

## Semi-Strong Market Efficiency Studies of the Nigerian Capital Market Using Dividend Announcements

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### **Abstract**

*The study applies simple regression model to know the impact of dividend on share prices using software packages such as E-views and MS-Excel 2007 model in investigating to find out if the Nigerian stock market reacts efficiently to dividend announcements in terms of price adjustments. In capturing reactions around the 3-day, 21-day and 61-day windows before and after the announcements, the study considered the level of the speed of adjustment of share prices to the announcement of dividend payments. In so doing earnings and dividend announcements are found to concurrently announced unlike in developed capital markets. Since the studies indicate a drift in share prices 30 days after announcements The CERs for the 3 – day, 21 – day and 60 – day event windows are positive and statistically significant for dividend announcements. This shows that the Nigerian Stock Market does not react efficiently to dividend announcements in terms of prices adjustments and also does not adjust to announced changes in dividend policies by the Nigerian companies. Overall, this provides evidence that the Nigerian stock market is not semi–strong efficient, that dividend policy matters and that share prices do react to dividend announcements. The findings support semi–strong market inefficiencies found by Olowe (1998) and Oludoyi (1999) from stock splits and earnings announcements, respectively*

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**Key words:** *Semi-Strong; market efficiency; Nigerian Capital Market*

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### **1.0 INTRODUCTION**

An efficient market is one in which prices fully reflect available information. One implication of an efficient market is that no abnormal returns can be made from this information because current prices already reflect the information.

Abnormal returns (if any) should not be statistically significant from zero (Fox and Opong However, 1999, Fama, 1970). Market efficiency depends on the ability of traders to devote time and resources to gathering and disseminating information. Markets that are more efficient attract more investors, which translates into increased market liquidity (Osei, 1998). Investors care about market efficiency because stock price movements affect their wealth. More

generally, stock market inefficiency may affect consumption and investment spending and therefore influence the overall performance of the economy.

A market is efficient with respect to publicly available information if it is impossible to make an economic profit by trading on the basis of the information set (Jensen, 1978).<sup>1</sup> The semi-strong efficient market requires that stock prices follow a random path and that the market price of a stock reflects all publicly available information such as earnings and dividend announcements. The efficiency tests, therefore, consist of measuring the ability of the market to anticipate new information and the speed with which it adjusts to such data (Khoury, 1983). When a firm initiates the payment of a cash dividend or omits such a payment, the firm is making an extremely visible and qualitative change in corporate policy. The decision may have short- and long-term effects on the performance of the price and volume of the company's shares (Naranjo et al., 1998; Amihud and Murgia, 1997; Michaely et al., 1995; Dhillon and Johnson, 1994). An optimal dividend policy should ensure that the wealth of the shareholders is maximized. This will in turn help in mobilizing resources for productive investment opportunities on the stock market and ultimately result in economic growth.

### **Stock market indicators**

Some indicators in the stock market are used to analyze stock by showing the direction of the market at a particular period. These could also be referred to as the mirror of the stock market or the top ten terms. They include the following;

#### **❖ Market Capitalization**

This is the most popular stock market indicator. It measures the total naira value of all shares quoted on the stock exchange at the close of trading each day. Market capitalization also shows the value of the entire market, that is, the value of all shares in the stock exchange. It is obtained by multiplying the number of shares of all companies listed on the stock exchange by their current prices.

#### **❖ All-share Index**

All-share index is used to capture the movement of prices in the stock exchange market. This index was formulated in Nigeria on the 4<sup>th</sup> of January 1984. It is calculated thus;

$$\frac{\text{Current market value}}{\text{Base market value}} \times 100$$

At the time the all-share index was formulated, the base market value was 100.

#### **❖ Earnings Per Share (EPS)**

It serves as an indicator of a company's profitability. It is the portion of a company's profit allocated to each outstanding share of common stock. A company with higher earnings per share shows that the company is a good investment vehicle. Calculated as:

$$\frac{\text{Net income} - \text{Dividend on preferred stock}}{\text{Average Outstanding shares}}$$

The EPS is to be compared among companies listed on the stock exchange to determine the highest paid company.

❖ **Price-Earnings Ratio (P/E)**

This measures how long it will take an investor to recover his initial investment in the stock exchange market. It is a valuation of a company's current share price compared to its per-share earnings.

