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FINANCIAL SECTOR BUBBLES IN THE NIGERIAN EXCHANGE GROUP

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Abstract:

This study investigated the existence of financial sectoral bubbles in the Nigeria Exchange Group using monthly data over the period 2008:M01 – 2023:M12. The study specifically examines the stock returns of four different NGX indices, namely NGX_ASEM, NGX Pension, NGX Banking, and NGX Insurance to detect the presence of bubbles. This is associated with the motivation to verify if any of these specified sectors are resilient within the Nigerian Exchange Group in relation to the contagion impact resulting from the Global Financial Crisis of 2007-2008, the bubble of 2012-2014, and April 2017 as specified by Central Bank of Nigeria. Data utilized in the study were sourced from the various issues of Central Bank of Nigeria, Nigeria Bureau of Statistics, and the Nigerian Exchange Group statistical bulletins. To analyse the data, the study employed the descriptive statistics and the generalized backwards supremum augmented Dickey-Fuller (BSADF) date-stamping techniques at the 95% confidence interval. The result of the study showed the presence of multiple bubbles in the various indices: NGX Pension, NGX Banking, NGX ASEM, and NGX insurance. The study concluded that that there is presence of multiple bubbles in all the selected sectors of the Nigerian Exchange Group. Among others, the study recommended that the Securities and Exchange Commission of Nigeria should strengthen its regulatory oversight responsibility. The enhancement of the authority of financial regulators to oversee and regulate speculative behaviours that have the potential to result in market bubbles. Enforcing more stringent restrictions and enhancing transparency might effectively mitigate the occurrence of excessive risk-taking.

Keywords: Investments, Meltdown, Recession, Capital markets, Herding

1. INTRODUCTION

Market bubbles occur when there are very strong fluctuations in market prices that may be attributed to non-financial and non-economic factors, like investor sentiment, calendar effect, manipulation, insider information, overconfidence, noise, and political volatility (Asekome & Agbonkhese, 2015; Aigbovo, Ozekhome, & Isibor, 2017; Olulu-Briggs & Sunday, 2023). The continued existence of these inefficiencies has been observed to lead to malicious consequences such as lengthy recessions and huge economic losses (Narayan et al., 2013; Jorda, Schularick, & Taylor, 2015) as a result of bursting of bubbles. A bubble burst occurs when the price of an asset deviates from the actual value, leading to a significant drop in the asset's price, exceeding its innate worth, due to inefficiencies of the market (Asekome & Agbonkhese, 2015; Olulu-Briggs & Sunday, 2023). Such a bubble generally leads to a financial crisis where the capital market will be eroded and the banking balance sheet will be broken, eventually leading to economic recession (Iliyasu et al., 2021). The global financial crisis of 2007-2008, born of the bursting of a real estate bubble in the United States, is an example of this phenomenon, where a contraction in global GDP of around $5 trillion worth of world GDP was undertaken, accompanied by the contraction of $25 trillion worth of stock markets (Sornette, 2013).

History is full of examples of bubbles around the globe that have had drastic impacts on investors and exchanges. Notable cases include the Tulip Mania in Holland in the 1630s (Day, 2008), the South Sea bubble in 1719 (Voth & Temin, 2004), the Mississippi Bubble in France between 1716 and 1720, the Railway Mania in Britain in the 1940s, the 1929 stock market crash in the United States, the Souk al-Manakh bubble in Kuwait in the early 1980s, the Dot com bubble in the United States in late

Similarly, the Nigerian economy has seen bubbles in the economy from time to time. The 2007-2008 global financial crisis which made its way into the developing world offers an salient example. The sudden crash in the U.S. real estate market (Sornette, 2013) created a contagion spread to emerging economies such as Nigeria. According to the Central Bank of Nigeria (2017), for this period the Nigerian All Share Index (ASI) went up slightly from 57,990 in December 2007 to 58,580 at the beginning of 2008, corresponding to a market capitalization of N10.284 trillion. on 5 March 2008

ASI: 66,371. 12.640 trn 1 12.640 12.640 12.640 NTR. Igbinovia and Igbinovia (2019) suggest that the increase in the ASI is caused by an amalgamation of financial and non-financial factors. Asekome and Agbonkhese (2015) note that this phenomenon was due to the tendency of the banks to hesitate in granting credit for long-term investment even though their banks have excess in their stock of capital following the recapitalisation of 2005 preferring to grant margin loans on equities.

