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**The impact of Black Economic Empowerment transaction
announcements on share price performance of JSE listed
mining companies**

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

14 January 2015

ABSTRACT

The South African government introduced the Black Economic Empowerment (BEE) as an intervention to resolve economic imbalances. In furthering inclusivity in the previously exclusive sectors, like Mining, the BEE legislations and Mining Charter were introduced to benefit the HDSA. The study addressed a significant gap in BEE research, which is important within the South African context, as the country currently reviews progress after the initial 20 years of democratic dispensation.

The research examined the share price performance of mining stocks listed on the JSE by tracking their share price performance after announcements relating to black empowerment transactions. The objectives of the research were to, first, determine whether announcements of BEE transactions lead to better shareholder wealth creation in the South African mining sector, second, to determine the impact of these announcements on Old and BEE mining companies that were listed on the JSE post-1994, third, to determine whether the early BEE announcements made before the release of the Mining Charter in September 2010 had a greater positive impact on the Cumulative Abnormal Returns (CARs) of Mining companies compared to those made after the amendment to legislation.

The research employed an event study methodology to analyse a sample of 26 mining companies that made a total of 241 qualifying announcements from January 2000 to November 2014.

The results of the study showed negative impact on the CARs of the mining companies. It was noted that the old mining companies that existed before 1994 had better average abnormal return than the BEE companies. Further, the results showed that the Average Abnormal Returns (AARs) of the BEE announcements made prior to the Mining Charter had greater AARs than those made after the implementation. In sum, the BEE announcements had largely a negative impact on share performance of the mining companies.

Keywords

Black Economic Empowerment (BEE), Mining Shares, Event Study, Abnormal Returns, JSE

DECLARATION

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

Lesang Edmunds Sennanye

14 January 2015

ACKNOWLEDGEMENTS

I would like to thank my supervisor, Professor Mike Ward, for his time, guidance and insight; it has been a good leaning. I would also like to thank Chris Muller who partnered with Mike to assist me with the database and running of their developed event study model.

I am grateful to GIBS management, the faculty and support services for a great learning experience. Thanks go to my MBA colleagues whom I learnt with and learnt from. With a special mention to my buddies, Fikile Holomisa, Lyborn Mashava, Memory Nyanga, Ntombi Nyaga and Melusi Sigasa. I also thank Anastacia Mamabolo for her time and guidance. Her passion for research brought light into my research.

I appreciate all the support I got from my friends and family who gave me support during the pressured times of my studies. I am grateful to the friendship and support I got from Kabelo Mogajane especially for assisting Chabi with the farming operations.

I am indebted to my wife, Masechaba, for her love, support and allowing me an opportunity to embark on the MBA journey. I am equally indebted to my son, Leano who missed a lot of playtime with me during the course of my studies. I thank the two of you for adding meaning to my life.

DEDICATION

This research work is dedicated to my favourite teacher Mrs. Catherine Segwagwa from Bona-Bona village, one of the teachers who motivated me from an early age and instilled love for education and learning.

TABLE OF CONTENTS

ABSTRACT	I
DECLARATION	III
ACKNOWLEDGEMENTS	IV
DEDICATION	V
LIST OF TABLES	VIII
LIST OF FIGURES	IX
LIST OF EQUATIONS	X
CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM.....	1
1.1 Research title	1
1.2 Introduction	1
1.3 Background of Study.....	2
1.4 Research Problem	3
1.5 Research objectives.....	4
1.6 Research Scope	4
1.7 Outline of Research Study	5
CHAPTER 2: LITERATURE REVIEW	6
2.1 General background information.....	6
2.1.1 South Africa's Black Economic empowerment	6
2.1.2 Broad-Based Black Economic Empowerment Act	7
2.2 South African Mining.....	8
2.3 Modes of equity transfer and announcements.....	11
2.3.1 Impact of BEE announcements on cumulative returns	12
2.3.2 Short-term cumulative returns.....	12
2.3.3 Long-term cumulative returns	13
2.3.4 Link between the age of the company and its share price performance.....	13
2.3.5 Timing of the BEE announcements	14
2.4 Review of event study methodology and significant announcements	15
2.4.1 Event study methodology.....	15
2.4.2 Some critical assumptions of event studies	16
2.5 Conclusion to the literature review.....	17
CHAPTER 3: RESEARCH HYPOTHESES	18
Hypothesis 1	18
Hypothesis 2	18
Hypothesis 3	19
Hypothesis 4	19
CHAPTER 4: RESEARCH METHODOLOGY	20
4.1 Research Approach	20
4.2 Research strategy.....	20
4.2.1 An event.....	21
4.2.2 Event Window	21
4.2.3 Return Estimation	22
4.2.4 Expected return.....	23
4.2.5 Abnormal Returns (AR).....	24

4.2.6	Actual return.....	25
4.2.7	Average Abnormal Return (AAR).....	25
4.2.8	Cumulative Average Abnormal Returns.....	26
4.2.9	Significance test.....	26
4.3	Unit of analysis.....	27
4.4	Population.....	28
4.5	Sample size and sampling method.....	28
4.6	Data collection.....	29
4.6.1	Identification event date.....	29
4.6.2	Exclusion confounding events.....	30
4.6.3	Final events list and share prices.....	30
4.7	Data analysis.....	31
4.8	Reliability and Validity.....	31
4.9	Research limitations.....	31
	CHAPTER 5: RESULTS.....	33
5.1	Introduction of results.....	33
5.2	Description of the sample.....	33
5.3	Hypothesis 1: Testing for Average Abnormal Returns.....	36
5.4	Hypothesis 2: Testing for CAR performance.....	38
5.5	Hypothesis 3: CAR performance based by age of company.....	43
5.6	Hypothesis 4: Timing of BEE announcements.....	47
5.7	Conclusion.....	49
	CHAPTER 6: DISCUSSION OF RESULTS.....	50
6.1	Introduction.....	50
6.2	Hypothesis 1: Testing for Average Abnormal Returns.....	50
6.3	Hypothesis 2: CAR performance.....	51
6.4	Hypothesis 3: CAR performance based by age of company.....	52
6.5	Hypothesis 4: Timing of BEE announcements.....	53
6.6	Conclusion.....	54
	CHAPTER 7: CONCLUSION.....	55
7.1	Introduction.....	55
7.2	Summary of the findings.....	55
7.3	Recommendation for practice.....	57
7.4	Recommendations for future research.....	58
7.5	Chapter Summary.....	58
	REFERENCES.....	59
	APPENDICES.....	65

LIST OF TABLES

Table 4-1: Control Portfolios	22
Table 4-2: Keywords used in initial search	30
Table 5-1: Descriptive statistics of the full sample	34
Table 5-2: t-test - positive AARs at 5% level	36
Table 5-3: t-test where AAR is negative at 5%	37
Table 5-4: Negative 10-day CAR (sig. at 5%).....	42
Table 5-5: Correlation: Old vs. BEE Miners	46
Table 5-6: Paired t-test: Old vs. BEE Miners	46
Table 5-7: Correlation: pre vs. post amendment of mining charter.....	48
Table 5-8: Paired t-test; pre vs. post amendment of mining charter.....	49

LIST OF FIGURES

Figure 2-1: The contribution of mining to South Africa over the past decade expressed in 2012 real money terms*	8
Figure 2-2: Percentage of mining revenue per commodity*	9
Figure 2-3: Market capitalisation of the top-10 mining companies (R 'billions).....	10
Figure 5-1: Histogram for AAR (Equally weighted).....	34
Figure 5-2: Chi-squared table – full sample	35
Figure 5-3: Bar graph of AARs for the full sample	37
Figure 5-4: Bar graph of AARs for t_{-20} to t_{20}	38
Figure 5-5: Long-term CAR: t_{40} to t_{+240}	39
Figure 5-6: Short-term, t_{-20} to t_{+20} : AAR & CAR	40
Figure 5-7: 10day CAR histogram	43
Figure 5-8: Equally Weighted CAR t_{-40} to t_{+240} for New vs. Old Miners	44
Figure 5-9: Old vs. BEE Miners – AAR & CAR t_{-20} to t_{+20}	45
Figure 5-10: Pre vs. post amendment of mining charter.....	47

LIST OF EQUATIONS

Equation 1: Expected Return	24
Equation 2: Abnormal Return (AR)	24
Equation 3: Actual Return	25
Equation 4: Average Abnormal Return (AAR)	25
Equation 5: Cumulative Average Abnormal Return (CAR)	26
Equation 6: t-stat for AAR	26
Equation 7: t-stat for CAR	27

CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM

1.1 Research title

The impact of Black Economic Empowerment transaction announcements on share price performance of JSE Listed Mining Companies.

1.2 Introduction

The South African mining stakeholders committed themselves to achieving a minimum target of 26% ownership of the South African mining and minerals industry by Historically Disadvantaged South Africans (HDSA) by 2014. This target was established in the Mining Charter to enable a change in racial and gender disparities prevalent in the ownership of South African mining and minerals industry (Department: Mineral Resources, 2010).

The objective of this research was to assess the impact of Black Economic Empowerment (BEE) announcements relating to equity ownership by HDSA on share price performance of South African Mining Companies. Furthermore, this research assessed whether the introductions of the Mining Charter had an impact on the share price performance of companies.

The study employed the well-established event study methodology (Kothari & Warner, 2007) that assessed whether investors in the South African mining stocks listed on the Johannesburg Stock Exchange (JSE) have benefited from transformational transactions as guided by the Mining Charter.

In 2004, the South African Government and Mining Industry recognised that one of the means of ensuring greater participation and benefit for HDSA's in the mining industry was by encouraging greater ownership of mining industry assets by HDSA's; other means include holding majority control (50% plus 1 vote) that include management

control and collective investment, or by using Employee Share Ownership Plans (ESOPS) and mining dedicated unit trusts. The use of Strategic Joint Ventures (SJVs) was also proposed as one of the means of achieving ownership and participation of the HDSA's in the Mining Sector (*Scorecard for the Broad Based Socio-economic Empowerment Charter for the South African Mining Industry, 2004*).

The impending 2014 deadline for achieving the 26% ownership level (Cawood, 2004; Hamann, Khagram, & Rohan, 2008; Republic of South Africa, 2004) makes this research relevant, as it demonstrates the degree to which the transformation of the ownership landscape of South African mining assets has impacted on shareholders. This study contributes to the review of the success of Black Economic Empowerment, as South Africa assesses the successes and failures of the first 20 years of the post-Apartheid era, while seeking guidance on methods to overcome growing inequalities within the population and economy.

It is hoped that the findings of the study can assist relevant industry stakeholders in assessing the impact of Black Economic Empowerment on shareholder value.

1.3 Background of Study

Before 1994, the government held South African (SA) mineral rights and few mining companies dominated the mining industry. After the first South African democratic elections in 1994, the government embarked on pursuing Black Economic Empowerment (BEE) initiatives designed as a direct intervention to redistribute assets, and to create opportunities required to resolve the economic inequalities created by the Apartheid Government, which had historically favoured white business owners and multinational corporates (MNCs) rather than benefitting the majority of the black population (Ribane, 2011). The government promulgated Acts which were intended to promote economic transformation in South Africa by encouraging meaningful participation of black people in the economy (Republic of South Africa, 2004).

Between 1994 and 2004, South Africa witnessed the emergence of a handful of prominent and politically connected black mining entrepreneurs, mainly through the disproportionate transfer of shares to enrich these few connected individuals. These

few politically connected individuals have amassed wealth from empowerment transactions and accompanying directorships (Tangri & Southall, 2008). To further inclusivity in the ownership of mineral rights and mines, Broad-Based Black Economic Empowerment (BBBEE) and the Mining Charter legislations were enacted (Republic of South Africa, 2004). The Charter and the Act were intended to enforce changes in the way that mining houses operated and were required for these businesses to retain their licenses to operate.

During 2012, the South African mining sector accounted for 24,7% (R1,8 trillion) of the JSE's all-share index, and the industry spent 80% of its R488 billion expenditure within South Africa. The mining sector is a significant contributor to the South African economy, the multiplier effect of its fixed investment is estimated at 25% of the country's total economy. This sector remains a major contributor to the economy, with significant contributions to employment numbers, export earnings, attracting foreign direct investment, creating GDP and contributing to proper, measured and sustained transformation of the economy (Chamber of mines of South Africa, 2013).

1.4 Research Problem

This research examined the share price performance of mining stocks listed on the Johannesburg Securities Exchange (JSE) by tracking the stocks' share price performance after announcements relating to black empowerment transactions. The scholars in this field lamented that further studies are required to understand BEE within mining industry (Fauconnier & Mathur-Helm, 2008; Ribane, 2011; Wolmarans & Sartorius, 2009). Therefore this study addressed this significant gap in research, especially within the South African context.

1.5 Research objectives

The objectives of this study were to:

- Determine whether announcements of BEE transactions in the long-term and short-term lead to better shareholder wealth creation in the mining sector.
- Determine whether BEE announcements have a greater positive impact on the cumulative abnormal returns of BEE Mining companies that were listed on the JSE post-1994 compared to their large market cap counterparts.
- Determine whether the early BEE announcements made before the release of the Mining Charter in September 2010 have a greater positive impact on the Cumulative Abnormal Returns of Mining companies compared to those made after the amendment to legislation.

1.6 Research Scope

The research scope included the reviews of the performance of mining companies listed on the JSE. Similar studies were conducted on the JSE companies by Sartorius and Botha (2008) and Ward and Muller (2010), however these studies covered all the stocks listed on the JSE. Previous research studied samples of between 72 and 175 JSE listed companies. However, this specific research study only focus on mining stocks and the study covered 66 companies that are classified as Resources within the economic grouping and industrial sector of mining on the JSE. Shares listed on the JSE are categorised into one of the three sectors that are consistent with the South African (SA) sector categories, namely Resources, Financials and Industrials, based on their revenue. The SA sector classification is derived from the Industry Classification Benchmark (JSE, 2014; Sharenet, 2014).

1.7 Outline of Research Study

CHAPTER 1: This chapter introduced the research problem and exhibited the need for the research, and stated the research objectives. The chapter has contextualised the need for the research by including the relevant background and concluded by defining the scope of the research.

CHAPTER 2: This chapter presents an argument within academic literature that demonstrates the need for this specific research. Relevant literature has been used to reveal the intricacies of the topic, by considering various points of argument. It also covers the review of literature on the theories and application of the measuring instrument.

CHAPTER 3: In this chapter, the purpose of the research is outlined and the formulated hypothesis presented.

CHAPTER 4: This chapter outlays the research design and methodology. The details of the population, sample size and sampling method as well as the research instrument are discussed. It confirms the data collection methods, and discusses the processing and analysis of the data. The chapter concludes by emphasising the few limitations of the research.

CHAPTER 5: This chapter presents a summary of the sample and the findings of the research by displaying tables and figures with limited commentary.

CHAPTER 6: Chapter analyses the data with the intention of interpreting, discussing and analysing the findings by connecting the primary findings to the literature review.

CHAPTER 7: The research study concludes the research to satisfy the aims and objectives of the study. It emphasises the main findings of the research and provides feasible recommendations for future research.

CHAPTER 2: LITERATURE REVIEW

2.1 General background information

2.1.1 South Africa's Black Economic empowerment

Following the successful transition of South Africa to Democracy in 1994, the South African government and the public at large became increasingly frustrated with the slow pace of social and economic transformation. The resulting pressure led to the conceptualisation of Black Economic Empowerment (BEE), and the establishment of the BEE commission in 1998 (Hamann et al., 2008).

The conclusions of the BEE Commission (report published in 2001) called for the government to intervene through policies and to facilitate the meaningful participation of black South Africans in the mainstream economy (Hamann et al., 2008). Following the BEE Commission report, the mining industry through the Department of mineral Resources (then, Department of Minerals and Energy) introduced the Mining Charter.

The Mining Charter was released in October 2002 and it outlined fundamental focus areas and guidance regarding how the mining industry could expand opportunities for HDSA. The pertinent issues included: ownership of mining assets, Employment and participation in management, worker and community participation and the sharing of benefits flowing from the south African mining industry (Cawood, 2004).

