WHAT HAVE WE LEARNT FROM MODELLING STOCK RETURNS IN NIGERIA: HIGGLEDY-PIGGLEDY?

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SUMMARY OF PRESENTER'S BIODATA

Professor Shehu Usman Rano Aliyu was born in Rano Town, Kano State on 21st June, 1967. He attended Rano Model Primary School and thereafter gained admission into Government Secondary School Rano where he emerged as the Best Final Year Student in Commercial Subjects Class in 1985. He earned his Bachelor of Science (B.Sc.) Degree in Economics, Second-Class Upper Division from Bayero University in 1990, Master of Science (M.Sc.) Degree in Economics from University of Ibadan, Nigeria in 1995 and Doctor of Philosophy (PhD) Degree in Economics in 2002 from Bayero University Kano. Professor Shehu Rano joined Bayero University Kano in 1992 as a Graduate Assistant and rose to the rank of Professor in October, 2009.

Professor Shehu Rano is biased in Financial Economics, Monetary Economics, Econometrics, Islamic Economics and Finance. He has supervised over twenty (20) M.Sc. and PhD students and numerous Postgraduate Diploma and Professional Masters' degree students in Banking and Finance as well as in Health Economics. Professor Shehu Rano has over forty (40) publications in conventional Economics as well as over twenty (20) others in Islamic Banking and Finance. These comprise fourteen (14) books and over forty (40) articles published in reputable local and international journals. Among these are the first and second editions of the textbook: *Introduction to Modern Microeconomics*, co-edited: *Book of Readings in Islamic Economics (2014)*, *Book of Readings in Islamic Banking and Finance (2014)*, Bayero International Journal of Islamic Finance (BIJIF) for 2014 and 2015, two editions of International Conference Proceedings in Islamic Banking and Finance held in 2014 and 2015, a text on *Introduction to Islamic Banking and Finance* and two editions of Proceedings of the 55th and 56th Nigerian Economic Society (NES) National Conferences held in 2014 and 2015, respectively.

Professor Shehu Rano served as a Conference-chair of local and international conferences, chaired numerous technical paper sessions and attended well over forty conferences within and outside Nigeria. Notably, he attended two conferences consecutively organized by the Centre for the Study of African Economies (CSAE), the Oxford University, United Kingdom in 2010 and 2011. Others include but not limited to: the AGBA Annual Conference in Manama, Bahrain, 2008; AGBA Annual Conference in Malaysia, 2009; the Society for Interdisciplinary Business Research (SIBR) Conference in Malaysia, 2013; the WASET Annual Conference in Malaysia,

2014 and the International Congress on Islamic Economics and Finance (ICISEF) in Sakarya, Turkey, 2015.

Professor Shehu Rano held various departmental, faculty and university administrative responsibilities/positions. He was the Pioneer Coordinator of the Postgraduate Diploma in Banking and Finance (PGDBF), Masters in Banking and Finance (MBF), Deputy Dean of Faculty of Social and Management Sciences (FSMS) and Deputy Dean of School of Postgraduate Studies (SPS), Bayero University Kano. As Visiting Scholar on a one-year Sabbatical to the Central Bank of Nigeria (CBN) in 2008/2009, he published six research articles and presented research seminars. As Visiting Scholar to the African Economic Research Consortium (AERC) in Nairobi, Kenya, he taught Managerial Economics in the M.Sc. Programme in 2010 and 2011 sessions, respectively. As pioneer Director of the International Institute of Islamic Banking and Finance (IIIBF) between 2012 and 2016, the Institute effectively ran three postgraduate programmes, established collaborations and linkages, organized international conferences and published six books/conference proceedings. As pioneer Dean of the School of Postgraduate Studies at the Al-Qalam University Katsina between 2016/2017 (on Sabbatical), he developed a Maiden General Regulations for Postgraduate Studies, organized a 3-Day Workshop on Imperatives of Advancing Postgraduate Education in Nigeria and promptly edited and published the Workshop Proceedings in May, 2017.

Professor Shehu Rano has served as external examiner in seven (7) universities and polytechnics and conducted numerous oral defences of M.Sc. Dissertations and PhD Theses. He has also served as an external assessor for the promotion of fifteen (15) Associate Professors and Professors across seven (7) universities in Nigeria. He also participated in the teaching and assessment of thirty-three (33) doctoral students under the Bayero University Kano-Universiti Utara Malaysia Collaborative PhD programme.

In the area of community service, Prof. Shehu Rano served on numerous non-university committees and holds membership of many professional organizations: Member and Resource Person, Kano State Committee on 2005 National Political Reform Conference (2005); Council Member, Kano State College of Arts and Remedial Studies (CAS) (2005-2007); Council Member, Nigeria Economic Society (NES) (2013-2017); Member, Macroeconomic Framework Technical Team on Nigeria's Vision 20:2020 (2009); Member, Committee for the creation of Tiga State

from the present Kano State (2009-2015), Consultant, Nigeria Governors' Forum (NGF) (2009-2015 & 2020); Chairman as well as Member to numerous Accreditation and Resource Verification exercises for undergraduate and postgraduate programmes organized by the National Universities Commission (NUC); and Member, TETFUND's Technical Advisory Committee on Impact Assessment (2019-2020). Member, Royal Economic Society (RES) (2019-2020).

Professor Shehu Rano continues to serve as member of editorial board and or reviewer of a number of reputable journals including: Member, Editorial Board, Nigerian Journal of Securities Market, Securities and Exchange Commission (SEC); Member, Editorial Advisory Board, CBN's Economic and Financial Review; Reviewer, NES's Nigerian Journal of Economics and Social Studies (NJESS); CBN's Journal of Applied Statistics; Reviewer, the West African Journal of Monetary and Economic Integration, West African Monetary Institute (WAMI), Ghana; Reviewer, Journal of Applied Financial Economics, Department of Economics, Warwick University, UK; and Reviewer, Bayero International Journal of Islamic Finance (BIJIF), International Institute of Islamic banking and Finance (IIIBF), Bayero University, Kano.

In the course of his academic pursuit, he has received numerous awards:

- Best Final Year Student Prize in Commercial Subjects Class at the Government Secondary School Rano in September, 1985;
- 2010 Academy for Global Business Advancement (AGBA)
- Distinguished Scholar Award at Putrajaya, Malaysia (2010);
- Distinguished Service Merit Award by the Rano, Kibiya and Bunkure NCE/DLS Student Learning Centre (2013);
- Award of Excellence presented by the International Institute of Islamic Banking and Finance, Bayero University Kano (2016)
- Nigeria Islamic Leadership Award presented by the International Institute of Islamic Banking and Finance, Bayero University Kano (2019).

Professor Shehu Rano is married to Maryam Umar and Asmau Umar. He is blessed with seven (7) children: Muhammad, Aisha, Fatima, Ibrahim, Zainab and Al-Hassan and Al-Hussain.

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All praises are to Almighty Allah *Subhanahu Wata'ala*, the Beneficent, the Merciful, the Mighty and the Wise, who taught with the pen, what man knew not. May His infinite blessings and mercy continue to be on His Most Beloved Servant and Noble Messenger, Muhammad *Sallallahu Alaihi Wassallam*. I thank the Almighty for making the presentation of this Inaugural Lecture possible.

Next, I wish to express my deep and sincere gratitude to my parents for their steadfastness, despite limited means, that I must be educated. I profoundly thank you for your excellent parental upbringing, generosity, love and care, especially during my early days in the primary school. May the Almighty Allah have mercy on the soul of my late father and continue to grant maximum health and long life to my beloved mother, ameen.

I would like to thank my colleagues in the Department for their brotherly support and understanding over the last two decades. I am particularly indebted to Professor Ibrahim Ahmad Kiyawa, Professor Isiaka Alimi Pedro and Professor Binta Tijjani Jibril who, among others, taught me and continue to be my focal point after joining the Department. I also wish to acknowledge and appreciate my erudite Applied Econometrics and Development Economics lecturers, though no longer with Bayero University Kano; Malam Sabo Bello and Dr. Shehu Yahaya, respectively. I am grateful to all former Heads of Department, staff and students.

My appreciation goes to my PhD mates; Professor Kabiru Dandago, Professor Garba Sheka and Professor Bilyaminu Idris, and my dutiful Deputy Directors at the International Institute of Islamic Banking and Finance; Professor Nasir A. Ahmad, Professor Mansur Idris and Professor Kabir Tahir. Others include Mal. Adamu Umar, Dr. Farida Shehu and Dr. Aliyu Dahiru Muhammad. I will equally not forget my diametric yet inseparable friend, Dr. Aminu Aliyu, my asymmetric senior brother, Professor Badayi M. Sani and my very close students and co-authors as well - Dr. Sani Bawa, Dr. Abubakar Aminu Wambai and Dr. Nafiu Bashir Abdul-Salam. Also, I sincerely appreciate Dr. Umar N. Bida for his immeasurable assistance in supplying me with all the necessary data for the empirical analysis.

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Alh. Bako Haruna Kumurya have been very inspiring. As I deliver this Inaugural Lecture, I feel the vacuum left by my late twin-Professor Shafi'u Mustapha, may his gentle soul rest in peace. Late Alh. Ma'aji Ali, late Alh. Lawan Saji, Rtd. Justice Wada Umar, Alh. Sani Haruna have all been very fatherly. Above all, the late Emir of Rano, His Royal Highness, Alh. Tafida Abubakar Ila, May the Almighty Allah grant him eternal peace, was a true father and visionary ruler.

Last and by no means the least, I most sincerely express my profound gratitude to my family. All through the rough and uneven roads, they have always been there for me as a great source of joy. My dearest brothers: Salisu, Umar, Ahmad (late) Dahiru, Ubale whom I grew up to love, respect, cherish and depend on through my journey in life so far. The great family of Alh. Muhammad Inuwa along with my auntie, Hajiya Innawuro, have been a great source of succour for me. I hold, in high esteem, the family of late Hajiya Saratu Mohammed, may the Almighty Allah grant her soul eternal rest, ameen. My family friends: Alh. Ali S. Fane, Engr. Kawu, Engr. Marwan, Arch. Shehu Usman, Alh. Muktar Danbatta, Alh. Dauda Atafi, Alh. Aliyu Ibrahim Musawa, have metamorphosed into my extended family and have added sweet flavour to my struggle in life.

Finally, I thank the organizing committee and the august audience that have spared their time to attend this Inaugural Lecture.

> *Wa huwallahu la ila illahuwa, lahul hamdu fil ula wal akhira, wa lahul hukmu wa ilaihi turja'un.* "And He is Allah, there is no god but He! All praise is due to Him in this (life) and hereafter, and His is the judgment, and to Him you shall be brought back." (*Suratul Qasas*-70).

WHAT HAVE WE LEARNT FROM MODELLING STOCK RETURNS IN NIGERIA: HIGGLEDY-PIGGLEDY?

PREAMBLE

The stock market simply trades in long-term investible resources but it means so many things to many people. The accountant, inching more closely, analyses the determinants of stock valuation and dividend policy while the business administrator ventures into matters pertaining to corporate governance structure, its ambiance with corporate existence and performance. The mathematician develops complex models to crack it and unwittingly, makes life miserable for the mathematically-aversed economist as well. The stockbroker and legal practitioner, though not well versed in finance, feed fat on the novice investors' fortunes. The economists, from a safe distance, models it and charts a course for investors and regulators. The regulators, like the Securities and Exchange Commission (SEC) and the Nigerian Stock Exchange (NSE) in Nigeria, set a level playing ground and sparsely, like the electrical engineers, employ a circuit breaker to dampen upheavals that could throw the market overboard. The Solicitors inventively nurture litigations and fruitage on the investors' windfall. The extreme risk-seekers stand between the thin and delicate line of extreme affluence/wealth and suicide. The risk averse folks, however, abhor the market.

