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Original Article

Financial Markets Performance and Market Microstructure in Nigeria

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Abstract *- The study examined and measured financial markets performance and market microstructure in Nigeria. The specific objective of the study was to determine the relationship between financial market performance and market microstructure in Nigeria. The study uses the Bid-ask-Spread (BAS) as a measure for market microstructure, while Total Number of New Issues (TNI), Stock Market Capitalisation (SMC), Stock Market Index (SMI), Total Value of Transaction (TVT), Number of Listed Securities (NLS), Exchange Rate (EXR), Treasury Bill (TRB), as well as Turnover Ratio (TOR) and Inflation Rate (INF) were measures of financial market performance. Specifically, the study hypothesized that there is no relationship between financial markets performance and market microstructure in Nigeria. To empirically achieve the objective and test the formulated hypothesis, the study utilized data spanning thirty-one (32) years of the Nigerian financial markets as aggregated in the Nigerian Stock Exchange (NSE) from 1985 to 2016. The study employed the Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH) model and other descriptive statistics estimation techniques to determine the relationship between the variables in the study. The findings from the empirical analysis of the study revealed that there is a significant and positive relationship between financial markets performance and market microstructure in Nigeria. In the light of the foregoing finding, the study recommends that the efficient performance of the Nigerian financial markets on the platform of market microstructure should be sustained by the government by organizing conferences, workshops, symposia and seminars for market participants on the theory of market microstructure finance so as to broaden their knowledge base on issues of market microstructure in Nigeria.*

Keywords *- Bid-ask-Spread, Financial Market, Market Microstructure, Performance,*

I. INTRODUCTION

The evolution of financial markets across the globe has been particularly significant in the last three decades with regard to intermediaries, capital markets and financial instruments. These have aided the increased mobilization of financial resources in the economy and the reallocation of such financial resources to sectors in dire need of investible funds. The allocation of investible funds is usually through the process of trading in various financial instruments in financial markets. It is this process and economics of trading financial securities that constitute the subject of market microstructure finance.

According to O'Hara (1995), whatever the setting, there are rules either explicit or implicit that govern the trading mechanisms and define the market structure. This organizational structure of trading determines traders' behaviour, that is, what, when, where and how they can trade and is the origin of market liquidity and price formation, and this is market microstructure. Thus, the market microstructure is defined as the study of the process and outcomes of exchanging assets under the explicit trading structures as guided by certain market rules and regulations and, in some effects, the formation of financial asset securities prices (O'Hara, 1995). This definition thus implies that market microstructure is shaped by market structure and trading rules.

Over the past three decades, market microstructure has become an important research area in finance. It studies the process by which investors' latent demands are ultimately translated into transactions, that is, prices and volume (Madhavan, 2000). Of particular interest in the market microstructure research is the study of market makers. Market makers are a special group of dealers, and they play a central role in financial markets. They stand ready to buy and sell securities on a regular and continuous basis at a publicly quoted price. The activities of the markets makers lead to increased liquidity in the market. It is in this wise that the Nigerian Stock Exchange (NSE) in 2012 registered ten (10) market makers with each given twenty (20) portfolio of firms at the moment to make a market in. Perhaps the most prominent example of these market makers in Nigeria is Stanbic IBTC capital, the first bank of Nigeria capital, Greenwich securities and others. They are specialists at the Nigerian Stock Exchange (NSE). A specialist performs five essential

functions in the specific securities allocated to him at NSE. He manages the auction process by establishing the opening price for his security every day and executes orders for floor brokers. He also serves as catalysts by bringing buyers and sellers together, enabling a transaction to take place that otherwise would not have occurred. He provides capital by trading against the trend of the market to minimize the order imbalance and stabilizes prices to ensure smooth trading. Market makers, therefore, play an important role in price discovery and market stability, which of course, are of great interest to regulators, practitioners, academics and the governments. It is against this backdrop that the study examines financial markets performance and market microstructure in Nigeria.

II. LITERATURE REVIEW

A. Conceptual Review

Traditionally, and over the years, the financial market has always been defined or categorized as including money and capital markets. Broadly defined, the financial market is any marketplace where the trading of securities, including equities, bonds, currencies and derivatives, occurs. Simply put, the financial market is a market in which people trade in securities, commodities, and other fungible items of value at low transaction costs and at prices that reflect supply and demand.

According to Osamwonyi (2000), the financial system is the framework of laws and regulations, institutions and practices which control the flow of financial resources within an economy. It includes the ownership structure of all economic units, the financial relationship between these units, the financial intermediaries such as banks and insurance companies, the financial markets, the legislation and regulations governing financial relationships, and financial policymaking and implementation machinery.

