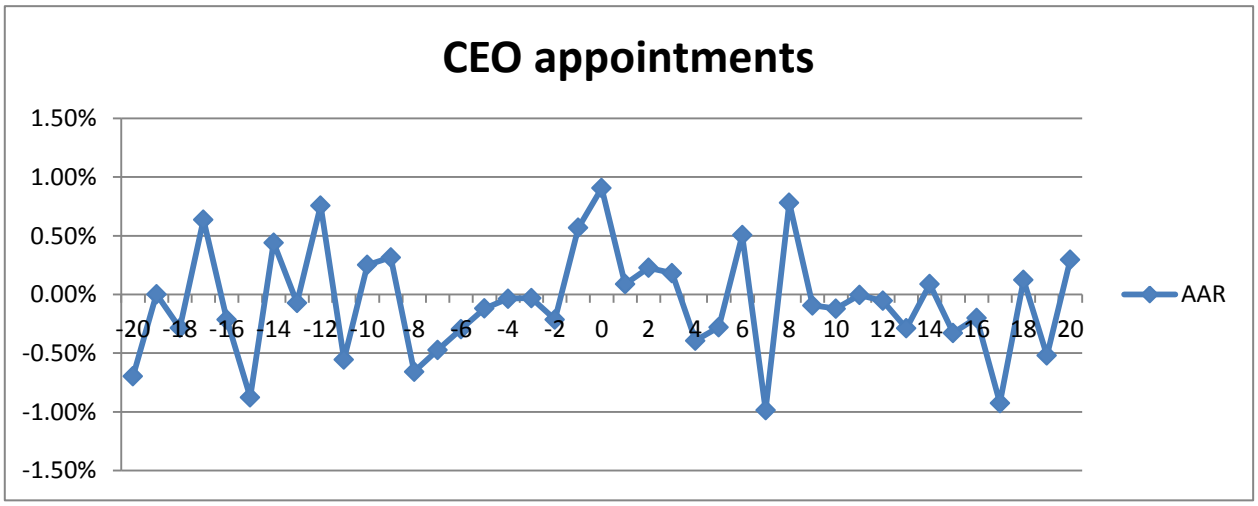

Figure 4. AAR for all the CEO Announcements

Consistent with Figure 3, Figure 4 illustrates a high degree of volatility during the event window. On the day of the event, T_0, it can be seen the market generally reacts positively to the CEO appointment announcement. This is explained by a 0.91% AAR on the day of the event, see **Appendix 2**. The t-test statistic indicates that this reaction is significant at a 95% confidence level.

On the day of the event, forty four of these companies experienced significant abnormal returns. The two largest negative abnormal returns were for RBA Holdings Limited and Ansys Limited who experienced negative abnormal returns of 26.36% and 10.57% respectively. The two largest positive abnormal returns were for Nutrional Holdings Ltd and Evraz Highveld Steel and Vanadium Ltd who experienced positive abnormal returns of 33.26% and 17.66% respectively. These abnormal returns evidence instances where market participants either reacted negatively or positively in response to a CEO appointment announcement.

On the date of the event, there were 61 announcements resulting in positive abnormal returns, and 44 negative abnormal returns. This indicates that the majority of the sample's market participants reacted positively to the CEO appointment announcement. This is consistent with the findings of Nthoesane (2014) who observed a slight increase in the performance of the security on the day of the announcement. He further argues that this increase in performance is due to the previous expectation regarding the nature of the successor i.e. internal/external not being met, for example, possibly a better quality CEO was appointed.

The CAAR during the post event window continue to decline. At the end of the event window, the CAAR is negative 2.55%, indicating that the overall market reaction in response to the CEO appointment announcement has been unfavourable. When isolating the CAAR for the post-event window, the results indicate that half of the sample has reacted positively to the announcement and the other half has reacted negatively to the CEO appointment announcement. The two largest negative cumulative abnormal returns included Keaton Energy Holdings Ltd and Esorfranki Ltd who generated -40.73% and -38.77% cumulative abnormal returns in response to the event. The two largest positive abnormal returns were with respect to Control Instruments Group Ltd and Infrasors Holdings Limited who displayed 37.54% and 37.8% cumulative abnormal returns respectively.

4.3 The effect CEO appointment announcements on share price returns of JSE listed companies in relation to firm specific and non-event related factors

In this part of this chapter, an analysis is made on the market's reaction to the event according to the reason the CEO departed, the nature of the successor, the firm size, the type of listing and whether the company was in financial distress preceding the CEO change. This approach facilitates developing an understanding on which factors have an influence on the market's reaction to CEO appointment announcements, thus enhancing the understanding on this effect

at an overall level. The tables and graphs representing the cumulative average abnormal returns are for a 41 day period. This includes a 20 day pre-event window, the day of the event and a 20 day post-event window. This will allow a determination to be made on the markets perception of the company's future prospects prior to the announcement and after the announcement.

4.3.1 Reason for CEO change: Voluntary or Involuntary

Furtado and Karan (1990) argue that the type of turnover, whether forced or voluntary has a significant impact on the performance of firms. Researchers such as Clayton's (2003) have indicated that forced changes (involuntary) in CEOs results in significantly higher volatility than voluntary departures, as forced departures typically indicate poor performance and thus may result in strategic changes once a new CEO is appointed. This is understood to create uncertainty on the future of the company and therefore result in higher share price volatility. The opposite effect has also been well documented. As studies have provided evidence that voluntary turnover shows a small performance improvement, whereas forced turnover contributes to positive market reactions regarding the announcement of the management turnover (Friedman & Singh, 1989; Denis & Denis, 1995; Rhim et al., 2006).

4.3.1.1 CAAR for voluntary and involuntary departures

Figure 5 illustrates that during the pre-event window, the market has reacted negatively to both involuntary and voluntary turnovers, this can be seen negative CAAR of -4.32% for involuntary (Forced) turnovers and negative -0.45% CAAR for voluntary turnovers. For both involuntary and voluntary departures the CAAR are both negative, this can be understood to be due to increased market uncertainty. This is explained by (Nthoesane 2014) who states that these negative CARs are due to the investors having an expectation of a CEO change. The strength of the CAAR indicates that market participants react more strongly to

involuntary departures than voluntary departures. This is view can be further reinforced when observing the higher level of volatility for involuntary departures in comparison to voluntary departures. These findings are consistent with those of (Clayton 2003) and (Bonnier 1989) who explain that that forced departures implies a higher probability of large strategy changes.

After the day of the announcement, **Figure 5** displays how the market reacts unfavourably to involuntary turnovers during the period succeeding the CEO appointment announcement; voluntary turnovers on the other hand remain constant during the majority of the post-event window, but decline after T_{16}. In summary, at the end of the event window, voluntary turnovers show CAAR of negative -1.41% and involuntary turnovers have CAAR of negative -5.42%. This direction of the CAAR was expected, given that the overall effect is negative. However, the strength of the CAAR at the end of the event window, indicate that market participants react more strongly to involuntary turnovers than voluntary.

