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EARNINGS ANNOUNCEMENT AND STOCK PRICES IN A RECESSIONARY ECONOMY: A TEST OF THE SIGNALLING THEORY HYPOTHESIS

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ABSTRACT

The paper examined the efficacy of the signalling theory hypothesis by investigating the relationship between earnings announcement and stock prices in a recessionary economy. The study employed secondary data of daily closing stock prices of 14 selected banks and the All Share Index between 2015 and 2016, sourced from the Nigerian Stock Exchange. The market model was used to estimate the expected returns and abnormal returns during the event window. The results showed that abnormal returns around announcement days were not statistically significant as abnormal returns of banks that made announcement of an increase or decrease in earnings were 0.0674 (-0.0244) with t-stat values of -1.374 (0.318) respectively. The findings also demonstrated that investors could not earn cumulative abnormal returns during the event window and the abnormal returns of most of the banks had an inverse relationship with earnings announcement. It was therefore concluded that information signalling theory does not hold in the Nigerian capital market during a recessionary period, and that investors could not earn abnormal profits by making use of fundamental analysis. The study therefore, recommended that investors should avoid mispriced stocks and invest in index funds in order to earn market average returns. Furthermore, regulatory authorities should monitor banks listed on the Nigerian stock exchange to guard against abuse of insider information to the detriment of investors.

Key words: Signalling Theory, Recessionary Period, Event-Study, Nigerian Economy

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1.0 Introduction

Earnings announcement refers to information released by a firm about its past financial performance, usually available on the national dailies and firm's website. It is assumed to provide significant information to investors about the firm's past performance and useful in forecasting future performance and valuations of equity. Barker and Imam (2008) pointed out that, the essential part of revealed earnings is to give some information about future income, and this information should be helpful to both present and potential speculators in settling on balanced investment choices with respect to the organization. As a result, companies reporting higher earnings are positively viewed by investors than companies reporting lower earnings resulting in stock price on an exchange to fluctuate. This view has led to a debate on the effectiveness of signalling theory that assumes companies announcing increase in earnings send positive signal to investors leading to increase in stock prices while companies with fall in earnings on the other hand, send negative signals resulting in fall in stock prices.

Several studies have investigated the effectiveness of the signalling theory with respect to earnings announced and stock prices. Some of these studies (Das, Pattanayak & Pathak, 2008; Elele-Aboagye & Opoku, 2013; and Kiremu, Galo, Wagala & Mutegi, 2013) opined that there is no significant signalling effect between earnings announced and stock prices. While others (Nissim & Ziv, 2001; Afego, 2013; Beaver, McNichols, & Wang, 2016; and Zou & Wilson, 2017) strongly advocated for the existence of the signalling effect. Hence, a reaction to earnings announcement which is a test of the signalling theory is seen as an attractive subject for study especially in the recent times characterized by recession in Nigeria. The Nigerian economy was officially declared a recessionary economy by the Nigerian Bureau of Statistics (NBS) on the 31st of August, 2016 because the Gross Domestic Product (GDP) contracted by 0.36% and 2.06% in 1st and 2nd quarters of 2016 respectively.

2.0 Literature Review

The paper is based on the signalling theory hypothesis which suggests that accounting information is employed by firms to convey future earnings information to the stock market. Some of the earlier empirical evidences favoring the existences of signalling theory are (Bhattacharya 1979; Asquith & Mullins 1983; Aharony & Swary 1980; John & Williams 1985; and Hussin, Ahmed, & Ying 2010). It was concluded that investors have limited information about the financial position of the firm hence; accounting information released conveys a signal of the expected cash flow and performance of the firm. Richardson (2000) opined that in a situation where there is high information asymmetry, investors have limited resources or information that could be used to monitor the actions of the management they therefore result to the practice of earnings and dividend management.