Calculated as:

$$\frac{\text{Market value per share}}{\text{Earnings per share}}$$

❖ **Dividend Yield**

This is a financial ratio, which shows how much a company pays out as dividend to its share price.

$$\text{Dividend yield} = \frac{\text{Annual dividend per share}}{\text{Price per share}} \times 100$$

❖ **Return On Assets (ROA)**

This is an indicator of how profitable a company is relative to its total assets. ROA gives an idea as to how efficient management is, at using its assets to generate earnings.

$$\text{ROA} = \frac{\text{Net income}}{\text{Total Assets}} \times 100$$

❖ **Return on Equity (ROE)**

This is the amount of net income returned as a percentage of shareholders equity. ROE measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested.

$$\text{ROE} = \frac{\text{Net income}}{\text{Shareholder's Equity}} \times 100$$

❖ **Debt/Equity Ratio (D/E)**

This is a measure of a company's financial average. It indicates what proportion of equity and debt the company is using to finance its assets. Calculated as

$$\text{D/E} = \frac{\text{Total Liabilities}}{\text{Shareholder's Equity}} \times 100$$

❖ **Weighted Average Cost of Capital (WACC)**

This is a calculation of a firm's cost of capital in which each category of capital is proportionately weighted. The WACC equation is the cost of each capital component multiplied by its proportional weight and then summing:

$$\text{WACC} = \frac{E}{V} * Re + \frac{D}{V} * Rd + (1-TC)$$

Where, Re = cost of equity; Rd = cost of debt; E = market value of the firm's equity; D = market value of the firm's debt; V = E+D; TC = corporate tax rate.

**Statement of research problem**

In Nigeria, the capital market, which is “the engine of growth”, is still underdeveloped and emerging. In fact, it is small even when compared with other emerging stock markets (Samuel and Yacout, 1981; Ogwumike, 1982; Umoh, 1984; Inanga and Emenuga, 1996).

The thinness of trading, low market capitalization, low turnover rates and illiquidity of the market can be attributed to barriers to foreign investors (until 1995), bottlenecks in the clearing system, the “buy-and-hold” attitude of investors, the imposition of a price cap on share price movements and political instability, among others (Inanga and Emenuga, 1996).

The stock market became fully open to foreign investors with the abolition in 1995 of the Nigeria Enterprises Promotion Decree 1989 and the Exchange Control Act 1962, and the promulgation of the Nigeria Investment Promotion Decree 17, 1995, coupled with the abolition of capital gains tax in the 1998 budget. This has resulted in the need for companies to complement these positive actions with sound dividend policies to attract local and foreign investors.

If the Nigerian capital market is to harness funds from local and foreign investors for viable investment opportunities that will bring about economic growth, it needs to be efficient. This has made it imperative that research be carried out in this area to identify the level of efficiency and the problems hindering the development of the market for effective policy formulation. A study of dividend policy is one key area that will provide important information for investors, academia and the government on the efficiency of the market and through that process, promote further interest in the market. It is therefore the overall aim of this study to determine the importance of firm dividend policy in Nigeria by examining whether the Nigerian stock market reacts efficiently to dividend announcements in terms of price adjustments. Against this background, this work is poised to answer the following research questions:

1. What is the market reaction to changes in dividend policies by Nigerian companies and determine whether there is an overreaction or a drift?
2. What is the speed with which share prices adjust to the information contained in dividend announcements in the Nigerian stock market?

**Research Objectives**

The overall objective of the study, which is to investigate whether the Nigerian stock market reacts efficiently to dividend announcements in terms of price adjustments, may be broken down into the following specific objectives:

1. To investigate market reactions to announced changes in dividend policies by Nigerian companies and determine whether there is an overreaction or a drift;
2. To assess the speed with which share prices adjust to the information contained in dividend announcements in the Nigerian stock market;

### **Research hypotheses**

The hypotheses of the study are stated in null form as follows:

1. H1: The Nigerian stock market does not react efficiently to dividend announcements in terms of price adjustments.
2. H2: The market does not adjust to announced changes in dividend policies by Nigerian companies, and therefore dividend policy does not matter.

### **Motivation of study**

In developed markets (such as the United States, Britain and Japan), the efficient market hypothesis (EMH) has been the subject of considerable research by economists. The outcome of this research is a strong consensus among economists on the validity of the weak and semi-strong forms of the EMH for the major developed countries (Fama, 1970; Ross and Westerfield, 1988). The EMH debate has been subsequently carried into the emerging markets and although the number of studies has been limited, their conclusions have been mixed (Gandhi et al., 1980; Cooper, 1982; Parkinson, 1984, 1987; Ayadi, 1983, 1984; Dickinson and Muragu, 1994; Omole, 1997; Matome, 1998; Osei, 1998; Oludoyi, 1999; Adelegan, 2004). Most evidence in Nigeria, however, indicates that the Nigerian capital market is efficient in the weak form, but not in the semi-strong form. Tests on strong-form efficiency are rare in Nigeria as yet. Given the large body of evidence on efficiency in developed markets, there is a need for “triangulation” in the research by providing further evidence from developing markets. This study extends the evidence on the efficiency of emerging stock markets using data from the Nigerian Stock Exchange (NSE). The study tests for the semi-strong efficiency of the Nigerian stock market using daily stock prices between 1990 and 1999 around the dividend announcement dates. The study is carried out around the 3-day, 21-day and 61-day event windows in the short run. It also covers the period from a year before to a year after the dividend announcement dates to capture the long-term reactions. The actual returns of each firm were adjusted for systematic risk using the Treynor measures (Treynor, 1965).

## **2.0 LITERATURE REVIEW**

The literature review is categorized into two main parts; the theoretical aspect and the empirical aspect of previous studies carried out by other scholars.

