ECONOMIC POLICY UNCERTAINTY, MACROECONOMIC VOLATILITY AND STOCK MARKET BEHAVIOUR IN NIGERIA

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ABSTRACT
This study investigates the impact of economic policy uncertainty and macroeconomic instability (volatility) on stock market behaviour (returns, liquidity and volatility) using monthly data collected from Central Bank of Nigeria statistical database, Nigeria Exchange Limited database and World uncertainty database covering April 2016 to July 2022. Macroeconomic volatility and stock market volatility were detected using GARCH (1,1). The autoregressive distributive lag model was used for the study. This study found that economic policy uncertainty positively and significantly impacts stock market returns, stock market liquidity, while its effect on volatility is significantly negative. Macroeconomic volatility (exchange rate volatility) significantly and positively determines stock market returns and market liquidity, but its impact on market volatility is negative but insignificant. This study also found that stock market volatility positively and significantly accounts for stock market returns and market liquidity. This study recommends that the Security and Exchange Commission (SEC) should initiate policy targeted at boosting market liquidity and strengthening the stock market resilience against shocks associated with economic policy changes, while the Central Bank of Nigeria should intensify the current economic policy, especially exchange rate policy aimed at stabilizing the macro-economy because of the positive impact on stock market returns and liquidity.

Keywords: Economic Policy Uncertainty, Macroeconomic Volatility, Nigerian Stock Market Behaviour
JEL Classification: E44, F24, G12

1. INTRODUCTION

Several factors interact at the macro-level to influence the stock market. However, macroeconomic instability constitutes risk and to minimize the effect of macroeconomic risk, the government initiates policies. Policy aimed at mitigating instability create uncertainty capable of affecting trades at the exchange. Uncertainty is the state of unsureness about the future outcome of an event, behaviour or action. It can also be described as a state of incomplete information (Haider, Hashmi & Ahmed, 2017), and it is brought about by changes in policies and macroeconomic variables.

Uncertainty in global space is on the increase since 2012, reaching its height in 2020 following the outbreak of COVID-19 and its more in low-income and developing countries because of their vulnerability to external shocks, thus making them more volatile. Specifically, uncertainty is higher in countries with poor institutional qualities and financial constraints as well as in nations practicing democracy (Ahir, Bloom & Furceri, 2022). Due to globalization, country-specific economic policy uncertainty and uncertainty emanating from stronger economies may influence the stock market (Das and Kumar, 2018). Uncertainty may also be linked to

fluctuations aggregate indicators such as interest rates, monetary variables, and so on (Henzel & Rengel, 2013). Though uncertainty is not an observable variable, it can be captured through proxy measures. Volatility of variables is among the regularly used measures to capture uncertainty because it reflects risk as well as uncertainty (Farrara, Lhuissier & Tripier, 2017), thus making volatility a measure of market risk (Ado &Yaro, 2023).

The Nigerian government has introduced a lot of policies in recent times, though targeted at economic stability, they are capable of creating uncertainty in the economy. For instance, the Central Bank of Nigeria (CBN) introduced a cashless policy and currency redesign in 2022, and this resulted in scarcity of Naira in the Nigerian economy. Also, CBN in its 273rd monetary policy committee (MPC) meeting held in May 28th 2020 reduced the monetary policy rate (MPR) from 13.5% to 12.5% (Punch News Paper, May 29th, 2020). However, on the 27th of February, 2024 MPC meeting, the monetary policy rate was again increased from 18.75% to 22.75%. MPR is a benchmark for interest rates, meaning that changes in the rate will trigger changes in other interest rates. Additionally, in 2023 the government introduced the free-floating or unified exchange rate and this led to the soaring of exchange rate. Indeed, the exchange rate of Naira to the US dollar rose from about N800 before the policy in 2023 to about N1800 in February 2024 (ThisDay News Paper, 20th April, 2024). Similarly, the Nigerian government under president Tinubu removed petroleum product subsidy in May 2023. This decision led to astronomical rise in the price of petrol from about ₦150 to as high as N660 in January 2024. No doubt that the aforementioned government policies and actions have created uncertainty which is capable of affecting investment decisions and financial market behaviour, and therefore desired empirical investigation.

The main objective of the study is to consider whether the stock market reacts to economic policy uncertainty and macroeconomic volatility in Nigeria. The remaining parts of the paper are arranged in the following order. Section two reviews conceptual, theoretical and empirical literature. Section three presents the theoretical framework, specifies the models and highlights the procedures for data analysis. Section four is devoted to the presentation of results and discussion of findings, while section five concludes the paper and makes recommendations.

2. LITERATURE REVIEW

2.1 Conceptual Review

Economic policy uncertainty is a state of unsureness. It is a conditional distortion that cannot be forecasted (Jurado, Ludvigson & Ng, 2015). Baker, Bloom and Davis (2016) described economic policy uncertainty as apprehension associated with fiscal policy, monetary policy or regulatory policy decisions. The economic policy uncertainty index has been developed, widely used and referred to in public speech and empirical work. For instance, Davis (2014) asserted that it appears that policy stability is back in the US because the economic policy uncertainty index dropped from 202 in December 2012 to 100 in July-a level not experienced since 2008. It is expected that a rise (drop) in the index will signify a decline (improvement) in the economy and investment performance. Baker, Bloom and Davis, (2012) generate an economic policy uncertainty index and survey its effect on economic outcomes. They discovered that investment and employment are sensitive to increased policy uncertainty. This tends to imply that the policy uncertainty index captures the effect of changes in government policy on economic activities, and ultimately the stock market.

