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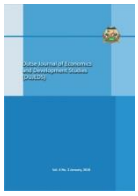

SPILLOVER EFFECT OF FINANCIAL STRESS TEST ANNOUNCEMENTS ON STOCK RETURNS OF LISTED NON-BANKING FIRMS IN NIGERIA

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Abstract
This study examined the spill-over effect of financial stress test result announcements on stock returns of listed non-banking firms in Nigeria. Event study methodology was used to analyse data drawn from sample of one hundred and thirteen listed non-banking firms, over ten days (-5 to +5 days) event window using the market model. Findings from the study indicates that, there is insignificant abnormal return on stocks of listed non-banking firms before and on the date of financial stress test result announcements, but positive significant abnormal return after financial stress test result announcements. The study concludes that, there were no abnormal stock returns before and on the days of announcements. But there was positive significant abnormal return was observed days after financial stress test result announcements. Financial regulators should evolve measures to reduce uncertainty. To curtail market reaction post disclosure, therefore they should devise mechanisms such as making other disclosures that will neutralise the impact.

Keywords: Stress Test, Announcements, Event Window, Estimation Window, Non-Banking
JEL Code: G14

Introduction

In recognition of the advancement in supervisory frameworks and the increasing complexity in the operations of industry players, the Central Bank of Nigeria widened it supervisory focus from it conventional micro-prudential supervision to macro-prudential supervision. An important instrument that has been employed as pivotal to macro-prudential supervision instrument by the apex bank to ascertain the financial stability in the banking industry is financial stress test. Ahnert, Vogt, Vonhoff and Weigert (2018) opined that bank stress tests are analyses conducted under simulated unfavourable economic scenarios to assess the capitalization of banks on a forward-looking basis. They focus on several key risks, such as credit risk, market risk, and liquidity risk, to determine the banks' financial health in crises. The result of financial stress tests is periodically disclosed or announced by the CBN through Financial Stability Reports (FSR) and press releases, aimed at providing a clear view to stakeholders about stability of the banking sector and long-term viability of banks examined, in order to restore confidence and reduce market uncertainty. Since banks play a central role in reallocation of funds in the economy, non-banking sectors of the economy are susceptible to spill over effects of announcements on these banks.

Kapinos and Mitnik (2014) noted that financial stability report on stress test results announcements could affect stock prices mainly through two channels. Firstly, the report may contain information that affects the estimation of potential riskiness that may be associated to future cash flows that are derived from financial intermediation function. Secondly, the report can contain substantial information about the viability of the company as a going concern.

The banking sector is one of the leading sub-sectors in the Nigeria Stock Exchange (NSE) and a driver of real sectors of the economy, stability or dislocations of it intermediation functions may have a corresponding spill-over effect on other sectors. The instability may lead to constriction of funds to borrowing non-banking firms, which may consequently impede firms' operation and ultimately affect investors. Thus, due to interconnections between the banking sector and other non-banking sectors of the economy, investors in these sectors may not just have a passing interest in the banking sector but may make investment decisions based on information derived from the banking sector. Therefore, reports on DMBs may consequently be employed as basis by investors to make an estimate on the values of firms in non-banking sectors. Studies results such as Georgeseu, Gross, Kapp and Kok 2017; Singh, 2016; Hirtle, 2015; Candelon and Sy, 2015; Flannery, Hirtle, and Kovner, 2015 and Dite, 2015 have been conducted on stock returns reaction to financial stress test announcements with varying outcomes, but there seems to be paucity of empirical literatures on spill over effects on non-banking firms' stocks returns especially in developing countries like Nigeria. This study therefore is set to fill these obvious gaps by investigating the spill-over effect of financial stress test result announcements on stock returns of listed non-banking firms in Nigeria. Based on the objective of the study it is hypothesised in null forms, thus:

H_{01}= There is no significant Cumulative abnormal return five trading days before financial stress test result announcements on stocks of listed non-banking firms' in Nigeria.

H_{02}= There is no significant cumulative abnormal return on the day of financial stress test result announcements on stocks of listed non-banking firms' in Nigeria.

H_{03}= There is no significant cumulative abnormal return five trading days after financial stress test result announcements on stocks of listed non-banking firms' in Nigeria.

The remaining part of the study contains section two for reviews related literature and theoretical issues. Section three presents the methodological aspects employed in conducting the study. In Section four the results of data analysis for test of hypotheses and the findings of the study were presented. Lastly, section five contains the conclusions drawn and recommendations proffered in the study.

