

Deposit Money Banks Stocks Return Reactions to Post Financial Crisis Stress Test Result Announcements in Nigeria

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Abstract

The study examined the impact of post-financial crisis stress test results announcements on stock return of DMBs in Nigeria over a thirty-One (31) days event window and one hundred (100) days estimation window, for the period June 2013 to June 2016. The secondary data used in the study was analyzed using event study methodology for a sample of 15 DMBs drawn from population of twenty-two DMBs in Nigeria. The residuals of abnormal returns over the event window were subjected to diagnostic tests for serial correlation, normality and heteroskedasticity, the results indicated that the model was correctly specified. The result of test of hypotheses indicated that there is no significant CAR before, on the days and after post crisis stress test results announcements on stock returns of DMBs in Nigeria. Thus, the study concluded that stress test result announcements post financial crisis has a positive insignificant abnormal return before and on the day of announcements but negative insignificant abnormal returns after the announcements on DMBs return on stocks post financial crisis period in Nigeria.

Keywords

Stress Test, Announcements, Post-Crisis.

Introduction

Financial stress test is a monitoring and analytical tools that have been developed by regulatory authorities and financial institutions to identify causes and vulnerabilities of the banking system under adverse future scenarios. Financial stress testing allows assessing the financial system stability or even individual bank's performance (Vasilopoulos, 2013). The Nigeria banking industry has undergone series of bi-annual stress test by the central bank of Nigeria from June 2010, with the primary motive of preventing reoccurrence of crisis that had significant effect on the Nigeria financial system between 2007/2009, which was largely attributed to supervisory weakness.

There are divergent definitions of stress test, according to Acharya, Engle and Pierret (2014) defined stress test as regulatory defined hypothetical stress scenario by specifying shocks to different macroeconomic and financial variables to simulate a severe economic downturn. They further opined that the prevailing approach to assessing capital requirements prior to adoption of stress test is strongly dependent on definition of Basel Accords regulatory capital ratios. The regulatory capital ratios is employed in stress tests to aid regulators arrived at outcome on which DMB failed to meet up with requirement of the stress scenario and consequently evolve measures to meet up. In more simplified terms stress test is measuring the effect of a hypothetical imagined financial shock on selected indicators that are derived from the books of DMBs, to ascertain their adaptability or operations if such shock may arise.

It is worthy of note that, the financial stress tests conducted by CBN from June 2010 to date are crisis prediction measures while the special examination in 2009 was crisis discovery and management stress tests. The announcement of stress test results by the CBN are done through financial stability Reports (FSR), which contains DMBs that are deficient and those that are healthy. These disclosures are often accompanied by expert and scholarly analysis. Stress test result disclosure varies from voluntary disclosures made by DMBs, the voluntary disclosure is provides an insight to varying stakeholders on the sustainability of an enterprise, mitigating information asymmetry and agent/principal conflicts that may be associated with managers and investors.

Announcement of financial stress test results by regulatory bodies is a contentious area of finance. Concerns has been raised by stakeholders that public announcement may lead to investors forming an idealistic expectations, distortion of outcomes and consequently lead to deviations from the value of the financial stress test to laying emphasis on containing the impact of misinformation. Goldstein and Sapra (2014) holds that that some financial stress tests result announcement significantly affects distress markets but may not necessarily influence market that are performing optimally. This perspective is premised on the basis that market participants are more sensitive to arrival of new information into the market during period of crisis than other periods, thus this result in high volatility of the market. Another perspective holds that announcement of stress test results, while significant to market participants, draw a smaller amount of market reaction. This assertion is further supported by Hirtle, Kovner and Zeller (2016) that over time markets seem to place less emphasis on the announcement of stress tests, that disclosure of stress tests is important, but that importance is dwindling and can be variable due to economic times.

Additionally, Colligan (2016) holds that banks are becoming more aware with requirements employed by regulators for evaluation; this may lead to suspicion by the investors that banks may smoothen their books to meet up regulatory requirements. This may be counterproductive to the system since stress tests are supposed to simulate an unexpected but plausible level of risk. Thus, the study is empirically expected to contribute to body of existing literature on how the investors construe the announcement of stress test results in developing markets like Nigeria, as studies on announcement effects on stock returns are tilted towards developed market. Therefore, this study seeks to determine the effect of stress test announcement post financial crisis in Nigeria.