In itself, stock market serves as a buffer zone for fund-starved business entities and governments, a haven for not-so-holy funds and a barometer of segregation of firms into listed, unlisted and delisted entities. Its trading options; the call and put options, provide insurance or protection to buyers and sellers against changes in the price of an underlying asset, respectively. Among other indicators, it is a gauge for adjudging the health of an economy. When the economy is booming it becomes bullish and bearish when it is sliding. It, though less often, counter-intuitively, moves in opposite direction with economic performance. Notwithstanding, it is vulnerable to policy misadventures; monetary, fiscal, exchange rate, trade policies and responds to domestic conditions of monumental proportions; elections, recession, insecurity, corruption and oil price dynamics–albeit and external factor, especially for a mono-cultural economy like that of Nigeria. Further, it is responsive to major global predicaments like the 2007 US's mortgage crisis, the 2014/15 oil price slowdown, and thus, susceptible to spillover effects and contagion in reaction to global events like the Covid-19.

I. INTRODUCTION

General Background

Stock market, especially in small economies, plays a very vital role in mobilizing economic resources within and from outside the economy to achieve greater and better economic potentials. The market serves as an important conduit through which funds flow from individuals and corporate bodies across the globe to investors residing in a particular economy. As a barometer of market performance, the All-Share Index (ASI) measures the average value of share prices of all traded stocks in a given market. Ultimately, the index is influenced by various variables such as inflation, exchange rate, interest rate and industrial production [73]. Although higher stock returns, positive changes in ASI over time, imply profitability by firms and other corporate bodies, however, returns volatility breeds uncertainty and impairs smooth stock market operations. An unexpected increase in volatility today, for instance, leads to an upward revision of future expected volatility and risk premium which further leads to discounting of future expected cash flows at an increased rate which results in lower stock prices or negative returns today [169]. Over the years, modelling stock returns has taken different dimensions, each yielding significant insights into stock returns behaviour.

First, evidence establishes a robust link between overall health of an economy in terms of low inflation, stable exchange rates and unconditional market volatility [67]. Rising inflation reduces purchasing power of goods and services, raises input prices, lowers profit and slows down the economy. For instance, evidence of a strong impact of inflation on time varying volatility for stock market returns in Toronto stock exchange (TSE) and Istanbul stock exchange (ISE) was reported in the literature [189]. Further, periods of high inflation coincide with periods of heightened uncertainty about real economic growth and unusually high-risk aversion, both of which rationally raise equity yields [21]. Other related empirical studies on effect of inflation on stock returns and market volatility include: [118; 179; 99; 57; 67; 68; & 174]. Others in Nigeria include: [152; 154; 201; & 185].

Second, monetary policy as a potent stabilization tool seeks to achieve positive effect on macroeconomic aggregates; output, employment, prices, exchange rates, balance of payments, and stock market, among others. For this to happen, monetary authorities need to take into account responses of rational economic agents in the design and implementation of monetary policy. Thus, the success or otherwise of a given policy stance depends on how the agents perceive what objective government

seeks to achieve. The theoretical basis for this stems from the work of the New Classical Macroeconomics, the *Rational Expectation Hypothesis (REH),* in the early 1970s. The hypothesis [133] postulates that primarily, unanticipated monetary shocks influence real economic activity while the anticipated component, however, would be rationally taken into account by economic agents in their decision making on output and employment. In a way, the hypothesis supports the neutrality[1] of anticipated monetary shock. Early investigations using REH include: [32; & 189] and in the US [126]. Other empirical studies focusing on stock market response to monetary shocks include: [56; 173; 64; 25; 30; 114; 87; 93; 77; & 158].

Third, globalization breeds market interdependencies and intertwines domestic financial markets with their foreign counterparts cum competitors as well. The predicament heightens stock market price risks, market volatilities, asymmetries and leverage effects. These drive market comovements, spillover, contagion effects. Invariably, these are knitted into wider global events; recession, oil price and exchange rate shocks, global security and the like. Consequently, predicting swings in the stock market has been the focus of many studies. Evidences in the literature show that swings in assets returns tends to be higher during downside or "bear" market than during upside or "bull" market [25; and 41]. Equally, market correlations hover around major episodes of financial distress signalling contagion effect [122; 128; & 41]. Knowledge of these formations is quite useful not only to investors and regulators but to policymakers as well [71; & 172]. Knowing market dynamics, investors exploit profitable opportunities through optimal timing and rebalancing of portfolios for higher returns [182; 27; & 178]. Thus, assessing comovements of financial markets and vulnerabilities during financial crisis is germane to regulators [53; & 27].

Fourth, modelling market returns is not only swayed by the dynamics of both micro and macro domestic and external factors but by choice of modelling technique as well. Following the seminal work [96], modelling financial variables inter alia, stock returns, exploits not only non-linear models but incorporates the influence of economic variables into a Markov switching regime model as well. Often, financial time series especially stock prices go through episodes in which the behaviour of the

[1] The proponents of *neutrality* of money argued that a change in the stock of money affects only nominal variables in the economy such as prices, wages and exchange rates but exerts no effect on real (inflation-adjusted) variables, like employment, real GDP, and real consumption. The term was originally coined by [84], and then later by the Keynesian economists.

series seems to change quite dramatically in response to fundamental internal and external shocks. They are often characterized by at least two distinct regimes (*bull* and *bear* markets). In particular, evidence of volatility spillover between exchange rate and stock market in "turbulent" and "calm" periods using Markov switching method were reported in the emerging market economies, Japan and the US [81; 206; 212; & 106].

Fifth, stock market returns in the literature has also been modelled using political events; elections, referendum, membership of economic unions such as the EU, political revolution, threats of biological weapons, as predictor variables [148; 149; 175; 89; 112; 184; 142; 159; 33; 51; & 104]. Evidences show that politics and economy remain keenly intertwined [103], with presidential elections capable of affecting stock returns in a number of ways. Specifically, electioneering often results in huge spending [34], influence sustainability or otherwise of government policies and or regulatory environment [78; & 33], breeds uncertainty [31; 43; 138; 28; & 166], affects corporate governance [34; & 139], expectations or market sentiment [127; & 183], increase in price volatility [165] and the like. The period of 1999 to 2019, which marks the Fourth Republic in Nigeria provides a germane environment for analysis of effects of presidential elections on stock returns behaviour.

The foregoing background provides excerpts of evidences in the literature on the nature and direction of empirical inquiry and or what predictor variable(s) matter when modelling stock returns. Punctiliously, five dimensions were unmasked as follows: how inflation affects stock market performance, effects of monetary policy shocks on stock market returns and whether global financial interconnectedness exerts systematic spillover and contagion effects across global capital markets. Furthermore, effects of exchange rate on stock market returns under the *bear* and *bull* markets and an empirical enquiry on effects of political events on stock market returns were also unveiled. The next sub-section provides a brief background on the Nigerian Stock Exchange (NSE) market.

Background to the Nigerian Stock Exchange Market

The Nigerian Stock Exchange (NSE) was established in 1960 as the Lagos Stock Exchange and over the years, passed through a number of stages and challenging moments; the indigenization policy of 1977 which ushered its new name "the Nigerian Stock Exchange", regime of control/regulation until July, 1986, deregulation/post-deregulation and the banking sector consolidation between 2005 and 2007. Operations started officially on August 25, 1961 with a total of 19

securities listed. The NSE initially conducted its operations inside the Central Bank building with only four firms as market dealers; Inlaks, John Holt, C.T. Bowring & ICON (Investment Company of Nigeria) [190]. The volume for August, 1961, was about 80,500 pounds and it rose to about 250,000 pounds in September of the same year with bulk of the investments in government securities [191]. Thus, historical antecedents show that the NSE had passed through four distinct stages in the course of it developments as follows: the infancy stage which covered the period of 1960-1971, the indigenization stage which spanned between 1972-1980, the expansion stage between 1981-1985 and finally the deregulation cum post-deregulation stage from 1986 to date.[2] The last stage has been more endearing, albeit, turbulent as it encapsulates both the post-deregulation and banking sector consolidation in Nigeria.

The major actors in the Nigerian Stock Exchange are the Securities and Exchange Commission (SEC) which acts as the apex regulator and the NSE as a self-regulatory organization (SRO) which regulates all transactions on the Exchange. Others are the Central Bank of Nigeria (CBN), Federal Ministry of Finance (FMOF) and the market operators; issuing houses, stockbrokers, trustees, registrars, institutional and other private investors [161]. In particular, the SEC has mandate for surveillance over the Exchange to forestall breaches of market rules and to detect and deter unfair manipulations and trading practices.

The NSE formulated an All-Share Index in January 1984 (January 3, 1984 = 100) where only common stocks (ordinary shares) are included in the computation of the index. The index is value weighted and is computed daily. For instance, the highest value of ASI of 66,371.20 was recorded on March 3, 2008. The NSE was deregulated in 1993, hence, prices especially in the secondary market are determined by the forces of demand and supply while prices of new issues (primary market) are determined by issuing houses and stockbrokers based on valuation carried out. The market/quote prices, the ASI plus NSE 30 and a basket of five other sector indices-the NSE Consumer Goods index, NSE Banking index, NSE Insurance index, NSE Industrial index and NSE Oil/Gas index, are published daily in the Exchange's daily official list, the NSE CAPNET (an intranet facility). The data is also available in newspapers, and on the stock market page of the Reuters Electronic Contributor System. The NSE has been operating an Automated Trading System (ATS) since April 27, 1999 and in

[2] However, Tijjani, B. (2010). *Share valuation and stock market analysis in emerging markets: The case of Nigeria* cited evidences in the literature that supported existence of only three distinct development stages of the NSE.

2013, it launched its X-Gen, the next generation trading platform and catalyst for boosting trading in Africa.

The NSE is a member of the World Federation of Exchanges (WFE) member of the International Organization of Securities Commissions (IOSCO), the SIIA's Financial Information Service Division (FISD) and the Intermarket Surveillance Group (ISG) and a foundation member of the African Stock Exchanges Association (ASEA) [195]. On 31st October, 2013, the NSE joined the Sustainable Stock Exchanges Initiative (SSE) [200]. In 2018, the NSE launched the Corporate Governance Index (CGI) to track performance of companies that meet the most stringent corporate governance criteria while in 2019, it launched the Facts Behind the Sustainability Report (FBSR) to promote Environmental, Social and Governance (ESG) practice and reporting among others [194; & 196].

Presently, the NSE operates as a multi-asset Exchange with a total of 307 listed securities, 165 equities, 132 bonds, 10 Exchange Traded Funds (ETFs), and 53 memorandum listings with a total market capitalization of ₦25.9 trillion as at January 9, 2019 [196]. The next section presents a short review of the market indices and hands-on analysis on the NSE's daily ASI between January, 1998 and to April, 2020.

Trends in the Nigeria's Stock Exchange Market

The Nigeria stock exchange (NSE) market's performance had been uneven over the last two decades, particularly, since the 2008 global financial crisis. The market was badly hit by the spillover effect of the crisis as a result of massive withdrawal of funds by foreign institutional investors and investment banks. Evidences show that market capitalization (MC), for instance, fell from N15.3 trillion in the first quarter of 2008 to N7.53 trillion in the first week of November, 2008 and further down to N6.25 trillion in the second week of December, 2008. Value of stocks traded in the market declined drastically from N387.3 billion in February, 2008 to N161.0 billion in September, 2008 and to only N38.1 billion by end of November, 2008. Meanwhile, the All-Share Index (ASI) fell from 66,371.20 in the first quarter of 2008 to 27,958.25 in the second week of December, 2008. This further fell down to 18,897.54 and 4,677 number of deals. In June, 2010, the ASI and number of deals in the market heaved up to 25,422.79, and 7,473, respectively, while the MC stood at N2.36 trillion [11].

