THE EFFECT TERRORIST ATTACKS ON THE STOCK PEFORMANCE OF INSURANCE COMPANIES LISTED IN THE NAIROBI SECURITIES EXACHANGE

BY

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DECLARATION

I declare this Research Project as my original work and has not been submitted for the award of a Degree in any other university.

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DEDICATION

This work is dedicated to my parents; Mr. and Mrs. Tilas Kivuthi, my brothers; Sam and Mark and sisters; Rachel and Esther, for the moral support and peace accorded during the entire time of writing the project. Finally, I dedicate this to my dear friend Mercy for her massive contribution and moral support in making this dream come true.

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ABBREVIATIONS

AKI- Association of Kenyan Insurers

AR- Abnormal Returns

CAR- Cumulative Abnormal Returns

CMA- Capital Markets Authority

COMESA- Common Market for Eastern and Southern Africa

DDM- Dividend Discount Model

EMH- Efficient Market Hypothesis

EPS- Earnings Per Share

FDI- Foreign Direct Investments

GARCH- General Auto Regression Conditional Heteroskedasticity

GTI- Global Terrorism Index

IEP- Institute for Economics and Peace

IRA- Insurance Regulatory Authority

KNCHR- Kenya National Commission on Human Rights

NSE- Nairobi Securities Exchange

ABSTRACT

The stock market is a very critical ingredient to the economic development of a country as it facilitates the flow of funds for business and provides an investment opportunity for the investor. The massive contribution done by the insurance and financial sectors to the growth of the Kenyan economy is one that cannot be ignored. However, rising cases of terrorism attacks seems to threaten the stability and performance of these sectors either directly or indirectly. Since late 2011, Kenya has seen an upsurge of violence both in form of terrorist attacks and internal inter-community violence. The objective of the study is to establish the effect of terrorist attacks to the stock performance of insurance companies listed at the Nairobi Securities Exchange. The study was conducted using the event study methodology and data analysed using excel. The results were presented in tables, figures and appendices. The study suggests that a more robust research on terrorism and the insurance sector performance especially in emerging markets is necessary in order to draw a conclusion. The results showed that Abnormal Returns (AR) increased slightly for the three events under study. Significance tests on these results showed that that they were significant at 5%. An analysis of the CAR for the three events showed that there existed a positive relationship between terrorist attacks and insurance company stock performance. One day after the event, the CAR for events 2 and 3 increase steadily to 4.23% and 5.2% respectively at the 10^{th} day. From the study, it can be observed that contrary to the general assumption that terrorist attacks affect the stock market negatively, investors in the insurance sector may not loose as well. The study also recommends the inclusion of insurance stocks in portfolio management strategies as well as the increased marketing activities by insurance companies especially on terrorism insurance.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

The stock market is a very critical ingredient to the economic development of a country as it facilitates the flow of funds for business and provides an investment opportunity for the investor. The markets are also used in implementing government privatisation programs (Lee, 1998). The stock market is part of the broader market referred to as the financial market. The securities market also promotes the culture of saving and investment as opposed to consumption. In addition, investors earn a return from such savings and will hence seek to invest where the associated return is high, holding other factors constant. A number of factors influence the returns from stocks, key among them being the fundamental and technical value of stocks. Other determinants include market sentiments all of which may lead to a positive or negative reaction towards stock price movements.

Studies have shown that socio-political events such as war and terror do have an effect on the behaviour of stock prices (Christofis et al., 2010). However, the nature of the effect can be either way depending on the causal relationship between the event and a specific return. There is also a possibility of prosperity rising out of the ashes of war and terror as dictated by the laws of business that every loss to one party is a gain to another party. On the other hand, such events have also been seen to cause adverse movements in economic indicators such as Foreign Direct Investments (FDI) (Kinyanjui, 2014), optimal allocation of capital, increased risk premium and foreign earnings (Drakos, 2010).

Like in any other market, the prices of securities are informed by factors affecting both the supply and demand of the security. Research has been conducted on the causality of some of these factors with respect to stock returns. Such include the study of the effect of terrorism to tourism (Kuto, 2004), the effect of terrorism on Kenya's security market (Keitany & Barasa, 2012), among others. However, a lot is yet to be studied in this topic especially with the rising investor concern on the state of insecurity in Kenya and the effects thereof. It is on this basis that this paper seeks to enumerate the effect of terrorist attacks to the stock performance of insurance companies listed in the Nairobi Securities Exchange (NSE).

1.1.1 Terrorist Attacks

Terrorism is defined as a premeditated, politically motivated violence that is perpetrated against non-combatant targets by sub-national groups or clandestine agents with the intention of influencing the audience (Brauner & Galey, 2003). Swiss Re, one of the largest reinsurance companies has defined terrorism as an act or threat of violence that is harmful to human beings, tangible or intangible property or infrastructure, with the intention or effect to influence any government or public into a state of fear. The Institute for Economics and Peace (IEP) acknowledges that there is no single internationally accepted definition of terrorism. While literature on this topic abounds with competing definitions and typologies, the IEP explains terrorism as "the threatened or actual use of illegal force and violence by a non-state actor to attain a political, economic, religious or social goal through fear, coercion or intimidation (Institute for Economics and Peace, 2014).

The level of insecurity in Kenya has recently increased since the country's defence forces invaded Somalia in a bid to stabilize the nation through an operation known as *Operation Linda Nchi* (Swahili for "protect the country"). Since late 2011, Kenya has seen an upsurge of violence both in form of terrorist attacks and internal inter-community violence. This has in effect caused a "siege mentality" across the country and even outside its borders. According to the KNCHR report, a total of 3060 Kenyans have lost their lives due to insecurity in the country over the last four years (2011-2014). In 2015 alone, Kenya has seen a series of attacks mainly in various counties, and most recently in Garissa, where 147 lives, mostly students, were lost in the Garissa University attack. There has been a massive destruction of property and displacement of people over the same period of time as a result of these attacks. About 180,300 people were displaced and billions of shillings in form property destroyed in terror attacks in Nairobi, Lamu, Garissa and Mandera (KNCHR, 2014). The provision of labour and other services to the main sectors of the economy mainly tourism, banking, agriculture, education and health has been disrupted over the period with professional bodies and trade unions recalling their members from these insecurity prone areas.

The Westgate attack in Nairobi was ranked 8th in the world's worst attacks of 2013 and was one of the largest attacks that involved fatalities, injuries, loss of property and business hours in Kenya. The Insurance Regulatory Authority (IRA) released a report indicating that the cover on Westgate Mall for property and business interruption amounted to Sh6.7 billion. However, insurance claims were expected to surpass Sh10 billion with the extra claim arising from individual business tenants for lost stock and shoppers' personal property.

According to IRA, this claim is equivalent to a third of total industry pay-out for the year 2012 (Nzioka, 2013). Though no bankruptcies have been reported in spite of the magnitude of these payments, insurers and reinsurers incurred large cash outflows. The capital base of many of the insurance companies involved was severely hit while portfolios would probably experience losses with the declining stock returns.

Several attempts to quantify the weight of terrorist attacks have been put forward by governments, institutions and even individuals. However, no one methodology has been universally accepted as a true measure of the magnitude of an attack due the diversity in motivation for the quantification. One such methodology was developed by IEP, known as the GTI Scoring System which accounts for the relative impact of incidents in a country for a particular year. The factors considered include the number of incidents, fatalities, injuries and the approximate value of property damaged in a particular year. Each of the factors is weighted differently and a five year weighted average applied to determine the final score (Institute for Economics and Peace, 2014). According to the IEP report for 2014, Kenya scored a GTI of 6.58 and was ranked 12th in the world, six places up from year 2012 ranking. Iraq, Afghanistan, Pakistan, Nigeria and Syria topped the list in that order (Institute for Economics and Peace, 2014).