Moreover, before full economic recovery in the August 2016 recession, the growth of ASI in 2017 recorded a significant 33.33 percent increase, from N25,516.34 as of 31 March 2017 to N34,020.37 as of 21 July 2017, whereas the growth of market capitalization in the same period period was from N8.83 trillion to N11.73 trillion (NSE, 2017). This caused the Monetary Policy Committee of the Central Bank of Nigeria to pledge concern about a possible bubble within the Nigerian Exchange Group at its July 2017 meeting (CBN, 2017). In response, Igbinovia and Igbinovia (2019), Iliyasu et al (2021) and Iliyasu, Sanusi and Suleiman (2020) studied the existence of bubble in NSE. Their findings support the presence of bubbles in the Nigerian stock exchange; however, Iliyasu and Saba (2019) failed to detect the same. The vast literature reveals unresolved debates on whether the suspected bubble identified in the year 2017 by the Central Bank of Nigeria persists - a question that needs to be asked more. A careful perusal of literature reveals missing data about which financial sectors in the NGX may have been subjected to bubbles, thus making this one of the hot topics for future research.

The extant scholarly literature is currently divided, and inconsistencies with the bubbles in the Nigerian economy cannot be defined. Some investigations (Ilyasu et al., 2020, Olulu & Sunday, 2023) have postulated multiple bubbles within the Nigerian economy, while others (Ilyasu et al., 2021; Omoruyi et al., 2017) have found a singular bubble episode and Iliyasu and Saba (2019) no bubbles at all. These contradicting results may be a function of methodological heterogeneity, varied geographical scope or the variability of data sources, thus hindering efforts to synthesise a coherent understanding of the phenomenon (Natchimuthu, 2022; Sunday & Olulu-Briggs, 2021). The divergent results with the absence of sector-specific analysis create the need for a more sophisticated approach within a comprehensive methodology to determine the presence of bubbles of the Nigerian exchange group. A rigorous meta-anal or comparative study defining sectoral responses may provide previously unavailable information.

Nigeria's under performance in the past and the recent volatility of the market-capitalization of the Nigerian Exchange Group are worthy of scholarly attention especially because part of the movements cannot easily be explained by the macroeconomic fundamentals. Might non- fundamental forces have contributed in part to the sort of growth patterns seen in the Nigerian Exchange Group? The global financial crisis and its subsequent impact on various economies are the perfect example of the possible negative impacts that global financial integration which is in the form of cross-borders activities will have on a less developed economy like Nigeria. For example, the Russia-Ukraine conflict could have a certain contagious impact through international trade connections, particularly as Russia and Ukraine provide 75 percent of European, Central Asian, Middle Eastern and African wheat (World Bank, 2022). As a result, there may be disturbances to the consumer and beverage sectors in Nigeria.

To the best of our current knowledge, the existing researches in Nigeria have not sufficiently studied financial sector bubbles in the Nigerian Exchange Group. This lacuna motivates the present research that seeks to investigate bubble existence across financial sectors of Nigeria Exchange Group using monthly data between January 2008 and December 2023, using the generalised supremum Augmented Dickey - Fuller (GSADF) model. Specifically, the period selected corresponds to the identification of Central Bank of Nigeria (2017), of three periods of bubbles since 2006: 2006-2008, 2012-2014 and April of 2017.

2. LITERATURE REVIEW

2.1.1 Bubbles

According to Kindleberger and Aliber (2005), price movements following a non-sustainable pattern over time can be described as a bubble. Escalation in prices is often due to optimism among investors. When one is too optimistic, one can find a gap between the market value of a security and the fundamental value of a security. Consequently, increasing prices is not indigenously justified by fundamentals but is driven by momentum traders that seek to sell at higher prices in order to guarantee a profit (Kyriazis, Papadamou & Corbet, 2020). Gemici and colleagues (2023) are further describing bubbles as persistent and organised discrepancies between market and intrinsic values. Kyriazis et al. (2020) report that such behavioural tendencies towards asset valuation can be attributed to an emotionally based optimism by investors. Such an optimistic behaviour leads to a rise in asset values due to collective demand for such assets.

2.2 Theoretical Framework

This study has been anchored on the Beauty Contest Principle of John Maynard Keynes (1936) and Greater Fool Theory of Paul Samuelson (1978). When making investments in equities, investors tend to document optimisation of investment returns by buying securities they believe will be in demand by others, rather than on the securities with the highest level of intrinsic value. This mental bias can lead to the creation of a bubble because people make selective decisions about stocks without necessarily understanding the market conditions supporting the stocks. Hence, the price of a chosen stock can undergo huge and quick rise with no fundamental justification. The problem worsens when the investors choosing a certain stock are considered well-informed. may imitate the strategies. For example, the steady stream of inexperienced investors, who are not informed of the mechanics of the market and these individuals are likely to mimic and purchase overvalued assets with a purchase price that is far less than their intrinsic value (Kindleberger, 1978; Xiong & Yu, 2011), thereby becoming Greater Fools. When these investors realise that the price of these assets

are overvalued given the intrinsic worth, they start selling off thus pushing the asset price down until equilibrium or near equilibrium is achieved (Abreu & Brunnermeier, 2003).