Second to the adverse effect of financial meltdown that affected the NSE was the 2016/2017 recession in Nigeria. Though the recession was caused by myriad of factors; sharp decline in crude oil prices, mounting government deficits, dwindling foreign reserves, rising inflation and daunting unemployment rates [45; 65; & 199], it

adversely effected the NSE's performance, that is, market indices. Well before the recession, the market saw a decline in the ASI from 34,657.15 in 2014 to 28,642.25 in 2015, a mammoth decline by -17.36%. In particular, the banking sector index fell by -23.59%. The ASI further went down by -6.17% in 2016 falling to 26,874.62. In the same vein, though the MC marginally increased by 0.71% between 2014 and 2015, it, however, declined by 4.76% to N16.19 trillion in 2016 [192; & 193].

The period of recession was followed by massive depreciation of the naira from N197=$1 in the interbank market to a whopping N305=$1 (58% depreciation) and exchanged, though transitorily, at N520=$1 (160% depreciation) in the parallel in January, 2017 [13]. Along with other fundamentals: external reserves, interest rate, inflation rate, broad money supply, the ASI mimicked their pattern and oscillated over the turbulent period. The economy eventually emerged out of the recession in the second quarter of 2017 [145] and the market indices; MC and ASI, rose by 41.6% and 42.3% in 2017 to N22.74trillion and 38,243.19 in 2017, respectively [193]. The developments, according to the NSE, followed stronger global economic condition, higher oil prices and increased domestic oil production. Further evidences from the floor of the NSE revealed that the ASI and MC fell negatively by -17.8% and -3.61% between 2017 and 2018, respectively, and while the ASI further dipped by -14.6%, the MC rose to 15.3% in 2019 [194; & 195].

Table 1: Summary Statistic of Daily and Monthly ASI and Stock Returns

Statistic	Daily ASI	Monthly ASI	Daily Returns	Monthly Returns
Mean	24066.43	25206.60	0.03817	0.849137
Median	23794.02	24980.20	-0.00020	0.117694
Maximum	66371.20	64848.70	12.4775	38.19779
Minimum	4792.030	4890.770	-10.364	-30.9530
Standard Deviation	13672.70	13100.24	1.07554	6.839753
Skewness	0.621315	0.40996	0.44230	0.257499
Kurtosis	3.135634	2.984012	17.7008	7.946243
Jarque-Bera	289.0858	7.201603	40388.1	263.7924
Probability	0.000000	0.027302	0.00000	0.000000
No. of Observations	4471	257	4469	256

Source: Researcher's computation using Daily and Monthly All Share Indices from the Nigerian Stock Exchange market from January, 1998 to April, 2019.

Table 1 presents summary statistics of the daily and monthly ASI returns from the Nigerian Stock Exchange market covering the period of January, 1998 to April, 2019. For comparison, monthly ASI and monthly returns were also computed. The means of the ASI, minimum and maximum values of both daily and monthly series mimic one another. However, market returns are higher in the monthly series though with higher uncertainty as implied by value of standard deviation. All the returns series show evidence of abnormal distribution, that is, skewness and kurtosis combined, but extreme risk is more apparent in the daily return series due to excess kurtosis which indicates strong evidence of fat tails otherwise known as leptokurtic distribution.

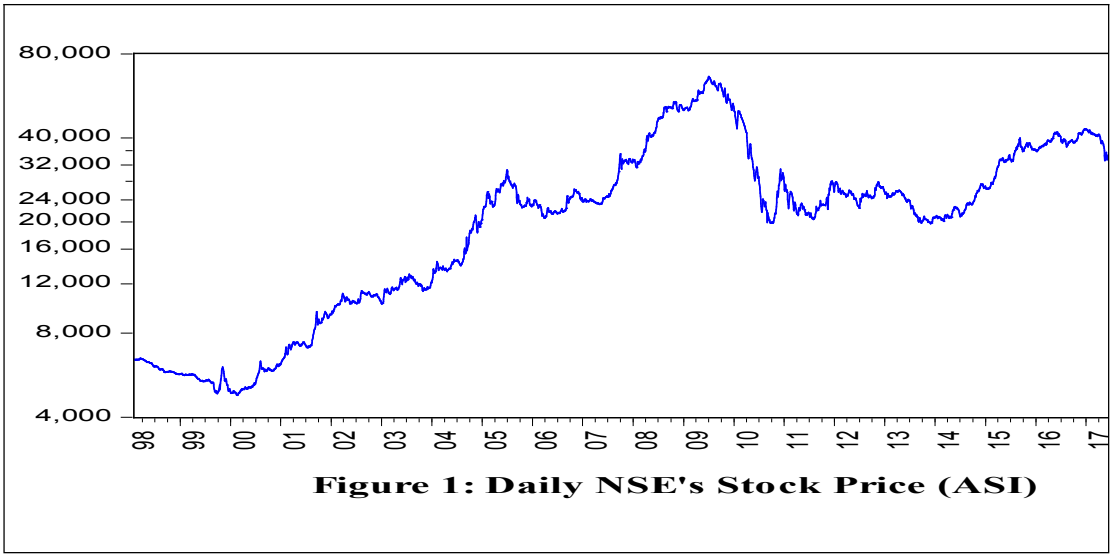


Figure 1: Daily NSE's Stock Price (ASI)

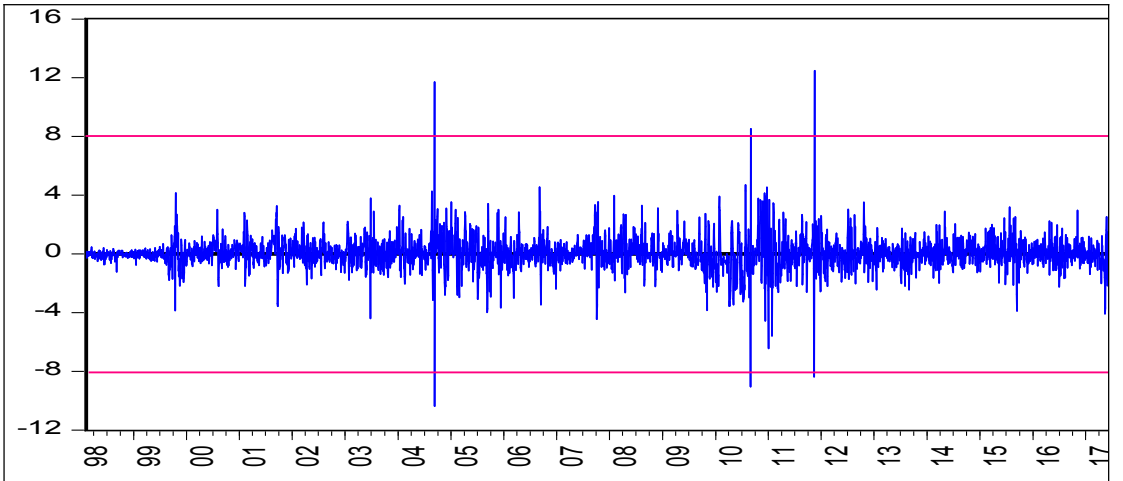


Figure 2: Daily NSE's Stock Returns

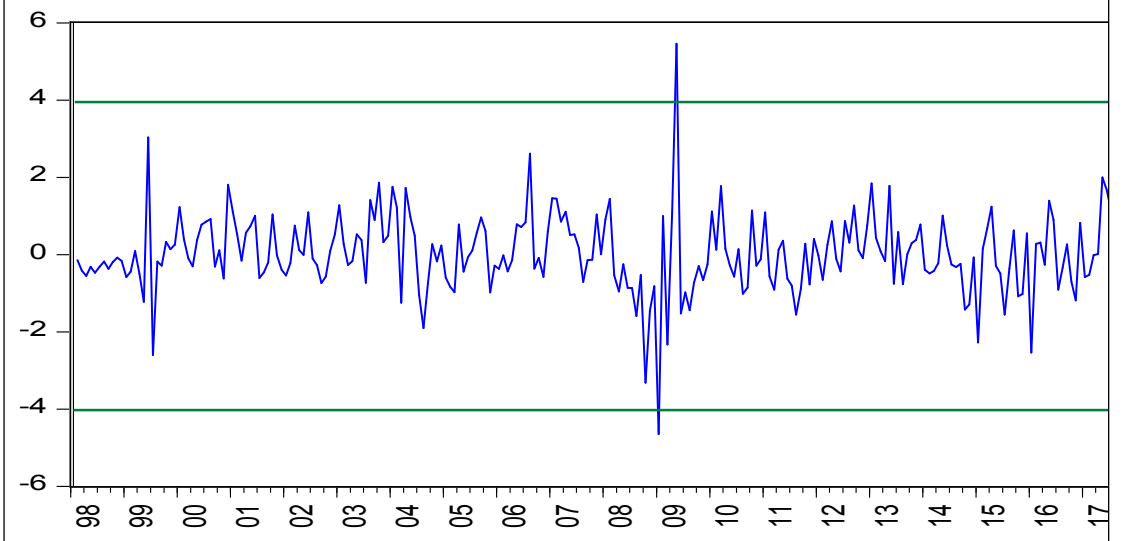


Figure 3: Monthly NSE's Stock Returns

Figure 1 depicts the daily ASI on the floor of the NSE which clearly shows evidence of a stochastic, otherwise a non-normal trend. To buttress the evidence fat fail phenomenon in the daily returns, Figure 2 depicts instances of extreme gains and losses in excess of ±8 in the daily market returns in the second quarters of 2004, 2010,

2011 and 2017. However, on a margin of only ±4, such appeared in the Q3 of 2008 as shown on Figure 3. Although a number of factors (global financial crisis, slowdown/rise in crude oil prices, monetary policy stance, political events, 2016/2017 recession) may have explained the extreme behaviour in the market in terms of both direction and magnitude of risks, it is pedestrian to ascribe the influence of any particular variable at this stage. Notwithstanding, the preliminary investigation suggests that modelling stock market dynamics require high frequency data as against aggregated one. These and more are what guided these empirical investigations that culminated into this inaugural paper.

Against this background, this inaugural paper entitled: "What have we learnt from modelling stock returns: Higgledy-piggledy?" summarizes research findings of five independent empirical studies in the field modelling of stock returns in Nigeria. These are: 'Does inflation impacts on stock returns and volatility?' [11], 'Reactions of stock market to monetary policy shocks during the global financial crisis in Nigeria' [12], and 'Financial spillovers in calm and turbulent periods' [14]. Others are: 'Economic regimes and stock market performance in Nigeria: Evidence from regime switching model' [13] and 'Do presidential elections affect stock market returns in Nigeria?' [15]. Essentially, we seek to unveil systematic and consistent learning curves that dovetail from the empirical findings. Present areas of congruencies with theoretical premises and established evidences or counter intuitiveness with established facts, else, higgledy-piggledy. The paper is structured into five sections. Following this section, section II presents literature review and methodological issues. Section III highlights the theoretical premises and section IV and V present empirical findings and conclusion and recommendations, respectively.

II. LITERATURE REVIEW AND METHODOLOGICAL ISSUES

Does Inflation Impact on Stock Returns and Volatility?

Theory postulates that nominal stock returns are positively (and even on a one-for-one basis) correlate with (expected or actual) inflation [130; & 94]. The postulation builds on the well-known Fisher's hypothesis in its *ex-ante* (actual inflation) form [79; & 80], which assumes that in the long-run, firms can increase their output prices in order to pass on the inflation to the customer [140; & 39]. Further, given that stocks are claims on physical assets, or "real" assets, nominal stock returns must also co-vary positively with actual inflation and this implies that stocks provide a good hedge against unexpected inflation [181].