In Aharony & Swary (1980), it was pointed out that earnings are an interesting phenomenon to observe, because they carry inside information about the company's future prospects. Company earnings have been a ground for research debates for decades, and different aspects have been explored to define the importance of company earnings. According to Mlonzi, Kruger and Nthoesane (2011), earnings announcement can be used as a tool in assessing the wealth and profitability of a firm. Aharony and Swary (1980) pointed out that company managers use earnings as a signaling tool to convey information about the prospects of a company, and like dividends, if earnings convey useful information, this will be reflected in stock price changes immediately following a public announcement. A study by Abiodun (2012) investigated the significance of accounting information on corporate values of firms in Nigeria. The study employed descriptive statistics and logarithm regression model with a sample of 40 companies between 1999 and 2009. The findings showed that earnings were more value relevant than book values, by extension, the information contained in the income statements as proxied by earnings gives more value to the firm than the information contained in the balance sheet. As such, earnings contain relevant information that influences economic decisions of its users by helping them evaluate pasts, present, and future events.

A study of earnings quality and the heterogeneous relation between earnings and stock returns by Isidro and Dias (2017) observed that in low volatility periods, earnings were moderately informative for stock returns. But in high volatility periods, earnings were strongly related to returns. It was therefore concluded that earnings are more informative to investors when uncertainty and risk are high which is consistent with the idea that during market downturns, investors rely more on fundamental information about the firm. Similarly, Zou and Wilson (2017) studied the importance of earnings announcements in China. The study made use of companies listed on the Shanghai Stock Exchange and the Shenzhen Stock Exchange for the period 2005 to 2014 by employing the event study methodology. It was discovered that earnings announcements contained information of value thus, demonstrated that the Chinese markets are not efficient with respect to information.

Beaver, McNichols, and Wang (2016) investigated the information content of quarterly earnings announcements between 1971 and 2001 in the NYSE stock market. The study observed unequivocal evidence that stock prices were revised three days around earnings announcements as against price revisions at other randomly chosen 3day periods. It was further observed that investors were beginning to have a better awareness of information contents of earnings announcements from 2001 onward. Furthermore, it was discovered that informational content of earnings announcements has a positive relationship with analysts' coverage, firm size, and profitability. Similarly, Savor and Wilson (2016) investigated earnings announcements and systematic risk of companies listed on the NYSE, AMEX, and NASDAQ from 1974 to 2012 using the OLS regression and T-stat. It was observed that, returns of earnings announcing firms

robustly predicted aggregate earnings growth. In addition, early (late) announcers earned higher (lower) returns.

In order to determine the effect of earnings announcement on share prices in Ghana, Elele-Aboagye and Opoku (2013) made use of the event study with a sample of 10 companies and an event window of 21days. The results obtained indicated that abnormal returns, as well as the Cummulative Average Abnormal Returns (CAAR) around the earnings announcement days, were insignificant. It was therefore concluded that the Ghana stock market does not efficiently adjust to earnings information. That is, earnings announcements have no impact on share prices in the GSE both before and after the announcements. Also, a study by Kiremu *et al.* (2013) examined the effect of annual earnings announcements at the Nairobi Securities Exchange by analyzing changes in share prices and trading volumes around the announcement days. The methodology employed was the event study with an event window of 91days on a data from 5 companies from 2006 to 2010. In addition, the volume reactions were examined by using the trading activity ratio (TAR). The results showed that abnormal returns and TAR were not significant at 5% probability level. Hence, the Nairobi Stock Exchange was efficient in the semi-strong form and therefore, impossible to beat the market and earn abnormal returns by using publicly available information.

On the contrary, Osei (2002); Magnus (2008); Ayentimi, Mensah and Naa-Idar (2013) investigated the Ghana stock exchange using the event study methodology and observed that the Ghana stock market is inefficient and stock prices significantly reacted to earnings announcements. It was therefore, opined that current share prices have not inculcated the newly available information hence; investors can trade and earn abnormal returns after earnings information is released.