### **Theoretical review of literature**

Information plays a very important role in security markets. It aids in the establishment of security prices and, with these prices, helps the individual investor in the selection of an optimal portfolio.

The relationship between security prices and information made available to the market has been explained by the efficient market theory (EMT), which states that publicly available information is always fully reflected in share prices. Any new information of economic value subsequently becoming publicly available is instantaneously impounded in an unbiased manner. This is the semi-strong form of the EMT (Gajewski, 1999).

The primary role of the capital market is the allocation of ownership of an economy's capital stock. In general terms, the ideal is a market in which prices provide accurate signals for resource allocation, that is, a market in which firms can make production– investment decisions, and investors can choose among the securities that represent ownership of firms' activities under the assumption that security prices at any time “fully reflect” all available information.

A market in which prices always “fully reflect” available information is called “efficient”.

### **Information transfer and dividend policy**

As already mentioned, economists have undertaken considerable research into EMH in developed markets and reached a consensus on the validity of the weak and semi–strong forms of EMH.

On the other hand, few studies of EMH in emerging markets have been carried out, and the conclusions reached in those studies have been mixed. Dickinson and Muragu (1994) studied the weak–form efficiency of the Nairobi stock market and concluded that the market is not efficient. Osei (1998) arrived at a similar conclusion in his study on the efficiency of the Ghana Stock Market. Matome (1998) examined the behaviour of the Namibian stock market.

Overall, there is more evidence of inefficiency than efficiency from studies on the African capital market. Similarly, the few studies of market efficiency in the Nigerian capital market have generally focused on tests of the weak–form efficiency. These include Ayadi (1984), Omole (1997) and Adelegan (2004).

Most of the studies conclude that the Nigerian stock market is weak–form efficient. Tests on the semi–strong form are even fewer (see the Appendix for highlights of literature on EMH in Nigeria).

An attempt at the semi–strong test by Emenuga (1989) using money supply information found that the structural efficiency of the stock market could not be determined using monetary data since there is no empirical relationship between money supply and stock prices.

### **The impact of news in the financial market**

It is not news that news moves financial markets. Good news lifts the market. Bad news dampens growth. The effect, however, is not symmetric: good news does not lift the market as much as bad news depresses it: good (bad) news does not lift (depress) a bull market as much as a bear market. Positive and negative stock returns innovations have different impact on the volatility, as found in the literature by researchers for example parker (2006).

Volatility following bad news is found to be higher than following good news. This is the well–documented predictive asymmetry effect in stock market, which is sometimes called the leverage effect.

Besides that, good and bad news in a bull market may not lift up the market as much as in a bear market or vice versa. Intuitively, given a continuous downward market movement, bad news may drag down the market more than if there has been upward market movement. In other words, in a bear market, the market is waiting for bad news and bad news shakes market confidence more than if it has been a bull market.

Using monthly prices, Olowe (1998) investigated the reaction of the Nigerian stock market to stock splits. His study centred on monthly data of 86 stock splits involving 59 quoted companies between 1981 and 1992, and found that statistically and economically abnormal returns could be earned on the Nigerian stock market.

Oludoyi (1999) looked at the impact of earnings announcements on share prices in Nigeria around annual general meeting (AGM) dates between 1986 and 1994. His study, which was



undertaken in the period before the cap on share price movements was expanded, used weekly stock prices and movements for a period of 21 weeks around the event window.

He showed that the Nigerian capital market is not efficient in the semi-strong form as share prices still drift ten weeks after corporate earnings have become public information.

There have been several economic policy changes affecting the stock market since then, however, such as the promulgation of the Nigerian Investment Promotion Decree of 1995, which fully opened the stock market to foreign investors, and the abolition of the capital gains tax in 1998.

Previous studies have established that the announcements of unexpected changes in dividend payments provide information affecting the market values of the companies making the changes. Lintner (1956) reports that managers avoid changes in dividends that would have to be reversed in the future because they believe such a reversal could have an adverse effect on the company's stock price.

Subsequently, many empirical studies have tried to explain, in general, the response of the market to announced changes in dividend policy, mostly in the UK and USA (Pettit, 1972; Charest, 1978; Bernard and Thomas, 1990; Healy and Palepu, 1988; Asquith and Mullins, 1983; Christie, 1990; Dhillon and Johnson, 1994; Michaely et al., 1995, Amihud and Murgia, 1997; Naranjo et al., 1998).

The results of most of these studies showed that market reaction to dividend announcements is biased.

One strand of literature found evidence for immediate and post announcement market drift as a result of dividend changes (Healy and Palepu, 1988; Asquith and Mullins, 1983; Michaely et al., 1995). Healy and Palepu (1988) examined companies that initiated dividend payments for the first time, as well as those that completely omitted their dividend payments, and found significant two-day abnormal stock returns of 3.95% and -9.5%, respectively.

Overall, this research found that the short-run price impact of dividend omissions is negative and that of initiations is positive.

Michaely et al. (1995) studied market reactions to dividend initiations and dividend omissions in the USA and found that omission announcements are associated with a mean price drop of about 7% and initiations with a price increase of over 3% around the event day.

