

The Reaction of Investors to Earnings Announcements on the Johannesburg Stock Exchange

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requirements for the degree of Master of Business Administration**

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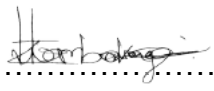
ABSTRACT

The efficient market hypothesis (EMH) has been a subject of interest since the 1950s and 1960s. The EMH is centred on information efficiency, that is all public and private information is immediately reflected in the market prices.

In the African context, it is argued that some of the stock exchanges are weak form efficient because of impairment in information flow. This research analyses the information efficiency of the Johannesburg Stock Exchange by investigating the impact of earnings surprise on investors. The research further examines the presence of post-earnings announcement drift. Earnings announcements for firms ranked as being in top 500 in their sector and industry are included in the study. Using event studies, the empirical results illustrate that earnings surprise have an impact on investors; however, these are influenced by external factors.

DECLARATION

I, Anne Onsongo, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Signed at 

On the ..15..... day of .September..... 20.15

DEDICATION

I dedicate this research to;

The Almighty God and my family.

ACKNOWLEDGEMENTS

I would like to acknowledge all who aided and encouraged me as I undertook my masters program and completed my research project. Their assistance was vital to the successful completion of my coursework. In particular, I would like to thank the following people:

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CHAPTER 1. INTRODUCTION

This chapter provides the overview of the report, including the problem and research objectives. Section 1.2 presents the context of the study and outlines the problem statement. Section 1.3 sets out the research questions, Section 1.4 presents the objective of the study and Section 1.5 describes beneficiaries of the study. Section 1.6 details the outline of the research report, while section 1.7 lays out the chapter summary.

1.1 Context of the Study

The purpose of this research is to study the response of investors to earnings announcements. Decisions taken by investors are founded on the efficiency or lack thereof of financial markets. It is therefore necessary to discuss the concept of market efficiency or inefficiency as a pre-requisite.

A market that is efficient is one where security prices fully incorporate all information available, whether private or public (Fama, 1970). Fama, (1970) stipulates that there are three types of market efficiencies based on the extent and speed a market can incorporate new information or earnings announcements. These are the strong form, semi-strong form and weak form.

The efficient market hypothesis (EMH) states that investors are rational and therefore will always make decisions that are congruent to expected utility theory (Kahneman&Tversky, 1979). Kahneman and Tversky (1979) argue that investors will always choose an investment that will maximise their utility, that is, their overall utility (as denoted by U) is the expected utility of each outcome. This can be denoted as $U(x_1, p_1; \dots x_n, p_n) = p_{1u}(x_1) + \dots p_{nu}(x_n)$. Similarly, under the expected utility theory, an investor considers an opportunity plausible if it maximizes his or her total assets. Finally, the expected utility theory considers the rational investor risk averse.

Therefore, an investor will only consider higher risk opportunities if the expected return complements the risk.

The EMH has its foundation in the random walk theory (Timmermann & Granger, 2004). The random walk theory evolved as a result of an interest by statisticians, economists and teachers of finance to develop theories other than the commonly accepted chartist or technical theories and the intrinsic value analysis (Fama, 1965).

Fama, Fisher, Jensen, & Roll (1999) support the view that markets are efficient maintaining that all information is incorporated into the price almost immediately following announcement of new information. They contend that prior to their report, 'The adjustment of stock prices to new information' a majority of empirical work inferred the efficiency of markets from observed price changes, i.e the presence of the 'random walk'. Minimal empirical studies have been done to analyse the speed prices change with information. Nonetheless, Fama, Fisher, Jensen, & Roll (1999) hold the view that market prices react speedily to new information and so are efficient.

However, there have been observations of anomalies that contradict the EMH. These have been attributed to various theories, including the prospect theory (Camerer, 1989; Kahneman & Tversky, 1979). Tversky and Kahneman, (1992) claim that the market continuously makes choices that contravene the precepts of the EMH. For instance, the market attaches value to specific gains and losses instead of the total value of assets as theorized by the EMH (Kahneman & Tversky, 1979). Furthermore, investors are inclined to take risk and not be risk averse, with a desire to receive a large return while also incurring minimum cost. This is in contrary to the risk-return notion which states that where the investor expects large returns, the investor should also expect to incur high costs (Nofsinger, 2011).

Other anomalies include the long-term reversal. This refers to the characteristic of negative correlation by stock returns at long-term horizons, that is, stocks that have had the lowest returns over a given five-year period tend to have high returns over the subsequent periods (Hong & Stein, 1999).

Fama, (1998) contends that the proposed anomalies are simply illusions since changes in methods seem to have caused anomalies to cease to exist, following robust checks by subsequent publications. According to Fama, (1998), anomalies are chance results.

1.2 Problem Statement

Earnings are considered important as they are perceived to be the means by which management measures the growth and development of a firm. Similarly, announcements are means by which investors can gauge a firm's growth against expectations (Lev, 1989).

Dickinson & Muragu (1994); Laurence (1986); Mlonzi, Kruger, & Nthoesane (2011) and Sui Suyin, (2007) have performed studies in African and emerging countries regarding the EMH. They found that markets generally display the weak form of efficiency and not the strong form, i.e. there seems to be information inefficiency.

This research therefore intends to contribute towards the literature by analysing the form of efficiency in the Johannesburg Stock Exchange (JSE) in various industries.

1.3 Research Questions

The research questions are as follows:

- * How do investors react to earnings announcement for companies ranked in the top 500 firms on the JSE?
- * Is there evidence of post-earning drift in companies ranked as being in the top 500 well-managed firms?
- * What is the EMH form of the JSE in terms of how the earnings announcements for companies that are ranked as being in the top 500 well-managed firms?

1.4 Objectives of the Study

The objectives of the study are as follows:

- * To investigate the reaction of investors to public earnings announcements pertaining to companies in the JSE ranked as being in the top 500 firms.
- * To clarify if a post-earnings drift is observed on the JSE.
- * To test the form of the EMH in the JSE for companies ranked in the top 500 well-managed firms.

1.5 Significance of the study

The research could assist key decision makers to make informed decisions. The integration of the theory and its suitability to practice will empower the decision makers to make choices that could be geared towards development and hence contribute towards the growth of the economy.

Market professionals in the field of investment may also benefit. The findings could enable both the professionals and institutions to ensure that their models are attuned. This could facilitate better client relationships and probably higher returns resulting in a win-win for client and company.

1.6 Outline of the Study

This research is organized as follows. Chapter 2 presents the literature review on earnings and earnings announcements, as well as the literature on market efficiency. Chapter 3 describes the methodology that will be used, including data selection. Chapter 4 presents the results. Chapter 5 elaborates the findings while chapter 6 outlines the conclusion and presents recommendations for further research.

1.7 Chapter Summary

Chapter 1 introduced the problem and outlined the EMH as it is on the premise of efficiency or lack thereof that a market makes decisions.

In addition, the objectives were established so as to present a framework within which the research shall be conducted.

CHAPTER 2. LITERATURE REVIEW

This chapter lays out the overview of the EMH and implications surrounding the response of individuals within the context of the hypothesis. Various theoretical accounts are presented with an emphasis on earnings. Section 2.2 presents the analysis of market efficiency. Section 2.3 analyses literature on market inefficiency and implications. Section 2.4 outlines various literature on the perception and definition of earnings.

2.1 Market Efficiency

The EMH, also referred to as the efficiency market model, is a key concept in the field of finance (Dimson & Mussavian, 2000). The development of interest and acceptance of the EMH began in the 1950s and 1960s. This was as a result of the development of the random walk theory in the field of finance and the rational expectations theory in the field of economics (Jensen, 1978). However, it was not until the influential review of Eugene Fama's *Efficient Capital Markets: A Review of Theory and Empirical Work* published in 1970 that the EMH gained prominence (Pesaran, 2005).

The concept of market efficiency is focussed on information. The extent to which relevant information is reflected in security prices reflects the state of the efficiency of a market (Timmermann & Granger, 2004). Fama (1970) developed three categories of market efficiency: weak form, semi-strong form and strong form.

A market with the weak form of market efficiency is defined as one in which security prices reflect only past information (Pesaran 2005). Therefore, in the weak form, future prices cannot be predicted from prior prices, and thus, consistent abnormal profits cannot be earned (Aguila, 2009).

The semi-strong form of efficiency is one where the security prices reflect all publicly available information and past information (Pesaran 2005). This implies that trading on public information such as analyst reports is not profitable (Aguila, 2009).

The strong form of market efficiency refers to a market where past public and private information is incorporated into the security price. An investor therefore will not be able to make abnormal profits even where he/she is privy to private information as this would have already been incorporated into the price (Pesaran 2005).

For the strong form to exist, it is presumed that any costs incurred such as transactional costs as well as costs to obtain the information are nil. However, it is claimed that the existence of the strong form of a market is contested by some. Doukas et al. (2002) stipulates that proponents of a market inefficiency paradigm propose that market efficiency should be framed as a continuum as opposed to an absolute. Jensen (1978) postulates that the strong form of EMH is an extreme paradigm for which there is little evidence to support its occurrence. Jensen (1978) further argues that the semi-strong form of the EMH is a more acceptable paradigm.

2.2 Market Inefficiency

The use of companies' earnings aids in accepting or refuting the EMH theory via the existence of anomalies such as the post-earnings announcement drift (PEAD). The PEAD refers to the persistence of abnormal price reactions several days after the earnings announcement (Bernard & Thomas, 1990). Hence, stock prices continue to move in a direction consistent with a reported year-on-year change. The PEAD effect is also referred to as the standardized unexpected earnings effect (Brown, 1997)

2.3 Earnings

Earnings are a source of vital information on which investors make decisions. Lev (1989) states that various equity valuation models base the final decision on expected earnings. In addition, management decisions and compensation are made based on earnings projections and the ability of the management to meet the forecasted earnings (Lev, 1989).

The use of earnings as a means to project a company's future growth still remains a contentious issue. Ball and Shivakumar (2008) argue that earnings are not timely, i.e. earnings are not relayed as frequently as the stock market prices. In addition, they state that earnings are not relevant because investors can rely on a plethora of other more timely information, including macro-economic and company-specific information.

Earnings are an account of past events and therefore are more useful for management to use as a way to evaluate the performance of a company against previously set objectives (Ball & Shivakumar, 2008). Watts and Zimmerman (1990) agree stating that in addition to determining bonuses to be issued to the management, earnings are used for contractual purposes, for example, for determining debt obligations. This is in contrast to share prices that convey investors' expectations (Ball & Shivakumar, 2008).

Beaver (1968) contends that the view that earnings do not have informational value is compelling but not necessarily true. Informational value is defined as having the ability to change an investor's belief about his or her expectations (Landsman & Maydew, 2002). Beaver (1968) stipulates that it is commonly opined that earnings have such considerable errors that it would be better to use other variables to determine the value of stock. It is also stated that another common argument is that despite earnings conveying information, investors have access to other sources that have already been assimilated into the stock market price by the time of earnings announcements.

Contrary to these explanations, Beaver (1968) finds that the volume and price of shares move dramatically when earnings are reported and that news announcements occurring prior to the earnings report do not pre-empt the content. This therefore implies that earnings have informational value.

Landsman and Maydew (2002) argue that despite the advent of information technology earnings, reports are as useful in the present time as they were three decades ago when the concept of the usefulness of earnings was introduced.

Information technology has introduced the ability to disseminate information faster to a large populace in a short time with minimal costs. Barely any cost is incurred to obtain information through the Internet, e.g. via social media or company's websites.

Nonetheless Landsman and Maydew (2002) contend that as opposed to the alleged waning of the use of earnings as an information source, investors presently rely more on earnings as a means of predicting a company's future cashflows. Therefore, the importance of earnings as a source of a company's financial status does not wane with the advent of technology, but rather it increases.

It could be argued that the confidence in the relevance of earnings could be attributed to an increased application of accounting principles and validation by auditors. However, Hodge (2003) states that investors' perception of earnings quality, as well as auditor independence, has decreased over time. Conversely, the perceived relevance of audited financial reports has increased over time. This seems to imply that the low perceptions of investors motivate them to critically analyse the reports or the critical analysis of financial information causes the investors to perceive the financial information as being of low quality.

Hunt (2001) states that a perturbing trend of decline in the integrity of financial information, specifically revenue recognition and asset valuation, is ongoing. According to Hunt (2001), it was found that senior management recognized revenues too early, recorded fictitious sales, improperly adjusted revenues or did not record

expenses. In addition, companies overvalued assets, failed to recognize liabilities and improperly capitalized expenses.

Therefore, it could be said that the integrity of senior management impacts the quality of earnings reported to shareholders. Senior management act as agents of a shareholder and is expected to make decisions that add value to the shareholder, thereby increasing the usefulness of earnings.

According to Warfield, Wildand Wild (1995),the higher the percentage of ownership of a firm by senior management, the higher the probability that the earnings quality is high. When management has minimal ownership and contractual restrictions, the propensity to manipulate information such as accruals for its benefit significantly increases. Eisenhardt (1989) states that the application of agency loss principles, that is the compensation of the management, e.g. through the owning of shares, could contribute to increasing the quality of earnings.

The definition of earnings differs across countries. According to Barton, Hansen and Pownall (2010), there are about eight commonly used line items in financial statements to define earnings. These include operating cashflows; sales; earnings before interest, tax, depreciation and amortization ('EBITDA'); operating income; income before taxes; income before extraordinary items and discontinued operations; net income and total comprehensive income.

The view of the relevance of earnings is generally interpreted differently across countries. Barton, Hansen and Pownall (2010) state that investors tend to be biased towards the 'middle' of the income statement. They would perceive items such as sales and total comprehensive income to be the least relevant. Line items such as operating income and EBITDA are nonetheless considered to be in the 'middle' and more relevant. There is no single performance measure that is considered to be the best, rather investors value information that includes key operations of the business and omit extraordinary activities such as the sale of assets and discontinued operations.

Another performance measure that is used is headline earnings. The requirement for listed companies in the 'JSE' to report headline earnings was introduced in December 2003 with an aim of providing users with a measure of a company's performance on its operations. About 95% of companies disclose headline earnings per share ('HEP'). The HEP is perceived to be a good measure of the company's maintainable earnings despite it being overstated (Stainbank&Harrod, 2007).

Ball & Brown (1968) and Litzenberger et al. (1977) agree that earnings are a relevant source of information, i.e. investors can generally rely on earnings as a means of projecting a company's future. Yet, they also postulate that the impact of the earnings announcement on the stock price is only modest. The element of earnings surprise, i.e. the information conveyed in earnings announcements, is not considered new to the public.

According to Litzenberger et al. (1977), only ten to fifteen percent of information contained in earnings announcements is considered a surprise by investors. This implies that only ten to fifteen percent of news in the earnings announcement was unanticipated. The stock price adjustment, leading to the event date, to the earnings announcement is thus gradual. This minimal element of earnings surprise is attributed to information that has been conveyed to the market via other sources such as interim reports. In addition, it is postulated that the minimal element of surprise could be as a result of adjustments occurring after the announcement (Litzenberger, et al., 1977).

Nonetheless, Sare, Akuoko & Esumanba (2013) stipulate that earnings announcements are an important aspect of relaying news. This research seeks to analyse investors' reactions to earnings announcements in view of the top 500 well-managed firms. In addition, the study shall analyse if stock price adjustments to information is gradual or dramatic. This will reveal the status of the efficiency of the JSE.

A strong efficient market should reflect information immediately in the stock price; the price movements thus should be dramatic and not gradual. This is consistent with the random walk hypothesis (Timmermann & Granger, 2004).

2.4 Chapter Summary

Chapter two outlined the literature review discussing theories relating to the EMH and the market's response to earnings announcements. The discussion of the response was contextualized within the context of the EMH. The EMH forms an underlying assumption for the research methodology applied, which is the event study.

CHAPTER 3. RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the research methodology, the research design, data to be analysed and the procedure that will be utilized to carry out the research study.

3.2 Research Methodology Paradigm

The research method chosen is an event study. This is a quantitative method. Event studies use financial data to measure the impact of a specific event on a firm. In this research, the event is the earnings announcements. This research intends to evaluate the impact of the earnings announcements on a firm's value by analysing the movement of share prices following the announcements. Furthermore, this analysis will assess the value investors have of earnings information (Mackinlay, 1997).

The methodology was brought into prominence by Fama, Fisher, Jensen and Roll (1969) who employed the method to determine the impact of information on stock splits. It is considered to be one of the most preferred statistical designs in the field of finance (Ball 2013). The event study methodology is a robust study owing to modified formulae arising out of contribution by researchers (Ball 2013). The event methodology's value is in its ability to accurately capture the impact on market values of firms rapidly. This is in contrast to direct productivity that requires a long period of observation. The immediacy of the impact of information on the security prices is based on the presumption of the EMH that strongly efficient markets reflect information immediately in the security prices (Landsman & Maydew, 2002; Lev & Zarowin, 1999).

3.3 Research Design

A key aspect when performing the event study is to obtain abnormal returns. To compute abnormal returns, expected returns and actual returns are required. The expected return can be calculated using either economical or statistical methods (Mackinlay, 1997).

The capital asset pricing model is one of the commonly used economical methods developed by Sharpe (1964) (Fama 1968). It is based on equilibrium theory where the expected return is measured by its covariance with the market portfolio. Another economical method is the arbitrage pricing theory. This study utilizes a statistical approach referred to as the market risk-adjusted return model.

In addition to abnormal return, it is vital that the event date is clearly defined (Mackinlay, 1997). Henderson Jr. (1990) further points out that an exhaustive search regarding event dates is necessary given that determining the earliest date of the release of information is key to determining its impact in a market. The event date also determines the estimation window, event window and post-event window. The event date is the point of interest around which security prices shall be examined prior to and after the earnings announcement is presented to the public. The estimation window is the period that is used to compute the normal or expected returns against which the abnormal returns shall be deducted (Henderson Jr. 1990).

The delineation of the event date is followed by the estimation of the expected return. The market risk-adjusted model uses a market index as a proxy, prevailing security prices and employs the use of a regression analysis. Other methods include the control portfolio return method that uses an exclusive portfolio, typically an industry index (Henderson Jr, 1990).

3.4 Data and Data Sources

The population of the study include earnings announcement dates and companies' respective security prices. Only information falling within the sample period shall be analysed. Each announcement shall be categorized according to the deviation of the earnings surprise, i.e. the deviation of actual earnings from expected earnings (Mackinlay, 1997).

Data relating to earnings announcements shall be obtained using the INET BFA Expert and Bloomberg databases. The sample period chosen is from 1 January 2007 to 31 December 2013. A random sample of companies that are ranked in the top 500 well-managed companies shall be utilized. However, these shall be subject to meeting certain criteria. One such criterion is that a firm must be found on the Bloomberg terminal, INET BFA Expert and listed on the JSE.

The study seeks to analyse companies' stocks listed on the stock exchange that are actively traded by the general public.

3.5 Data Collection

Earnings announcement dates shall be obtained from the Bloomberg terminal, as well as JSE News Services. As the publication date of earnings may not be an immediate source of information, other sources of data such as company websites, integrated financial statements and the media shall also be considered.

This research utilizes daily stock returns. A 21-day event window is employed, with 10 pre-event days, 1 event day and 10 post-event days. The estimation window comprises a 252 trading day period prior to the event window.

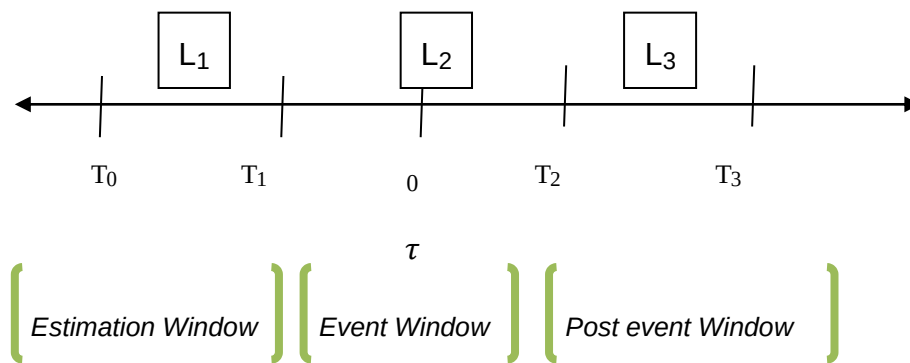
3.6 Data Analysis and Interpretation

The event study involves the computation of the abnormal return obtained by deducting the actual return from the expected return. The actual return can be computed as follows:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}. \quad (1)$$

Where R_{it} and R_{mt} are the returns on security i and a market, respectively. ε_{it} is the error term on which the abnormal return shall be calculated (Mackinlay, 1997).

The computation of the abnormal return is based on the event and estimation windows illustrated as follows:



t_0 is the event date. L_1 , L_2 and L_3 are the lengths of the estimation, event window and post-event window, respectively, which are as follows;

$$L_1 = T_1 - T_0,$$

$$L_2 = T_2 - T_1,$$

$$L_3 = T_3 - T_2.$$

The parameters α_i and β_i are computed as follows:

$$\beta_i = \frac{\sum_{\tau=T_0+1}^{T_1} (R_{i\tau} - \mu_i)(R_{m\tau} - \mu_m)}{\sum_{\tau=T_0+1}^{T_1} (R_{m\tau} - \mu_m)^2}, \quad (2)$$

$$\alpha_i = \mu_i - \beta_i \mu_m. \quad (3)$$

Where

$$\mu_i = \frac{1}{L_1} \sum_{\tau=T_0+1}^{T_1} R_{i\tau}, \quad (4)$$

$$\mu_m = \frac{1}{L_1} \sum_{\tau=T_0+1}^{T_1} R_{m\tau}. \quad (5)$$

$R_{i\tau}$ and $R_{m\tau}$ are the returns in the event period τ for security i and market, respectively.

The abnormal return is then computed as

$$AR_{i\tau} = R_{i\tau} - \alpha_i - \beta_i R_{m\tau}. \quad (6)$$

Where $AR_{i\tau}$ is the error term of the market risk-adjusted model.

