

Reaction of Banks and Insurance Companies' Stocks to Acts of Terrorism - An Event Study Approach

Alex E. Osuala (PhD)¹ Uchenna N. Anyanwu¹ Alexandra O. Kalu²

1. Department of Banking and Finance, College of Management Sciences, Michael Okpara University of Agriculture, Umudike, Nigeria

2. Department of Marketing, College of Management Sciences, Michael Okpara University of Agriculture, Umudike, Nigeria

Abstract

The paper examines the reaction of banks and insurance companies' stocks listed on the Nigerian Stock Market to two major terrorist events (the bomb blast on October 1, 2010-Nigeria's 50th independence anniversary day, and the bombing of the United Nation's (UN) embassy office on August 26, 2011, all in Abuja). The data stream for the study consisted of the Nigerian Stock Exchange Daily Official list on some selected banks and insurance stocks over the event period of eight (8) days for both the United Nation's (UN) embassy office bombing and the October 1 bomb blast respectively. Using the standard event study methodology and the single-factor market model, the study finds that of the two terrorist events, only the October 1, 2010 attack resulted in significant negative abnormal returns in the Nigerian stock market. The UN office bombing, though expectedly resulted in a negative abnormal return, the abnormal return was however not statistically significant at 5% level and only occurred a day after the event day, suggesting that the stock prices reacted rather slowly. The study therefore recommends that the federal government of Nigeria should explore ways of reducing the frustration of her citizens because the consistent neglect by successive governments to improve on the well-being of the commoners in this oil-rich nation has always led to frustration and aggression, and these are popular substratum for terrorism.

Keywords: Terrorism, banks, insurance companies, event study, stock market.

1. INTRODUCTION

Terrorism is by no means a new vocabulary or phenomenon. However, since the Al Qaeda terrorist attack directed at the World Trade Centre (WTC) in the United States of America (USA) on 11th September, 2001, terrorism has assumed a new significance drawing global attention and concern. The increasing concern over the acts of terrorism all over the world is hinged on the magnitude and scale of damage orchestrated by such acts, the attendant loss of human lives, and properties, and the increasing sophistication and expertise with which such terror acts are unleashed.

Nigeria unfortunately has been one of the most vulnerable to the paradigm shift of terrorism. Her vulnerability is mainly subjected on one hand to her relevance in the African economy, and on the other hand, to the consistent neglect by her successive governments to improve on the well-being of the commoners in this oil-rich nation. Harping on the Nigeria state's neglect and apathy to enhance the common good of the common people and lack of propriety in handling oil revenues, the New Partnership for Africa's Development (NEPAD, 2008:33) pointed out quite eloquently and forcefully in its report that:

"Nigeria presents a remarkable paradox of an enormously wealthy country both in potential and real terms yet, serving as home to the third largest concentration of poor people in the world. The country annually makes substantial revenue from oil and gas but has apparently failed to provide basic services for its people".

According to Lawson (1965), "frustration ultimately leads to aggression". Amaraegbu (2011) states that when individuals are subjected to a situation of alienation and extreme frustration, it makes them act unusually aggressively.

In Nigeria, terrorism started to assume significance in the 1990s with the Niger delta conflict which gradually escalated into a multidimensional resistance in 2008. The new dimension saw to huge destruction of oil installations, kidnapping of both foreign and indigenous oil workers, disruption of oil production and illegal oil trade or bunkering. And as a country that depends on crude oil earnings as a major source of foreign exchange, disruption of oil production resulted in huge national budgetary deficits (Amaraegbu, 2011:210).

The organizations in the Niger Delta creek of South-South Nigeria involved in these acts of terrorism include Movement for the Emancipation of the Niger Delta (MEND), Nigeria Delta Peoples Volunteer Force (NDPVF), the Coalition for Militant Action in the Niger Delta, Niger Delta Vigilante (NDV) and the Martyrs Brigade, to mention but a few. MEND is about the most visible armed group based in the region, and the main militant organization attacking oil infrastructure for political objectives (Energy Information Administrations (EIA), 2010). Formed in 2005 with more than 30 camps throughout Nigeria, it is a loose coalition of armed militant groups from the region. Although most of its attacks have been targeted at oil pipelines and supply

terminals on the creeks and swamps of the region, it has created a sense of insecurity and panic many miles offshore at different times in Lagos and Abuja. For instance, on July 12, 2009 MEND, in what was described as “Al Qaeda-style terrorism” blew up the receptor pipelines inside the 50 million-litre capacity Atlas Cove Jetty in Lagos, effectively crippling the capacity of the facility to receive petroleum products (Interview, Lagos, July 29, 2010). And on October 1, 2010, two vehicle loaded with improvised explosive devices were detonated by MEND near Abuja Eagle Square, venue of the parade marking the country’s 50th anniversary of independence causing substantial damage and fatal casualties (Reuters, 2010). However, MEND appears for the mean time to have been tamed with her recent disarmament due to the olive leaf offered her by the Federal Government of Nigeria (FGN).

