

## **Stock Prices Reaction to Dividend Announcements in Ghana: An Empirical Investigations of Banks Listed on the Ghana Stock Exchange**

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### **Abstract**

*The paper investigates how stock price react to dividends announcement the Ghana Stock Exchange (GSE) from 2015 - 2017. It focused on examining the reaction of share prices to dividend announcement using a sample of six banks (financial institution enlisted on the GSE from 2015 – June 2017). The methodology and the market model are used in estimating the abnormal and the cumulative abnormal return for -10 days before and +10 days after the announcement date.*

*The overall findings of the study showed that share prices react to dividend announcement though not instantly. It is observed that the average abnormal returns and the cumulative average abnormal returns for all the days before, on and after the day of dividend announcement are statistically significant and positive. It is expected that this study would help most investors to know the level of efficiency on the Ghana Stock Exchange. It suggests that in addition to the recent electronic trading development on the GSE, there is the need to further improve the quality, quantity and reliability of information on listed firms disclosed to the public.*

**Keywords:** *Dividend, Dividend Announcement, Efficient Market Hypothesis, Market Efficiency, Stock Prices, Stock Returns.*

### **Introduction**

Generally, stock markets are neither completely inefficient nor perfectly efficient. The intensity of informational efficiency varies across markets, times and countries. An efficient market is achieved when investors have access to readily available information and use this information to predict stock prices. In contrast to the efficient market hypothesis, there is evidence that unexpected negative or positive earnings lead to an immediate negative or positive stock price response and a negative or positive stock price drift. However, this only lasts for a few months after the earnings have been announced (Chordia et al. 2007).

According to Fama (1970), a market is efficient if the prices of assets fully reflect the available information. “Fully reflecting” means that knowledge on the information prevents anyone from profiting from it, because prices already incorporate the information. Furthermore, immediately the information becomes available, it is instantaneously and correctly impounded in the prices (White, Sondhi, & Fried, 2012). Information therefore plays a vital role in stock markets both at the individual and institutional investor levels, it is essential in the selection of portfolios of equity securities, bonds and other investments, it establishes equilibrium pricing in the capital market and has a great impact on share pricing (Osei, 2003).

According to Afego (2011) and Osei (2002), both Ghana and Nigeria’s stock markets are inefficient in adjusting to new information on earnings announcements. (Cheol, 2012) posited that financial statements on earnings provide just a modest amount of information on the market. In Ghana, there is limited information as at 2008 on stock price reaction on firms’ specific information. In this regard, this study intends to determine how stock prices react to disclosure of firm specific information in Ghana.

The introduction of the electronic trading system in 2008 is believed to have improved the efficiency on the stock market as well as to improve the liquidity and positioned the Ghana Stock Exchange to compete favourably on the international market and thereby attract more investors. In addition, its introduction experience improved stock market transparency, provided speedy and efficient matching of orders and enhance the variety and quality of market data and information provided by investors (GSE, 2010).

Consequently, it can be inferred that the inefficiencies associated with the trading on the GSE are minimized and problems associated with the manual trading such as unapproved dealings among investors and brokerage firms are eliminated. With this new technology in place coupled with other improvements on the GSE, it is expected that there is quick flow and dissemination of information to investors and other stakeholders.

Given this background, the objective of this study is to determine how stock prices react to disclosure of specific information on firms in Ghana. The study is organized into five sections. Following this introduction is section two which reviews related relevant literatures. Section three also deals with the methodology, while section four dwells on empirical results and analysis. Section five provides the conclusion of the study.

## Literature review

There are very few studies which have been conducted to determine how stock prices react to disclosure of specific information of firms in Ghana. Some of the relevant related studies with regard to the subject matter were reviewed below.

### Definition of concepts

Dividend is the most familiar and easily understood corporate action (Grooves, 2008). It is also the most common type of corporate action. A dividend is a distribution of cash to shareholders in proportion to their equity holding. No company is compelled to declare a dividend and those that do may vary the amount. Typically, a company will pay an interim dividend and a final dividend. An interim dividend is a dividend payment that is announced during the release of a company's half year announcement of the profits while a final dividend is announced during the full year announcement of the profits. The importance of dividends naturally varies from one company to another and there are also cultural differences in attitudes to dividends from one country to another.

### Stock returns

According to the Efficient Market Hypothesis (Fama, 1970) an operationally efficient stock market is expected to be efficient externally and in terms of information. Price changes are only expected to result from the arrival of new information. Given that there is no reason to expect new information price changes are expected to be random and independent.

In a semi-strong, efficient market where most of the information is incorporated into prices, stock value performance is, as it is widely accepted the best measure of estimating whether firms are creating value for shareholders or not (Brealey and Myers, 1991). It may be expected that efficient firms perform better than inefficient firms and this fact will be reflected in market prices. The event studies examine the stock returns to determine the impact of a particular event on stock prices. Most event studies have shown that stock prices change before announcement of a particular event. The strong form states that share prices reflect all public and private information.