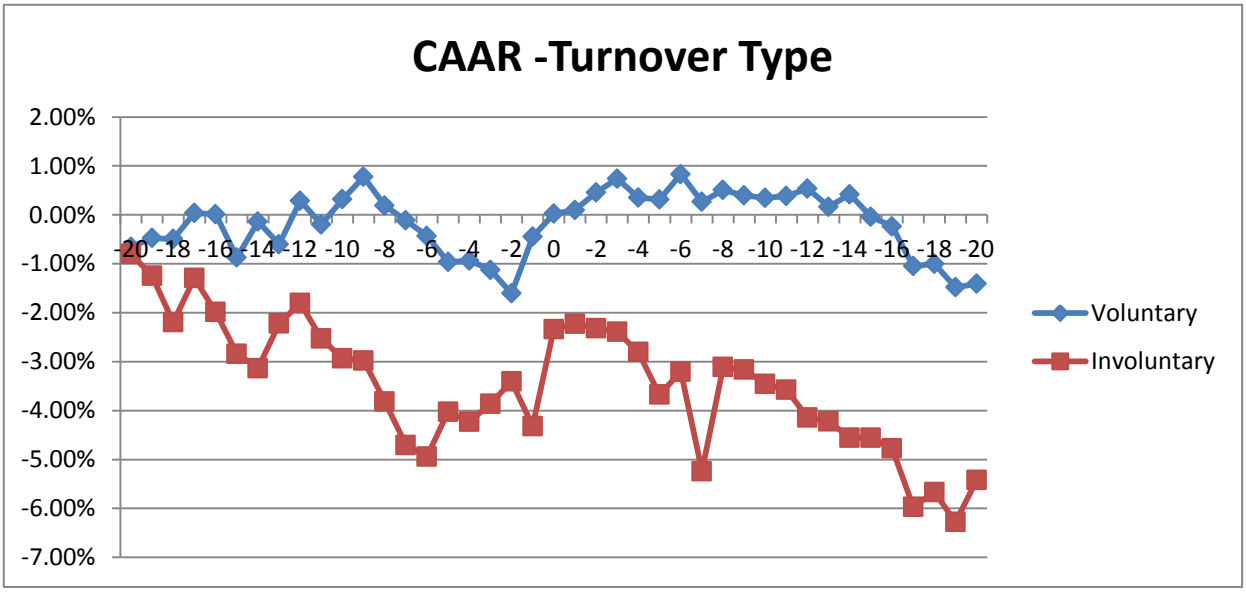

Figure 5. CAAR for Voluntary and Involuntary Turnovers

On the day of the event, the AAR for involuntary and voluntary changes are both positive, being 1.98% and 0.47% respectively. This indicates that market participants generally react positively to CEO change announcements for both voluntary and involuntary departures.

AAR for both involuntary and voluntary turnovers are found to be significant at a 95% confidence level. The AAR for involuntary departures are found to be stronger than voluntary departures, thus indicating that the market reacts more favourably on the day the replacement CEO is announced for involuntary departures than voluntary, see **Figure 6**.

For voluntary turnovers, the most significant AR were for Nutrional Holdings Ltd and RBA Holdings Limited who generated positive AR of 33.26% and negative AR of 26.36% respectively. For involuntary turnovers, the strongest negative AR was only 3.91% for Securedata Holdings Ltd; however, the highest positive AR was 36.29% for African Eagles Res Plc. These findings can be explained by (Nthoesane 2014) who states that involuntary departures reveal higher positive abnormal returns than voluntary departures due to investor expectations not being met, that is, a better quality CEO was appointed than expected.

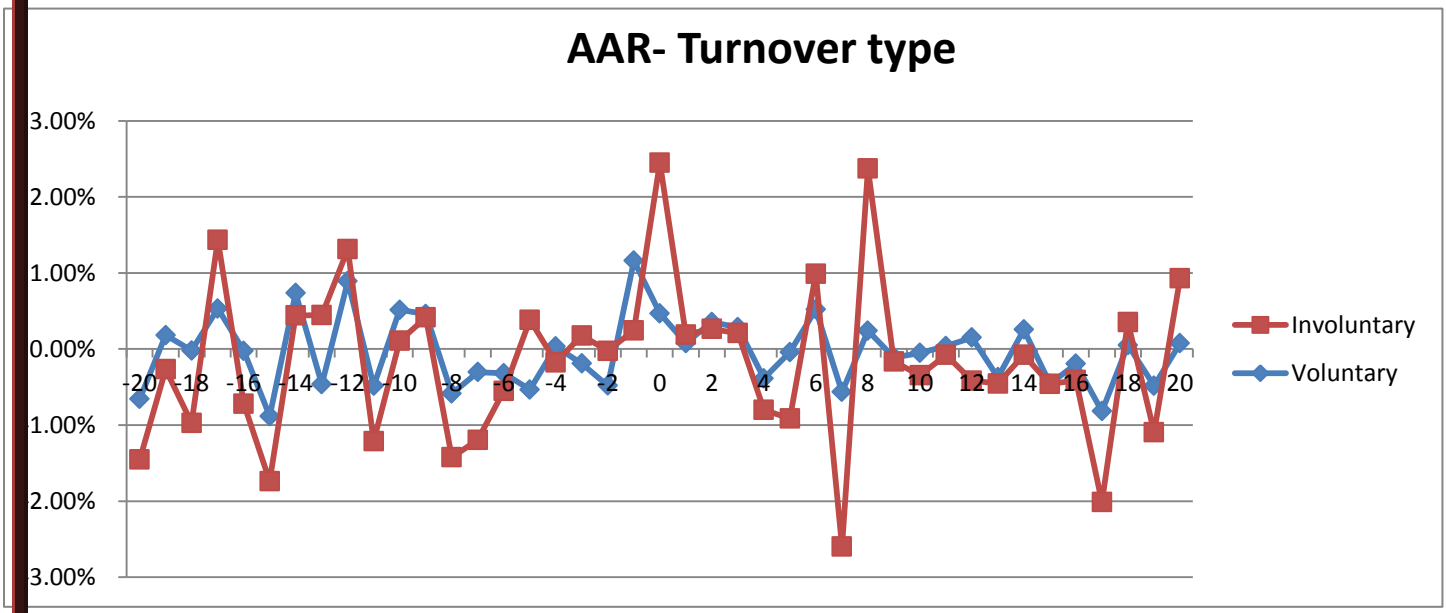

Figure 6. AAR for Voluntary and Involuntary Turnovers

Consistent with Ciccone (2006), who argues that forced turnovers are more likely to result in large strategic changes. These findings can be argued to be an illustration of the information effect in that during the pre-event window i.e. the announcement on the departing CEO could potentially be interpreted as a signal on the overall well-being of the company. Furthermore,

the strong CAAR observed in the post-event window can also be viewed as an illustration of the real effect, as these forced turnovers are indicative of large strategic changes. Market participants may view this announcement relative to the implications it has on the future prospects of the company.

4.3.2 Origin of successor

The origin of the departing CEOs successor is believed to be a key factor responsible for the direction and significance of the abnormal and cumulative abnormal returns observed during the event window in response to a CEO appointment announcement. Dherment-Ferere and Reneboog (2002) states that the benefit of internal successions is in conjunction with the internal successor enhanced understanding about the firm's condition, product, market, competition etc. To the contrary, it is further argued that external successors are better adept at maintaining corporate image, especially when the company is under financial distress. Another advantage of external successor is seen to be due to the new vision and passion they bring into the company. According to (Bonnier 1989), external successor are hypothesized to have a negative effect on performance. He explains that inside successions are less disruptive than external successions and thus result in less volatility.

4.3.2.1 CAAR for internal and external successions

From the 105 CEO appointments, 67 were internal changes and 38 were external appointments.

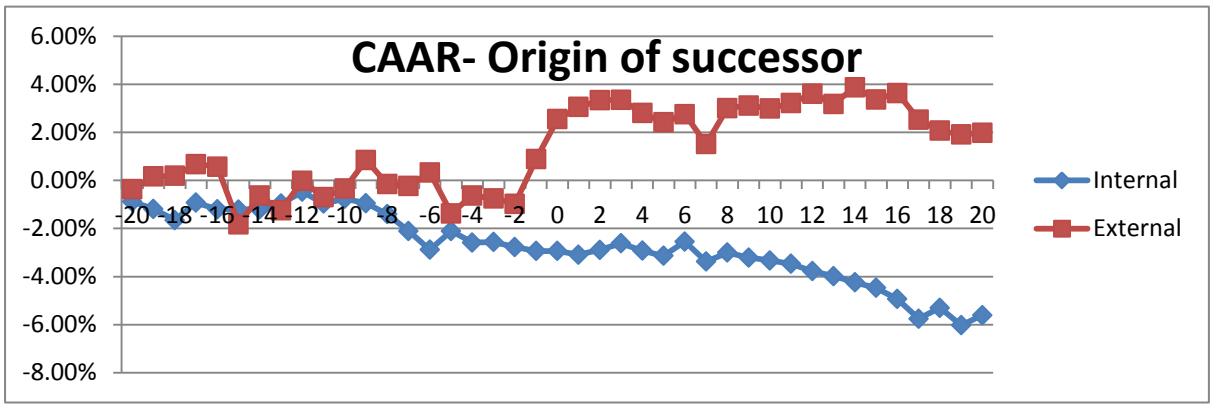

Figure 7. CAAR for Internal and External successor

CAAR during the pre-event window remain relatively stable for both internal and external appointments as depicted in **Figure 7**. Internal successions show negative CAAR on the day before the announcement on the CEO changes i.e. T_{-1} of -2.94% and external CEO succession show positive 0.89%. Both successor types show relatively minimal volatility during the pre-event window. Internal appointments show a steady decline whereas external appointment's CAAR fluctuate around 0.The negative CAAR can be explained by possible leakages of the company's intention to appoint a person internal to the company. This is relevant given that the market may already have expectations on the quality of the persons likely to succeed the CEO.