Generally, in every economy, there are surplus units and deficit units. The surplus units are presumed to have money in excess of their immediate needs. While the deficit units, presumably, do not have enough to meet their consumption and capital needs. To bridge this gap, financial institutions are required to link them while government use monetary policies such as money supply influence over the cost of money-interest rates and control of credit to pursue economic and political goals and objectives. To link the surplus units with deficit units that do not have enough for their expenditures or investment plans, financial intermediaries develop facilities and instruments to link the required lending and borrowing. They link the savers and borrowers by providing convenient ways for lenders to save money, packaging amounts lent by savers as loans and overdrafts to borrow in larger amounts, reducing risks such as bad debt-applicable to the strong intermediary, and providing maturity transformation.

B. The Market Microstructure

The market microstructure is a branch of finance that is concerned with the details of how exchange occurs in markets. The common view of market microstructure is that it is the study of the trading mechanisms used for financial securities. According to O'Hara (1995), the market microstructure is defined as "the study of the process and outcomes of exchanging assets under a specific set of market rules and in some effects the formation of asset prices." While much of economics abstracts from the mechanics of trading, microstructure theory focuses on how specific trading mechanisms affect the price formation process. Market microstructure is the study of the trading mechanism used for financial securities. According to Hasbrouck (2007), there is no microstructure manifesto, and historical antecedents to the field can probably be found going back to the beginning of written language, but at some point, the field acquired a distinct identity. Market microstructure theory is devoted to the study of the trading process in securities markets under explicit trading rules and regulations. However, this theory has been developed with the financial market in mind, and therefore it is mainly oriented towards micro questions, such as institution design, regulation and market performance (O'Hara, 1995; Madhavan, 2000).

The National Bureau of Economic Research (NBER) defines market microstructure as a field of study that is devoted to theoretical, empirical, and experimental research on the economics of securities markets. It includes the role of information in the price discovery process, the definition, measurement and control of liquidity, and transaction costs and their implication for efficiency, welfare and regulation of alternate trading mechanisms and market structures (Krishnamurti, 2009). Thus it is argued that the organization and regulation of trading in securities markets have significant implications for the process of price formation and, more generally, for all characteristics of the markets.

According to Stoll (2003), Market microstructure deals with the purest form of financial intermediation. That is the trading of a financial asset, such as stock or bond. He asserts that, in a trading market, assets are not transformed (as they are, for example, by banks that transform deposits into loans) but are simply transferred from one investor to another. The financial intermediation service provided by a market, first described by Demsetz (1968), is immediacy. An investor who wishes to trade immediately, that is, a

demander of immediacy - does so by placing a market order to trade at the best available price- the bid price if selling or the asking price if buying. Bid and ask prices are established by suppliers of immediacy. Depending on the market design, suppliers of immediacy may be professional dealers that quote, bid and ask price or investors that place limit orders or some combination (Stoll, 2001). This leads us to the important dimension of market microstructure.

III. THEORETICAL REVIEW

A. The Efficient Market Hypothesis (EMH)

The concept of market efficiency is used to explain the degree to which stock prices reflect all available and relevant information. The efficiency of the market is of great interest to investors and operators in the market. Investors have essentially a perpetual investment in stocks, which carry no redemption date. In order to encourage investment, investors must be persuaded that they can sell their shares at a fair price anytime. To realize this, the security market must price share efficiently by incorporating into the price all information currently available about the company and the economy as a whole (Samuels, Wilke & Brayshaw, 1995).

The Efficient Market Hypothesis (EMH) postulates that in an efficient market, stock prices fully reflect all available information about stocks in a rapid and unbiased manner. The whole concept of the Efficient Market Hypothesis (EMH) is based on the arguments advanced by Samuelson (1965) that the anticipated price of an asset fluctuates randomly. Fama, in 1970, presented a formal review of theory and evidence for market efficiency and subsequently revised it further on the basis of development in research in 1991.

On the basis of market efficiency, the EMH argues that the future price of a security, given today's set of information, is equal to today's price compounded at some desired return that is commensurate with the risk associated with the security (Bachelier,1900 & Fama). There is, however, three variants of the EMH, which are: the weak form, the semi-strong form and the strong form. The weak form contends that current security prices fully reflect what is knowable from a study of historical share patterns (Osazee, 2007).In other words, current security prices fully reflect the information given to the market regarding historical events and investors, knowing the historical sequence of prices can neither abnormally enhance their investment returns nor improve their investment returns nor improve their ability to select a stock (Samuels & Wilkes, 1980). Thus, current security prices fully reflect all security market information, including the historical sequence of the process, price changes and any volume information. Since the current is a reflection of all available information, including past price changes, there can be no relationship between past price changes and future price behaviour. In other words, security price behaviour is in tandem with the random walk theory.