The research questions raised for the study is that do stock returns of Deposit Money Banks in Nigeria exhibit significant Cumulative Abnormal Return (CAR) fifteen trading days before, on the day and fifteen trading days after financial stress test result announcements post crisis period in Nigeria? Thus, the study specifically intends to determine the extent of CAR of Deposit Money Banks stocks fifteen trading days before, on the and fifteen trading days after financial stress test results announcements post crisis period in Nigeria. The study intends to test the following hypotheses, stated in null forms, that there is no significant CAR fifteen trading days before, on the trading day and fifteen trading day after financial stress test result announcements on stocks of DMBs post crisis period in Nigeria. This study focused on post crisis stress test result announcements on stock returns of deposit money banks in Nigeria for the periods June 2013 to June 2016. The choice of the period of study stems from the fact that the Asset Management Corporation (AMCON) a major vehicle for purchase of DMBs Non-Performing Loans for resolution of financial crisis that ravaged the Nigeria banking industry concluded its loan consideration year ended December 2012. Thus, June 2013 financial stress test result announcement is considered post crisis announcement period, while June 2016 announcement is the last announcement made by CBN.

The study is structured into five constituent segments, section one contains introduction that enclosed problem statement, objectives and significance of the study; the test of hypotheses and scope of the study. Section two, reviews related literature and theoretical issues, while section three contains the methodological aspects employed in conducting the study. Section four, discusses results and findings of the study, while section five deals with conclusion drawn and recommendations proffered by the study.

Literature Review

Literature of related study on the effect of financial stress test results announcements on stock returns are reviewed to provide theoretical basis for the study. Dite (2015) examined the impact of macro stress tests on risk profiles of tested banks, with special focus on the 2010 and 2011 stress test exercises carried out by the CEBS/EBA in the EU and the resultant impact on the banks' capitalization levels. The results of analysis indicated a significant impact on capitalization dependent on the stress test execution. Specifically, the study found that in 2010 the banks tried to decrease their risk levels just before the stress tests and reverse these adjustments afterwards to present themselves as safer institutions to their stakeholders. Thus, the study opined that the symmetricity of the situation resulted in a state of artificial volatility where everyone is worse off. Nevertheless, there was an improvement in 2011, where this effect

disappeared. This change was attributed to the postponement of the stress test announcement and there was no timely and reliable enough indication that the 2011 exercise will take place. Secondly, the study found a significantly negative impact of the 2011 stress test on the capitalization levels of the participating banks compared to the non-participants. The study attributed it to believe that the decrease was caused by the inability of the regulators to present a relevant scenario and credible commitment to solving the issues that could arise from the exercise.

Summarily, the study found that performing the exercise, which ought to have injected confidence into the markets as witnessed in the US 2009 Supervisory Capital Assessment Program exercise, the EBA stress test destabilized the markets. This resulted in increased cost of funding which further translated to losses and decreased capitalization of the banks. Therefore, the study concluded that stress tests do not only test the resilience of the banks' balance sheets but also the ability and capacity of the authorities to act when required. Finally, a comparison of the two exercises shows that despite their quick succession and methodological similarity the impact on capitalization levels of the participating banks was vastly different. Therefore, they argued that even minor changes in execution both qualitative and quantitative could be crucial to the overall success of the exercise. A major limitation of conducting stress test is that it requires financial and political capacity. Since this study is multi country with economies that have varying level of advancements, the scope should be broad to include many countries with heterogeneous characteristics to verify the robustness of their results, in respect of empirically analysing the link of stress testing and bank riskiness.

Dimitrios (2014) assessed the impact of the 2009-2014 EU-wide stress tests using event study methodology on share prices of banks subjected to financial stress test in addition to the 14 most capitalized banks the sampled banks were categorized into four groups: Stressed, Not Stressed, PIGS and Failed. It examined if information disclosed lead to investors interest, which resulted in share price reaction. It found significant market reactions on three events in 2014 stress test, which include test announcement, announcement of methodology and announcement of results. Therefore, the study concluded that investors interpreted the stress testing to contain valuable information and made investment estimations based on data disclosed.

Bertrand and Amadou (2014) compared the market reaction of stress tests conducted in U.S. and EU-wide stress tests during the period 2009 to 2013. The event study method was employed for the comparison of stress effect on banks returns. The study found that stress test result publication resulted in positive reaction of stressed banks' share returns. Specifically, the US 2009 stress test result announcement had significant positive effect on stressed banks, while stocks reaction to subsequent U.S. stress test continued to decrease. Additionally, conversely they found only the EU 2011 stress test lead to negative significant reaction.