As part of the Mining Charter the BEE scorecard was introduced to ensure the fulfilment of the requirements contained in the Broad Based Socio-Economic Empowerment Charter for the Mining and Minerals Industry. Its objectives, amongst others, include: Promotion of equitable access to the country's mineral resources, increased participation of HDSA's in mining and the advancement of the social and economic welfare of mining communities and the major labour sending areas (*Scorecard for the Broad Based Socio-economic Empowerment Charter for the South African Mining Industry, 2004*).

2.1.2 Broad-Based Black Economic Empowerment Act

The South African government promulgated the Broad-Based Black Economic Empowerment Act to promote the achievement of the constitutional right to equality, to increase broad-based and effective participation of black people in the South African economy, to promote a higher economic growth rate, to increase employment and opportunities and to increase more equitable income distribution. Other achievements include the establishment of a national policy on broad-based black economic empowerment to promote the economic unity of the nation, to protect the common market, and to promote equal opportunity and equal access to government services (Republic of South Africa, 2004a).

Black people or the HDSA refers to persons, category of persons or community, disadvantaged by unfair discrimination before the Constitution of the Republic of South Africa, 1993 (Act No. 200 of 1993) came into operation (Republic of South Africa, 2004b).

In evaluating the broader impact of BEE in redressing past economic injustices, van der Berg, Burger, Burger, Louw, and Yu (2006) noted that little has been done in the area of poverty alleviation other than expanded social grants. With regard to education, whilst equality in State funding for teachers at all schools exists, teacher skills, governance and resource availability at black schools remains problematic.

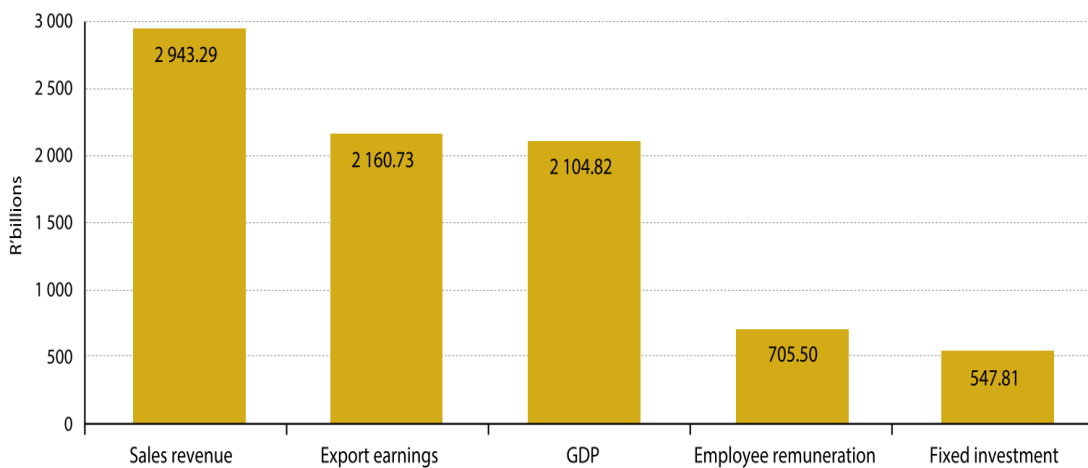
The introduction of BEE has been significant in the mining sector. The forced Joint Ventures associated with Black Economic Empowerment (BEE) boosted Foreign Direct Investment (FDI) in the mining sector (Japarov, 2012). South Africa's net FDI inflows in 2011 were 19% of the country's total net inflows of R46,7 billion.

The industry invested in expanding the production capacity of platinum and iron ore mines in anticipation of increased future demand. The declining South African gold mining sector has led to mergers and acquisitions of domestic companies as these seek growth in new international destinations. Essentially, this has led to an increase in outward investments because of a lack of local greenfield opportunities (South African Reserve Bank, 2012).

2.2 South African Mining

The South African mining industry is the fifth largest in the world (Chamber of Mines of South Africa, 2012). With a Citibank-estimate of US\$2.5 trillion of mineral resource base (Antin, 2013), the mining sector is set to play an important role in the future of the country. In terms of reserves, the country has been classified as the primary producer of platinum group metals (PGMs), manganese, chromium and gold. Although mining's contribution to the national GDP has fallen from 21% in 1970 to 6% in 2011, it still represents approximately 60% of exports (Leon, 2012). Figure 2-1 below depicts the contribution of the mining industry to the South African economy between 2001 and 2012.

Figure 2-1: The contribution of mining to South Africa over the past decade expressed in 2012 real money terms*

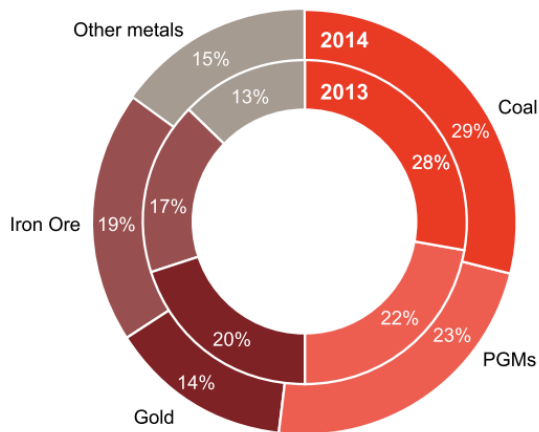


*Source: Chamber of mines of South Africa, 2012

South Africa's top four mineral commodities in terms of sales and employment have been coal, platinum group metals (PGMs), gold and iron ore (PricewaterhouseCoopers, 2014). Globally, South Africa is classified in the following positions: Number one in the production of chrome, manganese, platinum, vanadium and vermiculite; second in the production of Ilmenite, palladium, rutile and zirconium, and South Africa is the world's third largest coal exporter and now the fifth largest producer of gold.

Figure 2-2 below highlights the percentage split of how various commodities contributed to the South African mining revenue for the years 2013 and 2014. Gold which used to be South Africa's biggest foreign earner, saw its production output halved in the decade leading to 2014 (PricewaterhouseCoopers, 2014).

Figure 2-2: Percentage of mining revenue per commodity*



* Source: PricewaterhouseCoopers (2014), Stats SA

Mining-related products accounted for up to 25% of the output of the manufacturing sector in 2012. Performance of the mining sector therefore has a direct impact of South African manufacturing sector (South African Reserve Bank, 2012).

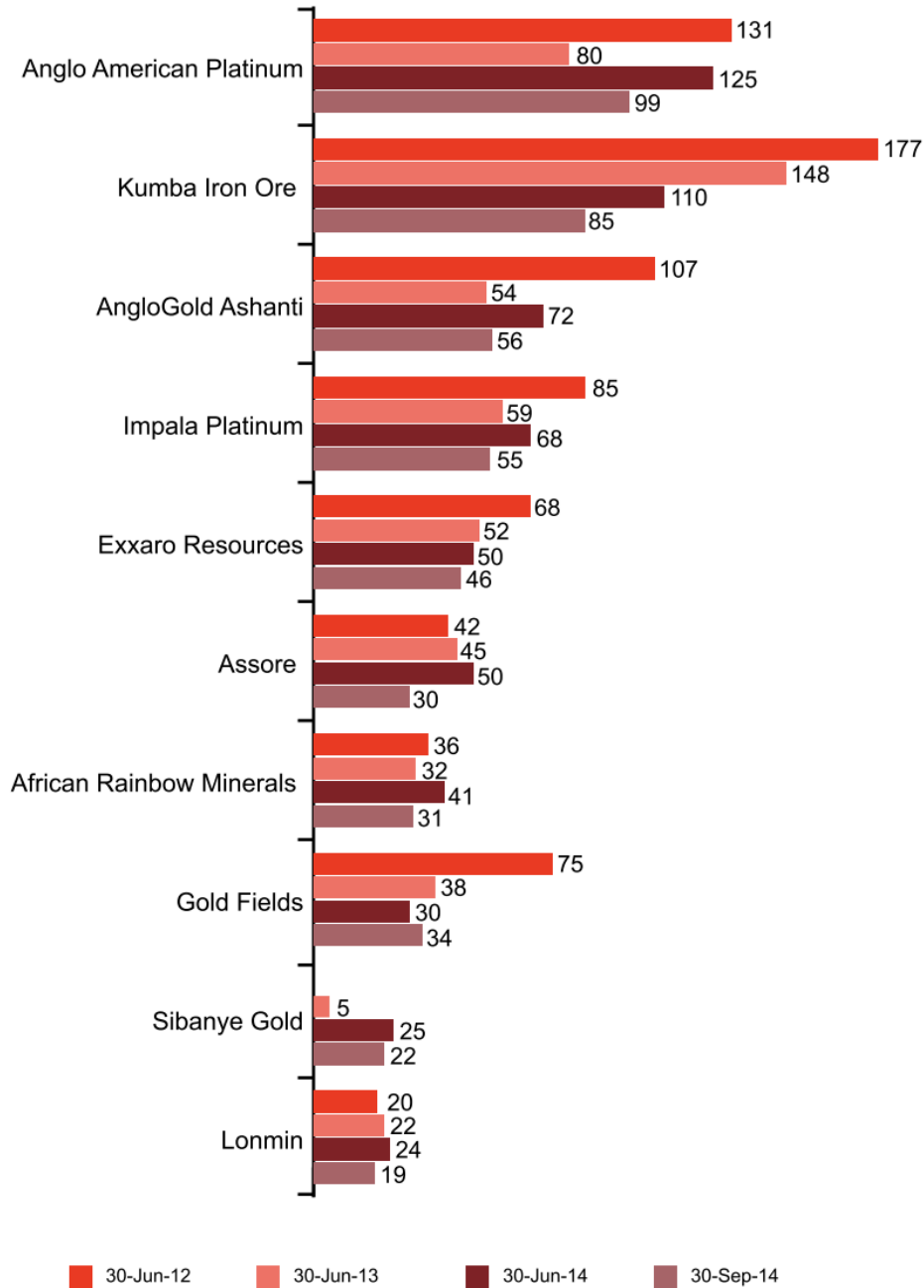
The majority of the South African mining sector is privately owned, and the state currently owns a few mining firms. The Mining Charter calls for 26% full shareholder rights as the minimum target for effective HDSA ownership. Companies have disclosed that this target has been reached, and in most cases, exceeded (PricewaterhouseCoopers, 2014).

The mining industry has played a critical role in the economic development of South Africa. Rogerson (2011) cited Crankshaw (2002), Department of Minerals and Energy (2008) and Mabuza (2009) as having identified that mining assumed the status of key driver of the South African economy for at least half a century.

The study by PricewaterhouseCoopers (2014) show as per Figure 2-3 that two of the top ten mining companies by market capitalisation are BEE miners. BEE miners refer

to HDSA mining companies, thus companies that are owned or controlled by historically disadvantaged South Africans (Republic of South Africa, 2004b)

Figure 2-3: Market capitalisation of the top-10 mining companies (R 'billions)



* Source: PricewaterhouseCoopers (2014), Stats SA

The Fraser Institute's annual Survey of Mining Companies 2014 highlighted investor concerns when it placed South Africa at position 64 out of 112 jurisdictions for policy potential and position 53 for investment attractiveness (Wilson & Cervantes, 2014). The report covered national policies and mineral resources, like South Africa's BBE policies in its assessment of the perceptions of the mining companies surveyed.

2.3 Modes of equity transfer and announcements

Wolmarans and Sartorius (2009) conducted a study on the short-term financial impact of 125 BEE transactions involving 95 companies. Their study identified three different types of transactions, namely the sale of equity to a BEE company, the purchase of a stake in a BEE company and other BEE transactions using Strategic Joint Ventures or partnerships. Their study concluded that the type of BEE transaction had no impact on explaining the differences between the performance of shares and the creation of wealth for shareholders. Their study established that there were differences in the impact on value creation when the different years of announcements were considered. BEE transactions between 2002 and 2005 had no significant positive impact on shareholder value creation, but for 2006 it had a significantly positive impact over both the three-day and the five-day windows.

None of the studies conducted thus far have specifically focused on mining stocks, hence the aim of this study was to explore the mining stocks. In the South African context, this is significant because of historical importance of mining to the South African economy, its current contribution to GDP, the foreign earnings resulting from the mining sector and the weighting of the mining sector within the JSE. Furthermore, most event studies on the JSE have either corrected or noted the effect of mining sector in the study as being significant (Ward & Muller, 2010; Wolmarans & Sartorius, 2009; Wolmarans, 2012).

A study that focuses on mining shares would be significant since the total market capitalisation of mining companies listed on the JSE has grown substantially to the current R2.82-trillion of the JSE's total R12.19-trillion market capitalisation (Kotze, 2014).

2.3.1 Impact of BEE announcements on cumulative returns

The research studies that have investigated the impact of the cumulative returns are considered from both the short-term and the long-term perspectives. The majority of documents revised during the literature review refer to short-term studies of the market and are in the range of the three to eleven day window, while those that ran long-term studies referred to windows of 21 days and more.

The short-term and long-term perspectives are discussed below.

2.3.2 Short-term cumulative returns

An event study of 254 BEE transactions between 1996 and 2006 was performed by Strydom, Christison and Matias (2009). Their study examined market reactions to BEE transactions. Their study was not conclusive, as it was found that there was a statistically insignificant positive market reaction to BEE transactions over the 11 days event window. However, the authors concluded that there was no evidence of a negative or a negative market reaction to BEE transactions (Strydom, Christison & Matias, 2009).

One of the questions addressed by Wolmarans and Sartorius (2009) was whether announcements of BEE transactions are related to shareholder value creation. Their results showed shareholder wealth creation over a three-day window for the 125 BEE transactions that were analysed. Their study found that there were significantly positive average abnormal returns for the day before and a day after the event, with return of 1.15 percent.

Wolmarans and Sartorius (2009) concluded that South African companies were using BEE transactions as an important vehicle to give expression to their Corporate Social Responsibility (CSR) objectives. (Alessandri et al., 2011; Jackson, Alessandri, & Black, 2005) also contended that BEE transactions represent CSR actions, as they created strategic benefits for the organization by serving both the firm's business interests and the interests of salient stakeholders.

2.3.3 Long-term cumulative returns

A research paper that examined 118 BEE announcements on the JSE found that companies that made BEE announcements prior to May 2005 performed worse than those who followed (Ward & Muller, 2010). This study was focused on long-term share price reaction to BEE and concluded that, generally, the BEE-related stocks had a positive cumulative abnormal return of 10% after the first year. The positive results were however confined to smaller companies (market capitalisation of less than R3,5bn), whilst large companies experienced marginally negative cumulative abnormal return (Ward & Muller, 2010).

Jackson, Alessandri, and Black (2005) used an event study to measure the impact of announcements of BEE transactions on share prices on a sample of 20 JSE listed companies. The authors utilised a market model where they estimated *betas* over the 200 trading days prior to the announcement. Over a five-day event window they found significant positive cumulative abnormal returns of 1,8%, suggesting that the market rewarded such transactions. In the year following the announcements they found that BEE firms out-performed an equally weighted index by 31%.

Jackson et al. (2005) also noted that BEE transactions were completed with an average discount of almost 10% to the ruling share price of the relevant company. As the authors noted however, their research was limited by a small sample size and may have benefited from a control-portfolio model that eliminated market effects.

2.3.4 Link between the age of the company and its share price performance

In a paper that outlined the history and development of BEE in South Africa, Ponte, Roberts, and van Sittert (2007) demonstrated that black control of JSE listed companies, measured in terms of share of market capitalisation, peaked at 9,6% in 1999 and dropped to 5,8% in 2005. These authors ascribed the decline to poorly structured empowerment deals with high gearing and over-priced assets.

Ponte, Roberts, and van Sittert (2007) also noted that during the early years of implementation of the BEE period, the biggest South African multinational companies like Old Mutual, SAB, Liberty Life, Anglo-American and de Beers relocated their

headquarters outside of South Africa. This was done presumably to place their major assets beyond the reach and recall of the post-apartheid South African government.

Ward and Muller (2010) found a sub-sample of large companies that had a marginally negative cumulative annual return (CAR), while the sub-sample of smaller companies had a strong positive CAR. They also concluded that large-cap companies on the JSE were predominantly resource companies. They attributed the performance of the large-cap companies to their export-oriented business as these companies sell their commodities in international markets where they derive little or no benefit from BEE compliance.