2.3 Empirical Review

Peng et al. (2023) used the GSADF test to detect multiple bubble episodes of Chinese copper prices. Their empirical findings instead detected, in agreement with the fundamental of the markets, 7 bubble episodes between January 1980 and March 2023. The first two bubbles owed to industry concentration in Japan and tight constraints of supply, while bubbles three to six were majorly affected by the global financial crisis and growing Chinese demand. The last bubble was a result of the post - Covid-19 economic recovery.

Potrykus (2023) examined price bubbles in the wine market, precious metal market and national stock market indices of G7 countries from December2003 to March2022. Using the GSADF test on the data of multiple index exchanges, the study showed bubbles in the markets that were studied. Only wine-investment bubbles were found to significantly last for long periods of time, namely up to 50 per cent of the total duration of the study.

Mohammadi et al. (2023) examined a gold-$market bubble and how it may get transferred to the stock exchange. Using the RADF, SADF, and GSADF tests, the authors found four separate periods of explosive behaviour and multiple price bubbles in the gold market, and documented bubble dynamics contagion in the equity market.

Olulu-Briggs and Sunday (2023) performed excellent analysis regarding economical bubbles by evaluating data on monthly All-Share Index between January 1985 and December 2021. The GSADF test showed that the Nigerian Exchange Group had speculative bubbles.

In an extensive empirical test, Nikitin (2023), with a very advanced recursive procedures, removed and shaded features for identifying market bubbles, market bubbles were significantly dated. Specifically, the GSADF test has been used which shows that sliding window application far improves discriminatory power of recursive tests.

Akcora and Kocaaslan (2023) examined price bubbles in the European natural gas markets using the daily data for the period from January 2011 to June 2020. Their results show that the Dutch TTF register the fewest bubbles followed by the British NBP and the Austrian VTP registers the most bubbles. Markets that have been around for a longer period of time seem to have fewer instances of a bubble.

Moe and Oversveen (2022) looked at the appearance of a green bubble in the Oslo Stock Exchange. Using the OSEBX index, which is used to aggregate the green stocks of both the Oslo Stock Exchange and Euronext Growth, recursive ADF tests found that there was no absence of a bubble in the Norwegian market though there has been evidence to suggest that some green stocks displayed explosive behaviour in certain ADF tests.

Dasman and Purnama (2021) showed the existence of a stock market bubble and examined how the monetary policy, market sentiment, and liquidity influenced the property stock index in Indonesia between 2016 and 2020. Their results point to medium bubble during that period.

Iliyasu et al. (2021) discussed the predictability of stock market bubble and bust cycle period between 1995-2017, using approximated log-periodic power-law model to identify pre-2008 crisis bubble. The study showed a regime change between December, 2007 and May, 2008, which coincided with the bursting of the NSE bubble.

Iliyasu et al. (2020) have examined bubble characteristics in Nigerian stock exchange between 1985 and 2018 using Generalised Sequentially Adaptive Durbin-Wallis (GSADF) test. The presence of two bubble events in the nominal ASI and three in the real time ASI thus highlights the different dynamics in terms of time.

He et al. (2019) investigated the weekly data of Chinese stock market bubbles with the use of ARCH effects, testing for conditional heteroskedasticity, and duration dependence tests. Bubbles at aggregate prices were seen before the split share reform, and migration of bubbles from the telecommunication industries to the health care industries. Monetary policy in the past had a significant impact on the size of bubbles, which lost its influence after the reform.

Omoruyi, Hassan, and Evbaziegbere (2017) have examined a speculative bubble within the Nigerian market, from 2008Q1 to 2009Q4, and used unit root and cointegration methods in assessing the random walks and fundamental deviations. Their empirical evidence discusses a bubble in the specified period.

3. METHODOLOGY

This research study uses the ex - post facto hypothetico-deductive research design which is appropriate given no data manipulation and no statistical hypothesis testing. By comparing groups that already have some characteristics compared to some dependent variable, we look at the bubble and how it affects the performance of Nigerian Exchange Group. The population includes eighteen indices that are listed on the Nigerian Exchange Group as of 10th December 2023 (Nigerian Exchange Group, 2023), although just four indices, namely NGX Pension, NGX Banking, NGX ASEM, and NGX Insurance, are analysed in this study owing to data availability. Consequently, purposive sampling is used to evaluate sectoral bubbles from January 2008 to December 2023; a span of time which overlaps with the Central bank of Nigeria's (2017) division of three phases of bubbles (2006-2008, 2012-2014 and April 2017). Monthly secondary data was gathered from a statistical bulletin from the exchange. Descriptive statistics and GSADF technique of 5% level of significance was used as GSADF has the ability to identify more than menace sectoral bubble and overcomes the issue of time stamp of SADF test (Vasilopoulos et al., 2020; Philips et al., 2015).