### Efficient market hypothesis

In explaining The Efficient Market Hypothesis, Fama (1970, 1991) opined that a security's market price reflects all available value-relevant information and hence is the true price of the security. Hence rational investors can easily foretell the riskiness, expected future cash flows of the security and the appropriate discount rate to apply to the securities expected cash flow. According to Fama (1970), there are three different degrees of efficiency in the market. They include:

- The **weak-form efficiency**: Here, the security's price reflects its historical prices. What this means is that past prices cannot be analyzed to predict future prices.
- The semi strong-form efficiency: Here, the security's price reflects all information available to the public, hence it is impossible to earn any excess returns by trading on this information. However, profits can be made through information that is not publicly available.
- The **strong-form efficiency**: In this form, the security's price reflects all available information, and hence abnormal returns equal zero.

Fama (1977) argues that these different degrees of market efficiency exist because several factors can modify the market's efficiency. These include the efficiency of technology available to analysts to gather and process information, the characteristics of the security and the issuer, as well as the characteristics of the market in which the security trades (Ogden et al., 2003).

The abnormal returns in a perfectly efficient market equal zero, except in cases where investors get access to new information. In case of a delay in change of stock prices, as in the case of an imperfect market, adjustments must be done, and this can benefit investors. However, the EMH does not always hold. Many articles have shown the existence of abnormal returns, as experienced in The Enron case financial crises. An ideal capital market is defined by five assumptions:

- Zero transaction costs: There are no transaction costs in the form of taxes and other costs incurred by firms.
- Homogeneous expectations: There is readily available value-relevant information at no cost. All participants are rational.
- Infinite buyers and sellers: The market price of a security cannot be influenced by a single buyer or seller.
- Transparency: There is perfect information available to everyone.
- Firm's financing is fixed: The firm's capital structure, once chosen, becomes fixed (Ogden et al., 2003, pp. 30-31).

It is almost impossible to achieve a perfectly competitive market, although some of its principles are advantageous and hence cannot be totally ignored. It provides an efficient production (no wastes) and ensures that prices are at their lowest rate, below which may not be viable to firms.

Market abuse refers to actions by investors that unfairly take advantage of other investors. The stock market should be perceived and seen as fair in order to encourage more investments (Barnes, 2009). It is morally wrong to have a winner and a loser (Barnes, 2009). With insider information, an investor can make profit when he buys or sells before the information becomes public, depending on the nature of the information. It is morally wrong for two rational investors to act differently due to lack of information.

### Event study model

Finance theorists posit that stock prices are a reflection of all available information about firms' prospects. With this knowledge, the effect of an event on a firm's prospects can be known by placing a figure on the impact of the event on the price of the stock. The need to conduct such an analysis brought to birth the 'event study methodology'. In concept, event study analyses differentiates between the returns that would have been expected if the analyzed event would not take place (normal returns) and the returns that were caused by the respective event (abnormal returns). The different analytic techniques for estimating abnormal returns differ with respect to the model used for predicting the normal returns around the event date.

The 'market model' is one of the most common models used. It builds on the actual returns of a reference market and the correlation of the firm's stock with the reference market. Equation (1) describes the model formally. The abnormal return on a distinct day within the event window represents the difference between the actual stock return ( $R_i, t$ ) on that day and the normal return, which is predicted based on two inputs; the typical relationship between the firm's stock and its reference index (expressed by the  $\alpha$  and  $\beta$  parameters), and the actual reference market's return ( $R_m, t$ ).

$$AR_i, t = R_i, t - (\alpha + \beta R_m, t) \dots\dots\dots (1)$$

Such an analysis performed for multiple events of the same event type (i.e., a sample study) may yield typical stock market response patterns, which have been at the center of prior academic research. Typical abnormal returns associated with a distinct point of time before or after the event day are defined as follows.

$$AAR = 1/N \sum_{i=1}^N AR_i, t \dots\dots\dots (2)$$

To measure the total impact of an event over a particular period of time (termed the 'event window'), one can add up individual abnormal returns to create a 'cumulative abnormal return'. Equation (2) formally shows this practice. The most common event window found in research is a three-day event window starting at  $t_1 = -1$  and ending at  $t_2 = 1$ .

$$CAR(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_i, t \dots\dots\dots (3)$$

In a 'sample event study' that holds multiple observations of individual event types (e.g., acquisitions), one can further calculate 'cumulative average abnormal returns (CAARs)', which represent the mean values of identical events. Equation 3 shows the formal equation for CAARs (Schimmer, 2012).

### **Reaction of stock prices of listed banks to the declaration of dividend**

Many researchers have tried to study the reaction of stock prices to the declaration of dividends. However, the results are generally inconclusive, although the subject matter has become very relevant to financial economists and accountants (Abbas, 2015). Earlier works by Graham and Dodd (1951) suggest that dividends are relevant and of great interest to investors. In contrast, Miller and Modigliani (1961) asserted that in a world of no transaction costs and taxes, investors do not pay any attention to dividends. Nevertheless, there is enough empirical evidence to give credence to the importance of dividend announcement to investors, and hence to stock prices. Hence Laabs' (2013) assertion that dividend announcements are actions taken by firms to attract new investors, whether they are surprise announcements or an increase in an already existing dividend. It is however worth noting that the impact of the announcement on the prices of stocks is highly dependent on the content of the announcement, in that an increase in dividends leads to an increase in the prices of stocks and vice versa.