1.1.2 Stock Performance

A stock represents a share of ownership in the net assets of a firm and may be transferable from one holder to another. Like in any other business transaction, a person holding, buying or selling a stock expects to increase his value at the end of the day. This increase in value may be in form of dividends earned or a change of

price over time, also known as capital gains. Since dividends are earned after a long period of time, mostly one year, investors tend to concentrate more on the capital gains. The study of share performance in stock markets is one of the most important topics in finance not only with scholars but with investors. However broad the subject is, the major focus is always to develop an explanation of how stocks perform with respect to the underlying factors. Fama (1965) developed the Efficient Market Hypothesis (EMH) arguing that all information affecting a share price will be immediately reflected in the share price. However, the lack of rationality in investor behaviour has led to the development of the behavioural finance theory which is based on the fact that investors will not always be rational.

An efficient market eliminates almost all forms of frictions in the trading process. Important information especially on price and volumes of past transactions is also readily and widely available while price sensitive information is both timely and accurate. Such a market also ensures price continuity in that there are no major variances between current and prior prices of stocks. However, in the presence of new significant information, prices are expected to change significantly to reflect the value of this new information.

Fama (1965) asserts that “in an efficient market, competition among the many intelligent participants leads to a situation where, at any given point, actual prices of individual securities already reflects the effects of information based both on events that have already occurred and events which, as of now, the market expects to take place in the future. In other words, in an efficient market at any point in time, the actual price of a security will be a good estimator of its inherent value”. From this, it

can be said that prices will only change upon the arrival of new information. Price changes from one period to another are expected to be random and independent as long as there is no reason to expect new information to be non-random. Simply put, security prices must be un-forecastable if they are properly anticipated.

The return of a stock can also be explained as the difference in value of a security between the time of purchase and the time of selling the security. This definition also includes all incomes that are earned in between these two points in time. Rationally, every investor will want to maximise this value, and this fact forms the basis of finance and investments.

1.1.3 Terrorist attacks and Stock Performance

Theoretical valuation models such as the Dividend Discount Model (DDM), Free Cash Flow Valuation and Residual Income Valuation have explained that there is a relationship between stock prices and the micro/macro-economic variables in the market. The general conclusion from the three models is that the value of a stock will be equal to all future cash flows derived from the asset. This therefore means that any factor that has an effect to the cash flows will also have an effect to the value.

The impact of terrorism has been studied by different scholars in different fields. The main studies have been done on the impact to economic performance and financial market returns. Aslam and Kang (2013) studied the impact of terrorism on financial markets and found that terrorist events have a negative impact on the performance of stock markets. Drakos (2010) studied terrorism activity, investor sentiment and stock returns and found out that terrorist activity led to lower returns on the day of the

event. Research on terrorism and financial markets have shown a negative relationship, with other studies showing that it adversely affects the business environment (Larobina & Pate, 2009; Blomberg et al (2009); Frey, 2009). Anh & Carl, 2009, found out that the attack on the World Trade Centre and the bombing of London reduced market returns in both the Karachi and Tehran stock exchanges five days after the attack. They also found that the high levels of uncertainty brought out by the attack led to a reduction of investor activity. Research on the effects of terrorism on stock performance was also conducted by Eldor and Melnick (2004), Kuto and Grooves (2004) among others. In Kenya, studies have shown that terrorist activities indeed have a negative impact on returns at the Nairobi Stock Exchange on the day of the attack, spread over a few days after (Keitany & Barasa, 2012). This was evidenced by the decline in the NSE 20 share index, abnormal returns and cumulative abnormal returns around the attack dates. Kinyanjui (2014) also studied the impact of terrorism on Foreign Direct Investment in Kenya and established a negative relationship.

1.1.4 Insurance Companies Listed in the Nairobi Securities Exchange

The history of the development of commercial insurance in Kenya is closely related to the historical liberation of the country as a nation (Kennedy & Throup, 1988). Economic activities set up by European settlers continued to generate assets which in turn required a form of protection against risk exposures. British insurers saw this opportunity and established agency offices to cater for the growing need for insurance services (Digr & Maxon, 1993). As at the end of 2013, there were 48 registered insurers in Kenya, growing from 43 in 2007. 25 of these wrote non-life insurance, 12 wrote life insurance while 11 were composite. At the same time, there were 187

registered brokers, 29 medical insurance providers and 4628 insurance agents. The industry incurred net claims totalling Kes. 63.35 billion in the year 2013 compared to Kes. 56.03 billion in the year 2012, representing an increase of 13.1%. Insurance penetration also grew to 3.44%, making the sector the leading insurance industry in East Africa and also a key player in the COMESA region (Association of Kenyan Insurers, 2013).

In Kenya, the Nairobi Securities Exchange (NSE) is the trading ground for publicly listed company securities. The stock exchange was formed in 1954 as a voluntary association of stock brokers registered under the Societies Act. It was charged with responsibility of developing the stock market and regulating trading activities. The market is subdivided in to segments namely Agricultural, Automobiles and Accessories, Banking, Commercial and Services, Construction and Allied Sector, Energy and Petroleum, Insurance, Investment, Manufacturing and allied, and lastly, Telecommunication and Technology (Nairobi Securities Exchange, 2013). As at the end of August 2015, there were only six companies listed in the insurance sector (See Appendix 1).

The players in the insurance industry are represented by the Association of Kenyan Insurers (AKI) and regulated by the Insurance Regulatory Authority (IRA). IRA was established under the Insurance (Amendment) Act of December 2006 and is mandated to formulate and enforce insurance standards, approve tariffs and rates, and deal with complaints from the public. IRA also monitors and enforces claim settlement and ownership of insurance companies. AKI acknowledged that even though the uptake of terrorism insurance is still considered to be low in Kenya, there was an expected

increase of insurance covers after the Westgate attack in Nairobi, which will impact the general industry statistics.

The Westgate mall was insured by Kenindia Assurance Co. Ltd, and re-insured by Lloyds and the African Trade Insurance Agency. Although Lloyd was expected to carry a large part of the estimated 10 billion shilling insurance claim, the eventual pay-out by the Kenyan firms was still substantial. 63 per cent of this claim was related to the property and business interruption in Westgate, another 10 per cent to Nakumatt Supermarket and a further 26 per cent to other shops and banks. This excludes the deaths, injuries to people and vehicles and other properties burnt down during the attack. With such big claims at stake, financial investment theory postulates that such information may influence subsequent decisions made by the investor. According to the AKI report of 2013, the combined industry claims expense went down by 4.58% in the year 2011 from the recorded industry total of year 2010. However, the same increased by 48.66% in the year 2012 and further grew by 13.06% as at end of year 2013. In all the 5 years from 2009 to 2013, claims contributed to 1/3 of total expenses and were proportionately 50% of the total income (Association of Kenyan Insurers, 2013). Though this growth may not be directly attributed to the increased risk of terrorism in the country, the Free Cash Flow (FCF) valuation model explains the relationship between this trend and the value of the firm.