The literature on the identification of bubbles based on market fundamentals goes back to the Lucas asset pricing model based on rational expectations and equilibrium conditions (Lucas, 1978). By examining the impact of non-financial variables on asset prices, the Lucas equilibrium model is able to identify bubbles. The canonical form of the Lucas (1978) equilibrium mathematical model is one as follows:

$$P_t = E_t \left[\sum_{j=i}^{\infty} \beta^i \frac{U^i(S_{t+j})}{U^i(S_t)} S_{t+j}\right] \quad 3.1$$

Where P_t is the price of the asset in period t,
E_t is the expected return of the asset in period t,
S_t is the expected dividend in period t.

Thus, the functional relationship for this study is stated as.

$$STR_t = f(STR_{t-n}) \quad 3.2$$

$$STR_{it} = \beta_0 + \beta_1 STR_{it-n} \quad 3.3$$

$$STR_{it} = \beta_0 + \beta_1 STR_{it-n} + \mu_t \quad 3.4$$

$$\beta_1 > 0$$

Where, STR_t = Current period sectoral stock return,
STR_{t-1} = Previous period sectoral stock return,
i = The different represented sectoral stock return,
β_o = Intercept,
β_1 = Constant parameters,
μ_t = Error term

4. RESULTS AND DISCUSSION

Table 4.1 Descriptive Statistic Result

Variables	Mean	Max	Min	Std. Dev	Kurtosis
NGX_BANKING	0.003922	0.281022	-0.191061	0.036188	26.28387
NGX_PENSION	0.005723	0.362182	-0.160575	0.006586	35.31731
NGX_INSURANCE	0.002516	0.325504	-0.178195	0.067444	7.497568
NGX_ASEM	0.002727	0.056003	-0.131476	0.015133	35.49935

Source: E-view Output 10.0

Table 4.1 shows that average monthly return of the investors in NGX_Banking index is 0.3922% . Accordingly, one may deduce that, on average, investing in the NGX_Banking provides investors with a monthly return of 0.3922% in that sector. The monthly returns of the sector range from -19.1061% to 28.1022%. As a result, investors in NGX_Banking could expect a maximum of 28.1022% realised return for their investments. Conversely, should adverse factors materialise the WCL could be minus 19.1061 per cent. The Standard Deviation of Monthly Returns for the NGX_Banking index is 3.6188%. As a measure of risk, this figure suggests that investing in NGX_Banking means that there is comparatively less volatility, potentially a consequence of the low average return. The kurtosis value of 26.28387 is of leptokurtic distribution, that is more than the normal of 3, indicating a high peak and indicating chances of herding behaviour. Such a pattern implies that investors may be following the strategies of more educated counterparts and hence there will be a greater-fool dynamic that may lead to speculative bubbles.

The monthly average return in the NGX_Pension index is 0.5723 per cent, meaning that the potential investors, who invest their capital in this index, expect an average monthly return of 0.5723 per cent. The range of annualised returns varies from -16.0575 per cent as the minimum to 36.2182 per cent as the maximum. Thus, the potential monthly return from this sector could be for investors 26.2182% (this seems to be a typographical mistake; the correct figure should be the maximum directly). Nevertheless, in the event of unfavourable deviation of performance, the potential loss could reach -16.0575%. The level of risk is 0.6586% measured by standard deviation. This low variance is consistent with the relatively modest return compared to the rest of the market, making this sector a good choice for investors with a low-risk appetite. The kurtosis number, at 35.31731 again indicates a leptokurtic distribution, which indicates a large concentration of high returns and by extension, herding behaviour. This dynamic could be the engenderer of the greater-fool thesis and potentially the catalyser of asset price bubbles.

There is an average monthly return of 0.2516 percent on the NGX-Insurance sector, which means that on average investment in this index will receive a small amount of return each month. The monthly return range of the sector is analysed -17.8195% (minimum) to 32.5504% (maximum). Accordingly, the maximum prospective return for investors is 32.5504% percent. In case of adverse conditions the worst case loss would become 17.8195% o/n. With a standard deviation of 6.7444 exercises, the profile of risk has a moderate level of volatility, similarly because of lower monthly mean return in proportion to the market. The kurtosis of 7.497568 is a significantly leptokurtic, implying that returns are highly concentrated and there may be much herding behaviour. Therefore, it was possible for market participants to copy the strategies of established investors which could have contributed to the bubble formation environment that was "the greater-fool environment".