The Semi-Strong Form of the EMH submits that current security prices reflect only all publicly available information about a security. This is what is now known as Fama's Fair Game Theory. According to Samuel and Wilkes (1980), the semi-strong form of the EMH is adjudged as being concerned with "the question of whether it is worth some effort to acquire and analyse this public knowledge with the hope of gaining superior investment result". In other words, the semi-strong form of EMH seeks to submit that security prices adjust to the public announcement. That is, how quickly does security prices reflect public information announcements? This is based on the assumption that any analysis on public information cannot earn greater trading profits to investors, considering the cost of transactions since there is information asymmetry (information advantage). On the other hand, the **strong form** variant of the EMH postulates that security prices reflect not only what is publicly known about security but what is also knowable. In other words, no investor can consistently earn above-average profits since no one has a monopoly of information access which is already reflected.

B. The Random Walk Theory

As earlier stated, the random walk theory is in conformity with the weak form of the EMH. It posits that successive price movements of security in the market are independent of each other. This is due largely to the fact that there is no serial correlation between price changes from one period to another. The firm's announcement of a profit that is much more than what was expected by the market might not have any significant effect on the price of its security if the market is in doubt about the durability and sustainability of the improved profit. In this way, the knowledge of past price movements cannot help in predicting the size or the direction of the next price movement. The Random Walk theory rests on the assumption that there is market efficiency. It did not also deny the fact that the prices of some security can appreciate and others can depreciate more than other security. The random walk did not also deny the fact that there is the possibility of superior investment performance from information other than historical information. What the Random Walk theory, however fails to explain is the why security prices change.

C. The Microstructure Model

The general failure of macro-based exchange rate determination models, at least in the short-run, caused a number of researchers to try to explain the exchange rate behaviour on a microstructure basis. Competing with other exchange rate determination models, market microstructure models concentrate on foreign exchange markets' institutional conditions instead of the economic environment. Thus, the microstructure approach incorporates details of foreign exchange market trading. Similar to the asset market approach, the supply and demand for foreign currencies stem from the trade of international assets. In this context, the microstructure view extends the asset approach with a microstructural component. Furthermore, this channel allows for huge trading volumes observed on the foreign exchange markets, an aspect that is incompatible with macro-based exchange rate models.

When dealing with a pure microstructure approach, one variable in exchange rate determination takes on extra significance: Order flow. The rejection of the EMH begs the question of how to capture market views of future currency values, which explain actual exchange rate movements. Instead of trying to measure the expectations of every single agent, one can easily comprise the aggregated expectations through the order flow. In this context, Rime (2007) notes: *"Unlike expectations measured by survey data, order flow represents a willingness to back one's belief with real money."* Order flow can be defined as the signed transaction volume, where the signs are given by the initiators. For example, if one decides to sell 10 units of foreign currency in period 1, the order flow is -10. In contrast, if an agent buys 20 units of foreign currency in period 2, the order flow is +20. The transaction volume of both trading periods is 30, whereas the specific order flow is +10. Hence, a positive value means net purchasing pressure on foreign currency and vice versa. Consequently, order flow can be interpreted as a shift in total foreign currency demand. This, in turn, reflects changes in market expectations about future fundamentals. The role of order flow is therefore clearly determined. Foreign exchange rate dealers learn about fundamentals through order flow from non-dealers, who in turn learned about fundamentals from direct sources, and were willing to back up their beliefs with money. Thus, order flow is the transmitter of fundamental information, which is not known to all agents.

The microstructure approach to foreign exchange markets focuses on order flow, information asymmetries, trading mechanisms, liquidity and the price discovery process. Central bank intervention works in this framework by emitting information to the market, which modifies expectations and generates huge order flows that change exchange rate dynamics (Evans and Lyons, 2002). Intervention induced order flows may also increase volatility, but this is dependent on whether the market is tranquil or volatile, which in turn depends on the number of liquidity traders relative to informed traders in the market. Central bank intervention is a special form of order flow that causes agents to change their expectations on the future part of the exchange rate and net open positions, which generates a cascade of order flows.

