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Fundamental factors and stock price volatility of listed banking firms in Nigeria

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Abstract

The study examined the impact of fundamental factors on the stock prices of Nigeria's listed banking sector companies. Using panel data analysis, the effects of five fundamental variables on share prices of listed banks in Nigeria, which include return on assets (ROA), return on equity (ROE), earnings per share (EPS), dividend per share (DPS), and growth in net interest income (NII), as well as two control variables (firm size and firm age), were analyzed. Data were gathered from eleven sampled banks' annual reports from 2006 to 2020. Based on the Hausman test, fixed effect model was estimated and regression results indicated that the coefficients of ROE, EPS, DPS, NII and SIZE were positive but ROE and SIZE were statistically not significant. On the other hand, the coefficients of ROA and AGE were negative but statistically significant. The study recommended that; regulators should pay attention to earnings management by banks to monitor any attempts to smooth dividend; existing shareholders should pay more attention on high dividend paying banks for capital gain; and boards of directors of banks should strive to maintain adequate dividend payment, specifically by reducing the proportion of yearly retain earnings while minimizing cost.

Keywords: Dividend per share, Earnings per share, Fundamental factors, Net interest income, Return on asset, Return on equity, Volatility.
JEL Classification D53; E44; G21.

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Contribution of this paper to the literature
The study contributes to existing literature by investigating the impact of fundamental factors on the stock prices of Nigeria's listed banking sector companies.

1. Introduction

There are many important roles played by financial markets in an economy. It encompasses mobilization of financial resources from the surplus units to the deficit units of the economy, also including the provision of the medium for; separating ownership and management, risk sharing, efficient allocation of financial resources and ascertainment of current and future consumption requirements, among others. As stated by Fouzan, Tahtamouni, and Al-Qudah (2016), listed institutions can deploy securities and increase fund through various market securities.

More specifically, the stock market, which is a critical segment of the financial markets, assist in the process of evaluating managerial performance through investors' sentiments that are contained in market prices of financial instruments. Hence, how much the equity of a company is worth arises from the aggregation of diverse opinions of market participants. The market, by means of financial or non-financial disclosures, helps management gauge opinion on its investment plans and future actions through market positive or negative reactions to stock prices. Stock market plays a substantial part in the allocation of resources, both directly as a source of funds and as a determinant of firms' value and its borrowing capacity (Tease, 1993).

Based on the underlying assumption of efficient market hypothesis, a market is said to be efficient where asset prices reflect all available information. Since market prices should only react to new information, it is therefore important to state that most factors that influence investment decision and the environment which businesses thrives ultimately impact share prices. By implication, this indicates that stocks are always trading at their current fair market value. Many investors are in dilemma with regard making a choice about profitable investment. One of the determining factors in taking decision is the share price of the stock which are constantly changing due to various factors in the market. Investors have various methods they may adopt in analyzing the investment, which may include bottom-up analysis or a top- down approach. The choice for any of these approaches depends on what motive drives the investor's decision. Some investors may adopt a technical analysis approach, where their focus is on the movement of the stock price in the market by relying on the historical prices and the volume of shares that were traded, or they conduct a fundamental analysis, where the main aim is to check the financial health of firms and the whole economy in order to take informed decision about the available stocks in the market.

Whether stock prices are impacted by firm fundamentals has become a hot topic in financial economics recently. However, there is absolutely no agreement among academics as to the key variables that affect stock values. In light of this, the goal of this study was to examine the potential relationships between the stock prices of Nigeria's listed banks and their underlying financial metrics, including their return on equity, return on assets, earnings per share, dividend per share, and growth in net interest income. It is tempting to encourage research into the factors that cause apparent volatility in stock prices as well as the ongoing and sporadic changes in accounting and market ratios.

The results of this study can undoubtedly affect regulatory policy, motivate businesses to improve performance, and help investors make wise stock market investing choices.

1.1. Statement of the Problem

The onset of 2007/2008 global financial crunch wiped out the growth and investors' confidence and it became worrisome to see that even corporations with proven record of success were not spared from these volatilities, especially those companies with sound fundamentals such as dividend pay-out and earnings and its components. However, as a result of the negative impact of the 2008-2010 global financial crises and 2015-2017 recession in Nigeria, All-Share Index plummeted down to 20,838.90 points in 2009 and remained below 30,000 points 10 years after, precisely 26,842.07 points as at 31st December 2019. It becomes expedient to consider the interdependence between stock market prices and company fundamentals.

Even with the potentials to make Nigerian listed companies' financials comparable with their foreign counterparts, it is observed that the stock market is yet to return to its old glory, with share prices of most listed companies in Nigeria remaining below pre-2008 financial crisis. Investors are also perplexed as to which investment to commit their financial resources in order to have optimum returns. In recent times, studies have been conducted to determine the impact of certain fundamental factors on the prices of stocks in Nigeria.