These studies indicate that dividend changes convey information from corporate decision makers to the investing public. Some other studies also provide evidence to support post dividend announcement drift. (Michaely et al., 1995; Charest, 1978; Christie, 1990).

Charest (1978) found small but significant price drift after dividend changes. That is, excess returns are positive in the months following the announcement of a dividend increase, but are negative in the month following the announcement of a dividend cut. The conclusion was supported by Christie (1990).

Michaely et al. (1995) investigated dividend omissions and initiations to see whether there are subsequent excess returns after the market has had a chance to react to the announcement of a change in dividend policy.

They found significant long-term drifts following announcements of initiations and omissions. Prices of firms that omit dividends drift down after the immediate reaction to the omission, and prices of firms that initiate dividends drift up.

In 22 out of the 25 years examined in the study, the combined initiating and omitting firms' drift results in abnormal profit. This is consistent with findings in De Bondt and Thaler (1989).

Bernard and Thomas (1990) also advanced evidence for the post-earnings announcement drift (or under-reaction).

This research showed that when firms made surprising quarterly earnings announcements, prices continued to move in the same direction for the next three quarters, especially on the days surrounding the next quarterly earnings announcement.

Since dividend omissions and initiations are similar to earnings surprises, one might expect a similar drift in the prices following a change in dividend policy.

A second strand of literature provides some reasons to expect exactly the opposite pattern of prices. Numerous studies found evidence for over-reactions or mean reversion in prices.

De Bondt and Thaler (1989) documented that those firms on the New York Stock Exchange (NYSE) that exhibit the most extreme price movements tend to display mean reverting excess returns in the subsequent time period.

This tendency is stronger for losers than for winners. Similar results were obtained by other researchers in the USA and in other markets for different time periods (Bremer and Sweeny, 1991).

The literature on why one might expect excess returns following a dividend initiation or omission is in support of the clientele effect. This research showed that dividend initiation or omission would give rise to excess returns if it causes a change in the type of stockholders owning the company.

The clientele effect may occur because some individual stockholders prefer cash payments, while others dislike cash dividends for tax reasons (Black and Scholes, 1974).

Similarly, some institutions may have a preference for dividends or be required by charter to own stock only in dividend paying companies. Findings of some studies of the effect of dividend changes on stock and bond prices have led to a distinction between the information content and wealth redistribution hypotheses.

Information content implies that when a dividend increase is announced, bond prices should increase, while a dividend reduction is expected to bring about a reduction in bond prices.

Handjinicolaou and Kalay (1984) analysed bond returns and dividend changes and reported that bond prices react to dividend reductions but are not affected by dividend increases. They argue that their data support the information content hypothesis.

Woolridge (1983) obtained similar results. Jayaraman and Shastri (1978) found insignificant negative bond price reactions to special announcements. Thus, the bulk of the existing literature supports the information content hypothesis, and the evidence for wealth transfer is scanty.

Wealth redistribution implies that bond prices should fall when dividend increases are announced, and this will in turn lead to wealth redistribution between bondholders and stockholders.

Dhillon and Johnson (1994) analyzed stock and bond prices and dividend changes and reported that there was a positive reaction to large dividend increases in the stock market and a negative price reaction in the bond market, which is consistent with the wealth redistribution hypothesis.

Other literature supports the dividend signaling hypothesis, which maintains that corporate decisions on dividend policy may signal inside information regarding expected future cash flow because of information asymmetry between a company's management and outside investors (Miller and Rock (1985).

Thus, an initiation or increase of a cash dividend may indicate cash flow strength, while a reduction or omission may indicate future cash flow weakness not evident in the company's publicly available information.



A necessary condition for the signaling hypothesis to be true is that the signal must affect the market's expected cash flow for the signaling company.

Researchers have used several approaches to test for evidence of the dividend signaling effect. Some studies use actual reported earnings after dividend announcements to proxy for the change in expected future cash flows and their conclusions are mixed.

Healy and Palepu (1988) report that companies in their sample have significant changes in their annual earnings in the year of the announcement of dividend changes and at least one year thereafter. Bernartzi et al., (1997) find no change in actual reported earnings after dividend changes and conclude that dividend signalling does not appear to be occurring for the companies in their sample.

However, the dividend signalling hypothesis holds that a change in dividend signals a change in current expectations of future cash flow and not necessarily changes in future realizations of them. Instead of using changes in actual future realizations of earnings as a proxy for changes in expectations of future cash flow, some authors use a more direct proxy.

Yoon and Starks (1995) use analysts' earnings forecasts to test the signalling power of changes in dividends. This is a more direct measure of changes in current expectations because earnings analysts specialize in helping the market set those expectations.

They reported that unexpected changes in dividends are positively related to abnormal earnings forecast revisions.

Another strand of literature made a distinction between the effects of dividend announcements on share prices of announcing firms (announcers) as well as share prices of non-announcers.

Two main distinctions underpin the two alternative types of information transfer documented in the literature. The first refers to industry-wide information commonalities that engender a contagion hypothesis.