To begin with, Gordon (1962) demonstrated the reaction of stock prices to the announcement of dividends. He suggested that on the announcement day, an increase in dividends leads to a positive excess return. Also, according to Bhattacharaya (1979), any action taken on dividends, being it an increase or decrease, sends price-sensitive signals to investors and shareholders. This is in consonance with Charest's (1978) finding that companies experience positive returns, months after an announcement of a dividend increase and negative returns after an announcement of a dividend decrease. Similarly, Aharony and Swary (1980) conducted an investigation on 149 industrial firms that have been listed on the New York Exchange for 10 years and revealed that stock prices respond in the same direction as dividends.

Black (1976) and Easterbrook (1986) concluded that positive changes in the prices of stocks are as a result of an increase in dividends. Subsequently, in a more interesting finding, Lonie et al. (1996) studied about 620 companies in the UK from January to June, 1991 and discovered that even in cases where there is no change in dividends, companies experienced an increase in returns on the day before the announcement of dividends. A parallel study by Asquith and Mullins (1983) on the market response to dividend announcements of about 168 firms on the US stock market revealed that the average abnormal returns increased by about 4% prior to the announcement of dividends.

In a more recent study, Kaestner and Liu (1998) presented an empirical analysis that is more comprehensive and more detailed on the effect of dividend announcement on stock prices. After simultaneously testing several theories on dividend information, they concluded that the most consistent determinant of the prices of stocks was the release of information on dividends. A similar recent study by Dasilas and Leventis (2011) on the Athens Stock Exchange from the year 2000 to 2004 showed a significant market reaction to dividend announcements. This is support of the information content of dividend hypothesis.

On the other hand, not all empirical evidence supports the information content hypothesis of dividends. Findings by Miller and Modigliani (1961) reveal that in some cases, investors do not always pay attention to announcements on dividends. On the Dhaka Stock Market, Uddin and Chowdhury (2005) conducted an investigation on the impact of dividends on stock prices and discovered no statistically significant abnormal returns. They concluded that information on dividends do not necessarily affect the price of stocks in the Dhaka Stock Market. Similarly, a study by Gunasekarage and Power (2006) showed that dividend announcements may in the short term influence the prices of stocks but this does not hold in the long run since firms with reductions in dividends earned excess returns in the long run. Also, in Nigeria, Adelegan's (2003) study on the impact of dividend announcements on stock prices and capital markets produced no significant results. Hence his assertion that the Nigerian stock market is inefficient in its strong form. This study will seek to find out whether or not dividend announcement has an effect on the stock returns.

## Data and research methodology

This section focuses on the data and analytical procedure adopted in this study. The data for this study were obtained from secondary sources. This study uses data from the past three (3) years released by the Ghana Stock Exchange (GSE), specifically the event study methodology. Event study methodology according to Campbell, Lo and MacKinlay (1997) is a study that is used to study significant events that might cause stocks to experience abnormal returns. This methodology was useful because it studied the effects of dividend announcement while making use of the normal and abnormal returns. The event window used was ten (10) days before and ten (10) days after the date of announcement.

## Explanation and measurement of variables

Following Fama (1976), the market model was used. The market model is commonly used in event studies because of its ability to differentiate between two kinds of events affecting share return. The market movement which affect the share price (captured by  $\beta$  s) and the particular event (information content) to share that is reflected in the abnormal return.

### Daily share return

Daily share return of each company is calculated according to the following equation.

$$R_{it} = \ln(P_{it} / P_{it-1}) \dots\dots\dots (1)$$

$$t = -5, -3, -1, \dots, +1, +3, +5$$

Where,

$R_{it}$  = return on share i on day t

$P_{it}$  = price of share i on day t

$P_{it-1}$  = price of share i on day t-1

### Daily market return

Daily market return is calculated according to the following equation.

$$R_{mt} = \ln(M_{it} / M_{it-1}) \dots\dots\dots (1^*)$$

$$t = -5, -3, -1, \dots, +1, +3, +5$$

Where

$R_{mt}$  = return of the market on day t

$M_{it}$  = stock market index at the end of day t

$M_{it-1}$  = stock market index at the end of day t-1

### Daily expected return

Daily expected return is estimated using the Market Model for each share as follows.

$$E(R_{it}) = \alpha_i + \beta_i(R_{mt}) \dots\dots\dots (2)$$

Where,  $E(R_{it})$  = expected return on share i on day t

$R_{mt}$  = return on the market on day t

$\alpha$  and  $\beta$  are parameters of the market model

### Abnormal Return (AR)

In order to test the market reaction to the announcement of an event, abnormal return was calculated at the time of the announcement, before and after. It was calculated as the difference between the actual return on share i on day t and the expected return on share i on day t according to the following equation:

$$AR_{it} = R_{it} - E(R_{it}) \dots\dots\dots (3)$$

Where

$AR_{it}$  = abnormal return on share i on day t

$R_{it}$  = Actual return on share i on day t

$E(R_{it})$  = expected return on share i on day t

### Cumulative Abnormal return (CAR)

Cumulative Abnormal Return is the sum of daily abnormal returns over the event window.