Neretina, Sahin and Haan (2014) assessed the impact of US banks stress test methodology and results announcement on banks share returns, credit risk and 2009-2015 systemic risk. Share returns of participating banks were used, while the S&P 500 returns index was employed as measure of market portfolio. Supervisory Capital Assessment Program (SCAP) of 19 largest Bank Holding Companies (BHCs) was the initial event of study, though the Federal Reserve has implemented two supervisory programs thereafter. To ascertain the extent of stress tests on equity or CDS markets, the study adopted event study methodology. Normal returns estimation

was carried out using the market model. The outcome of the study revealed that 2009 stress test outcomes had no significant impact on share returns. While the result for post-crisis stress tests showed insignificant reaction of share returns in some years. In addition, there is evidence that stress test results publication of decreased CDS spreads in 2009, 2012 and 2013. The analysis of systematic risk showed betas were affected by the publication of results for virtually all stress tests. Thus, the study drew the conclusion that information about stress tests occasionally lead to market's reaction. In other words, stress tests result release may have provided information to investors.

Leeuw (2012) investigated the effects of Supervisory Capital Assessment Program (SCAP) results announcement in U.S on share prices of 18 bank holding companies in the United States. The sample banks were drawn from the largest holding with a benchmark deposit of at least 100 billion dollars. The study used event study methodology to analyse data employed in the study. The result of analysis indicated that there was a significant positive reaction to SCAP results releases. The study also went further to differentiate the effect on stressed banks and unstressed banks. The study found share price of failed banks exhibited stronger effect than healthy banks. In addition, the study found that the result for the tested banks within the 18 largest banks is more significant than sample of the next 30 banks also in term of deposit.

Summarily, the conclusion drawn from studies reviewed in the study indicates mixed outcomes, Dite (2015) indicated the announcement of stress test results did not inject confidence into the market rather resulted in destabilisation. Dimitrios (2014) and Leeuw (2012) found that the investors interpreted stress test announcements to contain valuable information, thus had positive impact on stock returns. Conversely, Neretina, Sahin and Haan (2014) hold that stress test announcements had insignificant impact on stock returns, Bertrand and Amadou (2014) opined that announcements had mixed effect for varying periods of stress test announcements.

Research Methodology

Correlation research design was employed using event study. The choice of the event study methodology is justified on the basis that measurement of stock price reaction to announcements such as stress test results is complicated due to endogeneity and omitted variables bias problems. Thus, to surmount these challenges, event study is often employed (Kucukkocaoglu, Unalmis & Unalmis, 2013). To use event study an event window and widow estimation periods are determined to conform to the standards for carrying out research using event study. The study used the dates of CBN stability report releases post financial crisis, which is from June 2013 (Period after AMCON has concluded the purchase of toxic assets from banks) to June 2016. Thus, within the periods of the study seven (7) financial stress test results announcements were made. The estimation period is 100 trading days to -16 days before the event dates, while the event window ranges is be -15 to +15 (31 days event window). The justification for the choice of estimation and event windows is derived from Peterson (1989) that notes that the standard span of estimation period can be between 100 to 300 days. Pamela (1989) opines that daily studies may have an estimation period of 100 to 300 days. Typical lengths of the event window range from 21 (-10, +10) to 121 (-60, +60) days for daily studies. The population of the study is twenty-two (22) DMBs as at 31st December 2016. The sample size was determined using the following data filtering criteria that, the firm must have been listed and trading on the Nigeria

Stock Exchange over the period January 2013 to June 2016 and the firm was not placed on suspension throughout the period of the study January 2013 to June 2016.

The application of the criteria resulted in cumulative sample size of fifteen (15) DMBs for the study. The data for the study was derived from secondary sources only. The data collected are daily stock returns for the sampled listed firms, All Share Index (ASI) for NSE, which represents the market returns index was collected from NSE, and cash craft websites. While stress tests results announcement data was derived from CBN website and CBN financial stability reports. Normality test was conducted using the Jarque-Bera test (1980) for normality to test data goodness of fits. Serial Correlation using Breusch-Godfrey test and heteroskedasticity tests using Glejser Test (1969) were also conducted. To determine financial stress test results disclosures on stock returns, the expected returns was derived using the standard market model as employed by Afego (2011). Thus, the market model is given as:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \dots \dots \dots \quad (1)$$