On the other hand, stock prices are the reflector of various variables such as inflation, exchange rate, interest rate and industrial production [73]. Among the earlier studies in the US, [35; 109; 146; & 75] show that the relationship between stock returns and rate of inflation is negative in the U.S. and stated that the Fisher's effect does not hold in the stock market. Specifically, some studies reported positive/weak positive correlation between nominal stock price and inflation rate [39; 186; & 135]. The relationship between expected U.S. stock returns and expected rate of inflation is positive but weak in the short and long horizons [69].

Generally, there is a strong connect between overall health of the economy, low inflation and stable exchange rates, and unconditional market volatility [67]. For instance, inflation strongly impacted on time varying volatility of stock market returns in Toronto Stock Exchange (TSE) and Istanbul Stock Exchange (ISE) [177]. Equally, periods of high inflation coincide with periods of heightened uncertainty about real economic growth and unusually high-risk aversion, both of which rationally raise equity yields [21]. Other related empirical studies on effect of inflation on stock returns and market volatility include: [118; 179; 99; 57; 67; & 174].

Existence of a long run relationship between stock prices and consumer prices in six African markets support the long run relationship between stock prices and consumer prices particularly in Egypt, Nigeria and South Africa [8]. Also, inflation rate Granger causes stock returns in Nigeria and the latter may provide an effective hedge against inflation in Nigeria [155]. Using EGARCH and TARCH methodologies in the Kenyan stock market, evidences show that in addition to the leverage effect, exchange rate, interest rate and inflation rate, affect stock return volatility [153].

Afterwards, in line with the empirical findings of [8], investigation using VECM methodology confirms the existence of long run relationship between inflation and stock price index [152]. In addition, the results provide evidence in support of Fisher's effect in the short run and long run. However, using the same VECM approach, no evidence of long run relationship between stock returns, inflation and exchange rate was found in Nigeria [154]. In another development, inflation rate in Nigeria exerts a negative but weak impact on stock return [201], whereas no evidence of asymmetry was found in the stock returns series and that monthly CPI inflation does not significantly explain stock market return volatility in Nigeria [185].

The paper, in line with experiments in the literature, employs the GARCH (1,1) and Quadratic GARCH [180]. We estimated the two models using monthly data on all

share index (ASI) and inflation rates for the Nigerian Stock Exchange Market (NSE) and the Ghanaian Stock Exchange Market (GSE). The analysis covers the period of 1998M1 to 2010M5 and 1999M12 to 2010M5 for Nigeria and Ghana, respectively.

Reactions of Stock Market to Monetary Policy Shocks During the Global Financial Crisis in Nigeria

Investigation into the relationship between monetary policy and asset prices has attracted considerable attention among researchers and policymakers. Theory has identified the *stock market channel* as one of the conduits of monetary policy transmission [46]. Invariably, inflation induced by monetary expansion reduces the real value of the firms' assets which acts as a tax on capital stock. Meaning, reduction in the real value and quantum of dividends. Notwithstanding, the traditional interest rate channel was also equally investigated in the literature [23; 197; & 172].

Empirically, one-third of the changes in the equity prices are associated with news on monetary policy [72]. On average, a tightening (interest rate hike) of 50 basis points reduces US stock returns by about 3% and stock returns react more strongly when no change had been expected, when there is a directional change in the monetary policy stance and during periods of high market uncertainty [64]. Applying a model developed by [42], [24], found that a surprise increase in the MPR in the US decreases stock prices in three ways: decreases the expected future dividends, increases the future risk-free rate and increases the equity premium (above the risk-free rate) required to hold equities.

Evidence shows that monetary policy shocks especially during crisis can affect stock prices through direct and indirect ways [168]. A rise in the MPR, could lead to a fall in stock prices in the first instance and selling afterwards. A cut in the MPR during crisis leads to a larger-than-normal rise in expected future dividends, and hence a larger-than-normal rise in stock prices [141]. And when cuts are passed onto firms, the effect of policy on future profitability is weaker, hence policy changes during the crisis have smaller effect on stock prices. Again, policy announcements that involve keeping the rates lower for longer period during crisis may reduce the expected risk-free rate by more than is normally expected [141].

Economic agents' perception of policy also matters for monetary policy, a rise in the MPR, for instance, could be interpreted as the Monetary Policy Committee's (MPC) realization that the economy is growing faster than previously thought, which could boost expectations of future growth and confidence. In contrast, same could be

interpreted as the MPC's need to slow the growth in the economy in order to hit an inflation target, which could dent expectations of future growth and lower confidence [110]. Literature also posits that monetary environment affects investors' required returns [74; 111; & 37]. The US monetary environments (as well as their local monetary environment) affect not only the US stock returns, but also returns on foreign markets that hinge with the US as found in the stock returns of twelve OECD countries over the period 1956-1995 [54].

The impact of predicted money growth volatility, predicted real output volatility, predicted exchange rate volatility and predicted US stock market volatility was assessed on market volatility of Canada, Japan, United Kingdom and Germany markets. Findings show that only the US market volatility has a significant positive impact on the four countries' stock return volatility [52]. Equally, the Australian stock market volatility is directly influenced by the conditional volatility of interest rate and inflation and indirectly by money supply, industrial production and current account deficit [120]. Using a VAR methodology with real GDP, inflation, real M3 balances, short term interest rate, bond yield, and real stock prices, evidence reveals that a permanent positive monetary shock exerts a temporary positive effect on real stock prices in the Euro area [44]. Similarly, a prolonged period of high stock market volatility during the phase of economic growth is associated with an increase in money growth volatility [22].

In particular, evidence [76] shows that an unanticipated rise in policy rate by 1 percent causes a decline of around 5.6 percent in stock returns and this exceeds the typical estimates of 2.5 – 4 percent found in previous studies. Furthermore, monetary policy shocks exert significant impact on the conditional volatility of stock returns with the latter displaying a tent-shaped pattern, that is, abnormally low several hours before announcement—*calm-before-the-storm-effect,* increasing significantly during the announcement period, declining steadily while still remaining elevated after the announcement [131; 132; & 76]. Market returns in Pakistan are not only affected significantly by its own lag, but, by monetary policy via variations in the repo rates. An increase (decrease) in the repo rates, indicating a monetary policy tightening (expansionary) decreases (increases) the returns to the stock market and this implies that the monetary policy has a positive impact on the volatility of the stock market [151; 2; & 160]. Other studies include: [87; 1; 107; 93; 156; 3; & 77]. Recently, evidence shows that money supply and exchange rate fluctuations exert significant positive effect on stock market price movement, and an insignificant negative interest rate effect in Nigeria [158].

Methodologically, evidences from the empirical review show that the most widely applied models are the generalized autoregressive conditional heteroskedasticity (GARCH) models that helps to describe the unique features of financial markets; volatility clustering, leptokurtic and asymmetry of the stock return distribution. Derived from the work by [66], autoregressive conditional heteroscedasticity (ARCH) model explains the effects of previous error terms to the conditional variance of current term. Despite the extension by [36] to generalized autoregressive conditional heteroscedasticity (GARCH), yet the latter model cannot capture the leverage or asymmetry effect, hence the introduction of an exponential GARCH by [147]. Our investigation applied the EGARCH model which incorporates the asymmetry effect and specifies the conditional variance in the logarithmic form. Further, in line with [18; 10; & 114], the paper disaggregates the monetary policy variables; M1, M2 and MPR, into trend (anticipated) and cyclical (unanticipated) components using the Hodrick-Prescott filter (HP).

Financial Spill-overs in Calm and Turbulent Periods

International investment flows and capital movements characterized by financial integration-cum-globalization continue to shape the global financial landscape. As a result, this dictates the pattern of correlations among assets denominated in different currencies exchanged in geographically-separated markets. Evidences in the literature show high persistence and heteroskedasticity of stock market returns as well as volatility switches, contagion, market dependence and independence during business-cycles [137; 179; 171; 55; 53; 63; 90; 59; 178; 144; & 203).

Spillover effects in markets occur when shocks from one market (originator or dominant market) trigger changes in other markets [88; 82; 41; & 211]. Contagion effect, the possibility of widespread of crisis or boom, drives correlation coefficient among international stock markets to extremely high value (unity) and reduces the potential of portfolio diversification [95]. Monsoonal effect arises when coherence of financial markets with an exogenous event triggers several countries at the same time into crises due to high interdependencies national [117; & 198]. Due to presence of business cycles, extreme events of recessions and expansions invariably characterize the financial markets into phenomenon of bear and bull markets, otherwise calm and turbulent periods. [16]. Nonlinear time series modelling is typically designed to accommodate these features in the data, that is, models with recurring regimes [96].

In the empirical sphere, evidence of shock transmission originating from Hong Kong in 1997 was found to have no significant increase in the correlation coefficients of other main Asian markets albeit, some degree of interdependence [83]. However, the five Asian stock markets; Hong Kong, Singapore, Korea, Thailand and Malaysia, demonstrate plausible market characterizations of calm and turbulence over the long run with a spillover effect from the Hong Kong market to the Korean and Thailand markets, evidence of interdependence between Malaysia and Hong Kong markets and co-movement with the Singaporean market [88]. Furthermore, evidence using monthly data between 2000 and 2011 reveal strong and sudden upward shifts in volatility spillovers in Hong Kong, Europe and the United States stock markets during the global financial crisis [115]. The Chinese market show no significant correlation with other East Asian markets; Japan, Korea, and Taiwan but, in view of their exposure, Korea and Taiwan were affected more by financial crisis than China and Japan [211].

The asset universe of eleven worldwide assets (bonds and stocks) from the United States, United Kingdom, Europe, Emerging Markets, China, Japan and Switzerland, show that the CHs and the EUs assets depend, with a small but significant positive effect, on the US$, the European assets depend on the EURO among others [178]. A sample of most severely hit European countries by the 2007 US led financial crisis and the EU crisis; Greece, Ireland, Portugal, Italy, and Spain, inclusive of Germany and United States, reveal strong evidence of contagion effect. The contagion was not limited to the sampled countries but other countries in the zone at varying degrees [48]. Further, the US and some European Union countries financial markets show dramatic increase in interdependencies/contagion during the crisis [210].

Shocks transmission across international equity markets (USA, Japan, UK, France, Germany, and Canada) show persistence of high-volatility across all the market indices, contagion effect during turbulent periods and comovement of stock returns due to larger and more persistent macroeconomic disturbances [41]. In addition, the spillover effects between the US and the rest of the G7 stock markets – Canada, France, Germany, Japan, Italy and UK between January 1915 and February 2017 show evidence of risk spillover and while negative shock more rapidly affects the other markets than positive shock, negative shock originating from the other six countries have more profound negative effects on the US stock market than the one originating from the US' market [113].

Using a sample of emerging and developed markets, evidence of strong correlations/contagion was found in the latter markets as against the former and volatility spillovers are greater in comparison to cross-volatility spillovers for emerging markets [19]. Spillover effects and volatility transmission to and from the Brazil stock market during period of 2014-2016 show that the main source of volatility to Brazil is US monetary policy and while Brazil induces volatility to commodity markets, the US bonds market plays the role of an intermediary [58]. Evidence of one-way directional volatility spillover from the US S&P500 index to the Turkish's BIST100 index and volatility persistence for both markets emerged [164].

The main motivation for this investigation lies in the application of Markov regime-switching methodology that allows us to capture fat tails as well as other empirical properties of asset returns like contagion, comovements and stochastic volatilities. The investigation, in addition, applies asymmetric multivariate generalized autoregressive conditional heteroskedasticity model (AMGARCH) using both the Baba, Engle, Kraft & Krooner (BEKK) model and the Tse-Tsui Dynamic Conditional Correlation (DCC) model.