1.2 The Research Problem

The massive contribution done by the insurance and financial sectors to the growth of the Kenyan economy is one that cannot be ignored. However, rising cases of terrorism attacks seems to threaten the stability and performance of these sectors either directly

or indirectly. Kenya has already seen the deterioration of the tourism sector, loss of profits, property and lives as a result of terror. The nature of business in the insurance sector dictates that the industry bears the final losses as a result of these attacks inform of compensation claims. It therefore follows that understanding the effect of terrorism to these sectors will be valuable for operators in the industry, investors and even for national economic planning. Terrorism and national insecurity are one of the most talked about issues in Kenya in the recent past. Undoubtedly, terrorism activities have an adverse effect to the general performance of almost all sectors of the economy. The World Trade Centre attack led to huge insurance claims with many insurance companies throughout the world having to disclose the impact of the attack in their financial statements (PriceWaterhouseCoopers, 2001). The topic is so burning that it was addressed by the president of the United States of America, Barrack Obama, during a public address in Nairobi at Kasarani on 26th July 2015 in which he insisted that more needs to be done to stop the menace.

Several studies have been undertaken on the relationship of terrorism with different market parameters. Research on effect of terrorism to the stock market was done by Keitany & Baras (2012) and found out that there was a significant drop in abnormal returns and cumulative abnormal returns as a result of these attacks. Chen and Siembs (2004), and Arin, Ciferri and Spagnolo (2008) also established a negative relationship between terrorism and stock market performance. Although these studies were done around the interrelationship between terrorism and stock markets, to the best of my knowledge, no study has specifically sought to explain how stocks of insurance companies in the Nairobi Securities Exchange (NSE) behave as a result of terrorist attacks.

Therefore, this study was to investigate the behaviour of stocks held in the insurance sector in relation to terrorist attacks. Do current and prospective investors take up such information on terrorist attacks as relevant in their investment decisions?

1.3 Objective of the Study

The objective of the study is to establish the effect of terrorist attacks to the stock performance of insurance companies listed at the Nairobi Securities Exchange.

1.4 Value of the Study

The outcome of this study will inform both current and prospective insurance sector stock investors on the possible effects of terrorist attacks to their stock values. They will learn the importance, if any, of anticipating such events.

Managers of insurance companies and portfolio managers will also benefit from this study as they seek to maximise the value of shareholders and portfolio holders respectively. They will put in measures to minimize any adverse effects identified or take advantage of any possible gains that may result from a terrorist attack.

The government and other regulators can use the findings of this study to formulate policies to strengthen the stock markets, especially the insurance segment stocks. Financial analysts will also find the study relevant in providing insights when advising their clients on when to sell or buy insurance company stocks.

The study is also expected to make a significant addition to the existing body of knowledge on issues of terrorism and its economic implications. It will also provide a source of reference for future studies as researchers seek to fill the gaps left thereof.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This section represents the relevant literature on the effect of terrorist attacks to the performance of stocks in the insurance industry. Both theoretical and empirical literature will be analysed separately to closely explain the interrelationship, after which any gaps in literature review will be identified.

2.2 Theoretical Literature Review

This section discusses the theoretical foundation of the study. A theoretical research has its findings based on existing theories and hypothesis and hence, there is no practical application in the research. This study is founded on both theory and empirical literatures. Ensuing are the theories upon which this study is founded upon.

2.2.1 The Efficient Market Hypothesis

The Efficient Market Hypothesis, considered as the backbone of contemporary financial theory, has been the dominant investing theory since its inception in the 1960's. The EMH is the preposition that current stock prices fully reflect the available information about the value of the firm and that there is no other way to outperform the market using this information. The major concern behind the development of this theory was the need for an explanation of why stock prices change and is therefore a very important tool for both financial managers and investors.

Fama (1965) stated that in an efficient market, the full effect of new information on intrinsic values will be reflected instantaneously in actual prices as a result of competition. This in essence means that in an efficient market, the competing market participants reflect information rationally and instantly such that past information is rendered useless in predicting future prices. The main driver of stock price changes, according to EMH, is therefore the arrival of new information. Since the current price of the security reflects all available information at any given point in time, there is no reason for an investor to believe that a security is either over-priced or under-priced since the price adjusts before the investor can trade on that security.

There are three versions of efficient markets hypothesis. First, the weak form efficiency, which asserts that current market prices fully reflect information contained in the past history of prices only. Therefore nobody can outperform the market using such information. Secondly, a market is said to be semi-strong efficient if all publicly available information such as interest rates, inflation and financial reports have no predictive power to the stock prices. The assertion behind this form of efficiency is that one should not benefit from what everyone else knows. Finally, the strong form market efficiency suggests that security prices fully reflect all available information, both public and private, including insider information. This means that no one should be able to outperform the market even using information not publicly known at the time. The rationale for strong form market efficiency is that the market anticipates future possible development and incorporates this in the stock prices.

In the current world of investment and especially emerging markets, there are obvious arguments against the EMH. Jaffe (1974) found considerable evidence that insider trading is profitable. Rozeff and Zaman (1988) concluded that a 3 per cent profit can be earned from insider trading, after deducting an assumed 2 per cent transaction cost. One of the major applications of the Efficient Market Hypothesis is perhaps the event study analysis. Event study analysis is the determination of the market's reaction to 'events' with the aim of explaining the empirical relationship between security prices and economic factors such as mergers, acquisitions, dividends announcements, loss of assets etc. For instance, the raising of capital stock by issuing stocks with bonuses will create enthusiasm to the investors, something referred to as 'Positive Impact Hypothesis'. On the other hand, issuing stocks with rights leads to the fall of security returns and hence a negative reaction by investors may be experienced. This is referred to as the 'Negative Impact Hypothesis' (Aristeidis and Demitris, 2004).

2.2.2 Signalling Theory

Terrorist attacks do bring new information to the market that may signal a possible change of cash flows available to the investor in the insurance sector. The signalling hypothesis asserts that announcements and new information may trigger share returns simply because they pass a message about the ability of the firm to generate cash flows and maintain profitability. Specifically, the dividend signalling hypothesis assumes a positive correlation between dividends change announcements with share price reactions and future changes in earnings. A number of researchers developed the hypothesis and were able to show that in a world of asymmetric information, better informed insiders use the dividend policy as a costly signal to convey their firm's future plans to the less informed outsiders. This is according to Bhattachrya (1979)

and Miller and Rock (1985). The correlation implies that a dividend increase signals an improvement on the firm performance while a decrease signals a decrease in the firm's profitability.

In finance, information signalling refers to the conveyance of intelligence about a company's financial status and/or goals given through its actions or actions surrounding its operations. For example, an announcement that a firm intends to issue new bonds sends the signal that it has expansion plans and may therefore continue to be profitable in the near future. This will in turn have an effect on the stock prices. In the same manner, the happening of an event which will negatively affect the profitability or cash flows of the firm is expected to send a signal to current and prospective investors and will ultimately have an effect to the stock returns.

2.2.3 Behavioural Finance Theory

The emergence of behavioural finance in early 90's diluted the dominance of the Efficient Market Hypothesis as an investment finance theory. The new theory of human behaviour on investing decision making emerged as a contradictory and surrogating approach to traditional finance. Behavioural finance is defined as the study of how psychology affects financial decisions making and financial markets (Shefrin, 2001). In respect of this definition, some financial decisions may be informed by the investors' less rational behaviour resulting from psychological biases and heuristics. The central assumption of efficient market hypothesis and hence traditional finance is that people are rational. This assumption was challenged by psychologists with the emergence of behavioural finance explaining the effect of cognitive and emotional biases in finance decisions.