The stock market may react to economic policy in various ways. Policy targeted at restricting credit creation may inhibit the availability of funds for investment. Certainly, the impact of such government interference manifests through the stock market to influence the economy (Lagos & Zhang, 2018). Indeed, the more the bank liquidity (liquid funds held by banks), the less credit creation. This no doubt will depress transactions in the stock market because of the paucity of investment funds (Uhunmwangho & Ajao, 2019). Indeed, interest rate rise impedes trading activities because of its impact on access to funds. Control of interest rates affect borrowing and dampens the spirit of investment, thus hindering smooth market operation – a phenomenon described as market friction (He & Modest, 1995). The decline in stock market activities is often attributed to cash and financial policies (Shaban, Al-Zubi & Alghusin, 2017).

Macroeconomics is concerned with aggregate economic activities. Performance in the aggregate economy is captured through the exchange rate, inflation, interest rate, stock market and the level of employment among others. The instability (volatility) of macroeconomic variables dampens investors' confidence thereby discouraging investment. Changes in macroeconomic variables constitute risk because of the uncertainty associated with them, and this is capable of impeding investment decisions (Garikai, 2019). Macroeconomic instability (uncertainty) was computed by Garikai (2019) using the stock market index, asserting that instability (uncertainty) in the macroeconomic space is mirrored in the trend of index or stock market returns volatility.

2.2. Theoretical Review

Efficient market hypothesis, capital asset pricing model and arbitrage pricing theory are commonly referred in financial literature. The efficient market hypothesis (EMH) advanced by Fama (1970) enunciates that in an efficient market price of security fully incorporates all information. In an efficient market, prices adjust rapidly to news and the current price absorbs all available information, as such investors cannot take advantage of information set to make abnormal returns. That is, benefiting from price variations through prediction is difficult, if not impossible (Ruhami, Islam & Ahmad, 2018). The capital asset pricing model (CAPM) developed by Sharpe (1964) associates asset return to return on riskless assets and beta of the market. The core idea of CAPM is that, in a capital market of competitive equilibrium, non-systematic risks can be eliminated through diversification, only systematic risks which cannot be diversified away affect security return in linear fashion, hence it is called one factor model.

To obviate the weakness of CAPM as a single-factor model, Ross (1976) developed the arbitrage pricing theory (APT). APT submitted that asset return is linearly related to a number of risks associated with macroeconomic variables, with each variable having its risk element (beta), thus making it a multi-factor model. APT assumes that mispricing of financial assets may occur in the market, implying the market is not efficient, as such profit-taking is possible. Recently, Acharya and Pedersen (2005) came up with the liquidity-augmented capital asset pricing model. The model is premised on the belief that investors who are risk averse will maximise expected return (utility) under the condition of wealth restraints. These restrictions constitute risks capable of influencing investment return. Indeed, anxiety/uncertainty associated with government economic policy obstructs economic agents' future investment or trading decisions because of the effect such policy may have on investment funds (Brunnermeier & Pedersen, 2009). Evidence has shown that policy uncertainty leads to a reduction in spending and investment (Baker, Bloom, & Davis, 2015).

2.3 Empirical Literature

Debata and Mahakud (2018) used various econometric techniques such as causality, and impulse response functions and revealed that economic policy uncertainty (EPU) determines stock market liquidity in Kharagpur India both in normal and financial crisis periods. Dash, Maitra, Debata and Mahakud (2019) inspected the effect of EPU on market liquidity in G7 nations using linear and nonlinear causality tests and indicated a causal but inverse link between economic policy uncertainty and stock market liquidity. Fernandez-Amador,Gacher, Larch and George (2013) investigated the effect of monetary policy on stock market liquidity in the Eurozone using panel and vector autoregression models, and reported that monetary policy (interest rate) influence stock market liquidity. Chung and Chuwongarant (2013) studied uncertainty, market structure and liquidity in the US, applying multiple regression and revealed that uncertainty of the market wields (measured by the volatility of the index) a remarkable influence on liquidity. Uhunmwangho and Idolor (2022) tested the impacts of macroeconomic instability on the liquidity of African stock markets using difference GMM. The study discovered that macroeconomic instability positively and significantly influences stock market liquidity. Cheriyan and Lazar (2019) applied multiple regression on intraday data of 50 stocks in Indian exchange and revealed that stock volatility determines liquidity significantly. Muktiyanto (2015) applied ARCH and GARCH methods to determine the factors responsible for market liquidity in the Indonesian Stock Exchange, and confirmed that market-level liquidity declines with market volatility. The study further revealed that macroeconomic news slightly affects market liquidity. Fernandez-Amador, Garchter, Larch and Peter (2011) applied vector autoregressive tool on panel data in the Eurozone, and determined that changes in monetary policy (money growth) boost stock market liquidity in the Eurozone, specifically in Germany, France and Italy stock exchanges.

Liu and Zhang (2015) investigated the nexus between EPU and the volatility of the stock market and concluded that economic policy uncertainty (EPU) triggers stock market volatility. Burkhard (2021) reported that the rise in the uncertainty index led to an increase in volatility when causality technique was applied on monthly data covering 22 markets. Yu, Huang and Xiao, (2021) uncovered that economic policy uncertainty significantly stimulates the stock market liquidity in emerging markets. Srikanta and Amartya (2022) examined the effect of economic policy uncertainty on the stock market in a cross-sectional framework with the aid of Markvo switching vector autoregressive technique. The result indicates that volatility rises as policy uncertainty intensifies. The result also reveals that EPU leads to decline in return, only in the contemporary period, and stimulates returns in the future, resulting in depressed volatility. Adam, Sidek and Sharif (2022) explored the link between EPU, volatility and returns of Islamic stocks using causality procedures. It was revealed in the study that EPU has a negative effect on stock returns, while volatility positively and significantly accounts for stock returns.

