

Stock Price Reaction to the Announcement of Fuel Subsidy Removal in Nigeria

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ABSTRACT

On the 11th of May, 2016 the federal government of Nigeria announced the removal of fuel subsidy which generated a lot of arguments and several reactions in the midst of observers and market analysts as to the likely consequences of such an action to the Nigerian economy on the market value of listed firms in Nigeria. This study aims to empirically investigate the reaction of the stock prices to the sudden announcement of the removal of fuel subsidy in the Nigerian Stock market. Data for the study were collected from the Nigerian Stock Exchange daily official list covering both the 190 days estimation period and the 35 days event window. The standard event study methodology was used on a sample of 76 firms that cut across all the various sectors of listed firms in the Nigerian Stock Exchange. The study found the event to have a significantly positive impact on the stock market as positive cumulative abnormal returns were recorded in the market on the event day and a negative significantly cumulative abnormal return after the announcement of the fuel subsidy removal. Consequent upon the findings, this study recommends, among other things that policy makers should avoid sudden announcement of policies that bothers on sensitive sectors of the economy. Such actions should be preceded by the release of information that adequately justifies such action by policymakers before it is made public. The release of such information is useful as it will help the stock market to correctly interpret the philosophy underlying the action by policy makers and will further drastically reduce information asymmetry in the market.

KEYWORDS: Subsidy Removal, Stock Market, Event Study, Cumulative Abnormal Returns

1. Introduction

It is generally believed that Stock Markets act as a measure of the state of health and the bearing of economic activities of any given nation. In the information oriented world we are living today, information travels very fast and consequently, any event of economic interest is rapidly and automatically incorporated into the prices of shares. Therefore, the share price reaction may be positive, negative or indifferent depending on how the market perceives the event and the economic environment

existing at the instance of the event (Bello, 2014).

Successful investment for every kind of market participant depends largely on the acquisition, understanding, analysis and interpretation of financial information, regardless of whether it is an individual investor or an investment company. Financial information is the blood stream of investment decision making and this information can either be obtained easily through an in depth analysis of the company's financial statements or through a detailed

analysis of market factors. Official announcements are a more reliable source of information in the financial market; even though rumors also play a significant role in the various decisions by market actors. External factors like changes in political, legal, administrative or social environment of the country are also another source of information that may have an impact on the investments, but a sudden shock in the form of an unanticipated event garners more attention because of its plausible effects on the market trends.

Unanticipated events are sudden, random shocks that have not been calculated for by the investors. These may include acquisition announcement, bankruptcy declaration, corporate illegality, sudden removal of chief executive officers like the sudden removal of the Central Bank Governor in Nigeria, natural disasters, political changes, terrorist activity related issues like the *Boko Haram*, sudden announcement of government policies etc. It is the goal of investors to quantify all anticipated or unanticipated events and their likely effects on the market so as to be able to take informed decisions backed by a calculated risk. However, it is rather difficult to take decisions based on the information gathered regarding a sudden, unforeseen event. This is so because if a market is assumed to be inefficient, then the information gathered about the event is not simultaneously priced in leaving some time for the informed market participants to take advantage from this situation. If the market is supposed to be efficient then the event is priced in simultaneously because the market

participants re - evaluate their expectations about the firms. Event study analysis is an important tool commonly used by researchers' the world over to assess and analyze the efficiency of a stock market. This tool has been effectively used to gauge the effects of an event on the stock market, and has proved to be especially efficacious in the area of corporate finance.

An event, whether announced or unanticipated can have a strong impact on the stock market because stocks are a highly liquid form of investment and investors can take rapid decision regarding their sale or purchase based on the information they receive. Whatever the event indicates, such information will be priced in the stock and the market may experience a trend of activities in that respect. In a press conference on Wednesday 11th May, 2016, the then Minister of State, Petroleum Resources, IbeKachikwu surprised Nigerians through a press release announcing the removal of fuel subsidy which resulted in the increase of the pump price of Premium Motor Spirit (PMS) from N62 to N140. Arguments have it that it will be good for the economy while others argued that it will not favour the average Nigerian, especially those at the grassroots. Again, the single most important issue confronting a growing number of world economies today is the price of oil and its attendant consequences on economic output. Oil plays a significant role in the Nigerian economy not only as the largest contributor in terms of total government revenue but also as the overall contributor in her exports composition and therefore,

any policy that will be directed towards its direction will attract attention.