Similarly, Chipeta and Vokwana (2011) found that firm characteristics such as size and age are important determinants of short-term profitability post the BEE transaction.

2.3.5 Timing of the BEE announcements

The previous studies assessed the effects of announcements at the different points in time. A study by Chipeta and Vokwana (2011) also assessed the effects of announcements made in different market cycles; they studied abnormal market returns under Bull and Bear market conditions. Their study concluded that investors reacted more positively to BEE announcements during a Bear market and negatively to BEE announcements during the Bull phase of the market cycle. They made an observation that the findings of their study contradicted other international studies regarding the effect of timing equity issues.

A study conducted within a South African context by Ward and Muller (2010) found that the timing of the BEE transaction had an impact on cumulative abnormal returns of JSE companies. They concluded that the 'first-movers' had no performance advantage over the deals that were announced from and after May 2005, and that more recent deals performed comparatively better. Essentially, Ward and Muller (2010) had created two artificial market cycles, the Early and Late BEE deals.

In a quest to determine the impact of the timing of the BEE announcements on the share price, Ward and Muller (2010) considered the impact of announcements on transaction made early (prior to May 2005) and late (post May 2005).

The introduction of the amended Mining Charter in 2010 was aimed at transforming the mining industry to correct past injustices created by apartheid. The looming deadline for compliance with the Charter and its precursors has been and remains a concern for mining companies in South Africa (PricewaterhouseCoopers, 2014). There is opaque knowledge regarding the impact of the introduction of the mining charter on the share price performance of JSE listed mining companies.

The mining charter was designed to effect sustainable growth and one of its intentions was to substantially and meaningfully expand opportunities for HDSA to enter the mining and minerals industry and to benefit from the exploitation of the South African mineral resources (Department: Mineral Resources, 2010).

It was thus an expectation that the introduction of the mining charter would be of benefit to the previously disadvantaged (BEE) miners and might influence the performance of the share price in a positive way. Thus, the BEE announcements made post amendment and introduction of the mining charter would have had a better impact on the cumulative abnormal returns of the BEE miners as compared to the pre announcement.

2.4 Review of event study methodology and significant announcements

2.4.1 Event study methodology

In reviewing event study methodology, Corrado (2011) established that this method of study was introduced to a broad audience in 1968 by Ball and Brown. Event study methodology has since been used extensively and has been widely published.

Kothari and Warner (2007) conducted a meta-analysis study in which they reported a conservative figure of 565 articles that were published in five major finance publications between the years of 1974 and 2000. Furthermore, Kothari and Warner (2007) provided an overview of event study methods, and concluded that short-horizon methods are reliable, while the reliability of long-horizon methods has been improving.

Additionally, Wårell (2007) found the basic event study methodology to be relatively simple and uncomplicated when following the step-by-step procedure for applying the event study methodology, as meticulously explained by Henderson (1990). The initial step is to identify the date upon which the market would have received the news of the transaction being done. The second step estimates the normal returns of the stocks being studied based on historic price observations before the news of the transaction. The third step calculates the abnormal return (AR) for each firm by calculating the difference between observed returns and the estimated normal returns for each firm. The fourth step is to aggregate the abnormal return (AR) over time to find the cumulative abnormal return (CAR) over the event window. The Fifth step is to perform statistical tests to determine whether or not the abnormal returns are significant and, if so, for how long (Henderson, 1990).

Ward and Muller (2010) used event study methodology to study long-term share price reactions to Black Economic Empowerment announcements on the JSE. Other authors have also used event study methodology to study BEE-related transactions on the JSE (Jackson et al., 2005; Strydom et al., 2009; Wolmarans & Sartorius, 2009). These studies focused on the effect of announcement of BBBEE ownership transactions on company performance measured through indicators of market (JSE) performance.

2.4.2 Some critical assumptions of event studies

Event studies are grounded in some assumptions, and follow market efficiency theory that share prices adjust rapidly to the information. Tests of market efficiency involve the analysis of the behaviour share prices following a market event (Bowman, 1983).

This particular research study was not focussed on the information content of earnings announcements, and thus it would have been fruitless to select a previously unexplored event. Although an event study, similar to what was conducted in this research project could be used for market efficiency testing (Bowman, 1983), this was not an explicit objective of the researcher. The research study focused on clarifying and resolving the conflict presented by anomalous results at the most basic levels.

2.5 Conclusion to the literature review

A research project focussing on the impact of BBE announcements on the South African context was necessary because the previous studies (Alessandri et al., 2011; Strydom et al., 2009; Ward & Muller, 2010; Wolmarans & Sartorius, 2009) did not focus on this important sector of the economy. Previous studies were concerned about the JSE as a whole, and some samples of the studies were found to have excluded resource (mining) shares.

The event study methodology was found to be the most appropriate for the research project to achieve its objectives. This methodology has also proved its reliability over time (Alessandri et al., 2011; Corrado, 2011; Henderson, 1990; Kothari & Warner, 2007; Strydom et al., 2009; Ward & Muller, 2010; Wårell, 2007; Wolmarans & Sartorius, 2009).

CHAPTER 3: RESEARCH HYPOTHESES

The objective of this research was to examine the impact on shareholder returns following the announcement of Mining Empowerment deals affecting equity of JSE-listed mining companies for the period of 2000 to 2014.

Hypothesis 1

Null (H_{10}): BEE announcements relating to equity issuance made through the Stock Exchange News Service (SENS) of the JSE result in no Average Abnormal Returns (AARs) within the event window.

$$H_0: AAR = 0$$

Alternative (H_{1A}): BEE announcements relating to equity issuance made through the Stock Exchange News Service (SENS) of the JSE show significant AARs within the event window.

$$H_0: AAR \neq 0$$

Hypothesis 2

Null (H_{20}): BEE announcements relating to equity issuance made through SENS have no impact on the Cumulative Abnormal Returns (CARs) of mining companies.

$$H_0: 10day CAR = 0$$

Alternative (H_{2A}): BEE announcements relating to equity issuance made through SENS have a positive impact on the CARs of mining companies.

$$H_1: 10day CAR \neq 0$$

Hypothesis 3

Null (H_0): The Average Abnormal Return (AARs) of the new (BEE) mining companies post BEE announcements relating issuance of equity is not greater than the AAR of the old mining companies.

$$H_0: AAR_{Old} - AAR_{BEE} \geq 0$$

Alternative (H_1): The Average Abnormal Return (AARs) of the new (BEE) mining companies post BEE announcements relating issuance of equity is greater than the AAR of the old mining companies.

$$H_1: AAR_{Old} - AAR_{BEE} < 0$$

Hypothesis 4

Null (H_{4_0}): The average abnormal returns of the events made before the release of amended mining charter in September 2010 are not less than the average abnormal returns of the events made after the amendment of the mining charter.

$$H_0: AAR_{Pre} - AAR_{Post} \geq 0$$

Alternative (H_{4_A}): The average abnormal returns of the events made before the release of amended mining charter in September 2010 are less than the average abnormal returns of the events made after the amendment of the mining charter.

$$H_1: AAR_{Pre} - AAR_{Post} < 0$$

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Research Approach

The main aim of this study was to determine the impact of the BEE announcements on share prices as guided by the hypothesis derived from the existing theories. Therefore the suitable approach for this study was the positivism or the quantitative approach, which allows hypothesis testing using numerical data (Saunders, Lewis, & Thornhill, 2009).

4.2 Research strategy

This study used the event study methodology. Mitchell and Netter (1994) explained event study methodology as a statistical technique that estimates the stock price impact of occurrences such as mergers, earnings and announcements. Mitchell and Netter posited that the event study methodology would disentangle the effects of two types of information on stock prices-information that are specific to firms under investigation (e.g. dividend announcements) and information that is likely to affect stock prices market wide (e.g. change in interest rate).

As observed by Wårell (2007), the basic event study methodology is said to be relatively uncomplicated when following the step-by-step procedure for applying the event study methodology, as detailed by Henderson (1990).

The approach to event study was based on estimating a market-related return for a company, before and after a specified event. It involves calculating abnormal returns for a specified period before and after the event that was being studied. These abnormal returns were assumed to reflect the stock market's reaction to the arrival of the new information pertaining to the event (Corrado, 2011; Lyon, Barber, & Tsai, 1999; Wolmarans & Sartorius, 2009).

This current research project has developed and added to the study performed by Ward and Muller (2010); while they studied all the JSE stocks, the current study

focused only on mining stocks. Ward and Muller (2010) used event study methodology to analyse long-term share price reactions to Black Economic Empowerment announcements on the JSE.

4.2.1 An event

In respect of this study, an event was identified as an announcement made by companies listed on the JSE relating to BEE, where ownership and equity is affected. JSE rules compels listed companies to declare material information that may impact share prices to all shareholders through its Stock Exchange News Service (SENS) (Ward & Muller, 2010). These announcements are made through all major stock exchanges, which is consistent with local regulations, and mandate for material disclosures to be made (Neuhierl, Scherbina, & Schlusche, 2010).

Mackinlay (1997) found a relationship between the nature of news and the resulting CAR; he found “bad” news to result in negative CAR by causing the share prices to decrease, while “good” news results in positive CAR that causes the prices to increase.

Neuhierl et al. (2010) studied the market reaction to various types of news and confirmed prior findings regarding strong share price responses to financial news. They also found significant share price reactions to be consistent with news concerning corporate strategy, customers and partners, products and services, management changes, and legal developments.

4.2.2 Event Window

The event window is defined as the period where the actual event occurs (Lefebvre, 2007), it is the event day plus and/or minus some period of interest, either days, weeks or months during which the returns of a sample firms are studied to examine whether they behave in an unusual way (Henderson, 1990).

It is important to distinguish between the estimation period and the event window since the estimates (from the estimation period) are used to define the expected or normal returns for each firm during the event window (Henderson, 1990).

In this study, JSE SENS announcements by companies relating to their BEE or empowerment transactions are considered as events. Thus, event windows would be a defined period around or relative to the announcement.

The event windows for the purpose of the study were classified as follows:

The short-term included the 3day window (t_{-1} to t_{+1}) and the 11day window (t_{-5} to t_{+5}) and 21day window (S. Brown & Warner, 1985; Wolmarans, 2012).

While the long-term was defined as windows beyond the 21day window (Bhana, 2010; Kothari & Warner, 1997; Ward & Muller, 2010; Wolmarans, 2012). Kothari and Warner (2007) found the exact definition of “long horizon” (long-term) to be arbitrary and generally applied to event windows of 1 year or more.

4.2.3 Return Estimation

The study employed the Control Portfolio model to estimate the expected returns for each share. Although it is well specified and relatively powerful under various conditions (Brown & Warner, 1980), event studies using the market model have previously been found to be inadequate (Ward & Muller, 2010). The Control Portfolio model was preferred to other economic models such as the Capital Asset Pricing Model and Arbitrage Pricing Model because of their reliance on assumptions that may influence the results of the event study (MacKinlay, 1997).

Table 4-1: Control Portfolios

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

Table 4-1 demonstrates the classification of the twelve control portfolios as developed by Ward and Muller (2010). They used three main characteristics to compile the portfolios, which included whether the organisations were resources or non-resources companies, as well as whether they were value or growth companies, and the final characteristic related to company size.

The broad JSE sector groupings were used as criteria to decide whether stocks represented a 'resource' share or not. All mining and non-mining resource shares were classified as resources while the remainder of the market was classified as non-resources (Ward & Muller, 2010).

A company was classified as a growth or a value investment in terms of its price-to-earnings ratio. The price-to-earnings ratios were calculated and classified, after which the median was determined. All companies with price-to-earnings ratios above the median were classified into the growth portfolio and those below the median were categorised into the value portfolio (Ward & Muller, 2010).

A company's market capitalisation was used to categorise companies by size into either large, medium or small portfolios. All the companies listed on the JSE were ranked in descending order of market capitalisation.

The top 40 shares with the largest market capitalisation were grouped into the large capitalisation control portfolio, those with a market capitalisation ranking between 41 and 100 were grouped into the medium capitalisation control portfolio, and the remaining companies' shares were grouped into the small capitalisation control portfolio (Ward & Muller, 2010).

4.2.4 Expected return

Because of the level of criticism against the Capital Asset Pricing Model (CAPM) model over time (Lyon et al., 1999; Ward & Muller, 2010), this study employed the control portfolio approach.

The control portfolio model measures the expected return of share_{*j*} in period_{*t*} as the sum of the sensitivity of Share_{*j*} to the returns on the twelve control portfolios and a calculated alpha estimate in period_{*t*}.

This was summarised according to the following equation (Ward & Muller, 2010):

Equation 1: Expected Return

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

Where:

$E(R_{it})$ = Expected return on Share_i on period_t;

$\alpha_{i,t}$ = Alpha intercepts term of Share_i on day_t;

$\beta_{i,1} \dots \beta_{i,12}$ = Beta coefficient on each control portfolio return;

$SGN_t \dots SGR_t$ = Log-function share price return on each of the twelve control portfolios on day t.

4.2.5 Abnormal Returns (AR)

Abnormal Returns (AR) represented returns earned by the firm after adjusting for the “normal” or market-related returns. Simply put, it was the difference between the actual return of a share and the expected return. AR was represented by the following equation:

Equation 2: Abnormal Return (AR)

$$AR_{it} = R_{it} - E(R_{it})$$

Where:

AR_{it} Represent the abnormal return of stock_i in period_t

R_{it} Represent actual return of stock_i in period_t

$E(R_{it})$ Represent the expected return of Share_i in day_t

4.2.6 Actual return

Actual return was the actual gain or loss the investor would receive from the performance of a share. It was based on the movement in the daily share price.

Equation 3: Actual Return

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

Where:

R_{it} is the rate of return on share i on day t ,

And P_{it} is the price of share i at the end of day t .

4.2.7 Average Abnormal Return (AAR)

The Average Abnormal Return (AAR) was calculated by the sum of AR on a specific event day divided by the number of AR's.

Equation 4: Average Abnormal Return (AAR)

$$AAR_t = \frac{1}{N} \sum_{i=1}^t \omega AR_{it}$$

AAR_t = Average Abnormal Return

N = Number of sample returns

AR_{it} = Average Return

ω = Weighting

The Average Abnormal Return was a weighted average; this study used the equally weighted (EW) average for analysis of the ARs, however the market-capitalisation weighted (MCW) average on the complete sample was also provided to place the sample into context when discussing certain results or outcomes of the study. On EW, all the ARs had the same weighting of one (1), while MCW of the ARs of the events were weighted using the JSE market-Cap of the company involved in the event

(transaction announcement); this is similar to the approach followed by Ward and Muller (2010).

4.2.8 Cumulative Average Abnormal Returns

The Cumulative Average Abnormal Returns (CAR) was calculated for a firm as the sum of the AAR over the period in question (Binder, 1998; Jackson et al., 2005; Ward & Muller, 2010).

The performance of the entire sample was evaluated by calculating the cumulative average abnormal returns of all the shares included in the sample on each day of the period under investigation.

Equation 5: Cumulative Average Abnormal Return (CAR)

$$CAR_{t_1, t_2} = e^{\sum_{t=t_1}^{t_2} AAR_t} - 1$$

CAR_{t_1, t_2} = Cumulative Average Abnormal Return for the sample over the time interval (t_1 , t_2)

AAR_t = Average Abnormal Returns

4.2.9 Significance test

The Chi-Squared test was used to test for goodness-of-fit, to establish normality of the sample of AARs.

The hypotheses were tested using the t-test, this commonly used parametric test was found to be adequate for use in event studies (S. J. Brown & Warner, 1980; S. Brown & Warner, 1985; Ward & Muller, 2010).

The testing of the Null Hypothesis was done as represented in the equation below:

Equation 6: t-stat for AAR

$$t_{AAR_t} = \sqrt{n} \frac{AAR_t}{S_{AAR_t}}$$

Equation 7: t-stat for CAR

$$t_{CAAR} = \sqrt{n} \frac{CAAR}{S_{CAAR}}$$

Bootstrapping was selected as an appropriate non-parametric test to support the t-test (Ward & Muller, 2010). Bootstrapping was used because this method is not typically used in isolation but rather serves as an inspection of the robustness of conclusions based on parametric tests (Campbell, Cowan, & Salotti, 2010; MacKinlay, 1997). Bowman (1983) also found that the use of a non-parametric test as a complement would enhance the perceived validity of the statistical inferences.