From **Figure 8,** the most noticeable fluctuations for external appointments occur two days prior to the announcement on the CEO change, whereby share price performance increases by 1.86%. This can be explained by either information spillage on the replacement CEO or anticipation of market participants. On the day the announcement is made, external appointments reveal positive AAR of 2.55% and internal appointments show negative AAR

of 2.94% both these ARs are considered significant at a 95% confidence level. This is consistent with the findings of (Nthoesane 2014) who explains that external appointments result in positive AAR due to investor expectations on the replacement CEO not being met, and thus a positive reaction is observed possibly due to a better quality CEO being appointed than expected. Worrel, Davidson and Glascock (1993) produce similar findings evidencing that outside CEOs increase shareholder wealth.

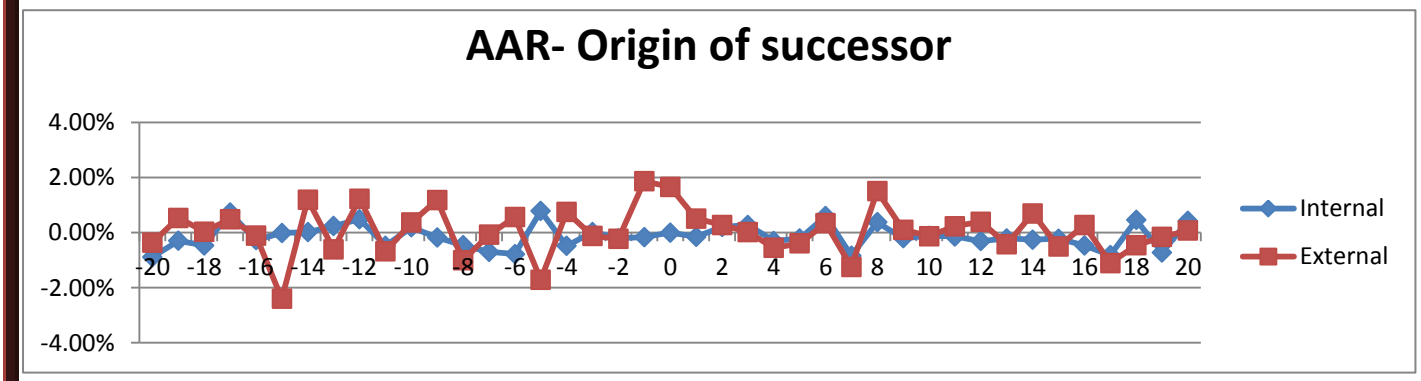

Figure 8. AAR for Internal and External successor

Through the course of the post-event window, internal appointments display decreasing CAAR whereas external appointment maintains positive CAAR which fluctuate between positive 2-4%. These contrasting CAAR indicate clearly that the market reacts positively to external appointments and negatively to internal appointments. Charitou, Patis, and Vlittis (2010) also found positive market reactions to the announcement of outside incoming CEOs in the US. This result shows the market perceives that outside incoming CEOs bring positive influences to the firms' performances.

4.3.3 Financially Distressed firms

The previous sections of this chapter have discussed the information effect explained by (Furtado 1990) of the CEO appointment announcement. In order to eliminate the information effect, and focus more closely on the real effect, the analysis share price performance in

response to CEO appointment announcements has been undertaken using the share returns of financially distressed companies. This approach, according to Bonnier (1989) is believed to eliminate any information effect as the CEO appointment announcement is unlikely to signal significant information about the state of the firm.

4.3.3.1 CAAR for Financially Distressed firms

The number of companies deemed to be under financial distress amounted to 10. The remaining 95 companies were thus not considered to be in financial distress. In ascertaining whether or not a company is in financial distress or not has been determined was using certain key indicators. For example, 1 Time Holdings Ltd, Adcock Ingram's Holdings Ltd, African Bank Investments Ltd, African Dawn Capital Ltd all had announcements on poor performance. For the remaining company's, announcements on decreases in headline earnings, disposal of core operations, disposal of major subsidiaries, refinancing of debt, difficulty in securing finance and difficult market conditions provided indication on whether the company was under financial distress.

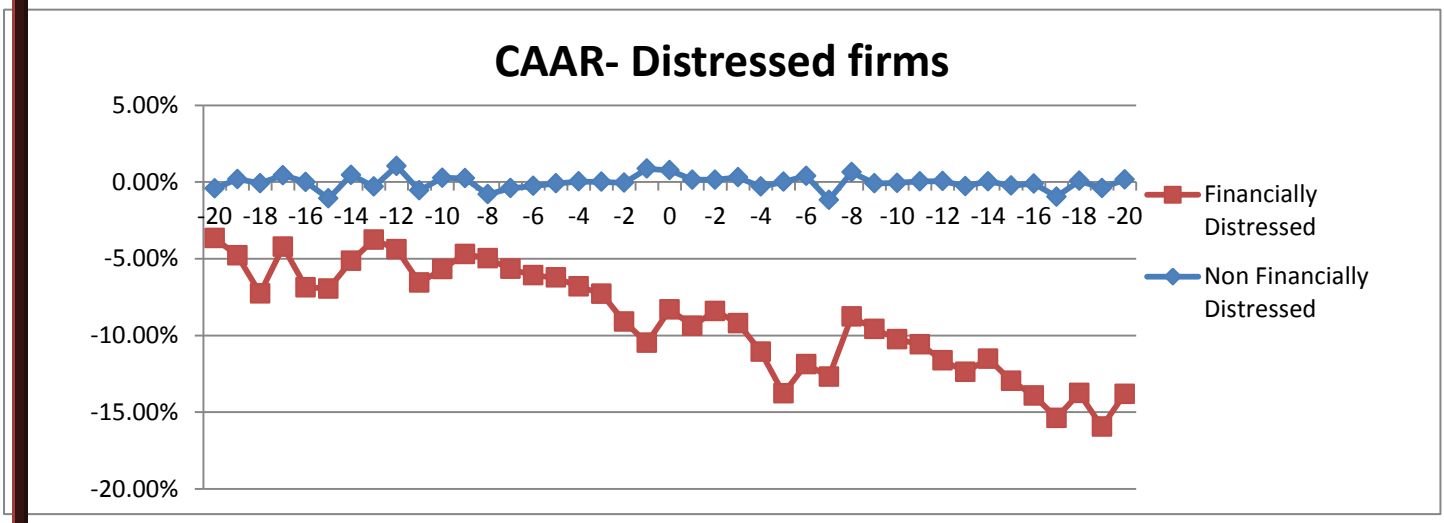

Figure 9. CAAR for financially distressed firms

The significance of these findings is derived from the separation of the information effect and real effect of the CEO appointment announcement on share price returns. From **Figure 9,** the

blue line shows the CAAR for firms which are not under financial distress, here the announcement contains both an information effect and real effect. The red line shows the CAAR for firms under financial distress, here the announcement contains only the real effect, since the state of the company is already known i.e. under financial distress; any information effect of the announcement is considered unlikely.

