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Research Article

Dividend Announcement, Stock Returns and Capital Market Efficiency: A Focus on the Nigerian Stock Exchange

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Abstract

The ability of Nigerian Stock Exchange market in performing the role of price discovery for economic growth has not been very satisfactory owing to the problem of information asymmetry. This paper used panel regression model that incorporated stock market returns to examine the response of actual stock returns to market returns; and how abnormal and cumulative average returns were influenced by information asymmetry. The results showed significant positive response of actual stock return in the days before and after dividend announcement; but not significant, statistically on the day dividend announcement information arrived at the market. The average abnormal and cumulative returns provided empirical evidence, that investors leveraged on anticipated information contained in the dividend announcement in the of pricing shares on the Nigerian Stock Exchange (NSE). Therefore, the paper concluded that the Nigerian Stock Exchange market is not information efficient. Consequently, the paper emphasized the need for the NSE to strengthen collaborative efforts in conjunction with the Securities and Exchange Commission (SEC) as the mechanism to eliminate information asymmetry and, thus, checkmate abnormal returns to investors.

Keywords: Dividend Announcement, Efficiency, Timeline window, Market return, Information asymmetry.

1.0 INTRODUCTION

As economic activities increase, the investing units require more long-term funds to meet resultant expansions; and stocks markets constitute a veritable interface for the long-term finance. Therefore, the role of effective and efficient stock exchange markets in particular, and financial markets in general, are vital in the mobilizing long-term financial resources for sustainable economic growth and development. Market efficiency remains a subject of discourse in the contexts of conceptual, theoretical and empirical expositions. Usually, the efficiency or otherwise manifests in the movement of stock prices in the market place. In this regard, Tafadzwa, Maredza and Sibanda (2014) observed that it has become paramount for financial analysts to develop theories and models that buttress changes in stock market prices and its determinants. This stems from observed deficiencies inherent in market efficiency hypotheses such as information asymmetry, which serves as the springboard of insider abuse.

Perhaps, information is the major driver of efficiency mechanisms of stock markets. The market requires information to step up its business activities, elicit investor confidence and promote its ability to mobilize savings needed for investment. Therefore, mobilizing funds for viable investment opportunities requires information-driven efficient market. In such market, stock prices adjust quickly to new information to engender efficient investment choices. In effect, the market neutralizes the various trading strategies employed by

fundamentalists, technicalists or chartists' trading activities, which are intended to leverage on asymmetric information to beat the market with the hope of earning abnormal returns (Manasseh, Ozuzuz & Ogbuabor, 2016).

An efficient market, therefore, is one in which the price of a security fully reflects all the information currently available about that security. However, the speed at which the market reflects available relevant information about dividend announcement could be marred by the delay and non-random releases of the information to the market (Osondu, 2014). The three (3) various forms of market efficiency are identified in theoretical literature, namely: strong, semi-strong and weak forms of efficiency. Theoretical literature usually provides the launch pad for empirical research efforts on the information-stock price nexus. In that regard, this paper is anchored on the semi-strong form of efficient market hypothesis (EMH).

In developed stock markets like the London Stock Exchange, prices reflect new information that arrives at the market immediately, thereby making it difficult for any investor to continually outdo the market. Smith (2012), using the martingale hypothesis, compared 15 European emerging stock markets with developed stock markets in Greece, Portugal and the UK for comparative purposes. The evidence is that UK, Turkish, Hungarian and Polish stock markets are the most efficient, while the least efficient are the Ukrainian, Maltese and Estonian stock markets. Empirical studies have also shown faster adjustment of index prices of developed markets like the US and the European markets in relation to EMH where evidence of abnormal returns are negligible and returns generally not different from zero except on the arrival of a new information in the market which is speedily incorporated on the security prices (Kayal & Maheswaran, 2018).

The experience of the Nigerian Stock Exchange market suggests that share prices do not reflect immediately on the pronouncement of fresh statistics in the market. For instance on June 3rd 2005, Intercontinental Bank Plc announced bonus issues of 1 for every 10 shares simultaneously with the declaration of ₦0.22k dividend per share for its shareholders. The expectation was a positive reflection of the information on bonus issues and dividend; when available to the market, without bias to avoid the possibility of investors beating the market by making abnormal profit. Contrary to this, the actual experience was that trading on the shares of the company commenced five days before the announcement or event date. As such, share price of the Bank stood at ₦7.81, ₦7.81, ₦7.81, ₦6.90, and ₦6.90 respectively in the five days preceding the event date. Each of these prices per share of the Bank was even higher than the price per share (₦6.24) on the day of the announcement. After the announcement date, it fell to ₦5.93, ₦5.64, ₦5.36, ₦5.10 and ₦5.13 respectively (Osondu, 2014). The asymmetries in the information available to equity issuers or investors could result in overpricing or underpricing of shares, thereby leading to poor market performance (Ayadi & Bouri, 2009).

In any information-efficient market, prices of shares adjust quickly to new information and, thus, provides level playground for informed investment choices. The Nigerian Stock Exchange (NSE) is still faced with the problems of insider dealings, unlisted private placements, inefficiencies of registrars, inadequate information on listed firms, shock induced by the global financial crisis, poor returns on investment, low participation rate, poor understanding of the dynamics of capital market and declining investor confidence amongst others (Demaki, 2013). It seems that the ability of NSE in performing the role of price discovery, fund mobilization and allocation of capital has not been very satisfactory. Perhaps, this accounts for the inefficient and unequitable dissemination of information, which affects share price reaction and the speed at which the market incorporates the arrival of new information. Information asymmetry deters investors and could lead to eventual loss of market confidence. There is also the conflict as to whether the NSE is in the semi-strong form of market efficiency or not.