The abnormal returns are then aggregated so as to draw a deduction. The aggregation is both across time and securities.

$$CAR(\tau_1, \tau_2) = \sum_{t=\tau_1}^{\tau_2} AR_{it}. \quad (7)$$

3.7 Limitations of the Study

This study proposes to analyse data on a daily basis. The time interval may be too short to capture the ‘true’ stock price (Binder 1998).

3.8 Validity and Reliability

According to Henderson (1990), the market risk-adjusted model is dominant in event study literature. It uses the ordinary least squares approach. It removes the portion of the return that is related to variation in the market’s return, thereby reducing the variance of the abnormal return. This enables the model to be reliable with regard to detecting event effects (Mackinlay, 1997).

CHAPTER 4. PRESENTATION OF THE RESULTS

Earnings announcements are considered as a vital source of information by investors. Earnings are used as a standard measure of a company's performance. In addition, they act as indicators of a company's ability to perform profitably in future. They are recognized as a yardstick against which profitability and wealth of companies are measured.

4.1 Introduction

This chapter explores the impact of earnings surprise for companies regarded as well managed and ranked in the top 500 firms in South Africa (Topco, 2014).

Presented in this chapter are the findings for each event and company that illustrate the reaction of investors following the earnings announcements.

Similarly, findings examining evidence of the PEAD and efficiency of the JSE via the analysis of abnormal and cumulated abnormal returns are illustrated.

4.2 Results Pertaining to the Reaction of Investors to Earnings Announcements

4.2.1 Description of Statistics

Tables 1–31 present a sample of companies ranked in the top 500 firms (Topco, 2014). Topco (2014) considers these as companies that illustrate superior management practices. The sample distribution includes 25% in the financial services sector, 17% in construction and engineering sector and 8% in each of the pharmaceuticals, precious metals and minerals, media, hotel, airline, food products and industry conglomerate sectors.

The tables also illustrate the expected return computed using the market model. This is followed by the abnormal return, cumulated abnormal return (CAR) which comprises of a summation of the abnormal returns and analysis of events of statistical significance at the 10% level, a t-statistic of 1.8.

Table A

Event schedule showing events meeting the T-statistic threshold of 1.8 or 10%

	Companies	Ticker Symbol	Sub-Industry	Sector	T-value	Rank per topco	CAR	Year
1	Aveng Trident Steel (Pty) Ltd	AEG	Construction & Engineering	Industrials	1.91072	3/7	0.23304	2009
		AEG			-2.13794		-0.01773	2011
		AEG			-1.96290		-0.06639	2013
2	AVI Limited	AVI	Packaged Foods & Meats	Consumer Staples	2.43056	3/5	0.04673	2008
3	Aspen Pharmcare	APN	Pharmaceuticals	Health Care	-2.95513	1/7	0.03566	2008
		APN			-3.59737		-0.04557	2008
		APN			2.56337		0.07436	2013
4	Bidvest Group	BVT	Industrial Conglomerates	Industrials	-2.02265	2/5	-0.07756	2009
		BVT			2.05700		-0.00613	2011
		BVT			2.39496		-0.01368	2013
5	Capitec Bank Holdings	CPI	Diversified Banks	Financials	-3.09133	3/5	-0.13142	2008
		CPI			-1.87520		0.10026	2011
		CPI			2.60884		0.12881	2013
6	Discovery Limited	DSY	Life & Health Insurance	Financials	2.43302	1/6	0.00387	2007
		DSY			4.66946		0.05723	2008
		DSY			2.11942		0.14684	2008
		DSY			1.95044		-0.03001	2009

Table A
Event schedule showing events meeting the T-statistic threshold of 1.8 or 10%

	Companies	Ticker Symbol	Sub-Industry	Sector	T-value	Rank per topco	CAR	Year
		DSY			3.00462		0.05361	2011
		DSY			-3.73499		-0.12871	2012
		DSY			4.26529		0.17980	2013
		DSY			1.88843		-0.13808	2013
7	FirstRand Limited	FSR	Other Diversified Financial Services	Financials	2.06302	1/5	-0.01906	2011
		FSR			2.08834		-0.00785	2013
8	Impala Platinum	IMP	Precious Metals & Minerals	Materials	-1.85233	2/6	-0.03733	2007
		IMP			2.91025		0.15106	2007
		IMP			-2.08098		-0.03700	2012
9	Murray & Roberts	MUR	Construction & Engineering	Industrials	1.80830	4/8	0.14011	2008
		MUR			-1.85307		0.14903	2013
10	Naspers Limited	NPN	Cable & Satellite	Consumer Discretionary	-2.17948	1/5	0.09111	2007
		NPN			3.24834		0.03989	2008
		NPN			-2.17948		0.09111	2013

Table1 Analysis of returns, Event 6

Companies on the JSE	Ticker Symbol	Sub-Industry	Sector	Expected Return R_{it}	Abnormal Returns (AR)	Cumulated Abnormal Returns (CAR)	T-test	Event Window	Event Number
Statistical Results									
Aveng Trident Steel (Pty) Ltd	AEG	Construction& Engineering	Industrials						
				-0.003821	-0.004222	-0.004222	-0.134927	-10	
				-0.005481	0.024400	0.020178	0.779725	-9	
				0.007428	0.029707	0.049885	0.949309	-8	
				-0.012201	0.065909	0.115794	2.106163	-7	
				-0.005441	-0.023928	0.091867	-0.764622	-6	
				-0.011114	-0.038649	0.053218	-1.235046	-5	
				0.001840	-0.000787	0.052430	-0.025164	-4	
				0.002160	0.023077	0.075507	0.737429	-3	
				0.009496	-0.014625	0.060882	-0.467338	-2	
				0.005958	-0.020134	0.040749	-0.643378	-1	
				-0.006199	0.059793	0.100542	1.910724	0	6
				0.006810	0.032893	0.133435	1.051098	1	
				0.007490	0.047403	0.180838	1.514789	2	
				-0.015216	-0.029806	0.151031	-0.952482	3	
				0.000584	0.006287	0.157318	0.200899	4	
				0.011365	0.035694	0.193012	1.140608	5	
				0.010524	0.045655	0.238667	1.458939	6	
				-0.005674	-0.015815	0.222852	-0.505378	7	
				-0.016748	-0.033045	0.189807	-1.055971	8	
				0.002738	0.044173	0.233980	1.411568	9	
				-0.004521	-0.000943	0.233036	-0.030148	10	

Table 2 Analysis of returns, Event 9

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Aveng Trident Steel (Pty) Ltd	AEG	Construction& Engineering	Industrials						
				0.004848	0.006487	0.006487	0.449898	-10	
				-0.004219	-0.010544	-0.004056	-0.731217	-9	
				-0.001773	0.014536	0.010480	1.008119	-8	
				0.006063	-0.010173	0.000307	-0.705478	-7	
				-0.000660	-0.001541	-0.001233	-0.106860	-6	
				-0.001100	0.007441	0.006208	0.516046	-5	
				-0.008473	0.035870	0.042077	2.487626	-4	
				-0.000560	0.007226	0.049304	0.501148	-3	
				-0.016400	0.008453	0.057757	0.586225	-2	
				0.004467	-0.016483	0.041273	-1.143137	-1	
				-0.005659	-0.030828	0.010446	-2.137942	0	9
				-0.012659	0.009293	0.019739	0.644512	1	
				0.007202	-0.029156	-0.009416	-2.021984	2	
				0.001474	-0.005503	-0.014919	-0.381616	3	
				-0.001182	0.023430	0.008510	1.624872	4	
				0.002999	-0.015718	-0.007207	-1.090059	5	
				0.005764	0.001680	-0.005528	0.116503	6	
				0.007194	-0.012593	-0.018121	-0.873352	7	
				-0.001340	0.015625	-0.002495	1.083645	8	
				-0.004254	-0.016873	-0.019368	-1.170133	9	
				0.005551	0.001643	-0.017725	0.113930	10	

Table 3 Analysis of returns, Event 3

Companies on the JSE	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Statistical Results									
AVI Limited	AVI	Packaged Foods	Consumer Staples						
				0.010502	0.028046	0.028046	1.551612	-10	
				-0.005943	0.005962	0.034008	0.329850	-9	
				-0.001253	-0.007277	0.026731	-0.402576	-8	
				0.007052	-0.010912	0.015819	-0.603706	-7	
				-0.004449	-0.033860	-0.018041	-1.873305	-6	
				0.001031	-0.013255	-0.031296	-0.733315	-5	
				0.007333	0.015783	-0.015513	0.873214	-4	
				-0.001341	0.025364	0.009851	1.403246	-3	
				0.003259	-0.009000	0.000851	-0.497942	-2	
				-0.006322	0.013286	0.014137	0.735054	-1	
				0.008051	0.043933	0.058070	2.430564	0	3
				-0.006231	0.005362	0.063432	0.296625	1	
				-0.010038	-0.010038	0.053393	-0.555358	2	
				0.000866	-0.029998	0.023395	-1.659640	3	
				0.007166	-0.017385	0.006010	-0.961795	4	
				-0.006950	0.017597	0.023608	0.973557	5	
				0.004680	-0.001312	0.022296	-0.072575	6	
				-0.011883	0.035169	0.057465	1.945694	7	
				0.001162	-0.005713	0.051752	-0.316053	8	
				-0.009174	-0.002346	0.049406	-0.129774	9	
				-0.018298	-0.002673	0.046733	-0.147886	10	

Table 4 Analysis of returns, Event 3

Companies on the JSE	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Statistical Results									
Aspen Pharmcare	APN	Pharmaceuticals	Health Care						
				-0.005778	0.023322	0.023322	1.355869	-10	
				0.015325	0.001917	0.025239	0.111436	-9	
				-0.001957	0.066366	0.091605	3.858353	-8	
				0.008105	-0.052693	0.038912	-3.063436	-7	
				-0.009104	0.012438	0.051349	0.723095	-6	
				0.007697	0.022203	0.073552	1.290816	-5	
				0.008218	-0.001765	0.071787	-0.102607	-4	
				-0.001899	0.015361	0.087148	0.893050	-3	
				0.010238	0.017590	0.104738	1.022630	-2	
				-0.005706	0.011861	0.116600	0.689591	-1	
				-0.001159	-0.050830	0.065770	-2.955132	0	3
				0.006893	0.012784	0.078553	0.743210	1	
				-0.004258	0.005526	0.084079	0.321259	2	
				0.001055	-0.002637	0.081442	-0.153312	3	
				0.007166	-0.032481	0.048961	-1.888351	4	
				-0.001244	-0.008498	0.040463	-0.494056	5	
				0.003216	-0.016330	0.024133	-0.949361	6	
				-0.006074	0.009397	0.033530	0.546298	7	
				0.007862	0.018297	0.051827	1.063729	8	
				-0.005986	-0.029188	0.022639	-1.696934	9	
				-0.009677	0.013023	0.035661	0.757097	10	

Table 5 Analysis of returns, Event 4

Companies on the JSE	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Statistical Results									
Aspen Pharmcare	APN	Pharmaceuticals	Health Care						
				-0.000977	0.003161	0.003161	0.159675	-10	
				-0.002619	0.004361	0.007522	0.220327	-9	
				-0.004602	-0.049553	-0.042031	-2.503444	-8	
				-0.011440	0.011669	-0.030362	0.589519	-7	
				0.013975	-0.002481	-0.032843	-0.125355	-6	
				-0.013675	0.014813	-0.018030	0.748377	-5	
				-0.000066	0.023902	0.005872	1.207538	-4	
				0.005177	-0.034001	-0.028130	-1.717777	-3	
				0.010436	-0.028703	-0.056832	-1.450077	-2	
				-0.007359	0.024801	-0.032031	1.252976	-1	
				-0.009936	-0.071206	-0.103237	-3.597368	0	4
				-0.010091	-0.022246	-0.125483	-1.123905	1	
				-0.003198	0.029161	-0.096322	1.473255	2	
				0.023027	-0.009497	-0.105819	-0.479788	3	
				0.008643	0.033385	-0.072433	1.686656	4	
				-0.014700	0.001886	-0.070547	0.095288	5	
				0.000911	0.018317	-0.052230	0.925376	6	
				-0.006498	-0.040896	-0.093127	-2.066113	7	
				-0.022991	-0.021564	-0.114691	-1.089455	8	
				0.014013	0.087022	-0.027669	4.396450	9	
				-0.007982	-0.017899	-0.045567	-0.904260	10	

Table6 Analysis of returns, Event 3

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Discovery Limited	DSY	Insurance	Financials						
				0.015240	-0.015240	-0.015240	-1.004948	-10	
				-0.002479	-0.002499	-0.017738	-0.164764	-9	
				0.007837	0.028088	0.010350	1.852229	-8	
				-0.009807	0.019903	0.030253	1.312474	-7	
				0.007419	0.052990	0.083243	3.494297	-6	
				0.007953	-0.003855	0.079388	-0.254193	-5	
				-0.002419	-0.034315	0.045073	-2.262853	-4	
				0.010025	-0.010025	0.035048	-0.661068	-3	
				-0.006323	-0.009355	0.025693	-0.616877	-2	
				-0.001661	0.030503	0.056196	2.011435	-1	
				0.006595	0.070811	0.127007	4.669464	0	3
				-0.004838	0.022314	0.149320	1.471428	1	
				0.000609	0.029925	0.179245	1.973337	2	
				0.006874	0.007940	0.187186	0.523615	3	
				-0.001748	0.007223	0.194408	0.476283	4	
				0.002824	-0.026418	0.167991	-1.742065	5	
				-0.006700	-0.019322	0.148668	-1.274170	6	
				0.007588	-0.045756	0.102912	-3.017277	7	
				-0.006610	-0.041009	0.061903	-2.704271	8	
				-0.010395	-0.000022	0.061881	-0.001441	9	
				0.000445	-0.004656	0.057225	-0.307026	10	

Table7 Analysis of returns, Event 13

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Discovery Limited	DSY	Insurance	Financials						
				0.002632	-0.004053	-0.004053	-0.426682	-10	
				0.003419	-0.001996	-0.006049	-0.210168	-9	
				0.000168	-0.003325	-0.009375	-0.350050	-8	
				-0.000742	0.023386	0.014012	2.461990	-7	
				0.002288	-0.004920	0.009091	-0.517989	-6	
				-0.000034	0.006865	0.015956	0.722686	-5	
				0.000272	0.011602	0.027558	1.221377	-4	
				-0.001207	-0.003669	0.023889	-0.386305	-3	
				0.003708	-0.002176	0.021712	-0.229111	-2	
				-0.002915	0.002915	0.024627	0.306888	-1	
				-0.008711	0.040516	0.065143	4.265294	0	13
				0.000763	0.015835	0.080978	1.667022	1	
				0.002607	0.019259	0.100237	2.027476	2	
				-0.001915	0.010474	0.110711	1.102623	3	
				-0.002881	0.029472	0.140183	3.102677	4	
				0.006600	0.028120	0.168303	2.960380	5	
				0.006424	0.025666	0.193970	2.702024	6	
				-0.002799	-0.030100	0.163870	-3.168737	7	
				0.009971	-0.009438	0.154432	-0.993541	8	
				-0.000459	0.009793	0.164225	1.030915	9	
				0.004509	0.015570	0.179795	1.639161	10	

Table 8 Analysis of returns, Event 14

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Discovery Limited	DSY	Insurance	Financials						
				-0.001706	0.002754	0.002754	0.192295	-10	
				0.001451	-0.003545	-0.000791	-0.247494	-9	
				0.006759	0.005833	0.005042	0.407244	-8	
				0.001106	0.009775	0.014817	0.682487	-7	
				0.007633	0.000158	0.014975	0.011038	-6	
				-0.002763	-0.030398	-0.015422	-2.122332	-5	
				-0.014443	-0.076456	-0.091879	-5.338130	-4	
				0.004001	-0.051565	-0.143443	-3.600220	-3	
				-0.002709	0.031020	-0.112423	2.165798	-2	
				0.011998	-0.015897	-0.128321	-1.109931	-1	
				0.004981	0.027047	-0.101273	1.888428	0	14
				-0.006160	-0.034070	-0.135343	-2.378718	1	
				0.007256	0.016097	-0.119246	1.123874	2	
				0.002353	0.001158	-0.118088	0.080869	3	
				0.000094	0.014716	-0.103372	1.027462	4	
				0.017671	0.004968	-0.098404	0.346831	5	
				-0.001077	-0.008250	-0.106654	-0.575990	6	
				0.008339	-0.019228	-0.125882	-1.342501	7	
				-0.001536	-0.000872	-0.126754	-0.060892	8	
				0.001352	-0.016067	-0.142821	-1.121755	9	
				0.004940	0.004743	-0.138077	0.331176	10	

From a total of 168 events, 31 were observed to be of statistical significance, attaining the threshold of 10% or a t-statistic of at least 1.8. Table A is an illustration of the summary of these events. Tables 1, 2, 4, 5, 6, 15, 19 and 20 illustrate the results within a 21-day event window for some of the companies sampled.

The impact of earnings announcements on investors was observed to have a statistical significance in 31 observable instances. It was observed that 16 of the cumulative average returns were positive, while 15 were negative, where the most significant negative cumulative return was 13.8% and positive return was 23.3%. The event, earnings announcements, therefore has an impact on the reaction to investors on the JSE.

4.3 Results Pertaining to the Existence of Post-Earnings Announcement Drift and Efficiency of the JSE

Charts 1–31 lay out the abnormal return and cumulative abnormal returns across the statistically significant event observations. From the 168 events, 31 (12 firms, 14 announcements per firm from 1 January 2007 to 31 December 2013) were considered as meeting the threshold.

Chart 15 Returns analysis

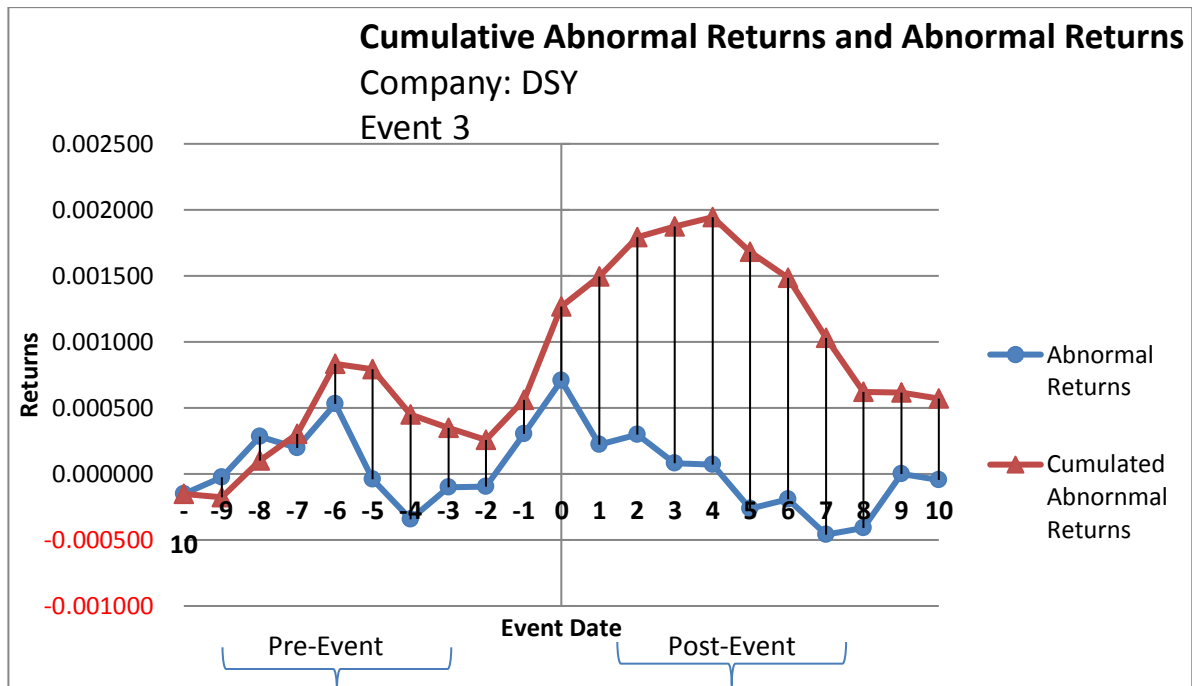
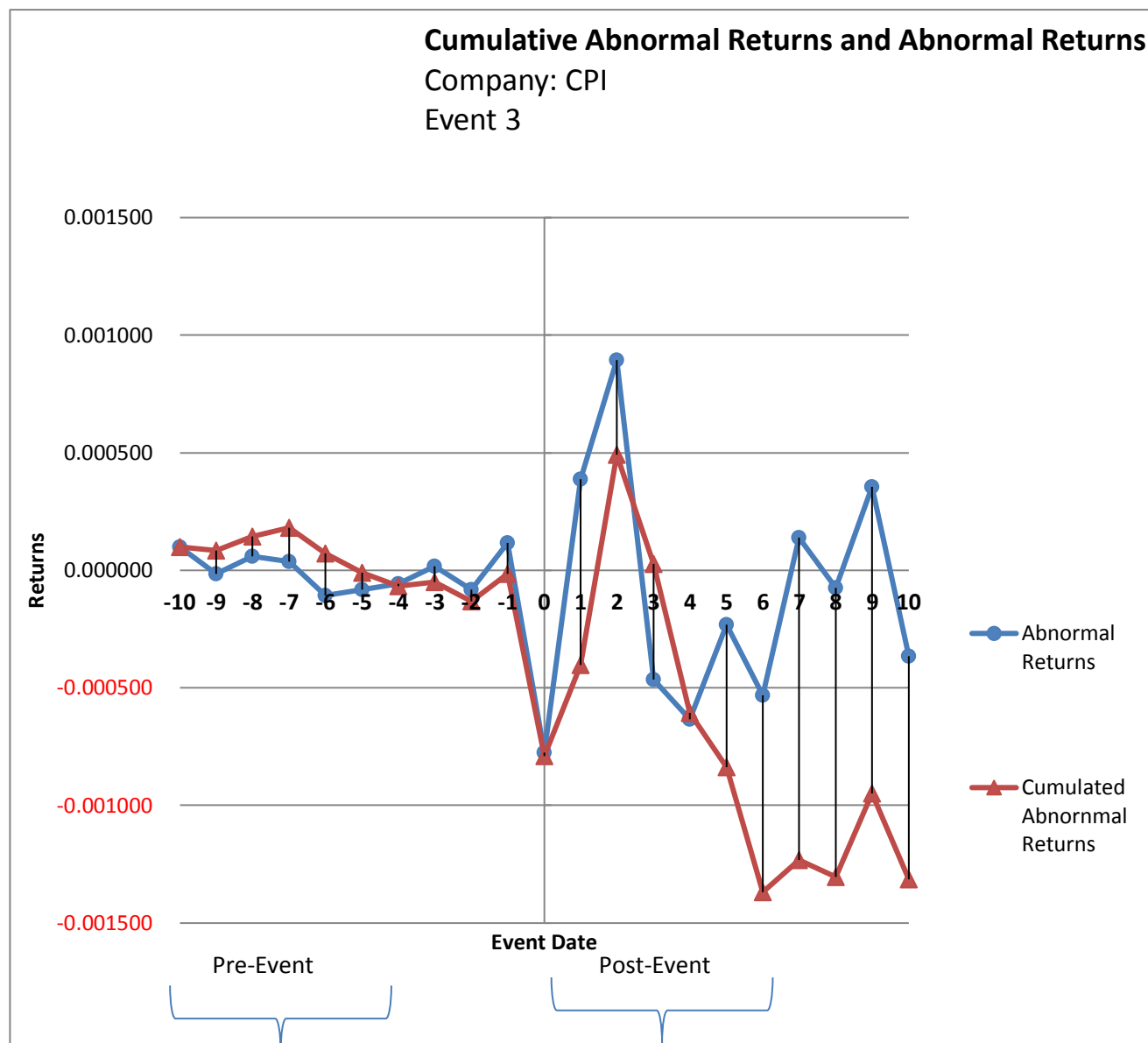


Chart 11 Returns analysis



Charts 1–31, as shown in appendix B, illustrate the returns of securities in a 21-day event window for each of the companies' 31 events. The impact of the event is observed as significant as evidenced by the t-statistic values ranging from 1.87 to 4.66. It was observed that the highest t-statistic was in the financial services sector. Similarly, the highest instances of significance were also observed to be in the financial services sector.