The relationship between volume and volatility in the microstructure setting is driven by agent heterogeneity and asymmetric information where informed traders gain at the expense of uninformed traders or customers who trade to eliminate exposure, especially when new information flows into the market. This is related to the mixture of distributions hypothesis (MDH) outlined by (Easley & O'Hara, 1992). In this framework, volume and volatility in prices are related because both aggregates are driven by common dynamics as new information comes into the market during normal (liquidity trading) periods (Frankel & Froot, 1990; Tauchen & Pitts, 1983). However, during periods of market turmoil, liquidity traders withdraw from the market, and there is a negative relationship (Galati, 2000).

This implies that there are two types of regimes or market conditions in which the central bank can intervene, a liquidity trading regime where most liquidity traders are involved and where the mean and variance of the exchange rate returns are relatively small and, an informed trading regime where many liquidity traders leave the market and where the mean and variance of exchange rate returns are relatively large. If the market is in the former regime, central bank interventions will tend to increase volatility, as there is a positive relationship between volume and volatility in this regime. If the market is in an informed trading state, central bank interventions will tend to reduce volatility since there is a negative relationship between volume and volatility in this regime.

D. Empirical Review of Literature

Many researchers have attempted to investigate the relationship between financial markets and macroeconomic performance. Onakoya (2013) examines stock market volatility and economic growth in Nigeria for the period of 1980 to 2010 using Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH). He finds that volatility shock is quite persistent in Nigerian financial markets and concludes that this might distort the growth of the

economy. Wang (2010) investigates the time-series relationship between stock market volatility and macroeconomic variable volatility for China using Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH) and Lag-Augmented VAR (LA-VAR) models and found evidence that there is a bilateral relationship between inflation and stock prices. In addition, a unidirectional relationship exists between the interest rate and stock prices (from stock prices to the interest rate). However, a significant relationship between stock prices and real GDP was absent.

Also, Augustine and Pius (2010) examine the impact of stock market development on long-run economic growth in Nigeria using time-series data from 1986 to 2006. The study employs the Ordinary Least Square (OLS) technique to analyze various models employed. The GDP per capita growth was adopted as the dependent variable. The independent variables include total market capitalization, the total value of shares traded, and turnover ratio. Other variables that may introduce bias in the results were controlled. They found that stock market size and turnover ratios are positive in explaining economic growth, while stock market liquidity coefficient was negative in explaining long-run growth in Nigeria.

In a similar study, Omoregie, Eromosele and Edo (2016) investigate the relationship between stock market volatility and economic growth, using Error Correction Model (ECM) to analyze the time-series data from 1984 to 2012. Their result revealed that there is a positive relationship between stock market volatility and economic growth. Also, Levine and Zervos (1996), as cited in Omoregie et al. examined whether there is an existence of a strong empirical relationship between stock market development and economic growth in the long run. The study utilized pooled cross-country time-series data of 41 countries from 1976 to 1993. The result of their analysis revealed that there exists a strong relationship between overall stock market development and economic growth in the long run. In the same vein, Nyong (1997) conducted a study on the aggregate index of capital market development and economic growth in Nigeria, using regression analysis. The result showed that the capital market development is negatively and significantly correlated with the long-run growth in Nigeria. This result is, however surprising, considering the fact that capital markets across the globe are barometers to gauge the performance of any economy. Similarly, Adamu and Sanni (2005) investigated the causal relationship between stock market development and Nigerian economic growth using the Granger-Causality test and regression analysis. They reported a one-way causality between GDP growth and market capitalization.

Similarly, Osamwonyi and Kasimu (2013), in their study of the stock market and economic growth in Ghana, Kenya and Nigeria from 1989 to 2009 used the Granger causality test to examine the causal relationship and the direction of causality among five indicators of stock market which are stock market capitalization (MC), stock turnover ratio (STO), the stock traded value (TVL), number of listed securities (LS), and stock market index (MI) against the real gross domestic product (GDP) as a proxy for economic growth. Their empirical findings show no causal relationship between stock market development and economic growth in Ghana and Nigeria but revealed a directional causal relationship in Kenya. When market capitalization (MC) and a number of listed securities (LS) were used as proxies for stock market development, they were found to Granger cause economic growth. Bidirectional causality was found between the stock turnover ratio (STO) and the Gross Domestic Product (GDP). Stock traded value (TVL) was found to have a strong negative effect on GDP.