These and other challenges of the NSE have necessitated some reforms aimed to align the Exchange in conformity with the G-30 recommendations for emerging stock exchange markets. The reforms notwithstanding, the NSE appears to remain information inefficient. Therefore, this provokes the interest to determine the current efficiency of the NSE, using market response to dividend announcement as reflected in share prices 10 days before and after making information about dividend available to the public through the announcement on the floor of the stock exchange.

2.0 REVIEW OF RELATED LITERATURE

2.1 Theoretical Underpinnings

Some theorists have attempted to explain the role of information in stock market efficiency. Variants of the theoretical constructs include market efficiency construct, random work, dividend signaling and capital asset pricing.

The version of the market efficiency hypothesis (EMH), by Eugene Fama (1970), posited that share prices normally integrate and imitate details germane statistics and, thus, it is difficult to outdo the market through either expert stock selection or market timing. Stocks should normally trade at their fair value on the stock exchanges and, as such, it is not possible for individual investors to either procure cheap stocks or sell stocks at bloated prices. The theory further argues that the investors' rationality and costless availability of information guarantee that no individual or institutional investors outperform the market consistently through either technical or fundamental analysis.

The EMH has been criticized on the ground that bubbles and crashes have become defining features of the stock exchange markets. Examples are share price bubble of the technology bubble of the late 1990s, when many technology companies were trading for sky-high valuations before crashing. There is also the housing bubble and stock market crash of 2008. Similarly, some investors do beat the market. An example is Warren Buffett who beat the market, using his value investing approach to identify a margin of safety in stocks (Chandra, 2008). The critics maintain argue that all these would not have happened if the EMH were correct.

The supporters of the EMH refute the claims challenging the efficient market hypothesis. For instance, Burton (2003), refuted the claim and, however, noted that the difference observed between market efficiency and perfect pricing exists and that it is usually due to the fact that market often misprices securities at least in the short run.

Anchored on the EMH, Burton Malkiel (1973) postulated the random walk model, which argued that continual price fluctuations are independent and identically spread. The theory however, insisted that no investor can consistently beat the market because the errors in the market prices are unbiased and difficult to "beat the market" constantly on a risk-adjusted basis since market prices normally respond to new statistics. Fama (1991) applauds the random walk model, pointing out that the theory reveals stern suspicion on many other methods for explaining and forecasting stock price behavior, which have substantial acceptance outside the educational environment. Fama submits that the random-walk theory is a precise explanation of market reality that completely invalidates the various "technical" or "chartist" procedures of predicting stock prices. In addition, some empirical evidence finds support for the random walk propositions.

Nwidobie (2014) investigated the applicability of the Random Walk Theory to the trading activities of the Nigeria Capital Market over the period of January 2000 to December 2012, the results showed that share price movements on the Nigerian Stock Exchange is not in line with the random walk pattern described by Fama in 1965 and, thus, the findings do not substantiate the random walk hypothesis in the circumstance of the Nigeria Capital Market. Results also indicated the existence of market inefficiencies in the Nigeria Capital Market necessitating the inflow of cheap and free information about security fundamentals into the market for share pricing by the forces of demand and supply. This study contributed to the existing knowledge on the random walk theory as research results showed that share prices in the Nigeria Capital Market is not in tandem with the random pattern as described by Fama in 1965. Limitation of study is on the limited period used for the study. Using the same model specification and extended data period, further study should test the Semi-strong efficient state of the Nigeria Capital Market.

However, critics of the theory argued that stocks prices are not constant over time and thus, it is difficult to outdo the market in determining points of entry and exit for equity investments. Also, countless number of

elements, such as infinite number of investors in the market where each trades has a different strategy to trading; do have a large impact on stock prices. Hence, it is likely that trends emerge over a period of time, which would allow an investor to earn a return in the market by buying the stock at low prices and selling at high prices (Tafadzwa, Maredza & Sibanda, 2014).

Dividend signaling theory, by Miller and Rock in 1985, posited that when a company announces an increase in dividend payouts, it is an indication it possesses positive future prospects. The theory explains dividend policy is effective channel to share statistics about a firm's future prospects to investors. Hence, cash dividend announcements convey valuable information, which shareholders do not have, about how; the management's assesses the firm's future profitability. Thus, the announcements reduce information asymmetry. Individual investors therefore may use available information in determining a firm's share price. Dividend policy under the model is therefore applicable (Al-Kuwari, 2009).

However, critics such as John Lintner and Myron Gordon believe that dividends matter because of the uncertainty characterizing the future, the imperfections in the capital market and the existence of taxes (Rachid & Wiame, 2016). Capital Asset Pricing Model (CAPM) propounded by Williams Sharpe in 1970 is one of the theoretical models that is relevant in calculating risk and expected return of financial investment. The model explains that individual investment contains two types of risks, systematic and unsystematic risks. Systematic risk is the market risk, which cannot be mitigated by diversified portfolio investment because the risk sources are exogenous to the individual's portfolio investment. Some constituents of the risk are interest rates, recession and wars. Unsystematic risk is specific to individual's portfolio investment. Therefore, it is also referred to as specific; and it can mitigated by diversifying the number of stocks in the investment portfolio. The implication is unsystematic risk is attributable to the component of a stock's return that is not correlated with general market moves.