Non-parametric tests are more powerful than standard parametric tests (Campbell et al., 2010), and are motivated by concerns that data, which is assumed to be normally distributed under the parametric tests, would lead to poor or imprecise inferences (Corrado, 2011).

Brown and Warner (1980) found that the t-tests were a better approximation of the theoretical distribution than some non-parametric tests like the Wilcoxon test. Although the t-test is prone to event-induced volatility, it was found to be well-specified under a variety of conditions (S. Brown & Warner, 1985).

4.3 Unit of analysis

The research study used a JSE listed mining company that made an unscheduled announcement in relation to its BEE transaction between January 2000 and November 2014 as the unit of analysis.

4.4 Population

Population is defined as the elements about which inferences will be made (Cooper & Schindler, 2014). The population under consideration for the event study comprised of all mining shares listed on the JSE over the period between 2000 and 2014.

Companies listed on the JSE are required to make announcements to shareholders of any material issues that may impact share prices through the Stock Exchange. JSE Stock Exchange News Service (SENS) is an electronic notice board and information system designed to ensure that investors and analysts can receive price-sensitive announcements timeously and simultaneously.

4.5 Sample size and sampling method

The sampling method is the process of selecting some elements from a population to represent that population while the sample size is the number of the elements from which the inferences will be made (Cooper & Schindler, 2014). The study had a sample of 26 mining companies listed on the JSE that made a total of 241 qualifying announcements through the JSE's SENS for the period from January 2000 to November 2014. The list of companies included in the sample is in Appendix 1: List of mining companies in the sample.

Non-probability sampling was conducted to gather samples from the database. An array of keywords was used to filter events specific to the mining industry and that were related to BEE announcements that affected shareholding or equity. The researcher used knowledge and professional judgment to eliminate announcements that were initially included in the sample. Information from company websites, industry reports and past research papers were accessed to triangulate and validate the selected announcements.

The sampling method used in this study best fits the definition of purposive sampling (Saunders et al., 2009).

In purposive sampling, the researcher's objective is to produce a sample that can be logically assumed to be representative of the population and would be appropriate for the study. One of the disadvantages of purposive sampling is that the results obtained from a sample are subject to some degree of bias (Saunders et al., 2009).

Lyon et al. (1999) noted that the analysis of long-term abnormal returns is "treacherous" Therefore, an important consideration for event studies, and particularly for long-term studies, is the selection of a benchmark against which abnormal returns are estimated. As such, the research study followed an approach similar to that taken by Ward and Muller (2010) that required four years of share price data prior to the announcement date for the estimation of *betas* and a further 250 trading days after the announcement for the analysis of the abnormal returns. Furthermore data were collected by removing outliers, and many thinly traded small company shares with market capitalisation of less than R100m at the event date were removed.

4.6 Data collection

4.6.1 Identification event date

Using a database containing all SENS announcements, a content search was conducted for all BEE-related announcements for a period extending from 2000 to 2014; from these events a sample of BEE-related transactions was compiled for analysis.

Data for this study was obtained from the Sharenet database. This was also the database that housed JSE SENS announcements that was used by Ward and Muller (2010) for their research on long-term performance of JSE stocks. To access the data from the database, a search using the keywords that are provided in Table 4-2 below was conducted.

Table 4-2: Keywords used in initial search

black economic empowerment	empowerment transaction	broad-based BEE
b-bbee	BEE	BEE deal
mining	strategic joint venture	joint venture
resources	partners	share price
equity	company name	sector

The initial search generated an extensive list because the keywords used created many correlations. The researcher then used judgment to narrow down the core keywords and reduced this list further to include the following keywords: BEE, Black Economic Empowerment and Joint Venture.

The resulting list of announcements from the database was manipulated by utilising pivot tables to condense the list to include only mining and resources stocks.

4.6.2 Exclusion confounding events

Follow-up announcements on the SENS that provided updates to an already announced BEE transaction were excluded from the analysis. Only announcements that were deemed to be the first to break the news relating to the BEE transaction were considered.

4.6.3 Final events list and share prices

The final events list was compiled having excluded all compounding events and announcements that were classified as not significant. The listed events met the criterion of being the first announcement relating to a specific BEE transaction.

The event list consisted of JSE mining companies, their share code (ticker) and the date on which the announcement was made. These events were used to retrieve share prices from the Sharenet database and used to execute the event study.

4.7 Data analysis

To measure the impact of BEE announcements on JSE mining shares, the research used a well-established event study. The analysis followed a step-by-step procedure for applying the event study methodology as detailed by Henderson (1990).

The calculation of the AR was computed using the event study model developed and maintained by Ward and Muller (2010). The computation followed once the relevant events were identified and the corresponding share prices of mining companies were assimilated into the model.

4.8 Reliability and Validity

Validity is the characteristic of measurement concerned with the extent of measures that measures what the researcher wishes to measure; and that differences found with a measurement tool reflect true differences among participants drawn from a population (Cooper & Schindler, 2014: 668). To ensure validity the researcher used other sources of information to confirm events. Other sources of information that published BEE announcements like websites (Moneyweb) and specific company web pages were accessed to ensure the events were interpreted correctly.

Reliability is a characteristic measurement concerned with accuracy, precision and consistency (Cooper & Schindler, 2014: 664). In order to ensure reliability the researcher performed the event study through an event study engine (Ward & Muller, 2010) that was previously tested over a long period of time, and used through various studies.

4.9 Research limitations

Owing to time constraints, the study did not test and contrast the performance of the types of transactions. By dividing the sample into the three BEE transaction types, as

identified by Wolmarans and Sartorius (2009), it would have been possible to ascertain whether the mining shares performed the same irrespective of whether the transaction was a sale or purchase of equity or a joint venture.

The study was industry specific (Mining & Resources Sector) and thus the selected companies resulted in a non-probability sample. This type of sampling generally has bias.

The size of the sample as well as the number of events and the long-term view of the study made it possible that the sample was impacted upon by confounding events. Some of companies made announcements within a couple of months of each other, thus repeat announcements relating to different deals.

The Department of Mineral Resources (DMR) is understood to be insisting that mining companies should repeatedly enter into new BEE transactions every time an existing BEE partner exits, so that they maintain their BEE credit. On the other side companies whose Black Economic Empowerment (BEE) partners have chosen to exit argue that deals from the past should continue to count towards empowerment credits (PricewaterhouseCoopers, 2014).

CHAPTER 5: RESULTS

5.1 Introduction of results

This study employed an event study methodology to calculate the CARs associated with the public announcement through SENS of BEE transactions by mining companies from January 2000 to November 2014. The approach to this event study was based on estimating a market-related return for a specific company, and then calculated the abnormal returns (ARs) for a certain number of days before and after the event that was studied. These abnormal returns were assumed to reflect the stock market's reaction to the arrival of the new information pertaining to the event.

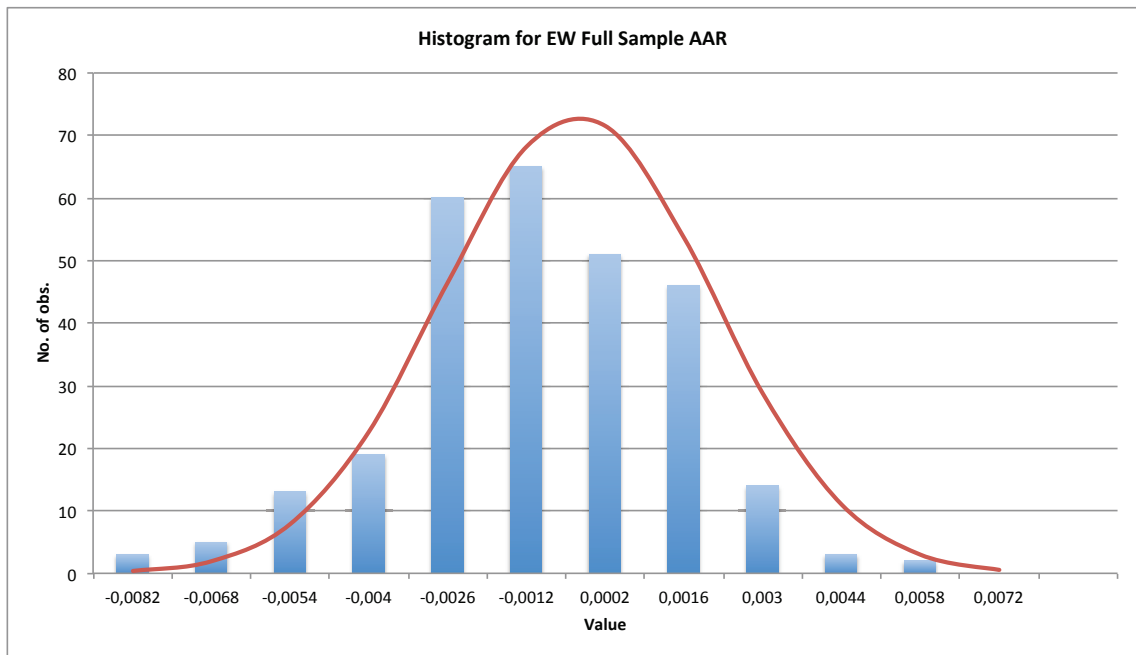
The CAR was calculated by accumulating the daily average abnormal returns (AARs).

5.2 Description of the sample

The sample covered 26 JSE-listed mining companies, jointly involved in 241 BEE transactions over a period spanning almost 14 years. The size of the available sample in this study was adequate for the AARs to tend towards a normal distribution, consistent with the Central Limit Theorem. The distribution of a large sample is likely to be normal.

However, running descriptive statistics and plotting the histogram of the AAR confirmed that the distribution might not have been normal when overlaid with a normal distribution curve as evidenced Figure 5-1. This necessitated a test for normality using statistical tools.

Figure 5-1: Histogram for AAR (Equally weighted)



As show in Figure 5-1, the distribution of the AARs was slightly flatter than a normal distribution with a wider peak, and the values are spread wider around the mean.

Table 5-1: Descriptive statistics of the full sample

EW Full Sample AAR*			
<i>Count</i>	281	<i>Skewness</i>	-0,24132
<i>Mean</i>	-0,0003	<i>Skewness Standard Error</i>	0,14483
<i>Mean LCL</i>	-0,00059	<i>Kurtosis</i>	3,19762
<i>Mean UCL</i>	-0,00002	<i>Kurtosis Standard Error</i>	0,2866
<i>Variance</i>	0,00001	<i>Coefficient of Variation</i>	-8,02354
<i>Standard Deviation</i>	0,00242	<i>Mean Deviation</i>	0,0019
<i>Mean Standard Error</i>	0,00014	<i>Median</i>	-0,00031
<i>Geometric Mean</i>	0,05504	<i>Harmonic Mean</i>	-0,00115
* Alpha value (for confidence interval) = 5%			

The descriptive statistics showed the sample was skewed to the left; it had skewness of -0,241 as shown in Table 5-1 and has kurtoses of 3,197. The sample kurtoses were slightly above 3, meaning that it is a Leptokurtic distribution with values concentrated around the mean and thicker tails. The descriptive statistics were not adequate to conclude the normality of the sample, thus a Chi-squared test was conducted.

The Chi-Squared test was run to test for goodness-of-fit, to establish whether the sample of AARs was normally distributed. Figure 5-1 (histogram of the frequency data) shows that the data was unimodal and was slightly to moderately skewed to the left.

For the Chi-Squared test, the null hypothesis stated that the calculated AARs of the sample fits the normal probability distribution with the mean of 0,03% and a standard deviation of 0,24%.

Figure 5-2: Chi-squared table – full sample

Chi-Squared Calculation											
Intervals	Observed frequency	Normal probability	Normal probability value	Expected frequency	Chi-squared	mean	x - mean	Standard Deviation	z	NORMSDIST(z)	
Below -0,47%	21	P(Below -0,47%)	0,047	13,174	4,648	-0,030%	-0,440%	0,242%	-1,82	0,034	
-0,47% to -0,19%	19	P(-0,47% to -0,19%)	0,073	20,505	0,111	-0,030%	-0,300%	0,242%	-1,241	0,107	
-0,33% to -0,05%	60	P(-0,33% to -0,05%)	0,147	41,250	8,522	-0,030%	-0,160%	0,242%	-0,661	0,254	
-0,19% to 0,09%	65	P(-0,19% to 0,09%)	0,213	59,874	0,439	-0,030%	-0,020%	0,242%	-0,082	0,467	
-0,05% to 0,23%	51	P(-0,05% to 0,23%)	0,223	62,712	2,187	-0,030%	0,120%	0,242%	0,497	0,690	
0,09% to 0,37%	46	P(0,09% to 0,37%)	0,169	47,400	0,041	-0,030%	0,260%	0,242%	1,076	0,859	
0,23% to 0,51%	14	P(0,23% to 0,51%)	0,092	25,851	5,433	-0,030%	0,400%	0,242%	1,655	0,951	
Above 0,51%	5	P(Above 0,51%)	0,036	10,171	2,629	-0,030%	0,540%	0,242%	2,235	0,987	
Summation:					24,01	Chi-Stat	df = 8 - 1 = 7	Chi-crit = 18,475			
8,000 / 281,000					0,11%	p-value	Alpha = 1%	p-value < alpha			

The test returned a p-value of 0,11% (X^2 of 24, df=7), which is less than the rejection level of 1% significance. Thus the null hypothesis was rejected in favour of the alternative hypothesis. The alternative hypothesis was that the AARs do not fit a normal distribution is therefore probably true based on the evidence of the test.

It can be concluded with 99% confidence that the AARs do not follow a normal probability distribution with a mean of 0,03% and a standard deviation of 0,24%.

Having established the nature of the sample, the researcher performed the various tests to answer the research questions.

5.3 Hypothesis 1: Testing for Average Abnormal Returns

The first hypothesis was that BEE announcements relating to equity made through the Stock Exchange News Service (SENS) of the JSE resulted in no average abnormal returns (AARs) within the event window. Thus, the AAR should be zero.

The computed ARs for the individual events (announcements) were used to calculate AARs for each day. The resultant AARs were tested for significance using the t-test, this was done to examine the significance in distance from zero (0). The important summaries of the t-test are presented in this chapter, while full outcomes of the results are presented in Appendix 2: AAR t-stat test for significance.

The outcome of the t-test was that, of the equally weighted the returns for the long-term window, 11 out of 281 days were found to be significantly positive or negative at the 5% level.

Table 5-2: t-test - positive AARs at 5% level

Day	EW Full Sample AAR	t-stat-AAR	p-value-AAR
day -24	0,593%	2,315	2,14%
day 171	0,593%	2,314	2,15%
* significant at 5%			

Two of these were positive, as shown in Table 5-2 while the majority were negative as evident from Table 5-3. It is worth noting that only one statistic (day 171) after the event returned positive AAR that was significant at 5%, while the majority (9 days) returned negative AARs that were significant at 5%.