The most common heuristics identified under behavioural finance are representativeness, anchoring, herding, overconfidence, loss aversion, mental accounting and regret aversion. These biases lead people to logical fallacy hence challenging the rationality of traditional investing theories. Behavioural finance therefore posits that information and news are inefficient as they may often be deceptively communicated to investors who in turn fail to exploit them since they have already been exploited by other investors. This means although relevant information may be available to investors regarding the performance of their stocks, they may not always act on this information rationally and hence the information is of no value.

2.3. Determinants of Stock Returns

A number of empirical studies have been conducted to find out the determinants of stock prices in different countries and markets. Several researchers examined the relationships between stock prices and some selected factors, which could be internal or external. From the findings, some common factors have been identified that affect stock prices across all stock markets. However, some studies are specific to the market under study and hence cannot be generalised. This is because of the difference between markets in legislation, regulation, country development and other factors unique to the market. These determinants can be classified as either internal or external. Internal factors, also known as company fundamentals, are those that reflect the company's performance. They include factors like earnings per share, dividend per share, book values among others. External factors are those that the firm has no control over and are mainly specific to the market or economy as a whole. They include factors like inflation, exchange rates and interest rates among others.

In their study on terrorism and the Kenya's securities market Keitany and Baras (2012) established that terrorist attacks indeed did affect stock returns. They studied behaviour around two events namely the 1998 and 2002 terrorist attacks and found that they both led to a negative abnormal returns and cumulative abnormal returns (CAR). The same t-statistical test conducted on the 2011 terrorist event, with the same significance level of 5%, found an insignificant effect to both the abnormal returns and cumulative abnormal returns. This implied that investors in the NSE viewed the 2011 attack to be less significant compared to both the 1998 and 2002 attacks. They concluded that terrorist attacks do lead to significantly lower stock returns at the NSE on the event day. This was evidenced by the decline of the NSE 20 share index, abnormal returns and cumulative abnormal returns.

Some of the common determinants of stock returns are explained below.

2.3.1 Dividend Per Share/Earning Per Share

Earnings per share are the profit that the company made per share during a financial period. It is mandatory for every public company to publish a report at the end of financial period that states the earning per share of the company. This is perhaps the most important factor for deciding the health of any company and it influences the buying tendency in the market resulting in the changes in the price of that particular stock.

2.3.2 Market Capitalization

This is the total market value of all of a company's outstanding shares. It is calculated by multiplying a company's shares outstanding by the current market price of one share. The investment community uses this figure to determine a company's size as opposed to sales or total asset figures. The higher the market capitalization of a company, the higher the company's stock price.

2.3.3 Price/Earnings Ratio

This ratio gives a comparison of the company's share price to its earnings. If the price of the share is too much lower than the earning of the company, the stock is said to be undervalued and it has the potential to rise in the near future. On the other hand, if the price is way too much higher than the actual earning of the company, then the stock is said to be overvalued and the price can fall at any point.

2.3.4 Demand and Supply Forces

This fundamental economic rule applies in the market of shares in the same manner it does in the goods and services market. The forces of demand and supply come into force to determine the price of stocks. When more people are interested in a certain stock, the price of that stock increases and when more people are selling the stock, the price of that particular stock falls.

2.3.5 Inflation

Inflation is a major input in the main valuation models in finance and a huge driver of the technical perspective of valuation too. This means that most valuation models give the resultant value of a share as the nominal value adjusted for the effect of inflation.

Historically, low inflation has had a strong inverse correlation with valuations. Deflation is however bad for stocks as it shows a loss in the pricing power of companies.

2.3.6 Incidental Transactions

Incidental transactions refer to those purchases or sales of stocks that are motivated by other forces other than the intrinsic value of the stocks. An example of such transaction is a purchase of stocks made on the basis of executive insider trading or a stock acquisition done to hedge some other investment. Other causes of such transactions can be explained upon a close look at investor behavioural finance. These transactions ultimately interfere with the demand and supply of the stocks and in effect lead to a significant price change. This effect can also be referred to as market sentiment, which is the effect to stock prices triggered by purely psychological factors.

2.4. Empirical Literature Review

Anh and Carl (2009) conducted a study on acts of terrorism and their impact on stock index returns and volatility, focusing on the Karachi and Tehran stock exchanges. Their study applied the GARCH (1,1) model to determine how these factors have affected the stock markets in Iran and Pakistan. They were able to establish that significant, but different, stock return shifts and volatility occurred in the two markets. In their conclusion, they pointed out that these effects have serious implications to the economies represented and provide a good insight to investor reaction with respect to terrorism. They also pointed out that given the characteristics of the markets, investors

can evaluate investment decisions and select hedging strategies to neutralize the risk of terrorism events.

Bashir et al (2013) conducted a study to establish the influence of terrorism activities on the financial markets, focusing on the Karachi Stock Exchange, in Pakistan. The coverage of their study was spread over a period of six years from 2005 to 2005. GARCH and GARCH-EVT models were used to identify the relationship between the two variables. The study established that terrorist activities adversely affected the financial markets with a considerably high significance. They pointed out terrorism as the key variable influencing stock exchange activities in Pakistan followed by politics and instability in the economy.

Aslam and Kang (2013) used data from five Asian stock markets to study the effect of terrorism on financial markets, evidence from Asia. The terrorism data used distinguished the attack type, target type, weapon type and severity of the attack for 410 terrorist events between 1997 and 2011. They also applied event studies and established varying effects to the stock markets under study. The Dhaka and Colombo stock exchanges were found to recover from such events in two days, Jakarta and Philippine recovered in one day while there was no significant effect on the Bombay stock exchange. They established that attacks targeting the business sector and security forces had a more significant effect to stock markets. Terrorist attacks in form of suicide squad and bombs had more negative impact to stock markets than other types. Furthermore, the severity of the attacks in terms of deaths and injuries had larger negative effects on the financial markets.

Keitany and Baras (2012) conducted a research on the effects of terrorism in Kenya to the securities markets. They relied on secondary data obtained from the NSE and applied event study methodology to establish if their existed any relationship between the variables. The study determined that there are significant short-term effects around the terrorism event as evidenced by the decline of NSE 20 share index, Abnormal Returns (AR) and Cumulative Abnormal Returns (CAR). They therefore concluded that indeed terrorism has a negative impact on the security markets. In addition, the analysis results of the events studied showed that investors attach a certain level of importance to each event, explaining why reaction between events varies. The study also suggested that there is need for more studies to establish the relationship between terrorism and other sectors of the economy such as insurance and re-insurance.

Kinyanjui (2014) studied the effect of terrorism on Foreign Direct Investments (FDI) in Kenya. The study utilized secondary data and FDI data for the period from 2010 to 2012. Multiple regression method was used to establish if any relationship existed between the variables under study. Upon analysing the data, it was found that terrorism had a negative effect to FDI in Kenya. The decrease was attributed to a reduction in investor confidence due to increased risk factor. They also established that if one investor experiences losses from an attack, the other investors suffer from spill-over effects.

Kuto and Grooves (2004) studied the effect of terrorism evaluating Kenya's tourism sector with the intention of aiding in the development of crisis management plan. They did a review of researches done on the relationship between terrorism and tourism and summarized a report of the findings. They noted that terrorism has led to

loss of business to the tourism sector due to the fear instilled by terrorist attacks and hence there was need to have a plan at hand to help minimize such negative effects.