$$CAR_t = \sum_i^k AR_{it} \dots\dots\dots (5)$$

Where

CAR<sub>t</sub> = Cumulative abnormal return of day t

$\sum_i^k AR_{it}$  = Sum of abnormal returns share i on day t

**Market efficiency**

To ascertain whether the stock market reacts to the firm specific information (such as dividend declarations, earnings announcement and bonus issues), the abnormal returns and the absolute

**Estimation techniques**

To generate the expected return by the market model, the Ordinary Least Square (OLS) technique was employed. A regression was run on the daily share return for each firm in the sample surrounding the release of firm specific information against the daily market return, as proxy by the market index for the corresponding calendar day. The parameters of the market model were estimated over a 200-day estimating period, from day t - 210 to day t-10. This 200 day period is in the range recommended by Strong (1992) and other previous studies in this area. The abnormal return data was analyzed by STATA version 13.0 Data was analyzed by descriptive and inferential statistics and significance tested by T-test. The level of significance was set at 5%.

The Abnormal return is the percentage of change in share price below or above what would normally be expected to occur. To improve the informativeness of the analysis of abnormal returns, I averaged the ARs across the observations for all events, N, using the following equation.

$$AAR_t = 1/N \sum AR_{it} \dots\dots\dots(4)$$

Where

AAR<sub>t</sub> = Average abnormal return at day t

N = Number of events in the sample

AR<sub>it</sub> = Abnormal return for share i at day t

In order to make generalizations and to draw on overall inference for the market reactions to earnings announcement, the cumulative abnormal returns was also analyzed for the 21-day event window, from the start of the event period t-10 (day -10) up to time t+10 (day +10) as follows

The CAARs for each stock is obtained by summing average abnormal returns (AARs) over the event window.

$$CAAR_t = \sum_i^k AAR_{it} \dots\dots\dots (5)$$

Where

CAAR<sub>t</sub> = Cumulative abnormal return of day t

$\sum_i^k AAR_{it}$  = Sum of Average abnormal return of day t -10 to t +10

**Empirical results**

**Average abnormal returns and significant values for 2015**

Table 1, shows the overall estimation of the average abnormal returns (AAR<sub>t</sub>) and the standard deviations for the day -10 to day +10 of the event window and their respective estimated t and p-values. From the table, the AAR<sub>t</sub> has the lowest value of -1.0600 on the -6 days and the highest value of 1.7825 on the +10 day (a day after the announcement). The trend indicates that the stock market does not react instantaneously to the release of dividend announcements.

**Table 1.** Average abnormal returns and significant values for 2015

Event window (Day)	AAR <sub>t</sub>	CAAR <sub>t</sub>	Standard dev.	t -value	P-value
-10	0.4350	0.43%	1.34205	-1.352	0.269
-9	0.0200	0.45%	1.20988	-1.967	0.144
-8	-0.7450	-0.72%	1.62441	-2.917	0.062
-7	0.1575	-0.59%	0.92269	-1.62441	0.196
-6	-1.0600	-0.90%	0.95927	-4.210	0.024**

-5	0.4450	-0.61%	1.28293	-1.306	0.283
-4	0.3950	0.84%	1.54656	-1.489	0.233
-3	-0.9675	-0.57%	2.43690	-2.794	0.068
-2	-0.4850	-1.45%	0.30260	-5.206	0.014**
-1	-0.0700	-0.55%	2.02940	-2.069	0.130
0	0.1050	0.04%	0.77844	-1.730	0.182
1	0.1925	0.30%	0.88711	-1.566	0.215
2	0.0875	0.28%	0.30181	-1.420	0.251
3	-0.1300	-0.04%	1.64959	-2.158	0.120
4	1.0025	0.87%	2.80485	-1.285	0.289
5	-0.4300	0.58%	0.99552	-2.864	0.064
6	0.0575	-0.37%	0.72307	-1.841	0.163
7	0.5000	0.56%	3.49483	1.714	0.185
8	1.0025	1.50%	1.05380	-0.097	0.929
9	0.2525	1.25%	1.63077	-1.690	0.190
10	1.7825	2.03%	2.07381	-0.281	0.797

Source: Author's computation from statistical package for social science (SPSS).

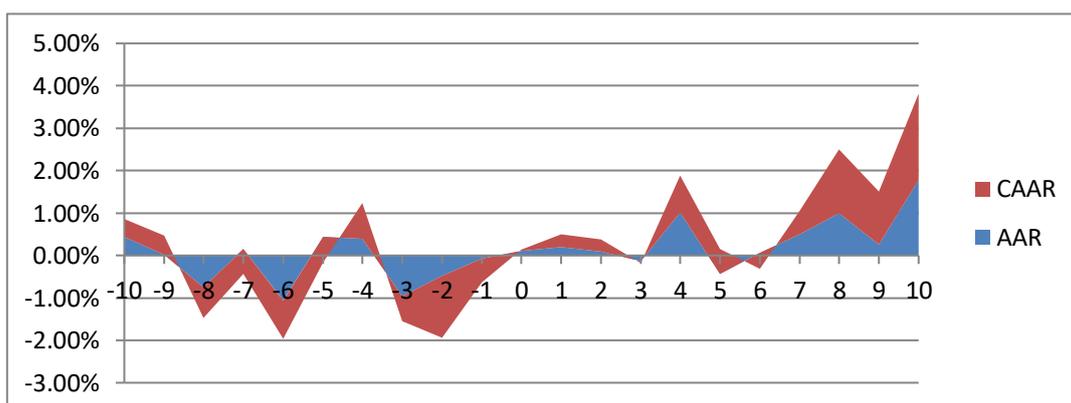
\*significantly different from zero at 1% level of significance.