In addition, the findings portray significant t-statistics up to 8 days prior to the event and 9 days post the event. The PEAD therefore exists on the JSE. This reveals the absence of a strong form of efficiency which postulates that all public and private information is absorbed by the market immediately and reflected in the security market prices.

4.4 Summary of the Results

It can be inferred from the findings that the investors do react to earnings surprise. However, the findings show reactions not only on the event day but also prior and post the event dates. There is a possibility that not all public and private information is made available on the event day.

In addition, although information may be released to the public at a specified time, it is possible that not all investors have access to the information at that specific time, resulting in reactions that are spread across the event window T_2 to T_1 .

CHAPTER 5. DISCUSSION OF THE RESULTS

5.3 Introduction

This chapter investigates the findings pertaining to the impact of the event day on investors and the form of the efficiency of the JSE.

5.4 Discussion Pertaining to the Reaction of Investors to Earnings Announcements

Table 1 illustrates a significant impact on investors at a t-statistic of 1.91 based on the significance threshold of 1.8. The table also illustrates event 6 for the company AEG and lays out the positive cumulative abnormal returns and abnormal returns of 10.05% and 5.97%, respectively. These returns are similar to those of event 9, as illustrated in table 2, reflecting cumulative abnormal returns and abnormal returns of 10.06% and 3.08%, respectively. However, the t-statistic pertaining to event 9 is 2.13. The event day had impact on the investors in both instances. However, the higher statistically significant figure of 2.13 suggests a higher expectation of return by investors. The cumulative abnormal returns for event 6 in comparison to event 9 reflect higher instances of positive returns. There were 9 instances for event 6 in comparison to 4 for event 9. Therefore, similar returns for different events have varied impact on investors as this is dependent on the returns the investors expect. This implies that positive returns released on the event day may not necessarily be a surprise to investors.

This finding supports Litzenberger et al. (1977) that there is a minimal surprise element in earnings announcements as the information may have already been conveyed to the market via other sources.

Tables 4, 5 and 6 reflect t-statistics of 2.95, 3.59 and 2.56 for event days 3, 4 and 12, respectively. The events not only surpass the threshold of 10%, a t-statistic of 1.8 but also of 5%, a t-statistic of 2.5. This indicates a strong statistical significance for Aspen Pharmcare.

The cumulative abnormal returns on the event day were 6.57%, -10.3% and 5.95% respectively. It is observed that the highest significance corresponds to negative cumulative abnormal returns. Similarly, the cumulative abnormal return for event day 5, illustrated in table 6, was -4.5%. It was also noted that this event occurred in the year 2008. It can be inferred that the economic situation of the country may have had a significant impact on the returns expected by investors. This implies that investors are not only influenced by the earnings surprise. Their frame of reference also affects their expectation for returns. Aguila (2009) posits the view that investors are exclusively influenced by not only objective metrics but also behavioural factors such as frame dependencesuch as perceived economic strength of a country.

Tables 15, 19 and 20 lay out the highest t-statistics in the samples of 4.66, 3.73 and 4.26. The corresponding CARs are 12.7%, -4.8% and 6.5%, respectively. These pertain to the company Discovery limited. It is also noted that the highest instances of statistical significance related to Discovery Limited numbering 8 compared to an average of 3 for other companies within the sample. It is also ranked first in its sector, financial services. It could be stated that expectations of returns by investors from such a company is high based on perceived high management expertise compared to other companies within the sample.

5.5 Discussion Pertaining to the Existence of Post–Earnings Announcement Drift and Efficiency of the JSE

Chart 11 illustrates the movement of both the abnormal returns and cumulative abnormal returns for Capitec Bank limited pertaining to event 3. It is observed that the graph illustrates returns that are concurrent prior to the event. At T_0 , the returns are similar, and the graph significantly diverges on day T_1 and T_2 , and subsequently, from T_4 , the CAR is negative, resulting in a total CAR of -13.14% at T_{10} . This implies that information is not assimilated by investors immediately, instead it is assimilated gradually. Similarly, graph 15 outlines CARs of significant t-statistics of 1.85 on day T_8 , 3.49 on day T_6 and 2.26 on day T_4 . Similarly, there are significant t-statistics on days T_2 , T_7 and T_8 of 1.97, 3.01 and 2.70, respectively.

Chart 15 shows positive abnormal returns of 0.257% 1 day prior to the event and 3.17% 1 day after the event. The graphs indicate the existence of drifts in the market, illustrating the existence of the PEAD. The PEAD is the tendency of cumulative abnormal returns to drift for several days following an earnings announcement (Bernard & Thomas, 1990).

5.6 Conclusion

Overall, it can be concluded that investors regard earnings information as vital in making decisions. However, the reaction of investors to the information released is dependent on their expectations. These expectations are moulded by frame dependence, including perceived expectations of the economy and of the management expertise.

In addition, investors may not respond immediately to earnings information released despite the advent of technology. Landsman and Maydew (2002) contend that the advent of technology does not invalidate investors' reliance on other sources of

information. Investors therefore assimilate information gradually, illustrating that the JSE does not exhibit the strong form of the EMH.

CHAPTER 6. CONCLUSIONS & RECOMMENDATIONS

6.3 Introduction

This chapter lays out the conclusion of the findings and areas of further research.

6.4 Conclusions of the Study

The field of finance upholds the notion that the market is rational. The EMH advocates that all information, both public and private, is reflected in market share prices immediately. Investors are also presumed to make rational decisions based on risk and reward and are not influenced by other factors pertaining to frame dependence such as the perceived expertise of management and the state of an economy. However, African stock exchanges have been observed to display the weak form of efficiency based on information inefficiency.

The findings in this report illustrate that the event day does elicit reaction from investors. Nevertheless, the existence of frame dependence in the JSE illustrates that other factors influence how investors react to the earnings surprise. In addition, the presence of the PEAD shows that the JSE exhibits the semi-strong form of efficiency. This study therefore supports the view that African stock markets do not portray the strong form of the efficient market (Dickinson & Muragu, 1994; Laurence, 1986; Mlonzi, Kruger, & Nthoesane, 2011; Sui Suyin, 2007).

6.5 Recommendations

Key stakeholders need to be aware of policy decisions made and their impact prior to ratifying their decisions. The existence of frame dependence illustrates that economic policies impact investors' choice to invest in the JSE and hence impact the overall liquidity of the stock exchange.

6.6 Suggestions for Further Research

This study analysed the impact of earnings information on investors pertaining to companies perceived as being well managed. In addition, the study illustrated the existence of the PEAD anomaly categorizing the JSE as having the semi-strong form of efficiency.

Further research can be done to compare the impact of earnings surprise for companies that are transferred to the main bourse from the AltX. The analysis could reveal the perceived strength of management as a company evolves and develops in wealth and profitability.

In addition, the existence of other behavioural factors such as heuristics may be investigated by analysing abnormal returns pertaining to companies that have encountered significant changes, such as the disposal of a division or mergers and acquisitions.

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APPENDIX A

Table 9 Analysis of returns, Event 14

Companies on the JSE	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Statistical Results									
Aveng Trident Steel (Pty) Ltd	AEG	Construction& Engineering	Industrials						
				-0.003720	0.000057	0.000057	0.002863	-10	
				-0.011464	-0.016110	-0.016053	-0.813177	-9	
				0.000765	0.004907	-0.011147	0.247664	-8	
				-0.003684	0.027744	0.016597	1.400429	-7	
				0.006066	-0.005699	0.010898	-0.287681	-6	
				0.001414	0.059136	0.070034	2.984983	-5	
				-0.005972	0.014623	0.084657	0.738100	-4	
				0.002923	0.002223	0.086880	0.112205	-3	
				-0.000328	0.010567	0.097447	0.533394	-2	
				-0.001825	-0.009999	0.087448	-0.504714	-1	
				0.009828	-0.038887	0.048561	-1.962900	0	14
				-0.002602	-0.043173	0.005388	-2.179200	1	
				0.003641	-0.007331	-0.001943	-0.370025	2	
				-0.002906	-0.008205	-0.010147	-0.414145	3	
				-0.000991	-0.017735	-0.027882	-0.895207	4	
				0.001387	-0.003678	-0.031560	-0.185630	5	
				-0.006167	-0.018316	-0.049876	-0.924532	6	
				0.011793	-0.037283	-0.087159	-1.881911	7	
				-0.003667	0.017752	-0.069407	0.896041	8	
				-0.001912	-0.006024	-0.075432	-0.304082	9	
				0.004963	0.009037	-0.066394	0.456167	10	

Table 10 Analysis of Returns, Event 14

Companies on the JSE	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Statistical Results									
Aspen Pharmcare	APN	Pharmaceuticals	Health Care						
				-0.017032	-0.016140	-0.016140	-0.940234	-10	
				0.004384	-0.007691	-0.023832	-0.448035	-9	
				-0.003407	0.047611	0.023779	2.773495	-8	
				0.013669	-0.014898	0.008882	-0.867850	-7	
				0.005522	-0.020668	-0.011787	-1.203980	-6	
				-0.007415	-0.000469	-0.012255	-0.027305	-5	
				0.008164	0.003560	-0.008695	0.207397	-4	
				0.002470	0.023281	0.014586	1.356219	-3	
				-0.000152	0.004378	0.018965	0.255046	-2	
				0.020256	-0.003424	0.015541	-0.199430	-1	
				-0.001513	0.044004	0.059545	2.563374	0	14
				0.009421	0.028234	0.087779	1.644705	1	
				-0.002046	0.020985	0.108764	1.222444	2	
				0.001308	0.007986	0.116749	0.465185	3	
				0.005475	-0.007242	0.109507	-0.421897	4	
				-0.007757	-0.019953	0.089554	-1.162338	5	
				0.023698	-0.025443	0.064110	-1.482164	6	
				-0.003378	0.016493	0.080604	0.960788	7	
				-0.000305	0.012725	0.093328	0.741261	8	
				0.011736	-0.008363	0.084965	-0.487197	9	
				-0.000918	-0.010607	0.074358	-0.617894	10	

Table 11 Analysis of returns, Event 6

Companies on the JSE	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Statistical Results									
Bidvest Group	BVT	Conglomerates	Industrials						
				-0.007476	-0.001050	-0.001050	-0.046133	-10	
				-0.009653	-0.018903	-0.019953	-0.830612	-9	
				-0.002334	-0.014277	-0.034230	-0.627352	-8	
				0.003730	-0.014731	-0.048960	-0.647297	-7	
				-0.019560	-0.006957	-0.055917	-0.305694	-6	
				-0.003199	0.011971	-0.043946	0.526030	-5	
				-0.014514	-0.024389	-0.068335	-1.071679	-4	
				0.000572	0.049904	-0.018431	2.192861	-3	
				0.006291	0.013655	-0.004775	0.600035	-2	
				-0.016654	-0.061124	-0.065899	-2.685871	-1	
				-0.002162	-0.046030	-0.111930	-2.022650	0	6
				-0.008370	0.014067	-0.097863	0.618127	1	
				0.012318	-0.005396	-0.103258	-0.237095	2	
				-0.001384	-0.004616	-0.107874	-0.202822	3	
				0.007773	-0.014313	-0.122187	-0.628932	4	
				-0.015521	-0.003466	-0.125653	-0.152285	5	
				0.015034	0.003546	-0.122106	0.155829	6	
				0.017888	0.007574	-0.114532	0.332828	7	
				0.001984	0.012346	-0.102186	0.542482	8	
				0.019292	0.015905	-0.086282	0.698878	9	
				-0.000489	0.008725	-0.077557	0.383374	10	

Table 12 Analysis of returns, Event 11

Companies on the JSE	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Statistical Results									
Bidvest Group	BVT	Conglomerates	Industrials	0.009471	0.029308	0.029308	2.688247	-10	
				-0.004218	-0.014992	0.014316	-1.375107	-9	
				0.005592	0.006355	0.020671	0.582926	-8	
				-0.023510	-0.028103	-0.007432	-2.577771	-7	
				0.002901	-0.003513	-0.010945	-0.322253	-6	
				0.001916	-0.000963	-0.011908	-0.088317	-5	
				-0.004363	-0.003457	-0.015365	-0.317128	-4	
				0.009971	0.007849	-0.007516	0.719970	-3	
				-0.006579	-0.027091	-0.034607	-2.484899	-2	
				0.002503	-0.002572	-0.037179	-0.235934	-1	
				0.024337	0.022426	-0.014753	2.057004	0	11
				0.002351	-0.002884	-0.017637	-0.264493	1	
				0.017522	0.027642	0.010005	2.535428	2	
				0.002575	0.036367	0.046372	3.335808	3	
				-0.014442	-0.029053	0.017319	-2.664853	4	
				-0.016356	-0.013467	0.003852	-1.235285	5	
				-0.009422	-0.016492	-0.012640	-1.512716	6	
				0.027582	0.037976	0.025337	3.483381	7	
				0.011138	-0.002285	0.023052	-0.209603	8	
				-0.012107	-0.019016	0.004035	-1.744273	9	
				-0.015182	-0.010165	-0.006130	-0.932401	10	

Table 13 Analysis of returns, Event 13

Companies on the JSE	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Statistical Results									
Bidvest Group	BVT	Conglomerates	Industrials						
				-0.004486	-0.008686	-0.008686	-0.784822	-10	
				0.005171	-0.002091	-0.010777	-0.188922	-9	
				-0.000155	0.006395	-0.004383	0.577752	-8	
				0.006839	-0.001656	-0.006038	-0.149578	-7	
				-0.005708	-0.020654	-0.026692	-1.866073	-6	
				-0.001933	-0.008115	-0.034807	-0.733156	-5	
				0.012035	-0.009235	-0.044042	-0.834367	-4	
				-0.006331	-0.006433	-0.050475	-0.581250	-3	
				0.007713	-0.000642	-0.051117	-0.057998	-2	
				-0.001078	0.008199	-0.042918	0.740813	-1	
				0.003768	0.026508	-0.016410	2.394963	0	13
				-0.003603	-0.006788	-0.023198	-0.613309	1	
				-0.000471	0.003158	-0.020040	0.285290	2	
				-0.013116	0.009170	-0.010870	0.828526	3	
				0.003125	-0.005522	-0.016392	-0.498870	4	
				0.003552	-0.003111	-0.019503	-0.281105	5	
				-0.009840	0.021649	0.002146	1.955986	6	
				-0.003222	-0.011161	-0.009015	-1.008394	7	
				0.020809	0.002627	-0.006388	0.237374	8	
				0.002699	-0.013501	-0.019889	-1.219809	9	
				-0.006450	0.006207	-0.013682	0.560815	10	

Table 14 Analysis of returns, Event 3

Companies on the JSE	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Statistical Results									
Capitec Bank Holdings	CPI	Banks	Financials						
				-0.009935	0.009935	0.009935	0.396241	-10	
				0.001702	-0.001436	0.008498	-0.057291	-9	
				-0.007518	0.005917	0.014416	0.236016	-8	
				-0.015657	0.003641	0.018056	0.145219	-7	
				0.011031	-0.010759	0.007297	-0.429132	-6	
				0.007940	-0.008212	-0.000915	-0.327544	-5	
				0.005809	-0.005809	-0.006724	-0.231691	-4	
				-0.001824	0.001824	-0.004900	0.072735	-3	
				-0.005263	-0.008249	-0.013150	-0.329029	-2	
				0.000630	0.011698	-0.001452	0.466577	-1	
				0.004436	-0.077506	-0.078957	-3.091327	0	3
				0.000723	0.038692	-0.040265	1.543236	1	
				0.005957	0.089549	0.049283	3.571667	2	
				0.008081	-0.046542	0.002741	-1.856354	3	
				-0.001993	-0.063342	-0.060601	-2.526414	4	
				0.007489	-0.023180	-0.083781	-0.924521	5	
				-0.001912	-0.053161	-0.136942	-2.120348	6	
				-0.001221	0.013797	-0.123145	0.550301	7	
				-0.004717	-0.007401	-0.130546	-0.295184	8	
				0.007071	0.035554	-0.094992	1.418075	9	
				0.007898	-0.036427	-0.131419	-1.452893	10	

Table 15 Analysis of returns, Event 9

Companies on the JSE	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Statistical Results									
Capitec Bank Holdings	CPI	Banks	Financials						
				-0.007173	-0.016882	-0.016882	-1.218182	-10	
				0.007434	0.070031	0.053149	5.053246	-9	
				0.003221	-0.006555	0.046594	-0.472962	-8	
				0.001268	0.011257	0.057851	0.812292	-7	
				0.004343	0.006020	0.063872	0.434400	-6	
				0.006376	-0.006376	0.057496	-0.460055	-5	
				0.007428	0.018214	0.075709	1.314238	-4	
				0.001152	0.008223	0.083933	0.593371	-3	
				-0.000991	0.047369	0.131302	3.418020	-2	
				0.006220	-0.000243	0.131058	-0.017563	-1	
				0.008929	-0.025988	0.105071	-1.875203	0	9
				0.000929	0.004456	0.109527	0.321564	1	
				0.004097	-0.008264	0.101263	-0.596316	2	
				0.002472	0.013726	0.114989	0.990464	3	
				0.004229	-0.007228	0.107761	-0.521554	4	
				0.005003	-0.006478	0.101283	-0.467466	5	
				-0.001318	-0.000159	0.101124	-0.011473	6	
				0.003965	-0.002604	0.098520	-0.187901	7	
				0.001916	-0.007176	0.091344	-0.517781	8	
				-0.005283	0.006530	0.097874	0.471210	9	
				0.003248	0.002389	0.100263	0.172359	10	

Table 16 Analysis of returns, Event 13

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Capitec Bank Holdings	CPI	Banks	Financials						
				-0.000518	0.000518	0.000518	0.034599	-10	
				-0.001143	-0.000423	0.000095	-0.028248	-9	
				0.000383	0.001185	0.001280	0.079202	-8	
				-0.002186	-0.013016	-0.011736	-0.869961	-7	
				-0.004118	0.002118	-0.009618	0.141581	-6	
				-0.001838	0.014171	0.004554	0.947191	-5	
				-0.000462	0.008584	0.013138	0.573762	-4	
				-0.003709	0.020828	0.033966	1.392158	-3	
				-0.000856	-0.000381	0.033585	-0.025494	-2	
				0.003435	-0.002444	0.031141	-0.163348	-1	
				-0.005360	0.039032	0.070173	2.608843	0	13
				-0.000384	0.026396	0.096568	1.764270	1	
				0.002526	0.001303	0.097871	0.087080	2	
				-0.009060	0.018362	0.116233	1.227302	3	
				-0.005162	-0.012719	0.103514	-0.850106	4	
				-0.008369	0.003114	0.106628	0.208110	5	
				0.001161	-0.001161	0.105467	-0.077569	6	
				-0.000700	0.011313	0.116780	0.756149	7	
				0.007816	0.007353	0.124134	0.491481	8	
				0.000506	0.017885	0.142018	1.195406	9	
				-0.007109	-0.013207	0.128811	-0.882778	10	

Table 17 Analysis of returns, Event 1

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Discovery Limited	DSY	Insurance	Financials	-0.004112	-0.017326	-0.017326	-1.192016	-10	1
				0.001101	-0.001101	-0.018428	-0.075774	-9	
				0.002231	-0.002231	-0.020659	-0.153486	-8	
				0.002875	0.027160	0.006501	1.868530	-7	
				0.003991	0.016593	0.023094	1.141526	-6	
				0.002916	-0.004597	0.018497	-0.316249	-5	
				0.000023	-0.008441	0.010056	-0.580714	-4	
				0.001620	-0.005356	0.004700	-0.368448	-3	
				-0.001258	-0.009990	-0.005290	-0.687283	-2	
				-0.002570	0.002570	-0.002719	0.176841	-1	
				0.005311	0.035365	0.032646	2.433022	0	
				0.001384	0.031740	0.064386	2.183636	1	
				0.001962	-0.008374	0.056011	-0.576141	2	
				-0.010833	-0.024340	0.031672	-1.674513	3	
				-0.003597	-0.013460	0.018212	-0.925982	4	
				-0.006018	-0.008953	0.009259	-0.615972	5	
				0.003226	0.012318	0.021577	0.847474	6	
				-0.008545	-0.028529	-0.006952	-1.962758	7	
				0.004447	0.018867	0.011914	1.297969	8	
				0.000873	0.000163	0.012077	0.011207	9	
				0.004764	-0.008212	0.003865	-0.564956	10	