The industry-wide commonality influence is expected to affect all firms within that industry in a directionally similar manner. In contrast, the competitive shift scenario indicates changes in competitive structure, which implies that within a given industry, some firms will benefit while others will lose.

Accordingly, the contagion hypothesis through industry-wide influences predicts positive correlated information transfers and therefore a positive price impact for non-announcing firms in the same industry. In contrast, the competitive hypothesis predicts negative correlated information transfers and hence a negative intra-industry price impact (Otchere, 2002).

Some researchers have explored the possibility that a company's announcements could affect the market value of its competitors. The evidence generally indicates an industry-wide information transfer via announcements previously thought of as company specific. Lang and Stulz (1992) report that bankruptcy announcements reduce the market value of rivals over a two-day announcement period by 1% on average – a phenomenon termed the contagion effect, as the rival companies have caught an infectious disease from the announcing company.

This suggests that changes in dividends may provide important information regarding rivals' cash flow in addition to potentially signaling inside information about cash flows of announcing companies.

Some other researchers have structured the potential linkage between the information conveyed by changes in dividends and the effect that is transferred from one company to its rival. Firth (1996) examines the effect of relatively large dividend changes on the stock market reactions and earnings forecast revisions of announcing companies and their rivals.

His results show that dividend increases produce a significant positive effect on stock prices while dividend reductions produce negative effects on stock prices and forecast revisions of both the announcing companies and their rivals.

On the other hand, Laux et al. (1998) study the stock market reactions of rivals to dividend changes by announcing companies and are unable to confirm Firth's findings. Howe and Shen (1998) find no average reaction to dividend initiation announcements on rivals' stock prices and their earnings forecasts. Caton et al. (2003) examine whether information embedded in dividend omissions affect the cash flow expectations of rivals.

They examine abnormal stock returns and abnormal earnings forecast revisions of rivals surrounding announcements of dividend omissions by announcing companies (announcers). Their results are consistent with those of Firth (1996) and inconsistent with those of Laux et al. (1998) and Howe and Shen (1998).

They found both significant negative stock returns and significant negative earnings forecast revisions for rivals to dividend omissions of announcers.

The regression results reveal a significant positive relationship between stock returns and earnings forecast revisions of rivals.

### **Empirical studies of dividend policies in Nigeria**

The earliest major attempt to explain the dividend behaviour of companies has been credited to Lintner (1956) who conducted this study on American companies in the 1950s.

Since then there has been an ongoing debate on dividend policy in the developed markets resulting in mixed, controversial and inclusive results.

This issue did not receive any serious attention among academic scholars in Nigeria until 1974. Uzoaga and Alozieuwa (1974) attempted to highlight the pattern of dividend policy pursued by Nigerian firms, particularly during the period of indigenization and the participation programme defined in the first Indigenization Decree of 1973.

Their study covered 52 company-years of dividend action (13 companies for four years). They reported that they found very minimal evidence to support the classical influences that determine dividend policies in Nigeria during this period. They concluded that fear and resentment seem to have taken over from the classical forces. However, Inanga (1978) and Soyode (1975) commented on the work of Uzoaga and Alozieuwa. Inanga concluded that the problem arising from the change in dividend policy can be attributed to the share pricing policy of the Capital Issue Commission (CIC), which seemed to have ignored the classical factors that should govern the pricing of equity share issues.

This in turn made companies abandon all the classical determinants of dividend policy.

Soyode criticized Uzoaga and Alozieuwa's work on the grounds that it glossed over some important determinants of optimal dividend policy; he also questioned certain conclusions made in the study because they were inadequate or a mistaken evaluation. Furthermore, Oyejide (1976) empirically tested for company dividend policy in Nigeria using Lintner's model as modified by Brittain (1964).

He disagreed with previous studies and reported that the available evidence strongly supports the fact that conventional devices explain the dividend behavior of Nigerian limited liability businesses.

Odife (1977) criticized the Oyejide study for failing to adjust for stock dividends and seemed to agree with Uzoaga and Alozieuwa's conclusion. However, Izedonmi and Eriki (1996), using data from 1984–1989, found support in Nigeria for Lintner's model.

Adelegan (2003) evaluated the incremental information content of cash flows in explaining dividend changes, given earnings in Nigeria. She carried out an 882 firm–year study by analysing the dividend changes–cash flow relationship on a sample of 63 quoted firms in Nigeria over a wider testing period from 1984 to 1997. She found a significant relationship between dividend changes and cash flow, unlike previous studies.

The empirical results reveal that the relationship between cash flows and dividend changes depend substantially on the level of growth, the capital structure choice, the size of each firm and economic policy changes.

With the exception of Izendomi and Eriki (1996) and Adelegan (2003), the inconclusive controversy seems to have come to a temporary halt in the late 1970s. The attention of academic scholars became diverted in the early 1980s to studies of the weak–form efficient market hypothesis (EMH) on the Nigerian stock market. For example, Ayadi (1984) and Omole (1997) found evidence to support this hypothesis.