2.5. Summary of Literature Review

The traditional finance and investment theory of efficient market hypothesis explained how new information is immediately reflected in stock prices such that no investor would use such information to make abnormal returns. It emphasizes the importance of signalling in making sure that the prices of stocks are adjusted to the value of any available signal. However, the supremacy of this school of thought ends with the introduction of behavioural finance. This new paradigm is a more open-minded market approach and though it does not negate the assumption of the EMH, a new way of financial decision making is introduced. This leaves the researcher with the question of whether investors are rational, irrational or combine both attributes in decision making.

Empirical studies on terrorism and the economic variables in the Kenya have unanimously established a negative relationship. This has been established in the general stock market performance, tourism sector and level of foreign direct investments. This was also supported by studies done outside Kenya which generally agree that terrorism is bad for the economy.

However, to the best of my knowledge, literature on the effect of terrorism to other sectors of the economy like the insurance sector is not available. In addition, literature on the cross effects of terrorism is limited as it would be assumed that for losses to occur on one sector or economy, profits may be experienced on another.

Theoretically, financial scholars have only explained the rational and irrational behaviour of investors. However, there are cases where investors experience a two-tiered thought process where a part of their decision is informed rationally while the other is irrationally informed. For instance, an investor who likes investing in insurance shares may consider the six available insurance stocks even though there may be more profitable stocks outside this bracket, say agriculture.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodology used in conducting the study. It will explain the research design, population of study, methods of data collection and data analysis techniques.

3.2 Research Design

The research was descriptive in nature. It was to analyse the behaviour of returns around the major attacks on Kenyan soil and will apply event study methodology to establish this effect. Event study methodology analyses the market's reaction to an 'event' such as mergers, acquisitions, announcements, new stock issues among others. Event study methodology was applied by Fama, Fisher, Jensen and Roll (1969), Brown and Warner (1980), Chen and Siems (2004) among others.

The event study methodology is one of the most popular statistical designs in finance. The methodology is mostly used by insurance firms and researchers in insurance to assess the impact of insured and uninsured events on individual firms. It is also applied in measuring the impact of market-wide events such as regulation or legislation on the market as a whole or on individual industry segments. Event studies are further subdivided into market efficiency studies and information usefulness studies. The former is used to assess how quickly and correctly the market reacts to a particular type of new information. The latter is used to assess the degree to which company returns react to the release a particular bit of news (Henderson, 1990). In

event studies that analyse stock returns where the event is political, economic, or a natural crisis, the ARCH and GARCH models have become more popular since they allow for changes in mean market returns and changes in volatility of returns (Anh and Carl, 2009).

3.3 Population

A population is defined as a group of objects that provide the sample that is under study. Currently, only six insurance companies are listed in the Nairobi Securities Exchange (See Appendix 1). A census survey was therefore conducted.

3.4 Data Collection

Secondary data was used for this study. Data was obtained from the Nairobi Securities Exchange authorised vendors for daily individual stock prices of the six stocks under study. Also obtained was the NSE 20 share index data as tabulated and stored by the NSE.

3.5 Data Analysis

For the purpose of the study, only three events were studied, chosen on the basis of estimated value of property destroyed, injuries caused to people and the number of resulting deaths. The first terrorist attack was the 2013 Westgate attack in Nairobi, followed by the 2014 attack in Lamu (Mpeketoni) and finally the Garissa University attack of 2015 (See Appendix 2).

To determine the magnitude of this effect, the event-day Abnormal Return (ARs) and the Cumulative Abnormal Returns (CARs) were determined and their statistical significance tested accordingly. The first step in this event study will be to define the event date. For clarification purposes, the date of the event may not refer to the specific day that the event took place but will be referring to the period when the market's most informed and interested segment reasonably anticipated the information. For the purpose of this study, the event is the terrorism attack. The event window was 21 days, ten (10) days before the attack and ten (10) days after the attack, with the event day taken as day 0. The second step was to characterize the returns of the individual company stocks in the absence of the terrorism related news. This was used in analysing the impact of the event on the stocks' returns by determining the abnormal returns. The abnormal return is the actual ex post return of the security over the event window less the expected return of the stock over the event window. The normal return is defined as the expected return without conditioning on the event taking place. This means that the abnormal return reflects that part of the stock return that is not predicted and is therefore the event's effect on the stock return. The investigation was conducted on each terrorist attack and a conclusion made after testing the significance of the abnormal returns thereof.

In a mathematical equation, Abnormal Returns (AR) = Actual Returns (R) – Expected Returns (ER)

For firm *i* and event date α, the abnormal return is

$$AR_{i\alpha} = R_{i\alpha} - E(R_{i\alpha}/X_{\alpha})$$

Where;

$AR_{i\alpha}$ is the Abnormal Return for the stock of firm i for the period α

$R_{i\alpha}$ is the Actual Return for the stock of firm i for the period α

$E(R_{i\alpha}/X_{\alpha})$ is the Normal Return for the stock of firm i for the period α

X_{α} is the conditioning information for the normal return model

To model the normal return, the market model will be applied where X_{α} becomes the market return. The main assumption in this model is that there exists a linear relationship between the market return and the security return.

For any stock *i*, the market model will be:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

$$E(\varepsilon_{it}=0)$$

$$\text{var}(\varepsilon_{it}) = \delta^2_{ei}$$

Where:

R_{it} and R_{mt} are the period-t returns on security *i* and the market return respectively.

ε_{it} is the zero mean disturbance term

α_i, β_i and δ^2_{ei} are the parameters of the market model.

Finally, the abnormal return observations must be aggregated in order to draw overall inferences for the event of interest. The Cumulative Abnormal Returns (CARs) will be estimated as the sum of the average abnormal returns for the period around the event. This will show if the event has a positive or negative effect on the stocks.

Defining $CAR_i\ (t_1, t_2)$ as the population cumulative abnormal return (CAR) from t_1 to t_2 where $T_1 < t_1 \leq t_2 \leq T_2$. The CAR from t_1 to t_2 is the sum of the included abnormal returns,

$$\text{CAR}i\ (t1, t2) = \sum_{t=t1}^{t2} A\ R_{it}.$$

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND ANALYSIS

4.1 Introduction

This chapter presents the results of the analysis and findings of the study with reference to the study objectives. The first section gives a summary of the data analysis method used. The second part gives the findings of the study including relevant tables and figures that help explaining the results of the analysis. The last part will give a summary of finding and interpretation of results.

4.2 Data Analysis

The objective of the research was to establish the effect of terrorist attacks on the returns of insurance company stocks. Three terrorist attacks were chosen and an event study methodology conducted to establish this effect, if any. Therefore, the study is an analysis of the performance of the securities before and after each attack.

Secondary data was obtained from authorised NSE data vendors in excel format. This was analysed using excel data analysis tool kit for further drawing of statistical inferences. To establish the statistical significance of the results, a parametric t-test was conducted for both the Abnormal Returns (ARs) and Cumulative Abnormal Returns (CARs).

The event period was determined in relation to the actual terrorist event where a 21 day window was used consisting of 10 days before and after the attack. Day 0 represented the terrorist attack day.