Table 18 Analysis of returns, Event 4

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Discovery Limited	DSY	Insurance	Financials						
				0.008855	-0.004047	-0.004047	-0.200746	-10	
				0.004124	0.005445	0.001398	0.270103	-9	
				0.000982	0.017975	0.019373	0.891669	-8	
				-0.008835	0.008835	0.028209	0.438290	-7	
				0.005027	0.004275	0.032484	0.212059	-6	
				0.006442	-0.001834	0.030650	-0.090979	-5	
				0.009807	0.036065	0.066715	1.789033	-4	
				-0.006318	-0.019998	0.046717	-0.992001	-3	
				-0.015396	0.015396	0.062113	0.763742	-2	
				-0.002688	0.007192	0.069305	0.356767	-1	
				-0.004609	0.042725	0.112031	2.119423	0	4
				-0.006929	0.043214	0.155245	2.143673	1	
				-0.014929	0.019515	0.174759	0.968038	2	
				0.014807	0.006770	0.181529	0.335817	3	
				-0.017545	0.016733	0.198262	0.830060	4	
				-0.001622	-0.002036	0.196226	-0.101015	5	
				0.004513	-0.029401	0.166825	-1.458449	6	
				0.010666	-0.039955	0.126870	-1.981987	7	
				-0.010155	0.023086	0.149957	1.145217	8	
				-0.013171	-0.020872	0.129085	-1.035368	9	
				-0.013351	0.017757	0.146841	0.880837	10	

Table 19 Analysis of returns, Event 5

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Discovery Limited	DSY	Insurance	Financials						
				-0.003215	-0.006494	-0.006494	-0.287750	-10	
				0.022472	-0.002864	-0.009358	-0.126916	-9	
				0.006161	0.003455	-0.005904	0.153072	-8	
				-0.003878	-0.011741	-0.017645	-0.520251	-7	
				-0.006809	0.013001	-0.004644	0.576078	-6	
				-0.007014	-0.002601	-0.007245	-0.115263	-5	
				0.000740	0.001202	-0.006044	0.053242	-4	
				-0.004620	-0.007008	-0.013051	-0.310500	-3	
				-0.006186	-0.053030	-0.066081	-2.349705	-2	
				-0.000923	-0.024088	-0.090169	-1.067300	-1	
				0.003437	0.044019	-0.046150	1.950439	0	5
				-0.013310	-0.007099	-0.053248	-0.314530	1	
				-0.001545	0.042795	-0.010453	1.896206	2	
				-0.009681	0.006080	-0.004374	0.269383	3	
				0.001167	0.002849	-0.001524	0.126258	4	
				0.005279	-0.005279	-0.006803	-0.233900	5	
				-0.011220	-0.022780	-0.029583	-1.009348	6	
				-0.000800	0.033926	0.004343	1.503224	7	
				-0.005263	-0.016781	-0.012438	-0.743535	8	
				0.009613	-0.009613	-0.022050	-0.425931	9	
				-0.000240	-0.007957	-0.030007	-0.352572	10	

Table 20 Analysis of returns, Event 10

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Discovery Limited	DSY	Insurance	Financials						
				-0.013567	0.000199	0.000199	0.023947	-10	
				0.001423	-0.003049	-0.002850	-0.367790	-9	
				0.000864	-0.001406	-0.004257	-0.169668	-8	
				-0.002700	0.006231	0.001974	0.751678	-7	
				0.005436	0.005119	0.007093	0.617558	-6	
				-0.003958	-0.018538	-0.011444	-2.236344	-5	
				0.001197	0.009762	-0.001682	1.177698	-4	
				0.013589	0.005381	0.003699	0.649113	-3	
				0.001111	0.009262	0.012960	1.117316	-2	
				0.009721	-0.002878	0.010083	-0.347143	-1	
				0.001237	0.024906	0.034989	3.004617	0	10
				-0.008421	0.012242	0.047232	1.476871	1	
				-0.009507	0.011284	0.058515	1.361226	2	
				-0.005572	-0.005323	0.053192	-0.642115	3	
				0.015431	0.001475	0.054667	0.177890	4	
				0.006098	0.006497	0.061164	0.783720	5	
				-0.007096	-0.002357	0.058807	-0.284335	6	
				-0.008841	0.000051	0.058858	0.006175	7	
				0.002740	-0.005780	0.053078	-0.697285	8	
				0.006559	0.007926	0.061004	0.956196	9	
				0.008147	-0.007396	0.053608	-0.892191	10	

Table 21 Analysis of returns, Event 10

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
FirstRand Limited	FSR	Diversified	Financials						
				0.003102	-0.017888	-0.017888	-1.818148	-10	
				0.024416	-0.012910	-0.030798	-1.312225	-9	
				0.003416	0.004497	-0.026301	0.457066	-8	
				-0.020490	0.000372	-0.025929	0.037790	-7	
				-0.023179	0.017670	-0.008259	1.796065	-6	
				-0.013438	-0.014760	-0.023019	-1.500222	-5	
				0.038548	0.005493	-0.017526	0.558328	-4	
				0.015447	0.022270	0.004745	2.263619	-3	
				-0.017210	-0.002398	0.002347	-0.243699	-2	
				-0.021529	-0.000422	0.001925	-0.042879	-1	
				0.007135	0.020297	0.022222	2.063020	0	10
				0.016588	-0.000084	0.022138	-0.008495	1	
				0.020519	-0.019564	0.002574	-1.988550	2	
				0.002339	-0.019514	-0.016940	-1.983502	3	
				-0.002989	-0.010603	-0.027543	-1.077728	4	
				0.014527	-0.017972	-0.045515	-1.826763	5	
				-0.000811	0.009700	-0.035815	0.985943	6	
				-0.035591	0.017480	-0.018335	1.776728	7	
				-0.009463	-0.011475	-0.029810	-1.166306	8	
				-0.012613	0.013122	-0.016688	1.333746	9	
				0.040029	-0.002370	-0.019058	-0.240935	10	

Table 22 Analysis of returns, Event 12

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Discovery Limited	DSY	Life & Health Insurance	Financials						
				-0.001456	-0.017454	-0.017454	-2.191468	-10	
				0.004594	0.002525	-0.014929	0.317046	-9	
				0.000807	0.000917	-0.014012	0.115124	-8	
				0.002895	0.006227	-0.007785	0.781871	-7	
				-0.000281	-0.016434	-0.024219	-2.063439	-6	
				0.001069	0.003615	-0.020604	0.453873	-5	
				-0.004378	-0.007189	-0.027793	-0.902651	-4	
				0.002618	0.004893	-0.022900	0.614340	-3	
				0.002802	0.002746	-0.020155	0.344760	-2	
				-0.002968	0.001761	-0.018394	0.221065	-1	
				-0.000116	-0.029747	-0.048141	-3.734986	0	12
				0.010236	-0.017353	-0.065495	-2.178843	1	
				0.002434	-0.009603	-0.075098	-1.205706	2	
				-0.001507	-0.031887	-0.106984	-4.003576	3	
				0.000411	-0.009748	-0.116732	-1.223923	4	
				0.005469	0.009611	-0.107121	1.206722	5	
				0.003514	0.012270	-0.094851	1.540594	6	
				0.010516	-0.002289	-0.097140	-0.287411	7	
				-0.001016	-0.000797	-0.097937	-0.100077	8	
				0.002599	-0.023490	-0.121427	-2.949269	9	
				0.001717	-0.007283	-0.128710	-0.914423	10	

Table 23 Analysis of returns, Event 13

Companies on the JSE Statistical Results	Ticker Symbol	Sub- Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
FirstRand Limited	FSR	Diversified	Financials	0.005377	0.004936	0.004936	0.360608	-10	
				-0.005701	-0.002274	0.002662	-0.166120	-9	
				-0.015396	0.004785	0.007447	0.349598	-8	
				0.000451	-0.009225	-0.001778	-0.674015	-7	
				0.003536	0.004005	0.002227	0.292622	-6	
				-0.004027	-0.009966	-0.007739	-0.728095	-5	
				-0.005644	-0.006898	-0.014637	-0.503949	-4	
				0.010214	0.020869	0.006232	1.524664	-3	
				0.009921	0.007908	0.014140	0.577739	-2	
				-0.005507	-0.012646	0.001494	-0.923905	-1	
				0.015853	0.028584	0.030078	2.088343	0	13
				-0.001593	-0.027600	0.002478	-2.016430	1	
				0.006717	-0.004478	-0.002000	-0.327147	2	
				0.000993	0.002837	0.000837	0.207253	3	
				0.006019	-0.009517	-0.008680	-0.695303	4	
				0.000051	-0.015367	-0.024046	-1.122683	5	
				-0.000886	-0.019853	-0.043899	-1.450486	6	
				0.001399	0.010514	-0.033386	0.768122	7	
				-0.002447	-0.008998	-0.042384	-0.657405	8	
				-0.005339	0.017910	-0.024474	1.308490	9	
				-0.001926	0.016627	-0.007847	1.214790	10	

Table 24 Analysis of returns, Event 1

Companies on the JSE	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Statistical Results									
Impala Platinum	IMP	Precious Metals & Minerals	Materials	0.022330	0.020792	0.020792	0.913826	-10	
				-0.005997	-0.019407	0.001385	-0.852951	-9	
				-0.004147	-0.024289	-0.022904	-1.067516	-8	
				0.021808	0.005070	-0.017834	0.222817	-7	
				-0.000528	-0.011395	-0.029229	-0.500839	-6	
				-0.019718	-0.009128	-0.038357	-0.401184	-5	
				0.005126	-0.007601	-0.045958	-0.334063	-4	
				0.010508	0.009343	-0.036616	0.410621	-3	
				0.013580	0.042381	0.005766	1.862705	-2	
				0.018894	-0.028110	-0.022344	-1.235479	-1	
				0.013773	-0.042145	-0.064490	-1.852334	0	1
				-0.000011	-0.013871	-0.078361	-0.609634	1	
				0.007599	-0.019735	-0.098095	-0.867357	2	
				-0.006115	-0.022140	-0.120235	-0.973078	3	
				-0.012372	0.021272	-0.098963	0.934935	4	
				0.025184	0.007346	-0.091618	0.322847	5	
				0.006470	0.027511	-0.064107	1.209124	6	
				0.009227	0.006266	-0.057841	0.275384	7	
				-0.051745	0.022666	-0.035176	0.996172	8	
				-0.017266	-0.001829	-0.037004	-0.080377	9	
				-0.028799	-0.000327	-0.037331	-0.014370	10	

Table 25 Analysis of returns, Event 2

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Impala Platinum	IMP	Precious Metals & Minerals	Materials						
				-0.020199	0.003948	0.003948	0.227262	-10	
				-0.000969	-0.015605	-0.011657	-0.898247	-9	
				0.011189	0.021115	0.009458	1.215392	-8	
				-0.002655	0.006736	0.016194	0.387741	-7	
				0.011779	-0.009069	0.007125	-0.522035	-6	
				0.003132	0.000165	0.007290	0.009499	-5	
				-0.001713	-0.010194	-0.002904	-0.586779	-4	
				0.006164	0.021645	0.018740	1.245882	-3	
				-0.006690	0.019952	0.038693	1.148465	-2	
				0.001266	0.020985	0.059678	1.207944	-1	
				0.004498	0.050559	0.110237	2.910253	0	2
				0.011984	0.017628	0.127865	1.014678	1	
				0.002938	0.023700	0.151565	1.364191	2	
				0.001874	0.029125	0.180690	1.676445	3	
				-0.006676	-0.031231	0.149459	-1.797677	4	
				0.001710	-0.006294	0.143165	-0.362267	5	
				-0.009744	-0.018163	0.125003	-1.045455	6	
				-0.002039	0.004910	0.129913	0.282634	7	
				0.009588	0.020947	0.150860	1.205721	8	
				-0.002957	0.002911	0.153771	0.167557	9	
				0.005072	-0.002711	0.151060	-0.156053	10	

Table 26 Analysis of returns, Event 11

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Impala Platinum	IMP	Precious Metals & Minerals	Materials						
				0.007826	-0.032846	-0.032846	-2.411104	-10	
				-0.000299	-0.015579	-0.048425	-1.143578	-9	
				-0.008720	0.007113	-0.041312	0.522134	-8	
				-0.008438	0.010168	-0.031144	0.746361	-7	
				0.008633	-0.002621	-0.033766	-0.192412	-6	
				0.000674	-0.006887	-0.040653	-0.505553	-5	
				-0.014909	-0.000036	-0.040688	-0.002623	-4	
				0.011020	0.004453	-0.036235	0.326910	-3	
				-0.004431	0.004431	-0.031804	0.325273	-2	
				-0.001722	-0.017385	-0.049188	-1.276142	-1	
				-0.011702	-0.028349	-0.077537	-2.080980	0	11
				0.009775	0.020568	-0.056969	1.509810	1	
				-0.000003	0.007120	-0.049849	0.522641	2	
				0.000490	-0.007191	-0.057041	-0.527899	3	
				-0.005970	-0.006541	-0.063582	-0.480158	4	
				0.002954	0.029280	-0.034302	2.149368	5	
				0.004852	0.003571	-0.030730	0.262151	6	
				-0.015431	-0.012015	-0.042746	-0.881999	7	
				0.012100	-0.006579	-0.049324	-0.482911	8	
				0.002174	0.017350	-0.031974	1.273613	9	
				-0.000783	-0.005022	-0.036996	-0.368665	10	

Table 27 Analysis of Returns, Event 4

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Murray&Roberts	MUR	Construction &Engineering	Industrials						
				0.004996	0.000468	0.000468	0.018127	-10	
				0.026666	0.005943	0.006411	0.230022	-9	
				-0.016687	0.005951	0.012362	0.230326	-8	
				-0.012812	-0.008257	0.004105	-0.319598	-7	
				-0.016140	-0.000165	0.003940	-0.006371	-6	
				0.018741	-0.004929	-0.000989	-0.190772	-5	
				0.010144	-0.027038	-0.028027	-1.046524	-4	
				0.004433	0.042684	0.014657	1.652107	-3	
				-0.013410	0.003352	0.018009	0.129746	-2	
				0.011785	0.021370	0.039380	0.827148	-1	
				0.014357	0.046720	0.086099	1.808297	0	4
				0.020471	0.016601	0.102701	0.642564	1	
				-0.008835	-0.012802	0.089899	-0.495493	2	
				-0.025334	-0.013127	0.076772	-0.508094	3	
				-0.002236	0.012237	0.089009	0.473630	4	
				-0.005728	0.010777	0.099786	0.417145	5	
				-0.009945	0.004922	0.104708	0.190494	6	
				-0.024486	0.014585	0.119292	0.564504	7	
				0.029560	-0.009560	0.109732	-0.370033	8	
				-0.029241	0.058653	0.168386	2.270201	9	
				-0.000300	-0.028272	0.140113	-1.094283	10	

Table 28 Analysis of Returns, Event 14

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Murray&Roberts	MUR	Construction&Engineering	Industrials	0.004653	0.002694	0.002694	0.157565	-10	
				-0.007372	-0.019370	-0.016677	-1.132990	-9	
				0.007529	-0.025014	-0.041691	-1.463105	-8	
				-0.001861	-0.000257	-0.041948	-0.015056	-7	
				-0.002338	0.017200	-0.024748	1.006031	-6	
				-0.000170	0.018580	-0.006168	1.086778	-5	
				0.003475	-0.005940	-0.012108	-0.347434	-4	
				-0.000407	-0.015656	-0.027764	-0.915702	-3	
				0.004075	0.054946	0.027182	3.213802	-2	
				-0.003064	-0.008004	0.019178	-0.468133	-1	
				-0.011084	-0.031681	-0.012503	-1.853069	0	14
				0.001581	0.021384	0.008880	1.250737	1	
				-0.003027	0.060170	0.069050	3.519353	2	
				0.007072	-0.001281	0.067769	-0.074920	3	
				0.002254	0.051489	0.119258	3.011610	4	
				-0.005397	0.018511	0.137769	1.082739	5	
				0.003816	0.003016	0.140785	0.176384	6	
				0.000449	0.006694	0.147479	0.391523	7	
				-0.001102	-0.000672	0.146807	-0.039278	8	
				0.010968	0.012123	0.158930	0.709057	9	
				-0.001906	-0.009899	0.149030	-0.579027	10	

Table 29 Analysis of Returns, Event 1

Companies on the JSE	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Statistical Results									
Naspers Limited	NPN	Cable & Satellite	Consumer Discretionary	0.000546	0.009957	0.009957	0.720659	-10	
				-0.016496	-0.016441	-0.006484	-1.189920	-9	
				0.007591	0.035865	0.029382	2.595774	-8	
				0.007365	-0.016297	0.013085	-1.179467	-7	
				0.006986	0.004488	0.017573	0.324797	-6	
				-0.004914	-0.001382	0.016190	-0.100056	-5	
				0.002792	0.000829	0.017019	0.059998	-4	
				-0.008638	0.005179	0.022198	0.374823	-3	
				-0.005347	0.006210	0.028408	0.449435	-2	
				0.004014	0.030029	0.058437	2.173341	-1	
				-0.011111	-0.030114	0.028323	-2.179481	0	1
				0.014356	0.008253	0.036577	0.597335	1	
				0.012377	0.005462	0.042038	0.395283	2	
				-0.000398	0.003367	0.045405	0.243718	3	
				-0.005540	0.014040	0.059446	1.016180	4	
				-0.014007	0.002591	0.062037	0.187558	5	
				0.001942	-0.017355	0.044682	-1.256108	6	
				0.008409	0.027936	0.072618	2.021882	7	
				0.008522	0.002077	0.074695	0.150302	8	
				0.003988	0.015708	0.090403	1.136877	9	
				-0.000608	0.000706	0.091109	0.051101	10	

Table 30 Analysis of returns, Event 3

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Naspers Limited	NPN	Cable & Satellite	Consumer Discretionary						
				-0.013643	-0.026680	-0.026680	-1.438750	-10	
				-0.012838	-0.012372	-0.039052	-0.667183	-9	
				0.012020	0.016716	-0.022336	0.901427	-8	
				0.000785	0.007036	-0.015300	0.379435	-7	
				0.011547	-0.019307	-0.034607	-1.041175	-6	
				-0.014557	-0.024549	-0.059156	-1.323877	-5	
				0.009421	-0.039654	-0.098810	-2.138412	-4	
				-0.022142	-0.025100	-0.123911	-1.353592	-3	
				-0.003628	-0.008454	-0.132364	-0.455877	-2	
				-0.008144	-0.007779	-0.140143	-0.419506	-1	
				-0.008456	0.060236	-0.079908	3.248337	0	3
				0.000481	-0.009712	-0.089620	-0.523741	1	
				0.012096	0.028898	-0.060721	1.558396	2	
				0.000925	0.019362	-0.041360	1.044120	3	
				-0.013169	0.027438	-0.013922	1.479652	4	
				-0.022612	-0.008753	-0.022675	-0.472025	5	
				-0.030054	0.006245	-0.016430	0.336760	6	
				-0.007688	0.021103	0.004673	1.137997	7	
				-0.000215	-0.007005	-0.002332	-0.377764	8	
				-0.019382	0.019382	0.017049	1.045208	9	
				0.013522	0.022842	0.039891	1.231799	10	

Table 31 Analysis of returns, Event 14

Companies on the JSE Statistical Results	Ticker Symbol	Sub-Industry	Sector	R_{it}	AR	CAR	T-test	Event Window	Event Number
Naspers Limited	NPN	Cable & Satellite	Consumer Discretionary						
				-0.013643	-0.026680	-0.026680	-1.438750	-10	
				-0.012838	-0.012372	-0.039052	-0.667183	-9	
				0.012020	0.016716	-0.022336	0.901427	-8	
				0.000785	0.007036	-0.015300	0.379435	-7	
				0.011547	-0.019307	-0.034607	-1.041175	-6	
				-0.014557	-0.024549	-0.059156	-1.323877	-5	
				0.009421	-0.039654	-0.098810	-2.138412	-4	
				-0.022142	-0.025100	-0.123911	-1.353592	-3	
				-0.003628	-0.008454	-0.132364	-0.455877	-2	
				-0.008144	-0.007779	-0.140143	-0.419506	-1	
				-0.008456	0.060236	-0.079908	3.248337	0	3
				0.000481	-0.009712	-0.089620	-0.523741	1	
				0.012096	0.028898	-0.060721	1.558396	2	
				0.000925	0.019362	-0.041360	1.044120	3	
				-0.013169	0.027438	-0.013922	1.479652	4	
				-0.022612	-0.008753	-0.022675	-0.472025	5	
				-0.030054	0.006245	-0.016430	0.336760	6	
				-0.007688	0.021103	0.004673	1.137997	7	
				-0.000215	-0.007005	-0.002332	-0.377764	8	
				-0.019382	0.019382	0.017049	1.045208	9	
				0.013522	0.022842	0.039891	1.231799	10	