Literature Review

It should be noted that, though studies have been conducted on stress test results announcements, there is paucity of studies that precisely examined the spill over effect of such disclosures on stock returns of non-banking firms. However, literatures are also reviewed on the impact of other related supervisory disclosures on stock returns.

Ahnert, Vogt, Vonhoff and Weigert (2018) applied event study methodology to analyse short-term performance implications around stress test release and announcement events using a large sample of ten tests from the US CCAR and the European EBA regimes between 2010 and 2017. The study found positive significant abnormal equity and CDS returns for tested banks around stress test result release events. The study found that a bank's asset quality and its return of equity at the time of the announcement are significant predictors of the pass/fail outcome of a bank. Thus, concluded that, banks with a higher capital buffer, higher asset quality, lower leverage and a less risky business model earn higher abnormal equity returns at the stress test release.

Correa, Garud, Londono and Mislang (2017) using the text of financial stability reports (FSRs) published by central banks, analysed the relation between the financial cycle and the sentiment conveyed in these official communications. Using a panel of 35 countries for the sample period between 2005 and 2015, the study found that central banks' FSS indexes are mostly driven by developments in the banking sector and by the indicators that convey information about the health of this sector.

Dendooven (2017) assessed whether the 2014 EU-wide stress test results had an impact on the relative change in banks' stock return volatility. In general, influence was found mainly during the first week after release of the results. Distinguishing between countries categorized as vulnerable and others within the Eurozone shows that the impact of the stress test results is mainly located in the vulnerable countries.

Berrospide and Edge (2017) examined the impact of the U.S. post-crisis regulatory reform on the lending of both BHCs subject to the Basel III capital standards and the largest BHCs subject to the CCAR stress tests. Using matched firm-level data across the largest banks to separate the impact of credit supply shocks implied by the supervisory stress tests from loan demand changes at the firm level. They found that the unanticipated reduction in regulatory capital implied by the stress tests, made public for the first time in the 2012 CCAR

exercise, led to a significant reduction in C&I lending.

Camara, Pessarossi and Philippon (2017) examined whether stress tests results provide reliable information for regulators on the resilience of banks, and whether market participants learn from these tests. To achieve this a two-step approach of using European stress test results to estimate bank loss rates sensitivity to macroeconomic shocks and computation of loss rate predictions under actual macroeconomic events. The estimate of market reaction of banks to macro announcement showed exposures help predict the cross sectional variation of bank stock returns after a macro announcement.

Georgescu, Gross, Kapp and Kok (2017) assessed the impact of the stress test-related events using event study approach. The study focused on whether stress tests revealed new information about stress tested banks and determine whether the publication of stress test results improved price discrimination between 'good' banks and 'bad' banks. Thus, the study found statistically significant abnormal returns around the announcement of the key features of the stress test and the publication of results revealed new information that was priced by markets.

Additionally, Georgescu et al (2017) found that the market price impact differs across banks according to how well they perform in the stress tests. They also found evidence that sovereign funding costs were somewhat affected by the publication of stress test results. In the context of the Comprehensive Assessment of 2014, the study found that stock market and debt market price reactions went in opposite directions. The disconnect between CDS and stock prices was not evident for the 2016 stress test. Therefore, the study concluded that the most recent EU-wide stress tests provided added value through arrival of new information to the stock market.

Gersl, Komarkova and Komarek (2016) applied macro stress-testing model to determine banks' market and funding liquidity risks survival for period of one month for a sample of 23 banks incorporated in the Czech Republic, using 2013 end-year data on both on-balance and selected off-balance sheet items. The model employed incorporated the impact of both bank specific and market-wide scenarios, with second-round effects of shocks due to banks' feedback reactions. The study found that the application of the model showed that the Czech banking system seems to be resilient against liquidity shocks. However, the study found harsh scenarios where a number of banks lost their initial liquidity buffers, partly due to second-round effects. The study concludes that even in a banking sector with sufficient liquidity, there is heterogeneity among banks and thus a potential for liquidity shocks to spread through the system via feedback effects.