Thus, examining the impact of fundamental factors on the stock prices of Nigeria's listed banking sector companies is the primary goal of this study. Other specific goals include assessing the impact of Return on Asset (ROA), Return on Equity (ROE), Net Interest Income (NII), Earnings Per Share (EPS), and Return on Equity (ROE) on the stock prices of listed banking companies in Nigeria, as well as looking at the impact of the Threshold Effect on Stock Prices of Listed Banking Companies in Nigeria.

In line with the stated objectives, the hypotheses of the study are stated in null forms thus:

H_{o1}: Return on Asset (ROA) has no significant effect on Stock Prices of listed banking companies in Nigeria.
H_{o2}: Return on Equity (ROE) has no significant effect on Stock Prices of listed banking companies in Nigeria.
H_{o3}: Net Interest Income (NII) has no significant effect on Stock Prices of listed banking companies in Nigeria.
H_{o4}: Earnings Per Share (EPS) has no significant effect on Stock Prices of listed banking companies in Nigeria.
H_{o5}: Dividend Per Share (DPS) has no significant effect on Stock Prices of listed banking companies in Nigeria.

Previous studies, like Karki (2018), Pradhan and Laxmi (2017), Shafiqul, Rubel, and Abdul (2016) and Fouzan et al. (2016), were conducted to examine the impact of some fundamental factors on stock prices of some selected firms in foreign countries with certain peculiar economic variables, using one fundamental factor in some cases thus leaving out other fundamental factors which may have had some influence on the stock prices of those firms. However, since findings from empirical studies reviewed were quite mixed for different markets and industries, the unique feature of this paper is that, first, it lengthened the study period to 15 years ending 2020 to cover period of capital market boom, crash and period of stability. Second, it incorporated growth in Net-interest income not used in any study in Nigeria, which is banking industry specific measure of profitability, to determine its influence together with four other dominant fundamental factors, on stock price of banking sector stock. Finally, the study lengthens the current

discussions on stock prices of firms, thereby adding to the existing literature in the region of fundamental factors as they affect share prices.

1.2. Concept of Stock Prices

Stock price is an indicator, reflecting a security or company's current market value. It is the price agreed by both a buyer and a seller at a particular point in time or at an agreed further date. In a market driven economy, share price is determined by the forces of demand and supply. Usually, where there are more buyers than sellers, the stock price will climb and vice-versa the price may decline. To a large extent, volatility in stock prices could be attributed to concern about or the direction of economic indicators such as interest rates, tax changes, inflation rates, and other monetary policies. Share prices can also be influenced by industry dynamics, domestic and global events.

1.3. Return on Asset

The ability of a business to use its assets to generate net profit is measured by return on asset (ROA). In a perfect market, a stock with a higher ROA ought to be costlier. Return on assets is the ratio of a company's annual net income to its average annual total assets (ROA). It displays how effectively a business uses its resources to produce net income. The profitability ratio is as follows (Zutter & Gitman, 2012). A growing ROA demonstrates an organization's ability to fully utilize its resources. It also shows that management is skilled at making the most of the resources at its disposal to generate higher cash flows with the same or less capital.

1.4. Return on Equity

The return on equity (ROE) formula calculates the amount of profit a company generates for each dollar invested in shares by shareholders. It is determined by dividing the relevant net income of the firm by the typical equity capital. If both ordinary and preference shares have equity rights, the appropriate net income will be the profit after tax, which is the amount available to ordinary and preference shareholders for distribution. When preference shares are excluded from the definition of equity, the pertinent returns will be net of earnings after tax and dividends on preference shares. To calculate average equity, one can use either the simple average or the weighted average approaches. In addition to examining the company's profitability, ROE also evaluates its efficacy. An increasing ROE shows that a company is getting better at generating profit while requiring less capital. Higher ROE is also advantageous for investments. The return on equity demonstrates how well and successfully the shareholders' money was managed by the company (Ugwudioha, 2019). Therefore, it is presumed that ROE and stock price have a positive relationship.

1.5. Net Interest Income

It is a metric of profitability unique to the business for banks and other financial institutions that lend out interest-earning assets. Net interest income is the difference between interest collections and costs (NII). The interest payments that banks earn on their interest-bearing assets are known as interest revenues, while the costs related to servicing the interest payments that banks make to their depositors are known as interest expenses. Banks receive interest through loans, mortgages, and other items that bear interest. On the other hand, in addition to income on deposit accounts like savings and CDs, they also deduct interest on any additional debt the bank may have. A significant source of income for banking institutions, net interest income is thought to include the cost of financial intermediation. The difference between what borrowers pay for their loans and what lenders make from lending is consequently what it is. In addition to other measures, banks might use net interest income to assess a company's internal profit potential. Investors who are looking at a bank's financial accounts might find this metric fascinating.