Where: R_{it} = returns on stock i at time period t

R_{mt} = market returns at time t

ε_{it} = error term

To establish the relationship between banks stress test results disclosures in post crisis period and stock returns reaction to information embedded in such disclosures, the study is anchored on the lending credibility theory. The theory entails that the main focus of audit (in the context of this study stress testing) is to add credibility to the financial disclosures. It holds that audited books tends to possess elements that increase confidence of users (which may be investors) of figures presented by the management (in the financial statement). The users' may derive remuneration from the increased credibility, thus may lead to improved quality of investment decisions based on reliable information. Thus, in the context of this study stress test result announcements avails the investor credible information about the going concern of the banks in situation of adverse economic situation. Thus, if the investor perceives the information contained in the stress test result announcements as reassuring on the going concern of the banks, it is expected to translated into positive stock returns adjustment and vice versa.

Test of market reaction to announcements abnormal returns (AR) is determined, for pre (before), on the day and post (after) the announcements. The abnormal return was computed as the difference between the actual return and the estimated return from the adopted market model. The cumulative abnormal return is the sum of the abnormal returns for the days in the relevant event window.

Discussion of Results and Findings

Serial correlation test results depicted in table shows that the data variables used for all the sample banks are not serially correlated at 5% level of significance. Thus, these indicates

absence of serial correlation in the abnormal returns residuals of all the sampled DMBs, therefore statistical outcomes derived based on this outcome are valid for statistical deductions.

Table 1:

Event Window Results for Breusch-Godfrey Test of Serial Correlation

Banks	Breusch-Godfrey LM P-Value	Serial Correlation of Variables
Access Bank	0.8137	Serially Uncorrelated
Diamond Bank	0.2503	Serially Uncorrelated
Eco Bank	0.4363	Serially Uncorrelated
First Bank	0.0877	Serially Uncorrelated
FCMB	0.9770	Serially Uncorrelated
Fidelity	0.4664	Serially Uncorrelated
GTBank	0.1444	Serially Uncorrelated
Skye Bank	0.4930	Serially Uncorrelated
Stanbic-IBTC Bank	0.0735	Serially Uncorrelated
Sterling Bank	0.0960	Serially Uncorrelated
UBA	0.3828	Serially Uncorrelated
Union Bank	0.8656	Serially Uncorrelated
Unity Bank	0.8639	Serially Uncorrelated
Wema Bank	0.0903	Serially Uncorrelated
Zenith Bank	0.9076	Serially Uncorrelated

Source: E-views 7.0 Output, 2017

Results of normality test for event window residuals shown in table 2 indicates that the residuals of the sample banks except one are normally distributed, while residuals of one bank (access bank) is significant at 1%. De Medeiros and Matsumoto (2006) as cited in Mohammed (2012) opined that, in line with the Central Limit Theorem; the non-normality of three sample banks (in the case of this study one bank) cannot significantly affect the distribution of average abnormal return.

Table 2:

Event Window Normality Test Results

Banks	Jarque Bera P-Value	Normality of Variables
Access Bank	0.0236***	Normally Distributed

Diamond Bank	0.4770	Normally Distributed
Eco Bank	0.7945	Normally Distributed
First Bank	0.5322	Normally Distributed
FCMB	0.0009	Not Normally Distributed
Fidelity	0.6530	Normally Distributed
GTBank	0.9325	Normally Distributed
Skye Bank	0.6305	Normally Distributed
Stanbic-IBTC Bank	0.4767	Normally Distributed
Sterling Bank	0.6898	Normally Distributed
UBA	0.7831	Normally Distributed
Union Bank	0.4521	Normally Distributed
Unity Bank	0.5190	Normally Distributed
Wema Bank	0.5654	Normally Distributed
Zenith Bank	0.6886	Normally Distributed

Source: E-views 7.0 Output, 2017

Significance Levels- * at 10%.** at 5% and *** at 1%

The result of the event window residuals test for heteroskedasticity using Glejser Test (1969) in table 3 shows the Glejser LM statistic value for all the banks depicted no evidence of heteroskedasticity in the residuals. Thus, the model used in the study is statistically outlined correctly.