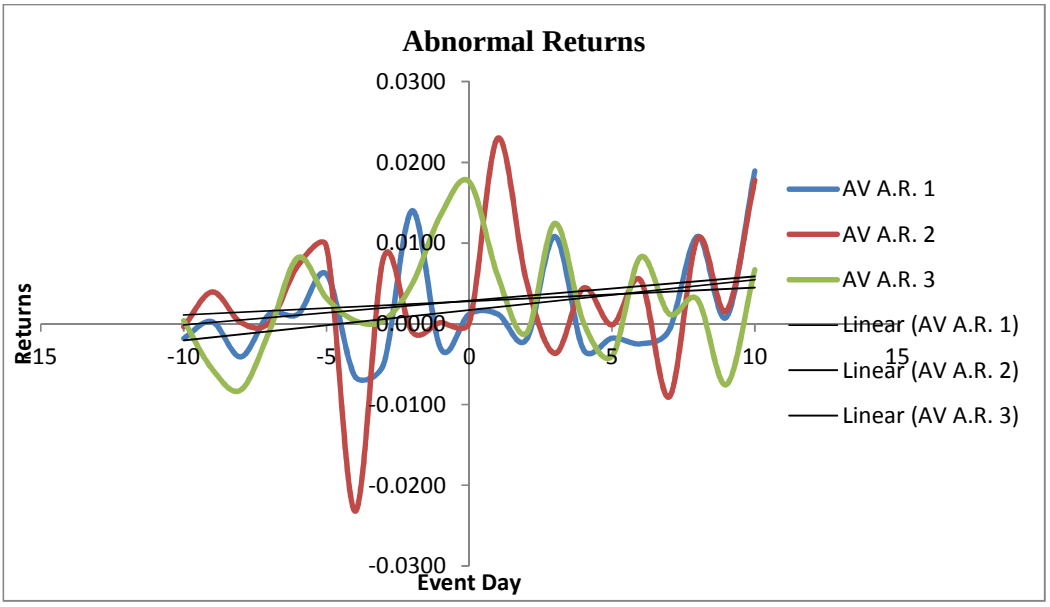
4.3 Analysis Results

The researcher used Microsoft Excel to analyse the data. Below is a discussion on the statistical tests conducted followed by the event-day Abnormal Returns (AR) and Cumulative Abnormal Returns (CAR).

4.3.1. Abnormal and Cumulative Abnormal Returns

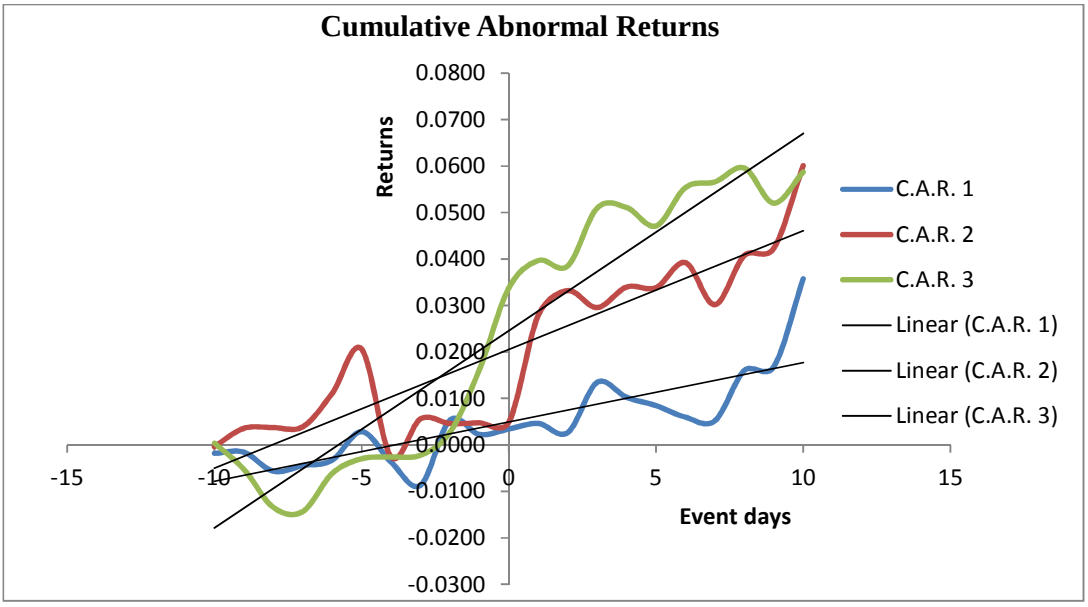
In this study, event study methodology is used to measure the magnitude of the effect of terrorist attacks on stock returns of insurance companies. The market model was used to estimate the expected return where a 20 day estimation period before the window was used. The calculation of individual company expected return is shown in appendix III. Measurement was done for event-day abnormal returns (AR) and cumulative abnormal returns (CAR) for each of the three terrorist events under study (See appendix IV and V). Statistical significance tests were done for each of the three terrorist events.

Figure 4.1: Linear Plot for the Average Abnormal Returns



Abnormal returns experienced 10 days before the event day appear to be very random though a closer look at the trend shows that there is an increase of abnormal returns over the window period. Average abnormal returns for the 2013 Westgate attack increased gradually from -0.18% on the 10th day before the attack to a high of 1.4% 2 days before the attack. It then went down to 0.12% as at the day of the attack and remained negative for 7 days after the attack before going up again to 1.89% as at the 10th day after the attack. The average AR for the 2014 Lamu attack also started at a negative position of -0.04% 10 days before the attack. This grew gradually to 0.02% on the day of attack and 2.3% 1 day after. However, the returns continued to move randomly and closed at 1.78% on the 10th day after the attack. Average AR following the 2015 Garrisa attack grew almost steadily on the 10 day period before the attack to 1.76% as at the day of the attack, which went down to 0.59% 1 day after. Mixed reactions were experienced after this point and the abnormal return from this event closed at 0.67% on day 10 after the event.

Figure 4.2: Linear Plot for the Cumulative Abnormal Returns



The cumulative abnormal returns for the three events under study showed a decrease on the 7th day before the attack before increasing to 0.34%, 0.49% and 3.38% for event 1, 2 and 3 respectively on the day of the attack. After the day of the event, the CAR for events 2 and 3 increase steadily to 4.23% and 5.2% respectively at the 10th day. However, CAR for event 1 increases to 0.46% 1 day after the attack before decreasing to 0.26% on the 2nd day. After this, the CAR increases gradually to close at 1.68% on the 10th day after the attack.

4.3.2. Statistical Test

The researcher used the T-test to test the statistical hypothesis of the study and determine whether the means of the two data groups were statistically different from each other. The hypothesis test was conducted as follows:

Null Hypothesis: Terrorist attacks have no effect on the stock returns of insurance companies listed in the Nairobi Securities Exchange.

Alternate Hypothesis: Terrorist attacks have an effect on the stock returns of insurance companies listed in the Nairobi Securities Exchange.

(i) T-Test for the Abnormal Returns (AR)

The results of the test between the AR and market returns are shown in the table below.

Table 4.1: t-Test for two-sample Assuming Unequal Variances

	EVENT 1		***EVENT 2***		***EVENT 3***	
Mean	0.001877052	0.00116	0.003022716	-0.0002	0.002916599	0.0021
Variance	4.62993E-05	1.1E-05	9.01907E-05	2E-05	4.78922E-05	8E-06
Observations	20	20	20	20	20	20
Df	28		26		25	
t Stat	0.423612305		1.40632708		0.459140654	
P(T<=t) two-tail	0.675085061		0.171467062		0.650100456	
t Critical two-tail	2.048407142		2.055529439		2.059538553	

Following the results of the t-test above, the t Stat< t Critical, while the p value>0.05 for all the three events and therefore the null hypothesis cannot be rejected. The t-statistical test at 5% indicates that event day abnormal returns were significant for the 2013 Westgate attack, the 2014 Lamu attack and the 2015 Garrisa attack.