Another study by Osinubi and Amaghionyeodiwe (2003), on the relationship between the Nigerian stock market and economic growth for a period of 31 years spanning 1980 to 2010 with the Ordinary Least Square (OLS) regression analysis as their tool, found a positive relationship between the stock market and economic growth in Nigeria. Also, in an attempt to measure the impact of financial volatility in Nigeria, Osazevbaru (2014) did a study on "Measuring Nigerian stock market volatility" for the period 1995 to 2009 with the employment of the Autoregressive Conditional Heteroscedasticity (ARCH) and the Generalised Autoregressive Conditional Heteroscedasticity (GARCH) model for estimation. The result of the estimates reveals that the Nigerian stock market exhibits volatility clustering.

In terms of behavioural explanations to investment decisions, Delong et al. (1990) examine the survival of noise traders in financial markets using chi-square and observation techniques. Their results reveal that irrational noise traders are the source of price volatility and other traders need to be compensated for the risk. Noise traders might normally incur losses on trading, but if they move prices collectively, they might profit at the expense of other groups of traders. Their findings suggest that we pay more attention to the role of noise traders and their motives for trading. On stock splits, Schultz (1999), using regression analysis, examines whether splits increase the number of small shareholders who own the stock. He finds an increase in the number of small buy orders following NASDAQ and NYSE-AMEX splits in 1993-1994, along with an increase in trading costs. Schultz argues this finding can be explained by the fact that the minimum bid-ask

spread is wider after the split, giving brokers an incentive to promote a stock.

On the impact of anonymity on liquidity in the limit order book, Foucault et al. (2007) study the change in bid-ask spreads on the Paris Bourse before and after the change to anonymous trading, using ordinary least square (OLS) regression analysis, their result shows that trader anonymity results in narrower spreads. However, this finding was contested by (Maher et al., 2008). They contested that the methodology used by Foucault et al. (2007) is flawed. This is because endogenous variables such as stock price, trading volume and volatility are used to control for bid-ask spread determinants. They obtain the opposite conclusion when they use the instrumental variable two-stage least squares regression model (2SLS). Similarly, Majois (2007), in his studies, argues that a "global liquidity factor" should be taken into account in natural experimental studies. Majors employs the ordinary least square (OLS) method in the same process as Foucault et al. (2007) and finds that the decrease in a spread in the Paris Bourse also appears at the same time on NYSE, which does not experience a change in market design. But after adding the spread on NYSE as an additional control variable for a market-wide factor in the regression of Foucault et al.(2007), Majors finds that the decrease in spreads in the Paris Bourse completely vanishes.

E. Methodology

The study adopts a causal and longitudinal research design. Causal and Longitudinal design involves the collection of data for any given variable over a long period of time for the purpose of tracking changes in such data and measuring the influence of the independent variables on the dependent variable(s) over time.

F. Sources of Data

The data used in this study are time series in nature. This is because it involves the quantitative collection and collation of data that span over a long period of time. The study employed secondary data sources which was sourced from the various data bank of the Nigerian financial markets regulatory institutions with a concentration on the readily available websites of the various markets regulatory institutions like the Nigerian Stock Exchange (NSE) database, the Central Bank of Nigeria (CBN) statistical bulletin and the Securities and Exchange Commission (SEC).

G. Model Specification

The model specification for the study is based on the modification of the works of Glosten and Milgrom (1985) and Evans and Lyons (2002). The model is specified below:

MMS = f (FMP,) (1)

Where:

MMS = Market microstructure measured as Bid-Ask-Spread (BAS)

FMP = Financial market performance.

MMS (BAS) = f (FMP) (2)

MMS (BAS) = *f (TNI, SMC, SMI, TVT, NLS, EXR, TRB, TOR, INF)* (3)

Where financial market performance variables were measured as follows:

TNI = Total number of new issues;
SMC = Market capitalization;
SMI = Market index;
TVT = Total value of transaction;
NLS = Number of listed securities;
EXR = Exchange rate;
TRB = Treasury bill rate;
TOR = Turnover ratio;
INF = Inflation rate.

Econometrically, the basic regression equation to be estimated is specified thus:

$$MMS(BAS_t) = \alpha_0 + \alpha_1 TNI_t + \alpha_2 SMC_t + \alpha_3 SMI_t + \alpha_4 TVT_t + \alpha_5 NLS_t + \alpha_6 EXR_t + \alpha_7 TRB_t + \alpha_8 TOR_t + \alpha_9 INF_t + \varepsilon_I \quad (4)$$

ε_i = the residual or error term.

A priori expectations of the relationship in the model equation are:

$\alpha, \alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7, \alpha_8, \alpha_9 > 0$ that is, financial performance impacts on market microstructure.