\*\*significantly different from zero at 5% level of significance.

It is assumed that if the p-value of AAR<sub>t</sub> and CAAR<sub>t</sub> is less or equal to the estimated critical value of and level of significance (i.e. 1% or 5% level of significance), the results show statistical significance of average abnormal return or cumulative average abnormal return, those being produced by the shares before, on or after the announcement date and therefore suggests inefficiency in the market.

The study above shows that abnormal returns on the Ghana stock market. The average abnormal returns AAR<sub>t</sub> (on day -6 (-1.0600), and day -2 (-.4850), before dividend announcements, (column 2 of the table) among others after the dividend announcements are found to be statistically significant and positive with corresponding p-values of 0.0240\*\*and, 0.014\*\* respectively (at \*1% and \*\*5% level of significance). Column 2 and 5 of the above table also show the remaining AAR values and the corresponding significant p-values.

Figure 1 below, shows further, the graphical explanation of the relationship between AAR and the event window from -10 days to +10 days. The graph provides evidence of how the Ghana stock market reacts positively and negatively to dividend announcements.



**Figure 1.** Estimated AAR<sub>t</sub> and CAAR<sub>t</sub> for 2015

Source: Research finding

The curve for cumulative average abnormal returns for 2015 slopes generally downwards for the 10 days before the dividend announcement date, and is generally upward sloping for the 10 days after the announcement. The curve for average abnormal returns fluctuates both before the dividend announcement date and after, but is negative before the dividend announcement date and positive after the dividend announcement date. On the day of announcement the average abnormal returns increases

rapidly as depicted by the curve. There is an upward kink on the average abnormal returns as evidenced by the curve.

It is realized that dividend announcement has a significant effect on stock returns. This is evidenced by the fact that the cumulative abnormal returns curve slopes downwards depicting a decrease in the returns before the announcement day. After the announcement day the curve slopes upwards depicting a positive reaction by the returns.

**Table 2.** Test of significance for average abnormal returns for the year 2015

	Test Value = 0.66546					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
AAR2015	-3.753	20	0.001	-0.54498	-0.8479	-0.2421

Source: Research finding

The t-test statistics was calculated using a 5% level of significance. The t-test is -3.753 which lies in the rejection area. Hence we reject the null hypothesis that dividend announcement does not have an effect on stock returns of firms listed at the Ghana stock Exchange for the year 2015. The p-value for AAR in the year 2015 is 0.001 (less than 0.005) which also leads us to rejecting the null hypothesis since the value is less than the level of significance.

**Table 3.** Test of significance for cumulative average abnormal returns for the year 2015

	Test Value = 0.84409					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
CAAR2015	13.188	20	0.000	2.42924	2.0450	2.8135

Source: Research finding

The t-test statistics was calculated using a 5% level of significance. The t-test is 13.188 which lies in the rejection area. Hence we reject the null hypothesis that dividend announcement does not have an effect on stock returns of firms listed at the Ghana Stock Exchange for the year 2015. The p-value for CAAR in the year 2015 is zero which also leads us to rejecting the null hypothesis since the value is less than the level of significance.

### Average abnormal returns and significant values for 2016

Table 4, shows the overall estimation of the average abnormal returns ( $AAR_t$ ) and the standard deviations for the day -10 to day +10 of the event window and their respective estimated t and p-values. From the table, the  $AAR_t$  has the lowest value of -1.9080 on the -2 days and the highest value of 2.1780 on the +8 day (a day after the announcement). The trend indicates that the stock market does not react instantaneously to the release of dividend announcements

**Table 4.** Average abnormal returns and significant values for 2016

Event window (Day)	$AAR_t$	$CAAR_t$	Standard dev.	t -value	P-value
-10	0.5940	0.59%	0.91705	-0.788	0.475
-9	0.0580	0.65%	0.46446	-1.957	0.122
-8	-1.5600	-1.50%	2.64771	-3.554	0.024 **
-7	-0.7980	-2.36%	1.53050	-3.402	0.027 **

-6	-0.3880	-1.18%	0.59479	-3.695	0.021 **
-5	-0.1860	-0.57%	0.67700	-2.850	0.046 **
-4	0.0300	-0.16%	0.05385	-0.990	0.378
-3	-0.5660	-0.54%	1.38749	-3.148	0.035 **
-2	-1.9080	-2.47%	3.27689	-3.538	0.024 **
-1	-0.5920	-2.50%	1.24375	-3.300	0.030 **
0	-0.5260	-1.12%	1.51548	-3.012	0.039 **
1	-0.9480	-1.47%	0.76660	-5.001	0.007 *
2	-0.4420	-1.39%	0.87776	-3.362	0.028 **
3	0.0560	-0.39%	0.16334	-1.469	0.216
4	-0.3440	-0.29%	1.02926	-2.983	0.041 **
5	-1.0780	-1.42%	0.90751	-4.892	0.008 *
6	0.2600	-0.82%	0.49624	-1.065	0.347
7	-0.1360	0.13%	0.32005	-3.186	0.033 **
8	0.0060	-0.13%	0.54638	-2.212	0.091
9	2.1780	2.19%	4.25347	-1.091	0.337
10	1.2520	3.43%	2.04843	-0.869	0.434

Source: Author's computation from Statistical Package for Social Science (SPSS).