It is immediately apparent that the CAAR for firms under financial distress are a lot more volatile than the CAAR which are not under financial distress. The financially distressed companies show strong negative CAAR as can be seen at $T_{-1,}$ which are negative -11.36% on the day before the announcement. Conversely, the CAAR for firms which aren't financially distressed are positive 0.87% on the day before the announcement.

On the day of the announcement, **Figure 10** illustrates how both groups experience positive significant AAR, as companies under financial distress show positive AAR of 2.29% and companies not under financial distress generate positive AAR of 0.24%. These findings further support the view that firms under financial distress experience significantly greater volatility compared to firms who are not. These findings are consistent with those of (Bonnier 1989), found a stronger positive return of 2.5% for firms under financial distress. A possible reason for this is that market participants may react favourably to a new vision and strategic changes.

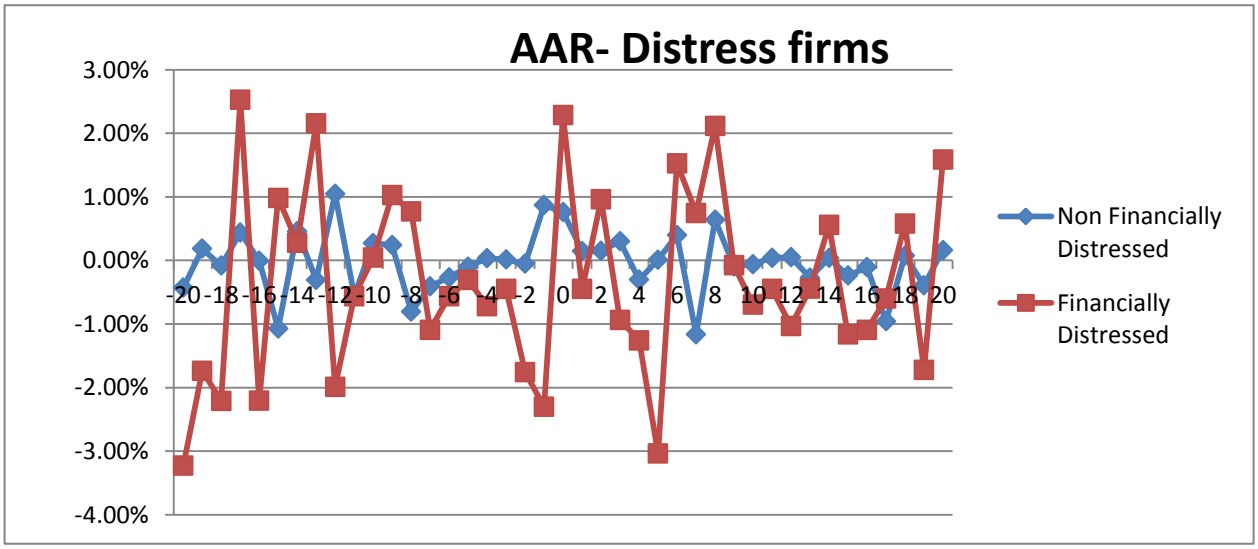

Figure 10. AAR for financially distressed firms

For the period succeeding the announcement i.e. post-event window, **Figure 9** and **Figure 10** both illustrate the same effect observed during the pre-event window, that is negative CAAR and AAR for firms under financial distress and relatively stable positive CAAR for firms which aren't under financial distress. At the end of the event period, the total CAAR for each group is as follows: financial distress firms generate a total of 13.97% negative CAAR and the latter displaying negative -1.39% CAAR.

4.3.4 Firm Size

Firm size is understood to be another important variable in analysing equity volatility as (Reinganum 1985) suggests that small firms may have less complex control structures and that the effect of a CEO change may result in greater share price volatility.

4.3.4.1 CAAR in relation to firm size

In analysing how CEO appointment announcements effect share price returns of companies in relation to their firm size, the sample has been categorized into five different groups in accordance with size of their share price. See **Figure 11**

Firm Size	Share price R- at 28 Februart 2014	Code
Code Series	0-500	1
	501-1000	2
	1000-5000	3
	5001-10000	4
	>10000	5

Figure 11. AAR for firm sizes

The usefulness of segmenting the data set into its firm size is that this more clearly illustrates the trend on the share price reaction in response to CEO appointment announcements more clearly than when observed on an overall level. This trend can be observed in **Figure 12.**

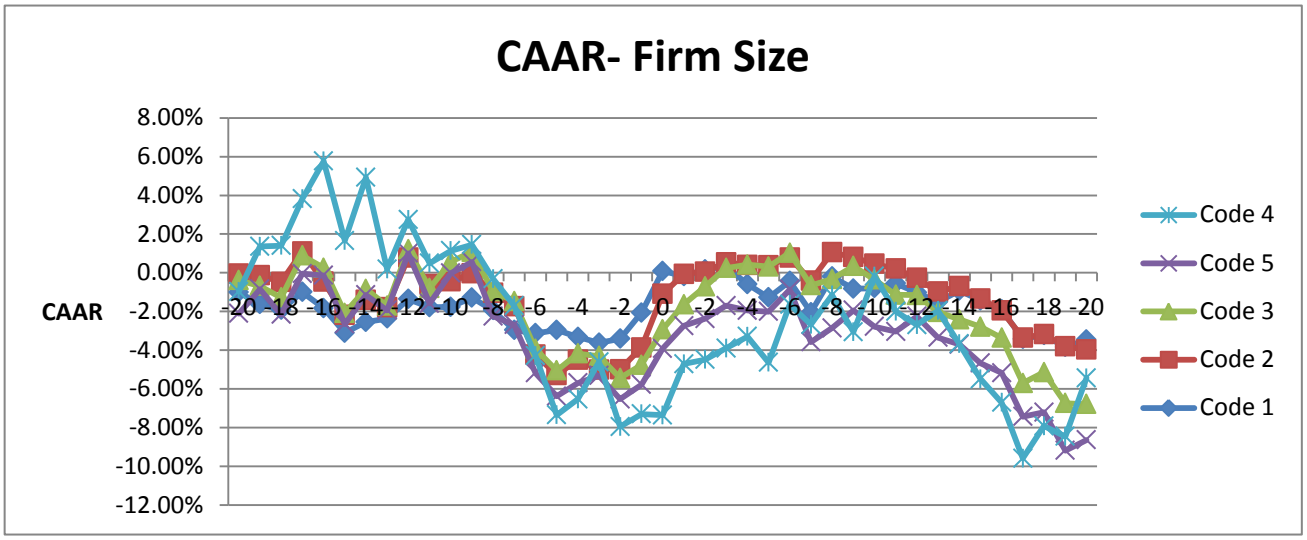

Figure 10. CAAR for firm size

On average, the CAAR for each firm size can be observed in accordance with **Table 2.**

20 day window					
Size	**(-20:-9)**	**(-8:-1)**	**0**	**(1:8)**	**(9:20)**
Code 1	**-1.80%**	-2.93%	0.08%	-0.53%	-1.91%
Code 2	**1.32%**	-0.91%	-1.18%	0.87%	0.40%
Code 3	**0.16%**	0.07%	-1.83%	-0.51%	-1.60%
Code 4	**2.92%**	-0.03%	-3.44%	-1.05%	0.18%
Code 5	**-0.61%**	-1.21%	-0.99%	-2.09%	-1.84%

Table 2

From period T_{-20} to $T_{-9,}$ CAAR remain relatively stable and fluctuate between -2% and 2%, this is with exception to Code 4. For the period T_{-8} to $T_{-1,}$ the CAAR for all firm sizes decrease. This is understood to be due to the announcement on the departure of the previous CEO, or as a result of market participants developing expectations on the replacement CEO. The levels of volatility however, remain consistent, in that firms with higher share prices experience higher volatility than firms with lower share prices. For the period T_1 to $T_{8,}$ the AAR increases, as seen by the re duction in negative CAAR. These increases occur up to T_9 whereby CAAR for all firm sizes begin to decrease up to $T_{20.}$

One of the key findings pertaining hereto can be observed from how high value firms experience higher volatility than smaller firms. This trend observed is inconsistent with (Reinganum 1985) suggestion that smaller firms experience greater volatility. A possible explanation for this inconsistency can be conferred upon the JSE regulations and Companies Act requirements which require a certain standards on internal controls, management structures and financial reporting to be adhered to. Secondly, the reasoning behind the above mentioned trend can be interpreted in light of Cools and van Praag (2007) trading volume approach which may suggest that firms with higher share prices experience greater volumes in transactions around the CEO announcements. This seems rational given that for firms with higher share prices, each percentage change results in greater changes in shareholder wealth in comparison to firms with smaller share prices.