Also, using 16 firms, Afego (2013) investigated the reactions of investors in the Nigerian stock market to annual earnings announcements. It was observed that there were significant abnormal price reactions around earnings announcement which suggested that, earnings announcements contained relevant information and possible abuse of information by insiders because stock prices started reacting some days before announcements were made. It was also concluded that the Nigerian stock market is inconsistent with the efficient market hypothesis. This implied that it did not efficiently adjust to earnings information because there was a persistent downward drift of the cumulative abnormal returns 20days after the earnings announcements were made for the firms under study.

Following the trend of debate on the reaction of stock prices to earnings announcements; it can be observed that there is paucity in the literature with respect to this subject in a recessionary economy especially as experienced recently in Nigeria. This study therefore seeks to investigate the effectiveness of the signalling theory in a recessionary economy like Nigeria.

3.0 Methodology

The paper made use of daily closing stock prices of the All Share Index (ASI) and selected quoted Deposit Money Banks (DMBs) on the Nigerian Stock Exchange (NSE) from 2015-2016 in order to investigate the efficacy of the signalling theory in a recessionary economy. The total number of banks which met the criteria for the study was 14. Hence; the study made use of a sample of 14 deposit money banks out of which 11 banks made announcements of increase in earnings while the remaining 3 banks announced decreased earnings. To study the reaction of stock prices to announcements of increase/decrease in earnings in a recessionary economy, the study identified the announcement day for each of the securities and estimated the expected returns and abnormal returns during the event window.

Banks included in the sample were subjected to the following criteria;

a. Company must be listed on the Nigerian Stock Exchange during the period of investigation (January 2015 – December 2016);
b. Company should be a Deposit Money Bank because the banking industry was observed to be the most actively traded sector in the Nigerian capital market during the study period; this was to ensure there could be a reliable method of abnormal returns (Bhana, 1995);
c. Bank must have held an Annual General Meeting (AGM) in 2016 which represented the announcement day.

The market model which relates the return of a security to the return of the market index as endorsed by MacKinlay (1997) was used to estimate the Expected Returns (ERs) and the Abnormal Returns (ARs) in this study. The market model is presented below:

$$E(R_{it}) = \alpha_i + \beta_i R_{mt} + e_{it} \quad \text{(I)}$$

Where;

$E(R_{it})$ = Expected Return on individual security

R_{mt} = Return on the market index (ASI)

α_i = Part of the return on individual security that is independent of Market's performance

β_i = The proportion of change in the return of individual security for a given change in market return

Abnormal return is the deviation of the expected returns from the actual returns and was estimated using the market model.

$$AR_{it} = R_{it} - \alpha_i - \beta_i R_{mt} \quad \text{(II)}$$

Hence: AR_{it} = Actual Return – Expected Return

Where;

AR_{it} is the abnormal return on security i at time t

R_{it} is the return on the security at period t

α_i is the estimated intercept
β_i is the estimated slope
R_{mt} is the average return on the market at time t
Average Abnormal Returns (AARs) of each of the portfolios of earnings change was computed as follows;

$$AAR_{p,t} = \frac{\Sigma AR_{p,t}}{N} \quad \text{(III)}$$

Where $AAR_{p,t}$ is the average of the abnormal returns for each portfolio, $\Sigma AR_{p,t}$ is the sum of the abnormal returns and N is the number of observations.

In order to test for the significance of the AARs around the announcement days, the equation below was used.

$$tARs = AR_t/SD(AR_t) \quad \text{(IV)}$$

Where tARs is the calculated t-statistics of the Abnormal Returns and $SD(AR_t)$ is the standard deviation of AR_t calculated over the event window. The null hypothesis calculated was that the mean abnormal returns of days in the event window are zero. The mathematical explanation of the hypothesis is provided below;
H_0: AR = 0; H_1: AR ≠ 0 where AR = Abnormal Returns

An observation period of 121days comprising of two components was employed for the study. The first was the event window of 21days consisting of 10days (+10) prior to announcement day, the announcement day (0) and 10days (-10) post announcement days. The second component was the estimation period (EP) of 100 trading days starting at day -110 to end at day -11 for each company. The length of the observation interval was set at one-day interval.

4.0 Analysis and Results

The analysis and results of the study are presented in this section.