(ii) T-Test for the Cumulative Abnormal Returns (CAR)

The researcher also conducted a t-test on the CAR which produced the results below

Table 4.2: t-Test for two-sample Assuming Unequal Variances

	EVENT 1		***EVENT 2***		***EVENT 3***	
Mean	0.005283253	0.00116	0.021560728	-0.0002	0.02576805	0.0021
Variance	0.000100717	1.1E-05	0.000313814	2E-05	0.000792694	8E-06
Observations	20	20	20	20	20	20
df	23		21		19	
t Stat	1.74468355		5.361084553		3.732346892	
P(T<=t) two-tail	**0.094390152**		**2.56821E-05**		**0.001411691**	
t Critical two-tail	2.06865761		2.079613845		2.093024054	

Following the results of the t-test above, the t Stat< t Critical, while the p value>0.05 for event 1 and therefore the null hypothesis cannot be rejected. The t-statistical test at 5% indicates that cumulative abnormal returns were significant for the 2013 Westgate attack. However t-test for event 2 and 3 shows that the t Stat> t Critical, while the p value<0.05 and therefore the null hypothesis is hereby rejected. The t-statistical test at 5% indicates that the cumulative abnormal returns for event 2 and 3 were insignificant.

4.4 Discussion of Results

The researcher sought to establish the effect of terrorist attacks to the performance of stocks of insurance companies listed in the NSE. The results showed that average Abnormal Returns (AR) for all insurance company stocks at the NSE increased slightly for the three events under study. This can be observed from the slope of the linear trends on Figure 4.1. Significance tests on these results showed that that they were significant at 5%.

An analysis of the CAR for the three events showed that there existed a positive relationship between terrorist attacks and insurance company stock performance. From Figure 4.2, the CAR for events 2 and 3 are observed to increase steadily to 4.23% and 5.2% respectively at the 10^{th} day after the attack. The CAR for event 1 also increases to 0.46% 1 day after the attack, after which it increases gradually to close at 1.68% on the 10^{th} day after the attack. However, significance tests on CAR placed the 2014 and 2015 attacks insignificant and hence only the 2013 Westgate attack was significant.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the conclusion of the research study and the implications of the findings, limitations encountered in the course of the study as well as suggestions for further research.

5.2 Summary of Findings

A 5% significance test for the abnormal returns shows that event day abnormal returns for the three events were significantly positive. This means that all the 2013, 2014 and 2015 terrorist attacks led to a significant increase in the abnormal returns. This can be seen from the general movement of the linear plots in fig. 4.1 above.

The same significance level conducted on the CAR however shows that only the 2013 Westgate attack was statistically significant. Although the CAR from event 2 and 3 increase steadily after the event day, CAR for event 1 increases at a lower slope as shown in Fig. 4.2. Although the three events led to loss of human life and property, the 2013 Westgate attack is deemed to be more severe probably because it affected the business class in the capital city as opposed to the other two attacks which took place near Kenya borders.

The overall finding is that terrorist attacks lead to a positive effect on the returns from stocks of insurance companies listed in the NSE. These findings are not in line with other studies done on the relationship between terrorism and stock returns which

agreed on a negative relationship. The study highly relied on the assertions of the EMH which suggests that, in an efficient market, the effect of any new information would be reflected in the price of a stock immediately. If this was to be in effect, a possible loss through possible insurance claims would send a negative message which should negatively affect the returns from such stocks. However, the findings explained above contradict this assertion by showing that terrorist attacks lead to increased abnormal returns and cumulative abnormal returns for stocks of insurance companies. The researcher does not seek to find out the reason for the positive relationship though this can be caused by a random and irrational behaviour by investors as explained by Shefrin (2001).

5.3 Conclusion

The researcher concludes that there is a positive relationship between terrorism attacks and the returns of insurance company stocks listed at the NSE. It is also concluded that the effect of an attack is also determined by the type, target and level of property damage during the attack. This is evidenced by the fact that the test of significance between the CAR and market returns determined the 2015 and 2014 attacks as insignificant while the 2013 Westgate Mall attack was significant.

On the other hand, test of significance for the AR showed that the relationship was significant for all the three events. With this, the researcher concludes that despite the limitations found and discussed below, there are positive returns to investors in the insurance sector following terrorist attacks especially those that involve high values of property damage and targeting the business class.

5.4 Recommendations

From the study, it can be observed that contrary to the general assumption that terrorist attacks affect the stock market negatively, investors in the insurance sector may not loose as well. Portfolio managers and the general investors are advised to incorporate insurance sector stocks as a means of mitigating return losses as a result terrorist attacks.

The government and regulators both in the insurance sector and the stock market are also advised to incorporate the results of this study in policy making and legislation formulation. This is because most policies are based on the basis that terrorism is bad to the economy but the results of this study may prove such policies to be counter-effective.

Although terrorism is not encouraged, insurance companies are advised to market terrorism-insurance in a bid to increase risk coverage and ultimately increase their incomes.

5.5 Limitations to the Study

Terrorism is a fairly recent phenomenon in Kenya which appears to have no readily available and adequate data which may have affected the judgement of investors. In addition, due to the uncommon nature of terrorism in Kenya as opposed to other countries in the Middle East where terrorism is common, emotions and fear overtake the immediate situation and investors may make rational decisions to take any advantage available. This therefore means that some markets may show more accurate and meaningful results than the Kenyan market.

The window period of 21 days and estimation period of 20 days selected for the event study may not have been sufficient to cover the terrorist event; hence the data collected and used in the study may not have been accurate leading to inconsistent results.

Other factors other than terrorist attacks may have affected the performance of the insurance company stocks during the period of study and consequently the results of the study may have been affected. Such factors include inflation, incidental transactions, demand and supply forces and fundamental value.

5.6 Suggestions for Further Research

A more robust research on terrorism and the insurance sector performance especially in emerging markets is necessary in order to draw a conclusion. Such studies should also consider extending the window period as well as the estimation period so as to obtain a more conclusive inference on this matter.

There is also need for further research to establish the effect of terrorism on other sectors of the financial, agricultural and other main sectors of the economy. Such sectors play a critical role in the growth and development of Kenya as an economy and with the upsurge of terrorism attacks, such studies will help understand the problem.