1.6. Earnings Per Share

Profit expressed per outstanding share of stock is known as earnings per share (EPS), and it is a key financial metric of a company's performance. The share price of a corporation is determined using it. A high EPS implies that the company is more successful and has more profits to distribute to shareholders. This ratio establishes a correlation between potential growth prospects and higher investor returns. In light of this, it seems to reason that EPS, which illustrates a company's growth, would have a positive effect on share prices.

1.7. Dividends Per Share

Dividend per share shows how much a corporation pays out in annual dividends in relation to each of its shares. Without any capital gains, dividend is the stock's return on investment. According to Ugwudioha (2019) investors frequently inquire about a company's dividend per share in order to assess the viability of the business and the value of each share.

1.8. Empirical Review

Karki (2018) used information from Nepalese commercial banks to examine the fundamentals of common stock pricing. The focus of the work was to establish the causal relationship between the fundamental factors and the changes in the Nepalese commercial banks' stock prices, using earnings per share, book value per share, cash dividend per share, stock dividend per share, price earnings ratio, and firm size as proxies for fundamental factors. Using secondary data, a balance panel data from 150 observations were utilized from year 2000 to year 2014. The result indicated that earnings per share and stock dividend per share had a greater impact on commercial banks' stock values in Nepal than other variables. From the analysis it was observed that the stock dividend was statistically and economically the most significant of the six fundamental variables analyzed.

Pradhan and Laxmi (2017) studied the effect of fundamental determinants on stock prices in the Nepalese commercial banks. In the study, market price per share and change in market price per share were the dependent variables while return on assets, return on equity, net interest income, earnings per share, and dividend per share were the independent variables. Sourcing the needed data from annual reports of the chosen commercial banks as well as the Banking and Financial Statistics and Bank Supervision Report released by Nepal Rastra Bank, the research

included 104 observations from 13 Nepalese commercial banks between 2007 and 2014. Results from the regression analysis showed a favorable relationship between the stock price and dividend per share (DPS), return on assets (ROA), and earnings per share (EPS) (market price per share and change in market price per share). This suggested that a greater DPS, ROA, and EPS would result in a higher stock price. Net profit margin was, however, inversely correlated with stock price. With market price per share at a 5% level of significance, the regression result revealed that the beta coefficients for DPS and EPS were positively significant.

Shafiqul et al. (2016) examined the factors that influence stock prices in listed cement businesses at the Dhaka Stock Exchange in Bangladesh, using a panel data set of seven cement industry businesses that were listed on the Dhaka Stock Exchange (DSE) between 2006 and 2015. Employing an Ordinary Least Square (OLS) regression with fixed effects and random effects models, six fundamental and technical factors, namely: Earnings Per Share (EPS), Net Asset Value Per Share (NAVPS), Price Earnings (P/E), Gross Domestic Production (GDP), Consumer Price Index (CPI), and Interest Rate Spread (IRS), were identified. Findings from the analysis showed that all the factors had significant impact on the share prices of companies in Bangladeshi stock market involved in the cement businesses. Fouzan et al. (2016) examined factors influencing stock market pricing in insurance businesses listed on the Amman Stock Exchange. The study looked at how certain variables, such as return on asset (ROA), return on equity (ROE), debt ratio, age of the company, and size of the company, affect stock market prices. Using simple and multiple linear regression, 20 insurance businesses listed on the Amman Stock Exchange between 2011 and 2015 were analyzed. Results from the analysis showed that there is a relationship between stock market price and ROA, Debt Ratio, Age of the Company, and Size of the Company in the firms studied. However, there was no relationship between ROE and stock prices of the firms studied.

2. Theoretical Framework

2.1. Efficient Markets Theory

The efficient markets theory by Wallace and Thomas (1975) has been discovered to be the most appropriate theoretical framework for this investigation (1975). According to this hypothesis, investors purchase stocks they anticipate will have higher-than-average returns and sell those they anticipate will have lower returns. They have a tendency to raise the prices of stocks with higher-than-average return expectations and drop the prices of stocks with lower-than-average return expectations. As soon as the predicted returns, taking into account risk, are equal for all stocks, the stock prices start to change. Equalization of expected returns implies that expectations or projections of investors are included into or reflected in stock prices. It actually means that stock prices adjust in such a way that, after taking into account information like dividends, bonuses, the time value of money, and other risks, they equal the best estimate of the future price made by the market. Therefore, only unpredictable, random elements that are impossible to predict in advance can affect stock price. According to the Efficient Market Hypothesis, a change in the company's fundamentals has the most immediate impact on a stock's price. Because of this, a rise in the share price is anticipated whenever revenues and earnings increase. On the other hand, if profit is dropping with no sign of change, investors start to give up on stocks, which thus causes the stock price to fall. This hypothesis' claim is that changes in the underlying business typically have impacts on share prices. Therefore, investors with keen, quick and imaginative thinking would have predicted a shift even before prices of the stocks were affected and thus would have taken an informed decision before the changes occur.