Several studies have investigated the effect of oil price shocks on levels of Gross Domestic Product (GDP). Some of these studies include: the effect of crude oil prices on real GDP, the real interest rate, government spending, real government revenues, the real stock price, the real effective exchange rate, the real crude oil prices and inflation rate in India (Abuzarour, 2005), effect of crude oil price on exchange rate (Aruwa, 2009), effect of PMS price on inflation rate in Nigeria (Akgiray, 1989), effects of increasing oil prices on the manufacturing sector of Nigeria (Aruwa, 2009). Among all the studies conducted in Nigeria there is no study that investigated the consequences of fuel subsidy removal on the stock market and therefore a central area of the economy was overlooked. Consequent upon that this study is necessary as it will help in understanding the reaction of the market as a result of the fuel subsidy removal. The sudden announcement of fuel subsidy removal by the federal government on the 11th of May, 2016 in Nigeria has generated a lot of argument and several reactions in the midst of observers and market analysts as to the likely consequences of such an action to the Nigerian economy on the market value of listed firms. The fear among many stakeholders is that policy makers could take such an abrupt decision without recourse to the possible consequences such decision might have on the Nigerian economy in general and the capital market in particular which is the engine of growth of

every nation's economy. Despite the divergence of opinions on the resultant consequences of the decision, they can at best be considered as mere guess but not borne out of empirical investigation. The need therefore to undertake an empirical research in order to investigate the level of the reaction is therefore crucial.

This event raises so much curiosity and very interesting, thus worthy of empirical investigation because, it is the first time the federal government of Nigeria is totally removing the fuel subsidy and also the event took place at a time the Nigerian economy is facing very serious challenges as well as shortly after a well contested election that removed the ruling party from power for the first time in the political history of Nigeria. Therefore, the impact of this event on the economy definitely is expected to have some important policy implications. Consequently, the main objective of this study is to examine the signalling effect of this sudden announcement of fuel subsidy removal on the Nigerian stock market. The event for this study is the unexpected announcement of fuel subsidy by the federal government of Nigeria on Wednesday the 11th May, 2016. The study appears exceptional in the sense that, there is no study known to the authors to date that has empirically investigated the information effect of the sudden removal of fuel subsidy in Nigeria.

The study, therefore investigated how the Nigerian Stock Market reacted to this shock. The main objective of this study, therefore, is to investigate the reaction of share prices in the Nigerian stock market

as a result of the sudden withdrawal of fuel subsidy by the federal government of Nigeria.

The specific objectives of the study include:

- i. Establishing the significance of firms' cumulative abnormal returns fifteen days from the announcement day of fuel subsidy removal in the Nigerian Stock Exchange.
- ii. Establishing the significance of firms' abnormal returns on the announcement day of fuel subsidy removal in the Nigerian Stock Exchange.
- iii. Establishing the significance of firms' cumulative abnormal returns fifteen days after the announcement day of fuel subsidy removal in the Nigerian Stock Exchange.

In order to achieve these objectives, we hypothesise as follows:

H₀₁: There is no significant cumulative abnormal return fifteen trading days before the announcement day of fuel subsidy removal in Nigeria

$$(AR_{(t-15, t0)} = 0)$$

H₀₂: There is no significant abnormal return on the announcement day of fuel subsidy removal in Nigeria

$$(AR_{(t0)} = 0)$$

H₀₃: There is no significant abnormal return fifteen trading days after the announcement day of fuel subsidy removal in Nigeria ($AR_{(t+15)} = 0$)

This study of share price reaction to the announcement of fuel subsidy removal in the Nigerian Stock Market is unique as earlier mentioned, that to date there is no study known to the author that has empirically investigated the reaction of share prices to the announcement of fuel subsidy removal in the

Nigerian Stock Exchange This study is therefore, significant as it will fill a gap of investigating the reaction of the Nigerian Stock Market given petroleum subsidy removal by the federal government. This investigation will be useful in making investment decisions by investors and potential investors. The research will also add to existing literature on market reaction to sudden events using the famous event study methodology.

The next part of the paper is a short sketch of the literature related to market reaction to sudden events. Section three discusses the research methodology and the analytical techniques used while section four dealt with data analysis and results interpretation. The final section presented a summary of findings and conclusion.

2. Literature Review and Theoretical Framework

Sharp drop in security prices as a result of a sudden event is a very unique opportunity for testing efficient market hypothesis. Unanticipated events generate more stress in the market, and market participants may lose their capability to assess rationally the valuation repercussion of the event.

In this way, quite a number of papers have investigated the behaviour of security prices after uncertainty in financial market increases following unexpected events. The logic of stock market event studies is straightforward. Under the efficient market hypothesis, share prices of publicly traded firms reflect current information about the profitability of those firms. It follows that any new information that

affects a firm's bottom line will quickly be capitalized into its share price. Therefore, some surprising event that affects any industry or group of firms will produce a coincident response in the stock prices of those firms. This allows researchers to test hypotheses about what matters for firms' profitability.

The first key step in an event study is identifying an event that contains surprising information. The sudden and untimely death of a powerful politician would be one example. Even somewhat anticipated events may contain an element of surprise. For example, the outcome of a close election resolves uncertainty, even if the result was not wholly unanticipated. The event's degree of surprise will affect the magnitude of the response in the share prices of affected firms. This is because anticipated events are already capitalized into share prices. Thus, some caution must be exercised in interpreting findings from events that are not complete surprises.