APPENDIX B

Chart 1 Returns analysis

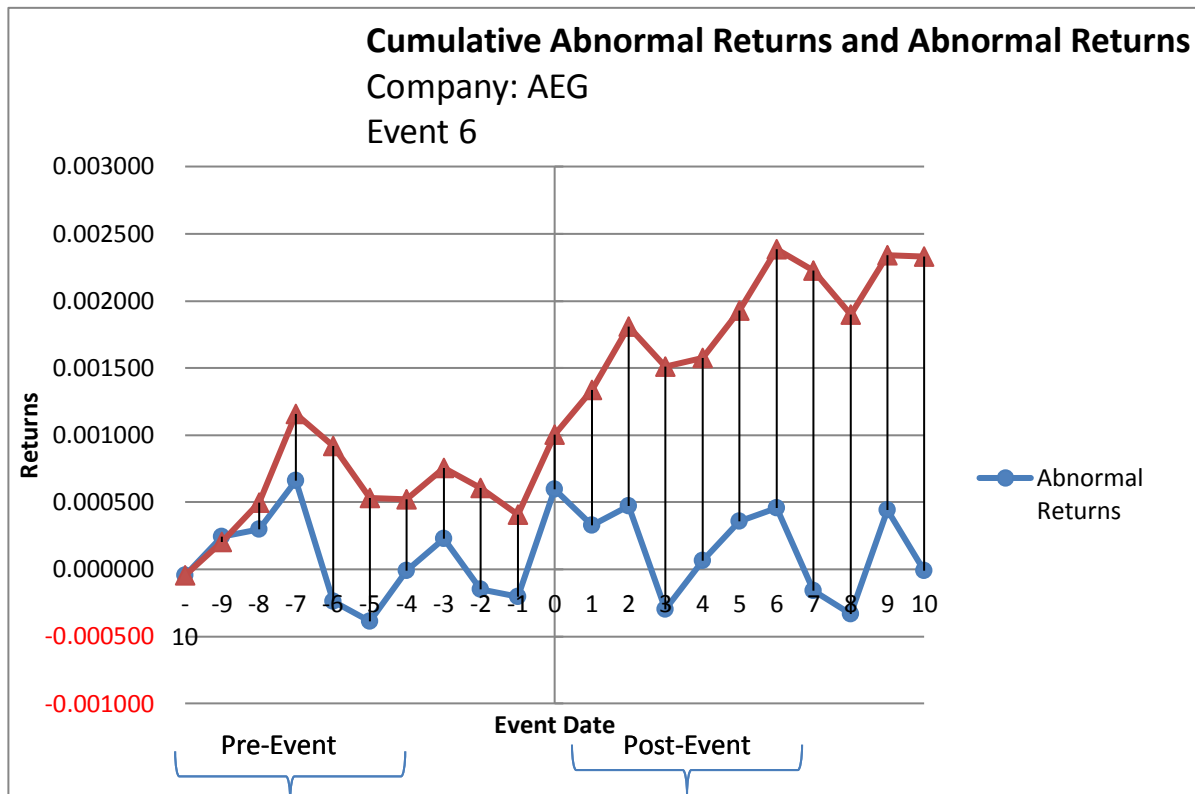


Chart 2 Returns analysis

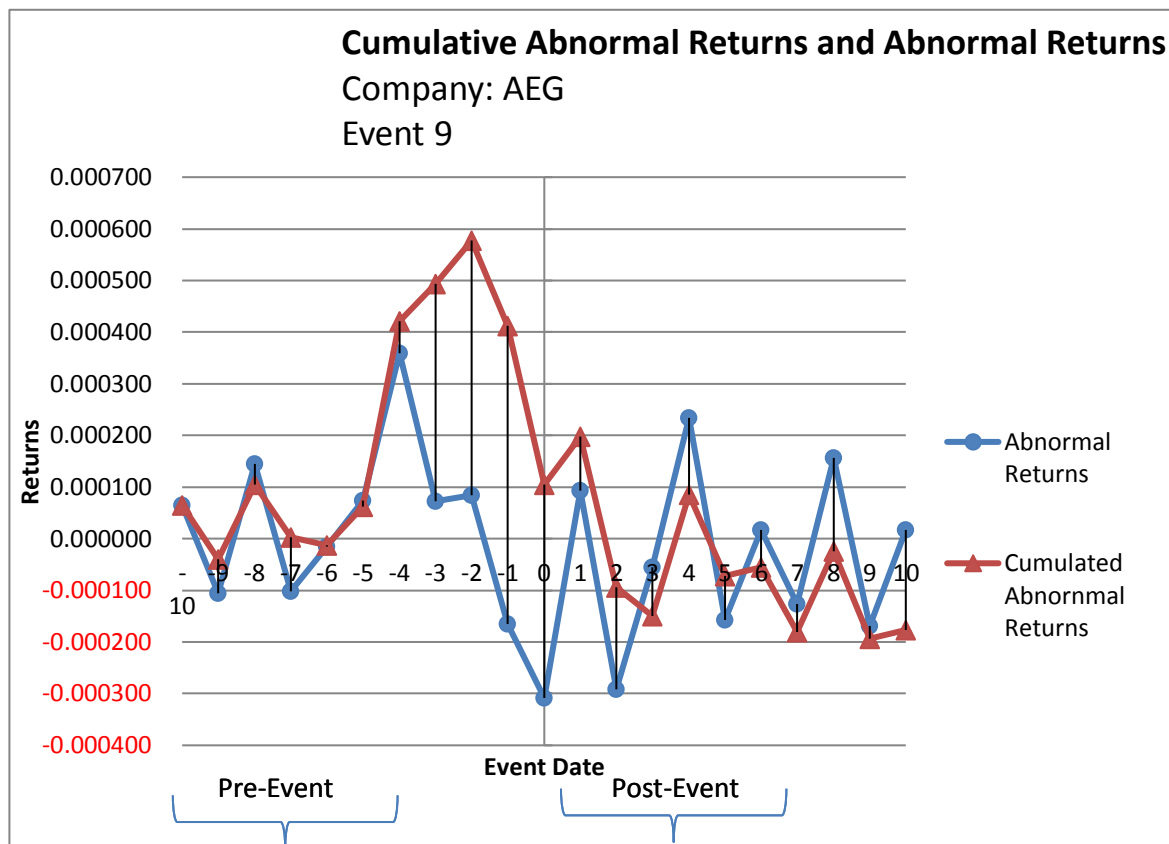


Chart 3 Returns analysis

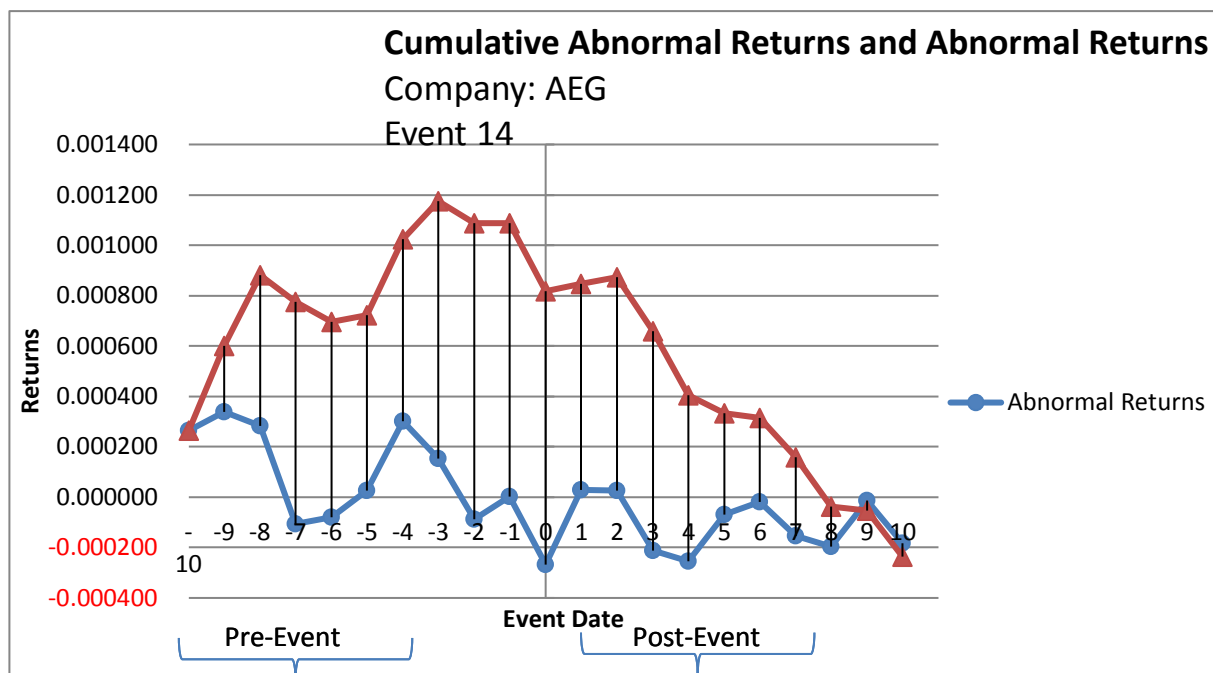


Chart 4 Returns analysis

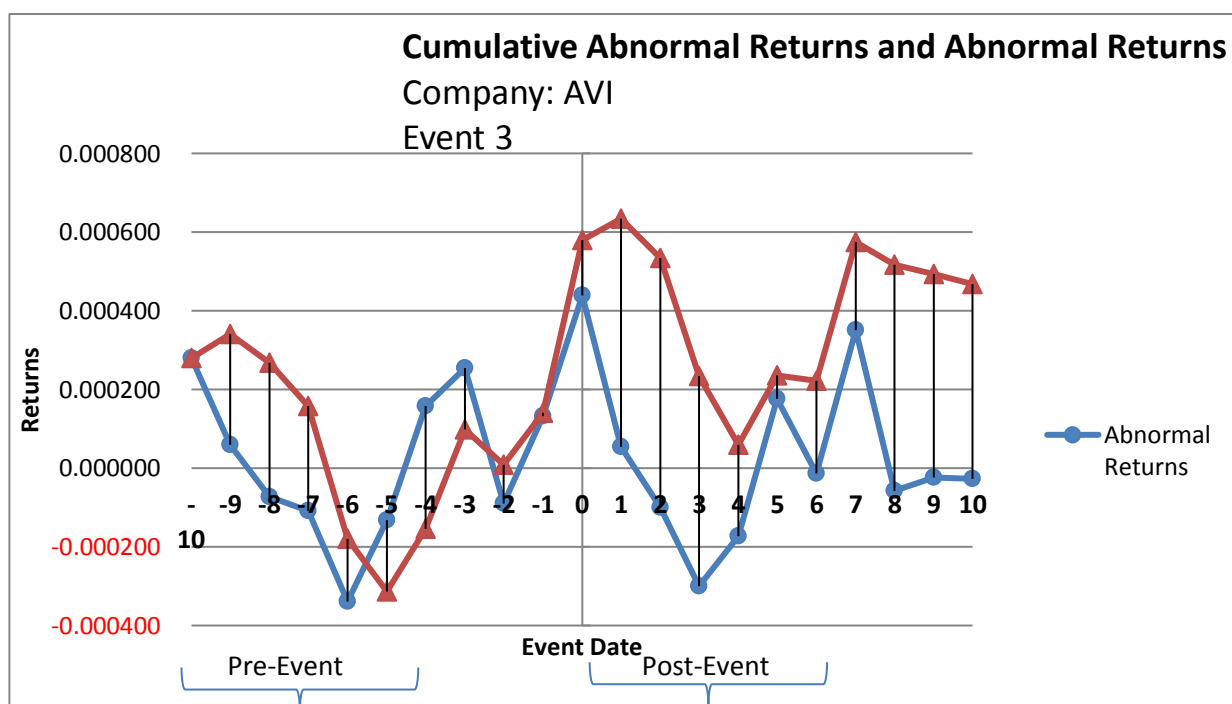


Chart 5 Returns analysis

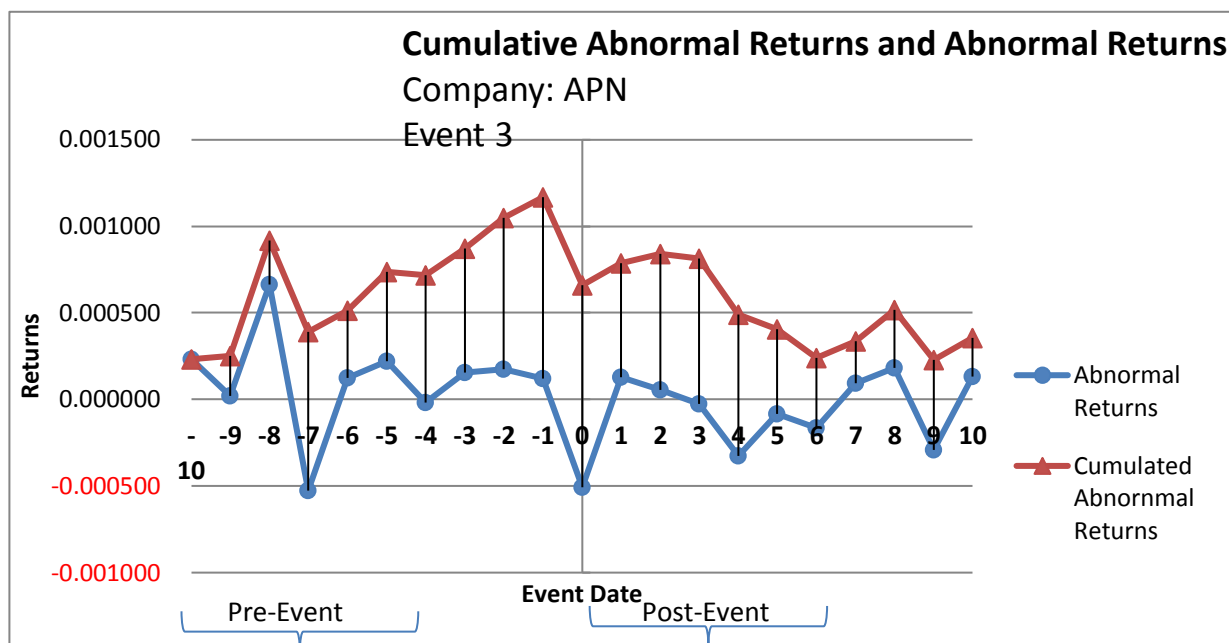


Chart 6 Returns analysis

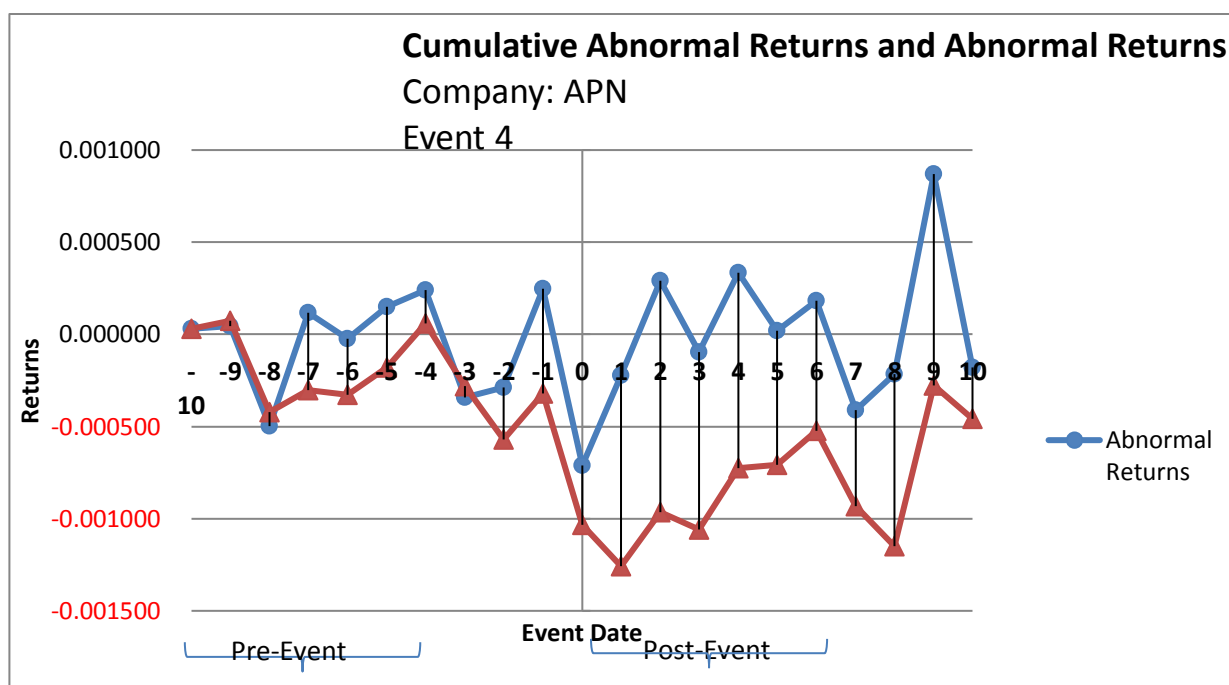


Chart 7 Returns analysis

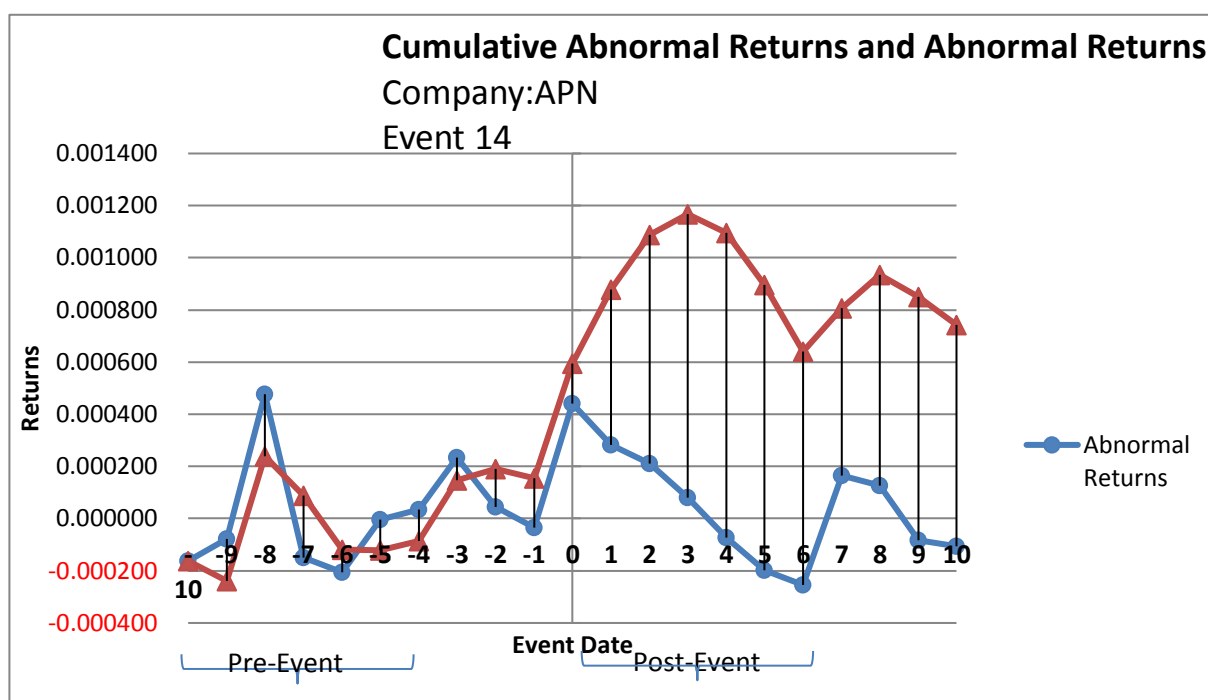


Chart 8 Returns analysis