3. Methodology

The 22 Nigerian commercial banks that have been granted licenses make up the study's population. As of 2020, thirteen (13) banks and corporations with subsidiaries that held commercial banking licenses and were listed on the Nigerian Stock Exchange (NSE) made up 59% of the 22 banks that fell under the commercial banking license category. Due to the availability of quoted stock prices for the banks, convenient sampling was used to concentrate the analysis on listed institutions.

A few filtration processes have been used to remove some of the banks that were deemed unsuitable for the study due to the requirements of the empirical models used in this investigation. First, only surviving firms' data is used for the study's empirical portion. Second, institutions with either missing value for the relevant variable were disqualified. Ecobank Transnational Incorporated (ETI) and Sterling Bank Plc are two of the excluded banks. Following the above-mentioned screening methods, the study's final sample, which is given in Table 1, consists of 11 banks listed on the Nigerian Stock Exchange, eight of which were among the top 10 banks in Nigeria according to Answer Africa's ranking (List of Largest Commercial Banks in Nigeria in 2020). Following is a list of the sampled banks along with the date of their incorporation:

The study used secondary data extracted from the individual financial statements of eleven (11) sampled banks over a period of 15 years. Hence, the analytical framework used is panel data regression, in view of the cross-sectional and time series dimensions of the sampled observations. The use of panel data analysis reduces the phenomenon of multicollinearity of the variables.

3.1. Model Specification

In order to examine the influences of ROA, ROE, NII, EPS, and DPS on the stock prices of listed banks in Nigeria, this study uses an econometric approach of data analysis. In order to analyze the association between one dependent variable, five explanatory factors, and a control variable, the study specifically uses the panel ordinary least square (OLS) approach.

To offer details on individual bank behavior over a range of individual characteristics and over time, a balanced panel OLS model is used (2006 - 2020). Consequently, the three popular models used in panel regression-pooled OLS, fixed effect, and random effects-are as follows:

Table 1. List of sampled banks.

S/N	Symbol	Security name	Date listed	Date of incorporation
1	Access	Access bank of Nigeria PLC	November 18th 1998	February 8th 1989
2	FBNH	FBN holdings PLC	November 26th 2012	August 13th 2012 but originating company existed since 1894
3	FIDELITYBK	FIDELITY bank PLC	May 17th 2005	November 19th 1987
4	FCMB	FCMB group PLC	June 21st 2013	November 20th 2012 but originating company existed since 20 April, 1982
5	Guaranty	Guaranty trust	September 9th 1996	July 20th 1990
6	STANBIC	Stanbic IBTC holdings PLC	November 23rd 2012	March 14th 2012 but originating company existed since 2 February 1989
7	UBA	United bank for Africa PLC	March 31st 1970	February 23rd 1961
8	UBN	Union bank of Nigeria PLC	Since 1971	Since 1917
9	UNITYBNK	Unity bank PLC	December 22nd 2005	April 27th 1987
10	WEMABANK	Wema bank PLC	February 13th 1991	May 2nd 1945
11	ZENITHBANK	Zenith international bank PLC	October 21st 2004	May 30th 1990

Source: NSE fact books (2020).

The pooled model specification, assuming constant coefficients is represented in Equation 1:

$$SP_{i,} = \alpha + \beta X_{i,} + \varphi Y_t + u_{i,t} \quad (1)$$

$$i \sim 1, 2, \ldots, 11 \text{ and } t \sim 1, 2, \ldots, 15$$

$SP_{i,}$ represents stock price for bank i at time t;

$\mathbf{X}_{i,}$ is a vector of bank specific variables (ROA, ROE, NII, EPS DPS, AGE and SIZE), which varies across banks and time.

$\mathbf{Y}_t$ is a vector of time, varying banking sector specific variables.

$u_{i,}$ are the disturbances across individual banks and time, and it is assumed to be independently identically distributed; and

α, and φ are constant coefficients for all banks.

The heterogeneity that occurs among banks is denied by pooled OLS because this model does not change among individual banks. It is impossible to presume homogeneity in this study because organizational goals and culture vary between organizations. As a result, the fixed effect and random effect models were used in the study rather than the pooled OLS.