We employed monthly times series data[3] between 2010M1 and 2018M12 for a total number of six financial markets; the United States, Europe, Asia and Africa as follows: US – Dow Jones, UK – FTSE, Japan – NIKKEI 225, China – SHANGHAI COMPOSITE, South Africa – JSE and Nigeria – NSE.

Economic regimes and stock market performance in Nigeria: Evidence from regime switching model

Early studies on time series modelling for identifying regime shifts date back to six decades [170; 91; & 93]. The application of Markov chain process with shift in mean was credited [96; & 97] and shift in both mean and variance [101; & 136]. Markov Switching (MS) models capture regime shifts in the mean, variance and parameter of interest [60; 121; 108; & 124]. The MS model further assumes regime heteroskedasticity and time-varying transition probabilities [26].

Burgeoning empirical evidence in the US economy abound on the link between macro-financial variables as predictor variables and stock market under two regimes approach; turbulent and calm periods [208; 49; 50; & 17]. Further, on whether stock

[3] The author is grateful to Dr. Umar Ndako Bida of the Monetary Policy Department (MPD), Central Bank of Nigeria (CBN) for sourcing the data for this analysis and beyond.

returns correlate with the business cycle, excess returns were found to be more predictable during economic downturn and less predictable during economic upturn [212; and 7]. Further, stock returns, in a two-regime model, was also found to correlate with macro-financial variables [49; and 17].
In BRICS countries, stock returns and exchange rate evolve according to the *low volatility* (bear) and *high volatility* (bull) regimes and evidence from the Markov switching VAR models [205]. In Turkey, financial variables, credit default swaps and exchange rate volatility negatively affect the stock market performance in bear and bull markets [119] and in Malaysia as well [108].

Guided by the data characteristics and findings from previous empirical studies, the investigation applies the regime heteroskedastic Markov switching (RHMS) model, a multiple regime approach with exchange rate as a predictor variable. The data spanned over the period of the 4th January, 2010 to 30th June, 2017, a total of 1855 daily observations on the all share index (ASI) and the Naira/Dollar exchange rate.

Do Presidential Elections Affect Stock Market Returns in Nigeria?
Evidences abound on how political process affects economic activity stock market inclusive. Evidence in the 1970s in the US reveals that stock market returns show abnormal behaviour 17 weeks surrounding the election-day [148]. Investors are afraid of investing at the time when there is a likelihood of political and economic instability [31].

In the US, smaller cap stocks outperform their larger counterparts under democratic presidents [176; & 47], exhibit cyclical pattern [209], whereas no significant change was found in either of the stocks under both Democrats and Republican regimes [38] in the US. In another development, stock market performs better when Democrats are in control of the presidency than when the Republicans are in office [163; & 142]. Stock market participants in the US incorporate expectations about political change into stock prices before and adjust after election [61; & 150]. Further, market quality deteriorates in the months leading up to elections but improves afterwards [167]. Expectedly, government partisanship matters for specific industrial sector or firm profitability during an election period such as on defence and healthcare [165]. Though Trump's win plunged the US into uncertain future, positive reactions of abnormal return were found, hence, effects of political uncertainty on stock returns were mixed [40].

In Germany, stock market returns depend on the probability of a right- (left) leaning coalition winning the election [85; & 2010]. Similarly, the Brexit referendum on EU membership impacts on both the UK and German financial markets as uncertainty around the polling result increases [184]. Also, positive statements suggesting that a Grexit is less likely lead to higher returns whereas negative statements lower stock returns [102]. Generally, informal political volatility in the EU countries of Central and Eastern Europe negatively affects stock returns, while formal political institutions generate much higher financial volatility than changes in monetary policy [100].

In Africa, the Nairobi Stock Exchange (NSE) stock returns increased around general elections [134; & 139] whereas the magnitude of abnormal returns is greater in presidential elections held in less-free countries when an incumbent president loses [139]. Specifically, while the 2002 election positively affected the Nairobi stock exchange market, it negatively affected it during the 2007 election [123] and, to a great extent, negative or positive returns depends on the volatility of election environment [116]. The Tunisian Revolution impacted on volatility of major sectorial stock indices traded on the floor of the TSE [112]. Political uncertainties following the 2013 military coup had profound impact on most sectors of the Egyptian market, though with different degree of intensities [5]. Conventional equity markets of developed countries prove much more sensitive to political uncertainty than their Islamic counterparts [6].

In India, elections conducted between 1998 and 2014 show that maximum impact (positive or negative) was recorded in the short-term, diminished in the medium-term and further reduced in the long-term in comparison to the pre-election period [20]. In North Korea, nuclear tests exerted heterogeneous effects on South Korea's stock prices across industries and over time, especially in the banking industry, during the entire sample period [104].

Evidence on effect of election worldwide between 1982 and 2012 show that firm stock is less likely to crash during the election years but are more likely to crash during the post-election period [129]. Political uncertainty affects the supply of relevant information about firms in emerging markets [51].

In Nigeria, evidence reveals negative relationship between market returns and risk behaviour of selected companies and election announcement [159]. The 2011 presidential election wielded negative and significant impact on stock market performance while the 2015 presidential election exerted positive but insignificant

impact [162]. Specifically, evidences show that banking and petroleum sectors decreased before and increased after 1999 to 2015 elections [62].

Guided by the data characteristics and findings from previous studies [207; 29; 202; & 13], the investigation applies the regime heteroskedastic Markov switching (RHMS) model to identify possible occurrence of multiple regime behaviour in the Nigerian stock exchange market. We extended the conventional Hamilton's model with focus on one-time regime shift in the mean by allowing the mean and the variance to shift simultaneously across the regimes [121].

We computed daily stock returns from the all share index (ASI) of the Nigerian Stock Exchange (NSE) market. This covers a total of six (6) presidential elections held in Nigeria in 1999, 2003, 2007, 2011, 2015 and 2019 and a sample period of 5 months around each presidential election.

III. PREMISE

A premise is what forms the basis of a theory. It is a logical statement upon whose truth an argument is based. Accordingly, the investigations carried out were anchored on the following premises.

Does Inflation Impact on Stock Returns and Volatility?

Rising inflation reduces purchasing power of goods and services, raises input prices, lowers profit, raises market risk and slows down the economy. Expected inflation (*ex post*) either positively or negatively affects stock returns whereas unexpected inflation often positively affects stock returns. Invariably, greater stock returns volatility correlates with rising inflation.

Do Stock Market Returns React to Monetary Policy Shocks During the Global Financial Crisis in Nigeria?

The rational expectation hypothesis (REH) postulates that primarily, unanticipated monetary shocks influence real economic activity while the anticipated components, however, would be rationally taken into account by economic agents in their decision making on output and employment [143; & 133]. In other words, economic agents do not yield to established traditions but to surprises. Therefore, anticipated monetary stance during global financial crisis between 2008 and 2011 was not ineffective.

Financial Spillovers in Calm and Turbulent Periods

Globalization and advancement in information and communication technology combined have knitted the World's trade and financial centres into a global village. Financial integration gives rise to market interdependencies, volatility spillovers, market contagion and comovements. In view of these, market price of assets, equities and other financial variables, vary over time in unison or otherwise in response to major global episodes; oil price shocks, financial crisis, security, and the like. Thus, are the Nigerian economy in general and the stock market in particular overwhelmed by these predicaments?

Economic Regimes and Stock Market Performance in Nigeria: Evidence from Regime Switching Model

The link between stock market and foreign exchange market works through trade and capital flows. An investor holding foreign stocks is invariably exposed to exchange rate fluctuations. In essence, the correlation between exchange rates and equity returns can take any sign; however, theory suggests that foreign exchange and equity market returns should be negatively correlated [101].

Do Presidential Elections Affect Stock Market Returns in Nigeria?

The *political policy* theory holds that different political parties may have different preferences concerning their economic policy [9]. However, the *political business cycle* (PBC) theory argues that competitive elections within democracies could lead to unfavourable economic outcomes, such as a post-election recession or inflation [149; & 204]. The enquiry is premised on both theories.

IV. EMPIRICAL FINDINGS

Does Inflation Impact on Stock Returns and Volatility?

Preliminary investigations reveal positive stock returns in Nigeria and Ghana at 0.87% and 1.82%, respectively. the markets also reveal evidence of non-normal, leptokurtic distributions. Inflation rate was mild, though higher in Ghana.

We found strong evidence of volatility (GARCH term) of stock returns in Nigeria but weak in Ghana. Current volatility, for instance, is explained by approximately 60% of the previous period's (month) return volatility for Nigeria and only 31% in Ghana. Evidence further shows that new information arrival (ARCH term) into the markets has significant impact on predicting next month's stock market volatility. The

Nigeria's market, using the *Wald* test, has an explosive volatility, while the Ghanaian market displays mean reversion.

Further, evidence from the QGARCH model shows arrival of bad news increases future volatility than good news of the same magnitude for the NSE and while the opposite case holds for the GSE. The Nigeria's case supports the asymmetry hypothesis and in tune with evidences in the literature [177]. Volatility measure remains the same for Nigeria at about 60% whereas the same dropped to 24% in Ghana. However, both Nigeria and Ghana show evidence of explosive volatility in the QGARCH model. Diagnostic test statistics, the ARCH LM test and Ljung-Box suggest that the standardized squared residuals are serially uncorrelated and homoskedastic, respectively.

Impact of Inflation on Conditional Stock Market Volatility

We found strong evidence that lagged (previous period) inflation decreases conditional market volatility in Nigeria and increases it in Ghana. Alternatively, using a 3-month average inflation rate, findings affirm reveal strong positive effect of inflation on stock returns volatility in both Nigeria and Ghana. Thus, our findings support the premise that inflation heightens stock returns and situate within the empirical evidences in the literature [70; 125; 191; & 4]. That when prices in the domestic economy are uncertain, the volatility of nominal asset returns should reflect consumer price index volatility [179]. Again, diagnostic test statistics, the ARCH LM test and Ljung-Box, suggest that the standardized squared residuals are serially uncorrelated and homoskedastic, respectively and the Wald test indicates that two models are mean reverting with a persistence parameter each of $(\alpha + \beta) < 1$.

Reactions of Stock Market to Monetary Policy Shocks During the Global Financial Crisis in Nigeria

The investigation utilizes monthly data from January, 2007 to August 2011, thus, a total of 55 observations. The data portray evidence of non-normality in series and clear indication that the 2007 global financial crisis took its toll on the Nigeria's stock returns, both the mean and median were negative at -0.85 and -0.87, respectively. This is in line with traditional asset pricing theory which suggests that higher average returns either ways – negative or positive, implies larger risk exposure [188; & 187].

Evidence of Time-varying Volatility

Evidence from restricted GARCH(1,1) model reveals presence of ARCH and GARCH effects with the coefficients of information about volatility observed in the

previous period *alpha* and last period's forecast variance, *beta* being robustly significant and consistent. In addition, the *Wald* test indicates that volatility is quite persistent. The EGARCH (1,1) model leads with more robust and statistically significant coefficient of the ARCH effect as well as strong leverage (positive) effect. This implies that positive innovations play more significant effect on stock return than negative innovations of the same magnitude–good macroeconomic policies, stable prices and exchange rate, strong institutions, are better determinants of stock returns as against bad macroeconomic policies, unstable prices and exchange rate and weak institutions [11; & 157].

Monetary Policy Innovations and Stock Returns Volatility

To assess the effects of anticipated and unanticipated policy changes on policy rate, the MPR and broad money supply, the M2, were incorporated into an unrestricted GARCH and EGARCH models. Results of the ARCH and GARCH effects corroborate those of the restricted model earlier reported and the leverage effect (γ) in the EGARCH model as well is positive, strong and statistically significant.