4.1 Average Abnormal Returns of Earnings Increase Announcement during the Event Window in a Recessionary Economy

The average abnormal returns estimated using the market model for banks that announced increase in earnings as well as the corresponding Cumulative Abnormal Returns and T-statistics are shown in Table 1 below.

Table 1: Average Abnormal Returns (AARs) around increase in earnings portfolio during event window

DAY	AR INCR (%)	INCREASE CAR (%)	T(STAT) FOR ARs
-10	-0.104983418	-0.104983418	-0.665874
-9	0.028331963	-0.076651456	1.361904

-8	-0.017596545	-0.094248001	-0.557626
-7	-0.073066242	-0.167314243	-2.054549
-6	-0.123238723	-0.290552966	-1.309735
-5	-0.000465098	-0.291018064	-0.016807
-4	-0.152798813	-0.443816877	-0.225325
-3	0.045990501	-0.397826376	1.0064
-2	-0.039284636	-0.437111011	-1.216069
-1	0.05953429	-0.377576721	0.944074
0	0.067414877	-0.310161844	1.513698
1	-0.054215908	-0.364377752	-1.374304
2	0.13182531	-0.232552442	0.518445
3	-0.016260038	-0.24881248	-0.808577
4	0.018692462	-0.230120018	1.253377
5	0.001016039	-0.229103979	0.01469
6	0.09234695	-0.136757028	1.437947
7	0.010502246	-0.126254782	0.424934
8	0.05095224	-0.075302542	0.913899
9	-0.023563921	-0.098866463	-0.691017
10	0.098866463	2.498E-16	1.234221
AVERAGE	1.18952E-17		

Source: Researchers' computation, 2018

Table 1 showed the Average Abnormal Returns (AARs) of DMBs that made announcements of increase in earnings during a recessionary economy. It was observed that, there was a positive average abnormal return of 0.067415 on the announcement day (Day0) however, not statistically significant. It was also noted that, most days before the announcement day0 had negative abnormal returns which were also not statistically significant at 5% level of significance. Furthermore, it was observed that, about six days following the announcement day, had insignificant positive abnormal returns as well. The average abnormal return for the event window was approximately zero (0) with a positive figure of 1.18952E-17 which implied that, on the average, no abnormal returns were earned during the 21day event window. Column 3 of Table 1 showed the Cumulative Abnormal Returns (CAR) of earnings around the event window. It is worth noting that, the CAR for all the days during the event window were negative including the announcement day (Day0) and the CAR for the tenth day after announcement was approximately zero (2.498E-16). That is, there was no tendency for the CAR to build up which implied that there was no relevant signal sent to the market as a result of increase in earnings which was strong enough to motivate investors in a recessionary period hence; share prices reacted independently of the earnings announced.

The graphical presentation of the average abnormal returns of increased earnings portfolio during the event window, in a recessionary economy is depicted in Figure 1 below.

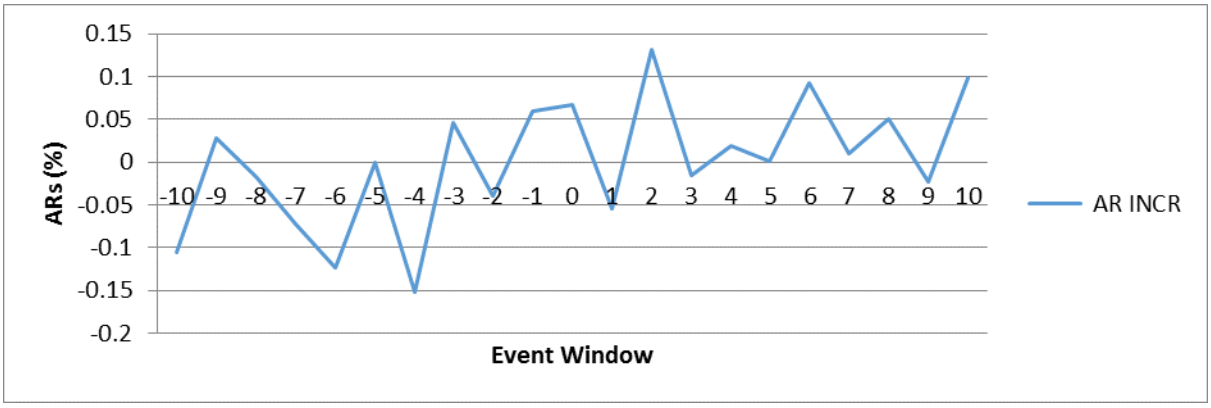

Figure 1: Average Abnormal Returns of increased earnings portfolio in a recessionary economy