Chong, Jin and Philips (2013) explained that the CAPM advocates that an investor's cost of equity capital is confirmed by beta (β), which is the measure of systematic risk whose value indicates how financial asset returns transit with the overall market. Oke (2013) posited that applying CAPM to the Nigeria Stock Market, using weekly stock returns of listed firms on the exchange from 2007 to 2010 and enhancing the precision of the beta estimates by combining the securities into portfolio; the results generally invalidated the CAPM's predictions that higher risk (beta) is related with a higher level of return and that the intercept should be equal to zero when estimating the security market line. The findings bring to question the use of CAPM in the evaluation of performance in managed portfolios in Nigerian Stock Market. Fama and French (2004) suggest that the problems with CAPM could be traced to the simplified assumptions and the difficulties in using the market portfolio in the tests of the model. Following the problem of formulating a good proxy for the market portfolio, the conclusion is to reject CAPM as strongly the sole source of risk, and resort to what appear to be ad–hoc factor models.

Chandra (2008) upholds the possibility of the CAPM being unrealistic, having looked at the assumptions. He argues that, instead, the value of a model depends not on the realism of its assumptions but on the validity of its conclusions. Extensive empirical analysis suggests that there is a lot of merit in the CAPM. De Giorgi and Post (2009) revealed that the reward risk CAPM includes the cross section of United State stock returns better than the mean-variance CAPM does.

2.2 Stylized Facts: Analysis of Daily Behavior of Share Prices

The daily behavior of share prices within the timeline window is summarized in Table 4.1.1 (see the Appendix). The table presents the summary of the evidence of share price adjustments before, upon and after the pronouncement of fresh statistics (dividend announcement) in the stock market. The table shows evidence of increased trading activities leading to increase in share prices as a result of anticipated information, which investors perceive to be good news.

A key point in 2014 is Total Plc whose share price ten days before dividend announcement was ₦181.45k but dropped from day six to ₦171.50k on the event date. Similar trend was exhibited by Total Plc in 2017. The share price traded on the average of ₦281.30k ten days before announcement but dropped to ₦274.55k on the

day of announcement. Still in 2017, GTB prices showed evidence of price appreciation on day -3 but dropped from ₦25.90k to ₦24.61k on day 0. In 2015, Guinness PLC showed evidence of share price appreciation on day -8 from ₦104.12k to ₦131.20k two days to announcement, dropping to ₦121.14 a day to announcement. The share price then appreciated to ₦122.09k on day 0 dropping afterwards to ₦118.51k after announcement. Similar trend was exhibited by Guinness PLC in 2016. Eight days to announcement, the share price increased from ₦92.61k to ₦94.64k on day 0 dropping to ₦88.02k after announcement date.

2.2.1 Analysis of Average Abnormal Return

The share prices after dividend announcement from 2013 to 2017 showed cases of share price appreciations occasioned by increased trading activities before announcement which led to abnormal returns. The pre-announcement increased trading activities showed evidence of abnormal returns that were considerable in most cases when the average abnormal returns and cumulative average abnormal returns were estimated. The activities suggest the possibilities of investors making excess returns before, upon and after declaration of dividend.

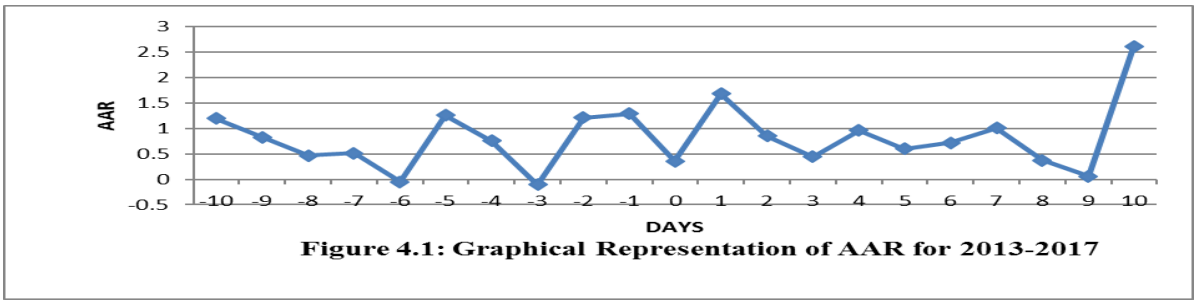

Figure 1: Graphical Analysis of AAR

Source: Authors' analysis (2020)

As seen in Figure.1, the average abnormal return (AAR) declined steadily from about 1.2 on the 10th day before the event or announcement day to about 0.75 on the 9th day before the announcement, and to about 0.5 on the 8th day to the event day. The AAR remained virtually the same through to the 7th day prior to day of the dividend announcement. On the 6th day to the event day, the AAR fell to a negative value of about -0.15. However, the value of the AAR reverted and increased to about 1.4 on the 5th day before dividend announcement day. It is evident from Figure 4.1 that the increase was temporary as the AAR decreased to about 0.75 and -0.1 on the 4th and 3rd, respectively, before the announcement day. Again, the negative value of AAR reverted to positive value and increased to about 1.2 and 1.3 on the 2nd and 1st, respectively to the dividend announcement day. On the event or announcement day, the AAR declined to about 0.35 from 1.3 in the previous day.