Gao, Zhu, O`Sullivan and Sherman (2019) examined the impact of economic uncertainty on stock prices in the UK, engaging the augmented vector autoregressive model and indicated that uncertainty associated with inflation and economic policy does not explain stock returns in the UK. Ajmi, Aye, Balcilar, Montasser and Gupta (2015) engaged the causality method to determine the effect of EPU on stock volatility in US and documented a bi-directional causal relationship. Raiz, Hongbing, Hashmi and Khan (2018) investigated the impact of US economic policy uncertainty and global economic policy on returns in the US. The result from ARDL bounds test, reveals that uncertainty from national and international economic policy negatively affects stock returns. Demir and Ersan (2018) determined the influence of EPU on

the stock returns of quoted firms in Turkey, and exposed that EPU negatively and significantly determines returns in the tourism sub-sector of the market. Hoque and Zaidi (2019) examined the impact of policy uncertainty on sectoral stock returns in Malaysia, utilizing linear and nonlinear techniques. The result reveals that uncertainty associated with global economic policy significantly drives stock returns. Ahmad and Ramzan (2016) examined the effect of the volatility of macroeconomic variables on stock market volatility in Pakistan using ARCH technique, and indicated that volatility of macroeconomic variables (inflation and interest rate) predicts stock returns. Chowdhury and Rahman (2004) applied vector autoregressive technique to inspect the impact of variability of macroeconomic variables on stock market return in Bangladesh, and revealed that the volatility of macroeconomic variables caused stock market fluctuation. Dawood (2007) examined the impact of macroeconomic uncertainty on the Karacki stock exchange, applying GARCH, Cointegration and regression techniques, and revealed that no significant relationship between macroeconomic volatility and stock market volatility. Zakaria and Shamsuddin (2012) applied GARCH procedures to investigate the macroeconomic volatility and stock market in Malaysia utilizing causality test and regression, and the result exposed that volatility of macroeconomic variables Granger stock return volatility.

Raunig (2021) used the causality technique and monthly data for 22 countries and revealed that economic policy uncertainty stimulates stock market volatility. Drama (2023) considered the impact of global economic policy uncertainty on the stock market covering Botswana, Mauritius and South Africa and using GARCH-MIDAS method. The result revealed that economic policy uncertainty in global space positively and significantly determines stock market volatility. Xu, Wang, Chen and Liang (2021) considered whether EPU predict stock market returns in China, using univariate and bivariate regression approaches. The result of their study shows that EPU negatively and significantly influences stock returns. Antonopoulou, Manalougou and Theodorakopoulos (2022) found a direct and significant impact of economic policy uncertainty on stock market return volatility in Greece from 5th January 2001 to 30th June, 2014. Faniband and Shamsher (2014) utilized quantile regression and discovered that economic policy uncertainty has significant impact on stock market in Tukey, Cyprus among other countries. Khojah, et al (2023) employed panel threshold technique to investigate the nexus between economic policy uncertainty and stock market return in G7 countries and found that EPU positively impact stock returns up to certain point before the impact becomes negative. Blau (2018) revealed that exchange rate volatility stimulates stock volatility in China exchange. Mahapatra and Bhaduri (2019) assessed the impact of exchange rate variability on Indian exchange using arbitrage pricing model and found that exchange rate variations significantly influence stock returns.

Li, Ma, zhang and Zhang (2020) considered the effect of global policy uncertainty on stock market volatility in China and found that global economic policy uncertainty can predict stock market volatility. Nusair and Al-Khasawneh (2022) applied ARDL to examined the link between EPU and stock returns in G7 nations. The result revealed negative and significant impact in the short-run but in the long-run it has negative effect only in Canada and Japan. Batabyal and Killins (2021) reported statistical negative and significant effect of EPU on stock market returns in Canada both in the short and long-runs. Bedowska-Sojka and Kliber (2019) documented a bi-directional causal association between stock market liquidity and volatility in Warsaw Exchange. The result implies that both indicators determine each other. Wang, Mbanyele and Muchenje (2022) found that economic policy uncertainty results to declining stock liquidity in China Exchange. The study further revealed that the quality of information releases lessened the negative effect of EPU on stock market liquidity. Chung and

Chuwonganant (2018) found that stockmarket volatility impact market returns both positively and inversely through the channel of liquidity. Specifically, the study discovered that the impact of volatility surprises on stock market returns is higher during high trading activities.