Table 5-3: t-test where AAR is negative at 5%

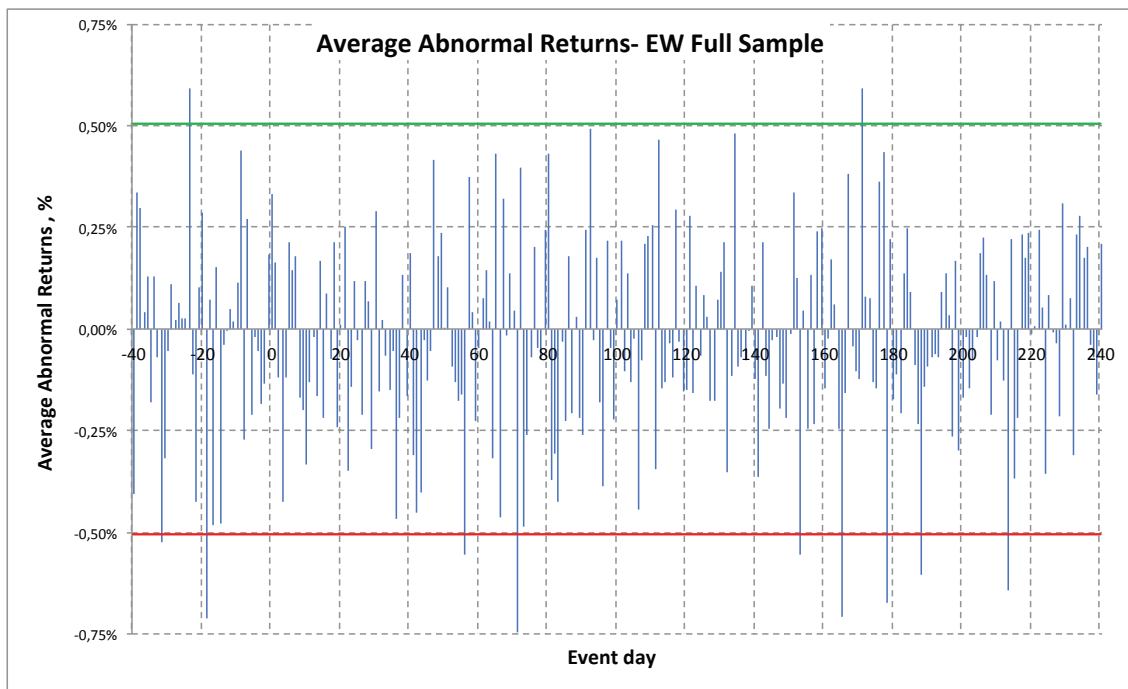
Day	EW Full Samp t-stat-AAR	p-value-AAR
day -32	-0,525%	(2,050)
day -19	-0,712%	(2,778)
day 56	-0,557%	(2,172)
day 71	-0,748%	(2,918)
day 153	-0,556%	(2,171)
day 165	-0,706%	(2,756)
day 178	-0,672%	(2,624)
day 188	-0,603%	(2,354)
day 213	-0,643%	(2,508)

* significant at 5%

Within the short-term window, there are no significant events at 5% levels, except for day -19 (nineteen days before the event) as shown in Table 5-3.

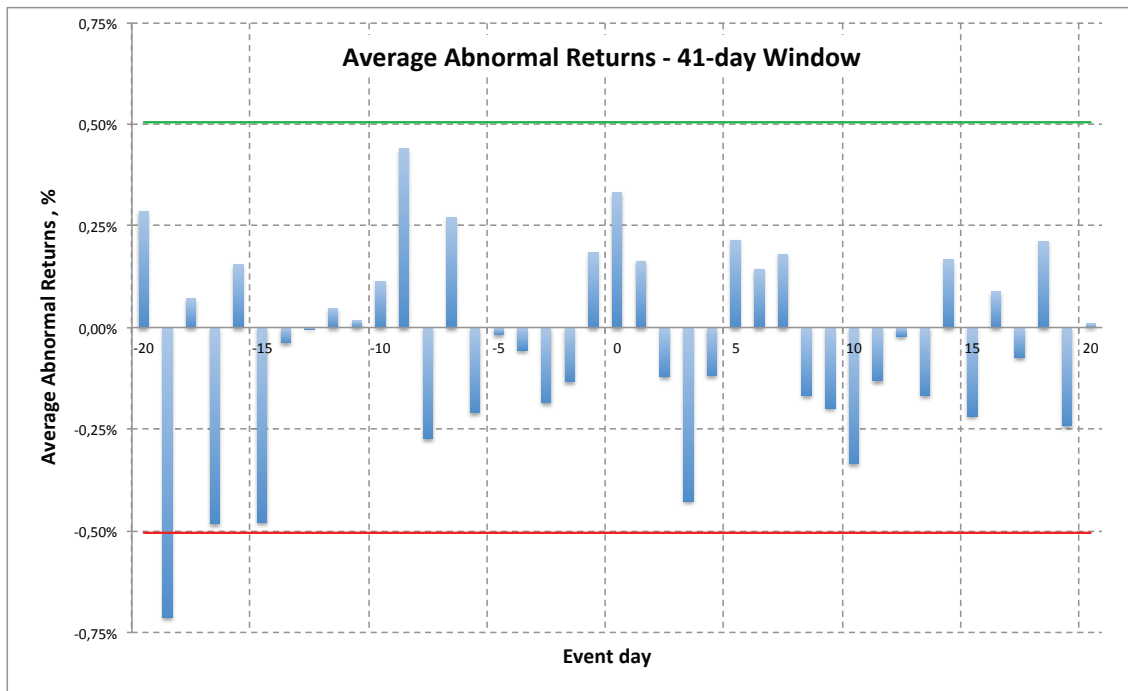
As shown by Figure 5-3, most AARs plot around the zero percent line, however there are a few that lie away from zero.

Figure 5-3: Bar graph of AARs for the full sample



A visual examination of the 41-day window in Figure 5-4 shows that up to 50% of the AAR are above 0,25% and -0,25%.

Figure 5-4: Bar graph of AARs for t_{-20} to t_{20}



Although 96% (271/281 days) of the AARs were within the +0,5% and -0,5% range, it does not mean they were insignificant.

There was sufficient statistical evidence to not support the null hypothesis in favour of the alternative. Therefore, the null hypothesis 1, which tested the impact of BEE announcements on the cumulative abnormal returns of mining companies in the long-term, is not supported.

The conclusion of the study is that the BEE announcements relating to equity issuance made through the Stock Exchange News Service (SENS) of the JSE show significant AARs within the event window.

5.4 Hypothesis 2: Testing for CAR performance

The second hypothesis was that BEE announcements relating equity made through the Stock Exchange News Service (SENS) of the JSE have no impact on the cumulative abnormal returns of mining companies.

To calculate CAR, the AARs were cumulated progressively from day zero (0), going both to the positive side and the negative side using the exponential summation. The CAR was cumulated exponentially because the ARs were calculated using the log returns.

Figure 5-5: Long-term CAR: t_{-40} to t_{+240}

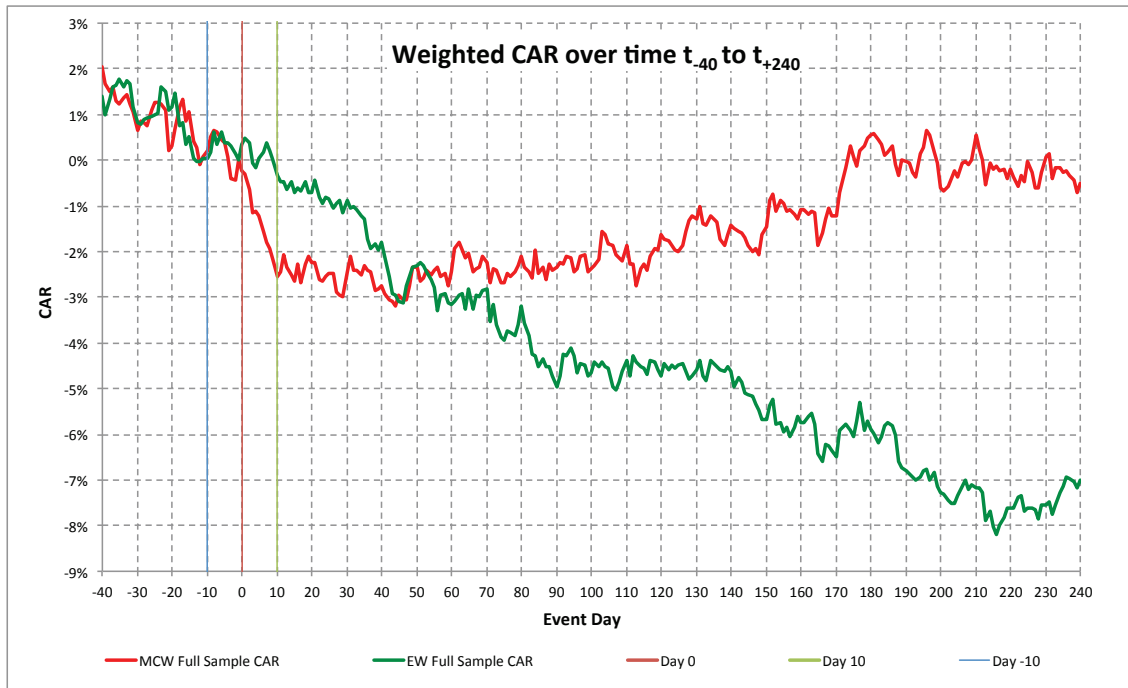


Figure 5-5 plots CAR's of the complete list of 241 transactions, using the control-portfolio method of calculating CAR. The equally weighted and market-capitalisation weighted graphs present similar performance from the event day (t_0), in that both trend negatively. From day 70 (t_{+70}), the two graphs show a divergence to t_{+240} , although still in negative CAR territory the market-capitalisation weighted graph starts to trend positively while the equally weighted graph continues trending deeper into the negative.

The market-capitalisation weighted CAR accelerated much more quickly in the negative in the first 10 days, it's CAR stabilised at an average of -2,5% from t_{+10} to t_{80} . For the corresponding period of t_{+10} to t_{80} , the equally weighted CAR of the whole sample decreased by 3%.

Beyond day 80, the market-capitalisation weighted graph shows a trend towards positive cumulative abnormal returns while the equally weighted shows the deepening of negative cumulative abnormal returns (Figure 5-5: Long-term CAR: t_{-40} to t_{+240}). The

market-cap weighted CAR had an average improvement of 2% between day 80 (t_{80}) and day-240 (t_{240}), while peaking at a positive 0,5% on three occasions between day-180(t_{180}) and day-210 (t_{210}).

The equally weighted CAR decreased by another 4% between day 80 (t_{80}) and day-240 (t_{240}), cumulatively recording a loss of approximately 7,5% from the event day (t_0).

Figure 5-6: Short-term, t_{-20} to t_{+20} : AAR & CAR

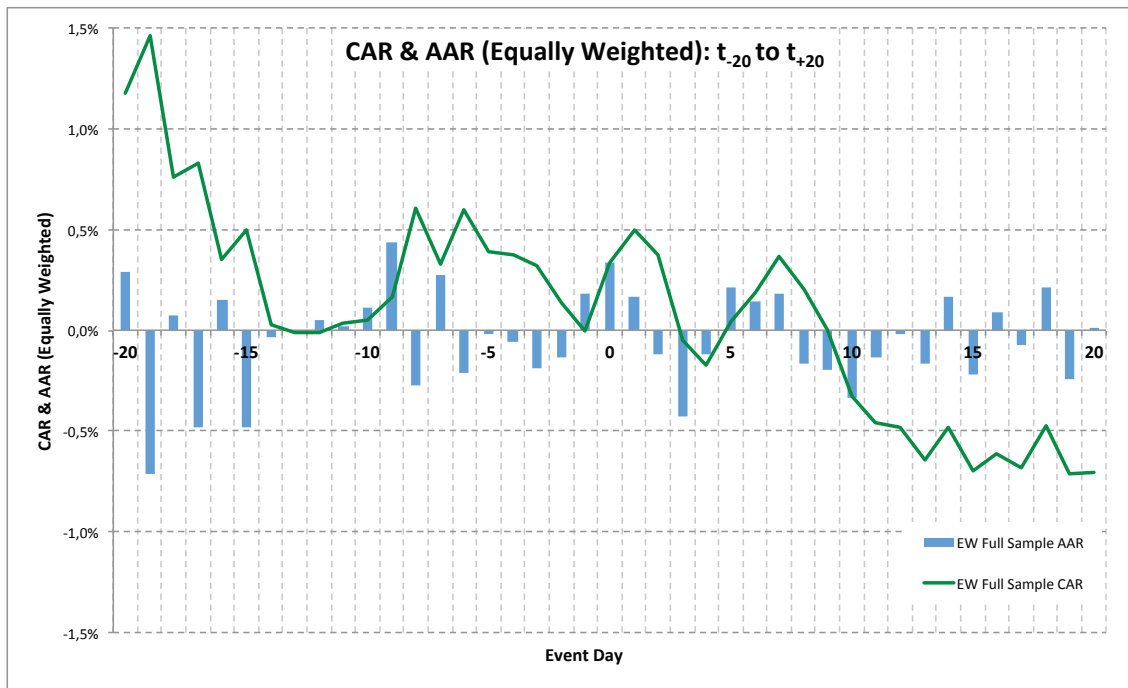


Figure 5-6 displays the impact of the only significant AAR (at 5%) within the short-term (day 3), as it results in the peak CAR performance for the study in day-2.

There was positive reaction to the BEE announcement by the market in the 3-day window, all three days (t_{-1} to t_{+1}) had positive AARs and was highest on the event day.

The 11-day window was noted to generally have negative AARs, except for the 3-day window around the event. This could be used to conclude that the market liked the news of BEE announcements, and that once the information had filtered through the market, the shares reverted back to the natural trajectory for the period.

The CAR performance over the 21-day window was generally positive; it as negative only on three days (days 3,4 & 10). It is worth noting that the CAR performance had a

negative slope, thus trending down before the 21-day window, it then held positive for this window and thereafter it continued on a downward trend into negative CAR. Almost 60% (12/21) of the days within the 21-day window returned negative AARs. These points were shown in Figure 5-6: Short-term, t_{-20} to t_{+20} : AAR & CAR.

In order to test the performance of the CAR, a sample distribution of 10-day CARs was computed. The t-test was then used to test the significance of the 10-day CAR at a level of 5%.

The AARs were used to calculate 10day CARs per day. The resultant 10day CARs were tested for significance using the t-test, this was done to test how significantly they are form zero (0). The null hypothesis of this 10-day t-test is that the 10-day CAR is equal to zero.

$$H_0: 10day CAR = 0$$

$$H_1: 10day CAR \neq 0$$

The important summaries of the t-test are presented in this section while full outcomes of the results are presented in the appendices. The outcome of the t-test was that, 25 out of 231 days were found to be significantly away from zero at 5% level. The 10day CAR was computed from day 10 to day 240 (end of window).

Table 5-4: Positive 10-day CAR (sig. at 5%)

Event day	EW Full Sample 10-day CAR *	t-stat- 10day CAR	p-value- 10day CAR
51	0,556%	2,170	3,10%
65	0,992%	3,871	0,01%
80	1,188%	4,635	0,00%
91	0,555%	2,164	3,14%
92	0,918%	3,583	0,04%
162	0,732%	2,858	0,46%
174	0,580%	2,262	2,46%
222	0,892%	3,482	0,06%
233	0,590%	2,303	2,21%
Significant at 5%			

Table 5 4: Positive 10-day CAR (sig. at 5%) shows a summary of the results were the test statistic of 10day CAR was positive at 5% level. It is worth noting that the found no

positive 10day CAR with the short-term windows of 3, 11 and 21 days. All of the significant 10day CARs fall in the long-term.

Table 5-5: Negative 10-day CAR (sig. at 5%)

Event day	EW Full Sample 10-day CAR *	t-stat- 10day CAR	p-value- 10day CAR
36	-0,584%	-2,280	2,35%
56	-0,970%	-3,786	0,02%
66	-0,833%	-3,252	0,13%
71	-0,891%	-3,478	0,06%
74	-0,686%	-2,675	0,80%
81	-0,765%	-2,986	0,31%
89	-0,645%	-2,518	1,24%
106	-0,659%	-2,572	1,07%
143	-0,595%	-2,321	2,11%
165	-0,839%	-3,273	0,12%
178	-0,568%	-2,215	2,77%
180	-0,762%	-2,975	0,32%
186	-0,519%	-2,024	4,41%
188	-0,822%	-3,207	0,15%
213	-0,623%	-2,433	1,57%
215	-0,594%	-2,320	2,12%
Significant at 5%			

Table 5-5 shows a summary of the results were the test statistic of 10day CAR was negative at 5% level. Similar to the positive 10day CARs, there was no negative 10day CAR within the short-term windows of 3, 11 and 21 days. All of the significant 10day CARs fall in the long-term view.