The AAR reached unprecedented high value of about 1.75 on the 1st day after the dividend announcement. But that was temporary as the AAR fell to about 0.8 on the 2nd day following the announcement. On the 3rd day after the announcement, the AAR fell further to 0.4. From the 4th day to the 9th day after the announcement, the AAR fluctuated between 1 and 0. On the 10th day after the announcement, the AAR increased unprecedentedly to 2.6.

It is obvious from the graph that, except on the 6th and 3rd days, the AAR of about 0.35 on the event day was lower than the AAR on each of the 10 days within the timeline window. Therefore, since AAR is a reflection of share prices in the stock exchange market, the comparatively low AAR on the dividend announcement day is a good indication that information asymmetry exists in the Nigerian Stock Exchange (NSE) market; and that the NSE does not fully incorporate immediately new information that arrives in the market.

2.2.2 Analysis of Cumulative Average Abnormal Return

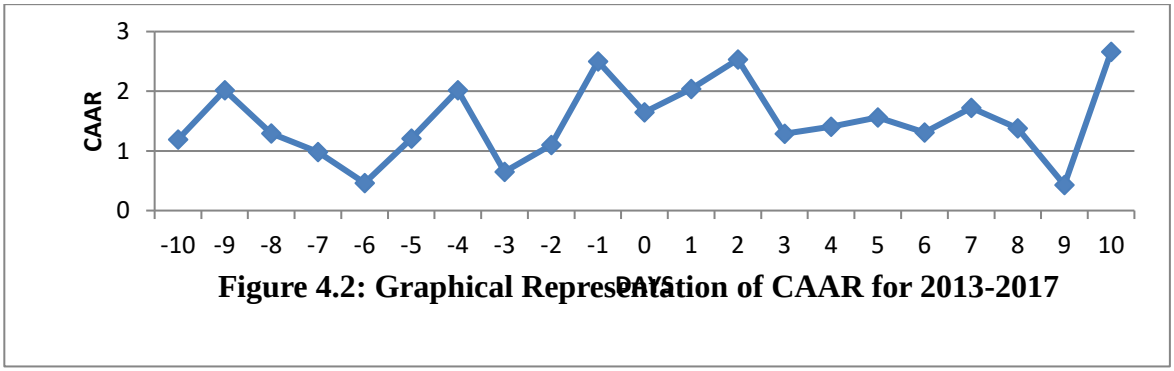

Figure 4.2: Graphical Representation of CAAR for 2013-2017

Figure 2: Graphical Analysis of CAAR

Source: Authors' analysis (2020)

Figure 2 shows the cumulative average abnormal return (CAAR). The CAAR increased from 1.1 on the 10th day before the dividend announcement to 2.0 the next day, which was the 9th day before the announcement. Subsequently, the CAAR to 1.15, 1.0 and 0.2 on the 8th, 7th and 6th days preceding the day of dividend announcement. On the 5th and 4th days before announcement, CAAR increased to 1.1 and 2.0, respectively; but fell to 0.8 on the 3rd day. Thereafter, the CAAR increased to 1.05 on the 2nd day and to unprecedented high value of 2.5 on the penultimate day before the event day. On the event or dividend announcement day, CAAR fell to 1.8.

On the 1st and 2nd days after the announcement, the CAAR increased to 2.0 and 2.3, respectively. But on the 3rd, 4th, 5th, 6th, 7th and 8th days after announcement, the CAAR were 1.15, 2.0, 3.0, 1.15, 1.75 and 2.2, respectively. It fell further to 0.25 on the 9th day, but increased unprecedentedly to 2.8 on the 10th day after dividend announcement.

Figure 4.2 shows that the CAAR peaked on the 1st day before announcement and the 10th day after announcement. These suggest the possibility of the existence of information asymmetry and, as such, the NSE does not fully incorporate immediately new information.

2.1 Empirical Studies

Some studies have examined the effects of dividend announcements and information asymmetry on share price behaviour. In the context of the theoretical efficient market hypothesis, Osondu (2014) examined share price behavior in relation to bonus issues and dividend announcement. Anchored on the market model developed by Fama (1969), a sample of 33 firms listed on the Nigerian was considered in the process of exploring the share price behavior-bonus issue and dividend announcement nexus. The results showed positive and significant abnormal returns for most of the days around the 41-day event window (-20, 0, +20). This provides evidence that share prices of main board market do not adjust quickly to dividend and bonus issues announcements, and that the market is not efficient in semi-strong form. The study further investigated the speed of adjustment of share prices of those firms that simultaneously declared a minimum of N1.25k dividend and 1:10 bonus issues. The finding suggested that share prices of blue-chips stock "A" responded to the announcements faster than share prices of blue-chips stock "B". This finding provides empirical evidence that the market is informational inefficient.

Adesina, Uwuigbe, Asiriuwa, Uwuigbe and Oriabe (2017) explored dividend policy-banks' share price valuation nexus in Nigeria. Based on financial data from annual statements of four representative banks (Access Bank, First Bank, United Bank for Africa and Guaranty Trust Bank), the authors employed the method of ordinary least squares (OLS) regression model to analyse the data. The findings showed significant positive relationships between earnings per share and share price. Therefore, the study argues in favour of robust and efficient dividend policy for better share price behaviour.