Few other scholars have attempted to find reasons to justify the semi–strong form efficiency of the Nigerian capital market, and the studies of Emenuga (1989), Olowe (1998) and Oludoyi (1999) are too scanty to draw any meaningful conclusion on this issue.

### **Limitations of research**

A major limitation is the date of announcement used in the study. We used the dividend announcement date in the Notice to Dealing Members File, which is the date when the announcement is made on the trading floor. Considering the low level of sophistication of most Nigerian investors, information about dividend announcements may not reach most investors until months later at the time of the Annual General Meeting (AGM). It appears, however, that this limitation may not seriously impair the results emanating from the study.

The study did not examine the effect of tax policy on changes in dividend policy and the resulting clientele effect. Tax policy changes are expected to have an impact on dividend changes. Increases or reductions in capital gains tax and personal income tax rates are expected to influence price reactions to dividend changes. Furthermore, the study did not examine market reactions in terms of volume of shares.

## **3.0 METHODOLOGY**

Several models have been used in the economic and finance literature to empirically estimate security returns. These include the market model (MM), the capital asset pricing model (CAPM), arbitrage pricing theory (APT) and the modified market model (MMM). Fama (1991) believes that the market model can be used to test for market efficiency when the phenomenon being studied is “firm–specific”, which most event studies are. MacKinlay (1997: 19) believes that to the extent that the market model eliminates the biases introduced by using CAPM, it dominates equilibrium–based models, that is, CAPM and APT, in event studies. Therefore, this study applies the simple regression model to know the impact of dividend on share prices using software packages such as E-views and MS-Excel 2007 to enter the variables.

### **3.1 Model specification**

This study tests whether the Nigerian stock market is semi–strong efficient with respect to its reactions to dividend announcements in terms of price adjustments and assesses market reaction to announced dividend policy changes in Nigeria.

**3.1.1 Functional specifications for pre-announcements**

PR3= f (DIV) ..... (1)

PR21= f (DIV) ..... (2)

PR61= f (DIV) ..... (3)

**3.1.2 Econometric Specifications for pre-announcements**

PRE3=  $\beta_0 + \beta_1 \text{DIV} + \mu_1$  ..... (4)

PRE21=  $\beta_0 + \beta_1 \text{DIV} + \mu_2$  ..... (5)

PRE21=  $\beta_0 + \beta_1 \text{DIV} + \mu_3$  ..... (6)

**3.1.3 The functional specifications for the post-announcements**

POS3= f (DIV) ..... (7)

POS21= f (DIV) ..... (8)

POS61= f (DIV) ..... (9)

**3.1.4 The empirical specifications for the post-announcements**

POS3=  $\pi_0 + \pi_1 \text{DIV} + \mu_4$  ..... (10)

POS21=  $\pi_0 + \pi_1 \text{DIV} + \mu_5$  ..... (11)

POS61=  $\pi_0 + \pi_1 \text{DIV} + \mu_6$  ..... (11)

Where

PRE3 = Index Price for the three days before the announcement

PRE21= Index Price for the twenty one days before the announcement

PRE61= Index Price for the sixty one days before the announcement

POS3 = Index Price for the three days after the announcement

PRE21= Index Price for the twenty one days after the announcement

PRE61= Index Price for the sixty one days after the announcement

**Justification for the model**

The Ordinary Least Square (OLS) simple regression analysis is the statistical framework for the research work due to its general characteristics of linearity in parameters and variables, unbiasedness, minimum variance, efficiency, and consistency. The choice of this model is based on the fact that it allows for estimation of the impact or effect of the explanatory variables on the dependent variable. In other words, it describes how two or more independent variables affect

the dependent variable. Thus the OLS model is a statistical tool, which helps to predict one variable from the other variable(s) on the basis of the assumed nature of the relationship between the variables. The variables that form the basis for prediction are usually referred to as the independent or explanatory variables (regressors) while the variable whose values are being predicted is called the dependent variable (regressands).

In simple regression, when an equation is formulated for predicting say Y (dependent variable) from X (independent variable), such equation is called regression equation of Y on X. Therefore the value of the dependent variable is determined by the values of the independent variables. Hence, the dependent variable is a function of the independent variable. The function is usually represented explicitly by an equation;

$$Y = \alpha + \beta X + \mu$$

### Source of data

We shall use secondary data from a report on dividends of 30 companies for a 6-window period for two years and their respective share prices derived from [www.peacecapitalmarket.com](http://www.peacecapitalmarket.com) and various national daily newspapers.

### Presentation of regressed results

The results of the ordinary least square regression are presented below. The estimates of the regression result were subjected to various economic, statistical and econometric tests.