The NGX_ASEM index has a monthly average return value of 0.2727 % which means the investors that project their capital into this index expect to allocate a small amount of money on the value of their capital every month. The return spectrum is between -13.1476% and 5.6003%. For that reason, investors may see a maximum monthly gain of 5.6003% maximum gain. Failure to meet expectations would expose them to a loss of -13.1476%. The standard deviation of the index is 1.5133 per cent which shows average risk when compared to overall market returns and hence attractive to risk averse investors. The kurtosis of 35.49935 indicates that it is leptokurtic, indicating a spike in the high probability of returns, or an inclination towards herding. Accordingly, investors are likely to follow the lead of well-informed peers, and this will reinforce the greater-fool hypothesis and possibly lead to speculative bubbles.

Table 4.2 GSADF Result

Sectors	GSADF Test Critical Values	t-statistic	P-value
NGX_Insurance	2.068710	5.412893	0.0000
NGX_Pension	2.062227	4.019567	0.0000
NGX_Banking	2.068710	3.863302	0.0000
NGX_ASEM	2.143164	5.060311	0.0000

Source: E-view Output 10.0

According to the following results in Table 4.2, the NGX_Insurance t statistic assumes 5.412893, which easily exceeds the critical level of 2.068710. With the t statistic value at 5% significance level being greater than this, the analysis concludes that there are bubbles in the NGX_Insurance index in the period under study. Moreover, the p value of p-dickey fuller 0.0000 accompanying our test results in generalisation (supremum augmented Dickey Fullr) indicates that the p value is less than 5 percent, also strengthening the existence of the bubbles of the NGX_Insurance index at the period we are reporting.

Similarly, for NGX_Pension, the value of t statistic is 4.019567 which again exceeds its corresponding critical value 2.062227. As the statistic for the 5 per cent level of significance is higher than the critical benchmark, the study concludes that the bubbles are present in the NGX_Pension index across the timeframe reviewed. In line with this finding, the determined p-value (0.0000) through the GSADF test is well below the significance level of 5%, which confirms the existence of the bubbles in the NGX_Pension index for the period investigated.

The t statistic of NGX_Banking is 3.863302 which is higher than its critical level of 2.068710. As the t statistic value at a 5% significance level overpowers the critical value, the study confirms that bubbles in NGX_Banking indeed exist in the concerned period. Accordingly, the result of the p-value (0.0000) with the GSADF test is that NGX_Banking index shows a bubble behaviour over the investigated period since its position is below the 5% level of significance.

From Table 4.2, the t statistic of NGX_ASEM is found to be 5.060311 which is higher than the t's critical value of 2.143164. Since the statistic at 5% significance level surpasses the critical value, the study confirmed the existence of bubble in NGX_ASEM index in the period under study. Accordingly, the p-values (0.0000) for the GSADF test support that the NGX_ASEM index has activity with bubble over the studied period, as it is less than the threshold of 5 percent significance.

For consistency and robustness, for backwards supremum augmented Dickey-Fuller (BSADF) date-stamping test is implemented in the study. Following the framework of Philips et al. (2015), the condition for the existence of bubbles is that the supremum augmented Dickey-Fuller statistic should be above the critical values sequence for at least 2 consecutive months. Thus, we will have graphical illustrations in this study as follows:

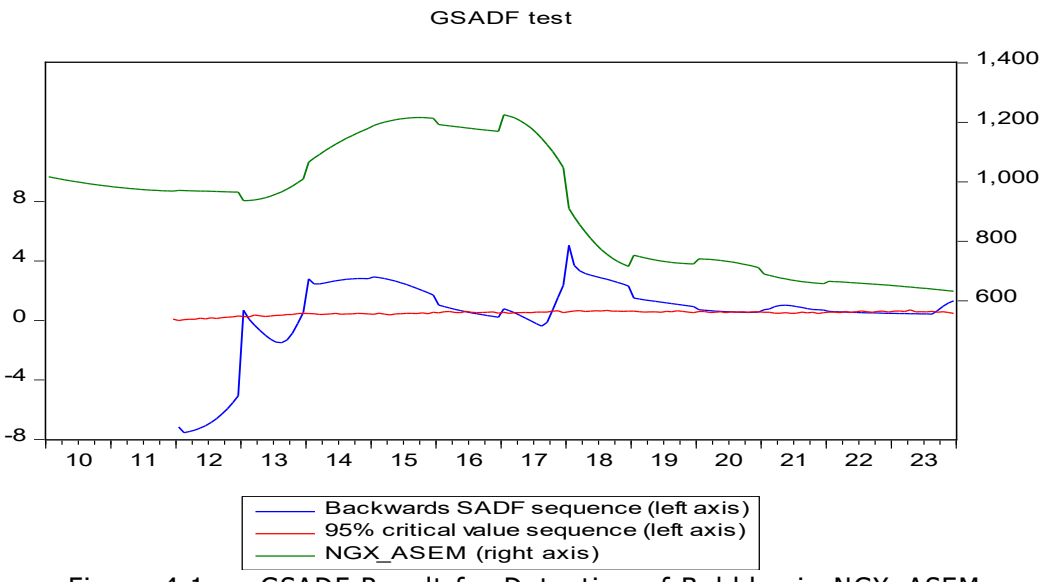

Figure 4.1: GSADF Result for Detection of Bubbles in NGX_ASEM

The analysis indicates the existence of multiple bubbles in the NGX_ASEM during the time periods of December 2013 to March 2016 and October 2017 to December 2019. Since the backward supremum augmented Dickey-Fuller line consistently remains above the 95% critical value sequence for more than two months, the graphical representation confirms the existence of multiple bubbles in the NGX_ASEM.

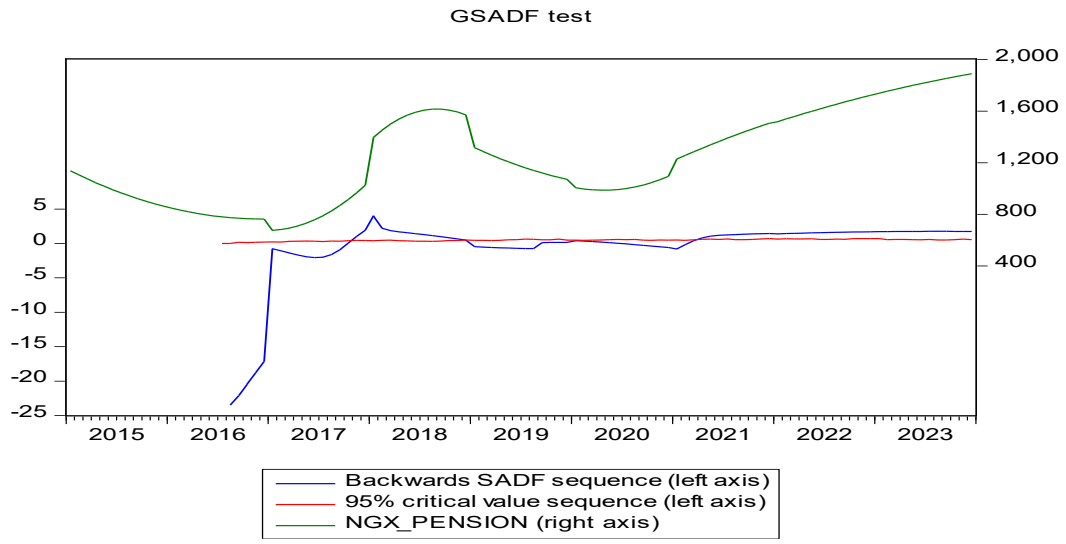

Figure 4.2: GSADF Result for NGX_Pension

The analysis indicates the existence of multiple bubbles in the NGX_Pension during the time frame from July 2017 to March 2018 and June 2020 to December 2023. The presence of multiple bubbles in the NGX_Pension is supported by the consistent observation that the backwards supremum augmented Dickey-Fuller line remains above the 95% critical value sequence for more than two months.