Ayodele, Oshadare and Ajala (2017) tested the semi-strong form of efficiency of the Nigerian Stock Market (NSE), using the framework of input and output index. The study considered all the companies that participated in trading activities on the floors of the NSE during the period of January 1, 2005 to December 31, 2013. Hinged on modified transfer function model, the authors estimated the market index represented by the output index, and the computed selected securities represented by the input index, which is synonymous to circulated statistics. The results showed that publicly circulated statistics, captured by the input index, commands significant effect on the stock market represented by the output index. The implication of the result is that the Nigerian Stock Market is semi-strong inefficient.

In a related study, Mohit and Navdeep (2018) studied the signaling effect of shifts in dividend policy on share prices in India Stock Exchange. The authors explained the variance in dividend policy as an increase or a decrease of dividend by 20 percent from the previous dividend payout rate. The study employed standard events methodology, and classified the events according to market capitalisation. Large-cap stocks typified the existence of substantial abnormal returns in the pre-event era, whereas the mid-cap stocks depicted the same in the post-event era. The outcomes of the small-cap stocks reflected that of large-cap stocks, but they were the only ones in which cumulative average abnormal returns were found to be significantly exhibiting the trailed reaction toward the event. The implication of this is that it suggests market inefficiency. The decrease in dividend rate by 20 percent or more does not result in average abnormal returns in either pre-event or post-event window.

A study by Dedunu (2018) examined the impact of dividend announcement on share price in Colombo Stock Exchange, using standard event study methodology. Based regression analysis, the author computed abnormal return, excess return and average abnormal return, with associated t-statistic values for the effects of the proxies of the dividend announcement variables. The findings showed positive abnormal return, as reflected in share prices increase around the event of dividend announcement.

3.0 METHODOLOGY

3.1 Design, Data and Source

This study used the *ex-post facto* research design, in panel data environment. The design is considered appropriate because it is based on published authentic data values, which are not subjected to manipulation, and the data set has both time series (2013 to 2017) and cross-sectional (167) companies listed on the NSE attributes. The data are daily closing prices of stocks of the firms on the NSE as at December 2017, which announced and paid dividends during the period covered in this study. Since the study is interested in companies that were active on the floor of the NSE, purposive sampling technique was used to determine focus companies that constituted the sample population. The data were extracted from published annual reports and financial statements of the companies in the sample population.

Graphical and tabular tools of descriptive statistical analysis were employed to examine the values of the average abnormal return (AAR) and cumulative average abnormal return (CAAR) for the 10-day before and 10-day after announcement or event day. The graphical analysis provided insights into behaviour of stock market returns during the 10-day before and 10-day after the dividend announcement or event day. Panel least squares (PLS) regression model-anchored inferential analysis was used to determine the response of actual stock return (ASR) to market return induced by trading activities within the announcement timeline window. Market return is considered in the contexts of average abnormal return (AAR) and cumulative average abnormal return (CAAR), respectively. Subsequently, statistical significance of the ASR response to AAR and CAAR before, upon and after dividend announcement was ascertained via appropriate parametric tests. These facilitated the

determination of the underlying reaction of share prices during the 10 days before and 10 days after the dividend announcement.

3.2 Analytical Model

The functional model used in this paper to examine the reaction of actual stock return to market return, as the proxies for share price behaviour and dividend announcement respectively, derives from average abnormal returns and the cumulative average abnormal returns. First, we utilized the daily closing price of stock *i* on day *t* and closing price of the same stock i on day t-1 to compute the daily actual return for each stock ($R_{i,t}$) as follows:

$$R_{i,t} = P_{i,t} - P_{i,t-1}. \quad (1)$$

where; $P_{i,t}$ is the closing price of stock i on day t, $P_{i,t-1}$ is the closing price of stock i on the previous day, t-1, and $R_{i,t}$ is the daily actual returns of stock *i*.

Second, we derive the daily market return (RM_t) from relevant Nigeria Stock Exchange market data and, subsequently, use both the $R_{i,t}$ and RM_t to estimate the perceived response of actual stock return ($R_{i,t}$) to market return (RM_t). Thus, we specify and estimate the underlying relationship as follows:

$$R_{i,t} = a_i + b_i\, MR_t + \varepsilon_{i,t} \quad (2)$$

$R_{i,t} = -0.013807 + 0.000435R_{m,t} + e_{i,t}$ (Estimate of equation 2)

Where, R_{it} is actual stock return and RM_t is the market return on firm i stock at day t (as calculated from Nigeria Stock Exchange 30 Index). a and b are the parameters of the market model, while i and t are the respective firm and announcement day. The intercept term, a_i, depicts the actual to firm to the stock of firm i when market return is zero, b_i is the non-market premium depicting specific risk that measures the marginal effect of the market returns on stock return of firm i. ε_{it} is the error term or abnormal return on the stock of firm i at day t, and it is assumed to be white noise.

Third, we determine the growth rate of the daily actual returns on the stock of each firm i (grR_{it}) as follows:

$$grR_{i,t} = \left(\frac{P_{i,t} - P_{i,t-1}}{P_{i,t-1}} \right) 100 \quad (3)$$

where grR_{it} is the growth rate of actual returns on stock i in day t. P_{it} is the closing price of stock i on day t, and P_{it-1} is the closing price of stock i on the previous day, t-1.