H. Estimation Technique

Specifically, the study used the EGARCH model. The EGARCH is the Exponential Generalized Autoregressive Conditional Heteroskedasticity which is within the framework of the multivariate GARCH analysis. In addition, tests of stationarity were performed on the time series as this is justified in that it corrects the non-stationary time series to obtain stationarity using the Augmented Dickey-Fuller (ADF) unit root to determine the presence of co-integration among the variables of interest.

IV. ANALYSIS OF RESULTS AND DISCUSSION OF FINDINGS

Table 1. Descriptive Statistics

	BAS	TNI	SMC	SMI	TVT	NLS	TRB	EXR	INF	TOR
Mean	-3.978125	39352.35	310938.0	15139.67	732318.7	216.9375	13.54813	40292.00	18.79813	4.965625
Median	255.2500	2280.850	18040.40	9537.050	190016.0	264.0000	12.95000	116.4568	11.65000	5.000000
Maximum	24800.90	552782.0	2900062.	57990.20	3535631.	310.0000	26.90000	1286516	72.80000	10.70000
Minimum	26874.60	0.000000	5121.000	127.3000	0.000000	0.000000	4.500000	0.893800	5.400000	0.000000
Std. Dev.	9318.464	107024.6	653468.8	14929.06	971838.0	107.3850	4.793696	227409.9	17.54341	3.286003
Skewness	-0.827175	3.797008	2.814229	0.873194	1.504848	-1.495493	0.405219	5.388158	1.728263	0.033822
Kurtosis	6.436071	17.93730	10.39009	3.181478	4.477610	3.408913	3.404493	30.03225	4.878064	1.642688
Jarque-Bera	19.39128	374.3892	115.0574	4.110412	14.98880	12.15094	1.093901	1129.162	20.63294	2.462497
Probability	0.000062	0.000000	0.000000	0.128066	0.000556	0.002299	0.578712	0.000000	0.000033	0.291928
Sum	-127.3000	1259275.	9950015.	484469.4	23434200	6942.000	433.5400	1289344.	601.5400	158.9000
Sum Sq. Dev	2.69E+09	3.55E+11	1.32E+13	6.91E+09	2.93E+13	357477.9	712.3651	1.60E+12	9540.913	334.7322
Observations	32	32	32	32	32	32	32	32	32	32

Source: Researcher's Estimation using E-View 8.0 software, 2017.

The results of the descriptive statistics revealed that TVT has a very high mean value when compared to the mean value of the other variables. The variable with the lowest mean value is BAS, followed by TOR. The mean of BAS, NLS and TOR being less than their respective median indicates the skewness of the data to the left, while the mean of TNI, SMC, SMI, TVT, TRB, EXR and INF being greater than their median respectively indicates the skewness of the data to the right. The value of the standard deviation appears relatively high on the average for all the variables except for TRB, INF and TOR. This shows that there is the considerable divergence from the mean point in the distribution of the data except for the TRB, INF and TOR, which shows a clustering of the data around the mean point for the financial markets performance and market microstructure data.

Amongst all the variables, it is only BAS, SMI, TRB and TOR that were found to be negatively skewed from the origin. The other variables were found to be positively skewed relative to the normal distribution (0 for the normal distribution) from the origin. This is an indication of a non-symmetric series. The kurtosis is slightly larger than 3, the kurtosis for a normal distribution. Skewness indicates non-normality, while relatively large kurtosis suggests that distribution of the variable series is leptokurtic (that is, exhibit fat tail), but since the kurtosis in the study is not large except for TNI and EXR, the distribution cannot be said to be leptokurtic in this sense. For the normality test, all the series were normally distributed as revealed by the Jarque-Bera statistic and their probability values were significant at 1% level of statistical significance except for TNI, SMC and EXR, which were not significant at the 1% level of statistical significance. The implication of the series passing the normality test is that the regression output is reliable as there will be no spurious regression result.

Unit Root Test

Time series data have always been found to exhibit non-stationary characteristics. This has the tendency or implication of producing spurious regression results when one non-stationary variable is run on another non-stationary variable. It is against this backdrop that we test for the stationarity of the dataset for the various variables using the Augmented Dickey-Fuller Test.