2.4 Gags in Literature

From the foregoing, it is clear that the impact of risks on stock market has gain empirical attention but the method and scope differ. Sharpe (1964) considered aggregate market risk (beta), Ross (1976) focused on macroeconomic risks, while Acharya and Pederson (2005) introduced liquidity risks to general equilibrium model of CAMP. This study combined both market risk (volatility) and macroeconomic risk factors. Also, Sharpe (1964) CAPM and Ross (1976) APT assumed that the financial market is frictionless and that borrowing costs are absent. Whereas, bank charges interest on loans (borrowing cost) and the government through its monetary regulatory agency constraints investment funds using interest rate and bank liquidity controls, thus constituting frictions, these phenomena were accounted for in this study as control variables. Chung and Chuwongarant (2013) investigated the impact of uncertainty on US market liquidity. However, their study did not engage economic policy uncertainty indicators and was conducted in developed market, unlike this ongoing study. Recent studies (Dash, et al, 2019; Demire & Ersan, 2018; Hoque & Zaidi, 2019; Raiz, et al, 2018; Guo, et al, 2019; Raunig, 2021; Xu,et al, 2021; Drama, 2023) considered the effect of economic policy uncertainty on stock market. Again, these studies were conducted in different geographical regions, particularly in developed economies. Therefore, the scope of these study is different from this ongoing one. Notwithstanding that the nexus between risk and stock market has been considered, studies which investigated the impact of economic policy uncertainty and macroeconomic volatility on stock market returns, market liquidity and market volatility using Nigerian data for the period April 2016 and November 2022 is uncommon. It is against this backdrop; that this study examines the impact of economic policy uncertainty, and volatility of macroeconomic variables on stock market behaviour in Nigeria, controlling for bank indicators.

3. METHODOLOGY

3.1 Theoretical Framework

The relationship between asset returns and risk was captured in Sharpe (1964) capital asset pricing model (CAPM). CAPM associated asset return to return on riskless asset and the product of market risk (Beta) and risk premium thus:

$$Ri = FR + \beta(\mathrm{Rm} - \mathrm{FR}) \quad \text{……………………………………………………………………………………(1)}$$

Where: Ri is security return, β is market beta (risk), Rm is return on market and FR stand for return on riskless asset. However, Ross (1976) arbitrage pricing theory (APT) claimed that security return is influence by risks associated with macroeconomic variables and that each variable has its risk factor (beta). The condensed version of the model takes the form:

$$R_i = Fr + б_i KF_1 + \ldots\ldots + б_n F_n + \mathrm{E}_k \quad \text{…………………………………………(2)}$$

Where, R_i is the rate of return to security i, Fr represent the risk-free rate of return, бi is the risk associated with macroeconomic factor (the k^{th} factor), F_1 is the k^{th} factor (economic factor), $б_n$ is the risk common to nth factor (Fn), and E_k stand for the error term.

3.2 Model Specification

Changes in government policy create uncertainty and may impact the stock market by altering the mood of investors. Also, macroeconomic uncertainty (volatility) constitutes risk and this may cause banks to lower credits to investors. Bello, Anfofum and Farouk (2020) discovered that bank credit has positive effect on the firms' output, and ultimately earnings thus affecting trading at the exchange. Similarly, economic policy uncertainty (EPU) may trigger stock market volatility (Liu & Zhang, 2015). Thus, the interaction between uncertainty in the macroeconomic space and the stock market is represented in this study thus:

$$SKM = f(EPU, MV, BL)$$
……(3)

Where:

SKM = stock market behaviour, EPU is the short form of economic policy uncertainty, MV represent volatility of macroeconomic variable, and BL proxy for bank indicators.

Stock market behaviour is captured in the study using the stock market index, stock market liquidity and stock market volatility. The volatility of macroeconomic variables was proxy by volatility of exchange index returns and stock market volatility. The use of volatility of the stock market index to capture uncertainty was advanced by Bloom (2009) because it reflects the mood of investors in the stock market. This study implements the autoregressive distributive lag procedure (ARDL). ARDL is a dynamic model approach because it incorporates dynamic regressors. Dynamic model is activated when one or two lags of the dependent variables are included as explanatory variables (Gujarati, 2009) in addition to that of the explanatory variables. Importantly, the incorporation of the lag dependent variable as an explanatory variable captures the influence of the past. ARDL model usually take the form:

$$K_t = a_o + \sum_{i=1}^{n} \Upsilon K_{t-1} + \sum_{j=1}^{d} \sum_{i=0}^{vj} \mathrm{Xj,t}_{-1}\beta j,i+Et \quad \text{……..(4)}$$

Where:

K_t is the dependent variable at time t, n is the number of lags of the regressand, v is the number of lags of the first regressor, d is the lag of other regressors, X is a set of regressors and Et is the error term. This study employed both dynamic regressors (explanatory variables with lag) and static regressors (explanatory variables without lag). Also, the least squares estimation equation procedure as against the ARDL estimator equation was implemented in this study. Therefore, the functional form of the model for stock market index performance (the first measure of stock market behaviour in this study) is stated as follows:

$$LASI_t = K_o + \Upsilon \Delta LASI_{t\_1} + K_1 \Delta EPU_{t_{-1,2}} + K_2 \Delta VEXR_t + K_3 \Delta VASI_t + K_4 \Delta VASI_{t-1} + K_5 \Delta BLR_t + K_6 \Delta LDR_t + K_7 \Delta LDR_{t-2} + E_t \quad \text{……...(5)}$$

Where:

$LASI_t$ stand for logarithm of all market index at time t (proxy for stock market returns in line with in line with Mogbo and Igbinedion (2024). EPU_t represents economic policy uncertainty at time t, $VEXR_t$ denotes exchange rate volatility at time t (used in place of macroeconomic volatility), $VASI_t$ signifies stock market volatility at time t (used to account for macroeconomic volatility) BLR_t measures bank liquidity at time t (used to proxy fund constraints but incorporated as control variable), LDR_t stands for lending rate at time t (engage to account for

borrowing cost in line with Mobosi and Madueme (2016) and used as control Variable), Δ is the differenced value of the variables, and E_t is the error term