Fourth, we calculate the daily abnormal returns on stock i (AR_{it}) as the difference between the daily actual returns on stock i ($R_{i,t}$) and daily market return on stock i (RM_t). Hence,

$$AR_{i,t} = R_{i,t} - RM_t \quad (4)$$

Where, AR_{it} is the daily abnormal return on stock i a in day t RM_t is the daily market return stock i (determined from NSE30 Index), and R_{it} is the actual returns on stock i.

Fifth, we express the cumulative abnormal returns, which measures the investor's total return over a period ranging from before to after dividend announcement dates. Thus,

$$CAR_t = \sum_{t=1}^{n}\left(R_{i,t} - RM_t\right) = \sum_{t=1}^{n} AR_{i,t} \quad (5)$$

Where CAR_t is the cumulative or aggregated abnormal return and n denotes the day interval of -10 through +10 day.

Next, we examine the response of cumulative abnormal stock return to market returns, as the proxies of dividend announcement on the Nigerian Stock Exchange within the context of the 21-day timeline (-10 days, event day and +10 days), as articulated in Figure 3.1. Abnormal return is considered in the timeline, with the event or announcement day depicted as t = 0; 10 days before, t-10 = T-10+1; and 10 days after, t+10. The estimation window is $t = T_{-100}+1$ to $t = T_{-21}$. These are articulated in Figure 3.1.

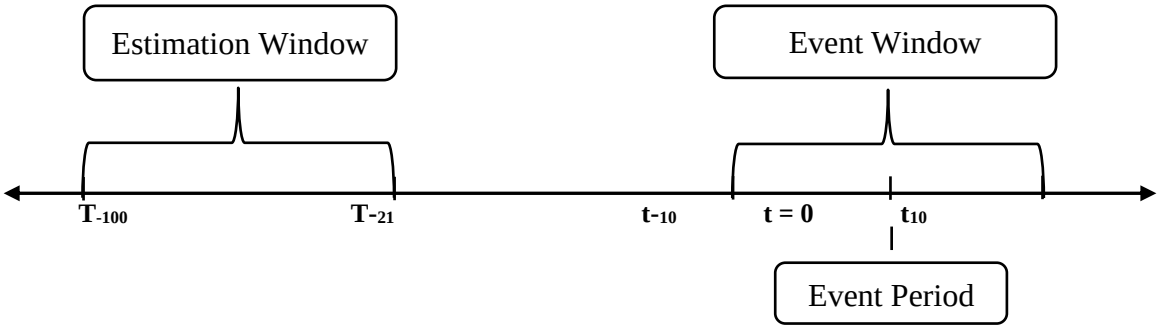

Figure 1: Event and Estimation Windows

Source: Authors' conceptualisation

We estimate the CAR to determine the firms' share values in relation to dividend announcement. We consider and estimate the CAR as the sum of the average abnormal returns around the event window (t_{-10} and t_{+10}). This shows the nature and magnitude of the effect of the event or announcement on the firms' stock returns (Osondu, 2014). Further, we employed t-statistic to ascertain whether or not the returns differ from zero.

Therefore, in the framework of the timeline of the event and estimation windows articulated in Figure 1, we specify the partially aggregated analytical model in equation (6) to forge a linkage path between dividend announcement and share price behaviour in the Nigerian Stock Exchange Market. Thus,

$$CAR_{i,t} = \beta_0 + \beta_j \sum_{j,t=}^{3} RMDA_{i,t} + \mu_t \quad (6)$$

Where CAR is cumulative abnormal return on stock i during the event window, RMDA is the composite index of market return within the -10 and +10 days dividend announcement timeline window. β_0 is the intercept of the model, β_j ($j = 1, 2, 3$) is the coefficient vector of the market return. It shows the nature and magnitude of the response of cumulative abnormal return on stock of firm i to market return induced by trading activities during the dividend announcement timeline window, and t depicts -10 and +10 days within the timeline window. t ($t = 1, 2, 3$) are the three time segments within the dividend announcement timeline window (i.e., 10 days before dividend announcement, event or announcement day, and 10 days after dividend announcement. μ is the stochastic variable which is assumed to be white noise.

To determine the response of cumulative abnormal return (CAR) to the specific components of the market return associated with dividend announcement (RMDA), we disaggregated the right-hand-side of equation (6). Thus,

$$CAR_{i,t} = \beta_0 + \beta_1 RMBDA_{i,t} + \beta_2 RMUDA_{i,t} + \beta_3 RMADA_{i,t}\mu_t \quad (7)$$

Where CAR is as defined earlier, RMBDA is market return before dividend announcement, RMUDA is market return upon dividend announcement and RMADA is market return after dividend announcement. β_0 is the intercept of the model, β_1, β_2 and β_3 respectively are the effects of dividend information or announcement-induced market return on firms' share stock. *i* stands for the respective firms in the market, and *t* and μ are as explained earlier.