Lastly, the trend observed from these findings can be understood in relation to how the value of a CEO is perceived in relation to the future prospects of the company. The rationale behind this is in consideration to the possibility that the departing CEO may have been responsible for the growth of the company's share price. This creates uncertainty as the replacement CEO may not be able to create similar shareholder returns. Smaller firms however, may experience less volatile returns given that these smaller companies were probably listed for a shorter period in comparison to firms with greater share prices.

4.3.5. Listing type

The effect CEO appointment announcements on share price performance has strong association with the efficiency in which new information is incorporated into prices (Clayton 2003). It is said that if the announcement on CEO appointment conveys important information, then it is assumed that this information shall be reflected in share price movements as soon as the information is released into the market (Hussin 2010). There is not

a strong body of knowledge supporting strong form efficiency in the JSE. Current research supports only a semi-strong or weak form efficient market. This suggests that share prices do not at all times reflect new information immediately.

The purpose of analysing the effect CEO appointment announcements in relation to listing type will enable the understanding of this effect to be made using information from the JSE as well data of shares who listed both on the JSE as well as another reputable stock exchange (particularly London and New York Stock Exchange).

4.3.5.1 CAAR of JSE listed and Dual listed companies

The total number of CEO appointment announcements for dual listed companies were equal to 10. The remaining 95 were with respect to shares listed only the JSE. From **Figure 11**, it can be seen that during the pre-event window, both listing types display negative CAAR; this is consistent with the findings displayed in the previous sections. JSE listed shares are however less volatile than dual listed shares as CAAR at T_1 (day before the event) equal negative -1.59% and negative -1.23% for JSE listed and Dual listed share respectively. Similarly, on the day of the event, both listing types display positive AAR equal to 0.72% and 2.7% for JSE listed and Dual listed companies respectively. During the post-event window, the CAAR for each listing type diverge. Dual listed shares indicate that market participants react positively to CEO appointment announcements, whereby JSE listed companies react negatively.

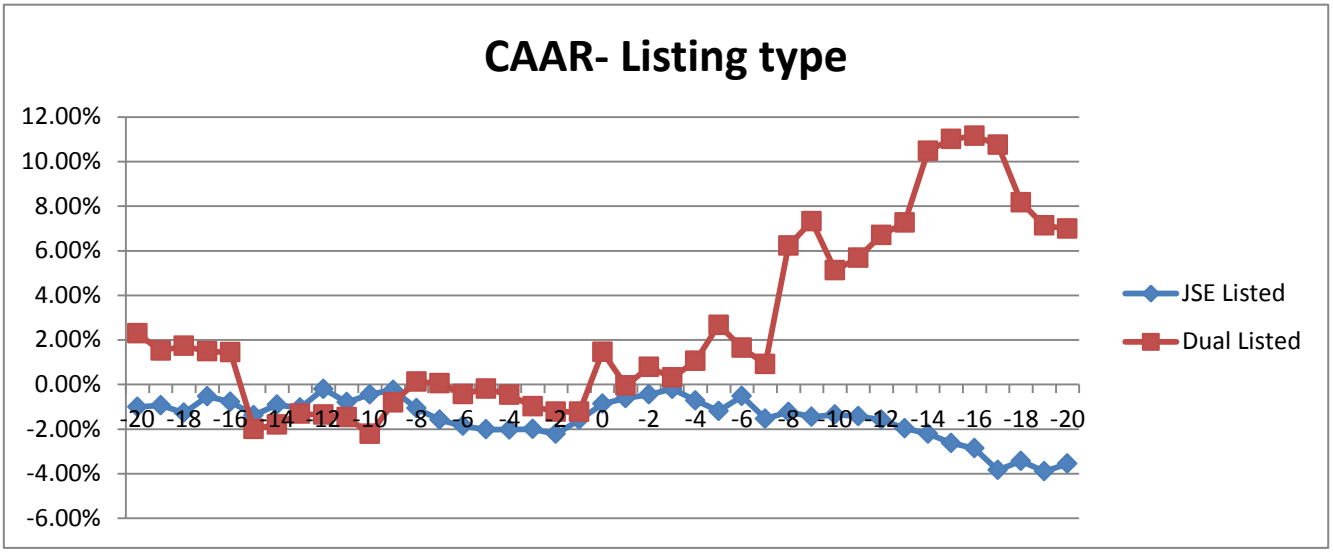

Figure 11. CAAR for listing type

The CAAR displayed at the end of the event window equal -3.55% and +6.99% for JSE and Dual listed companies respectively. This market reaction can possibly be due to better quality CEOs being appointed for dual listed companies as these companies would more likely have strong CEO succession programmes and may also be capable of attracting better quality CEOs than its JSE counterpart. Secondly, the CEO change for dual listed companies may be as a result of the company obtaining dual listed status as seen by ABSA Bank following their acquisition by Barclays Plc, in November 2008 which resulted in the appointment of Maria Ramos. This holds strong information effect on the state of the company in their undertakings in expanding into the international market. The real effect pertaining hereto can be deduced from the show of faith on behalf of foreign shareholders in their perception on the quality of the replacement CEO. This effect may further be understood to be due to differences in market efficiency of the respective exchanges, this may suggest that information relating to the quality of the replacement CEO is incorporated into share prices more timeously and more accurately than JSE listed shares.

Chapter 5: Conclusion and Recommendations

This study is believed to fill the gap in current empirical research by investigating the effect CEO appointment announcements has on share prices of JSE listed companies. This investigation investigates how certain event specific, non-event specific and firm specific characteristics influence the reaction of market participants in response to a CEO appointment announcement. Finally, this study highlights further research which can be conducted in investigating the above mentioned effect.

5.1 Conclusion on overall effect

The results of the findings indicate that there is significant negative cumulative average abnormal return for the period preceding the announcement, thus evidencing significant volatility in the period surrounding the announcement of the CEO change; this is consistent with the findings of (Nthoesane 2014). These negative cumulative average abnormal returns observed before the announcement may be argued to be due to investors having an expectation of a CEO change, however, due to uncertainty involving the reason for the change, the type of successor and the future implications for the company, the market reacts negatively in response.

On average, on the date of the event, significant AAR was found. This indicates that on average, market participants react positively to a CEO appointment announcement. This is supported by the findings reported by (Lassoued 2013) in Tunisia, (Kang 2009) in Asia, (Charitou 2010), (Van Doom 2011), (Vafeas 2009) in Europe and (Lubatkin 1989) in America who all concluded that there is a positive market reaction in response to announcements over a CEO announcement.

Focusing more closely on the African market, the findings of (Nthoesane 2014) and (Lassoued 2013) were both done on the Johannesburg Stock Exchange (JSE) and Tunisia, although not in the scope of this study, this may suggest an emerging trend on how investors in African Markets react to announcements over changes in CEOs. Table 3 shows performance returns over the 41 day event window. The majority of the AAR is statistically significant at a 95% confidence level. The AAR was generally found to be positive and statistically significant on the day of the event. This implies that the market responds favourably to announcements of CEO changes. The significance of the AAR provides confers to possible linkages between market participants expectations on the future of the company and the CEO.