\*significantly different from zero at 1% level of significance.

\*\*significantly different from zero at 5% level of significance.

It is assumed that if the p-value of AARt and CAARt is less or equal to the estimated critical value of and level of significance (i.e. 1% or 5% level of significance), the results show statistical significance of average abnormal return or cumulative average abnormal return, those being produced by the shares before, on or after the announcement date and therefore suggests inefficiency in the market.

The study above shows that abnormal returns on the Ghana stock market. The average abnormal returns AARt (on day -8(-1.5600), day -7 (-0.7980), day -6 (-0.3880), day -5 (-0.1860) , day -3 (-0.5660), day -2 (-1.9080) day and day -1(-.5920) before dividend announcements and day +1(-0.9480-), day +2(-0.4420), day +4(-0.3440), day +5(-1.0780), and day +7(-0.1360),(column 2 of the table) among others after the dividend announcements are found to be statistically significant and positive with corresponding p-values of 0.024 \*\*,0.027 \*\*,0.021 \*\*,0.046 \*\*,0.035 \*\*,0.024 \*\*,0.030 \*\*,0.007 \*0.028 \*\*,0.041 \*\*,0.008 \* and 0.033 \*\* respectively (at \*1% and \*\*5% level of significance). Apart from these, the AAR value on the announcement day (day0) is -0.5260 and shows a significant p-value of 0.039\*\*indicating a positive reaction of the market. Column 2 and 5 of the above table also show the remaining AAR values and the corresponding significant p-values.

Figure 2, further shows the graphical explanation of the relationship between AAR and the event window from -10 days to +10 days. The graph provides evidence of how the Ghana stock market reacts positively and negatively to dividend announcements..

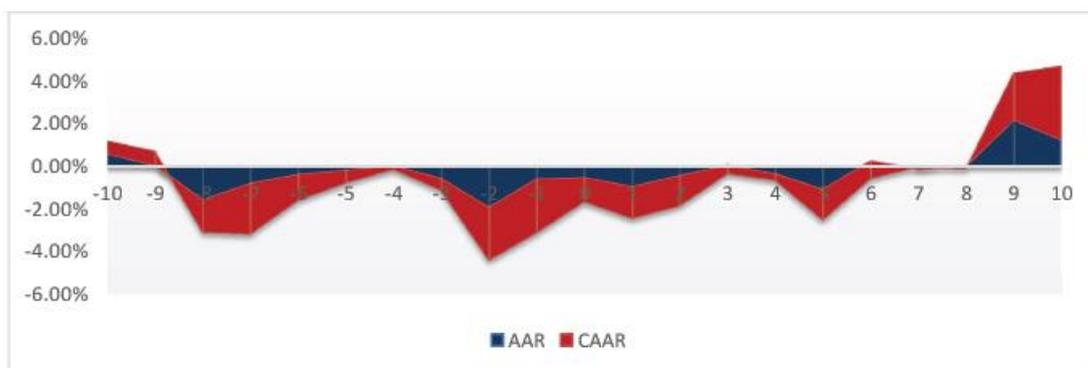


Figure 2. Estimated AARt, and CAARt for 2016

Source: Research finding

The curve for cumulative average abnormal returns for 2016 slopes generally downwards for the 10 days before the dividend announcement date, and is generally upward sloping for the 10 days after the announcement. The curve for average abnormal returns fluctuates both before the dividend announcement date and after, but is negative before the dividend announcement date and positive after the dividend announcement date. On the day of announcement the average abnormal returns increases rapidly as depicted by the curve.

**Table 5.** Test of significance for average abnormal returns for the year 2016

	<b>Test Value = 0.88838</b>					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
<b>AAR2016</b>	-5.82113	20	.000	-1.12838	-1.5328	-.7240

Source: Research finding

The t-test statistics was calculated using a 5% level of significance. The t-test is -5.82113 which lies in the rejection area. Hence we reject the null hypothesis that dividend announcement does not have an effect on stock returns of firms listed at the Ghana stock Exchange for the year 2016. The p-value for AAR in the year 2016 is zero which also leads us to rejecting the null hypothesis since the value is less than the level of significance.

**Table 6.** Test of significance for cumulative average abnormal returns for the year 2016

	<b>Test Value = 3.23565</b>					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
<b>CAAR2016</b>	-5.268	20	0.000	-3.71994	-5.1928	-2.2471

Source: Research finding

The t-test statistics was calculated using a 5% level of significance. The t-test is -5.268 which lies in the rejection area. Hence we reject the null hypothesis that dividend announcement does not have an effect on stock returns of firms listed at the Ghana Stock Exchange for the year 2016. The p-value for CAAR in the year 2016 is zero which also leads us to rejecting the null hypothesis since the value is less than the level of significance.