This heterogeneity of the banks was captured with αi. A fixed effect model is established if αi are correlated with the explanatory variables, otherwise random effect is established. Equation 2 specified the fixed effect model;

$$SP_{i,} = \alpha_i + \beta X_{i,} + \varphi Y_t + u_{i,t} \quad (2)$$

The variables in Equation 2 are as defined in Equation 1 above and αi measures the individual bank's effect on stock price. A fixed effect model allows the individual banks to have different intercept term but the same slope parameters.

In the same vein, the random effect model is specified as

$$SP_{i,} = \beta X_{i,} + \varphi Y_t + (\alpha_i + u_{i,t}) \quad (3)$$

The impacts of that bank are taken into account in the random effect model via the intercept parameter I although each bank is chosen at random.

The Hausman test is used to evaluate the significance of the difference between Fixed and Random estimates in order to choose the best panel model. Only factors that are strictly cross sectional and particular to a given bank are used in the test, though. Yt in Equations 1, 2, and 3 above would be disregarded as a result. The Hausman test is based on a test of the null hypothesis that there is no association between the random effect and explanatory variables, and the outcome is distributed according to a chi-square formula. The fixed effect model is regarded as having the best fit in cases where the null hypothesis is rejected. This study is based on partial logarithm form of Equations 1, 2, and 3, hence restating the $\mathbf{X}$ vector (i.e. $\beta_{1,}\beta_{2,}\beta_{3,}\beta_{4,}\beta_{5,}\beta_6$ and β_7 representing the coefficients of ROA, ROE, NII, EPS, DPS, AGE and SIZE as follows and ignoring Yt, the modified model specifications are as follows;

$$Log(SP_{i,t}) = \alpha_i + \beta_1 * ROA + \beta_2 * ROE + \beta_3 * NII + \beta_4 * EPS + \beta_5 * DPS + \beta_6 * AGE + \beta_7 * Log(SIZE) + u_{i,t} \quad (4)$$

Equation 4 above represents the modified model specification of the variables, excluding the banking sector specific variable, Yt.

Modified Fixed Effect model

$$Log(SP_{i,t}) = \beta_1 * ROA + \beta_2 * ROE + \beta_3 * NII + \beta_4 * EPS + \beta_5 * DPS + \beta_6 * AGE + \beta_7 * Log(SIZE) + (\alpha_i + u_{i,t}) \quad (5)$$

The modified fixed effect model of the variables is represented by Equation 5, which would be used to decide on the hypotheses.

Modified Random Effect model

The study expects the coefficient of $\beta_{1,}\beta_{2,}\beta_{3,}\beta_{4,}\beta_{5,}\beta_6$ and β_7 to be positive (non-negative). That is the a priori expectation of the constant term and $\beta 1, \beta_{2,}\beta_{3,}\beta_{4,}\beta_{5,}\beta_6$ and $\beta_7 > 0$.

3.2. Justification of Variables

To study gt the effect of fundamental factors on firms, variables like Return on Asset (ROA), Return on Equity (ROE), Net Interest Income (NII), Earnings Per Share (EPS) and Dividend Per Share (DPS) may be employed. Previous works (Fouzan et al., 2016; Karki, 2018; Pradhan & Laxmi, 2017; Shafiqul et al., 2016) employed the variables in their studies at different times to examine the impact of fundamental factors on stock prices of firms in various industries. The variables help in determining the performances of the firms based on what objective the investor wish to achieve. Employing these variables in this study will help in achieving the objectives of this study.

Table 2. Estimation procedure.

S/N	Variable		Estimation	Variable interaction
1	Dependent	Stock prices (SP)	End-of-period closing share prices measured in Naira	Share prices is determined by the forces of demand and supply. They are significantly affected by company's fundamental, industry changes, national and global events. Therefore, share price movement results from investor's perception of the available information specific or general about the entity or market.
2	Explanatory	Return on assets (ROA)	Profit after interest and tax divide by average total assets measured in percentage	ROA indicates the capability of a company to utilize its assets to generate net profit. In an ideal market, a stock with higher ROA should have a higher price. Therefore, ROA should have positive and significant relationship with stock price.
3		Return on equity (ROE)	Profit after interest and tax divide by average total equity measured in percentage	Return on equity (ROE) calculates how many Nairas of profit a company generates with each Naira of shareholders' equity. Hence, represents a measure of company's efficiency. A rising ROE suggests that a company is increasing its ability to generate profit without requiring much capital. In other words, higher ROE is better for investment. Therefore, ROE is presumed to have positive relation with stock price.
4		Net interest income (NII)	Measured as the annual growth in percentage of the difference between interest income and interest expenses.	NII is the primary source of income and cost of financial intermediation, which provide the measure of the ability of banks to earn profits. The consistency to sustain growth in NII in excess of operating cost and impairment on loan assets increases the ability of a bank to reward investors and consequently impact share price.
5		Earnings per share (EPS)	Profit after interest and tax divide by total number of shares measured in Naira	From the perspective of an investor, higher the EPS the better it is, as it indicates the future prospects of the company's business, potential growth opportunities and higher returns for the investors. Hence, earnings per share has a positive relationship with market price, that is, higher the earning per share, higher would be the market price per share.
6		Dividend per share (DPS)	Total amount of dividend divides by total number of shares measured in Naira	Dividends generally influence the share price in a positive direction. Dividend per share shows how much a company pays out in dividends each year relative to each of its share. In the absence of any capital gains, dividend is the return on investment for a stock. Therefore, DPS and stock price is supposed to have a positive relationship.
7	Control	Age of the bank (AGE)	The age of the bank from the date of incorporation	Companies with longer existence and with history of consistence performance tend to enjoy investors' patronage and thus may impact it share price.