For the period succeeding the event, it can be seen that the performance returns decrease. A number of arguments can be made to support this observation; this may be due to share performances returning to normal before the announcement was made, as any strategic changes the succeeding CEO intends on bringing into the company may only be observed on a date outside the event window. This calls for further research into this phenomena, whereby this effect is analysed using longer event window periods.

5.2 Conclusion per category

5.2.1 Conclusion on reason for turnover

The pre-event window revealed high negative CAAR for involuntary turnover. On the day of the event however, both involuntary and voluntary turnovers both showed positive AR. Involuntary turnovers had higher positive AR than voluntary. Forced turnovers increase volatility more than voluntary turnovers; hereby evidencing an investor expectation on large strategy changes. The CAAR for voluntary turnovers were mostly positive throughout the event window whereas the opposite effect was observed for involuntary turnovers. From

these findings, it can be deduced that market participants react favourably to CEO-initiated turnover as voluntary changes as opposed to forced changes are less likely to be interpreted as a signal to the market on poor performance of the company.

5.2.2 Conclusion on Origin of successor

Several studies lend support to the importance the origin of the successor has on understanding the market reaction to the change in CEO. These studies however, provides strong evidence supporting the view that external appointments could either result in positive or negative market reactions, (Bonnier 1989) proposes two hypotheses pertaining hereto. Firstly, the market may either react positively due to the board of directors knowing insiders better than outsiders and thus are less likely to make bad appointments, alternatively, external successors represent change and are less likely to be committed to past policies thus enabling alterations to company strategy and mission objectives. For the majority of the pre-event window, both internal and external successions reveal negative cumulative abnormal returns

The findings of this study provide strong support to the view that the origin of the replacement CEO does influence the market's reaction in response to a CEO appointment announcement. The findings for this section display that CAAR for internal appointments are on average negative throughout the event window. On the other hand, external appointments show relatively stable CAAR during the pre-event window but show a strong positive AR on the day of the event and continue to increase throughout the post-event window. This provides evidence that market participants of the JSE react more favourably to external appointments than internal appointments. Furthermore, it can be seen that the market reacts more favourably to strategic changes and a new vision being brought into the company. This interpretation is corroborated when considering that the internal successor may follow a similar approach to the departing CEO.

5.2.3 Conclusion on non-event specific factors

There is a strong body of research on the effect CEO changes have on share performance. These findings however have been argued to be inconclusive due to the inconsistency in findings. Positive reactions were observed by (Weisbach 1995), (Denis 1995) and (Huson 2003). In Japan Kang and Shivdasani (1996) found positive abnormal returns.

Conversely, (Reinganum 1985) did not find any market reactions in the US. Negative reactions were found by (Lassoued 2013) in Tunisia, (Kang 2009) in Asia, (Charitou 2010), (Van Doom 2011), (Vafeas 2009) in Europe and (Lubatkin 1989) in America.

In summary, there appears to be a strong body of knowledge supporting the view that a change in CEO of an organization may result in a change in the value market participants attach to the company.

The inconsistency in findings is argued to arise from the a confounding information effect associated with the announcement on CEO change and the CEO change (Bonnier 1989). In this part of the study, an analysis is performed on the share price reaction in response to a CEO change, focusing only on companies in financial distress. This approach allows removal of the negative information effect associated with the announcement, thereby enabling an analysis on the real effect to be undertaken. The findings of this section revealed that firms under financial distress experience a higher level of volatility in comparison to its counterpart. Furthermore, the CAAR of firms in financial distress were mostly negative, whereas the opposite effect was observed for companies which weren't under financial distress whereby high positive CAAR were displayed. Notwithstanding that a relatively small sample was used, the significance of these findings warrant further research on this relationship to be undertaken.

References

Agrawal, A., Charles R. Knoeber & Theofanis Tsoulouhas. (2000). "CEO Succession: Insiders versus Outsiders." Available at SSRN 213629.

Aharony, J. S., I. (1980). "Quarterly dividend and earnings announcements and stockholders' returns: An empirical analysis." Journal of Finance **35**(1): 1-12.

Ball, R., Brown, P. (1968). "An Empirical Evaluation of Accounting Income Numbers." Journal of Accounting Research **6**: 159-178.

Beatty, R. P. a. Z., B. J. (1987). "CEO change and firm performance in large corporations: Succession effects and manager effects." Strategic Management Journal **8**.

Binder, J. J. (1998). "The event study methodology since 1969." Review of quantitative finance and accounting **11**: 111-137.

Bonnier, K., Bruner, R. F. (1989). "An analysis of stock price reaction to management change in distressed firms " Journal of Accounting and economics **11**: 95-106.

Bowman, E. H. a. S., H. (1993). "Corporate restructuring: Reconfiguring the corporation. ." Strategic Management Journal, **14**(1).

Bukowitz, W. R., Williams, R.L. (1999). "The knowledge management fieldbook." Financial Times: London

Cao, J., Owen, S. and Yawson, A. (2006). "Evaluating the market reaction to UK divestitures." Management Research News **28**(8): 471 – 479.

Cao, J., Owen, S. and Yawson, A. (2010). "Divestitures, Corporate Governance and Wealth Effects, ." Accounting and Finance **50**(2).

Charitou, M., Patis, A. & Vittis, A. (2010). "The market reaction to the appointment of an outside CEO: An empirical investigation " Journal of Economic International Finance **2**(11): 272-277.

Ciccone, A., Papaioannou E. (2006). "Human Capital, the structure of growth, and production " Social Science Research network **623**.

Clayton, M. J., Hartzell, J.C., Rosenberg J.V. (2003). "The impact of CEO turnover on Equity Volatility " Federal Reserve Bank of New York Staff Reports **166**.

Constantinos, G. (2003). "Examining knowledge assets: reengineering the maintenence work request/ order system at a greek oil refinery system as an illustration." London School of economics **5**(3).

Coughlan, A. T. a. S., R. M. (1985). "Executie compensation, management turnover and firm performance." Journal of Accounting Research and Economics **7**.

Crawford, C. B. (2011). "Exploring the relationship between knowledge management and transformational leadership." Knowledge Management and Leadership.

Davenport, T. H. P., L. (2000). "Working Knowledge: How organizations manage what the know." Cambridge: Harvard University Press.

Denis, D. J. D. K. D. (1995). "Performance Changes Following Top Management Dismissal. ." The Journal of Finance **Vol 50**(No 4): 1029-1057.

Dolley, J. C. (1933). "Characteristics and procedure of common stock split-ups " Harvard Business Review **11**: 316-326.

Durlauf, L. B. S. (2007). "The new palgrave: a dictionary of economics " New York: Palgrave McMillan **2**.

Fama, E., F, L. and Jenson, M. (1969). "The Adjustment Of Stock Prices To New Information." International Economic Review **10**(1): 1-21.

Fama, E. F. (1970). "Efficient Capital Market: A review of theory and empirical framework " The Journal of Finance **25**(2): 28-30.

Fama, E. F. (1991). "Efficient Capital Markets II." The Journal of Finance **46**(5): 1575-1617.

Fisher, A. (2011). "Event Study Analysis CLM Chapter 4 [online via internal VLE] Available at:

www.vwl.unibe.ch/studies/3084_e/lecture7.pdf

Furtado, E. P. H., and Karan, V. (1990). "Causes, consequencesm and shareholder wealth effects of management turnover: A review of empircal evidence." Financial Management **19**: 60-75.

Gilbertson, B. a. G., M. N. (1981). "The Market Model on the Johannesburg Stock Exchange." Investment Analysis Journal **17**: 40-42.

Grossman, S. J., Stiglitz, J. E. (1980). "On the impossibility of informationally efficient markets " The American Economic Review **70**(3): 393-408.

Hagel III, J. a. S., M (2000). "200Unbundling the corporation [Online] Available at:

http://www.mckinseyquarterly.com/Unbundling_the_corporation_1069 Accessed Date 20

February 2012]."

Hamel, G. P., C.K. (1994). "Competing for the Future." Cambridge: Harvard University Press.

Huson, M. R., Paul H. Malatesta & Robert Parrino (2003). "Managerial Succession and Firm Performance." Journal of Financial Eonomics.