Stock market behaviour is also captured in this study using stock market liquidity. Huang and Stoll (2001) claimed that exchange volatility has no remarkable impact on stock liquidity (trading cost). Therefore, it is necessary to ascertain whether uncertainty factors including volatility influence market liquidity in Nigeria exchange. Thus, the nexus between EPU, exchange rate variability and market liquidity is represented as follows:

$$\Delta TOR_t = K_o + \Upsilon\Delta TOR_{t\_2} + K_1\Delta EPU_t + K_2\Delta EPU_{t_{-2}} + K_3\Delta VEXR_t + K_4\Delta EXR_{t-1} + K_5\Delta VEXR_{t-2} + K_6\Delta VASI_t + K_7\Delta VASI_{t-2} + K_8\Delta BLR_t + K_9\Delta BLR_{t-2} + K_{10}\Delta MS_t + K_{11}\Delta LDR_{t-2} + E_t \quad \ldots\ldots(6)$$

Where:

TOR_t is the stock market liquidity at time t (another measure of stock market behaviour and captured in this study as the ratio of value traded to market capitalization), MS_t represented market capitalization at time t (used to account for market size and used as control variable). Other variables are as stated previously.

There is the contestation that in an unstable economic environment, policy uncertainty enhances stock market volatility predictability performance (Yu, Huang & Xiao, 2021). The foreign exchange rate has been unstable in Nigeria following the introduction of a unified exchange rate by President Tinubu's administration in 2023 arising to as high as N1800 to one dollar in 2024. Therefore, this study believed that uncertainty in the foreign exchange market (proxy by exchange rate volatility) together with EPU will influence stock market volatility. To capture this nexus in this study, the model below was implemented.

$$\Delta VASI_t = K_o + \Upsilon\Delta VASI_{t\_2} + K_1\Delta EPU_t + K_2\Delta EPU_{t_{-2}} + K_3\Delta VEXR_t + K_4\Delta TOR_t + K_5\Delta TOR_{t-1} + K_6\Delta BLR_t + K_7\Delta BLR_{t-2} + K_8\Delta LDR_t + K_9\Delta LDR_{t-2} + K_{10}\Delta MS_t + + K_{11}\Delta MS_{t-2} + E_t \quad \ldots\ldots(7)$$

Where:

$VASI_t$ stands for volatility of stock market at time t (extracted from GARCH residual)

TOR_t represents stock market liquidity at time t (measured as the ratio of value traded to market capitalization). Other variables are as stated before.

The volatility of macroeconomic variables is measured from stock market prices (index) and exchange rate (Baker, Bloom & Terry, 2020). Thus, volatility of the variables (exchange rate and market index) was detected in this study using Generalized Autoregressive Conditional Heteroscedasticity (GARCH) procedures. The condensed form of GARCH (1,1), with log conditional variance as the autoregressive model is stated thus:

$$Log б^2 t = K_0 + K_1 E^2 t_{\_1} + K_2 б^2 t_{\_1} \quad \ldots\ldots(8)$$

Where:

$\log б^2_t$ is the log of conditional variance which depends on previous period shocks ($K_1E^2_{t-1}$), E^2_{t-1} represents past period error variance, and $б^2_{t-1}$ proxy past period conditional variance. K_0, K_1, K_2 are parameters to be estimated. For these parameters to be valid, they should not be negative and $K_1 + K_2$ should not be more than one (Perera, 2016).

3.3 Data and Estimation procedure

Data for this study was collected from the Central Bank of Nigeria (CBN) database, the Nigeria Stock exchange database and the World uncertainty index database computed by Ahir, et al (2018) available at www.economicpolicyuncertainty.com. The unit root test constitute the preliminary analysis, while the autoregressive distributive lag (ARDL) in least squares equation procedure as against the ARDL estimator equation was implemented in this study. The GARCH (1,1) econometric tool was used to extract volatility residuals of exchange rate and all share index, and thereafter incorporated with other variables in the excel work file for further analysis, Also, the logarithm of variables with large size was taken, while E-view 9.0 computer software was used for the analysis.

4. Results Presentation

Unit Root Test on Variables

Unit root test was conducted to verify the claim that time series data are not stationary over a range of time. To this end, the Augmented Dickson Fuller unit root test was applied on the variables at levels. The unit root test result is displayed in table 1 below.

Table 1: Unit Root Test on Variables

	Unit Root @ Levels			Unit Root @ First Difference		
Variable	ADF Statistic	5% ADF Critical Value	Remark	ADF Statistic	5% ADF Critical Value	Remark
ASI	-0.910723	-2.898623	Not Stationary	-7.258333	-2.899115	Stationary
EPU	-4.670201	-2.898623	Stationary	-8.633050	-2.899619	Stationary
EXR	-0.526342	-2.904198	Not Stationary	-8.262713	-2.899115	Stationary
TOR	-6.226744	-2.898623	Stationary	-9.005407	-2.900137	Stationary
LDR	-0.514988	-2.899115	Not stationary	-16.36226	-2.899115	Stationary
BLR	-2.818018	-2.898623	Not stationary	-9.562044	-2.899115	Stationary
MS	-7.188797	-2.898623	Stationary	-10.14425	-2.899619	Stationary

Source: Authors' computation with the aid of E-view software

Table 1 above demonstrates that only TOR, EPU and MS are stationary at 5% level, while ASI, EXR, LDR, and BLR are not. However, when the unit root test was repeated on the variables at their first difference, all the variables became stationary as shown in table 1 above. The implication of this result is that, at the first difference, there is no unit root on the variables. Meaning, that the variables are stable because they are integrated of order one 1(1). Therefore, regression conducted using the variables at their first difference will be consistent. However, the variables were transformed to their first difference before applying regression to them in this study.