Figure 5-7: 10day CAR histogram

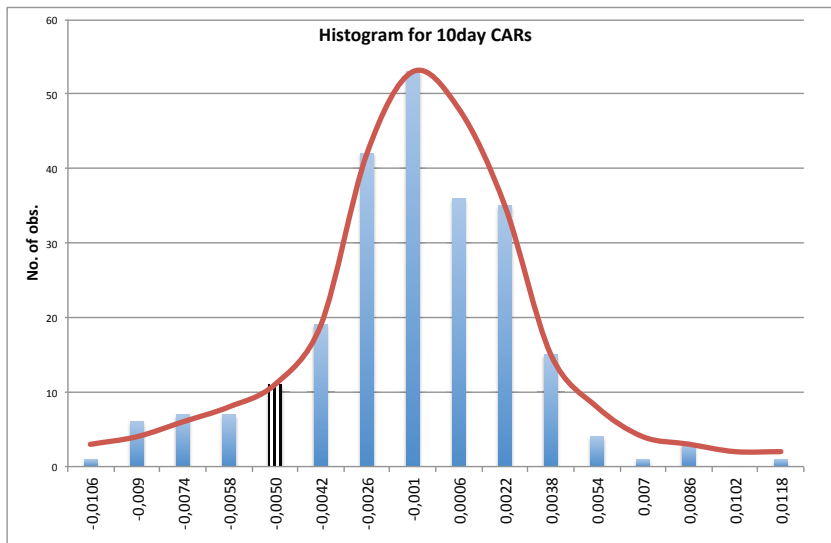


Figure 5-7 above shows the distribution of the 10day CARs, with 0,005 shown in black.

There was sufficient statistical evidence to not support the null hypothesis in favour of the alternative. Therefore, null hypothesis 2, which postulated that BEE announcements relating equity made through the Stock Exchange News Service (SENS) of the JSE have no impact on the cumulative abnormal returns of mining companies is not supported.

It can be concluded from the presented performance of the CAR that BEE announcements had a negative impact on cumulative abnormal returns of mining companies. The alternative hypothesis is therefore accepted. The established impact is however negative, resulting in losses for the shareholders.

5.5 Hypothesis 3: CAR performance based by age of company

Hypothesis 4 postulated that the impact on CARs of mining companies due to BEE announcements relating to issuance of equity is not affected by the age of the company, thus there should be no difference in the CAR performance between the old

and the new mining companies. In testing hypothesis 4, cumulative abnormal returns of the whole sample were divided into two groups, one represented a sample of old mining companies that have operated and existed pre-1994 and the other was a sample that represented new companies that were formed or reconstituted to benefit from the BEE laws of the democratic South Africa. The new mining companies (new miners) can and are being classified in this regard as the beneficiaries of BEE.

For these two groups (sub-samples), their AARs were used to calculate their respective CARs. The CARs were then plotted to examine how they performed when compared to each other. Of the 241 events, 105 announcements related to old miners and 136 announcements were classified for BEE miners.

Figure 5-8: Equally Weighted CAR t_{-40} to t_{+240} for New vs. Old Miners

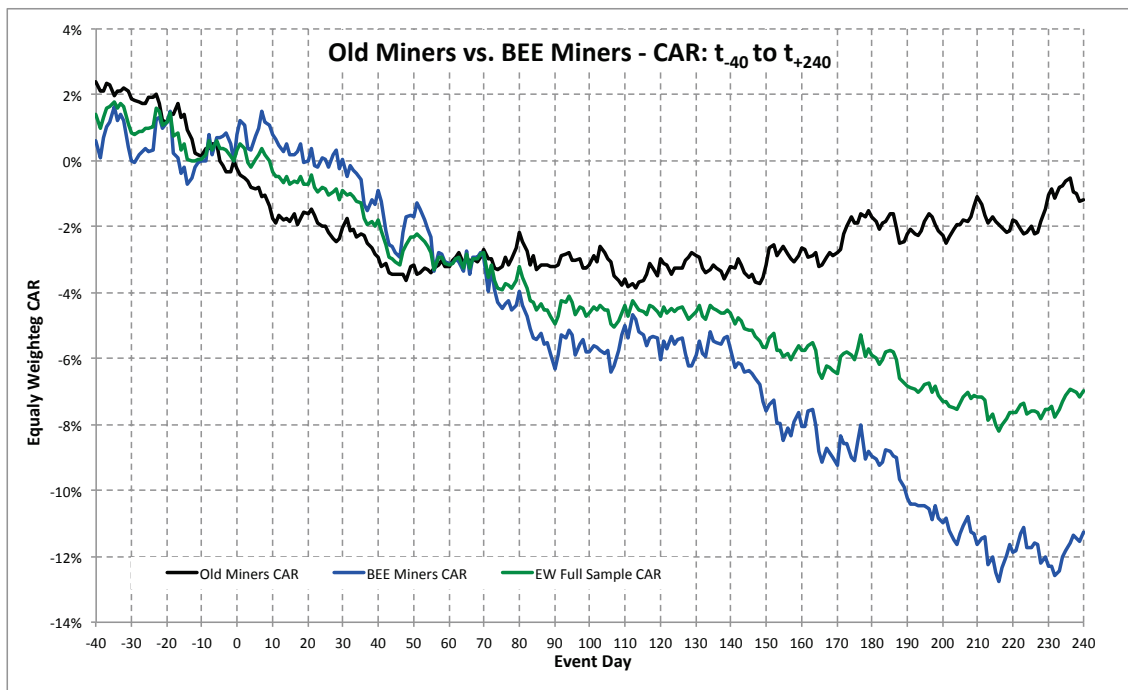


Figure 5-8 shows that both old and BEE miners experienced negative CAR, however, the old miners tend to fair better from day 60 onwards.

Figure 5-9: Old vs. BEE Miners – AAR & CAR t₋₂₀ to t₊₂₀

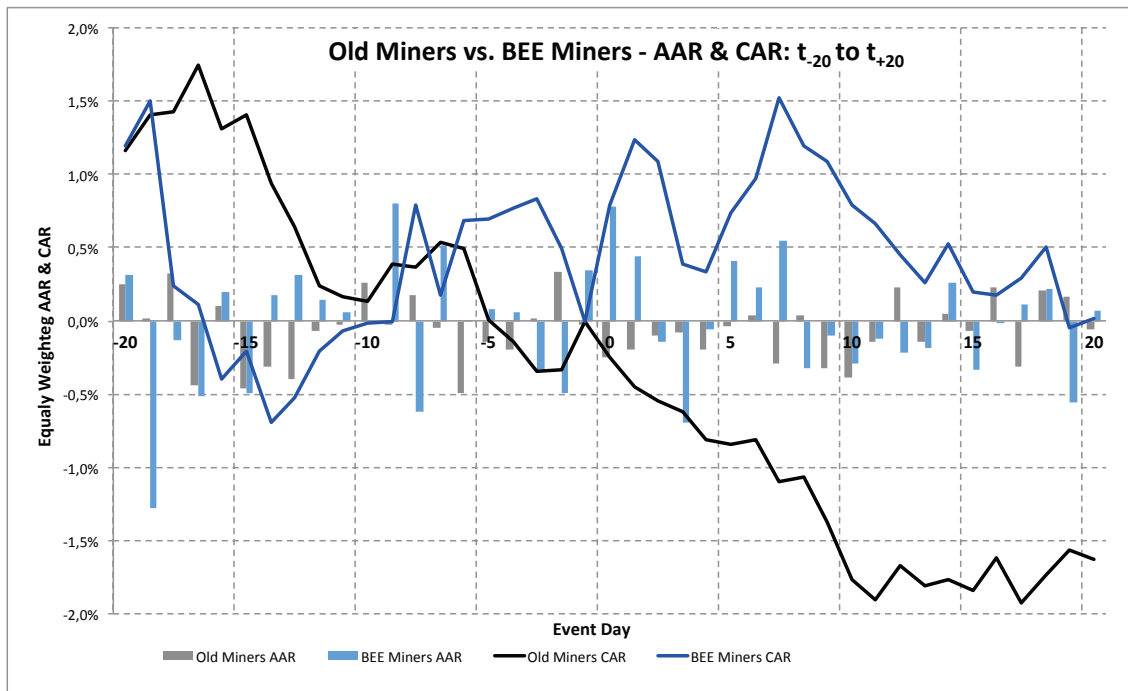


Figure 5-9 illustrates the CAR performance of the old miners *versus* the BEE miners in the short-term. The BEE miners have a better CAR performance meaning that the market viewed the announcement as positive for the miners.

Conversely, the market did not perceive the announcement as being good for the old miners; the CAR performance had a negative trend. It should be noted that the negative trend of the old miners' CAR started before the event day and continued thereafter.

A paired t-test was performed to compare the two sub-samples and to ascertain whether they significantly differ from each other. A test was also run to determine the correlation between the performances of old miners when compared to BEE miners. Both tests were performed using SPSS (predictive analytics software by IBM) to determine whether there is a difference in the means of the two categories of the mining companies. The correlation was performed first to determine whether the variance between the two populations is the same, then later the t-test was conducted.

Table 5-6: Correlation: Old vs. BEE Miners

	N	Correlation	Sig.	Bootstrap for Correlation ^a			
				Bias	Std. Error	Interval	
						Lower	Upper
Old Miners AAR & BEE Miners AAR	281	,031	60,28%	0,020%	5,823%	-7,703%	14,694%

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Table 5-6 above indicates that there was a weak positive correlation of 0,031 between the old miners and the BEE miners. This means the two samples are not correlated as this figure is very close to zero (0).

This was followed by a more rigorous paired t-test, that was conducted together with bootstrapping. The null hypothesis of the paired t-test is that the difference between the AARs of the Old miners and the AARs of the BEE miners is greater or equal to zero (0).

$$H_0: AAR_{Old} - AAR_{BEE} \geq 0$$

The alternative hypothesis for this test is that difference between the AARs of the Old miners and the AARs of the BEE miners is less than zero (0).

$$H_1: AAR_{Old} - AAR_{BEE} < 0$$

The results are shown in Table 5-7: Paired t-test: Old vs. BEE Miners:

Table 5-7: Paired t-test: Old vs. BEE Miners

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Old Miners AAR - BEE Miners AAR	0,0306%	0,4394%	0,0262%	-0,0210%	0,0822%	1,167	280	24,4%

	Mean	Bootstrap ^a				
		Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
					Lower	Upper
Old Miners AAR - BEE Miners AAR	0,0306%	-0,0007%	0,0264%	24,9%	-0,0206%	0,0823%

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

NB: Variable 1 is new miners and variable 2 old miners.

The results indicates that the t-stat of 1,167; both the p-values for the standard t-test and the bootstrap were greater than the significance level of 5%, which they were

tested at. Therefore the null hypothesis is supported at the 5% level of significance and it can be concluded that the null hypothesis is probably true. The statistical evidence supported the view that the AARs of the old miners are greater than the AARs of the new miners.

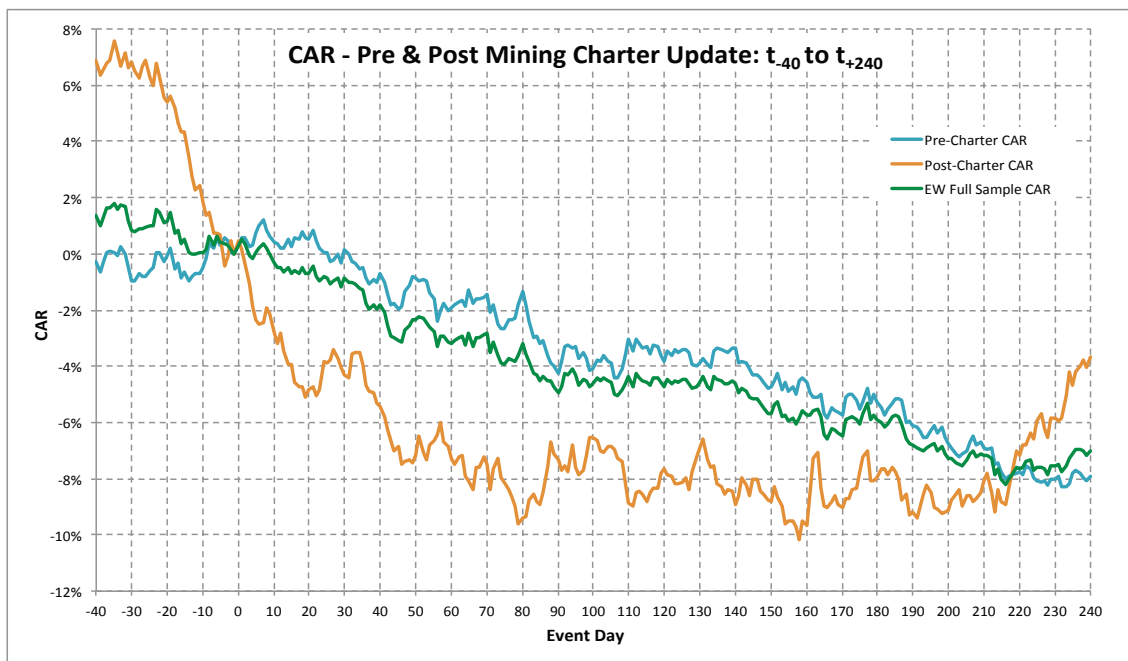
5.6 Hypothesis 4: Timing of BEE announcements

Hypothesis 5 was designed to test whether the BEE deals that were announced before the implementation of the Amended Mining Charter that was introduced in September 2010 performed better or worse than those announced after the milestone date.

The sample was divided into two groups, one that represented announcements made before September 2010 and the second group represented the period thereafter. The computed CARs of the two sub-samples were then compared to each other.

Assumedly as shown by Figure 5-10, the pre-September 2010 events trended very closely to the full sample of weighted CAR because those events account for 78% of the total sample (204 of 262 events).

Figure 5-10: Pre vs. post amendment of mining charter



As evident in Figure 5-10, the CAR performance of events post-September 2010 turned negative from day-1. The CAR of events than were announced after the amendment of the mining charter lost 7% in the 20 days preceding the event, while the CAR of the events before September 2010 remained relatively flat, averaging at -0,26%.

After the event day (t_0), the post-September 2010 announcements demonstrated a sharp loss of 5% up to day-20. It recovered slightly between day-20 and day-35 before plummeting again to reach - 9,4% on day-80. The CAR stabilised to an average of 8,24% between day-80 and day-215, and thereafter saw a late recovery of 4% to the end of the study window.

Similarly, from day-20, the pre-September 2010 announcements returned negative CAR to the end of the study window. However the losses were not as volatile and erratic as the post-September ones. They trend was gently and consistently towards the negative over time, losing 8,5%.

However the short-term CAR (t_0) to day-20 (t_{20}) of the announcements made pre-September showed positive performance, which meant that those were well received by the market.

Table 5-8: Correlation: pre vs. post amendment of mining charter

	N	Correlation	Sig.	Bootstrap for Correlation ^a			
				Bias	Std. Error	Interval	
						Lower	Upper
Pre-Charter AAR & Post-Charter AAR	281	-,057	34,33%	0,398%	6,337%	-17,644%	7,975%

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

Table 5-8 above indicates that there was weak negative correlation of -0,057 between pre- and post- amendment of the Mining Charter in September 2010. This means that the correlation between the two samples is very weak and has an inverse relationship.

This was followed by a more rigorous paired t-test, which was generated by the addition of bootstrapping. The null hypothesis of the paired t-test is that the difference between the AARs of the announcements made pre- compared to those made post-September 2010 is greater or equal to zero (0).

$$H_0: \mu_d \geq 0$$

The alternative hypothesis for this test is that the difference between the AARs of the announcements made pre- when compared to those made post-September 2010 is less than zero (0).

$$H_1: \mu_d < 0$$

The results are shown in Table 5-9: Paired t-test; pre vs. post amendment of mining charter:

Table 5-9: Paired t-test; pre vs. post amendment of mining charter

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pre-Charter AAR - Post-Charter AAR	0,0115%	0,5663%	0,0338%	-0,0550%	0,0780%	0,340	280	73,4%

	Mean	Bootstrap ^a				
		Bias	Std. Error	Sig. (2-tailed)	95% Confidence Interval	
					Lower	Upper
Pre-Charter AAR - Post-Charter AAR	0,0115%	0,0006%	0,0342%	76,8%	-0,0547%	0,0745%

a. Unless otherwise noted, bootstrap results are based on 1000 bootstrap samples

The results of the t-test according to Table 5-9 indicated that the t-stat is 0,34; the p-values for the standard t-test and the bootstrap were greater than the significance level of 5%, at which they were tested. Therefore the null hypothesis is supported at the 5% level of significance and it can be confirmed that the null hypothesis is probably true. The statistical evidence supports the view that the AARs of the events of pre-September are greater than the AARs of the post-September 2010 events.