The above (Table 2) represents a tabular presentation of explanation of the variables and other factors used in the analysis of the study. It highlights the relevance of the variables and how they are situated in this study to help in achieving the study's objectives.

Table 3. Sample descriptive statistics of the variables.

Variables*	Dependent	Explanatory					Control	
	SP	DPS	EPS	ROA	ROE	NII	AGE	SIZE
Mean	11.356	0.610	1.260	1.340	11.006	28.746	47.727	1.80E+09
Median	7.600	0.250	0.890	1.760	12.710	15.050	31.000	1.17E+09
Maximum	49.500	3.600	8.300	9.930	346.680	250.390	126.000	8.68E+09
Minimum	0.500	0.000	-20.810	-29.3200	-252.920	-235.730	17.0000	1.07E+08
Std. dev.	11.474	0.792	2.866	4.090	45.065	56.293	32.591	1.80E+09
Skewness	1.479	1.715	-3.045	-4.380	1.301	0.754	1.1355	1.691810
Kurtosis	4.701	5.429	26.481	29.874	31.618	8.599	2.880	5.667539
Jarque-Bera	80.095	121.533	4045.609	5493.060	5677.462	231.202	35.559	127.6320
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	1873.820	100.6600	208.0406	221.2100	1816.150	4743.100	7875.000	2.98E+11
Sum Sq. dev.	21591.21	103.0487	1347.225	2743.834	333067.6	519713.7	174202.7	5.32E+20
Observations	165	165	165	165	165	165	165	165

Note: *SP = Share price (Naira), ROA = Return on assets (%), ROE= Return on equity (%), NII = Net-interest income (%), Earnings per share (Naira), DPS= Dividend per share (Naira), Age= Age of the bank (years) since establishment Size = Logarithm of annual total assets.

Table 3 above represents the description of the statistics employed in the study. It shows the value position of each of the variables in relation to the mean, median, standard deviation, Jargue-Bera and the probability of the variables.

4. Data Analysis and Results

4.1. Correlation Matrix

Table 4 below shows the correlation matrix, showing the relationship between the dependent variable and explanatory variables, on the other hand, the matrix indicates the direction of the relationship which assist establishing the extent of multicollinearity among all the variables considered. The table indicates that there is a positive relationship between the dependent variable and all the other variables, except one of the control variable, Age.

This revelation suggests a likelihood that all explanatory variables affect the share price of sampled listed banks in Nigeria. In a similar vein, the degree of relationship between these variables are not too high which is an indication of absence of multicollinearity among all the explanatory variables considered in this study. In relation to the dependent variable, the result showed a strong positive correlation between SP and DPS compared to the other variables.

Table 4. Correlation matrix for the sample observations, which are the variables.

Variables	SP	DPS	EPS	ROA	ROE	NII	AGE	SIZE
SP	1.000000							
a	-----							
b	-----							
DPS	0.7500	1.000000						
a	14.477	-----						
b	0.0000*	-----						
EPS	0.460	0.642	1.000000					
a	6.620	10.711	-----					
b	0.0000*	0.0000*	-----					
ROA	0.267	0.357	0.730	1.000000				
a	3.551	4.893	13.652	-----				
b	0.0005*	0.0000*	0.0000*	-----				
ROE	0.192	0.178	-0.105	-0.320	1.000000			
a	2.507	2.321	-1.350	-4.322	-----			
b	0.0131**	0.0215**	0.1788	0.0000*	-----			
NII	0.0750	-0.038	-0.049	0.239	0.030	1.000000		
a	0.961	-0.497	-0.638	3.147	0.387	-----		
b	0.337	0.619	0.524	0.0020*	0.6990	-----		
AGE	-0.073	-0.190	-0.180	-0.195	-0.049	-0.221	1.000000	
a	-0.947	-2.473	-2.338	-2.546	-0.633	-2.897	-----	
b	0.3449	0.0144**	0.0206**	0.0118**	0.5271	0.0043*	-----	
SIZE	0.176	0.488	0.408	0.168	0.095	-0.204	0.220	1.000000
a	2.288	7.148	5.713	2.180	1.224	-2.664	2.886	-----
b	0.023**	0.0000*	0.0000*	0.0307**	0.2226	0.0085*	0.0044*	-----

Note: ** Correlation is significant at the 5% level. *Correlation is significant at the 1% level, a:t-statistics and b-p-value.