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APPENDICES

Appendix I: Listed Insurance Companies at Nairobi Securities Exchange

Britam Limited

CIC Insurance Limited

Jubilee Holdings Limited

Kenya Reinsurance Corporation Limited

Liberty Kenya Holdings Limited

Pan Africa Insurance Holdings Ltd

Appendix II: List of Recent Major Terror Attacks In Kenya

DATE	PLACE OF ATTACK	PERPETRATOR	PROPERTY DAMAGE	FATALITIES	INJURED	TARGET TYPE	DESCRIPTION
07/08/98	Nairobi- US EMBASY	Al-Qa`ida	**MAJOR**	224	4000	Government (Diplomatic)	08/07/1998: Suicide attackers detonated a vehicle bomb outside of the United States Embassy in Nairobi, Kenya, killing 224 people
04/02/15	GARISSA UNIVERSITY COLLEGE	Al-Shabaab	**MINOR**	152	79	UNIVESITY	On 2 April 2015, gunmen stormed the Garissa University College in Garissa, Kenya, killing 147 people, and injuring 79 or more.
21/09/13	Nairobi-WESTGATE	Al-Shabaab	**MAJOR**	72	201	Business	09/21/2013: Assailants with automatic weapons and grenades attacked the Westgate Mall in Nairobi city, Nairobi province, Kenya
01/01/08	Eldoret	Unknown	Unknown	50	Unknown	Religious Figures/Institutions	01/01/2008: In Eldoret, Kenya, tribal militia burned a church to the ground killing all 50 people inside.
15/06/14	Mpeketoni	Al-Shabaab	**MINOR**	48	3	Private Citizens & Property	06/15/2014: A group of 50 assailants attacked Mpeketoni town, lamu province, Kenya.
02/12/14	Mandera	Al-Shabaab	Unknown	36	0	Private Citizens & Property	12/02/2014: Assailants attacked quarry workers in near Mandera town, Mandera county, Kenya.
22/11/14	Mandera	Al-Shabaab	Unknown	28	Unknown	Private Citizens & Property	11/22/2014: Assailants stopped a passenger bus and forced all of the occupants to exit the vehicle in Mandera County, Kenya.
01/11/14	Kapedo	Unknown	Unknown	22	0	Police	11/01/2014: Assailants attacked police officers in Kapedo area, Turkana county, Kenya.
05/10/06	Marsabit	Unknown	Unknown	17	3	Police	10/05/2006: Around 5:30 am local time, the bandits attacked the police station at Fololе in Marsabit (District), Kenya.
28/11/02	Mombasa	Al-Qa`ida (suspected)	Unknown	16	0	Business,Private Citizens	11/28/2002: Perpetrators attacked Paradise Hotel in Mombasa, Kenya, with a suicide car bomb
03/12/14	Mado Gashi	Al-Shabaab	Unknown	15	0	Private Citizens & Property	12/03/2014: Assailants opened fire on non-Muslim farmers in Mado Gashi district, Isiolo county, Kenya
23/06/13	Banisa	Unknown	Unknown	15	21	Government (General),Other	06/23/2013: A rocket-propelled grenade detonated at a refugee camp in Banisa, Mandera province, Kenya.
05/07/14	Hindi	Al-Shabaab,Mombasa Republican Council (MRC) (suspected)	Unknown	12	2	Private Citizens & Property	07/05/2014: Assailants attacked a shopping center in Hindi town, lamu county, Kenya,
19/05/14	Mandera	Al-Shabaab	Unknown	12	Unknown	Private Citizens & Property	05/19/2014: Assailants opened fire on vehicles transporting khat in Mandera city, Mandera
23/06/14	Witu	Al-Shabaab	Unknown	11	Unknown	Private Citizens & Property	05/21/2008: On Wednesday, a group of as many as 300 young men burned eleven people, suspected of being witches or wizards, in Western Kenya.

Source: Global Terrorism Database

http://www.start.umd.edu/gtd/search/Results.aspx?country=104

Appendix III: Individual Company E.R and A.R Determination

Date	Stock	CFCI VWAP	CFCI RETURNS	E.R	A.R
11/09/2013	CFCI	11.8000	- 0.0126	0.0010	- 0.0136
12/09/2013	CFCI	11.7000	- 0.0085	0.0011	- 0.0096
13/09/2013	CFCI	11.6000	- 0.0085	0.0023	- 0.0108
14/09/2013	CFCI	11.6000	-	0.0005	- 0.0005
15/09/2013	CFCI	11.6000	-	0.0005	- 0.0005
16/09/2013	CFCI	11.7500	0.0129	- 0.0036	0.0166
17/09/2013	CFCI	11.6500	- 0.0085	0.0011	- 0.0096
18/09/2013	CFCI	11.5000	- 0.0129	0.0019	- 0.0148
19/09/2013	CFCI	11.8500	0.0304	0.0024	0.0280
20/09/2013	CFCI	11.8000	- 0.0042	0.0012	- 0.0054
21/09/2013	**CFCI**	**11.8000**	-	0.0005	**- 0.0005**
22/09/2013	CFCI	11.8000	-	0.0005	- 0.0005
23/09/2013	CFCI	11.7000	- 0.0085	- 0.0008	- 0.0077
24/09/2013	CFCI	11.7500	0.0043	- 0.0006	0.0048
25/09/2013	CFCI	11.3500	- 0.0340	0.0005	- 0.0346
26/09/2013	CFCI	11.8500	0.0441	0.0043	0.0398
27/09/2013	CFCI	11.6500	- 0.0169	0.0009	- 0.0178
30/09/2013	CFCI	11.9000	0.0215	0.0032	0.0182
02/10/2013	CFCI	11.8000	- 0.0084	0.0017	- 0.0101
03/10/2013	CFCI	11.7000	- 0.0085	0.0033	- 0.0117
04/10/2013	CFCI	11.9000	0.0171	0.0013	0.0158

PARAMETERS

INTERCEPT	-0.000241469
SLOPE	-0.046722337
R-SQUARED	0.001366851
STD ERROR	0.005079027

Appendix IV: Event Day Average A.R.

EVENT DAY	**AV A.R. 1**	**AV A.R. 2**	**AV A.R. 3**
-10	-0.0018	-0.0004	0.0004
-9	0.0002	0.0039	-0.0056
-8	-0.0041	0.0002	-0.0082
-7	0.0012	0.0002	-0.0009
-6	0.0012	0.0072	0.0082
-5	0.0061	0.0095	0.0032
-4	-0.0065	-0.0232	0.0004
-3	-0.0050	0.0082	0.0004
-2	0.0140	-0.0010	0.0049
-1	-0.0031	0.0002	0.0135
0	**0.0012**	**0.0002**	**0.0176**
1	0.0012	0.0230	0.0059
2	-0.0020	0.0053	-0.0012
3	0.0108	-0.0037	0.0124
4	-0.0032	0.0044	0.0002
5	-0.0018	-0.0001	-0.0040
6	-0.0025	0.0054	0.0083
7	-0.0008	-0.0091	0.0012
8	0.0108	0.0106	0.0030
9	0.0008	0.0016	-0.0076
10	0.0189	0.0178	0.0067

Appendix V: Event Day C.A.R.

EVENT DAY	C.A.R. 1	C.A.R. 2	C.A.R. 3
-10	-0.0018	-0.0004	0.0004
-9	-0.0016	0.0036	-0.0052
-8	-0.0057	0.0037	-0.0134
-7	-0.0045	0.0039	-0.0144
-6	-0.0033	0.0111	-0.0062
-5	0.0029	0.0206	-0.0030
-4	-0.0037	-0.0026	-0.0026
-3	-0.0087	0.0056	-0.0022
-2	0.0053	0.0046	0.0027
-1	0.0022	0.0048	0.0162
0	**0.0034**	**0.0049**	**0.0338**
1	0.0046	0.0279	0.0397
2	0.0026	0.0332	0.0385
3	0.0135	0.0295	0.0510
4	0.0102	0.0340	0.0511
5	0.0085	0.0338	0.0471
6	0.0060	0.0392	0.0554
7	0.0052	0.0302	0.0566
8	0.0160	0.0407	0.0596
9	0.0168	0.0423	0.0520
10	0.0357	0.0601	0.0587