Hussin, B. M., Ahmed, A.D. & Ying, T.C. (2010). "Semi-strong form efficiency: Market reaction to dividend and earnings announcements in Malaysian stock exchange." Journal of Applied Finance **16**(5).

Jensen, M. C. (1978). "Some anomolous evidence regarding market inefficiency " Journal of finance and economics **6**(2).

Kang, E., Ding, DK. (2009). "Investor reaction to women directors " Business Review **63**: 888-894.

Kaplan, S., Schenkel, A., von Krogh, G., Weber, C (2001). "Knowledge Based Theories of the Firm in Strategic Management: A Review and Extension." MIT Sloan Working Paper

Lassoued, N., Attia, MBR. (2013). "The market effects of CEO turnover: The case of post-revolution Tunisia " Global Review: **4**(1): 85-103

Lonie, A. A., Abeyratna, G., Power, D.M. & Sinclair, C.D. (1996). "The stock market reaction to dividend announcement: A UK study of complex market signals " Journal of Economic Studies **23**(1): 32-52.

Lubatkin, M., Chung, KH., Rogers, R. & Owens, JE. (1989). "Stockholder reactions to changes in large corporations " Academy of Management Journal **32**(1): 47-68.

MacKinlay, A. C. (1997). "Event studies in economics and finance " Journal of Economic Literature **35**: 13-39.

Maroun, W. (2012). "Interpretive and critical research: Methodological blasphemy!" African Journal of Business Management 6-16.

McWilliams, A. a. S., D. (1997). "Event Studies in Management Research: Theoretical and Empirical Issues." The Academy of Management Journal **40**(3): 626 – 657

Meckel, M. (2007). Non financial success factors in capital market communications University of Gallen, Institute of Communications Management

Merkl-Davies, D. M., Brennan, N. M. & McLeay, S. J. (2011). "Impression Management and Retrospective Sense-Making in Corporate Narratives: A Social Psychology Perspective " Accounting , Auditing & Accountability Journal **24**: 315-344.

Meznar, M., Nigh, D., & Kwok, C. (1994). " Effect of announcements of withdrawal from South

Africa on stockholder wealth." Academy of Management Journal **37**(6): 1636-1648.

Mlonzi, V. F., Kruger, J., & Nthoesane, M. G. (2011). "Share price reaction to earning announcements on the JSE-ALtX: A test for maket efficiency." South African Business Review **15**(3).

Nthoesane, M. G., Kruger, J. W. (2014). "Market reaction to chief executive officers (CEOs) appointments on the Johannesburg Securities Exchange (JSE): stock price and volume approach." Journal of Economics and International Finance **6**(5): 91-102.

Peterson, P. (1989). "Event Studies: A review of issues and Methodology." Quarterly Journal of Business and economics **28**(3): 36-58.

Poterba, J. M., L.H. Summers. (1986). "The persistence of volatility and stock market

fluctuations. ." American Economic Review **76**.

Reinganum, M. R. (1985). "The effect of executive succession on stockholder wealth." Administrative Science Quarterly **Vol 30**: 46-60.

Rono, H. C. (2013). Stock price reaction to earnings announcements: A comparative test for market efficiency between NSE securities exchange and JSE securities exchange. Faculty of Commerce Law and Management Wits Business School University of Witwatersrand Master of Management in Finance and Investment

Setiawan, D. (2008). "An Analysis Of Market Reaction To CEO Turnover Announcement: The Case In Indonesia." International Business & Economics Research Journal **Vol 7**(No. 2): 119.

Sorokina, N., Booth, D. E. & Thornton, J,. H. (2013). "Robust methods in event studies: empirical evidence and theoretical implications " Journal of Data Science **11**: 575-606.

Strauss, A. C., J. M (1990). "Basics of qualitative research: Grounded theory procedures and techniques." Sage Publications Inc

Vafeas, N., Vittis, A. (2009). "Stock market reaction to chief marketing officer appointment announcements " Journal of Business Economic Research **7**(11): 29-40.

Van Doom, M. (2011). "Market Reaction to CEO and CFO succession announcements for public companies in Netherlands ".

Volkov, D. a. G., T. (2007). "Intangible Assets: Importance in the Knowledge-Based Economy and the Role in Value Creation of a Company." The Electronic Journal of Knowledge Management Volume 5 Issue 4, pp. 539 - 550 **5**(4): 539-550.

Warner, J., Watts, R. & Wruck, K. (1988). "Stock Prices and Top Management Changes " Journal of Financial Economics **Vol. 20**.

Warner, S. J. B. J. B. (1980). "Measuring security price performance " Journal of financial economics **8**: 205-258.

Watson, S., Rossouw, J. (2012). "JSE Efficiency and share price reaction to forced financial restatements " Journal of Economic and Financial Sciences **5**(2): 417-436.

Weisbach, M. S. (1995). "CEO Turnover and the Firm's Investment Decisions." Journal of Financial Economics **37**: 159-188.

Zhao, J., Michalisin, M. D. and Stubbart, C. I. (2011). "Restructuring Strategies That Change Corporate Focus: An Empirical Investigation Of Their Performance Consequences In The Early

1990s." Advances in Competitiveness Research **19**(1).

Appendix

The following appendices are included in this report.

- Table 1: CEO appointment announcements
- Table 2: Announcements which were significant at a 95% confidence level
- Table 3: Event Window Returns

Table 1: CEO appointment announcements

Company	Date of CEO appointment announcement
1time Holdings Ltd	5-Sep-11
Adcock Ingram Holdings Ltd	3-Apr-14
Advtech Limited	2014/08/11
AECI Ltd	2012/11/28
African Bank Investments Ltd	2014/10/06
African Dawn Capital Ltd	2012/05/24
African Dawn Capital Ltd	2011/12/22
African Oxygen Ltd	2011/12/09
AFROCENTRIC INVESTMENT CORP	2012/09/10
AH Vest Ltd	2012/10/29
Anglo American Platinum Ltd	2012/07/19
Anglogold Ashanti Ltd	2013/02/21
Ansys Limited	2013/06/05
ARB Holdings Ltd	2014/09/18
ArcelorMittal South Africa Ltd	2014/05/22
Ascension Properties Ltd	2014/08/29

Astrapak Limited	2012/05/30
Astrapak Limited	2012/10/19
Aveng Ltd	2014/02/11
Basil Read Holdings Ltd	2014/08/27
Basil Read Holdings Ltd	2014/03/27
Bauba Platinum Ltd	2013/02/08
Beige Holdings Ltd	2013/01/16
Bsi (sa) Limited	2014/04/21
Business Connexion Group Ltd	2014/06/12
Cadiz Holdings Ltd	2012/02/21
Calgro M3 Holdings Limited	2009/12/14
Capitec Bank Holdings Ltd	2013/09/23
CHEMICAL SPECIALITIES LIMITED	2013/01/01
Cipla Medpro South Africa Ltd	2013/06/20
Control Instruments Group Ltd	2011/12/14
Coronation Fund Managers Ltd	2013/02/01
Cullinan Holdings Ltd	2013/06/14
Dorbyl Ltd	2013/01/16

Efficient Invest	2013/08/13
ELB Group Ltd	2013/01/01
Esorfranki Ltd	2014/09/01
Evraz Highveld Steel And Vanadium Ltd	2014/10/01
Evraz Highveld Steel And Vanadium Ltd	2014/04/16
Famous Brands Ltd	2014/02/28
Fountainhead Property Trust	2014/10/28
Gijima Group Ltd	2013/10/13
Gijima Group Ltd	2012/09/26
Gooderson Leisure Corporation Limited	2012/03/30
Grand Parade Investments Ltd	2013/02/13
Hospitality Property Fund Ltd	2013/02/20
Hudaco Industries Ltd	2014/06/30
Illovo Sugar Ltd	2011/09/15
Impala Platinum Holdings Ltd	2012/01/31
Imperial Holdings Ltd	2014/02/20
Infrasors Holdings Limited	2013/05/31
Invicta Holdings Ltd	2014/09/02