The second key step in an event study is choosing a baseline for comparing stock prices before and after the event. Consider the change in actual share prices immediately before and after an event: This change captures the market valuation of the informational shock associated with the event, but it also captures the value of anything else that is simultaneously occurring. For that reason, most event studies examine "abnormal returns" by comparing the change in the actual stock price of an affected firm to a prediction of what would have occurred otherwise. These predictions are usually based on the recent

historical correlation between changes in a firm's share price and changes in the overall market.

Empirical studies show an increasing evidence of stock market reacting instantaneously to disastrous events (Carter & Bettey, 2004). The sudden fluctuation in the stock prices following information about an event show the investors' review of future expected returns. These fluctuations, when considered as aggregate movements, reflect a whirlwind of activity. The impact on stock prices of firms is significant as a result of rapid investor activity because stocks and bonds are highly liquid and investors can easily and quickly change their decisions regarding their sale or purchase. The effect of an event can be better analyzed if the events being studied are unanticipated and the market is efficient so as to avoid any puzzling or unrelated effects within the event window (McWilliams & Siegel, 1997). Since the efficient market hypothesis is based on the assumption that the market takes possession of any information, whether it be macroeconomic or microeconomic information, to forecast the future stock prices, it is only rational to suppose that this information needs to be "new and unpredictable" to examine the full effect of the hypothesis (Brooks, Patel & Su, 2003). In case of the event being disastrous, investors prefer to take money out of the stock market and invest in low risk, secure financial alternatives; this has the potential to turn into chaos which can result in an extended bearish trend in the stock market. However, in case of the event being

favorable, the stock market is likely to experience a wave of bullish activity.

An event study can provide valuable insight in the proceedings of stock market when investor activity suddenly increases. Following information of an unanticipated event, a sudden increase in investor activity has been observed in stock markets worldwide. This increased investor activity causes the volatility of security prices to increase and the volatility in the stock market resulting from an event, outlives the event itself (Javid, 2009). The information accompanying an unanticipated event may be available in varying degrees initially to the investors and the stock market may run the risk of a chaotic volatility. An event occurring when the market is still open gives the market participants the opportunity to immediately take position according to the information but for events that take place over night, there is a phase of no activity before the information is priced in. The effect of an event on the stock returns of an organization is determined by two elements-the nature of event structure and information structure (Damodaran, 1985).

Researchers have taken up the event study method with interest in analyzing the impact of an event on the stock prices and stock returns. The events being examined range from announcement of policy changes, changes in the organisation's governance, to social and political occurrences involving natural disasters, terrorist attacks, military coups, national elections or some law and order situation. The prime

motive for studying these events and their effect on the stocks is to test the efficiency of the market and whether the events being analyzed are priced simultaneously or not. The methodological issues concerning the conduction and design of event studies were addressed in the early 1980s, focusing on daily and monthly data (Brown & Warner, 1980). Assuming that the researcher analyses an unfavorable event, the outcome will be dependent on whether the event was expected or not by the market and whether the market is efficient or not. We would expect the stock prices to experience a decline whether the event was anticipated or unanticipated but how soon this will be priced in would be a matter of how efficient the market is. In case of an efficient market, the unanticipated event will be priced instantaneously, but in case of an inefficient market, the drift from normal will be visible sometime after the event. Also, in case of an expected event, the stock prices will show a declining trend, some times before the event in an inefficient market and in an efficient market, stock prices are more likely to stabilize on the date of the event. Events that take place while the market is closed have been found to exhibit price movements when the market opens (Brookes, Patel & Su, 2003).

The first event study analyzed the stock market's response to the announcement of stock splits (Fama, Fisher, Jensen & Roll, 1969). This provided useful insights in the complex workings of the stock market. The first event study paved way for other researchers conducting other similar useful studies. Another

major event study analyzed the impact of sudden CEO deaths on the stock prices (Johnson, Magee, Nagarajan, & Newman, 1985). With an increase in research in this field, controversial evidence was highlighted. Event studies conducted late 1970s and early 1980s emphasized seasonality (Rozeff & Kinney, 1976) in the stock market and the major phenomena of “Monday Effect” (Gibbons & Hess, 1981), the study indicated that some of the participants were aware of the effect and took advantage of it but with time their gains declined.