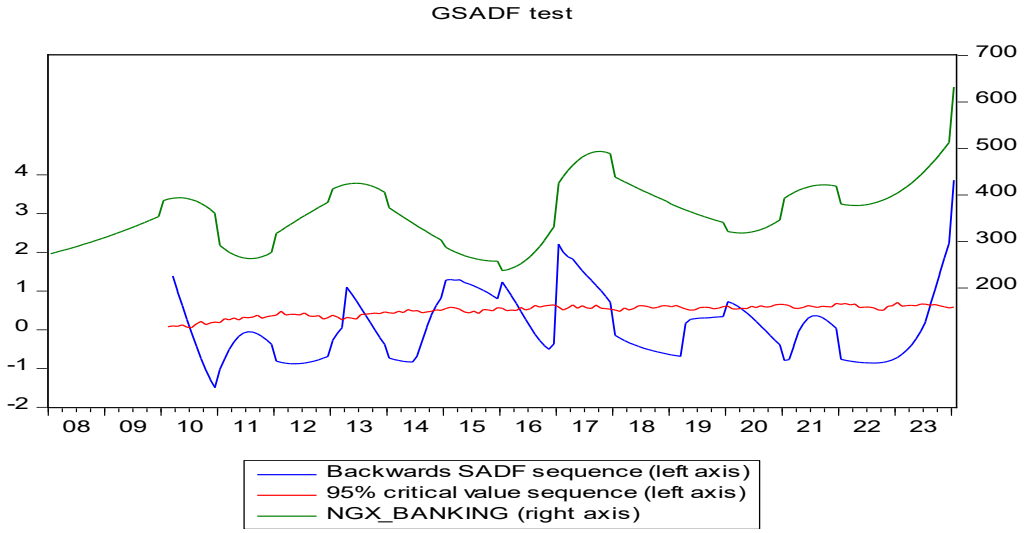

Figure 4.3: GSADF Result for NGX_Banking

The result reveals that the presence of multiple bubbles in the NGX_Banking for the periods March 2010 to June 2010, December 2014 to April 2016, September 2016 to November 2017, and June 2023 to December 2023. Since backwards supremum augmented Dickey-Fuller line lies above the 95% critical value sequence for more than two months consistently, the graphical representation upholds the presence of multiple bubbles in the NGX_Banking.

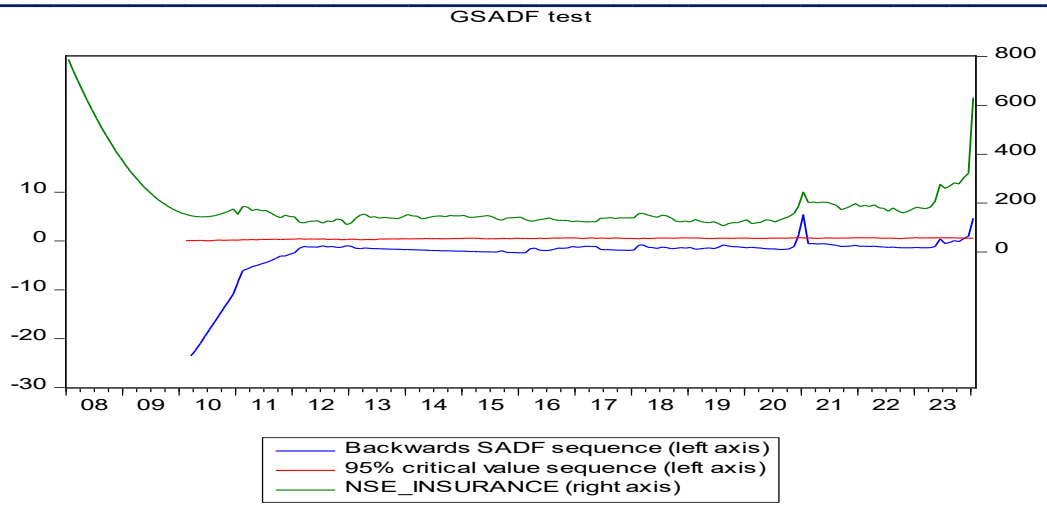

Figure 4.4: GSADF Result for NGX_Insurance

The analysis indicates that there were instances of bubbles in the NGX_Insurance during the time periods of April 2020 to May 2020 and June 2023 to December 2023. Since the augmented Dickey-Fuller line consistently remains above the 95% critical value sequence for more than two months, the graphical representation confirms that there are bubbles in NGX_Insurance.

4.2 DISCUSSION OF FINDINGS

4.2.1 NGX_Banking

Based on the results presented in Table 4.2 and Figure 4.5, it can be seen that a variety of bubble episodes continued to exist within NGX_Banking. These episodes occurred during different time periods - March 2010 to June 2010, December 2014 to April 2016 and September 2016 to November 2017. The March-June 2010 bubble can be linked to the contagion of the 2007/2008 global financial crisis, of their own origin from the United States sub-prime mortgage market. The resulting spill-over situation resulted in overstocking of the market as stocks were accumulated in excess, inciting foreign investors to sell stocks in preference to cash repatriation. This erosion of capital bases and asset values are evidenced in the works of Igbinovia and Igbinovia (2019); Sunday and Olulu-Briggs (2021), and Asekome and Agbonkhese (2015). The latter bubbles, in the period extending from December 2014 to April 2016 and September 2016 to November 2017, could be explained by the Central Bank of Nigeria's adoption of electronic transfer platforms such as m-cash, e-billspay, etc., Remita, Central pay and the Nigeria Inter-bank Settlement System, as well as efforts of biometric registrations for the banks. Noise-trading since then reinforced confidence in the sector and index prices increased rapidly without any underpinning fundamental reason. The phenomenon whereby educated investors draw imitators - a type of herd behaviour as identified by Kindleberger (1978) and Xiong and Yu (2011) - fed into the bubble. NGX_Banking's failure to weather these cycles is consistent with the storey promoted by the Monetary Policy Committee of the Central Bank of Nigeria (2017). Moreover, Igbinovia and Igbinovia (2019), and Iliyasu et al. (2021, 2020) present occurrences of bubble phenomena, while occurrences of bubble phenomena are not reported in the Nigerian Exchange Group by Iliyasu and Saba (2019).