In addition, the effects of anticipated monetary innovations on the MPR and M2 are weak whereas those of unanticipated innovations are robust and statistically significant. This implies that a positive shock (expansionary policy) on the M2 invariably lowers the MPR and improves availability of credits but this heightens speculative behaviour in the stock market. Similarly, the effect of a positive shock (tightening) on the MPR would trigger higher stock return volatility on the floor of the NSE through foreign inflow of financial resources, *ceteris paribus*. The findings concur with the postulation of the *REH* that an unanticipated policy change exerts more profound effect on the economy than an anticipated change which economic agents rationally foresee. Thus, our findings validate the premise upon which our investigation rests and situate within the body of existing evidences in the literature [42; 72; 24; 114; and 2].

Figure 4: Unrestricted GARCH(1, 1) Model

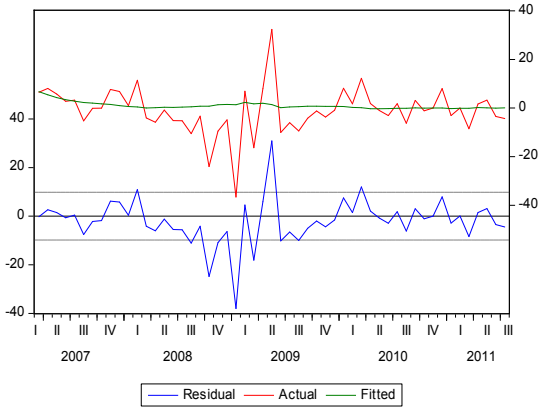
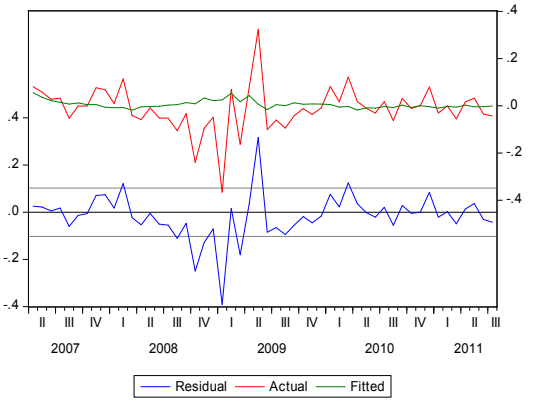


Figure 5: Unrestricted EGARCH(1, 1) Model



Figures 4 and 5 affirm the numerical accuracy of the GARCH and EGARCH models in terms of capturing volatility of stock returns in the NSE especially during the period of the financial crisis. The residual plots of both models explicitly track the tremendous volatility of stock returns at the flow of the NSE from mid of 2008 until 2009. The Jacque-Bera statistic for normal distribution shows that the residuals in the two models are normally distributed while robustness tests applied suggest that the EGARCH model proves to be superior than the GARCH model.

Financial Spillovers in Calm and Turbulent Periods

We intuitively delineate two periods of analysis based on major global events, that is, the pre- and post-global financial crisis that ballooned from the 2007 US mortgage crisis. *Ex-ante*, this favourably singles out the US as the originator of crisis as in [82; 41; & 211]. Thus, the period from January 2000 to March 2007 was tagged the pre-crisis period otherwise *'calm regime'* while the period from January 2008 up to March 2018 was regarded as the crisis period, otherwise *'turbulent regime'*.

Preliminary investigation reveals strong evidence of non-linear comovements (skewness) among the equities of the countries under investigation in both regimes. The mean value of the market returns in our sample are positive and negative in the calm and turbulent regimes, respectively. Additionally, the turbulent regime turns out to be more volatile (coskewness) in view of extreme minimum and maximum values compared to tranquil regime. Thus, turbulent regime leads with higher comovements in the markets; US, NG, SA, and UK, and presence of contagion effect and spillover from the US to CH & JP.

Analyses using the Bayesian switching model with the US as originator country show that the calm regime exhibits mild comovement of the NSE with the US & other markets whereas the Japanese NIKKEI & Chinese SHANGHAI brace strongly with the US during the same period/regime. Additionally, except for NSE & SHANGHAI, JSE & SHANGHAI and UK and SHANGHAI, market correlations are generally weak. Market returns volatility during the pre-crisis remains low with the exception of the JSE and SHANGHAI as well as SHANGHAI and FTSE markets. Thus, with positive returns in all the markets, the calm regime generally unveils low contagion and spillover effects.

Conversely, the turbulent regime demonstrates strong incidences of correlations across the markets with the NSE and JSE more inclined to the SHANGHAI than the DOW JONES. Again, while the SHANGHAI shows greater independence with the DOW JONES, the NIKKEI negatively correlates with it. Return volatility dropped during period of turbulence and turned positive for the NSE and JSE implying that investors are becoming too sensitive to risk, otherwise risk averse during the turbulence regime than during the calm regime.

Empirical analysis further reveals perfect contagion effect, albeit spillover effect across the market during turbulent regime. This fact concurs with the literature which suggests that as markets move from bear to bull market, the tendency for spillover albeit contagion effect heightens.

Analysis of Volatility Spillover and Interdependencies

There is significant cross-volatility spillover and own-volatility spillover across the sampled markets with time-varying correlations. In addition, we reveal, from the estimates of BEKK-AMGARCH that the contagion distribution is asymmetric and this improves the forecast of volatility and correlations among the market returns.

Specifically, we found strong evidence of transmission of shock (spillover) from the DOW JONES the NSE and the JSE. This confirms the expectation that contagion effect, invariably, is transmitted from the stronger markets to the weaker markets [105; and 19]. The NSE and JSE, however show weak evidence of volatility transmission. This confirms that spillover transmission between the developed market (DOW JONES) and emerging markets (NSE & JSE) is asymmetrical as in [58] for the Brazilian and the US markets.

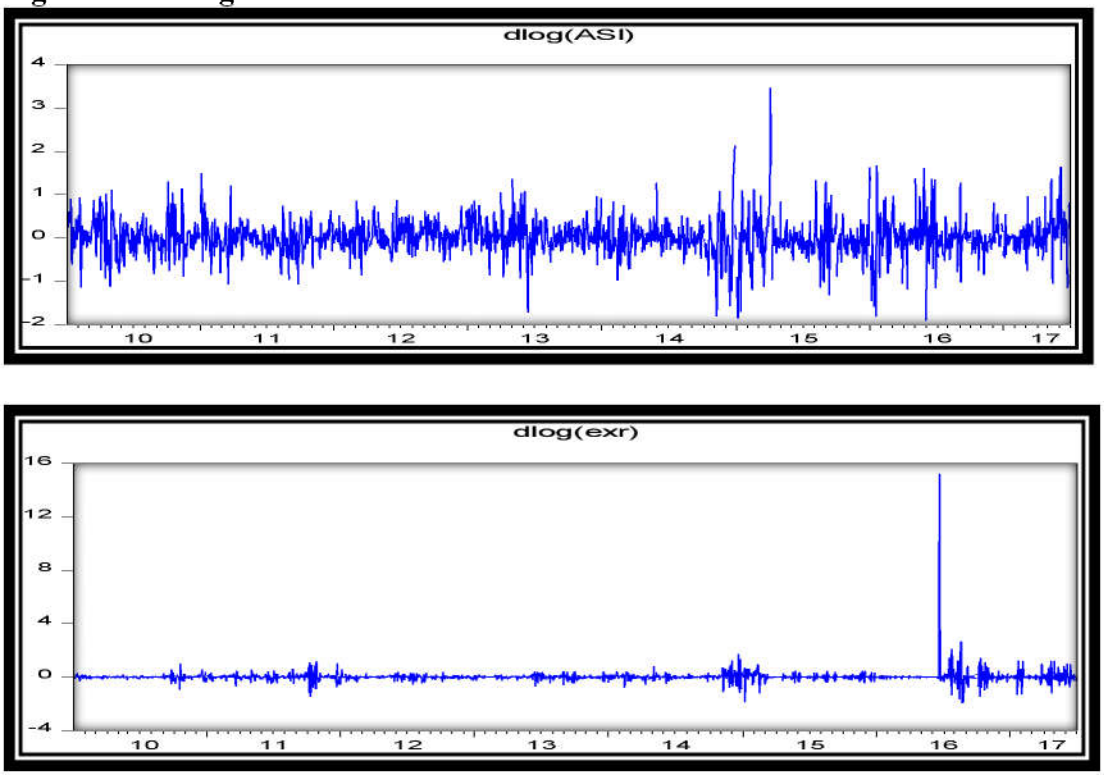


Figure 6: *Plots of Daily Returns of ASI and EXR (% changes)*

Our investigation shows that the 2-regime structure fits the data on stock returns and exchange rate in Nigeria over the study period. In particular, the stock market returns depict the low yield (bear regime) and high yield (bull regime). On average, stock returns fall by -0.0047 percent daily, in the bear market and gain, on average, by 0.0313 daily in the bull market. In line with findings in the literature [108)], returns volatility was found to be more volatile in the bear market [-1.437] than in the bull regime [-0.431]

The exchange rate variable, intuitively, affects stock market returns positively in the bear regime and negatively in the bull regime. In view of higher regime probability of stay in the bear regime more than in the bull regime, it implies that the chances that exchange rate appreciation, all things being equal, will increase volatility of stock returns is higher than the chances that exchange rate depreciation will increase the

volatility of stock returns. Thus, exchange rate appreciation will lead to decline in stock returns in the bear regime than depreciation will in the bull regime.

Our findings partly concur to that of BRICS markets in terms of higher regime probability in the bear market otherwise higher persistence [205; & 119]. In another development, though transition probabilities in both regimes were found to be relatively small for the Canadian, UK and the US markets, the markets were characterized by negative returns in the in the bear market, and positive returns in the bull market [7].