Flannery, Hirtle, and Kovner (2016) examined whether public disclosure of supervisory stress test results by Federal Reserve Bank of United States of America provides value-relevant information. The results indicated that disclosure of supervisory stress test results generates significant, new information about stress tested BHCs around many of the stress test disclosure dates. The study also found evidence that stress test results convey information about non-stress-tested BHCs, although the tested sample's CAR always exceeds that of the non-stress tested sample. The result indicates that stress testing announcements are producing information that is meaningful across all types of markets. Stress test disclosures also provide significant information about non-stress tested banks, although the effects are not nearly as pronounced. Furthermore, the study investigated whether the market reaction to supervisory stress test results affects some types of BHCs. The results suggest that the stress tests produce more information about riskier or more highly leveraged BHCs.

Fernandes, Igan, and Pinheiro (2015) examined market effect of stress tests in the United States. Specifically, they analyze equity and bond price changes and jumps, equity and credit bid-ask spreads, implied volatilities, and CDS spreads in a difference-in-difference event-study setup to establish the effects of stress test announcement and results disclosure. The findings indicate that stress tests are informative, especially during period of crisis. The study observed that the markets tend to react to stress test announcements, based on the on the nature of information disclosed. The results indicate that information asymmetry increases with announcements, though it then declines after the release of the results. The findings of the study support the notion that there is important information in stress tests, especially at times of turmoil.

The theory underpinning this study is the lending credibility theory which suggests that the primary function of the audit (in the context of this study stress testing) is to add credibility to the financial disclosures (Hayes, 2009). Audited financial statements are seen to have elements that increase the financial statement users' confidence in the figures presented by the management (in the financial statement). The users are perceived to gain benefits from the increased credibility, these benefits are typically considered to be that the quality of investment decisions improve when

they are 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 disclosures as reassuring on the going concern of the banks, it is expected to translated into positive stock returns adjustment and vice versa.

Methodology

Correlation research design was employed using event study methodology. The choice of this methodology was influenced by study of Kucukkocaoglu, Unalmıs and Unalmıs (2013). Data for the study was derived from secondary sources only. The study used daily stock returns for the sampled listed firms and All Share Index (ASI) for NSE that represents the market returns index which was collected from NSE and cash craft websites, while stress tests results announcement days were derived from CBN website.

To conform to requirements of using standard event study, the estimation period used is 120 trading days ending -6 days prior to the event dates, while the event window ranges is -5 to +5 (11 days event window). This depicts 120 days to 6 days' pre-event window was applied to indicate a normal return period prior to the announcement, while 11 days event window is employed to indicate period to observe abnormal return that may occur because of financial stress test result announcement. According to Brown and Warner (1985) a parameter estimation period of 120 days is adequate when employing daily returns data. The study used the dates of CBN stability report release, which contains disclosure of stress test results conducted by the apex bank in Nigeria. Therefore, within the periods of the study, nine (9) financial stress test results disclosures were made, which resulted in nine event disclosure dates which has been used in the study, as day 0, the days of news arrival to the market.

Even though the stress test conducted by the central bank of Nigeria focuses on deposit money banks; it should be noted that due to the financial intermediation role played by DMBs, the financial positions of the DMBs may have a contagious effect on other firms in the economy. Therefore, the population of the study is the One hundred and Sixty (160) listed non-banking firms in Nigeria as at end of second quarter 2018 (Q2,2018), while the sample size is 113. The sample size was determined using Krejcie and Morgan (1970) table for determining sample size.

The data of the study were subjected to diagnostic test for stationarity properties to avoid problems of spurious regression results, using the unit root test to check the stationarity of the variables employed using the Augmented Dickey Fuller (1979) test. Augmented Dickey Fuller test reject a null hypothesis of unit root if the series are non-stationary. Normality test was conducted using the Jarque-Bera test (1980) for normality as employed by Inyiama (2014), to test goodness of fits to determine whether sample data have matched with normal distribution, while heteroskedasticity and serial correlation tests were also conducted using Bruesch-Pagan test. The expected returns are estimated using the standard market model across the estimation period as employed by Afego (2011). Thus, the adopted market model is given thus:

$$Rit = \alpha i + \beta_i R_{mt} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where: R_{it}= returns on stock i at time period t
R_{mt}= market returns at time t
ε_{it}= error term

The Cumulative Abnormal Returns (CAR) is employed to test for significance to determine whether the event produced stock reactions over time. To test $\mathbf{H_{01}}$, $\mathbf{H_{02}}$ **and** $\mathbf{H_{03}}$ for significance, t-statistic was computed to check whether the CAR for stock is statistically different from zero. If the absolute value of test is greater than critical value of t-test, then the CAR for that stock is significantly different from zero at the 5% level.