Table 2. Result of Unit Root Test

Variables	ADF Statistics With Constant But no trend	95% ADF Critical Level	Order of Integration	Probabilities
BAS*	-4.855404	-1.952066	1(0)	0.0000
TNI*	-3.585227	-1.952066	1(0)	0.0008
SMC*	-2.331956	-1.952066	1(0)	0.0213
SMI*	-5.714391	-1.952473	1(1)	0.0000
TVT*	-1.993058	-1.954414	1(1)	0.0461
NLS*	-5.447689	-1.952473	1(1)	0.0000
TRB*	-6.171964	-1.952473	1(1)	0.0000
EXR*	-5.476141	-1.952066	1(0)	0.0000
INF*	-3.529182	-1.954414	1(1)	0.0011
TOR*	-5.987381	-1.952910	1(1)	0.0000

Source: Author's Estimation using Eview 8.0 software, 2017.*Significant at 5% level.

S can be seen from the analysis of results in table 4.2 above, the null hypothesis of a unit root is not rejected for any of the variables. That is, all the series were non-stationary at the level. However, each of the series was stationary at first difference. Bid-Ask-Spread (BAS), Total Number of New Issues (TNI), Stock Market Capitalization (SMC), and Exchange Rate (EXR) were stationary or significant at the level form at the 5% level of significance, while Stock Market Index (SMI), Total Value of Transaction (TVT), Number of Listed Securities (NLS), Treasury Bill (TRB), Turnover Ratio (TOR) and Inflation were stationary or significant at the first difference level at 5% level of significance. This implies that the time-series properties of the data were relatively stable, and there is no unbiasedness of information in the data utilized for financial markets performance in Nigeria. This goes to confirm the earlier findings of the Jarque-Bera statistic in relying on the data set for inferences. This shows that the likelihood of spurious regression results is non-existence.

Estimation Results

Table 3: Regression Result

Dependent Variable: BAS
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 09/29/17 Time: 18:25
Sample: 1985 2016
Included observations: 32

Failure to improve Likelihood after 57 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(11) + C(12)*RESID(-1)^2 + C(13)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	5385.661	6082.222	0.885476	0.3759
TNI	-0.001485	0.023723	-0.062595	0.9501
SMC	0.004937	0.004291	1.150356	0.2500
*SMI	-0.747426	0.106464	-7.020481	0.0000
*TVT	0.010565	0.002833	3.728883	0.0002
*NLS	-27.78754	10.48769	-2.649537	0.0081
TRB	18.24995	238.7091	0.076453	0.9391
*EXR	0.026445	0.005239	5.047953	0.0000
INF	63.29925	42.72115	1.481684	0.1384
*TOR	941.6074	204.4345	4.605913	0.0000
Variance Equation				
C	10438616	13095890	0.797091	0.4254
RESID(-1)^2	1.167930	1.156121	1.010214	0.3124
GARCH(-1)	-0.436437	0.571844	-0.763209	0.4453
R-squared	0.789880	Mean dependent var		-3.97812

			5
Adjusted R-squared	0.703922	S.D. dependent var	9318.464
S.E. of regression	5070.462	Akaike info criterion	19.79660
Sum squared resid	5.66E+08	Schwarz criterion	20.39205
Log-likelihood	-303.7455	Hannan-Quinn criteria.	19.99397
Durbin-Watson stat	2.135029		

*Significant at 5% level.
Source: Researcher's Estimation using E-view 8.0 econometric software, 2017.

A. Interpretation of Regression Result.

The regression result presented in table 3 above shows that there is a negative and not significant relationship between Total New Issue (TNI) and Bid-ask- Spread (BAS). An increase in total new issue by 1 unit will result in a 0.0015 unit decrease in Bid-ask Spread. The p-value of 0.9501, which is more than the 5% level of significance, implies that the relationship is not significant. Thus, it can be inferred that the total new issue (TNI) does not significantly explain changes that occur in Bid-ask spread (BAS). As can be seen from the table above, Stock market capitalization (SMC) and Bid-ask Spread (BAS) have positive but not significant relationships. The p-value of 0.2500 being greater than the 5% level of significance confirms the non-significance of the relationships.

Also, the Stock market index (SMI) and Bid-ask spread (BAS) demonstrate negative but significant relationships. This is revealed by the estimated coefficient and probability value. While the estimated coefficient showed a negative relationship, the p-value of 0.0000 confirmed that there is a significant relationship. An increase in the stock market index by 1 unit will result in a 74.7% change in bid-ask spread(BAS). Thus, it can be validly inferred that the stock market index (SMI) does significantly explain changes that occur in Bid-ask spread (BAS). In the same vein, it was observed from the regression result that Total Value of Transaction (TVT) and Bid-ask spread (BAS) did exhibit not only positive relationship but also very significant relationships as confirmed by their estimated positive coefficient and probability value which is less than 5 per cent statistical significance level. This implies that the total value of financial market transactions does explain changes that occur in Bid-ask spread which is market microstructure proxy.