### Average abnormal returns and significant values for 2017

Table 7 shows the overall estimation of the average abnormal returns ( $AAR_t$ ) and the standard deviations for the day -10 to day +10 of the event window and their respective estimated t and p-values.

From the table, the  $AAR_t$  has the lowest value of -1.0600 on the -6 days and the highest value of 1.7825 on the +10 day (a day after the announcement). The trend indicates that the stock market does not react instantaneously to the release of dividend announcements

**Table 7.** Average abnormal returns and significant values for 2017

Event window (Day)	$AAR_t$	$CAAR_t$	Standard dev.	t -value	P-value
<b>-10</b>	-0.0950	-1.56%	0.21079	-2.901	0.062
<b>-9</b>	-0.6150	-1.47%	0.61690	-3.994	0.028**
<b>-8</b>	0.2600	-0.85%	0.60536	-1.141	0.337
<b>-7</b>	0.0500	-1.11%	0.39013	-1.744	0.180

-6	0.1375	-1.16%	0.77569	-1.645	0.198
-5	0.2400	-1.30%	0.24993	-.079	0.942
-4	0.3950	-1.54%	1.80025	-1.561	0.216
-3	-0.2925	-1.93%	0.34062	-3.7174	0.034**
-2	-0.2500	-1.64%	0.54136	-2.924	0.061
-1	-0.2475	-1.39%	0.22426	-4.207	0.025**
0	-0.2925	-1.14%	0.18715	-5.126	0.014**
1	-0.0325	-0.85%	0.67144	-2.097	0.127
2	0.1450	-0.82%	0.40878	-1.291	0.287
3	-0.1075	-0.97%	0.86658	-2.248	0.110
4	-0.2450	-0.86%	0.13626	-5.596	0.011**
5	-0.0700	-0.61%	0.51387	-2.272	0.108
6	0.2600	-0.54%	0.73738	-1.295	0.286
7	-0.5650	-0.80%	0.83811	-3.348	0.044
8	0.4025	-0.24%	0.46764	-.279	0.065
9	-0.2875	-0.64%	0.29680	-3.937	0.029
10	-0.3500	-0.35%	0.52479	-3.334	0.045**

Source: Author’s computation from Statistical Package for Social Science (SPSS).

\*significantly different from zero at 1% level of significance.

\*\*significantly different from zero at 5% level of significance.

It is assumed that if the p-value of AARt and CAARt is less or equal to the estimated critical value of and level of significance (i.e. 1% or 5% level of significance), the results show statistical significance of average abnormal return or cumulative average abnormal return, those being produced by the shares before, on or after the announcement date and therefore suggests inefficiency in the market.

The study above shows that abnormal returns on the Ghana stock market .The average abnormal returns AARt (on day -9 (-0.6150), day -3 (-0.2925), and day -1 (-.2475), before dividend announcements,(column 2 of the table) among others after the dividend announcements are found to be statistically significant and positive with corresponding p-values of 0.028\*\*, 0.034\*\*,0.025\*\* 0.011 and ,0.045\*\* respectively (at \*1% and \*\*5% level of significance). from these, the AAR value on the announcement day (day0) is -0.2925 and shows a significant p-value of 0.014 \*\*indicating a positive reaction of the market. Column 2 and 5 of the above table also show the remaining AAR values and the corresponding significant p-values.

The graph below shows the pictorial explanation of the relationship between AAR and the event window from -10 days to +10 days. The graph provides evidence of how the Ghana stock market reacts positively and negatively to dividend announcements.

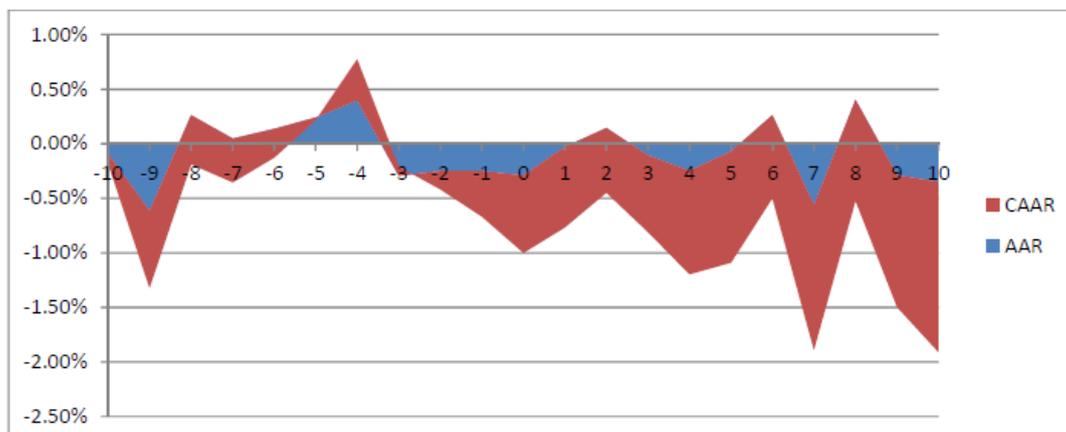


Figure 3. Estimated AARt, and CAARt for 2017

Source: Research finding

The curve for cumulative average abnormal returns for 2017 slopes generally upwards for the 10 days before the dividend announcement date, and is generally downward sloping for the 10 days after the announcement. The curve for average abnormal returns fluctuates both before the dividend announcement date and after, but is negative before the dividend announcement date and positive after the dividend announcement date. On the day of announcement the average abnormal returns increases rapidly as depicted by the curve.