Discussion of Results

Data analysis was conducted to test for the contagious effect of financial stress test results announcements on stock returns of listed non-banking firms in Nigeria. The result of stationarity test for the existence of unit root in the data of sampled banks and their market index return, using Augmented Dickey Fuller (1979) test for both event and estimation windows, indicates the data series for both windows were stationary at levels (1%, 5% and 10% respectively). Thus, the hypothesis of non-existence of stationarity in time series data was rejected, for both the share return and market index series. The result for test of heteroskedasticity for stock return series shows they were not statistically significant at any level (1%, 5% and 10% respectively). Therefore, the null hypotheses of non heteroskedasticity in the

return series failed to be rejected, thus the regression model used were correctly specified. The result of normality test for return series depicts they are normally distributed after being corrected for non-normality using lag. Furthermore, the result of test for serial correlation indicated that, the variables employed in the study are not serially correlated.

The result of analysis for test of null hypothesis **H_{01}:** There is no significant cumulative abnormal return five trading days before financial stress test result disclosures on stocks of listed non-banking firms in Nigeria, in table 1 depicts that the CAR for the period day -5 to day -1 (days before disclosure date) reported -1.2332 percent, while the standard deviation of CAR over the estimation parameter window is 1.0624. The critical value table indicates that the t-statistic of -1.1419 is less than the critical value of 2.1318 at 5% level of significance. Thus, the null hypothesis, that there is no significant abnormal return five trading days before announcement failed to be rejected.

Table 1: Summary of **H_{01} R**esult

CAR	-1.2332
Standard Deviation	1.0624
t- Statistics	-1.1419
P-value	2.1318

Source: Authors' Computation using Eview 7.0

To test **H_{02}:** There is no significant cumulative abnormal return on the day of financial stress test result announcements on stocks returns of listed non-banking firms in Nigeria. As depicted in table 2, the results for test of **H_{02}** shows that the CAR on the date of stress test result disclosures is -0.2553, which is less than the critical value of 6.314 at 5% level of significance. Therefore, the study fails to reject the null hypothesis, that there is no significant CAR on the day of stress test result announcements. This connotes that the CAR of -0.2553 percent is not significant on the date of stress test result disclosures of listed non-banking firms in Nigeria.

Table 2: Summary of **H_{01} R**esult

CAR	-0.2553
Standard Deviation	1.0624
t- Statistics	-0.2403
P-value	6.314

Source: Authors' Computation using Eview 7.0

In order to test for **H_{03}:** There is no significant cumulative abnormal return five trading days after financial stress test result announcement on stock returns of listed non-banking firms in Nigeria. Table 3 shows that after the financial stress test result announcements, the market in contrast to before the announcement and the date of the announcements recorded a positive CAR of 1.4684, but the t-statistics is reported at 2.3822 which is greater than the critical value of 2.1318 at 5% level of significance, the study failed to accept null hypothesis **H_{03}**.

Table 3: Summary of **H_{01} R**esult

CAR	1.4684
Standard Deviation	1.0624
t- Statistics	2.3822
P-value	2.1318

Source: Authors' Computation using Eview 7.0

Conclusion and Recommendations

The study examined the spill-over effect of financial stress test announcements on stock returns of listed non-banking firms in Nigeria. Thus, based on the findings of the study it is concluded that non-banking firms' stocks return also experienced insignificant CAR before and on the days of financial stress test announcements. This implies that the uncertainty in banking sector had a spill-over effect on non-banking firms' investors, as they may have viewed a dislocation in the banking system may have a multiplier effect on DMBs lending to other sectors of the economy. Lastly, the study concluded that the positive significant CAR recorded by stock return of non-banking firms after financial stress test results disclosures implies that as detailed information contained in the report becomes readily available, it builds up investors' confidence and consequently helped in stabilizing the financial system as a whole. This is consistent to lending credibility theory, that stress test result disclosures

avail the investor credible information about the going concern of banks in situation of adverse economic situation. Based on the findings of the study, it is recommended that financial regulators should evolve measures to reduce uncertainty. To curtail market reaction post disclosure, they should also devise mechanisms such as making other disclosures that will neutralise the impact.

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