On the other hand, the Number of listed securities (NLS) and Bid-ask spread (BAS) exhibit negative but significant relationships. The significance of their relationship is substantiated by the p-value of 0.0081 is less than the 5 per cent level of statistical significance. Their estimated coefficient indicates that a unit change in the total value of the transaction will result in 27.8 unit decrease in bid-ask spread. Thus, the number of listed securities does significantly explain changes that occur in bid-ask spread. This is explained to be a bidirectional causal relationship. Treasury bill and bid-ask spread exhibit positive but not significant relationships. This is occasioned by the p-value of 0.9391 being greater than the 5 per cent level of statistical significance.

The analysis of the regression result also revealed a positive and significant causal relationship between Exchange rate (EXR) and Bid-ask spread (BAS). While the estimated coefficient is positive, the probability value of 0.0000 is also statistically significant at the 5 per cent level. Inflation (INF) and bid-ask spread also demonstrated a positive but not significant relationship. This is accentuated by the p-value of 0.1384 being greater than the 5 per cent level of significance. Also of significant and positive relationship with the bid-ask spread (market microstructure) is the Turnover Ratio (TOR), as can be observed from the analysis of the regression results. The estimated coefficient of 941.61 demonstrated the positive direction of the relationship, while the probability value of 0.0000 being less than the 5 per cent level of statistical significance demonstrates the significance of the relationship. This implies that a unit increase in the turnover ratio will result in a 941.61 units increase in both directions. Thus, it can be rightly inferred that turnover ratio does explain significant changes that occur in bid-ask spread (market microstructure).

The diagnostic statistic was quite impressive. The R-squared, which is the coefficient of determination, was 0.789880, showing that 79% of the systematic variation that occurs in the dependent variable (BAS-bid ask spread), which is the market microstructure, is explained by the various independent variables. The remaining 21% can be attributed to extraneous force outside the model specifications. The results demonstrate the goodness of fit of the regression model with the Adjusted R-squared of 0.703922, which implies that there is 70.3% goodness of fit. The implication of this is that the variables specified in the model are proper for providing an explanation for the objectives of the study. The Durbin-Watson (D.W)

statistic of 2.1 allows us to reject the presence of autocorrelation in the model.

B. Hypothesis Testing

Hypotheses One:

The null form of hypothesis one is hereunder restated thus:

(i) There is no relationship between financial markets performance and market microstructure in Nigeria.

To test for this hypothesis, the study utilized the regression results earlier obtained from financial market variables. We reject the null hypothesis that there is no relationship between financial markets performance and market microstructure in Nigeria and accept the alternative hypothesis that there is a significant relationship between financial markets performance and market microstructure in Nigeria. Five financial markets variables were significant with their p-values less than 0.05 significant levels. They are (SMI = 0.0000, TVT = 0.0002, NLS = 0.0081, EXR = 0.0000, TOR = 0.0000).

C. Discussion of Findings

This section briefly presents a juxtaposition of the findings of the study with the theoretical body of knowledge and related postulations in the literature. Along the line of the first finding that there is the relationship between financial markets performance and market microstructure in Nigeria, it was observed from the outcome of the study that the very act of financial market performance begins with the trading processes, mechanism, design and structure of the market which is the crux and thrust of the market microstructure matter in finance. Thus, it can be validly inferred that there can never be financial market performance without market microstructure and financial intermediation. This outcome is in tandem with the submission of Stoll (2003), that market microstructure deals with the purest form of financial intermediation. Hence, the very act of financial market performance is premised on market microstructure theory.

V. CONCLUSION AND RECOMMENDATION

The study was set out to examine the relationship between financial markets performance and market microstructure in Nigeria. The study observed that very little research had been carried out on market microstructure in Nigeria, which made abundant references to local literature a herculean task to the study as the little ones available were scanty. However, deliberate research efforts were intensified to ensure the success of the study.

Through the analysis of the objective, it was observed that the very act of financial market performance is premised on the market microstructure variables.

A. Recommendations

Based on the findings and conclusions of the study, the following recommendation was made:

The study recommends that the efficient performance of the Nigerian financial markets on the platform of the market microstructure should be sustained by the government by organizing conferences, workshops and seminars for market participants on market microstructure finance as the knowledge of this area of finance is limited in Nigeria. Their enhanced knowledge of the market microstructure finance will improve the performance of the market.

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