Event studies have been most successful in the field of corporate finance. Event studies have given significant results in areas like mergers and acquisitions creating shareholder value (Andrade, Mitchell & Stafford, 2001), internalization (Morck & Yeung, 1992), investments and the value of the firm (Im, Dow & Grover, 2001) and issuance of debt/equity (Jung, Kim, & Stulz 1996). Event studies conducted about whether or not mergers and acquisitions create shareholder value have contributed to understanding the reasons behind price movements in the market. Short-window studies have proven to be more reliable in this case, especially the three day window considering the day before and after the announcement including the main. Earlier studies have shown merger announcements to be positive for the target firm as the abnormal returns for these firms are favourable, but no significant results have been assessed for the acquiring firm (Andrade, Mitchell & Stafford, 2001). There are also data leading to the conclusion that the short-run reaction to mergers may

overturn in the long run (Rosen, 2006). Unforeseen events include natural disasters, terrorist activities and other sudden policies such as political and social activities. In the recent age, terrorism and natural disasters have been on the top of the list to wreak havoc in economies, particularly in international trade and finance. Financial markets are victimized by these events, either directly or indirectly and there is a trickledown effect of this on the global economy (Liargovas & Repousis, 2010). Empirical research on unanticipated events and the related market response shows abnormal returns based on the intensity and nature of the event. Following the September 11 attacks on the World Trade Centre, studies examined negative abnormal returns by the airline industry, with the market generally plunging on the first trading day after the attacks with the Dow Jones Industrial Average falling almost 684.81 points and the airline stocks particularly tumbling (Carter & Simkins, 2004). Research has shown that the negative effect of natural disasters is often offset to a certain limit by the opportunity of gain through premium from the insurance companies by the market participants (Angbazo & Narayanan, 1996).

In 1999, the study conducted in Pakistan analyzed the stock market’s reaction to nuclear blasts by India and Pakistan (Javid & Ahmed, 1999). The results showed that Indian detonation caused a decline in the daily rate of return at Karachi Stock Exchange but an increase in the trading volume and volatility. Whereas the detonation by Pakistan had no significant effect on the average ROR but it also caused an increase

volatility and trading volume. There is evidence of the resilience of the banking and financial sector of Pakistan and it has been found to rebound and stabilize quicker (Javid, 2009). This study is being conducted with the purpose to add to the existing knowledge bank. Osuala, Nwansi, Osuji and Njoku (2015) examined the signalling effect of the unexpected removal of Mallam Sanusi Lamido Sanusi, the erstwhile governor of the Central bank of Nigeria on the Nigerian stock market. The results of the study showed that the sudden ouster of Sanusi L. Sanusi as the governor of CBN had statistically significant negative impact on the stock market as negative abnormal returns were recorded in the market following the unexpected ouster from the event day up to four days after the event. They recommended that care should be taken in appointing central bank governors to avoid unexpected termination of their appointments as such action make huge negative publicity and send negative signals to the participants in the market, be they indigenous or external stock market investors.

2.1 Theoretical Framework

The foremost theoretical underpinning for the signalling or information effect of surprise events in the capital market is the efficient market hypothesis developed by Fama (1965). In the past three decades, the Efficient Markets Hypothesis (EMH) developed by Fama (1965) has been the most venerable tenet of financial economics and a staple of academic analysis (Erzurumlu, 2011). The EMH suggests that security

prices reveal all currently available information in the market, provided that stock market investors are rational. Under the EMH, a natural metric for assessing the information content of a new event in the market is the fraction of the variance of stock returns that is associated with the announcement of such events (Aga and Kocaman, 2008). Osuala (2007) opined that the stock price performance around the announcement of the sudden removal of CEOs is a measure of the information conveyed by the change.

3. Research Methodology

The objective of this study is to establish the relationship between the sudden announcement of fuel subsidy removal by the federal government of Nigeria and the resultant market returns. This study therefore utilised the correlational research design. The choice of this design is warranted by the fact that it seeks to establish the existence and nature of relationships, associations and interdependence between variables (Kumar, 2005). This study employed the standard event study methodology. Since an event study is an examination of the effect of a certain event upon the value of a company (Christensen, 2009), the first thing to do is to map and describe the event which in this study is the sudden announcement of fuel subsidy removal by the Federal Government of Nigeria and the event date is the day the announcement was made (11th May, 2016).

Furthermore, in order to determine the expected return on the market, an estimation period needs to be chosen within which the alpha (α) and the Beta (β) will be estimated. The estimation period has to be of a certain length. In order to effectively avoid an overlap, a parameter estimation window of one hundred and ninety (190) days (203 to 14) was utilised. The idea behind making sure that the event window and the estimation window do not overlap is to make sure that an unbiased estimate of how the firm's stock prices would have behaved normally without the event's occurrence is obtained; otherwise the normal return is *contaminated* by the event (Osuala, Nwansi, Osuji & Njoku, 2014). An event window of thirty one days (31 days) (-15 to +15) was adopted by the study. This covers fifteen (15) trading days before the announcement, the day of the announcement and another fifteen (15) trading days after the announcement.

According to Dyckman, Philbrick and Stephen (1984); Brown and Warner (1985) and Shaheen (2006), a parameter estimation period of 120 days is adequate, while Shahid, Xiaping, Mahmood and Usman (2010) opined that a parameter estimation window of 190 days is more adequate since daily market returns data for 190 days prior to the event can sufficiently formulate a benchmark for normal market returns.