4.2.2 NGX_ASEM

In particular, the anomalous bubbles found in NGX_ASEM had occurred between December 2013 and March 2016 and again between October 2017 and December 2019. During the former interval there was unprecedented growth in market capitalisation on the Alternate Securities Market, due to a stampede of new investors who picked particular stocks based on the knowledge of others, ie. a classic example of the herding effect mentioned by Kindleberger (1978). This speculative inflow was short-lived with a quick collapse after the 2015 elections, changes in the political climate as well as noise trading. The ensuing decline led to the devaluation of the naira to US dollar, reduction of foreign reserves and even led to insurgency dynamics (Proshare, 2015). The results align with the findings on bubble genesis by Asekome and Agbonkhese (2015), Aigbovo, Ozekhome, and Isibor (2017), and Olulu-Briggs and Sunday (2023), which suggest the importance of non-financial variables like political volatility and investor overconfidence in the genesis of bubbles. This is in contrast to the findings of Iliyasu and Saba (2019) who do not find any evidence of bubbles in the Nigerian Exchange Group with regard to broader market.

4.2.3 NGX_Pension

The data of Table 4.2 and Figure 4.4 show that there is a bubble in NGX_Pension from July 2017 to March 2018. This period saw a rapid increase in the value of market capitalisation with no real underpinnings. Cognitive biases, which is a failure of investors in selecting stocks without thorough understanding of macro-economic situation, intensified the price boom phenomenon - irrational exuberance reading in scholarship of Kindleberger (1978) and Xiong & Yu (2011). As the bubble decreased, the market capital of the NGXPension decreased greatly exposing the weakness of panic driven asset price swings. These remarks are consistent with the Monetary Policy Committee's characterization of the bubble (2017) and the conclusions of Igbinovia and Igbinovia (2019), Iliyasu et al. (2021) and Iliyasu et al. (2020). On the other hand, according to Iliyasu and Saba (2019), there is no bubble formation in the Nigerian Exchange Group.

4.2.4 NGX_Insurance

Table 4.2 and Figure 4.4 document components of bubble activity in NGX_Insurance in April 2020 to May 2020. The significant increase in market capitalisation has seemed to have been the result mostly of speculative behaviour on the part of investors. Cognitive predispositions, in which investors went for stocks when there was no full awareness of systemic dynamics contributed to the prices in increase - a case of this herd behaviour was identified by Kindleberger (1978). The bubble's sudden burst is timely with the outbreak of the covid - 19 pandemic that caused a global market contraction and consequent mass exodus of investment capital from Nigerian exchanges. This episode is consistent with those by Igbinovia and Igbinovia (2019), Iliyasu et al. (2021) and Iliyasu et al. (2020). It is again contradicted by the position taken by Iliyasu and Saba (2019) which has no bubble manifestation in the Nigerian Exchange Group.

4.3 Limitations of the Study

The Central Bank of Nigeria and Nigerian Exchange Group provide data for NGX_ASEM and NGX_Pension starting from 2010 and 2015 respectively. Studies with longer horizons are usually more reliable for predictions. Accordingly, although the present study groups are given statistical robustness, the inherent uncertainties surely will be reduced as the number of observations accumulates.

5.0 CONCLUSION AND RECOMMENDATIONS

This research examines the existence of financial sector bubbles in the Nigerian Exchange Group by analysing the monthly data for January 2008 - 2023. The four indices studied, which are NGX Pension, NGX Banking, NGX ASEM and NGX Insurance, were analysed using the descriptive statistics and a Generalised backward supremum augmented Dickey-Fuller dating staining technique at 95 per cent level of confidence. The evidence tells us of recurrent presence of multiple bubbles across all the selected financial sectors.

Based on these results, the following are the recommendations:

i. The Securities and Exchange Commission of Nigeria should increase regulatory supervision, especially crack down on regulations governing the speculative business in the market. A better regulatory environment would be expected to reduce over-reliance on risk and prevent future bubbles.

ii. The federal government of Nigeria should contemplate direct market interventions where the appropriate, such as asset acquisition to stabilise prices or liquidity provision to forestall market collapse.

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