Regression Results

The aim of this study is to ascertain the impact of economic policy uncertainty and macroeconomic volatility on stock market behaviour. To achieve this, a multiple regression technique was applied to the three-models specified in this study to capture stock market behaviour. However, volatility of variables namely exchange rate volatility and stock market volatility were first detected using GARCH (1,1) procedures. Table 2.1 and Table 2.2 below displays the outcome of exchange rate volatility and volatility of the stock market.

Table 2.1: Outcome of GARCH(1,1) procedure on Exchange Rate (EXR)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
LOG(GARCH)	3.079440	0.825728	3.729362	0.0002
C	72.48639	2.542132	28.51401	0.0000
	Variance Equation			
C	0.295025	0.410206	0.719214	0.4720
RESID(-1)^2	0.224883	0.065485	3.434118	0.0006
GARCH(-1)	0.798532	0.026194	30.48551	0.0000

Source: Researchers' presentation from E-view output

Table 2.1 above indicates that the criteria for a valid volatility outcome are satisfied. For instance, the LOG(GARCH), the residual GARCH and GARCH (-1) are positive and significant at 5% level. The sum of residual GARCH and GARCH (-1) is less than one (1) as expected, thus confirming the reliability of the result. Table 2.2 below which highlights the outcome of the GARCH (1,1) tool on all share index (ASI), reveals that all the parameters used namely the LOG(GARCH), the residual GARCH and GARCH (-1) also meet the necessary condition for a reliable result. This is because all the indicators are not negative and are significant at 5% level. Meaning, that there is the presence of volatility in all share index.

Table 2.2: Outcome of GARCH(1,1) procedure on All share index (ASI)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
LOG(GARCH)	1934.044	332.4523	5.817509	0.0000
C	-2161.080	5053.457	-0.427644	0.6689
	Variance Equation			
C	1385613.	564338.6	2.455286	0.0141
RESID(-1)^2	0.740273	0.362462	2.042350	0.0411
GARCH(-1)	0.342046	0.184260	1.856319	0.0434

Source: Researchers' presentation from E-View output.

Based on the satisfactory outcome of the GARCH techniques and the detection of volatility on exchange rate (EXR) and all share index (ASI), the volatility residuals were extracted and incorporated among other variables in excel work file for further analysis.

Result of Economic policy uncertainty and macroeconomic instability (volatility) on Stock Market Index Return (Equation 5)

The result of the effect of economic policy uncertainty and volatility of macroeconomic variable on stock market index performance is presented in the table 3.1 below

Table 3.1: Regression outcome of index return and its determinants (LASI as dependent variable)

Variable	Coeff.	T-Stat.	Prob.
C	3.288556	3.482768	0.0009
DLASI(-1)	0.693928	7.869024	0.0000
DEPU(-1)	0.035934	2.373278	0.0205
DEPU(-2)	-0.019485	-1.268478	0.2090
DVEXR	0.001329	2.875374	0.0054
DVASI	2.49E-05	15.99014	0.0000

DVASI(-1)	-1.40E-05	-4.709028	0.0000
DBLR	-0.008754	-3.381650	0.0012
DLDR	-0.000871	-2.266304	0.0267
DLDR(-2)	-0.000485	-1.231862	0.2223
R2 0.9878			
Adj. R2 0.9862			
F. Statistic 606.52			
Prob. F(Stat.) 0.0000			
D.W Stat. 1.9865			

Source: Authors' compilation

The result in Table 3.1 reveals that stock market performance in the past (DLASI_1) is significant and positively related to the current performance. This tends to imply that the market has memory and that the past trend can be used for prediction, hence the need to include the lag value of market performance as a regressor in this study. The result in Table 3.1 also indicates that economic policy uncertainty in the immediate past (DEPU_1) is a major determinant of stock market behaviour. The significance of economic policy uncertainty at 5% level, implies that the stock market reacts in no small measures to policy uncertainty. Table 3.1 further reveals that macroeconomic volatility proxy in this study using exchange rate volatility and the volatility of the stock market index significantly influence stock market behaviour. Specifically, the current volatility of the exchange rate (DVEXR) positively and significantly drive index returns. This result implies that exchange rate risk is a strong determinant of stock market movement in Nigeria. Market volatility in the current period positively and significantly impacts stock market index return, while stock market volatility in the past negatively influences stock market index performance. The implication of this result is that stock volatility at the initial stage boost trading because of the risk in price associated with it. But the market reaction negatively afterward due to volatility persistence. It is also obvious in table 3.1 that bank liquidity (DBLR) and lending rate (DLDR) used as control variables negatively and significantly stimulate market index returns. This result tends to imply that bank indicators are important consideration when modeling stock market returns because of the role borrowing cost and fund control in investment decisions. The result in Table 3.1 further suggests that the adjusted R2, the F. statistic and the Durbin-Watson statistics are satisfactory and consistent for a valid estimation.

Regression outcome of the effect of economic policy uncertainty and macroeconomic instability (volatility) on Stock market liquidity (Equation 6)

A liquid market is the delight of both local and foreign investors because of the accompanying low risk and the ease of trading associated with such market. This study seeks to determine the uncertainty risk factors affecting stock market liquidity. Table 3.2 below displayed the impact of economic policy uncertainty and macroeconomic uncertainty factors influencing market liquidity.