Even though some studies (Panayides & Gong, 2002; Shahid et al., 2010; Osuala et al., 2014 and Mohammed et al., 2014) suggested that event windows of 11 days before and 5 days after; 10 days

before and 10 days after; 1 day before and 6 days after and 15 days before and 15 days after respectively are sufficient to fully capture the effect of an event; this study utilised the longer event window. The choice of the longer event window (of -15, +15) is made in order to capture possible pre-event reaction and this is consistent with the view that emerging markets like Nigeria in the words of Afego (2010) are generally known to be less efficient than matured markets and therefore, tends to be more sluggish in reflecting new information in stock prices.

Therefore, event windows should be much wider in order to capture leakages, rumours and long-run effects of events. Thus, the choice of a large event window is necessary not only in capturing any leaking information and rumour, but even to measure any effect of growing expectations to equity issue announcements in the Nigerian market.

3.1. The Study Population

The population of this study consists of all the 174 listed firms on the Nigerian Stock Exchange that traded on the 11th May 2016 which was the day the news of the subsidy withdrawal became public.

3.2. Sampling Design and Procedure

The study utilised all the listed firms in the Nigerian stock market. For a firm to be part of the sample, however, the following criteria must be met:

- i. Data on daily stock prices must be available for the firm at least over the period of 190 trading days before the announcement and another fifteen trading days after the announcement.

ii. The firm did not undergo technical suspension within the period of the event window.

iii. No other simultaneous important announcement such as earnings and bonus issues announcement have taken place such as to have contaminated the effect of the event within the event window. The application of the above criteria resulted in the elimination of 98 (ninety eight) firms from the sample. This left us with 76 (seventy six) firms in our sample.

3.3. Sources and Method of Data Collection

This study relied solely on data collected from secondary source. Specifically, the study utilised secondary data relating to the daily stock prices of sample companies for 190(one hundred and ninety) trading days estimation window and the 31 (thirty one) trading days event window. Similarly, the corresponding NSE daily All Share Index (ASI) was collected for the same period. Both the daily series of stock prices of the sample companies and the corresponding NSE ASI was retrieved electronically from the online database of cash-craft asset management limited and verified from the capital assets management website. Since the study as aimed at evaluating the information effect of the announcement on the shares of firms'listedon the NSE, the data collected werebased on those firms whose stocks traded on the NSE during the study period.

3.4. Data Analysis Techniques

Analysis of the study began with the conversion of

daily share price data to daily continuously compounded stock returns using the formula below as advocated by Strong (1992), Arsiraphongphisit (2003), Brooks (2008) and Adelegan (2009a) all in Bello (2014):

$$R_{i,t} = \ln \frac{P_{i,t} - D_{i,t}}{P_{i,t-1}} \times 100 \quad (1)$$

Where $R_{i,t}$ is the return on the security company i at time t ; $P_{i,t}$ is the share price of the company at time t ; $D_{i,t}$ is the dividend received from security i at time t ; $P_{i,t-1}$ is the share price of company i at time $t - 1$ and $\ln$ stands for natural logarithms. Given that the study in the first instance will utilise an event window and the estimation window of less than a year dividends would be constant at zero. The logarithmic transformation of the time series data became necessary in view of the need to keep the effect of outliers under control. The same approach will also be applied to the NSE ASI to create daily compounded market returns as follows:

$$R_{mt} = \ln \left[\frac{ASI_t^*}{ASI_t - 1} \right] 100 \quad (2)$$

Where R_{mt} is the return on the market at time t ; ASI_t is the NSE ASI at time t ; $ASI_t - 1$ is the NSE ASI at time $t - 1$; and $\ln$ is as defined above. The log daily returns of the Sample Company's and those of the NSE ASI will be the main variables of the study. Being an event study, log stock and index returns were computed over the parameter estimation window of 190 trading days, starting from day -203 to day -14

and the event window of 31 trading days running from day -15 to +15 with day 0 as the day of the event. The next step was establishing the stationarity of computed daily sample of company returns and the return on the market index. Financial time series data, especially those collected on daily basis are generally believed to be non-stationary (Brooks, 2008; Agung, 2009). This non-stationarity implies the existence of unit root in the data which often give rise to the occurrence of spurious regressions (De Medeiros & Matsumoto, 2006).

Consequently, the study employed the Augmented Dickey-Fuller test for unit roots (Dickey and Fuller, 1979) to test for the stationarity of the sample data series which will consist of stock return series and market return series. The estimation was done based on the following model (Brooks, 2008 cited in Bello, 2014):

$$\Delta y_t = \mu + \gamma Y_{t-1} + E_t \quad (3)$$

Where γ is a non-stationary series; μ and γ are parameters to be estimated and E is a random disturbance term. The null hypothesis for the presence of a unit root in the series will be rejected if the Dickey Fuller test statistic is less than the critical value at a given apriori alpha level and the alternative hypothesis of a stationary time series will be accepted. The reverse will be true if the test statistic is greater than the critical value.