**Table 1.**

| Variable   | Coefficient | Std. error | t-statistic | Prob. Value |
|--|-------------|------------|-------------|-------------|
| <b>Dependent Variable: Pre-Announcement Share Price - 3 days</b>   |             |            |             |             |
| CONSTANT   | -5813065    | 6.69449    | -0.878179   | 0.3873      |
| DIVIDEND   | 32.52967    | 2.72344    | 11.94433    | 0.0000      |
| <b>Dependent Variable: Pre-Announcement Share Price - 21 days</b>  |             |            |             |             |
| CONSTANT   | -5339818    | 6.642084   | -0.803937   | 0.4282      |
| DIVIDEND   | 32.45742    | 2.732752   | 11.87719    | 0.0000      |
| <b>Dependent Variable: Pre-Announcement Share Price - 61 days</b>  |             |            |             |             |
| CONSTANT   | -3.959345   | 7.088661   | -0.558546   | 0.5813      |
| DIVIDEND   | 31.94824    | 2.819663   | 11.33051    | 0.0000      |
| <b>Dependent Variable: Post-Announcement Share Price - 3 days</b>  |             |            |             |             |
| CONSTANT   | -5904057    | 6.688132   | -0.882766   | 0.3849      |
| DIVIDEND   | 32.52432    | 2.751698   | 11.81973    | 0.0000      |
| <b>Dependent Variable: Post-Announcement Share Price - 21 days</b> |             |            |             |             |
| CONSTANT   | -4918151    | 6.266367   | -0.784849   | 0.4391      |
| DIVIDEND   | 30.70675    | 2.578171   | 11.91029    | 0.0000      |

| <b>Dependent Variable: Post-Announcement Share Price - 61 days</b> |          |          |           |        |
|--|----------|----------|-----------|--------|
| CONSTANT   | -6895142 | 6.630068 | -1.039981 | 0.3072 |
| DIVIDEND   | 30.87841 | 2.727809 | 11.31986  | 0.0000 |

Result is shown in Appendix  
Evaluation of Regression Result  
Economic “a Priori” Criterion

**Table 2.**

| <b>Variable</b> | <b>Sign</b> | <b>Interpretation</b>             |
|-----------------|-------------|-----------------------------------|
| CONSTANTS       | NEGATIVE    | Conformed to a priori expectation |
| DIVIDENDS       | POSITIVE    | Conformed to a priori expectation |

A critical examination of the coefficients reveals that all the variables conformed to economic “a priori” expectation.

### **Constant**

The constant conformed to “a priori” expectation. The constant term represents autonomous pre-announcement share prices and post – announcement share prices and they are negative. It stipulates that pre-announcement share prices will fall by 5.81%, 5.34% and 3.96% for the 3-day, 21- day and 61-day windows respectively if there are no dividend announcements for the selected 30 companies. Also, post- announcement share prices will fall by 5.9%, 4.92% and 6.90% if there are no dividend announcements for the selected 30 companies.

This may equally be due to such factors as future corporate earnings, socio-political factors, technical or structural factors and investors’ future estimates, all of which exert some influence on share prices. However, the constant variable is not significant both in the pre-announcement and post-announcement of dividends.

### **Dividend**

#### **For Pre-Announcement of share prices**

Dividends for pre-announcement of share prices are positive and conformed to “a priori” expectations. The results suggest that 1% increase in dividend announcement will increase post-announcement share prices by 32.53%, 32.46% and 31.95% for 3days, 21days and 61days respectively for the selected 30 companies.

#### **For post-announcement of share prices**

Dividends for post-announcement of share prices are positive and conformed to “a priori” expectations. The result suggest that 1% increase in dividend announcement will increase post-announcement share prices by 32.52%, 30.71% and 30.88% for 3days, 21days and 61days respectively for the selected 30 companies.

### **Adjustment of share prices to dividend announcement**

Table 3 below shows the adjustment of share prices to dividend announcement for the thirty selected companies in the Nigerian Stock Exchange.



**TABLE 3**

Test for Equality of Means Between Series

Date: 06/20/16 Time: 13:03

Sample: 1 30

Included observations: 30

| Method            | Df      | Value    | Probability |
|-------------------|---------|----------|-------------|
| Anova F-statistic | (6,201) | 8.877765 | 0.5121      |

Analysis of Variance

| Source of Variation | Df  | Sum of Sq. | Mean Sq. |
|---------------------|-----|------------|----------|
| Between             | 6   | 25853.55   | 4308.925 |
| Within              | 201 | 986703.6   | 4908.973 |
| Total               | 207 | 1012557.   | 4891.580 |

Category Statistics

| Variable | Count | Mean     | Std. Dev. | Std. Err of Mean |
|----------|-------|----------|-----------|------------------|
| PRE3     | 30    | 32.71833 | 76.80307  | 14.02226         |
| PRE21    | 30    | 33.10600 | 76.70373  | 14.00412         |
| PRE61    | 28    | 35.90179 | 77.86741  | 14.71556         |
| POS3     | 30    | 32.62100 | 76.92383  | 14.04431         |
| POS21    | 30    | 31.45400 | 72.53318  | 13.24269         |
| POS61    | 30    | 29.68033 | 73.57932  | 13.43369         |
| DIV      | 30    | 1.184500 | 2.158668  | 0.394117         |
| ALL      | 208   | 28.02007 | 69.93983  | 4.849455         |

In order to discuss the adjustment of share prices to dividend announcements, we turn to the first and second hypotheses (H1 and H2). As noted earlier, the hypotheses are stated in null form as follows;

- H1: The Nigerian stock market does not react efficiently to dividend announcement in terms of price adjustments.
- H2: The market does not react to announced changes in dividend policies by Nigerian companies; therefore dividend policy does not matter.