Table 3:

Event Window results for Glejser Test (1969) for Heteroskedasticity

Sample	Glejser Test for Heteroskedasticity		Evidence of Heteroskedasticity
	P-Value		
Access Bank	0.3333		No
Diamond Bank	0.8908		No
Eco Bank	0.5747		No
First Bank	0.3528		No
FCMB	0.6569		No
Fidelity	0.8453		No
GTBank	0.2087		No
Skye Bank	0.8275		No

Stanbic-IBTC	0.2941	No
Sterling Bank	0.5246	No
UBA	0.4077	No
Union Bank	0.4406	No
Unity Bank	0.6489	No
Wema Bank	0.6915	No
Zenith Bank	0.4648	No

Source: E-views 7.0 Output, 2017

The result of test of null hypothesis one (H_{01}) shows on table 4, the CAR over the fifteen-day pre-announcement period, standard deviation, calculated t-statistics and critical value. The result indicates calculated t-statistic of 0.3952 is lower than the critical values of 1.7613 at 5% significance level. Therefore, study failed to reject H_{01} , which implies that there is no significant CAR fifteen trading days before post crisis financial stress test result announcements on stocks of DMBs in Nigeria. The result implies that there were positive insignificant abnormal returns prior to announcements. The findings supported the findings of Neretina, Sahin and Haan (2014) that stress test announcements had insignificant impact on stock returns. Conversely, the finding negates the lending credibility theory that announcements from examined books tend to possess elements that increase investors' confidence.

Table 4:
Summary of results before Announcement

Cumulative Abnormal Return	0.6090
Standard Deviation	1.5412
Calculated t- Statistics	0.3952
Critical Value	1.761

Source: Eview7.0, Critical value table and Excel Computations 2017

Additionally, the result of test of null hypothesis two (H_{02}) as shown in table 5 indicates values of CAR for the days of announcement, standard deviation, calculated t-statistics and critical value. The result indicates calculated t-statistic of 1.2086, which is less than the critical values of 6.3138 at 5% level of significance. Thus, the study failed to reject H_{02} , therefore that there is no significant cumulative abnormal return on the day of post crisis financial stress test result announcements on stocks of DMBs in Nigeria. The implication of the result is that though the market experienced positive abnormal return it did not significantly affected the investors' estimation. The finding derived is consistent to Dimitrios (2014) and Leeuw (2012) that the investors interpreted stress test announcements to contain valuable information, thus had positive impact on stock returns.

Table 5:
Summary of on the days of Announcement

Cumulative Abnormal Return	1.8626
Standard Deviation	1.5412
Calculated t- Statistics	1.2086
Critical Value	6.3138

Source: Eview7.0, Critical value table and Excel Computations 2017

Lastly, result of null hypothesis three (H_{03}), as illustrated in table 6 shows the CAR over the fifteen-day post-announcement period, standard deviation, t-statistics and critical value. Thus, the results indicate t-statistic of -0.0382 is less than the critical values of 1.7613 at 5% level of significance. Thus, the study failed to reject H_{03} , therefore there is no significant cumulative abnormal return fifteen trading days after post crisis financial stress test result announcements on stocks of DMBs in Nigeria. The implication of the result derived is that though there was negative abnormal return, it did not significantly affect DMBs stock returns after the announcement. This finding is consistent with the study of Dite (2015) which indicated the announcement of stress test results did not inject confidence into the market, rather resulted in destabilisation. This is in contrast to the lending credibility theory.

Table 6:
Summary of results after Announcement

Cumulative Abnormal Return	-0.05884
Standard Deviation	1.5412
Calculated t- Statistics	-0.0382
Critical Value	1.761

Source: Eview7.0, Critical value table and Excel computations 2017

Conclusions and Recommendations

The results derived for the study indicates that the stock returns of DMBs recorded a positive trend before and on the days of post crisis stress test results announcements, but a negative trend after the announcements, even though not significant for the three periods. Thus, null hypotheses H_{01} , H_{02} and H_{03} failed to be rejected; therefore, the study concluded that there is no significant CAR prior (before), on the days and after post crisis stress test results announcements on stock returns of DMBs in Nigeria. This may support the observations of Hirtle, Kovner and Zeller (2016) that over time markets seem to place less emphasis on the announcement of stress tests, that announcement of stress tests is important, but that importance is dwindling and can be

variable due to economic times. The conclusion drawn for this study is completely at variance with the conclusions drawn by studies of Mohammed (2013), Umar, Babakatun and Shakur (2016) on supervisory announcements by the CBN during crisis periods. Therefore, the study recommends that the CBN should evolve measures to make quarterly disclosures to further curtail investors' uncertainty in the market. Also, the criteria evolved for stress tests should be more dynamic to hedge against predictability, which may consequently hedge the DMBs to smoothen their books to meet up regulatory requirements.

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