Table 3.2: Regression outcome of uncertainty factors influencing market liquidity (DTOR as dependent variable)

Variable	Coeff.	T-Stat.	Prob.
C	-1.768181	-1.696869	0.0947
DTOR(-2)	-0.020111	-0.176616	0.8604
DEPU	-0.086523	-0.691317	0.4919
DEPU(-2)	0.263660	*2.047484	0.0448
DVASI	3.34E-05	*3.461056	0.0010
DVASI(-2)	-7.63E-06	-0.723333	0.4722
DVEXR	-0.008262	-0.917013	0.3626
DVEXR(-1)	0.025928	*2.331951	0.0229
DVEXR(-2)	-0.008746	-1.340822	0.1848
DBLR	-0.113050	-1.945609	0.0562

DBLR(-2)	0.182061	*3.082812	0.0030
DMS	0.018306	*3.957917	0.0002
DLDR(-2)	0.007471	*2.696040	0.0090
R2	0.638149		
Adj. R2	0.610178		
F. Statistic	6.117307		
Prob. F(Stat.)	0.000000		
D. W	2.149023		

Source: Authors' compilation from E-View output.

As highlighted in Table 3.2 above, stock market liquidity in the past (DTOR_2) has a negative but not significant effect on the current liquidity status of the market. The not significant impact may not be unconnected to the low liquidity position of most emerging markets including the Nigerian Stock Market. A close look at Table 3.2 reveals that current period economic policy uncertainty (DEPU) has negative but not significant effect on market liquidity, while previous period economic policy uncertainty (DEPU-2) positively and significantly influenced stock market liquidity with a lag of two period. The positive and significant impact of this indicator on liquidity tends to portray that the liquid stock market has the capacity to curtail policy uncertainty but not immediately. This probably account for why investors develop more interest in liquid markets because it has the potential to minimize risk. Table 3.2 above also reveals that stock market volatility (DVASI) proxy for macroeconomic volatility in this study positively and significantly determines stock market liquidity. This result implies that, in a liquid market investor can achieve the desired investment objective even in the face of macroeconomic uncertainty because a liquid market has the potent capacity to minimize risk, hence the positive effect. Similarly, the result of this study demonstrates a positive and significant effect of exchange rate volatility (DVEXR_1) on stock market liquidity. The significant impact of exchange rate volatility on stock market liquidity in this study is an attestation that a liquid market lowered risk for investors. Surely, the liquid market accommodates large-size trading activities, thus making risk spreading ease. The control variables used in this study for the model namely bank liquidity (DBLR), market size (DMS) and bank lending rate (DLDR) positively and significantly influence stock market liquidity. This result tends to indicate the importance of the indicators in modeling stock market liquidity, thus should be take care of in market liquidity study.

Impact of Economic Policy Uncertainty and Macroeconomic Instability (volatility) on Stock Market Volatility (Equation 7)

It has been declared that monetary policy influence stock market variations (Bhawmik & Wang, 2020). If stock market movement reflects macroeconomic conditions, it can be argued that uncertainty associated with government policy and macroeconomic variables may impact stock market volatility. To determine this, this study applied regression tool on volatility model in equation 4 above. The outcome of the result is highlighted in table 3.3 below.

Table 3.3: The outcome of economic policy and macroeconomic volatility on stock market volatility (DVASI as dependent variable)

Variable	Coeff.	T. Stat.	Prob.
C	30794.54	3.225058	0.0020
DVASI(-2)	0.699230	*10.71693	0.0000
DEPU	-27.28330	-0.023749	0.9811
DEPU(-2)	-4033.933	*-3.562556	0.0007
DVEXR	-53.10819	-1.382551	0.1716
DTOR	2589.172	*2.464920	0.0164
DTOR(-1)	2728.707	*2.711830	0.0086
DMS	-50.09227	-1.116954	0.2682

DMS(-2)	268.7936	*6.044358	0.0000
DBLR	767.3506	1.431740	0.1571
DBLR(-2)	-1380.062	*-2.515714	0.0144
DLDR	9.513583	0.362255	0.7184
DLDR(-2)	-100.5009	*-3.557009	0.0007
R2	0.916569		
Adj. R2	0.900925		
F. Statistic	58.59142		
Prob. F(Stat.)	0.000000		
D. W	1.65920		

Source: Authors compilation from E-view output

Table 3.3 above indicates that previous stock market volatility drives the current volatility of the market. The significant and positive effect of the past volatility signifies that market risk in the past has a spillover effect on the current behaviour of the market. Table 3.3 above also reveals that economic policy uncertainty negatively and significantly impacts on stock market volatility with a lag of two periods. This result tends to imply that policy uncertainty constitutes risk to investors, therefore has the capacity to slow down trading momentum. Surely, investing in an uncertain condition is risky and is capable of eroding investors' confidence due to the associated loss**.** As shown in Table 3.3 above, exchange rate volatility surrogate for macroeconomic volatility in this study has a negative but not significant effect on stock market volatility. The negative effect is an indication that exchange fluctuation may dampen the confidence of investors, especially risk-averse investors but the current exchange rate has not constituted risk sufficient to reduce trading activities. Table 3.3 further demonstrates that both the current and the past period stock market liquidity levels (DTOR and DTOR-1) positively and significantly account for stock market volatility. Surely, in a market with low liquidity, there is the potential for risk because of limited investment vehicles, small-size trading activities and the difficulty in exchanging positions. However, the market has the potential to absorb the risk when the liquidity level improves. The result in Table 3.3 indicates that the past level of market size (DMS-2), bank liquidity (DBLR-2) and lending rate (DLDR-2) significantly account for stock market volatility. Meaning, these indicators can be relied on to minimize the impact of stock market risk.