However, it should be noted that both sets of announced transactions resulted in negative CAR in the long-term.

5.7 Conclusion

While the results of the research study were comprehensively discussed in this chapter, the proceeding Chapter 6 profoundly analyses the results in terms of reflecting on the information garnered from the literature review, as well as by determining the effect on the South African mining industry at large.

CHAPTER 6: DISCUSSION OF RESULTS

6.1 Introduction

This Chapter discusses the results of hypotheses that were tested. The data was gathered quantitatively from a sample of 26 mining companies that made a total of 241 qualifying announcements. Each of the four hypotheses is discussed and contrasted against the current literature findings on BEE announcements.

6.2 Hypothesis 1: Testing for Average Abnormal Returns

The hypothesis postulated the existence of average abnormal returns resulting from BEE announcements; this was successfully tested.

$$H_0: AAR = 0$$

$$H_0: AAR \neq 0$$

The t-test was conducted and confirmed the existence of significant AARs within the event window. The majority of the observed AARs were negative, signalling negative share price reactions to BEE announcements that lead to the destruction of shareholder value.

The outcome of the test demonstrated that the results were consistent with that of Ward and Muller's (2010) previous study. The majority of the AARs were negative and were intermingled with some positive AARs. Although Ward and Muller (2010) found a distinction of positive and negative AARs in the short-term when compared to the long-term, this study found no such obvious distinction between the short-term and the long-term.

The results of the study were also found to be different that those of Jackson *et al.* (2005); their study returned positive AARs from a sample of 20 JSE companies and

they found no evidence of negative post-announcement share price performance for BEE transactions. This confirms that, since mining companies returned negative AARs, they could have a different response to BEE announcement than the general JSE market. It is also possible that the study by Jackson *et al.* (2005) did not note this phenomenon since their sample of 20 companies potentially had no mining shares included; instead it had four broad industry categories of financial (six transactions), consumer services (six transactions), manufacturing (four transactions), and other (four transactions).

6.3 Hypothesis 2: CAR performance

Null hypothesis 2 that was test, postulated that BEE announcements relating to equity issuance made through SENS had no impact on the Cumulative Abnormal Returns (CARs) of mining companies. The hypotheses were tested as follows.

$$H_0: 10day CAR = 0$$

$$H_1: 10day CAR \neq 0$$

The results from testing the second hypothesis affirmed that BEE announcements related to equity through the SENS have negative impact on the cumulative abnormal returns of mining companies in the long-term. This is in contrast to the findings of the study by Ward and Muller (2010), who found the long-term CAR to be positive.

The announcement of BEE deals in mining could be taken as “bad” news, since these announcements resulted in negative CAR. Bad news generally causes shares to decrease while good news causes shares to increase (MacKinlay, 1997).

The testing for short-term CAR performance as summarised in Table 5-2: t-test - positive AARs at 5% level, Table 5-3: t-test where AAR is negative at 5% and Figure 5-3: Bar graph of AARs for the full sample, confirmed that the results of short term CAR present enough statistical evidence that BEE announcements had negative impacts on cumulative abnormal returns of mining companies in the short-term, except for the 3-day window around the event.

The findings of this test are contrary to those of Strydom *et al.* (2009), where the authors found a statistically insignificant positive market reaction to BEE transactions over the 11-day event window. However, Strydom *et al.* (2009) concluded that there was no evidence of a negative market reaction to BEE transactions. Wolmarans and Sartorius (2009) also found that there was a significantly positive average abnormal return for the day before and a day after the event.

Ward and Muller (2010) found one significantly negative 10-day CAR that ended on day 15 after the announcement, and attributed this to the negative market reactions following the announcement. They however found the CAR performance to be generally positive in the short-term, which is not consistent with the findings of this current research study.

6.4 Hypothesis 3: CAR performance based by age of company

Hypothesis 3 was designed to test whether there was a difference in the CAR performance between the old and the new mining companies, thus to test whether the age of company had an impact on the cumulative abnormal returns. These are the hypotheses that were tested.

$$H_0: AAR_{Old} - AAR_{BEE} \geq 0$$

$$H_1: AAR_{Old} - AAR_{BEE} < 0$$

In testing Hypothesis 4, as summarised in Figure 5-5: Long-term CAR: t_{-40} to t_{+240} and Table 5-9: Paired t-test; pre vs. post amendment of mining charter, significant differences were found between CAR performance of the old and the new mining companies. This lead to a finding that the age of mining company had an impact on the cumulative abnormal returns, and those old mining companies that had operated and existed pre-1994 had a better CAR performance than the newer companies which are BEE beneficiaries.

However, the BEE miners portrayed better performance in the short-term. The results demonstrated that although both new and old miners experienced a decline in their share performance post the announcement of a BEE transaction, the old miners were able to recover in the long-term although their CAR remained slightly negative. These results are not fully comparable with those of Ward and Muller (2010), as the authors found a sub-sample of large companies to have a marginally negative CAR, while the sub-sample of smaller companies had a strong positive CAR.

The results of the two studies can be compared because generally, the large-capital companies are predominantly resource companies (Ward & Muller, 2010). The performance of the large-capital companies was attributed to their export-oriented business as these businesses sell their commodities in international markets where they derive little or no benefit from BEE compliance.

6.5 Hypothesis 4: Timing of BEE announcements

Null hypothesis 4 postulated that the average abnormal returns of the events made before the release of amended mining charter in September 2010 are not less than the average abnormal returns of the events made after the amendment of the mining charter. These are the hypotheses that were tested.

$$H_0: AAR_{pre} - AAR_{post} \geq 0$$

$$H_1: AAR_{pre} - AAR_{post} < 0$$

In testing Hypothesis 4, the results revealed a clear distinction between early BEE announcements made before the release of the Mining Charter in September 2010 and those made thereafter. The long-term CARs of the sub-sample of announcements made before the amendment of the mining charter are less negative while that of the announcements made after the introduction of the Amended Mining Charter are more negative.

The outcome of this test is different when compared to previous studies. When Ward and Muller (2010) divided their sample in terms of early *versus* later BEE

announcements, they found that CARs for the 'early' sub-sample were negative until approximately day 140, and thereafter it became positive. In their study, the CARs of announcements made later in the period were initially positive and consistently exceeded 12% from day 180 onwards (Ward & Muller, 2010).

6.6 Conclusion

This Chapter presented the discussions of the results that were analysed. The results of the hypotheses were discussed with reference to the reviewed literature. In sum, the BEE announcements had largely a negative impact on share performance of the mining companies. Further conclusions and recommendations for practice and future research are discussed in Chapter 7.

CHAPTER 7: CONCLUSION

7.1 Introduction

This research examined the share price performance of mining stocks listed on the JSE by tracking their share price performance after announcements relating to black empowerment transactions. The study addressed a significant gap in BEE research, which is important within the South African context, as the country currently reviews progress after the initial 20 years of democratic dispensation. This Chapter concludes the study by presenting the summary of the findings and recommendations.

7.2 Summary of the findings

The study found mixed reactions to the announcements of BEE transactions in the long-term and short-term.

In the short-term, the 11-day window was assessed and it was found that there are generally negative AARs, except for the 3-day window around the event. The 3-day window (t_{-1} to t_{+1}) had positive AARs and was highest on the event day. It is concluded that the market enjoyed the news of BEE announcements when these were publicised. This is consistent with the idea of the efficient market, as once the info had filtered through; the market reverted back to its natural trajectory for the period.

The CAR performance of the total sample had a negative slope, thus being downwardly trending over the entire study window. There were a few instances of recoveries where the trend plateaued; most significantly this occurred around the 21-day window. CAR performance held positive for this window and thereafter it continued on a downward trend into negative CAR.

The conclusion from the presented performance of the CAR and AARs is that BEE announcements had a negative impact on cumulative abnormal returns of mining companies in the short term.

A paired t-test was run to determine whether BEE announcements have a greater positive impact on the cumulative abnormal returns of old mining companies that were listed on the JSE pre-1994 compared to their BEE counterparts.

The test revealed there were significant differences between CAR performance of the old and the new mining companies. This led to a finding that the age of the mining company had an impact on its cumulative abnormal returns, and those old mining companies that had operated and existed pre-1994 had a better CAR performance than the newer companies that are BEE beneficiaries.

The BEE miners showed better performance in the short-term while the old miners showed better performance in the long-term. The results exposed that although both new and old miners experienced a decline in their share performance after the announcement of a BEE transaction, the old miners were able to recover in the long-term.

The short-term versus long-term performance of old and BEE miners is not reconcilable with the study performed by Ward and Muller (2010). Their study had concluded that larger market-cap companies (similar to old miners) had marginally negative CAR, while the smaller companies (similar to BEE miners) had a strong positive CAR.

This study however demonstrated that generally the old miners (blue-chip shares) performed better in the long-term. The results of the two studies can be compared because in general, the large-cap companies are predominantly resource companies (Ward & Muller, 2010).

A paired t-test was also generated to determine whether the early BEE announcements made before the release of the Mining Charter in September 2010 had a greater positive impact on the cumulative abnormal returns of mining companies compared to those made after the amendment to legislation.

Although the results exposed negative CAR performance of mining shares to both pre- and post-September 2010, a clear distinction was established between early BEE announcements made before the release of the Mining Charter in September 2010 and those made thereafter.

The earlier events announced before September 2010 had better performance than the later ones. This was evidenced by long-term CARs of the sub-sample of announcements made before the Amendment of the Mining Charter being slightly negative while those made after were significantly negative.

This study has returned different results when compared to the study of Ward and Muller (2010), where they concluded that BEE transactions generally yielded positive CAR performance, except for the early transactions that were negative until approximately day 140 and thereafter became positive.

7.3 Recommendation for practice

This study found that the BEE announcements resulted in a negative share price performance, therefore South African government should determine the reasons of the negative view to qualify why mining investors are reacting negatively. Addressing investor concerns could contribute to the increment of foreign direct investment into the country.

In addition to using BEE as an act of CSR like most South African companies (Alessandri et al., 2009, 2011; Jackson et al., 2005; Wolmarans & Sartorius, 2009), mining companies also have to comply with BEE legislation to ensure they attain or maintain their licence to operate (Department: Mineral Resources, 2010). It is therefore imperative for the mining sector to find a balance between BEE as a business sustainability measure and shareholder value creation, since the study found negative reaction by the market to BEE announcements.

7.4 Recommendations for future research

The study makes the following recommendations for future research:

First, it was noted from the study that some of the companies might not be complying with the mining charter; therefore future studies should separate the mining companies as per mining charter compliance.

Second, a qualitative approach should be conducted to explore the perceptions of the investors with regard to the BEE announcements.

Third, future studies should focus on the different sectors to determine the sector impacted the most by BEE announcements.

Fourth, future studies should contrast the performance of the share price by the types of transactions.

7.5 Chapter Summary

This research was successful in examining the share price performance of mining stocks listed on the JSE by tracking their share price performance after announcements relating to black empowerment transactions. Summary of findings were presented from the event study and the results showed negative impact on the CARs of the mining companies. Recommendations to industry were made were above relating to concerns flowing from the outcome of the study.

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APPENDICES

Appendix 1: List of mining companies in the sample

Code	Name
BIL	BHP Billiton PLC
AGL	Anglo American PLC
AMS	Anglo American Platinum
ANG	AngloGold Ashanti
IMP	Impala Platinum
ASR	Assore ltd
ARI	African Rainbow Minerals
GFI	GoldFields
LON	Lonmin Platinum
NHM	Northam Platinum Limited
HAR	Harmony
ATL	Atlatsa Resources
RSG	Resource Generation Limited
AQP	Aquarius Platinum
DRD	DRD Gold
CZA	Coal of Africa
EPS	Eastern Platinum Limited
BDM	Buildmax Limited
VIL	Village
GBG	Great Basin Gold
TAW	Tawana
CRD	Central Rand Gold Limited
FCR	Ferrum Crescent Limited
JBL	Jubilee Platinum Plc
BAU	Bauba Platinum Limited
CMO	Chrometco Limited
DMR	Diamond Core Resources
KMB	Kumba Resources Limited
PGL	Pallinghurst Resources