Recently, the tide of violence and terrorism appears to have shifted from the South to the Northern parts of the country due to the terrorist activities of a religious sect called Boko Haram. Boko Haram became active in Nigeria in about 2003 and is concentrated mainly in the Northern Nigeria states of Yobe, Kano, Bauchi, Borno and Kaduna. One of the most significant terrorist acts of the sect was the bombing of the United Nation’s Embassy office in Abuja on August 17, 2011 that claimed several lives and destroyed a lot of properties.

Obviously, acts of terrorism affect virtually every sector of the national economy. However, the impact on the financial markets is often quite enormous and consequential considering the fact that the financial markets are regarded as the nucleus of any economic system (Gul *et al*, 2010). Keeping in view the importance of the financial market for the Nigeria’s economy, the quantification of the impact of terrorism on Nigeria’s financial market becomes, not only quite expedient and timely but also an interesting area of research work.

Pointedly, the study seeks to determine whether Nigeria’s financial market reacts to acts of terrorism using the case of commercial banks and insurance companies’ reaction to two very important terrorist attacks in Nigeria, namely the 50th Independence Day Anniversary bombing at the Eagle Square, Abuja, and the bombing of the United Nation’s (UN) office, also in Abuja.

This study is important for several reasons. First, we explore the link between terrorist events and their impact on the stock market. According to Karolyi and Martell (2006), stock and bond prices arguably incorporate investors’ beliefs and views about future cash flows and discount rates because the liquidity of financial markets provides an efficient conduit for these views to be quickly reflected in asset prices. Secondly, increasing integration of global stock markets and advances in technology means reaction to international events also gets quickly incorporated in stock prices and hence could have contagion effects across continents. According to Chen and Siems (2004), global capital markets today are tightly inter-linked such that news spread quickly especially bad news, with quick spill-over or contagion effects. Thirdly, Boko Haram terrorist activities is a new dimension to terror acts in Nigeria and the study of the impact on the Nigerian stock market should make the government and all concerned parties give the issue the attention it deserves, and more importantly to seek for ways of alleviating the sufferings of her people who feel disfranchised rather than “tear-gassing” them.

To the best of our knowledge, there has not been an earlier work that explicitly explored the reaction of banks and insurance companies stocks to terrorism on Nigeria’s financial markets using event study methodology. This therefore makes this study quite unique.

2. LITERATURE REVIEW

Although there exists a quantum of studies on the impact of terrorism on stock markets, we find limited literature on the quantification of reaction of banks and insurance companies’ stocks to acts of terrorism, especially in Nigeria.

One of the few available studies is the one due to Johnson, et al (2005) which analyzed the reaction of the financial market to the September 11, 2001 terrorist attacks in the New York, and March 11, 2004 attacks in Madrid. They conclude that given the accurate timely response of the authorities, the financial markets of U.S and Spain respectively were able to absorb the shocks of the terrorist attacks.

Bart, *et al* (2006), using some panel data on terrorism showed that acts of terrorism have negative, depressing and unfavourable influence on economic progress. Berrebi and Klor (2005) assessed the impact of terrorism on the stock-market valuation of Israeli companies that are traded in American markets. The study suggests that the impact on stock valuation of companies involved with defence, security and anti-terrorism products or clients was positive while for other companies it was negative.

Drakos (2004) investigated the effects of terror attacks of 9/11 on a set of airline stocks listed at various international stock markets. The study found that conditional systematic risk has on the average more than doubled which would have implications for portfolio diversification and the cost of airlines in raising capital. Elder and Melnick (2004) analyzed the impact of Palestinian terrorist attacks on Israel’s stock market prices and exchange rates in Israel using daily time series data from 1990 to 2003. They found that the attacks had a parliament effect on both stock and foreign exchange markets but location of terrorist attack had no effect in either of the markets.

Gul *et al*, (2005) examined the impact of terrorism on the financial markets of Pakistan and found that

terrorist activities adversely affected the financial markets under study but concluded that the significance of the adverse effect varied for different markets.

Liargovas and Repousis (2010) investigated the reaction of Greek banks' stocks to three different major international terrorist events using the event study methodology. The events were: (a) the September 11, 2001 Al Qaeda terrorist attack at the WTC, USA; (b) the Madrid bombing on March 11, 2004 in Spain and (c) the London Train bombing on July 7, 2005. They found that of the three terrorist attacks, only the September 11, 2001 resulted in significant abnormal returns in the Greek banks stocks due to the dominant position of the United States of America economy worldwide.