5. Discussion of Findings

This study found that economic policy uncertainty positively and significantly influences stock market index returns. The positive effect of EPU on index returns may be due to individual investors' risk preference. Investors who are risk-seekers (risk-lovers) prefer to invest when the risk is high because the higher the risk the higher returns. Whereas, the risk-averse investors may take the wait-and-see approach because they are unsure about the next government policy. This finding tends to provide support for Raiz, et al (2018); Demir and Ersan (2018); and Hoque and Zaidi (2019) that uncertainty associated with economic policy significantly affects stock returns, but differ from Xu, et al (2021) who showed that EPU significantly but negatively accounted for stock returns. This study also found that stock market reacts significantly to macroeconomic volatility. Specifically, there is a positive and significant effect of exchange rate volatility on stock market index return. Indeed, when exchange rate rises, the value of domestic currency falls and foreign investors considered the local market as cheaper investment destination during that period, thus stimulating trading activities at the exchange. Also, current market volatility has positive and significant effect on returns, while previous period market volatility negatively impacts market returns. This result suggests that market volatility at the initial stage stimulate trading activities, the market experience decline only when volatility persist. Indeed, upward movement in price boost investors' confidence and stimulate trading, whereas downward price movement discourages investment at the exchange.

This finding provide support for Adam, et al (2022) who found that stock market volatility positively and significantly accounts for stock returns.

Furthermore, this study found that economic policy uncertainty has negative and significant effect on stock market liquidity. The positive impact of EPU on liquidity tends to portray that a liquid stock market has the capacity to curtail policy uncertainty. Indeed, a liquid market absorbed risk because it offers opportunity to spread risk by providing immediacy. This probably account for why investors develop more interest in liquid markets. This result is in tandem with Debata and Mahakud (2018) that economic policy uncertainty determines stock market liquidity significantly, but different from Dash, et al (2019) who documented inverse impact of economic policy uncertainty on market liquidity. This study also found that stock market volatility in the current period has positive and significant influence on stock market liquidity. Meaning that investors can minimize market risk by offloading risky securities and investing in liquid stocks, thus spreading the risk in the process. Indeed, liquid market offer chance for quick turnover and in the process, liquidity is boosted. This result is in support of Cheriyan and Lazar (2019) who revealed that stock volatility determines liquidity significantly, while it deviate from Muktiyanto (2015) who found that market-level liquidity declines with market volatility. This study further found that exchange rate volatility positively and significantly influences stock market liquidity after a one period lag. This result implies that variations in exchange rate is a potent factor driving stock market liquidity. This result tends to align with Uhunmwangho and Idolor (2022) who revealed that macroeconomic instability positively and significantly influences stock market liquidity.

Finally, this study discovered that economic policy uncertainty negatively and significantly determines stock market volatility. This result tends to imply that policy uncertainty constitutes risk to investors, therefore discourages investment activities because of the fear of loss. Surely, investing in an uncertain condition is risky and capable of eroding investors' confidence, thus slowing down trading momentum. This finding provide support for Raunig (2021) who revealed that economic policy uncertainty stimulates stock market volatility; and Ajmi, et al (2015) who reported a causal link between EPU and stock return volatility in the US, but tends to deviate from Drama (2023) that economic policy uncertainty positively and significantly determines stock market volatility. This study also found that macroeconomic volatility (measured by exchange rate volatility) has negative but not significant effect on stock market volatility. This finding tends to suggest that the prevailing exchange rate variability is not a major factor accountable for market volatility in Nigeria. This finding is contrary to Mahapatra and Bhadin (2019) that exchange rate variations significantly influence stock returns, but tends to provides support for Blau (2018) who revealed that exchange rate volatility stimulates stock volatility; and Dawood (2007) that macroeconomic volatility does not significantly influence stock market volatility.

5. Conclusion and Recommendation

This study investigated the impact of economic policy uncertainty and macroeconomic instability (volatility) on stock market behaviour (index returns, stock market liquidity and stock market volatility), using monthly data covering April 2016 to July 2022. Macroeconomic volatility and stock market volatility were extracted using GARCH econometric procedures. Data for this study was extracted from the Central Bank of Nigeria statistical database, the Nigeria Exchange Limited database and the World uncertainty database developed by Ahir, bloom and Furceri (2018) and retrieved from www.economicpolicyuncertainty.com). The ARDL model in least squares equation estimator was implemented to capture the effect of economic policy uncertainty and macro-

volatility on stock market behaviour. The result from this study reveals that economic policy uncertainty and macroeconomic volatility significantly accounts for stock market behaviour in Nigeria. Specifically, economic policy uncertainty positively and significantly impacts stock market index returns; and stock market liquidity, while its effect on stock market volatility is significant and negative. Macroeconomic volatility (exchange rate volatility) significantly and positively determines stock market returns; and stock market liquidity, while its influence on stock market volatility is negative but not significant. Also, stock market volatility (another measure of macroeconomic volatility in this study) positively and significantly accounts for stock market returns, and stock market liquidity.

Based on the findings, this study recommends that the Security and Exchange Commission (SEC) should initiate policy targeted at boosting market liquidity and strengthening the stock market resilience against shocks associated with economic policy changes, while the Central Bank of Nigeria should intensify the current economic policy, especially exchange rate policy aimed at stabilizing the macro-economy because of the positive impact on stock market return and liquidity. Also, investors should take advantage of volatile market conditions to invest because high risk brings high returns but should demand for risk premium to enhance their investment returns.

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