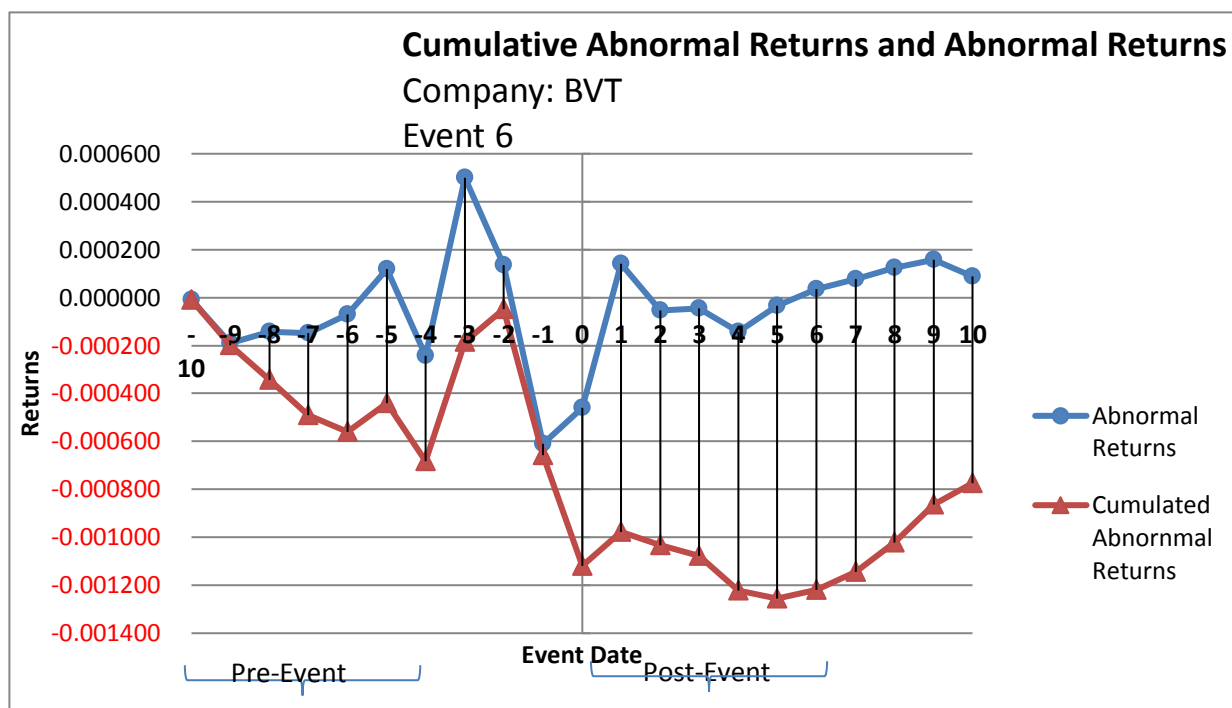


Chart 9 Returns analysis

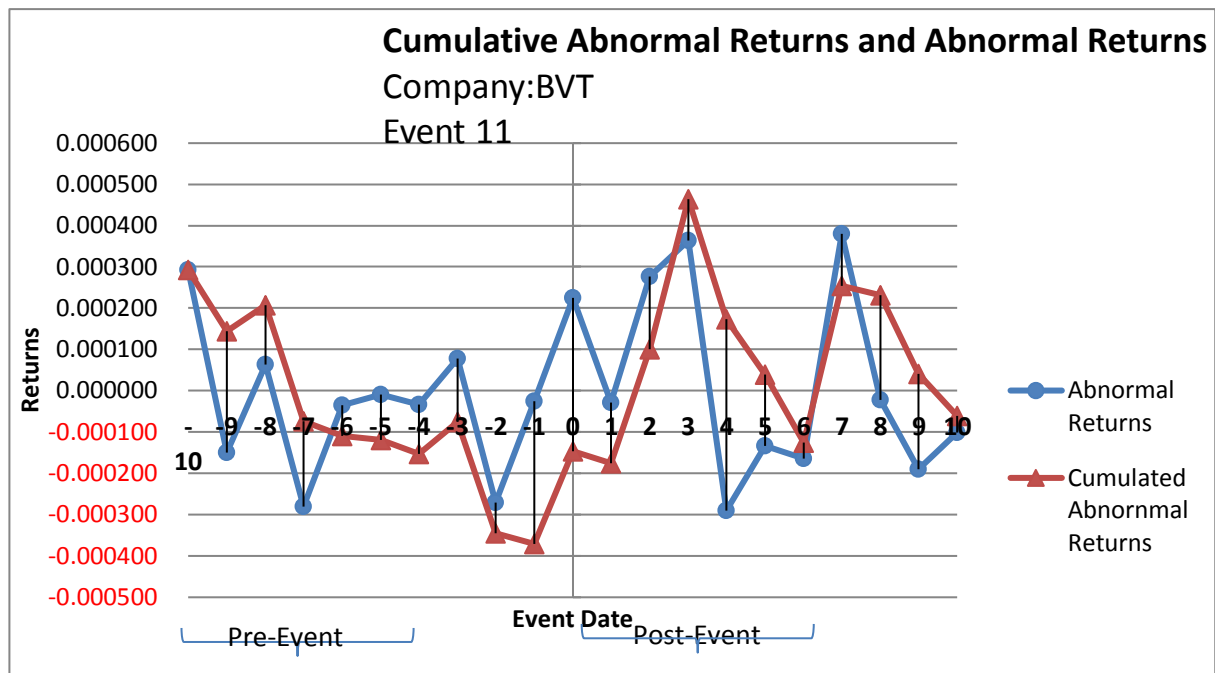


Chart 10 Returns analysis

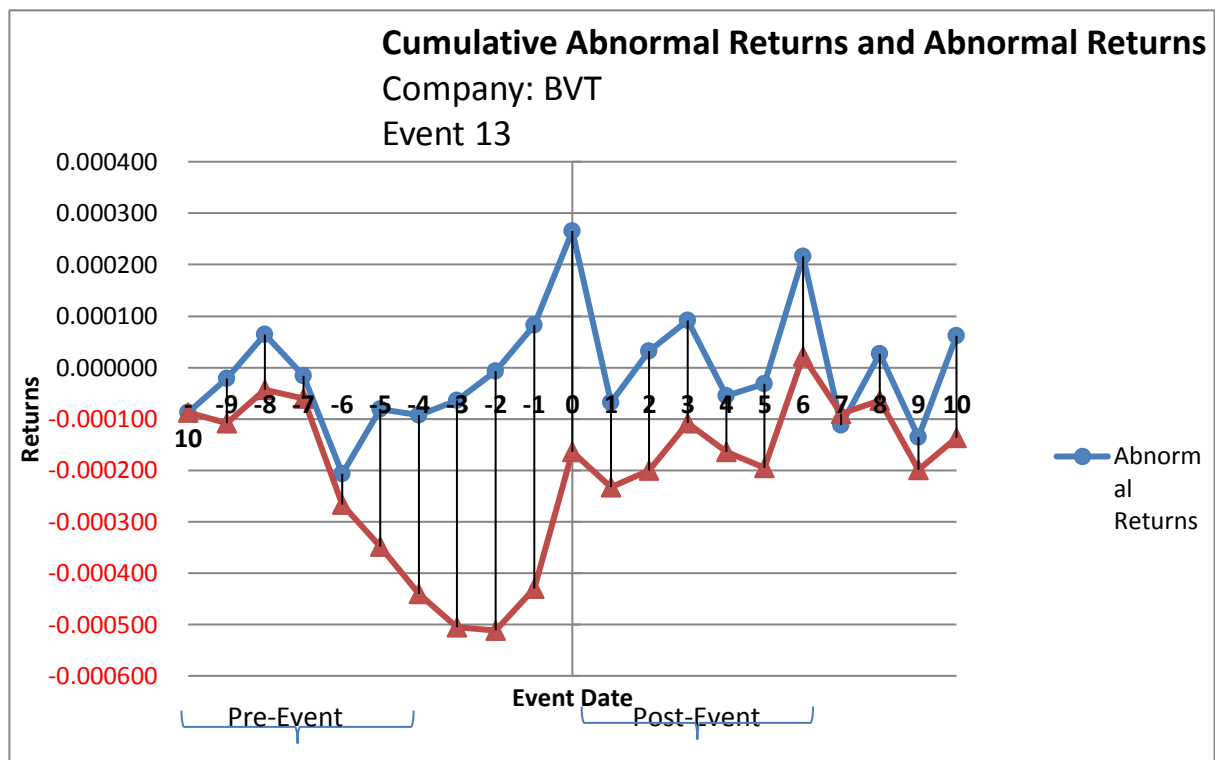


Chart 11 Returns analysis

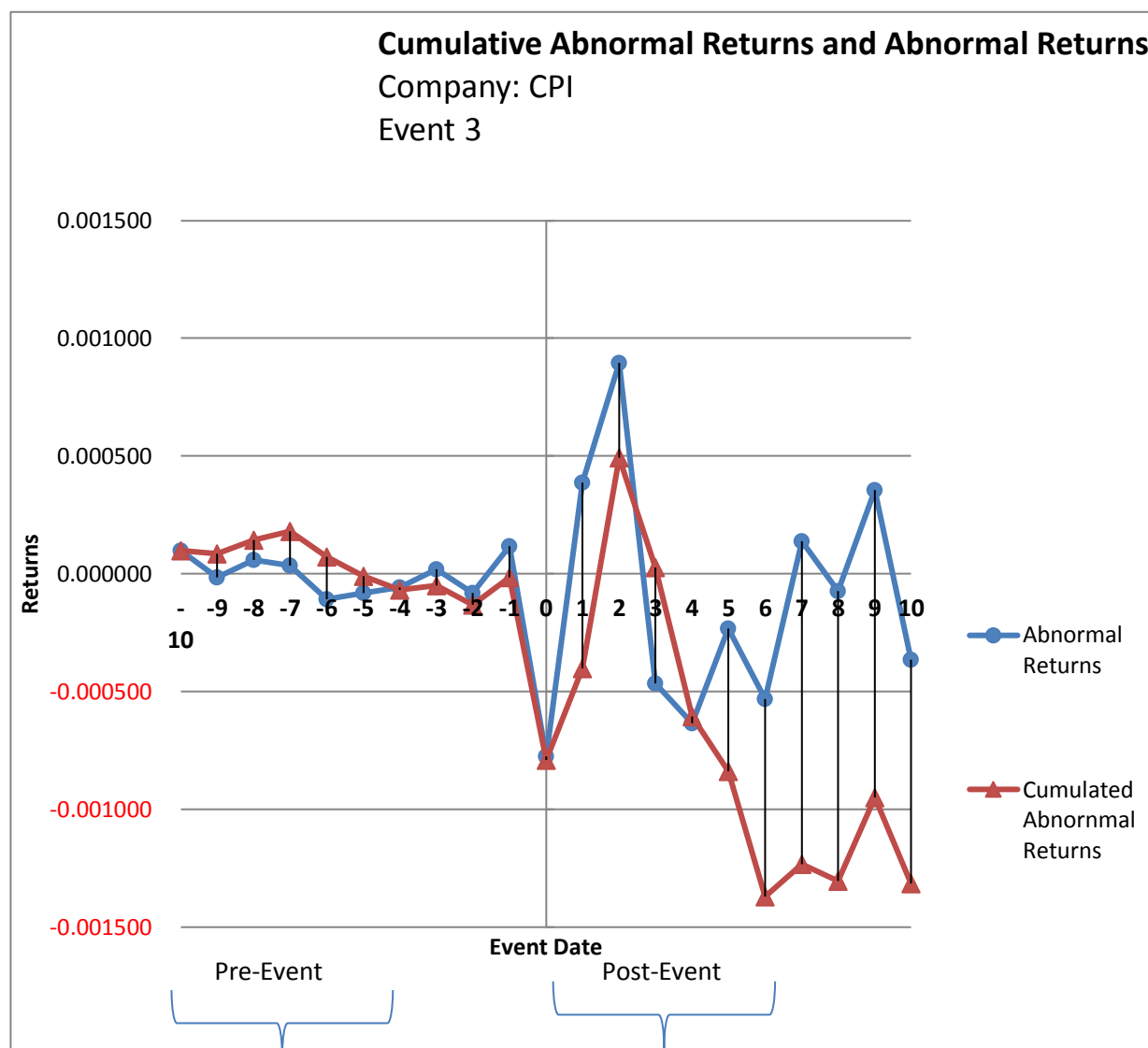


Chart 12 Returns analysis

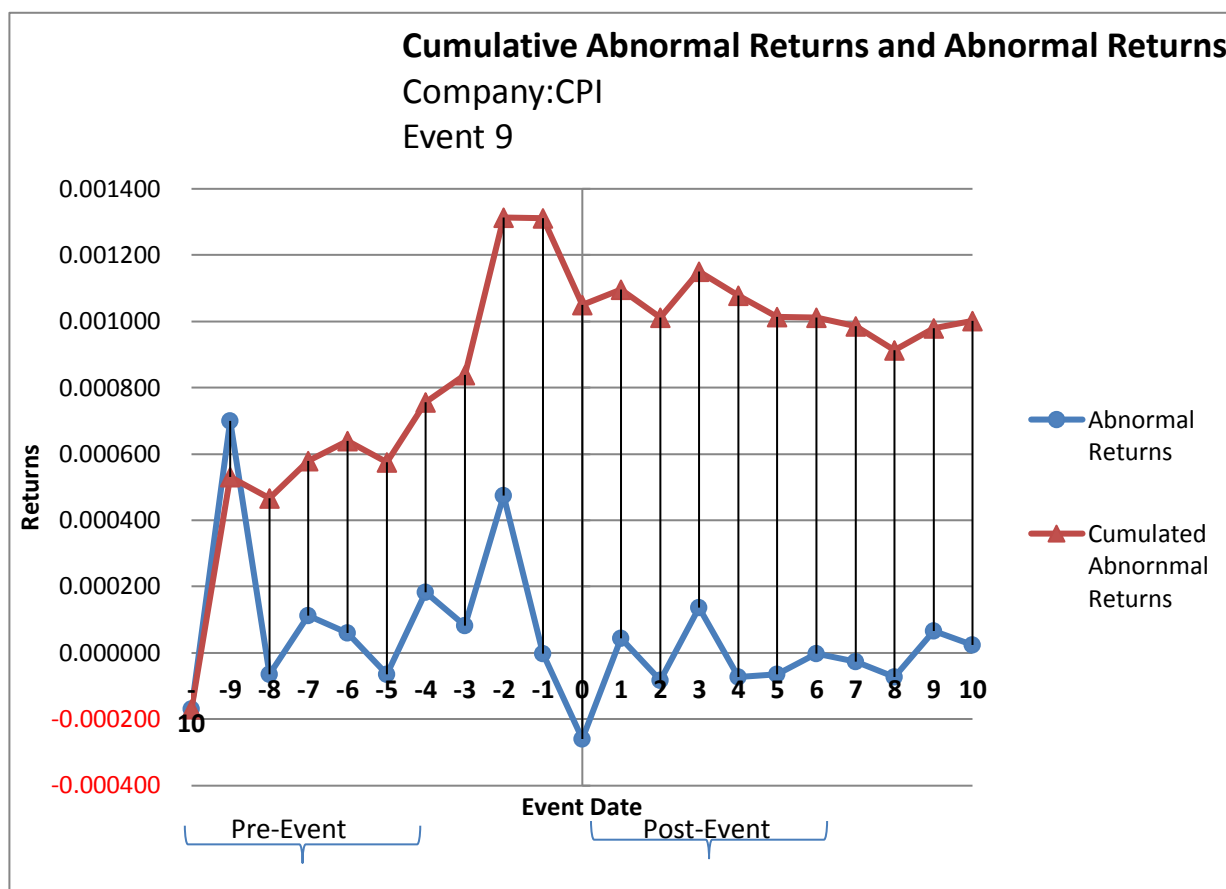


Chart 13 Returns analysis

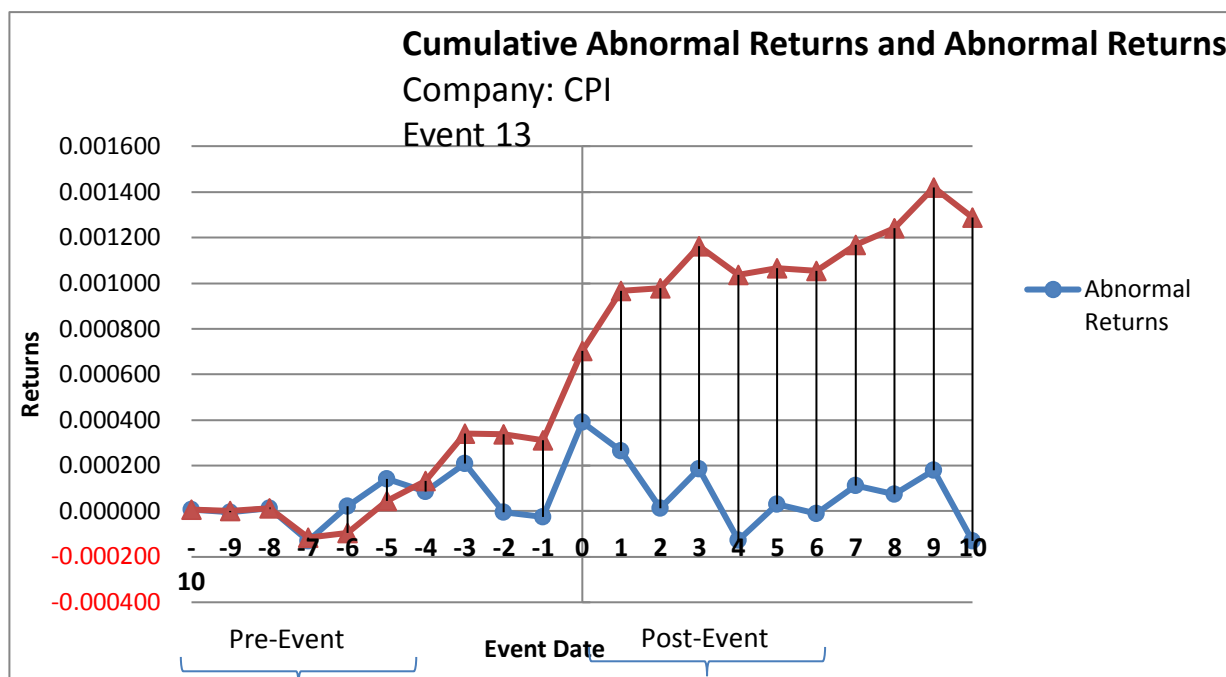


Chart 14 Returns analysis

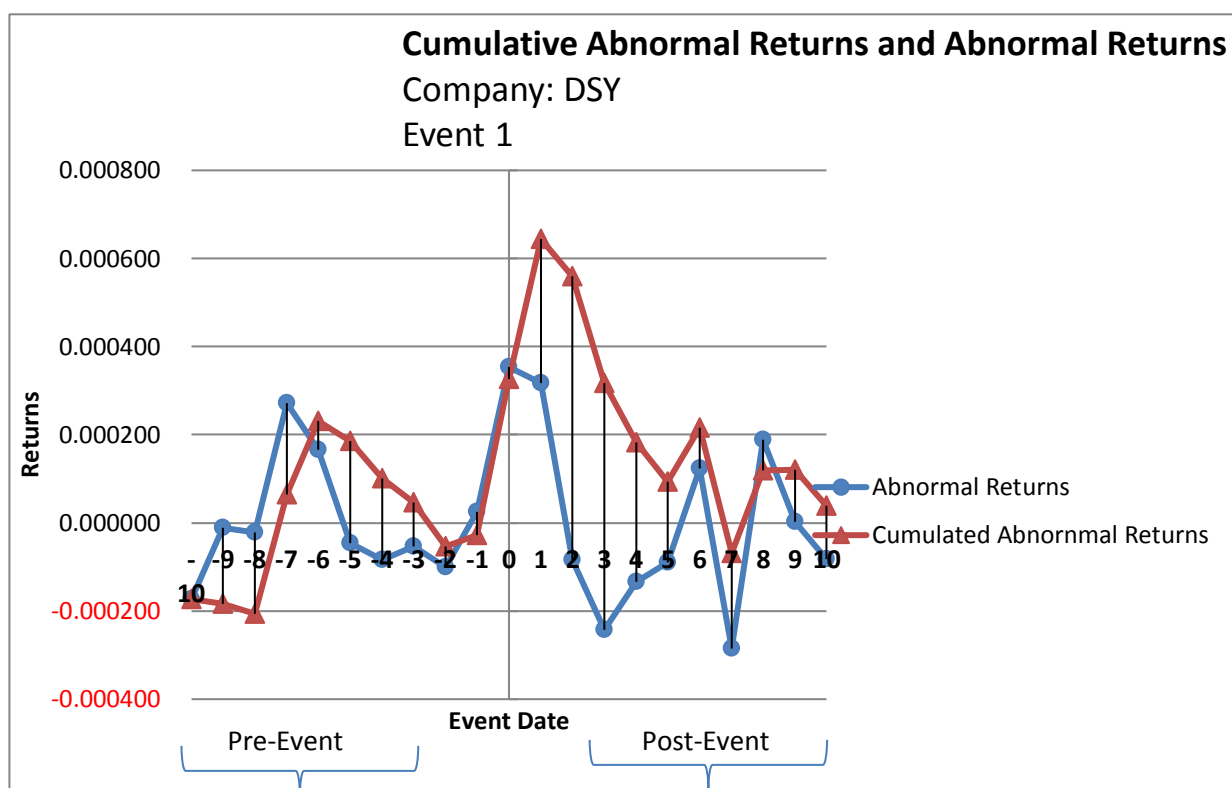


Chart 15 Returns analysis

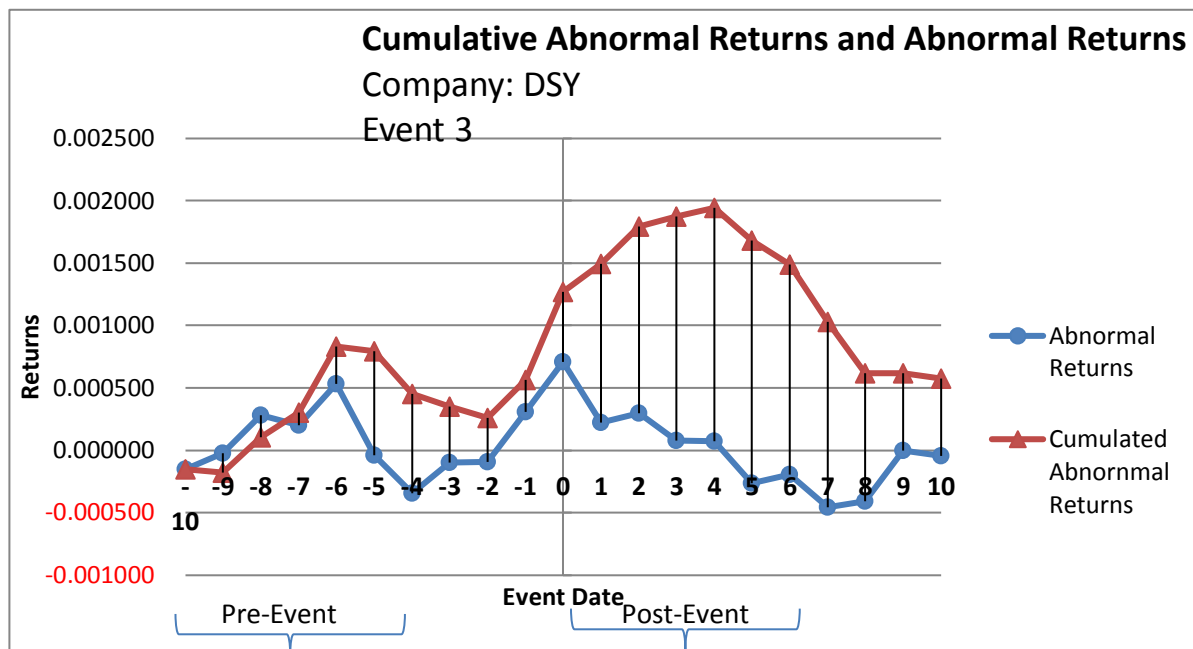