3. METHODOLOGY

The event study methodology is employed in this study to analyze the response of banks and insurance companies' stocks to acts of terrorism in Nigeria. The objective of event study is to measure the effect of an economic event on the value of firms. The usefulness of such a study stems from the belief that, given rationality in the market place, the effects of an event (in this case, terrorist attack) will be reflected instantaneously in security prices. Thus, a measure of the event's economic impact can be constructed using security prices observed over a relatively short time periods.

For the present study, two very important terrorist events in Nigeria were selected. The first is the Independence Day Anniversary bombing of October 1, 2010 that occurred at Eagle Square, Abuja which claimed lives and properties. The second is the bombing of the United Nations (UN) embassy office on August 26, 2011, still in Abuja, which also claimed several lives and destroyed properties in Abuja. While MEND was said to be responsible for the first case, Boko Haram sect claimed responsibility for the second bombing event.

The two events have been selected because of their relevance in the history of Nigeria. The first case-the 50th Independence Anniversary Day bombing is very significant because it took place on the date that marks Nigeria's liberation from British colonialism. An act of terrorism on this memorable day is akin to dragging the nation back to servitude and enslavement. The second event is also very significant because an attack on UN embassy office in Nigeria meant, by implication an attack on several nations of the world who are members of the Union.

The procedure for event study according to Osuala (2007) entail:

- Clear definition of the event of interest and the period over which the security prices of the firms involved in the event would be examined.
- Determination of the selection criteria
- Definition of the event window
- Calculation of the abnormal, normal and expected returns
- Aggregation of the abnormal returns to obtain the cumulative abnormal returns
- Designing a testing framework for the cumulative abnormal returns.

We define the **event date** as the occasion of the very first occurrence of the terrorist attack as published in the national dailies. Normal return is defined as the return that would be expected if the event did not take place. The abnormal return is the actual return of the security over the event window. Therefore for each firm i , and event date t , we have:

$$e_{it} = R_{it} - E(R_{it} / X_t) \text{ ----- [1]}$$

where e_{it} , R_{it} and $E(R_{it})$ are the abnormal, actual and expected (normal) returns, respectively, for the period t .

X_t is the conditional information for normal performance model. The abnormal or residual return represents the part of the return that is not predicted and is therefore an estimate of the change in the firm's stock value on the event date that is caused by the event, that is, the terrorist attack.

There are two common choices for modeling the normal return: the constant-mean-return model where X_t is a constant, and the market model where X_t is the market return. This study employs the single-factor market model for estimating the impact of terrorist attacks on the Nigerian stock market, and it is given as:

$$R_{it} = \alpha_i + \beta_i R_{mt} + e_{it} \text{ ----- [2]}$$

where R_{it} = realized (or actual) rate of return of the i^{th} security during period t .

R_{mt} = rate of return on the equally weighted market index m , at period t .

e_{it} = a random variable that is expected to have a value of zero.

α_i and β_i = the intercept and slope parameters for the firm i , respectively.

The abnormal return (AR) for the i^{th} common stock on day t , is given by:

$$AR_{it} (or, e_{it}) = Rit - [\hat{\alpha}_i + \hat{\beta}_i R_{mt}] \quad \text{-----} \quad [3]$$

where $[\hat{\alpha}_i + \hat{\beta}_i R_{mt}]$ is the expected rate of return, $E(R_{it})$; the coefficients $\hat{\alpha}_i$ and $\hat{\beta}_i$ are ordinary least squares (OLS) estimates of α and β estimated from a regression of daily security returns on daily market returns over the estimation window (which is defined in our case as -31 to -45). The proper length of the event window is an empirical issue. Too long a window allows other news and events to offset the ones that are of interest to this study, while too short a window means that the effect of the event may not be fully incorporated, or observed. Osuala (2007) noted that for developed markets, the specification of the event window is usually two days (i.e., 0 to +1), or three days (-1 to +1 days). However, for this study, the event window of eight days (-3 to +4) is chosen for reasons of poor information technological advancement in emerging markets like Nigeria, which constitutes an impediment to the speed of information dissemination.

The individual security's abnormal returns, AR_{it} , is aggregated and averaged across all the observations in estimation period as shown below:

$$AAR_t = \frac{\sum_{i=1}^N AR_{it}^{EP}}{N} \quad \text{-----} \quad [4]$$

where AAR_t = average abnormal return across the firms at time, t in the estimation period.

AR_{it}^{EP} = abnormal return at time, t in the estimation period, EP .