The coefficients *(β_1, β_2, β_3)* of the components of the market returns *(RMBDA, RMUDA, RMADA)* within the event timeline window (t = -10 to t = +10) in equation (7) approximate the nature and magnitudes of the response of the cumulative abnormal return on the stock of firm i in day t to market returns during each segment of the dividend announcement timeline window. We expect, *a priori*, positive actual stock return ($\beta_0 > 0$) in the case when there is no dividend announcement. We also expect market return before dividend announcement to be marginal positive ($0 < \beta_0 < 1$) in the immediate days before the announcement, while market return is expected to be considerably positive ($\beta_2 > 1$) upon dividend announcement. We further expect that market return reverts to marginal positive ($0 < \beta_0 < 1$) after dividend announcement. These expectations are based on the assumption that the Nigerian Stock Exchange adjusts instantaneously to the arrival of new information.

Finally, we carried out the test of significance for the average abnormal return (AAR) and cumulative average abnormal return (CAAR) to determine whether the investors do anticipate the information content of the dividend announcement.

4.0 RESULTS AND DISCUSSION

Results of the descriptive and inferential analysis are presented and discussed in this sub-section.

4.1 Descriptive Analysis

The results of the descriptive statistics of the cumulative abnormal return (CAR), market return during 10 days before the dividend announcement (RMBDA), on the announcement day (RMUDA) and 10 days after the announcement (RMADA) are presented in Table 1.

Table 1: Descriptive Statistics

	CAR	RMBDA	RMUDA	RMADA
Mean	-13.02411	268.7576	11.96460	41.35100
Median	-8.984329	36.11000	0.000000	39.29500
Maximum	20.56183	1835.630	298.9207	855.3300
Minimum	-62.32050	-296.2200	0.000000	-1051.380
Std. Dev.	18.06392	618.8109	53.76071	302.1871
Skewness	-1.036191	1.930038	4.659962	-1.019277
Observations	50	50	50	50

Source: Authors' analysis

As seen in the results, the average values of the market returns within the 21-day event timeline window were positive, while the average value of the cumulative abnormal return was negative. The results also show wide range between maximum and minimum values of CAR, RMBDA, RMUDA and RMADA respectively. By implication, market outcomes are highly volatile within event timeline window. The high volatility during or within the event window is further substantiated by the high values of the standard deviations of the market outcomes. The negative value of the skewness of the RMADA provides statistical evidence of dwindling market return during 10 days after dividend announcement. This indicates that active and profitable trading activities take place prior to the arrival of dividend announcement to the market. By implication, the market is inefficient since it does not reflect the information during the immediate days after the announcement.

4.2 Correlation Analysis

Results of the correlation analysis of the cumulative abnormal return (CAR), market return during 10 days before the dividend announcement (RMBDA), on the announcement day (RMUDA) and 10 days after the announcement (RMADA) are presented in Table 2.

Table 2: Partial Correlation Coefficients

	CAR	RMBDA	RMUDA	RMADA
CAR	1			
RMBDA	0.1439	1		
RMUDA	0.1371	-0.0970	1	
RMADA	-0.4555	-0.0911	-0.0859	1

Source: Authors' analysis (2021)

The results in Table 3 show that pairwise market returns are not highly linearly correlated. This is evident in the values of the partial correlation coefficients of indices of the market returns, none of which exceeds 0.95 (Iyoha, 2004; Agung, 2009) or the squared of which exceeds 0.80 (Kennedy, 2008). Therefore, the values of the market return measures within the dividend announcement timeline window are considered appropriate to be combined in the model linear model shown in equation (7).

4.2 Inferential Analysis

4.2.1 Response of Actual Stock Return to Market Return

The estimate of equation 2 ($R_{i,t} = -0.013807 + 0.000435R_{m,t} + e_{i,t}$) indicates that actual stock return responds positively to market return. This provides the basis to conclude that actual stock return and market return co-vary in the same direction.

Results of the Regression Analysis

This sub-section is anchored on regression analysis, which results are presented in tables 3.

Table 3: Regression Analysis Results

Dependent Variable in Model 1: CAR	Periods Included: 5
Method: Panel Least Squares	Cross-Sections Included: 30
Sample: 2013 – 2017	Total Panel (balanced) Observations: 150

Variable	**Coefficient *(β_j)***	**Std. Error**	**t-Statistic**	**Prob.**
Constant	8.359	0.055	151.982	0.000
MRBDA	0.997	0.022	44.409	0.000

MRUDA	0.140	0.079	1.772	0.087
MRADA	0.417	0.072	5.792	0.000
R-squared = 0.535		Adjusted R-squared = 0.520		

Source: Authors' computations (2020).

Note: Significance is considered at the 95% confidence interval or p-value < 0.05 level.

The results in Table 3 indicate that the positive and significant response or sensitivity of the firm's cumulative abnormal return (CAR) to the market on the stock of the firms is greater before than upon and after the dividend announcement (MRBDA = 0.997 > MRUDA = 0.140; MRBDA = 0.997 > MRADA = 0.417, respectively). The coefficients are appropriately signed as earlier envisaged. Though the response tends to the increase in the days after the dividend announcement, the results provide empirical evidence of the existence of information asymmetry, and that the Nigerian Stock Exchange (NSE) does not efficiently incorporate new information that arrives on the market. The implications of these are that, as a result of the information asymmetry, abnormal return-induced trading activities are usually executed even before the new information about dividend announcement by the firms arrives the market. Thus, the announcement does not influence share price in the expected direction and in line with efficient market hypothesis.