Figure 2 illustrated the cumulative abnormal returns for increased earnings portfolio during the event window, in a recessionary economy.

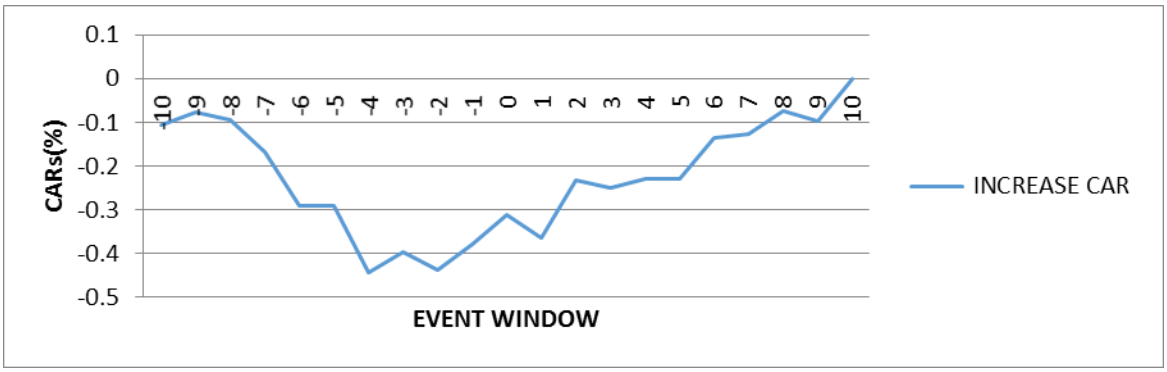

Figure 2: Cumulative Abnormal Returns of increased earnings portfolio in a recessionary economy

Figures 1 and 2 depicted the movement of the Abnormal Returns (ARs) and the Cumulative Abnormal Returns (CARs) of banks that made announcements of increase in earnings in a recessionary economy. It can be observed that in Figure 1, ARs were in most cases, negative around pre announcement days and in most of the cases, positive during post announcement days, however, these returns were not statistically significant at 5% level of significance hence; it cannot be sufficiently concluded that stock prices reacted positively to the announcements of increase in earnings in a recessionary period. It was also noted in Figure 2 that the CARs maintained negative returns throughout the event window and eventually ended at 0 on day10 after the announcements.

The results above contradict existing literatures (Beaver *et al* 2016; Savor & Wilson 2016; Isidiro & Dias 2017; and Zou & Wilson 2017) who concluded that earnings announcements are used as signalling tools and a means of communication between management and the

shareholders of a company, especially with respect to a recessionary economy. The findings on the other hand, support Das, Pattanayak and Pathak (2008); Elele-Aboagye and Opoku (2013); and Kiremu *et al.* (2013) that an announcement of increase in earnings does not cause stock prices to react positively and that stock markets are efficient in the semi-strong form such that, stock prices efficiently adjust to earnings information which was the case during a recessionary period in Nigeria. And as such, we accept the null hypothesis that signalling theory hypothesis does not hold in a recessionary economy. The results of the findings conformed to the *a-priori* expectation that share prices do not react to announcements of increase in earnings in a recessionary period.

4.2 Average Abnormal Returns of Earnings Decrease Announcement during the Event Window in a Recessionary Economy

The average abnormal returns estimated using the market model for banks that announced decrease in earnings as well as the corresponding Cumulative Abnormal Returns and T-statistics are shown in Table 2 below.