In order to capture the abnormal returns in the event window, the study utilised the market model

pioneered by Ball and Brown (1968), Fama et al (1969) and Brown and Warner (1985) and Mackinlay (1997). When using the market model, abnormal returns are the differences between the actual stock return and the predicted stock return (the return that would have been earned had the event not occurred) based on Ordinary Least Squares (OLS) estimation that employs market return as the independent variable (Mackinlay, 1997). To obtain the actual return over the parameter estimation window and the event window, the following linear model was estimated:

$$R_{i,t} = \alpha_1 + \beta_1 R_{mt} + \epsilon_{it} \quad (4)$$

Where R_{it} is the actual return on company i 's security at time t ; α_1 and β_1 are parameters to be estimated; $R_{m,t}$ is the market return at time t ; and ϵ_{it} is company i 's random disturbance term at time t . Assuming a constant beta value, the estimated return for company i 's security can be computed by substituting the estimated values of α_1 and β_1 over the estimation window in equation (6) above as follows:

$$\hat{E}_{ts} = \hat{\alpha}_1 + \hat{\beta}_1 R_{mt} \quad (5)$$

Where $\hat{E}_{ts}$ is the expected return on company i 's security at time t ; $\hat{\alpha}_1$ and $\hat{\beta}_1$ are the estimated parameters based on the estimation window; and R_{mt} is the market return at time t . The abnormal return is defined as the difference between equation (6) and (7) as follows:

$$AR_{it} = R_{it} - E_{it} \quad (6)$$

Once the estimated equation has been obtained, the actual return on company i's security was calculated as follows:

$$R_{it} = \alpha_i + \beta_i R_{m,t} + E_{it} \quad (7)$$

Since $E_{it} = R_{it} - \alpha_i - \beta_i R_{m,t}$ equation (9) simplifies to:

$$R_{it} = E_{mt} + E_{it} \quad (8)$$

This implies that abnormal return for company i at time t is simply given as:

$$AR_{it} = E_{it} \quad (9)$$

Thus, the abnormal return on the security of a given sample company will simply be the residual of the OLS after regressing the company stock return on the market return. For the residuals to be considered as the abnormal return however, the parameters estimated over the estimation window must be integrated into the equation as shown above.

Since the hypotheses of the study were tested using the standard t-test, the need to ensure that all assumptions regarding the use of the tool hold became crucial. The standard t-test assumes that individual firms' abnormal returns are normally distributed. Thus, the normality of residuals is necessary to validate t-tests (De Medeiros & Matsumoto, 2006). In the light of this, the study utilised the Jarque-Bera Normality test (Bera & Jarque, 1981) to test for the normality of the abnormal returns. The statistic was computed as follows:

$$\text{Jarque-Bera} = \left[\frac{N-k}{6} S^2 + \frac{(K-3)^2}{4} \right] \quad (10)$$

Where S is the skewness, K is the kurtosis; and k is the number of estimated coefficients used to create the series. The null hypothesis of normality will be rejected if the Jarque-Bera statistic is significant at an apriori alpha level, and vice versa.

The cumulative abnormal return of company i in the sample for a given period was obtained by summing up the abnormal return in a given period. The procedure is demonstrated by the following formula (Peterson, 1989):

$$CAR_i(t_0, t_1) = \sum AR_{i,t} = \sum \epsilon_{t,1} \quad (11)$$

Where $CAR_i(t_0, t_1)$ is the cumulative abnormal return of company i from time t_0 to t_1 ; $AR_{t,1}$ is the abnormal return of company i at time t; $\epsilon_{t,1}$ is the residual of company i at time t. Similarly, the sample average abnormal return at time t is simply the arithmetic mean of n number of stocks, as shown below:

$$AAR_t = \frac{1}{n} \sum AR_{i,t} \quad (12)$$

Where AAR_t is the sample average abnormal return at time t; n is the number of observations; and $AR_{i,t}$ is the abnormal return of company i at time t. As a consequence of the foregoing, the cumulative average abnormal return was computed as follows:

$$CAAR(t_0, t_1) = \sum AAR_t \quad (13)$$

Where $CAAR(t_0t_1)$ is the sample cumulative average abnormal return from time t_0 to t_1 ; and AAR_t is the sample average abnormal return at time t . The null hypothesis of no significant cumulative abnormal return for equity issues announcement fifteen trading days before the announcement, on the announcement date, and fifteen trading days after the announcement was tested using the t-test for the significance of abnormal returns. According to Brown and Warner (1985) and Panayides and Gong (2002), the test statistic is simply the ratio t_0 to period t_1 CAR to its estimated standard deviation over the estimation window as shown in the equation below:

$$t(CAR) = CAR(t_0t_1) / \left[S(AAR_t) \right] \quad (14)$$

Where $t(CAR)$ is the test statistic for cumulative abnormal return; $CAR(t_0t_1)$ is as defined above; $S(AAR_t)$ is the standard deviation of average abnormal return over the parameter estimation window. For the decision criteria, the null hypothesis of no significant abnormal return will be rejected if The EVIEWS 7.0 Econometrics package was used for all statistical and econometric tests in this study. The choice of this package among its peers was motivated by its robustness and flexibility in handling financial and time series data (Gujarati, 2003; Agung, 2009) in Bello (2014).