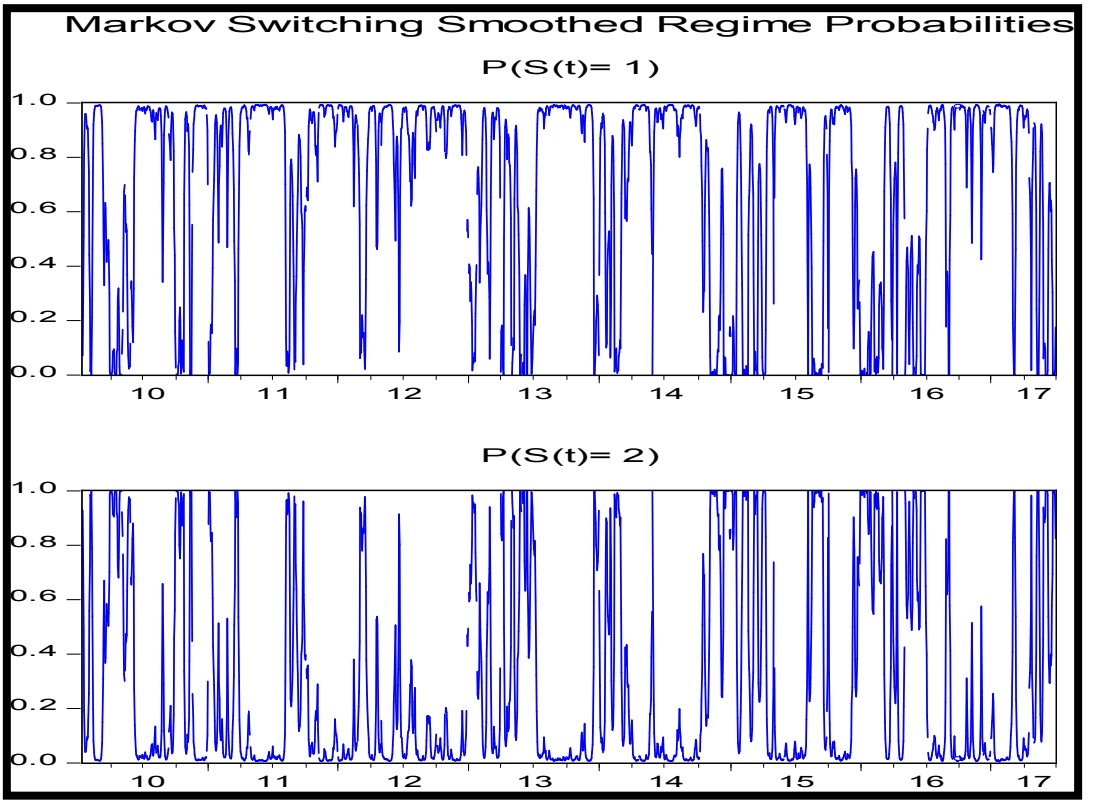


Figure 7: *Markov Switching Regime Smoothed Probabilities*

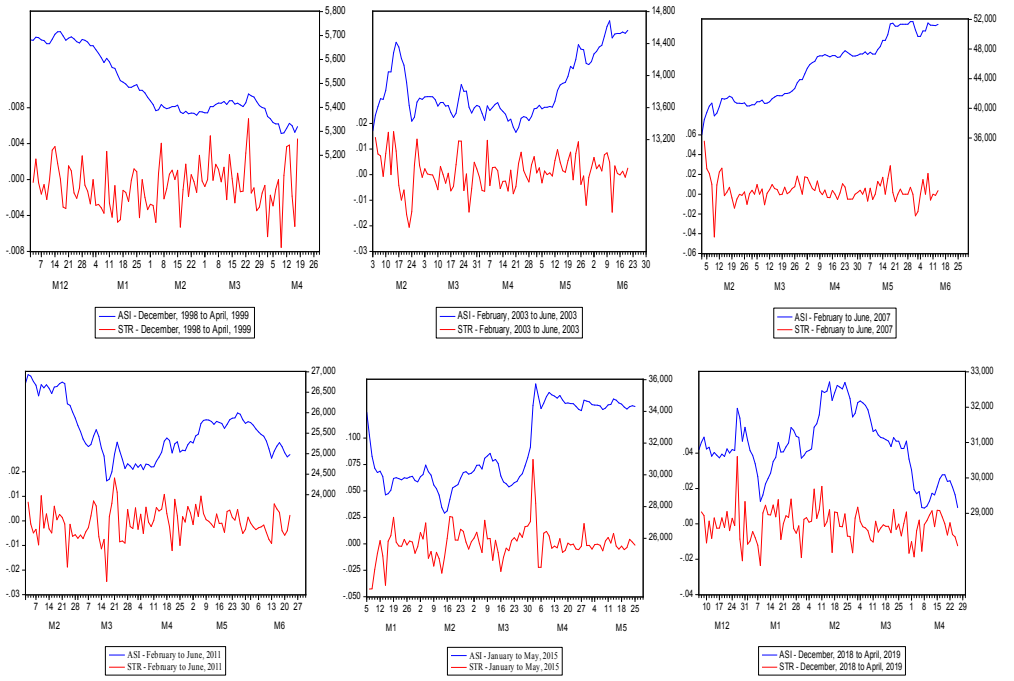


Figure 8: *All Share Index (ASI) & Stock Returns (STR) Plots*

Do Presidential Elections Affect Stock Market Returns in Nigeria?

We delineate the two regimes (1, 2) and regime 2 leads with more consistent and statistically significant coefficients for the mean and standard deviation across the election periods. Counterintuitively, we unveil evidences of higher volatility in regime 2 than in regime 1.

The transition matrix parameters reveal that the dummy variable for impact of election affects stock returns in the 2011 and 2019 elections, positively (strong) and negatively (weak), respectively. Similarly, using Markov regime switching methodology found that stock returns in Nigeria tend to reduce generally before and increase after an election [62]. Although the 2011 election in Nigeria negatively affected stock returns, the 2015 exerted a weak positive impact on stock returns in Nigeria [162].

Furthermore, in four (1999, 2007, 2011 and 2015 elections) out of the six elections, the probability of stay in low yield/negative returns are quite high. This coincides with the period when the People's Democratic Party (PDP) was in office. Conversely, the probabilities for the 2003, 2015 and 2019 elections are in favour of regime 2, that is, high yield/positive returns. Patently, except for the 2003 election, the 2015 and 2019 election periods were when the opposition party, the All Progressive Congress (APC) party was in office.

These findings, for instance, support empirical evidences in the literature in the United States: higher returns were associated with the presidency of the Democrats as against that of the Republicans [163; & 142] and in Germany, small-firm stock returns were positively (negatively) linked to the probability of a right- (left) leaning coalition winning the election and volatility heightened as the electoral prospects of right-leaning parties improved [85; & 86]. Others include: effect of Brexit referendum on stock return in the United Kingdom [184] and on effect of Grexit-related on stock market returns in Germany [102].

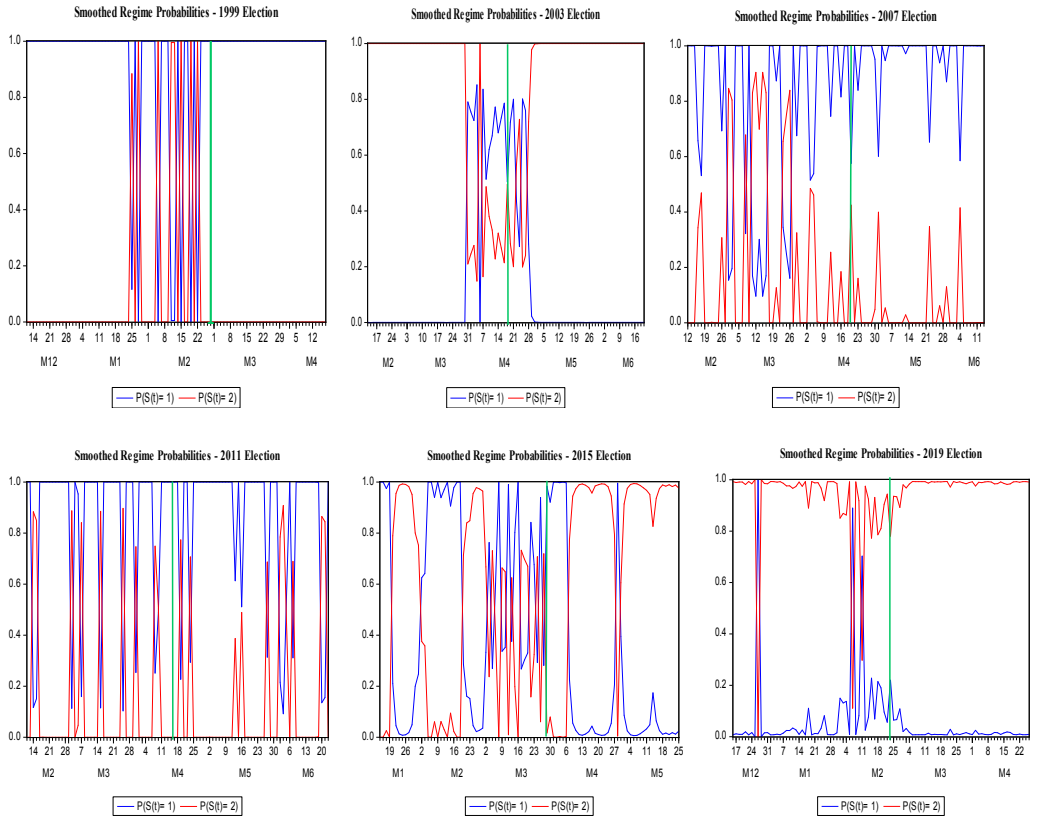


Figure 9: *Smoothed Probabilities of Regime 1 and 2 (combined graphs)*

V. CONCLUSIONS AND RECOMMENDATIONS

This inaugural paper entitled "What have we learnt from modelling stock returns in Nigeria: Higgledy-piggledy?" summarizes the empirical findings of five independent empirical studies in the field of "modelling stock returns in Nigeria". The attempt aims to unveil areas of consistency of our modest findings or otherwise-counterintuitive and incongruent cum higgledy-piggledy, with the theoretical premises and established empirical evidences. Ultimately, our findings justify and rhythm with the stated premises and in one way or the other and situate well within the body of empirical findings in the literature. Thus, no evidence of higgledy-piggledy but consistency and congruency with established knowledge.

Accordingly, the conclusions and recommendations are as follows:

Premise 1:

Unexpected inflation (*ex post*) positively affects stock returns and rising inflation rates are associated with greater stock returns volatility.

a) In line with the stated premise, we conclude that inflation is one of the underlying determinants of stock returns volatility in the Nigerian and Ghanaian stock markets. This is particularly so in the case of unanticipated (ex post) inflation, thus in line with the REH hypothesis; and
b) We found evidence of higher stock returns volatility and an asymmetry effect in the NSE than in the GSE and this makes the former more volatile than the latter.

Recommendations:

i) Investors in the two countries; Nigeria and Ghana, should plan their portfolio selection based on information on the magnitude-mean reverting, and direction-asymmetry effect of volatility in the two markets;
ii) Investors should incorporate inflation expectation in portfolio selection and management;
iii) Policymakers especially the Central Bank of Nigeria (CBN) should strive to moderate future inflation (via interest rate, monetary or inflation targeting) to avoid unexpected turbulences; and
iv) The CBN should continue its policy of communicating its policy decisions to all market participants.

Premise 2:

Unanticipated monetary shocks influence real economic activity while the anticipated component would, however, be rationally taken into account by economic agents in their decision making on output and employment.

a) As obtained in major global stock markets, we found evidence of volatility clustering implying (positive) that leverage effect-good news generates more volatility than bad news of the same magnitude; and
b) Specifically, unanticipated policy innovations on M2 and MPR exert significant effect on stock returns volatility on the floor of the NSE whereas the anticipated component does not.

Recommendations

i) There is need for continuous monitoring of volatility by both investors and regulators in the market;
ii) Need for more disciplined and regular monetary policy pronouncements to promote stability in the NSE;

iii) Policymakers should strive to internalize responses/upheavals from the external environment in their policy decisions; and
iv) Accept the fact that economic agents/investors in Nigeria are rational and therefore not given to surprises at all times.

Premise 3:
Market price of assets, equities and other financial variables, vary over time in unison or otherwise in response to major global episodes; oil price shocks, financial crisis, security, pandemic, and the likes. Thus, the Nigerian economy in general and the NSE in particular are muted into these predicaments.

a) Empirical evidences show that the patterns of market returns differ across the *calm* and *turbulent* regimes in our sample–market comovements, for instance, with the DOW JONES rises during period of turbulence than during tranquillity, particularly for the NSE and JSE; and
b) In line with overwhelming evidences on contagion transmission from the stronger markets to the weaker markets, there is evidence of asymmetric contagion transmission from the DOW JONES to the NSE and JSE markets and more pronounced stock returns volatility from the DOW JONES to SHANGHAI and NIKKEI. However, the SHANGHAI and NIKKEI remained weakly intertwined.

Recommendations*:*
i) Understanding the patterns of market comovements, returns volatility and spillovers among financial markets are germane for shrewd investment decisions and prudent financial risk management at domestic and continental levels; and
ii) With unending upheavals in the global economy, policymakers and regulators should continue to monitor and incorporate relevant information into policy design to take advantage of as well as mitigate the adverse effects of these upheavals.