These findings are consistent with the findings by Onoh and Nkama (2016), which showed that the Nigerian stock market does not react efficiently to dividend announcements in terms of price adjustments and also did not adjust to announcement changes in dividend policies by the Nigerian companies. However, the findings contradict the results by Smith (2012) that news of dividend announcements are incorporated instantaneously on share prices of companies quoted on London Stock Exchange (LSE) and New York Stock Exchange (NYSE), respectively.

The adjusted r-squared value of 0.520 indicates that the three events (before, upon and after dividend announcement) explain 52% of the total variations in cumulative abnormal returns on stock of the listed firms in any given timeline window.

4.3 Test of the Significance of AAR and CAAR

Results of the significance test of average abnormal return (AAR) and cumulative average abnormal return (CAAR) are presented in Table 4.

Table 4: Significance Test Results of AAR and CAAR

Days	AAR	t-stat	Remarks	CAAR	t-test	Remarks
-10	1.193	2.829***	S	1.193	2.645***	S
-9	0.823	1.953	NS	2.016	4.470***	S
-8	0.470	1.115	NS	1.293	2.868***	S
-7	0.514	1.219	NS	0.984	2.182**	S
-6	-0.054	-0.129	NS	0.460	1.019	NS
-5	1.260	2.987***	S	1.205	2.673***	S
-4	0.757	1.796	NS	2.017	4.472***	S
-3	-0.107	-0.255	NS	0.650	1.441	NS
-2	1.209	2.867***	S	1.101	2.442***	S

-1	1.291	3.061***	S	2.500	5.543***	S
0	**0.358**	**0.849**	**NS**	**1.649**	**3.656*** **	**S**
1	1.683	3.991***	S	2.041	4.526***	S
2	0.848	2.010**	S	2.531	5.612***	S
3	0.442	1.049	NS	1.290	2.861***	S
4	0.962	2.282**	S	1.405	3.115***	S
5	0.598	1.418	NS	1.560	3.459***	S
6	0.714	1.693	NS	1.312	2.908***	S
7	1.009	2.393***	S	1.723	3.820***	S
8	0.373	0.884	NS	1.382	3.063***	S
9	0.057	0.134	NS	0.429	0.952	NS
10	2.608	6.184***	S	2.664	5.907***	S

Source: Authors' computation, 2020

Notes: ** and *** indicate Significance at 5% and 1% level. NS = Not significant, S = Significant. AAR means average abnormal returns and CAAR indicates cumulative average abnormal returns

The results in Table 4 present some interesting findings about the average abnormal returns (AARs) and cumulative average abnormal returns (CAARs). The prevalence of positive AARs and CAARs earned by the investors during -1 to -2 days before the event day (0) indicate that the investors receive privileged information before the dividend announcement is officially made public. As a result of the anticipated information which the investors perceived as good news, the market reacts positively and, thus, stimulates increases in share prices of the firms with good news to rise before the official announcement date (day 0).

The results also show that, at the 5% and 1% critical levels, the AARs are significantly different from zero. These provide statistical evidence that investors do anticipate the information contained in the dividend announcement when pricing the shares of the firms on Nigerian Stock Exchange (NSE). By implication, trading activities on the floors of the NSE do not reflect the public information of dividend announcement instantaneously. Therefore, the NSE is not information efficient. The results also show that the CAARs are significantly different from zero and, thus, provide empirical evidence that dividend announcements have no significant influence on the prices of the shares of firms on the NSE during around the event window. The implication of this is that the shares of the companies are traded before the announcement to the public; and after the announcement, the investors have no incentive to continue trading on the shares thereby leading to fall in the share prices. These results support the findings of sum previous studies (Osondu, 2014; Onoh & Nkama, 2016).

5.0 CONCLUSION AND RECOMMENDATIONS

The results of the analysis showed that actual stock return responds positively and significantly to market returns before and after the dividend announcement or event day. The response on the event day is positive but not significant. The lower magnitude of the dividend announcement-induced market return on the event day clearly shows that active trading is done before the arrival of the dividend information. This indicates that information asymmetry exists on the Nigerian Stock Exchange and, thus, the market is information inefficient.

The significance of the investors' abnormal average returns (AARs) and cumulative abnormal average returns (CAARs) around the event day provide the basis to conclude that the investors have access to leaked dividend information. Hence, trading activities in the Nigerian Stock Exchange are very much driven by

privileged information. Therefore, the Nigerian Stock Exchange (NSE) trading mechanisms falls short of the postulates of the efficient market theory in the semi-strong form.

The evidence of statistically insignificant positive effect of MRUDA as compared to the greater and statistically significant positive effect of MRBDA and less, though significant positive effect of MRADA on ASR clearly establish information asymmetry on the NSE market. Therefore, this paper emphasises the need for NSE management and policy makers to focus on the 2015 capital market reform and strengthen collaborative efforts with the Securities and Exchange Commission (SEC). These will increase the capability of the NSE to eliminate information asymmetry and, thus, eliminate abnormal returns to investors. Subsequently, policy formulation and implementation for the day-to-day trading activities of the NSE would be guided by true market data on stock return as well as market return within the timeline window and, ultimately, foster efficiency of the Nigerian Stock Exchange.

This paper also suggests that related studies in the future, may consider that influence of other factors such as ownership structure, expectations of shareholders, liquidity, inflation, and age of the firm on dividend policy on actual stock price and market returns within specified timeline window.

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