Chart 16 Returns analysis

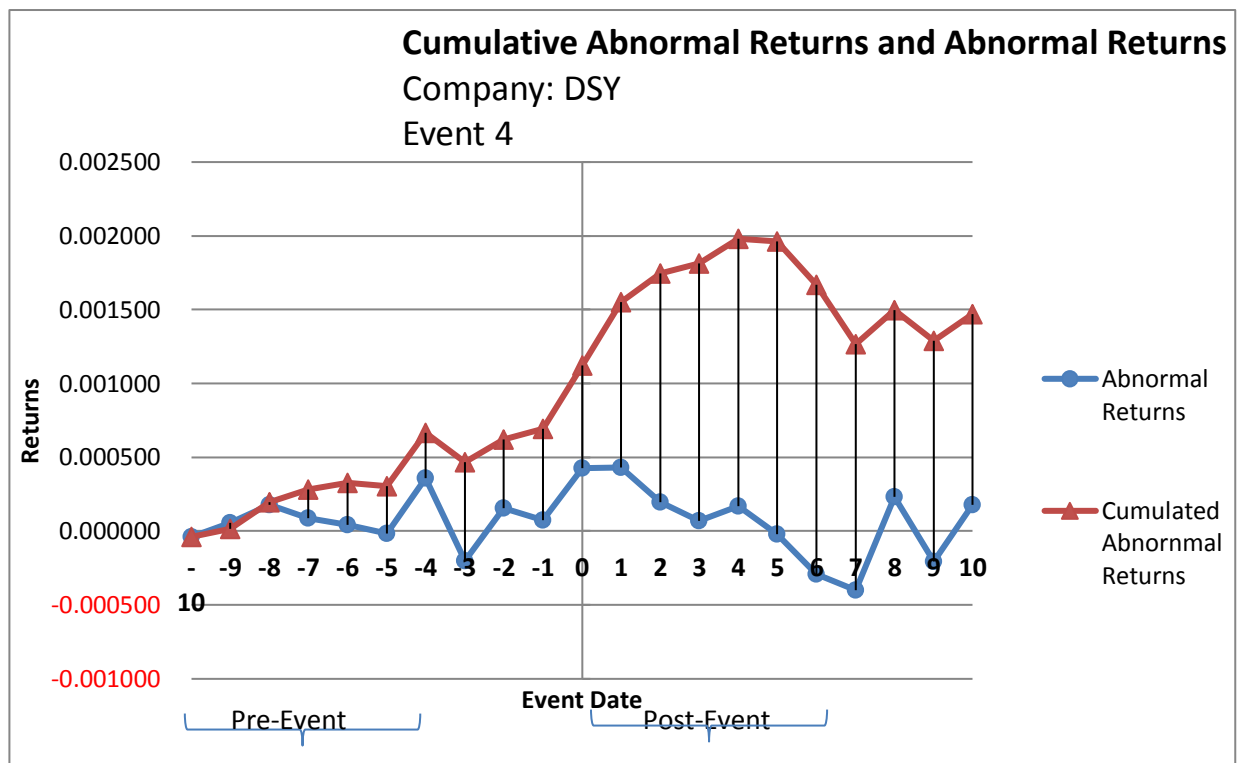


Chart 17 Returns analysis

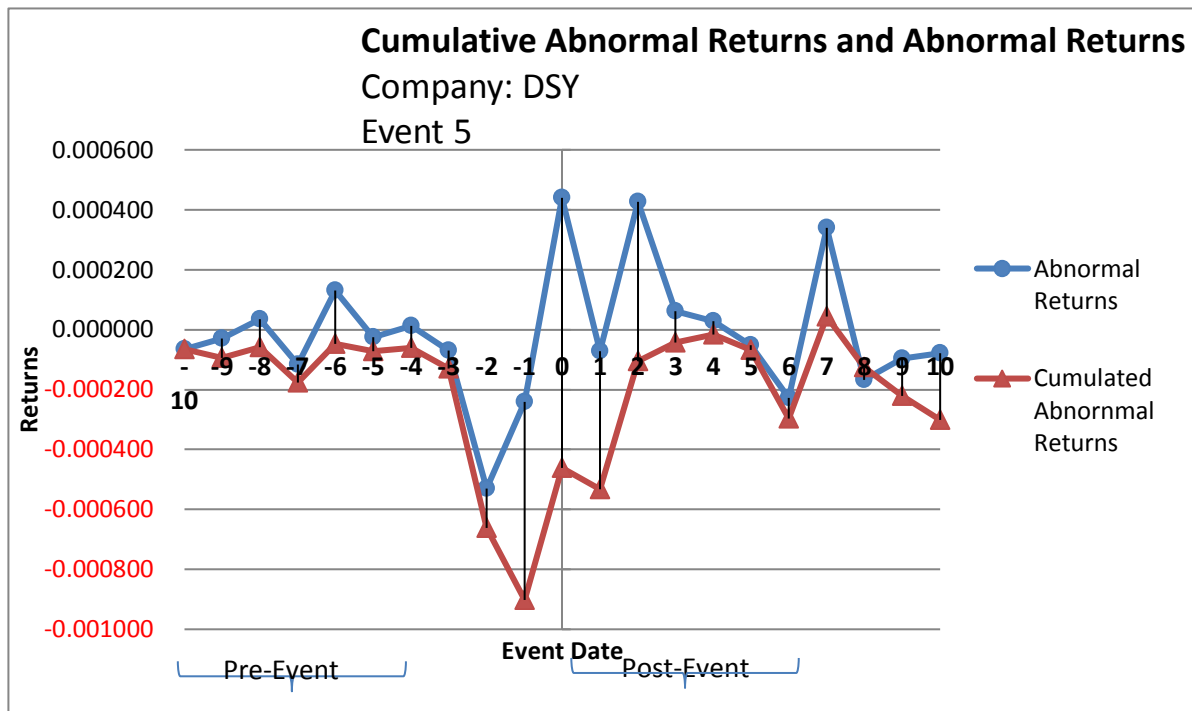


Chart 18 Returns analysis

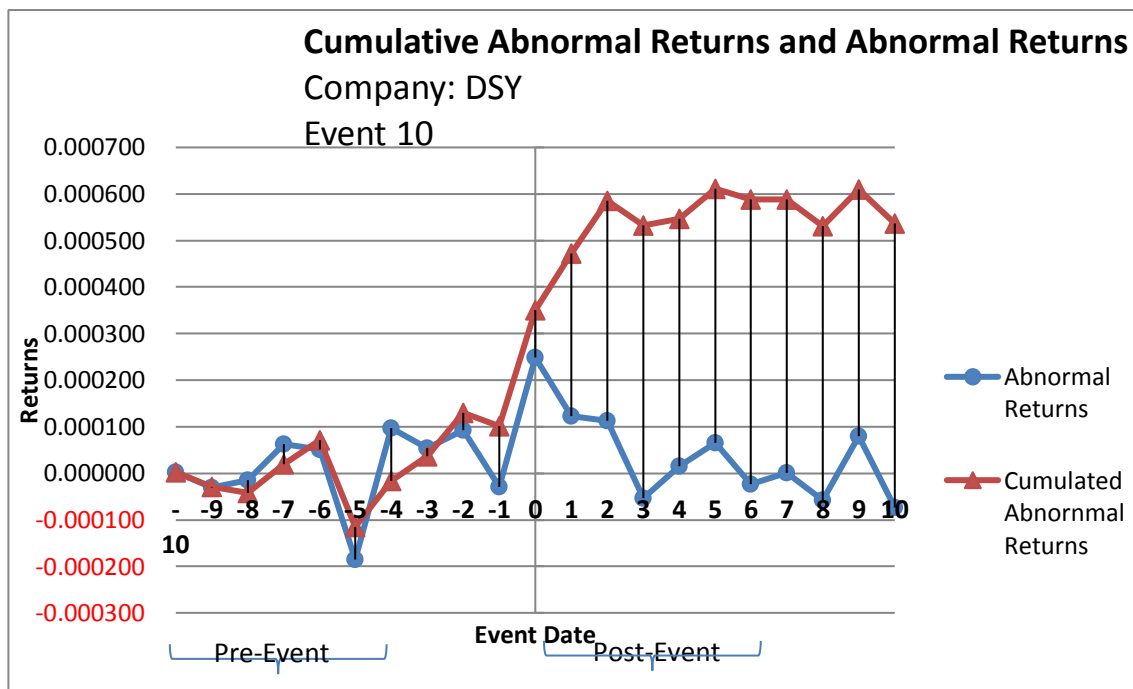


Chart 19 Returns analysis

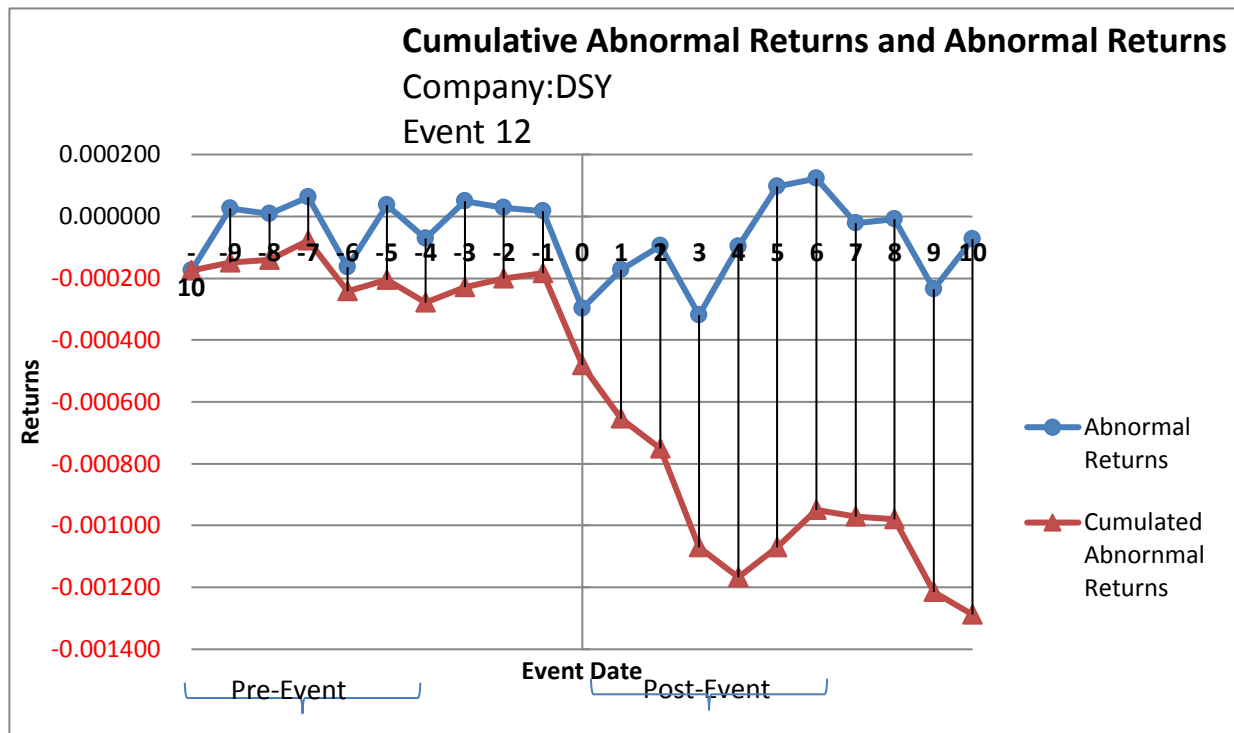


Chart 20 Returns analysis

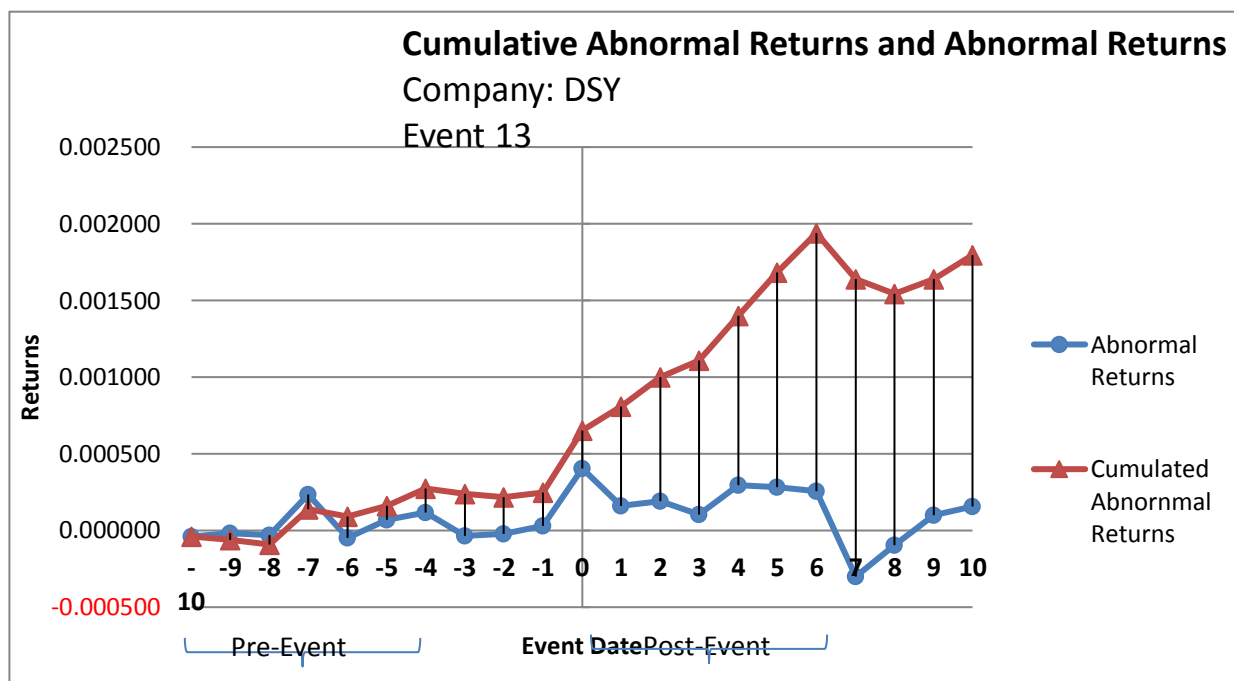


Chart 21 Returns analysis

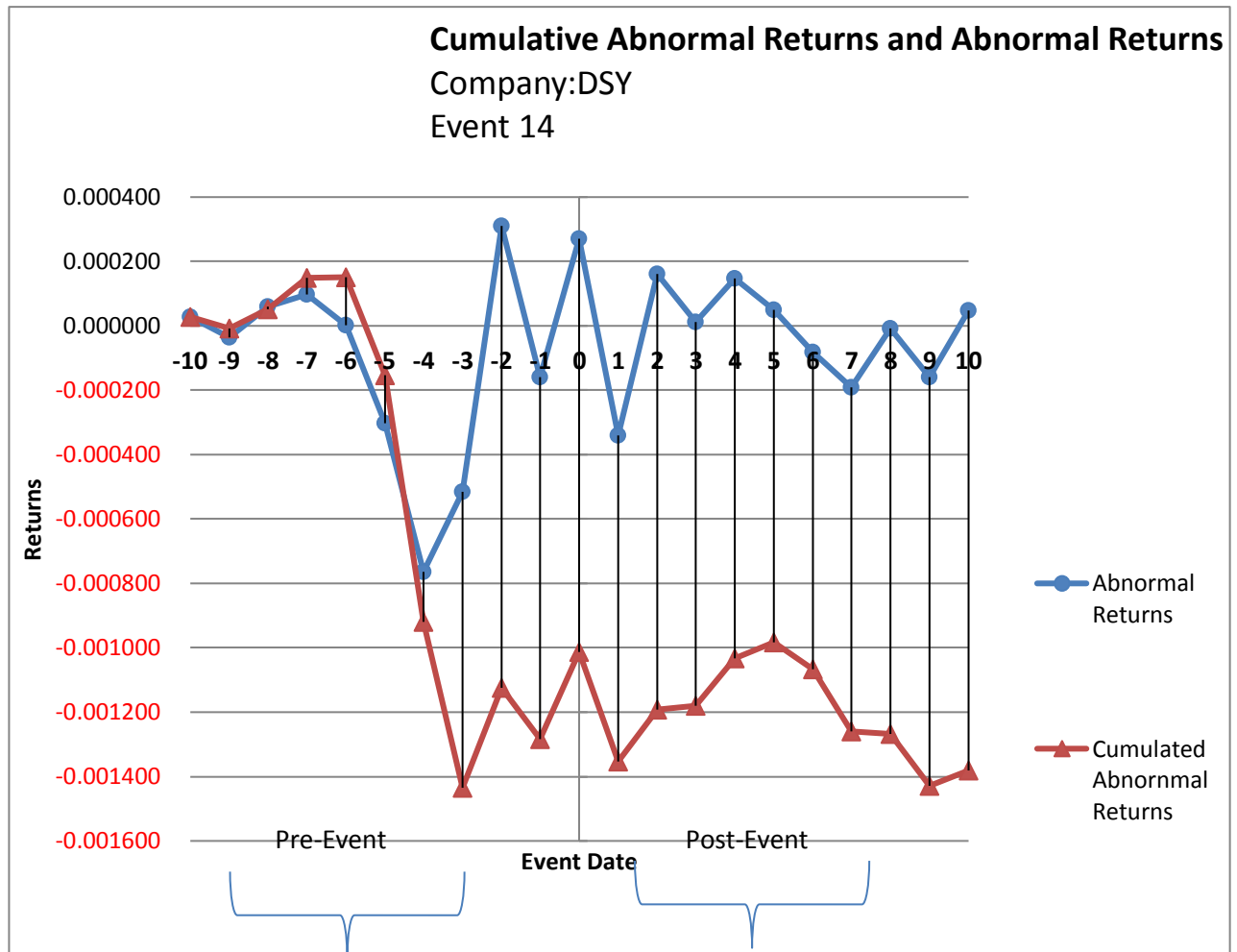


Chart 22 Returns analysis

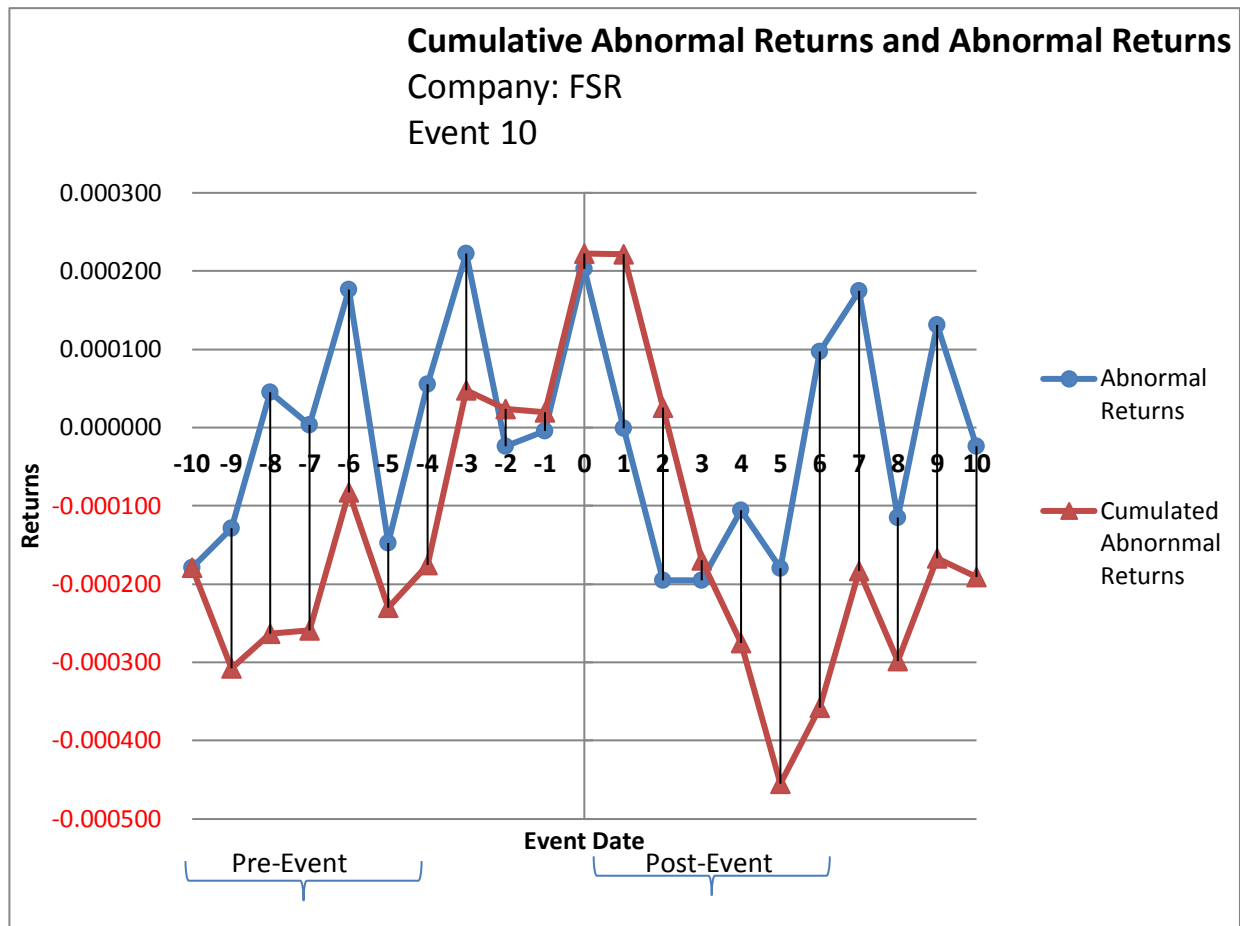


Chart 23 returns analysis

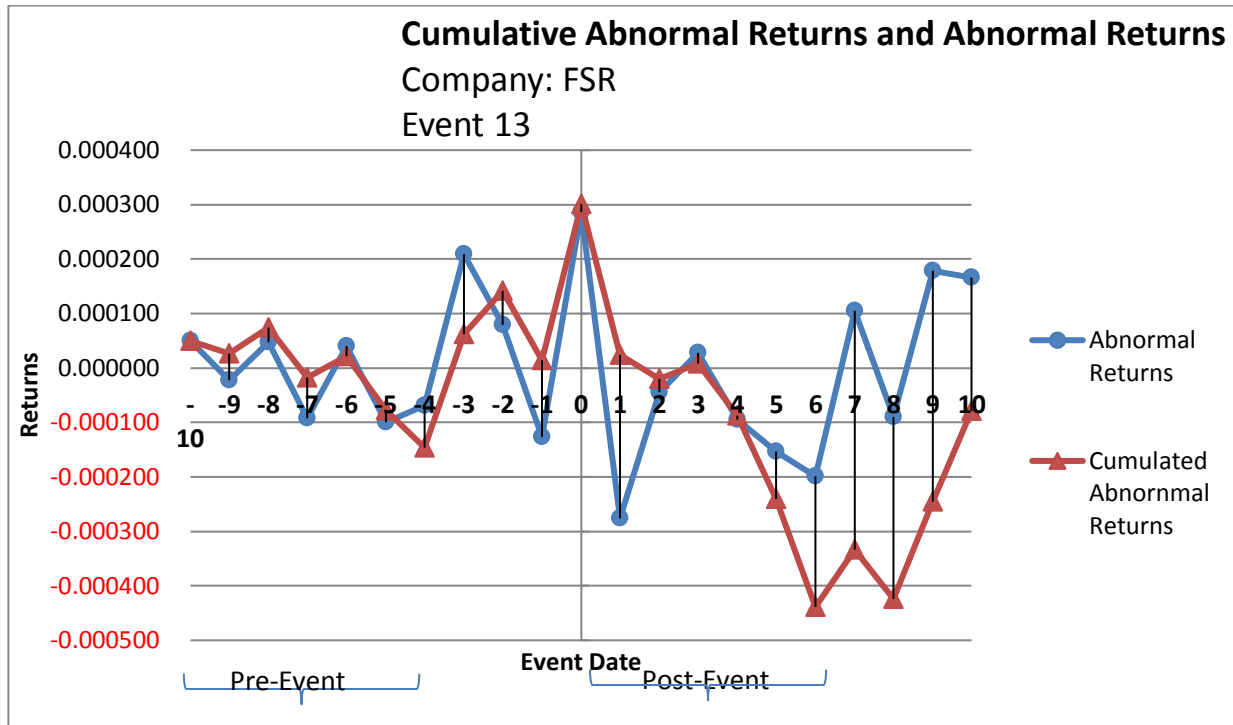