Premise 4
The correlation between exchange rates and stock (equity) returns can take any sign, albeit, theory emphasizes that foreign exchange and equity market returns should be negatively correlated.

a) Our empirical findings concur with our research premise and enormous body of empirical evidences; that is, evidence of two-regime structure; *bear* and *bull* markets characterizing high persistence-low returns and low persistence-high returns, respectively; and

b) In addition, exchange rate is a significant predictor of stock returns in view of its positive and negative effects in the bear and bull markets, respectively. Specifically, exchange rate appreciation leads to decline in stock returns in the bear regime than depreciation does in the bull regime.

Recommendations*:*

i) Patterns of stock returns in the NSE within the regimes is instructive to both domestic and international investors for profitable investment decisions;
ii) Effective management of exchange rate by policymakers is a recipe, among others, for market stability and efficient forecasting of stock returns; and
iii) Transparent market rules and investor education are useful for mitigation of risks and better investors' market perception.

Premise 5

The *political business cycle* (PBC) theory postulates that competitive elections within democracies could lead to unfavourable economic outcomes, such as a post-election recession or inflation.

a) Patterns of stock returns on the floor of the NSE traverse between the bear and bull regimes over the presidential election cycles in Nigeria;
b) Election cycle exerts positive effect on stock returns during the 2011 election and a weak negative effect during the 2019 election; and
c) Stock market returns were bearish during presidential election conducted by the PDP government (1999, 2007 and 20011) and bullish for elections, supposedly, during the APC government (2015 and 2019).

Recommendations:

i) Investors should focus on market instruments with fixed expected returns and other inter-temporal investments as safe heaven around election period;
ii) Fiscal authorities; Federal Ministry of Finance (FMOF) and National Planning Commission (NPC), and other relevant agencies-the Economic and Financial Crimes Commission (EFCC) and the Independent Corruption Practices Commission (ICPC), should assist in curtailing government spendings and election campaigns expenditure around election period; and
iii) Regulators, especially the Nigerian Stock Market (NSE) and the Securities and Exchange Commission (SEC) in Nigeria, are instrumental in forestalling crisis through continuous monitoring of volatility around election cycles to mitigate risks and uncertainties.

How Does the Stock Market Work? Prank!

(Mr. Wise, a successful stockbroker visited his friend, Mr. Alex, an equally successful farmer. Watching the sunset in an open space near the cattle ranch chatting.)

Mr. Alex: *Frank, I keep hearing on the radio, TV, read in the papers about the stock market but I still have no good idea how it is. Could you please explain?*

Mr. Wise: *How should I best explain it to you? Let's say you buy some eggs for your farm, these eggs hatch and now you have chicks, these chicks grow up to be hens that lay more eggs out of which you get more chicks that grow up to be hens and so on and so forth, to the extent that your farm is full of them.*

One day, a big black flood ravages your land and takes all of them downstream. Then you sit and think to yourself: Ducks... I should have gotten ducks! More duck!! More and more duck!!! That's what the stock market is like.

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LIST OF PROFESSORIAL INAUGURAL LECTURE TO DATE

S/N	NAME	DEPT	DATE	TOPIC
1st	Emmanuel Ajayi Olofin	Geography	4th March, 1992	The Gains and Pains of Putting a Water Lock on the Face of the Drylands of Nigeria
2nd	Garba Dahuwa Azare	Education	24th June, 2000	BASIC CONCERNS: Revitalizing Nigeria's Primary Education in the New Millennium
3rd	Dajuma Abubakar Maiwada	Education	29th July, 2000	Improving Teaching and Learning in University Education with Particular Reference to Bayero University, Kano
4th	Majekodunmi Oladeji Fatope	Chemistry	7th July, 2001	NATURAL PRODUCTS SCIENCE: Looking Back and Looking Forward
5th	Muazu Alhaji Zaria Sani	Nigerian Languages	13th October, 2001	A focus on Some Segmental and Suprasegmental Features in Hausa Phonology
6th	Isa Hashim	Political Sciences	20th March, 2004	Planning and Budget Implementation in the Health Sector
7th	Abdulla Uba Adamu	Education	24th April, 2004	SUNSET AT DAWN, DARKNESS AT NOON: Reconstructing the Mechanisms of Literacy in indigenous Communities
8th	Auwalu Hamisu Yadudu	Private and Commercial Law	5th June, 2004	LAW AS INTERPRETATION: An Exploratory inquiry from Islamic Law Jurisprudence

S/N	NAME	DEPT	DATE	TOPIC
9th	Mohammed Sanni Abdulkadir	History	31st July, 2004	STRUCTURING, STRUGGLING AND SURVIVING ECONOMIC DEPRESSION IN NORTHERN NIGERIA: The 1930s As Preview of the present
10th	Muhammad Sani Sule	Bio-chemistry	23rd March, 2013	Enzymology and Radiation Biology in the Understanding of Biochemistry
11th	Essiet Unanaowo Essiet	Agriculture	22nd May, 2013	AGRICULTURE SUSTAINABILITY IN THE DRYLAND OF NIGERIA: Realities and Prospects
12th	Aliyu Kamal	English Studies	5th March, 2014	The Islamic Novel Style and Structure
13th	Abdu Ahmed Manga	Agriculture	9th April, 2014	Horticulture as a Panacea for Food Insecurity and Unemployment
14th	Sa'idu Muhammad Gusau	Nigerian Languages	26th May, 2014	Wakar Baka Bahaushiya (The Hausa Oral Songs)
15th	Abdulla Uba Adamu	Mass Comm-unication	9th July, 2014	IMPERIALISM FROM BELOW: Media Contra-Flows and Emergence of Metro-Sexual Hausa Visual Culture

S/N	NAME	DEPT	DATE	TOPIC
16th	Ghaji Abubakar Badawi	Library and Information Sciences	29th July, 2015	THE ROLE OF PUBLIC LIBRARIES AS CENTERS OF INFORMATION TO DISADVANTAGED GROUPS: A 2004 - 2014 Study of the Information Needs of Gada Prostitutes in Dawakin Kudu Local Government Area of Kano State, Nigeria.
17th	Mohammed Kabir	Community Medicine	16th September, 2015	Public Health Concern for Chronic Non-Communicable Diseases Surpasses Anxiety Over Most Infections
18th	T.I. Oyeyi	Biological Sciences	30th March 2017	Linking Schistosomiasis and Water Resources Development in Kano State Nigeria: Public Health Impact and Mitigation
19th	Abdulrazaq G. Habib	Medicine	27th April, 2017	Medicine, Science and Society – The Global Health Imperative
20th	S. Y. Mudi	Chemistry	6th July, 2017	Natural Products: Plants as Potential Sources of Drugs
21st	Sani Ibrahim	Biological Sciences	27th July, 2017	BETWEEN LIFE AND DEATH: Water Quality and Resource Evaluation - The Place of Hydrobiologists
22nd	J. Afolabi Falola	Geography	26th October, 2017	The Poor We Have With Us Always

S/N	NAME	DEPT	DATE	TOPIC
23rd	Umar G. Danbatta	Electrical Engineering	2nd November, 2017	GETTING OUT OF THE WOODS: Diversifying Nigeria's Economy Through the Telecommunications Sector
24th	Adelani W. Tijani	Nursing	23rd November, 2017	Wholesome Alimentation: Path to Radiant Health
25th	Juwayriya Badamasiuy	Private and Commercial Law	21st December, 2017	Uncovering Patriarchy in the Law: Feminist Movement for Re-Interpretation of Islamic Law in Focus.
26 th	Isa Mukhtar	Nigerian Language	25th January, 2018	STYLISTIC THEORIES AND THE LINGUISTICS OF HAUSA PROSE TEXTS: the (SFL) approach.
27th	Ganiyu Sokunbi	Physiotherapy	29th March, 2018	TODAY IT HURTS, TOMORROW IT WORKS: Complimentary and Alternative Therapy for Failed Back Syndrome
28th	Aminu K. Kurfi	Business Admin. and Entrepreneurship	19th April, 2018	Micro-finance as an Elixir for Poverty Alleviation and Wealth Creation in Nigeria
29th	Muhammad S. Khamisu	Arabic	17th May, 2018	Substitution in Arabic Languages Rules and Types
30th	Habu Nuhu Aliyu	Pure and Industrial Chemistry	21st June, 2018	SCHIFF BASES AND THEIR TRANSITION METAL COMPLEXES: The Drug for the Next Generation
31st	Hashim M. Alhassan	Civil Engineering	19th July, 2018	EASING THE BURDEN OF TRAVEL: Can Roadway Capacity Modeling Help?
32nd	Habu Mohammed	Political Science	13th September, 2018	TUG OF WAR OR ECHO IN THE DARK? Civil Society Organizations (CSOs) and the Fight Against Corruption in the Era of Change

				Mantra in Nigeria
33rd	Bello Idrith Tijjani	Physics	20th September, 2018	NAVIGATING THE DATA LABYRINTH: Application of Some Advanced Statistical Analysis in Atmospheric Physics
34th	Mohammed Ajiya	Electrical Engineering	18th October, 2018	SEAMLESS GLOBAL CONNECTIVITY AT THE SPEED OF LIGHT: Converting Intrinsic Phenomena in Optical Fibers to Capacity Increase.
35th	Abdulrahman Abdul Audu	Pure and Industrial Chemistry	25th October, 2018	MY ACADEMIC VOYAGE IN WATER INTO THE WORLD OF HEAVY METALS
36th	Ibrahim Rakson Muhammad	Animal Science	21st February, 2019	FORAGE AND FODDER PRODUCTION IN NIGERIA: Its Sensitivity in Sustainable Ranching.
37th	Muhammad Bashir Ibrahim	Department of Pure and Industrial Chemistry	14th March, 2019	WATER POLLUTION AND THE QUEST FOR ITS REMEDIATION: The Natural Resource Option
38th	Oyerinde O. Oyesegun	Department of Physical and Health Education,	4th April, 2019	MAN DOES NOT DIE BUT KILLS HIMSELF: The Dilemma of the Health Educator and the Moderating Influence of Health Education
39th	Danladi Ibrahim Musa	Department of Physical and Health Education	25th April, 2019	WAGING WAR ON THE DEADLY QUARTET AND ITS CO-MORBIDITIES: A Physical Activity Panacea
40th	Kabiru Isa Dandago	Department of Accounting	2nd May, 2019	THE ACCOUNTING IN HUMANITY KNOWS NO BOUNDS
41st	Mustapha Hassan Bichi	Department of Civil Engineering	20th June, 2019	MAN, ENVIRONMENT AND WATER - The *Moringa oleifera (Zogale)* Intervention

S/N	NAME	DEPT	DATE	TOPIC
42nd	Mustapha Muktar	*Department of Economics*	27th June, 2019	PEOPLE, PLANET AND PROFIT: Peaceful Bed Fellows at the Best of Times But Strange Roommates at Present - The Economist's Approach to a Peaceful and Sustainable Co-Existence
43rd	Mohammed Atiku Kano	*Department of Biochemistry*	25th July, 2019	Serum Lipids and Lipoproteins - A Curse or a Blessing?
44th	Rabi'u Mohammed	*Department of Physical and Health Education*	8th July, 2019	EXERCISE AND SPORTS FOR THE ATYPICAL PERSONS: A Multidimensional Analysis
45th	Yahaya, D.B.	*Dept. of Mech. Engineering*	12th Dec. 2019	GETTING OUT OF THE DARKNESS: THE SOLAR ENERGY SOLUTION
46th	Shehu Alhaji Musa	*Dept of Agric. Economics & Extension*	22nd April, 2021	CROSSING THE CHASMS OF AGRICULTURAL DEVELOPMENT IN NIGERIA: Consumer Preference Studies: Market Integration Syntheses and Value Chain Diagnoses to the Rescue