4.2. Estimated Regression Result

The results of the estimated models (pooled, fixed and random effect) and Hausman Test are presented in Table 5 and 6 respectively.

The amounts in brackets represent the standard errors of the estimations and the corresponding probabilities. The fixed effect model has a superior fit, according to a summary of the models' statistics in terms of R-squared, standard error of the regression, and Durbin-Watson Statistic, whereas the value of cross-section random error is very minor in comparison to the idiosyncratic random.

The Hausman test result showed a chi-square statistic value of 320.63 and a p-value of 0.000 with 7 degrees of freedom, suggesting that the null hypothesis that there is no connection between the explanatory factors and the random effect has been rejected at a 1% significant level. This suggests that fixed effect is a better model for predicting share price in Nigeria throughout the data period.

Table 5. Determination of appropriate model: Dependent variable: LOG(SP) and other independent variables

Variable	Pooled model	Fixed effect model	Random effect model
DPS	1.0379 (0.1329) (0000)*	0.5637 (0.0968) (0000)*	1.0251 (0.0767) (0000)*
EPS	-0.0351 (0.0463) (0.4498)	0.088 (0.0285) (0.0024)*	-0.0308 (0.0265) (0.2472)
ROA	0.0241 (0.0301) (0.4247)	-0.0552 (0.0186) (0.0036)*	0.0206 (0.0172) (0.234)
ROE	0.0034 (0.0017) (0.0524)***	0.0009 (0.00103) (0.3427)	0.0033 (0.001002) (0.0012)*
NII	0.00462 (0.001) (0.0015)*	0.001705 (0.0008) (0.0523)***	0.004563 (0.0008) (0000)*
AGE	0.0055 (0.0024) (0.0224)**	-0.0989 (0.0198) (0000)*	0.0054 (0.0014) (0.0002)*
LOG(SIZE)	0.0942 (0.0871) (0.281)	0.1141 (0.1204) (0.3451)	0.0807 (0.0504) (0.1117)
C	-1.19408 (1.7425) (0.4942)	3.7310 (1.7832) (0.0381)**	-0.8963 (1.01006) (0.3762)
R-squared	0.5220	0.8548	0.5080
Adjusted R-squared	0.5007	0.8380	0.4861
F-statistic	24.5008	50.921	23.1638
Prob(F-statistic)	0.000000	0.000000	0.000000
Durbin-Watson stat	0.7161	1.7637	0.7222
Cross-section random			0.0373 (0.0055)
Idiosyncratic random			0.5009 (0.994)

Note: * Significance at 1%, ** significant at 5% and *** significant at 10% level.

The study proposed that the explanatory variables would positively affect share price. According to Table 5, the value of the R-squared coefficient of determination is 85.48%, and the corrected R-squared value is 83.80%. This coefficient expresses how much of the entire fluctuation in bank share prices can be accounted for by the explanatory factors used. This coefficient showed that the model explained 83.8% of the variation in the overall price of banks' shares.

By extension, the independent variable used in this study cannot account for 16.2% of the overall fluctuation in the share price of banks. The F-statistics is significant at 1% and has a value of 50.92 with a p-value of 0.000. This finding shows that the econometric model used in the study is suitable for explaining the relationship between the share price of banks and the five key factors taken into account (DPS, EPS, ROA, ROE and NII). Therefore, the following is the estimated fixed effect panel regression model:

Log(SP) = 3.73 - 0.055*(ROA) + 0.001*(ROE) + 0.002*NII + 0.088*(EPS) + 0.564*(DPS) − 0.099*AGE + 0.114*Log(SIZE)

Table 6. Correlated random effects - Hausman test of chi-sq

Test summary	Chi-sq. statistic	Chi-sq. d.f.	Prob.
Cross-section random	320.636	7	0.0000

4.3. Test of Hypotheses

Ho_1: Return on assets (ROA) do not significantly affect the stock prices of listed banks in Nigeria.

Coefficient (ROA)	Std. error	T-statistics	P-value
-0.055	0.0186	-2.9595	(0.0036)

Decision: The study accept Ho_1 and conclude that ROA do not significantly affect stock prices of banks since the coefficient return is negative coefficient rather than the expected positive value. However, the negative coefficient was significant at 1%

Ho_2:Return on equity (ROE) do not significantly affect the stock prices of listed banks in Nigeria.