Appendix 2: AAR t-stat test for significance

Day	Sample AAR	STDEV.S-AAR	Std.Error-AAR	t-stat-AAR	p-value-AAR	Day	Sample AAR	STDEV.S-AAR	Std.Error-AAR	t-stat-AAR	p-value-AAR
day -40	-0,407%	3,978%	0,256%	(1,590)	0,113	day 31	-0,155%	3,978%	0,256%	(0,604)	0,547
day -39	0,335%	3,978%	0,256%	1,306	0,193	day 32	0,024%	3,978%	0,256%	0,093	0,926
day -38	0,298%	3,978%	0,256%	1,163	0,246	day 33	-0,065%	3,978%	0,256%	(0,254)	0,800
day -37	0,042%	3,978%	0,256%	0,164	0,870	day 34	-0,151%	3,978%	0,256%	(0,590)	0,556
day -36	0,130%	3,978%	0,256%	0,506	0,613	day 35	-0,055%	3,978%	0,256%	(0,214)	0,831
day -35	-0,179%	3,978%	0,256%	(0,700)	0,484	day 36	-0,466%	3,978%	0,256%	(1,819)	0,070
day -34	0,131%	3,978%	0,256%	0,511	0,610	day 37	-0,218%	3,978%	0,256%	(0,849)	0,397
day -33	-0,069%	3,978%	0,256%	(0,268)	0,789	day 38	0,134%	3,978%	0,256%	0,521	0,603
day -32	-0,525%	3,978%	0,256%	(2,050)	0,041	day 39	-0,167%	3,978%	0,256%	(0,651)	0,516
day -31	-0,318%	3,978%	0,256%	(1,243)	0,215	day 40	0,189%	3,978%	0,256%	0,736	0,463
day -30	-0,056%	3,978%	0,256%	(0,218)	0,827	day 41	-0,312%	3,978%	0,256%	(1,216)	0,225
day -29	0,111%	3,978%	0,256%	0,432	0,666	day 42	-0,451%	3,978%	0,256%	(1,759)	0,080
day -28	0,023%	3,978%	0,256%	0,090	0,929	day 43	-0,403%	3,978%	0,256%	(1,574)	0,117
day -27	0,064%	3,978%	0,256%	0,248	0,804	day 44	-0,028%	3,978%	0,256%	(0,110)	0,913
day -26	0,026%	3,978%	0,256%	0,103	0,918	day 45	-0,127%	3,978%	0,256%	(0,495)	0,621
day -25	0,025%	3,978%	0,256%	0,096	0,924	day 46	-0,056%	3,978%	0,256%	(0,218)	0,828
day -24	0,593%	3,978%	0,256%	2,315	0,021	day 47	0,418%	3,978%	0,256%	1,630	0,104
day -23	-0,110%	3,978%	0,256%	(0,431)	0,667	day 48	0,180%	3,978%	0,256%	0,702	0,483
day -22	-0,425%	3,978%	0,256%	(1,658)	0,099	day 49	0,236%	3,978%	0,256%	0,923	0,357
day -21	0,102%	3,978%	0,256%	0,397	0,692	day 50	0,004%	3,978%	0,256%	0,017	0,986
day -20	0,286%	3,978%	0,256%	1,116	0,265	day 51	0,103%	3,978%	0,256%	0,401	0,689
day -19	-0,712%	3,978%	0,256%	(2,778)	0,006	day 52	-0,091%	3,978%	0,256%	(0,356)	0,722
day -18	0,070%	3,978%	0,256%	0,275	0,784	day 53	-0,132%	3,978%	0,256%	(0,513)	0,608
day -17	-0,482%	3,978%	0,256%	(1,880)	0,061	day 54	-0,175%	3,978%	0,256%	(0,682)	0,496
day -16	0,154%	3,978%	0,256%	0,601	0,548	day 55	-0,161%	3,978%	0,256%	(0,626)	0,532
day -15	-0,479%	3,978%	0,256%	(1,867)	0,063	day 56	-0,557%	3,978%	0,256%	(2,172)	0,031
day -14	-0,037%	3,978%	0,256%	(0,145)	0,885	day 57	0,374%	3,978%	0,256%	1,461	0,145
day -13	0,000%	3,978%	0,256%	(0,002)	0,998	day 58	0,042%	3,978%	0,256%	0,165	0,869
day -12	0,048%	3,978%	0,256%	0,187	0,852	day 59	-0,225%	3,978%	0,256%	(0,879)	0,381
day -11	0,018%	3,978%	0,256%	0,068	0,946	day 60	-0,048%	3,978%	0,256%	(0,189)	0,851
day -10	0,114%	3,978%	0,256%	0,446	0,656	day 61	0,077%	3,978%	0,256%	0,300	0,765
day -9	0,439%	3,978%	0,256%	1,714	0,088	day 62	0,145%	3,978%	0,256%	0,565	0,573
day -8	-0,273%	3,978%	0,256%	(1,067)	0,287	day 63	0,019%	3,978%	0,256%	0,075	0,940
day -7	0,271%	3,978%	0,256%	1,059	0,291	day 64	-0,319%	3,978%	0,256%	(1,244)	0,215
day -6	-0,210%	3,978%	0,256%	(0,820)	0,413	day 65	0,430%	3,978%	0,256%	1,677	0,095
day -5	-0,018%	3,978%	0,256%	(0,071)	0,944	day 66	-0,462%	3,978%	0,256%	(1,803)	0,073
day -4	-0,055%	3,978%	0,256%	(0,216)	0,829	day 67	0,319%	3,978%	0,256%	1,244	0,215
day -3	-0,186%	3,978%	0,256%	(0,724)	0,470	day 68	-0,015%	3,978%	0,256%	(0,060)	0,952
day -2	-0,134%	3,978%	0,256%	(0,522)	0,602	day 69	0,138%	3,978%	0,256%	0,537	0,592
day -1	0,184%	3,978%	0,256%	0,717	0,474	day 70	0,044%	3,978%	0,256%	0,173	0,863
day 0	0,333%	3,978%	0,256%	1,298	0,196	day 71	-0,748%	3,978%	0,256%	(2,918)	0,004
day 1	0,163%	3,978%	0,256%	0,636	0,525	day 72	0,398%	3,978%	0,256%	1,555	0,121
day 2	-0,121%	3,978%	0,256%	(0,471)	0,638	day 73	-0,488%	3,978%	0,256%	(1,904)	0,058
day 3	-0,427%	3,978%	0,256%	(1,665)	0,097	day 74	-0,259%	3,978%	0,256%	(1,009)	0,314
day 4	-0,118%	3,978%	0,256%	(0,460)	0,646	day 75	-0,071%	3,978%	0,256%	(0,276)	0,783
day 5	0,215%	3,978%	0,256%	0,840	0,402	day 76	0,202%	3,978%	0,256%	0,789	0,431
day 6	0,144%	3,978%	0,256%	0,560	0,576	day 77	-0,046%	3,978%	0,256%	(0,181)	0,856
day 7	0,181%	3,978%	0,256%	0,705	0,482	day 78	-0,073%	3,978%	0,256%	(0,287)	0,775
day 8	-0,168%	3,978%	0,256%	(0,654)	0,514	day 79	0,245%	3,978%	0,256%	0,957	0,340
day 9	-0,198%	3,978%	0,256%	(0,772)	0,441	day 80	0,431%	3,978%	0,256%	1,683	0,094
day 10	-0,335%	3,978%	0,256%	(1,307)	0,192	day 81	-0,370%	3,978%	0,256%	(1,443)	0,150
day 11	-0,131%	3,978%	0,256%	(0,512)	0,609	day 82	-0,308%	3,978%	0,256%	(1,203)	0,230
day 12	-0,021%	3,978%	0,256%	(0,083)	0,934	day 83	-0,424%	3,978%	0,256%	(1,653)	0,100
day 13	-0,166%	3,978%	0,256%	(0,648)	0,517	day 84	-0,032%	3,978%	0,256%	(0,124)	0,901
day 14	0,168%	3,978%	0,256%	0,656	0,513	day 85	-0,225%	3,978%	0,256%	(0,878)	0,381
day 15	-0,218%	3,978%	0,256%	(0,850)	0,396	day 86	0,180%	3,978%	0,256%	0,703	0,483
day 16	0,088%	3,978%	0,256%	0,342	0,733	day 87	-0,209%	3,978%	0,256%	(0,814)	0,416
day 17	-0,074%	3,978%	0,256%	(0,290)	0,772	day 88	0,028%	3,978%	0,256%	0,110	0,913
day 18	0,212%	3,978%	0,256%	0,828	0,409	day 89	-0,217%	3,978%	0,256%	(0,846)	0,398
day 19	-0,241%	3,978%	0,256%	(0,939)	0,348	day 90	-0,260%	3,978%	0,256%	(1,015)	0,311
day 20	0,009%	3,978%	0,256%	0,037	0,971	day 91	0,245%	3,978%	0,256%	0,955	0,341
day 21	0,253%	3,978%	0,256%	0,989	0,324	day 92	0,491%	3,978%	0,256%	1,915	0,057
day 22	-0,350%	3,978%	0,256%	(1,364)	0,174	day 93	-0,027%	3,978%	0,256%	(0,104)	0,918
day 23	-0,141%	3,978%	0,256%	(0,551)	0,582	day 94	0,175%	3,978%	0,256%	0,683	0,496
day 24	0,118%	3,978%	0,256%	0,459	0,647	day 95	-0,181%	3,978%	0,256%	(0,707)	0,480
day 25	-0,028%	3,978%	0,256%	(0,108)	0,914	day 96	-0,386%	3,978%	0,256%	(1,506)	0,133
day 26	-0,211%	3,978%	0,256%	(0,824)	0,411	day 97	0,217%	3,978%	0,256%	0,847	0,398
day 27	0,119%	3,978%	0,256%	0,464	0,643	day 98	-0,047%	3,978%	0,256%	(0,182)	0,856
day 28	0,067%	3,978%	0,256%	0,263	0,793	day 99	-0,223%	3,978%	0,256%	(0,869)	0,386
day 29	-0,295%	3,978%	0,256%	(1,151)	0,251	day 100	0,071%	3,978%	0,256%	0,278	0,781
day 30	0,289%	3,978%	0,256%	1,128	0,260	day 101	0,218%	3,978%	0,256%	0,850	0,396

Day	EW Full Sample AAR	STDEV.S- AAR	Std.Error- AAR	t-stat-AAR	p-value-AAR	Day	EW Full Sample AAR	STDEV.S- AAR	Std.Error- AAR	t-stat-AAR	p-value-AAR
day 101	0,218%	3,978%	0,256%	0,850	0,396	day 171	0,593%	3,978%	0,256%	2,314	0,022
day 102	-0,104%	3,978%	0,256%	(0,404)	0,687	day 172	0,079%	3,978%	0,256%	0,309	0,757
day 103	0,137%	3,978%	0,256%	0,535	0,593	day 173	0,074%	3,978%	0,256%	0,289	0,773
day 104	-0,130%	3,978%	0,256%	(0,508)	0,612	day 174	-0,131%	3,978%	0,256%	(0,511)	0,610
day 105	-0,022%	3,978%	0,256%	(0,087)	0,931	day 175	-0,147%	3,978%	0,256%	(0,572)	0,568
day 106	-0,444%	3,978%	0,256%	(1,731)	0,085	day 176	0,363%	3,978%	0,256%	1,417	0,158
day 107	-0,077%	3,978%	0,256%	(0,299)	0,765	day 177	0,434%	3,978%	0,256%	1,694	0,092
day 108	0,208%	3,978%	0,256%	0,813	0,417	day 178	-0,672%	3,978%	0,256%	(2,624)	0,009
day 109	0,228%	3,978%	0,256%	0,890	0,374	day 179	0,221%	3,978%	0,256%	0,861	0,390
day 110	0,257%	3,978%	0,256%	1,002	0,318	day 180	-0,174%	3,978%	0,256%	(0,678)	0,498
day 111	-0,346%	3,978%	0,256%	(1,352)	0,178	day 181	-0,112%	3,978%	0,256%	(0,439)	0,661
day 112	0,466%	3,978%	0,256%	1,817	0,070	day 182	-0,206%	3,978%	0,256%	(0,805)	0,422
day 113	-0,145%	3,978%	0,256%	(0,566)	0,572	day 183	0,135%	3,978%	0,256%	0,528	0,598
day 114	-0,131%	3,978%	0,256%	(0,511)	0,610	day 184	0,249%	3,978%	0,256%	0,973	0,332
day 115	-0,036%	3,978%	0,256%	(0,140)	0,889	day 185	0,090%	3,978%	0,256%	0,351	0,726
day 116	-0,118%	3,978%	0,256%	(0,462)	0,644	day 186	-0,087%	3,978%	0,256%	(0,338)	0,735
day 117	0,294%	3,978%	0,256%	1,147	0,253	day 187	-0,233%	3,978%	0,256%	(0,909)	0,364
day 118	-0,031%	3,978%	0,256%	(0,123)	0,902	day 188	-0,603%	3,978%	0,256%	(2,354)	0,019
day 119	-0,153%	3,978%	0,256%	(0,597)	0,551	day 189	-0,142%	3,978%	0,256%	(0,554)	0,580
day 120	-0,150%	3,978%	0,256%	(0,586)	0,559	day 190	-0,092%	3,978%	0,256%	(0,358)	0,721
day 121	0,279%	3,978%	0,256%	1,088	0,277	day 191	-0,069%	3,978%	0,256%	(0,270)	0,787
day 122	-0,157%	3,978%	0,256%	(0,611)	0,542	day 192	-0,064%	3,978%	0,256%	(0,248)	0,804
day 123	0,105%	3,978%	0,256%	0,409	0,683	day 193	-0,069%	3,978%	0,256%	(0,269)	0,788
day 124	-0,064%	3,978%	0,256%	(0,249)	0,803	day 194	0,091%	3,978%	0,256%	0,355	0,723
day 125	0,082%	3,978%	0,256%	0,318	0,751	day 195	0,136%	3,978%	0,256%	0,532	0,595
day 126	0,030%	3,978%	0,256%	0,116	0,908	day 196	0,035%	3,978%	0,256%	0,138	0,890
day 127	-0,176%	3,978%	0,256%	(0,686)	0,493	day 197	-0,264%	3,978%	0,256%	(1,029)	0,305
day 128	-0,177%	3,978%	0,256%	(0,690)	0,491	day 198	0,167%	3,978%	0,256%	0,651	0,516
day 129	0,072%	3,978%	0,256%	0,281	0,779	day 199	-0,300%	3,978%	0,256%	(1,171)	0,243
day 130	0,142%	3,978%	0,256%	0,555	0,579	day 200	-0,168%	3,978%	0,256%	(0,657)	0,512
day 131	0,212%	3,978%	0,256%	0,829	0,408	day 201	-0,019%	3,978%	0,256%	(0,072)	0,942
day 132	-0,352%	3,978%	0,256%	(1,376)	0,170	day 202	-0,147%	3,978%	0,256%	(0,575)	0,566
day 133	-0,116%	3,978%	0,256%	(0,453)	0,651	day 203	-0,077%	3,978%	0,256%	(0,302)	0,763
day 134	0,482%	3,978%	0,256%	1,882	0,061	day 204	-0,019%	3,978%	0,256%	(0,076)	0,940
day 135	-0,094%	3,978%	0,256%	(0,367)	0,714	day 205	0,188%	3,978%	0,256%	0,734	0,464
day 136	-0,070%	3,978%	0,256%	(0,274)	0,785	day 206	0,227%	3,978%	0,256%	0,884	0,378
day 137	-0,077%	3,978%	0,256%	(0,299)	0,765	day 207	0,134%	3,978%	0,256%	0,525	0,600
day 138	-0,006%	3,978%	0,256%	(0,022)	0,982	day 208	-0,211%	3,978%	0,256%	(0,825)	0,410
day 139	0,107%	3,978%	0,256%	0,418	0,677	day 209	0,116%	3,978%	0,256%	0,453	0,651
day 140	-0,124%	3,978%	0,256%	(0,484)	0,629	day 210	-0,076%	3,978%	0,256%	(0,298)	0,766
day 141	-0,362%	3,978%	0,256%	(1,413)	0,159	day 211	0,018%	3,978%	0,256%	0,070	0,945
day 142	0,215%	3,978%	0,256%	0,838	0,403	day 212	-0,125%	3,978%	0,256%	(0,488)	0,626
day 143	-0,115%	3,978%	0,256%	(0,450)	0,653	day 213	-0,643%	3,978%	0,256%	(2,508)	0,013
day 144	-0,244%	3,978%	0,256%	(0,952)	0,342	day 214	0,220%	3,978%	0,256%	0,860	0,391
day 145	-0,029%	3,978%	0,256%	(0,111)	0,912	day 215	-0,369%	3,978%	0,256%	(1,441)	0,151
day 146	-0,020%	3,978%	0,256%	(0,078)	0,938	day 216	-0,218%	3,978%	0,256%	(0,850)	0,396
day 147	-0,196%	3,978%	0,256%	(0,764)	0,446	day 217	0,231%	3,978%	0,256%	0,902	0,368
day 148	-0,134%	3,978%	0,256%	(0,523)	0,601	day 218	0,175%	3,978%	0,256%	0,681	0,497
day 149	-0,219%	3,978%	0,256%	(0,856)	0,393	day 219	0,237%	3,978%	0,256%	0,926	0,356
day 150	-0,010%	3,978%	0,256%	(0,041)	0,967	day 220	-0,012%	3,978%	0,256%	(0,046)	0,963
day 151	0,334%	3,978%	0,256%	1,305	0,193	day 221	0,009%	3,978%	0,256%	0,034	0,973
day 152	0,124%	3,978%	0,256%	0,486	0,628	day 222	0,244%	3,978%	0,256%	0,951	0,342
day 153	-0,556%	3,978%	0,256%	(2,171)	0,031	day 223	0,052%	3,978%	0,256%	0,201	0,841
day 154	0,044%	3,978%	0,256%	0,171	0,865	day 224	-0,357%	3,978%	0,256%	(1,395)	0,164
day 155	-0,245%	3,978%	0,256%	(0,957)	0,339	day 225	0,083%	3,978%	0,256%	0,325	0,746
day 156	0,133%	3,978%	0,256%	0,521	0,603	day 226	-0,009%	3,978%	0,256%	(0,036)	0,972
day 157	-0,233%	3,978%	0,256%	(0,907)	0,365	day 227	-0,036%	3,978%	0,256%	(0,139)	0,889
day 158	0,238%	3,978%	0,256%	0,930	0,353	day 228	-0,214%	3,978%	0,256%	(0,834)	0,405
day 159	0,248%	3,978%	0,256%	0,968	0,334	day 229	0,310%	3,978%	0,256%	1,210	0,227
day 160	-0,148%	3,978%	0,256%	(0,576)	0,565	day 230	0,012%	3,978%	0,256%	0,045	0,964
day 161	-0,024%	3,978%	0,256%	(0,096)	0,924	day 231	0,077%	3,978%	0,256%	0,301	0,763
day 162	0,172%	3,978%	0,256%	0,671	0,503	day 232	-0,311%	3,978%	0,256%	(1,214)	0,226
day 163	0,062%	3,978%	0,256%	0,241	0,810	day 233	0,231%	3,978%	0,256%	0,900	0,369
day 164	-0,245%	3,978%	0,256%	(0,957)	0,339	day 234	0,278%	3,978%	0,256%	1,085	0,279
day 165	-0,706%	3,978%	0,256%	(2,756)	0,006	day 235	0,173%	3,978%	0,256%	0,677	0,499
day 166	-0,158%	3,978%	0,256%	(0,615)	0,539	day 236	0,203%	3,978%	0,256%	0,793	0,428
day 167	0,381%	3,978%	0,256%	1,488	0,138	day 237	-0,038%	3,978%	0,256%	(0,147)	0,883
day 168	-0,044%	3,978%	0,256%	(0,170)	0,865	day 238	-0,071%	3,978%	0,256%	(0,275)	0,783
day 169	-0,105%	3,978%	0,256%	(0,411)	0,681	day 239	-0,162%	3,978%	0,256%	(0,632)	0,528
day 170	-0,123%	3,978%	0,256%	(0,479)	0,633	day 240	0,208%	3,978%	0,256%	0,813	0,417