**Table 8.** Test of significance for average abnormal returns for the year 2017

	<b>Test Value = 0.29275</b>					
	t	df			95% Confidence Interval of the Difference	
			Sig. (2-tailed)	Mean Difference	Lower	Upper
<b>AAR2017</b>	-5.738	20	0.000	-0.36656	-0.4998	-0.2333

Source: Research finding

The t-test statistics was calculated using a 5% level of significance. The t-test is -5.738 which lies in the rejection area. Hence we reject the null hypothesis that dividend announcement does not have an effect on stock returns of firms listed at the Ghana stock Exchange for the year 2017. The p-value for AAR in the year 2017 is zero which also leads us to rejecting the null hypothesis since the value is less than the level of significance.

**Table 9.** Test of significance for cumulative average abnormal returns for the year 2017

	<b>Test Value = 0.44738</b>					
	t	df			95% Confidence Interval of the Difference	
			Sig. (2-tailed)	Mean Difference	Lower	Upper
<b>CAAR2017</b>	-15.201	20	0.000	-1.48405	-1.6877	-1.2804

Source: Research finding

The t-test statistics was calculated using a 5% level of significance. The t-test is -15.201 which lies in the rejection area. Hence we reject the null hypothesis that dividend announcement does not have an effect on stock returns of firms listed at the Ghana stock Exchange for the year 2017. The p-value for CAAR in the year 2017 is zero which also leads us to rejecting the null hypothesis since the value is less than the level of significance.

It is observed that there is an effect of dividend announcement on the share price on the announcement date, and a positive effect on the days before and after. An analysis of the AARt values for the different time periods and their respective t-values indicate that the GSE is inefficient in its semi strong as shown by the reaction of stock prices around dividend announcements. This can be inferred from Fama (1969) as the stock returns of the sample firms on the GSE have generated average abnormal returns before and after the dividend announcement which would otherwise not have been observed had the market been in the semi-strong efficient form.

## Conclusion

The conclusion is that dividend announcement has a positive effect on stock returns of firms listed at the Ghana stock Exchange. It can also be concluded that the Ghana stock Exchange market reacts to new information such as dividend announcement. Fama (1970) stated that in an efficient market all publicly available information is reflected in the stock prices such that no individual can make abnormal returns by trading on the information. The trend in the results it is assumed that the weak form of efficient of the Ghana Stock Exchange would continue to provide gainful arbitrage opportunities for only a few investors who can be smart. It was realized that dividend is one of the significant issues in

the determination of share prices and market returns. Against the background discussed in the foregoing section, the following recommendations are made:

Financial analysts on the stock should take advantage and periodically make predictions to beat the stock market averages. The statistical significance observed can create the possibility for investors to steadily beat or outperform the stock market.

## Reference

- [1.] Adelegan, O. J (2000). An empirical analysis of the relationship between cash flows and dividend changes. A paper presented at the 23rd Annual Congress of the European Accounting Association, Munich, Germany p.5
- [2.] Fama E. F. & French, K. R. (1993). Common risk factors in the returns on stocks and bonds, *Journal of Financial Economics*, 33(1): 3-56.
- [3.] Fama E. F. & Gibbons M. R. (1982). Inflation, real returns and capital investments. *Journal of Monetary Economics*, 9,297-323.
- [4.] Fama, E. F. & French, K. R. (1988). Permanent and temporary components of stock prices. *Journal of Political Economy*, 96(2): 246-273
- [5.] Fama, E. F. (1965). The Behavior of stock market prices. *Journal of Business*, 38(1): 34-105.
- [6.] Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, 25(2): 383–417.
- [7.] Fama, E. F. (1981). Stock Returns, real Activity, Inflation, and Money. *American Economic Review*, 71, 545-564.
- [8.] Fama, E. F., Fisher, L., Jensen, M. C. & Roll, R. (1969). The adjustments of stock prices to new information. *International Economic Review*, 10(1): 1-21.
- [9.] Fama, E. F., Fisher, L., Jensen, M. C. & Roll, R. (1969). The adjustments of stock prices to new information. *International Economic Review*, 10(1): 1-21.
- [10.] Fama, E.F. (1970). Efficient capital markets: A Review of theory trading profits. *Journal of Business*, 39(1): 226-241.
- [11.] Modigliani, F. and Miller, M. H. (1961).Dividend policy, growth, and the valuation of shares. *American Economic Review*, 48 (3), 261–297.
- [12.] Osei, K. A. (2002). The Investor Profile of the Ghana Stock Market, *Journal of Management Studies*, 17, 95-114.
- [13.] Osei, K. A. (2003). The Response to Annual Earning Information Announcements By Listed Companies on the Ghana Stock Exchange, *The South African Journal Of Economics*, 71,195 – 210.