N = number of firms in the sample. The reason for averaging is because stock returns are noisy, but the noise tends to cancel out when averaged across a large number of firms.

Next, the average abnormal returns are aggregated over the event window to give the cumulative average abnormal returns (CAAR). Thus, for any interval in the event window,

$$CAAR_{t_1, t_2} = \sum_{t_1}^{t_2} AAR_{it} \quad \text{-----} \quad [5]$$

where, $CAAR_{t_1, t_2}$ = cumulative average residuals from t_1 day to t_2 day of the event window.

Parametric Tests: The parametric tests proposed in the literature by Brown and Warner (1985) relies on the important assumption that individual firm's abnormal returns are normally distributed. The standard statistic is:

$$t_{AAR} = \frac{AAR_t^{EP}}{\sigma(AAR_t^{EP})} \quad \text{-----} \quad [6]$$

where AAR_t^{EP} is average abnormal return at time, t in the estimation period, and $\sigma(AAR_t^{EP})$ is the standard deviation of the average abnormal return derived in the estimation period; and

$$t_{CAAR} = \frac{CAAR_t}{\sigma(AAR_t) \sqrt{N_t}} \quad \text{-----} \quad [7]$$

where N_t = the absolute value of event day, t , plus 1 (Kusnadi and Sohrabian, 1999).

The standard deviation of the abnormal returns in the estimation window is calculated thus:

$$\sigma(AAR_t) = \sqrt{\frac{\sum_{i=1}^n (AAR_t - \overline{AAR})^2}{n-1}} \quad \text{-----} \quad [8]$$

where n = the number of days in the estimation period

\overline{AAR} = average abnormal return over all firms in the estimation or control period and AAR_t is the average abnormal return over all securities in period, t .

4.0 DISCUSSION OF FINDINGS

We present the results of two separate regressions for the two different events – 1st October and the 26th August events using Eviews 7.0.

Table 4.1: 1st October, 2010 Bombing Event

Event Window	-4	-3	-2	-1	0	1	2	3
CAAR	-2.10E+07	-4.10E+07	-6.30E+07	-8.50E+07	-1.10E+08	-1.30E+08	-1.50E+08	-1.70E+08
t-CAAR	-5929478053	-1.46E+10	-3.16E+10	-3.00E+10	-3.06E+10	-3.20E+10	-3.35E+10	-3.85E+10

Table 4.1 shows the cumulative average abnormal returns (CAAR) arising in reaction of banks and insurance companies' stocks to the terrorist attack that occurred on Nigeria's 50th Independence Anniversary Day. The result indicates that there were statistically significant negative abnormal

returns at 5% levels all through the event window of 8 days. The fact that there were statistically significant abnormal returns some three days before the event day suggests that the event was partially pre-empted by the market. This is not surprising because there had been threats of attack by MEND before the event of 1st October.

Table 4.2: Abnormal Returns for UN Office Bombing

Event Window	-4	-3	-2	-1	0	1	2	3
CAR	1.15E+03	2.29E+03	3.42E+03	4.56E+03	5.70E+03	5.70E+03	5.70E+03	5.70E+03
t-CAR	1.35E+05	3.18E+05	3.58E+05	5.62E+05	-7.04E+04	2.71E+05	1.15E+05	-1.05E+04

With respect to the second event – the UN embassy office bombing, there was a negative abnormal return a day after the event date and on the fourth post-event day, which were however statistically insignificant at 5% levels. The implication of this result is that the stock market though reacted negatively to the terrorist attack- hence the negative abnormal returns- the event was not as significant as the independence anniversary day bombing.

5. CONCLUSION

The study examined the impact of terrorism on emerging stock markets using the case of Nigeria. Pointedly, the paper investigated the reaction of prices of some stocks listed on the Nigerian Stock Market to two major terrorist events (the bomb blast on October 1, 2010 and the bombing of the United Nation's (UN) embassy office on August 26, 2011, all in Abuja). Mainly secondary data obtained from the Nigeria stock Exchange were used. The study finds that while the 1st October, 2010 bombing resulted in statistically significant negative abnormal returns, the UN office bombing though resulted in negative abnormal returns on the first and fourth post-event days, the abnormal returns were however not statistically significant at 5% level.

The study further explores the efficacy of the inter-agency synergy in combating the hydra-headed evil of terrorism and finds that even with the urgency of the need for inter-agency co-operation coming to the fore by reason of recent developments, such sudden imperative only helped to expose years of worrisome rivalry between and among these agencies. It also brought to fore the abysmal lack of capacity to deal with this new threat.

The study therefore recommends that the various security agencies in the country should be made to work in harmony so as to be able to deal with the problem of terrorism in view of the increasing sophistication and expertise with which such terror acts are unleashed in the country.

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