Table 2: Average Abnormal Returns (AAR) around decrease in earnings portfolio during the event window

DAY	ARs DCR(%)	CARs DCR(%)	T(STAT) FOR ARs
-10	-0.0054371	-0.00543707	-0.1019453
-9	-0.0586126	-0.064049709	-1.6122383
-8	0.00383062	-0.06021909	0.6874574
-7	0.06486041	0.004641317	1.9745687
-6	-0.0464163	-0.04177503	1.1111027
-5	-0.010484	-0.052259056	0.2006164
-4	0.11558207	0.063323013	1.8252775
-3	-0.0504768	0.012846196	-0.0293202
-2	0.08802551	0.100871704	0.8726482
-1	-0.153162	-0.052290287	1.9290715
0	-0.0243974	-0.076687684	0.3181397
1	-0.0393787	-0.11606636	0.3392773
2	-0.1238141	-0.239880469	0.5161492
3	0.03779357	-0.202086895	-0.1870165

4	0.0646265	-0.137460398	-0.4701463
5	-0.0018449	-0.139305317	0.0132437
6	0.0519843	-0.087321021	-0.595324
7	-0.0784691	-0.165790114	0.4733038
8	-0.0024508	-0.168240956	0.0145674
9	0.08890569	-0.079335265	-1.1206327
10	0.041074	-0.038261268	-1.0735137
AVERAGE	-0.001822		

Source: Researchers' computation (2018)

Table 2 presented the average abnormal returns of decrease in earnings portfolio around the announcements day in a recessionary economy. It can be observed that, average abnormal return on the announcement day (Day 0) was negative at -0.0244 with a t-stat value of 0.31814 which was not statistically significant at 5% level of significance. It could also be seen that, positive average abnormal returns were earned on days before and after the announcement day despite the announcements of decrease in earnings. All abnormal returns during the event window were not statistically significant at 5% level of significance. It can therefore, not be concluded that negative announcements led to negative abnormal returns around announcement days however, the average abnormal returns for the event window was negative at -0.00182. This implies that, these announcements carry little information value for investors in a recessionary economy. And as such, we can also accept the null hypothesis that signalling theory hypothesis does not hold in a recessionary economy.

The graphical presentation of the average abnormal returns of decreased earnings portfolio during the event window, in a recessionary economy is shown in Figure 3 below.

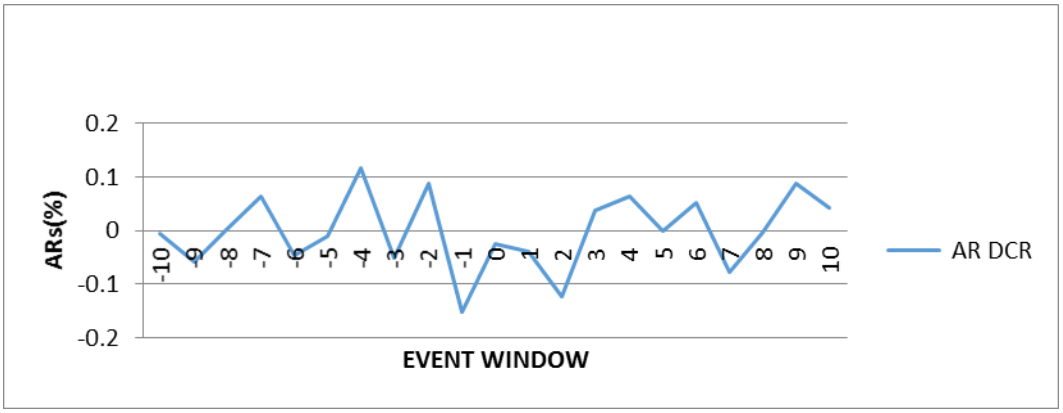

Figure 3: Average Abnormal Returns for decrease in earnings portfolio in a recessionary economy

Figure 4 illustrated the cumulative abnormal returns for decreased earnings portfolio during the event window, in a recessionary economy.