4. Presentation and Discussion of Results

The analysis of our results started with establishing the stationarity of all the variables that were utilised for the study. Hence, the ADF test was employed to establish the stationarity of the stock return series and

the corresponding market return series within the event window. The test was conducted in order to avoid dealing with non-stationary variables which might give rise to spurious results. The results for the unit root test were based on the 76 stock return series and the corresponding 76 market return series for the supports the existing evidence that prices of financial assets tend to be non-stationary while their return tend to be stationary (Chiang & Doong 2001; Brooks 2008). In addition, results for the White (1980) test illustrated in Table 1 suggest the absence of heteroskedasticity of unknown form in the residuals of the 76 models within the event window. Furthermore, the result of Breusch-Godfrey test for the presence of first order serial correlation in the residuals revealed that 69 models are not serially correlated at one lagged (-1) period, while that of seven (7) firms became serially uncorrelated at two lagged (-2) period after which the observed serial correlation disappeared. Lastly, the results indicate that the data for 42 firms are normally distributed at 1% level of significance, while data for 34 firms are normally distributed at 5% level of significance.

Table 1:Diagnostic and Specification Tests Results

FIRM	NORMALITY	SERIAL	HETERO	FIRM	NORMALITY	SERIAL	HETERO
ACADEMY	0.0530	0.2092	0.8763	MOBIL	0.0140*	0.0110	0.0101
ACCESS	0.9826	0.0983	0.6699	MORRISON	0.0120*	0.5256	0.7799
AFRIPAINTS	0.0758	0.0137	0.1464	MPFMCRF	0.9475	0.0108	0.7638
AGLEVENT	0.0110*	0.0360	0.3782	NAHCO	0.2256	0.0992 (-2)	0.8788
AIRSERVICE	0.3394	0.8425	0.7272	NASCON	0.1264	0.9730	0.5822
ALEX	0.0356*	0.0121	0.0127	NCR	0.0150*	0.9649	0.8832
ANINO	0.0238*	0.0102	0.4872	NEIMETH	0.0120*	0.7921	0.7919
ASHAKACEM	0.0120*	0.4349	0.0106	NESTLE	0.0126*	0.0381	0.1136
AUSTINLAZ	0.0110*	0.9649	0.8056	NEWGOLD	0.0120*	0.1252	0.9124
AVONCROW	0.0775	0.0101	0.0147	OANDO	0.0140*	0.5998	0.8806
BETAGLASS	0.0122*	0.0125	0.4411	PAINTCOM	0.0112*	0.6789	0.8643
CADBURY	0.0180*	0.1384	0.8610	PORTPAINT	0.0120*	0.0113	0.0110
CAPHOTEL	0.0124*	0.0538(-2)	0.0717	PREMBREW	0.0158*	0.0329	0.0701
CAP	0.4193	0.0577	0.0729	PRESCO	0.5884	0.8719	0.9887
CCNN	0.0110*	0.5094	0.5119	REDSTAREX	0.0191*	0.0483 (-2)	0.8291
CHALLERAM	0.0577	0.0104	0.0162	SCOA	0.0101*	0.5694	0.5278
CHAMPION	0.8190	0.0585 (-2)	0.9128	SEVENUP	0.0110*	0.7293	0.7494
CONTINSURE	0.1048	0.1621	0.7697	SKYEBANK	0.0111*	0.6944	0.5908
DANGCEM	0.0149*	0.0147	0.7483	SMURFIT	0.0120*	0.9505	0.0121
DANGFLOUR	0.0267*	0.0520	0.8548	STANBIC	0.0349*	0.7783	0.5342
DANGSUGAR	0.0100*	0.9743	0.8919	STERLIN	0.9051	0.0559	0.8350
DIAMOND	0.1200	0.0571(-2)	0.8312	THOMSWYAT	0.0105*	0.6783	0.7067
ENAMELWA	0.0641	0.1465 (-2)	0.6385	TOTAL	0.0130*	0.9930	0.8950
ETI	0.1100	0.2215	0.9812	TOURIST	0.1209	0.3506	0.3178
FBNH	0.3147	0.1085	0.9686	TRANSCOHOT	0.9879	0.5289	0.5143
FCMB	0.1081	0.1114	0.4139	TRANSEX	0.0121*	0.9113	0.8898
FIDELITY	0.1120	0.0920	0.8218	UACN	0.0116*	0.1002	0.6867
FLOURMILL	0.7985	0.1436	0.8353	UACPR	0.3197	0.1872	0.5020
GOLDBREW	0.0122	0.3534	0.1973	UBA	0.7987	0.0409	0.8564
GUARANTY	0.1466	0.6676	0.4001	UBN	0.9245	0.3895	0.6185
GUINNESS	0.4517	0.0573	0.4052	UNHOMES	0.0101*	0.0709	0.9004
IKEJAHOTEL	0.0110*	0.9641	0.8931	UNITY	0.4381	0.0763	0.0674
INTBREW	0.0130*	0.2931	0.8991	VANLEER	0.0104*	0.7362	0.7218
JOHNHOLTI	0.0146*	0.0791 (-2)	0.7722	VITAFOAM	0.0131*	0.9189	0.5992
LEARNAFRICA	0.0120*	0.0949	0.7682	WEMA	0.8094	0.0121	0.4138
LENNARDS	0.0108*	0.4967	0.6946	ZENITH	0.6646	0.7035	0.5965
MANSARD	0.4742	0.3016	0.4677	-* at 1% level of significance - (-2) two lagged periods			
MAYBAKER	0.0104*	0.9386	0.7651				
MCNLCHOLI	0.0130*	0.4119	0.8110				