Chart 24 Returns analysis

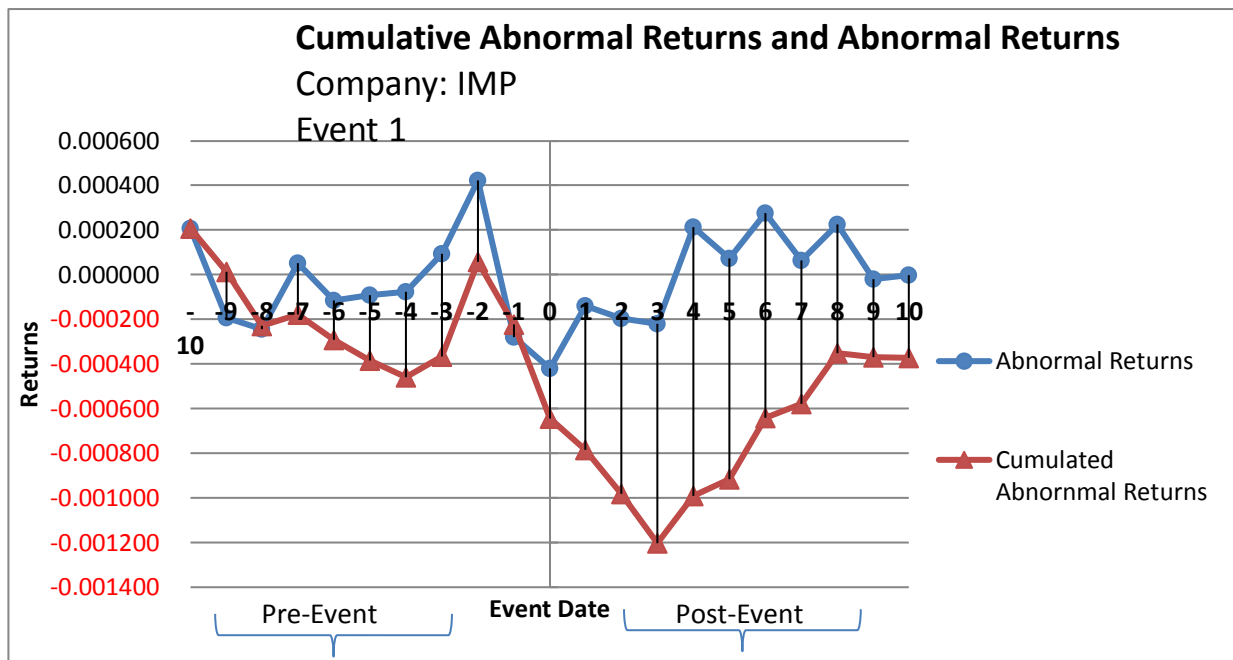


Chart 25 Returns analysis

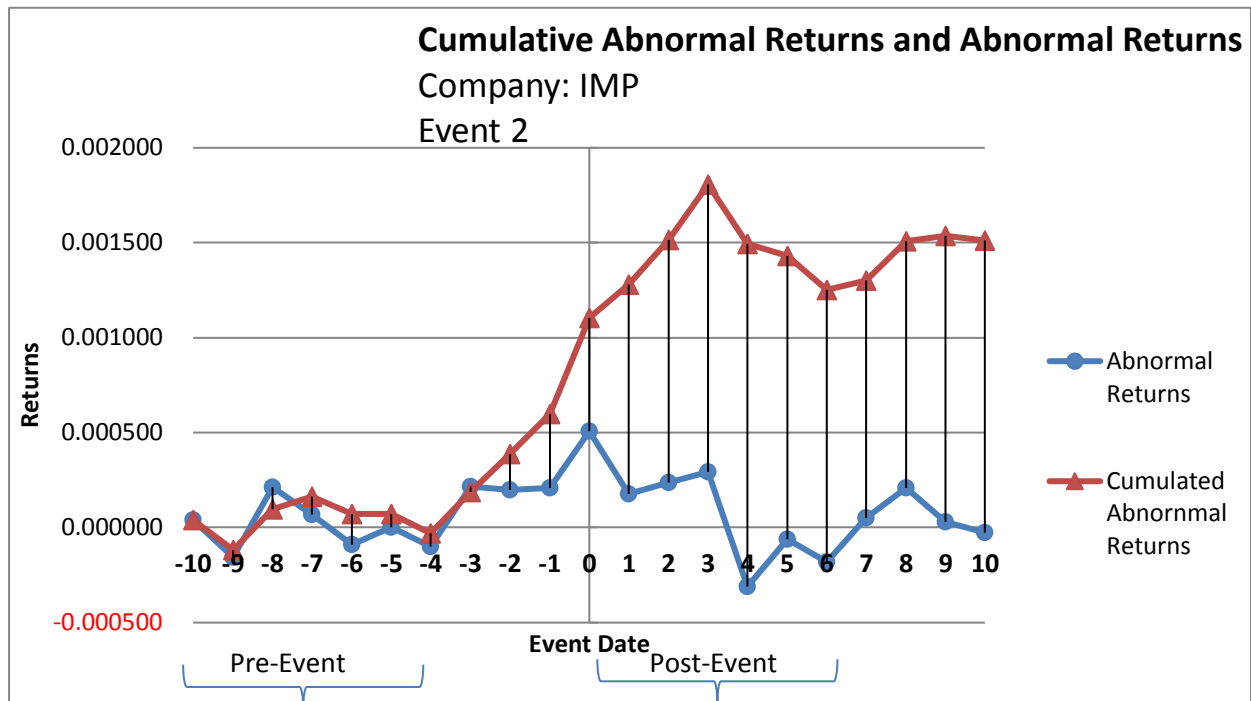


Chart 26 Returns analysis

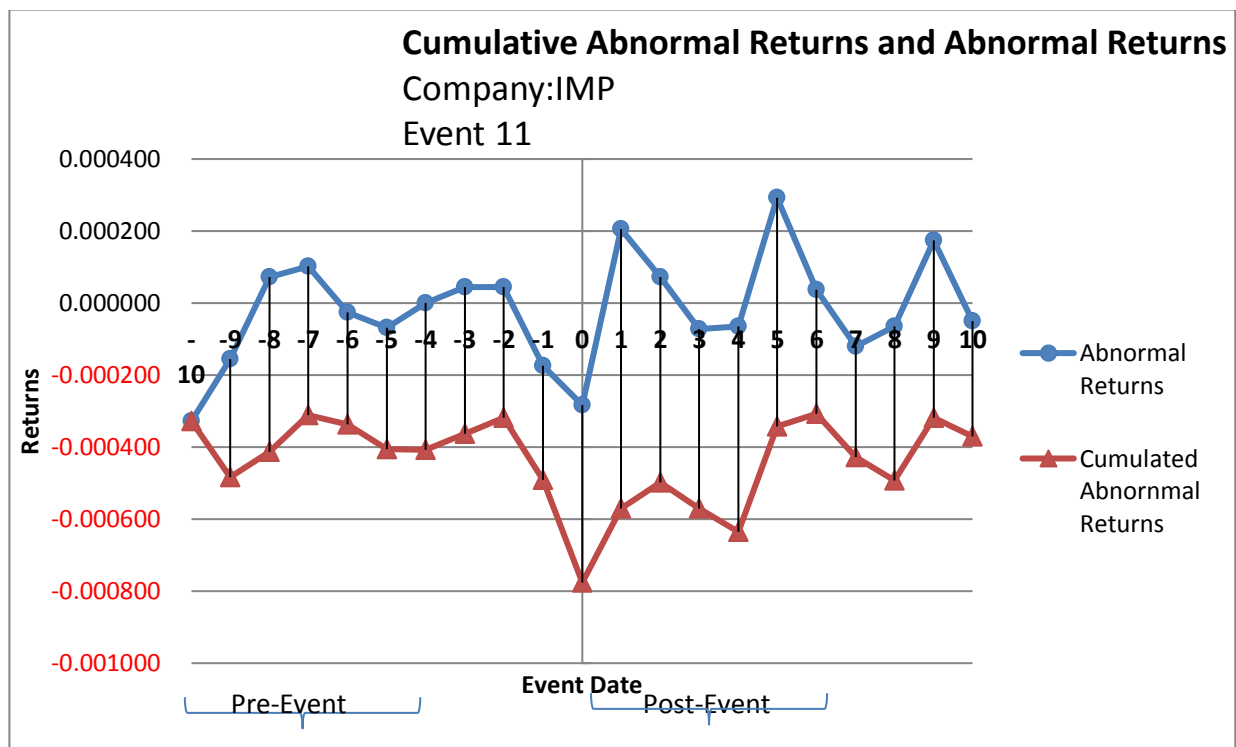


Chart 27 Returns analysis

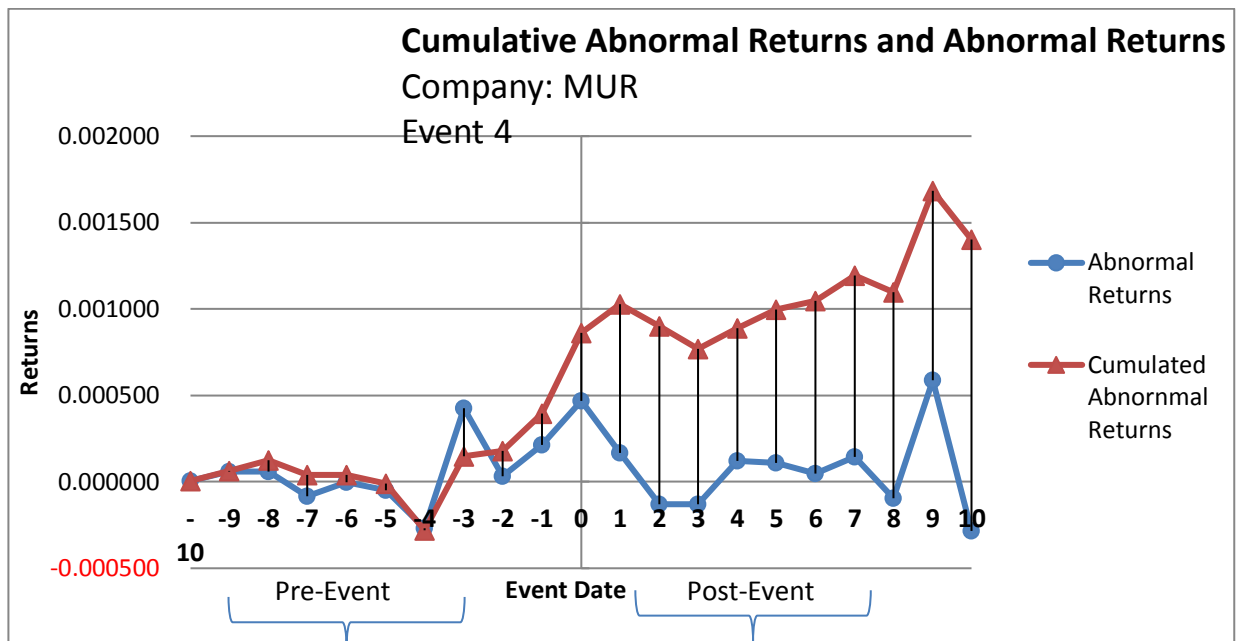


Chart 28 Returns analysis

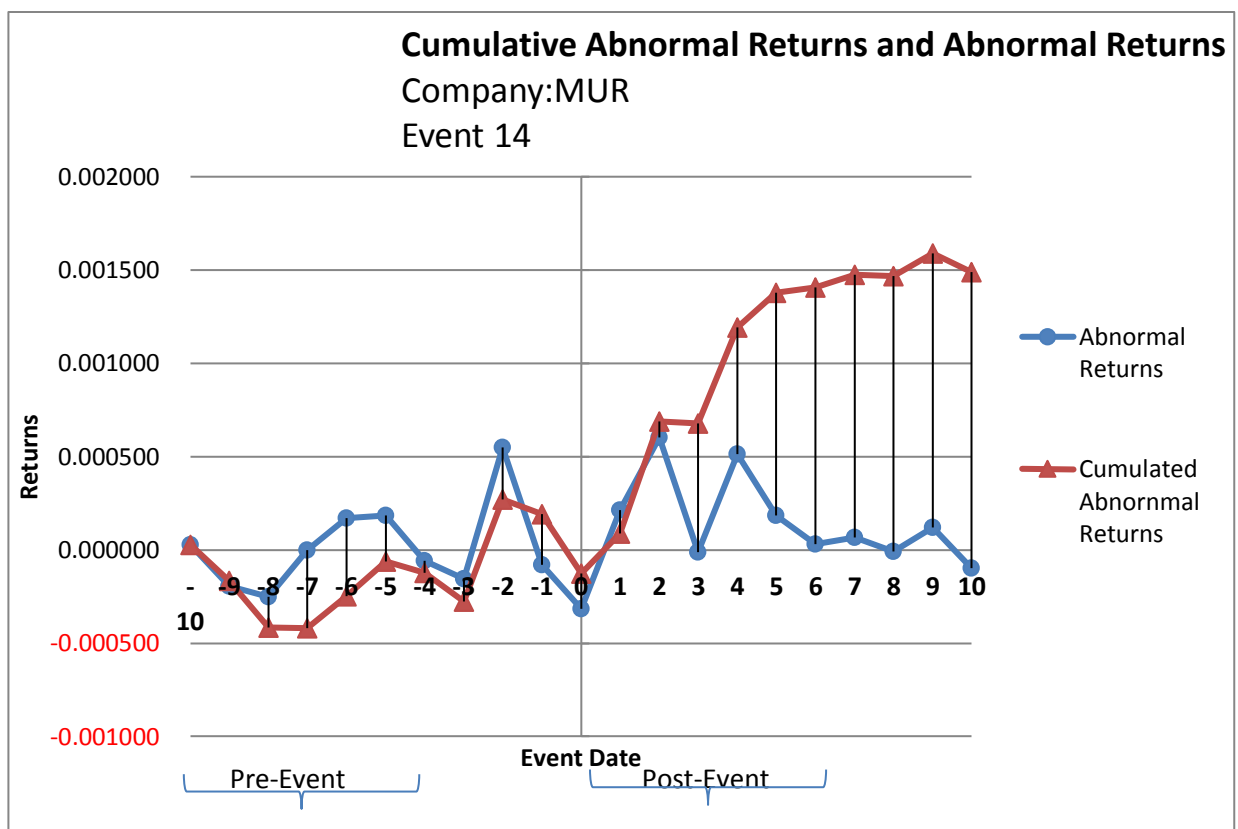


Chart 29 Returns analysis

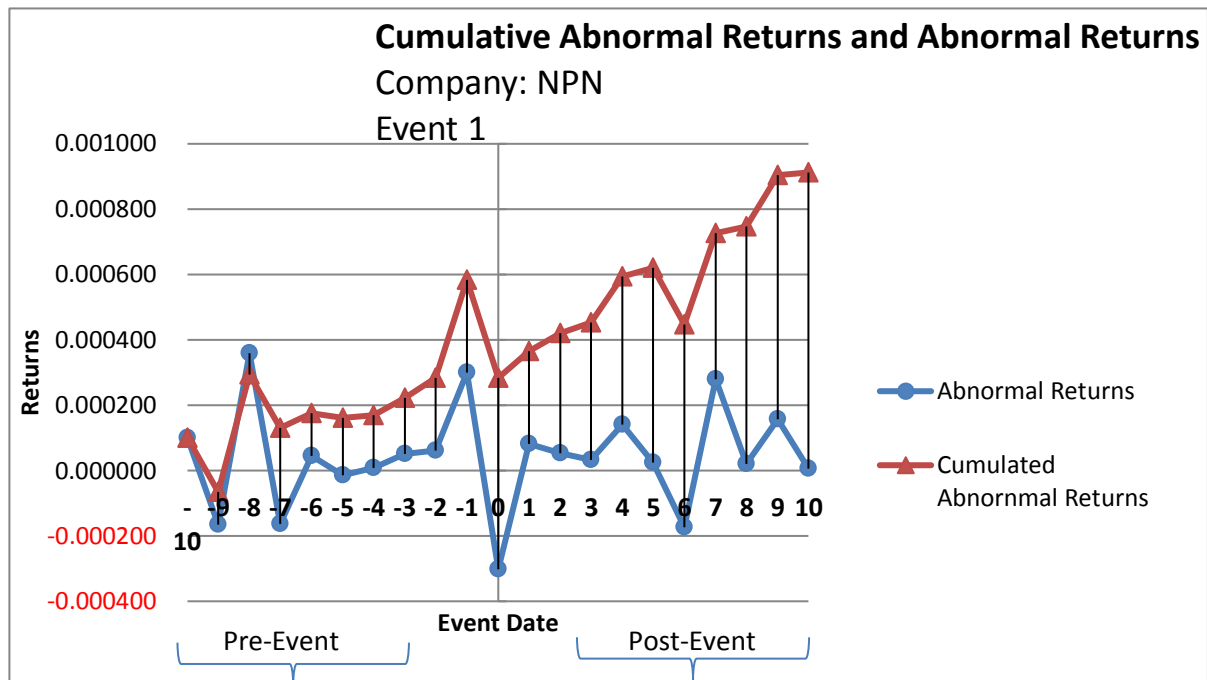


Chart 30 Returns analysis

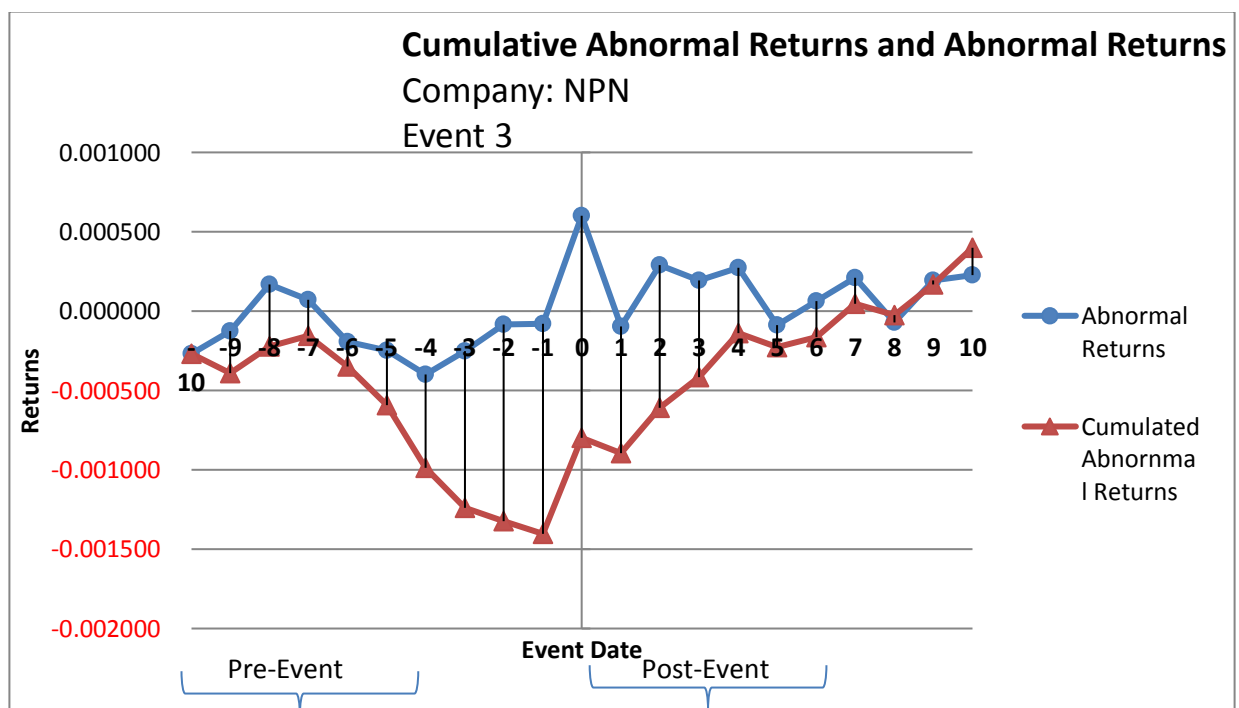


Chart 31 Returns analysis