Figure 4: Cumulative Abnormal Returns for decrease in earnings portfolio in a recessionary economy

Figure 3 above demonstrated the movement of abnormal returns during the event window for banks that announced decrease in earnings in a recessionary economy. It was noted that, stock prices reacted in both directions that is negatively and positively during the event window, the direction of returns was not definite. It can therefore not be sufficiently concluded that stock prices of firms announcing a decrease in earnings reacted to such information in a recessionary period, more so, the average abnormal returns were not statistically significant.

Also, Figure 4 showed the CAR for decrease in earnings announcements for the event window. It can be seen that, cumulative abnormal returns moved positively and negatively before the announcements and maintained negative abnormal returns after the announcements through to the end of the event window.

For a clearer view of the behaviours of abnormal returns for announcements of both increase and decrease in earnings, a graphical comparism during the event window is depicted in Figure 5 below.

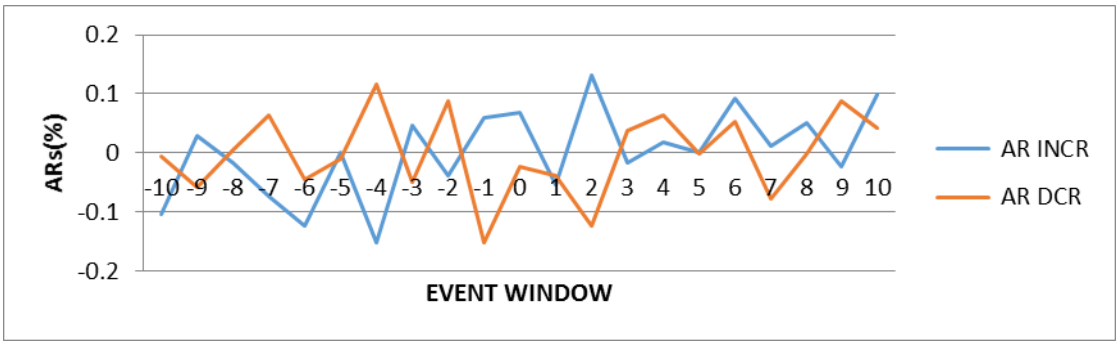

Figure 5: Combined chart of both increase and decrease in earnings announcement during the event window.

From Figure 5 above, it can be observed that, abnormal returns for announcement of increase in earnings had more negative abnormal returns before the announcements than the decrease in earnings announcements. In other words, decrease in earnings portfolio reacted more positively than the increase in earnings portfolio before the announcements. This could imply that, there was no presence of insider trading that could have influenced stock prices in a recessionary economy. This negates Afego (2013) who discovered that, stocks had started to react to earnings announcements about 20days before the announcements were made, suggesting the presence of insider trading in the Nigerian stock market.

5.0 CONCLUSION AND RECOMMENDATIONS

This research was carried out to test the validity of signalling theory in a recessionary economy like Nigeria. The findings of this study revealed that abnormal returns during the event window for both increase and decrease in earnings portfolio were not statistically significant at 5% level of significance. It was therefore concluded that the signalling theory does not hold in Nigeria during a recessionary period especially for stocks of Deposit Money Banks. The implications of these findings are that announcements of earnings (increase/decrease) by Deposit Money Banks in Nigeria do not send relevant signals to investors that could lead to significant reactions in stock prices in a recessionary period and stock prices had already incorporated all publicly available information. This implies that earnings information does not have significant effect on share prices and the Nigerian capital market was efficient in the semi-strong form during a recessionary period. This also implies that investors cannot earn significant abnormal returns which are statistically different from zero in a recessionary economy by using publicly available information or fundamental analysis.

It is therefore recommended that intending and existing shareholders in the Nigerian capital market invest in index funds that charges low commissions in order to earn market average returns instead of searching for mispriced stocks. The Nigerian stock exchange should encourage the establishment of index funds to enhance consistent earnings of average market returns by investors. Also, the Nigerian Stock Exchange should guide against the abuse of insider information to the detriment of investors.

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