Italtile Ltd	2014/07/01
JD Group Ltd	2013/08/09
Kagiso Media Ltd	2013/08/02
Kap Industrial Holdings Ltd	2014/11/14
Keaton Energy Holdings Ltd	2012/08/07
Keaton Energy Holdings Ltd	2012/06/06
Kumba Iron Ore Ltd	2012/07/19
Liberty Holdings Ltd	2014/03/01
Life Healthcare Group Holdings Ltd	2014/03/31
Massmart Holdings Ltd	2014/04/11
Merafe Resources Ltd	2012/05/29
MINE RESTORATION INVESTMENTS Ltd	2013/11/18
MoneyWeb Holdings Ltd	2014/08/07
Nampak Limited	2013/10/14
Naspers Limited	2014/02/24
Northam Platinium	2014/06/30
Palabora Mining Co. Ltd.	2013/11/01
Peregrine Holdings Ltd.	01/04/2013

Pick 'n Pay Holdings Ltd.	2013/01/22
RMB Holdings Ltd.	2014/08/10
Rare Holdings Ltd.	2012/04/13
Redefine Properties Ltd	2014/06/26
Remgro Limited	2014/04/30
Reunert LTD	2014/08/08
SA Corporate Real Estate Fund	2014/06/01
SacOil Holdings Ltd.	2014/06/01
Sanyati Holdings Limited	2012/06/30
Securedata Hldg Ltd	2012/08/01
Sherbourne Capital Ltd	2014/07/25
Sovereign Food Investments Ltd	2012/05/18
Spar Group Ltd	2013/11/12
Spur Corp Ltd	2012/03/02
Standard Bank Group Ltd	2013/07/03
Sun International Ltd.	23-Nov-12
Village Main Reef Ltd	12-Aug-13
Wescoal Holdings Ltd.	10-Sep-12

Zeder Investments Ltd	23-Jul-12
Zurich Insurance Co. S.A. Ltd.	01-Mar-12
Alert Steel Holdings Ltd	2013/02/28
Nutritional Holdings Ltd	2012/11/30
Pioneer Food Group Ltd.	2013/02/22
Protech Khuthele Holdings Ltd.	2011/09/01
RBA Holdings Limited	2012/09/10
SABMiller plc	2013/04/23
BHP Billiton plc	2013/20/02
Anglo American plc	2013/01/08
Lonmin plc	2013/04/02
Lonmin plc	2012/12/28
Pan African Resource plc	2013/09/09
Pan African Resource plc	2013/02/27
African Eagle Res plc	2011/09/15
African Eagle Res plc	2014/11/14
IPSA Group plc	2011/09/08

Table 2: Announcements which were significant at a 95% confidence level

Company	Abnormal Returns	AR significant
Advtech Limited	3.08%	Yes
African Bank Investments Ltd	2.36%	Yes
African Oxygen Ltd	-4.37%	Yes
Anglo American Platinum Ltd	-2.14%	Yes
Ansys Limited	-10.57%	Yes
Ascension Properties Ltd	1.94%	Yes
Capitec Bank Holdings Ltd	3.24%	Yes
Control Instruments Group Ltd	6.51%	Yes
Coronation Fund Managers Ltd	-1.67%	Yes

Esorfranki Ltd	6.58%	Yes
Evraz Highveld Steel And Vanadium Ltd	17.66%	Yes
Evraz Highveld Steel And Vanadium Ltd	2.98%	Yes
Gooderson Leisure Corporation Limited	13.22%	Yes
Hospitality Property Fund Ltd	5.92%	Yes
Impala Platinum Holdings Ltd	-4.48%	Yes
Imperial Holdings Ltd	-3.76%	Yes
Infrasors Holdings Limited	-3.55%	Yes
Keaton Energy Holdings Ltd	3.40%	Yes
Keaton Energy Holdings Ltd	2.18%	Yes

Kumba Iron Ore Ltd	5.72%	Yes
Life Healthcare Group Holdings Ltd	1.60%	Yes
Merafe Resources Ltd	3.70%	Yes
MINE RESTORATION INVESTMENTS Ltd	-8.98%	Yes
MoneyWeb Holdings Ltd	6.57%	Yes
Nampak Limited	3.43%	Yes
Naspers Limited	3.57%	Yes
Redefine Properties Ltd	2.45%	Yes
Reunert LTD	-1.92%	Yes
Securedata Hldg Ltd	-3.91%	Yes

Spar Group Ltd	-3.25%	Yes
Spur Corp Ltd	4.12%	Yes
Sun International Ltd.	-1.63%	Yes
Village Main Reef Ltd	9.32%	Yes
Alert Steel Holdings Ltd	-1.82%	Yes
Nutritional Holdings Ltd	33.26%	Yes
Pioneer Food Group Ltd.	3.59%	Yes
Protech Khuthele Holdings Ltd.	1.91%	Yes
RBA Holdings Limited	-26.36%	Yes
SABMiller plc	3.03%	Yes

BHP Billiton plc	-2.75%	Yes
Lonmin plc	-2.92%	Yes
Pan African Resource plc	-2.36%	Yes
Pan African Resource plc	-4.39%	Yes
African Eagle Res plc	36.29%	Yes

Table 3: Event Window Returns

Unadjusted Cross Sectional Errors

Unadjusted Cross Sectional Errors
0.085555%

	Sample				
Day relative to event	AAR	T-stat (2 tailed) 95%	Significant (95%)	Significant (99%)	SD
-20	-0.70%	-8.14	YES	YES	0.45%
-19	0.00%	0.02	NO	NO	0.05%
-18	-0.29%	-3.34	YES	YES	0.16%
-17	0.64%	7.45	YES	YES	0.49%
-16	-0.22%	-2.52	YES	NO	0.11%
-15	-0.88%	-10.23	YES	YES	0.57%
-14	0.44%	5.15	YES	YES	0.36%
-13	-0.07%	-0.83	NO	NO	0.01%
-12	0.76%	8.84	YES	YES	0.58%
-11	-0.55%	-6.48	YES	YES	0.35%
-10	0.25%	2.93	YES	YES	0.22%
-9	0.32%	3.69	YES	YES	0.27%
-8	-0.66%	-7.69	YES	YES	0.42%
-7	-0.47%	-5.52	YES	YES	0.29%
-6	-0.29%	-3.44	YES	YES	0.16%
-5	-0.12%	-1.39	NO	NO	0.04%

-4	-0.04%	-0.43	NO	NO	0.02%
-3	-0.03%	-0.36	NO	NO	0.02%
-2	-0.21%	-2.50	YES	NO	0.11%
-1	0.57%	6.63	YES	YES	0.45%
0	0.91%	10.58	YES	YES	0.68%
1	0.09%	1.02	NO	NO	0.11%
2	0.23%	2.66	YES	YES	0.20%
3	0.18%	2.13	YES	NO	0.17%
4	-0.39%	-4.60	YES	YES	0.23%
5	-0.28%	-3.26	YES	YES	0.15%
6	0.51%	5.90	YES	YES	0.40%
7	-0.98%	-11.51	YES	YES	0.65%
8	0.78%	9.13	YES	YES	0.60%
9	-0.09%	-1.10	NO	NO	0.02%
10	-0.12%	-1.41	NO	NO	0.04%
11	-0.01%	-0.07	NO	NO	0.04%
12	-0.05%	-0.63	NO	NO	0.01%
13	-0.29%	-3.38	YES	YES	0.16%
14	0.09%	1.02	NO	NO	0.11%
15	-0.33%	-3.83	YES	YES	0.19%
16	-0.20%	-2.34	YES	NO	0.10%
17	-0.93%	-10.82	YES	YES	0.61%
18	0.12%	1.45	NO	NO	0.13%
19	-0.52%	-6.07	YES	YES	0.32%
20	0.30%	3.47	YES	YES	0.25%

Average	-0.06%	-0.73	NO	NO	0.00%