From Table 3 we found that the mean excess returns (CERs) are positive and statistically significant for all of the days after dividend announcements for the dividend paying firms at the 1% and 5% levels for the 60 – day event window.

Therefore, share prices do not react efficiently to dividend announcements on the NSE. This is consistent with findings in Oludoyi (1999) on earnings announcements and share prices.

Table 3 also presents the cumulative market adjusted excess returns for 3 days, 21 days and 61 days for pre-announcement of dividends and 3 days, 21 days and 61 for post-dividends announcement days around the event windows of the announcements or omissions of dividends. The CERs for the 3 – day, 21 – day and 60 – day event windows are positive and statistically significant for dividend announcements.

This shows that the Nigerian Stock Market does not react efficiently to dividend announcements in terms of price adjustments. Therefore, the study accepts the null hypothesis H1.

For the first hypothesis, we accept the null hypothesis that the Nigerian stock market does not react efficiently to dividend announcements in terms of price adjustments and accept the alternative hypothesis.

For the second hypothesis, we also reject the null hypothesis that the market does not adjust to announced changes in dividend policies by the Nigerian companies, and therefore dividend policy does not matter and accept the alternative hypothesis.

#### **4.0 SUMMARY OF MAJOR FINDINGS, CONCLUSION**

In its examination of efficiency of the Nigerian stock market at the semi-strong level the speed of adjustment of share prices to the announcement of dividend payments was considered. The study captured reactions around the 3-day, 21-day and 61-day windows before and after the announcement.

The Nigerian stock market as far as this study shows reveals obvious inefficiencies and so it is not considered as semi-strong efficient during the period under review. Earnings and dividend announcements are found to be normal concurrent events in Nigeria as the two are always announced together, whereas in developed stock markets such announcements are made separately.

The stock prices around the announcement dates reveals that it is consistent with the findings of Oludoyi (1999) on price reactions to earnings announcements around the AGM dates an indicator that returns on stocks are low in Nigeria. This points to the fact that dividend policy matters and share prices do react to dividend announcements. However, one cannot completely rule out the possibility of insider trading on the Nigerian stock market.

Again the share price still drifted 30 days after the announcement, hence another indicator that the Nigerian stock market is not semi-strong efficient. The findings support semi-strong market inefficiencies found by Olowe (1998) and Oludoyi (1999) from stock splits and earnings announcements, respectively.

#### **5.0 POLICY RECOMMENDATIONS**

The recommendations made as a result of findings, include (but not limited) to safeguarding the market from insider abuse, encouraging globalization of the stock market through cross-border listing, developing investment trusts and funds, encouragement of capital inflows and proper dissemination of information, the need for sound macroeconomic policies to encourage stock market growth.

The key recommendations are:

There is a need for SEC to prevent insider abuse by ensuring that market activities are increasingly monitored at the NSE and ensuring that those caught are prosecuted.

Improved communication infrastructure (especially electricity supply) in Nigeria should be encouraged; information about the stock market should be disseminated on a daily basis, as is done in developed markets.

Development of funds and unit trusts are to be encouraged by Brokerage Managers since there are very few in Nigeria.

Quoted companies should be allowed incentives by SEC and NSE to provide timely information about their activities. Delayed reports should attract penalties.

The government, NSE and SEC can fund research into the capital market to improve the efficiency of the market.

The Regulators have a responsibility to provide the necessary education to promote the growth and development of the stock market through public enlightenment programmes, seminars, workshops, symposiums and publications. The knowledge of investing in the stock market can also stimulate public dialogue on topical issues, initiate policy changes and support prudent innovation for growth of the stock market with its attendant consequences on operational, allocation and informational information.

Government at the federal, state and local levels and government agencies should invest their idle funds in stocks and to raise bonds in order to finance development activities when there is a liquidity problem since sufficient liquidity increases allocation efficiency.

Regular review of primary market regulations pertaining to new issues, including disclosure, accounting and listing standards that conform to international standards will help boost investor confidence and efficiency of the market.

Relaxation and simplification of statutory listing requirements in order to attract a large number of unquoted companies to the second tier securities market. Among possible areas of relaxation include the lowering of capital requirements to a level that is within the financial capabilities of most firms, this will help increase the operational efficiency of the market.

Consistency in following prudent macro economic are essentially fundamental for informational efficiency of the market especially with the preponderance of high but persistent interest and inflation rates and budget deficits which are affecting stock market development by creating financial instability and uncertainty. Encouragement of cross-border listing will help informational efficiency of the Nigerian Stock Exchange.

Accurate information will ensure proper evaluation of prices of listed securities that will be indicative of the true value of stocks, determined exclusively by market forces based on investors' assessment of the performance of the listed companies. This will not only increase the volume of secondary trading and new issues, but also enhance the efficiency of the capital market.

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