Source: EvIEWS 7.0 Output/Researcher's Computations, 2017

The hypotheses of the study were tested using the *t*-test for the significance of abnormal return over three periods. In each of the cases, the *t*-statistic sought to establish whether the abnormal return or cumulative abnormal return over the period of interest is significantly different from zero. Thus, the three points at which the significance of abnormal return and the cumulative abnormal return were tested include announcement day abnormal return, announcement day cumulative abnormal return and post-announcement day cumulative abnormal return.

Table 2: Results of Test of Null Hypotheses (H_{01} to H_{03})

	H01	H02	H03
CAR	4.0991	0.7879	-4.8870
Standard Deviation	1.5771	1.5771	1.5771
Calculated T – Stat.	2.5991	0.4996	-3.0988
Degree of Freedom	14 (15-1)	1	14 (15-1)
Critical Value	1.7613	6.3138	1.7613

Source: EvIEWS 7.0 Output and Critical Value Table

The result for test of H_{01} indicates a calculated *t*-statistics of 2.5991 which is greater than the critical value of 1.7613 at 5% level of significance therefore the study failed accept H_{01} . Thus, there is positively significant CAR fifteen (15) trading days before the announcement. While studies on the sudden announcement of sudden events such as fuel subsidy removal are not common, the finding of significant positive abnormal return on the announcement day is consistent with the findings of existing studies on sudden events like the sudden removal of CEO's such

as Osuala, Nto and Akpan (2013) and Adelegan (2009b) and negates the findings of Lassoued and Attia (2013), Suchard, Singh, and Barr (2001) and Mohammed and Nwafor (2014).

Conversely, the result of H_{02} indicates that the calculated *t*-statistics at 0.4996 is less than the critical value of 6.3138 at 5% level of significance, thus the study failed to reject H_{02} . Therefore, there is no significant CAR on the day of announcement, this finding supports the findings of Adelegan (2009b) and contradicts Lassoued and Attia (2013), Suchard, Singh and Barr (2001) and Mohammed and Nwafor (2014).

Lastly, the result of H_{03} shows that the calculated *t*-statistics of -3.0988 in absolute values is greater than the critical value of 1.7613 at 5% level of significance, therefore the study failed to accept H_{03} .

Thus, there is negative significant CAR fifteen (15) trading days after announcement, this finding is in contrast with the findings of Osuala, Nto, and Akpan (2013) and Warner, Watts, and Wruck (1988) and consistent with Lassoued and Attia (2013), Suchard, Singh, and Barr (2001) and Mohammed and Nwafor (2014).

5. Conclusions

This study surveys the signalling effect of the unexpected removal of fuel subsidy by the Federal Government of Nigeria on the Nigerian stock market using the standard event study methodology. The results of this study indicate that the sudden announcement of the removal had positive but

insignificant CAR on the day of the announcement and a negative significant CAR after the announcement. Thus, it can be concluded that the reason behind the positive insignificant CAR may be as a result of the fact that the market was pervaded by uncertainty on the success or otherwise of the sudden removal. While, the reason for the negative significant CAR after the announcement might be as a result of the fact that market participants in the Nigerian stock market adjudged the sudden announcement of the removal of fuel subsidy as bad news. Thus, fear of the possible consequences the subsidy removal might have on the economy may have accounted for the sharp negative reaction after the announcement. This study shows that there exist high economic and social costs associated with the sudden announcement of policies by the Government, particularly on a sector that has direct linkage with virtually every aspect of the economy. That may be the reason why investors reacted immediately to the event on the announcement day and immediately after the event.

6. Recommendations

Consequent upon the findings of the study, it is recommended that policy makers should avoid sudden announcement of policies that borders on sensitive sectors of the economy. The announcement of such actions should be preceded by the release of information that sufficiently justifies such action by policymakers before it is made public. The release of such information is useful as it will help the stock market to properly understand the idea underlying the action by policy makers and will further severely reduce the information asymmetry in the market

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