Coefficient (ROE)	Std. error	T-statistics	P-value
0.000987	0.0010	0.9519	0.3427

Decision: The study accept Ho_2 and conclude that ROE do not significantly affect the stock prices of listed banks in Nigeria. The coefficient showed positive impact of ROE as expected but is not statistically significant.

Ho_3:Growth in Net Interest Income (NII) do not significantly affect the stock prices of listed banks in Nigeria.

Coefficient (NII)	Std. error	T-statistics	P-value
0.001705	0.0008	1.9568	0.0523

Decision: The study reject Ho_3 and conclude that growth in Net Interest Income (NII) significantly affect the stock prices of listed banks in Nigeria. The coefficient is positive as expected and significant at 10%.

Ho_4: Earnings per share (EPS) do not significantly affect the stock prices of listed banks in Nigeria.

Coefficient (EPS)	Std. error	T-statistics	P-value
0.08814	0.0285	3.0860	0.0024

Decision: The study reject Ho_4 and conclude that EPS significantly affect the stock prices of listed banks in Nigeria. The coefficient is positive as expected and significant at 1%.

Ho_5: Dividends per share (DPS) do not significantly affect the stock prices of listed banks in Nigeria.

Coefficient (EPS)	Std. error	T-statistics	P-value
0.5637	0.0968	2.0922	0.0000

Decision: The study reject Ho_5 and conclude that DPS significantly affect the stock prices of listed banks in Nigeria. The coefficient is positive as expected and significant at 1%.

The above findings provide evidences for the rejection of three null hypotheses (Ho_3, Ho_4 and Ho_5), implying that that, NII, EPS and DPS positively impact share price of banks. Thus, when banks want to boost their market value, they must strive to continuously leverage acquired assets to generate quality earnings, maintain optimum expense level to remain profitable as well as declare dividends.

5. Discussion of Findings

Regarding the explanatory variables, the model showed that the coefficient of DPS, EPS, NII and ROE contribute positively to share price of the sampled banks while ROA impact share price negatively. Precisely, the coefficients of the model suggest that increase in the proportion units of DPS, EPS, NII and ROE may result in 0.564, 0.088, 0.002 and 0.001 percentage point increase in share price. On the other hand, proportionate unit increase in ROA could lead to 0.055 percentage point decrease in share price respectively. While the coefficient of NII was statistically significant at 10%, the coefficients of DPS, EPS and ROA are significant at 1% level. The coefficient of ROE was not statistically significant and hence suggest that the study accept the second hypothesis (H_{02}) and conclude that ROE does not significantly affect the stock prices of listed banks in Nigeria. This finding is consistent with Fouzan et al. (2016), whose work found that there is no effect between ROE and stock market price of 20 insurance companies listed in Amman stock exchange during the period 2011 to 2015.

The possible conjecture of non-significance of the ROE could relate to the fact that the equity positions of a few banks, as a result of post consolidation expansion drives, expanded dramatically from merger of medium sized banks, emerging in to larger banks, which has not translated in earnings capacity that could drive share prices of those banks to the height attained by leading banks on the Nigerian stock market. The study found that it is not the leading banks in terms of assets, equity and/or earnings that are price leaders. The negative ROA also differ from the a priori

expectation. This is likely as a result of the fact that the study covered both the period of capital market boom, when stock prices reached unprecedented high points, and the period of crash, precisely during the 2008 global financial crisis, when the market witnessed significant decline in stock prices. The later event eroded investors' confidence and the stock market have not been able to surpass the height reached over a decade ago. The study found that as at close of 2020, only two out of the sampled eleven banks were able to reach or surpass the price levels they attained in 2007. Coincidentally, the two banks were that best in terms of average ROA and ROE for the 15-year study period.

In relation to the control variables (age and size), the coefficient on age is negative but statistically significant at 1% but was found to have insignificant inverse relationship with share price. The coefficient of size is positive but not significant. This result indicate that the share price of a Nigerian bank with a larger size of assets is likely to be lower keeping every other variable constant. The study found that the share price of one of the leading banks in 2020 (in terms of assets) was less than 9 naira per share and the bank had assets 3 times a medium sized bank trading above 44 naira per share.

6. Conclusions and Recommendations

In conclusion, the study has provided both empirical as well as statistical evidence on the utility of the explanatory variables (ROA, ROE, NII, EPS and DPS) and control variables (firm size and age) in explaining and predicting the share price of banks. On the bases of the findings of the research, the study concludes that there is a positive relationship between share price and some firm fundamental factors. Also, dividend per share, earnings per share, growth in net interest income engender share price positively. While bank age negatively affects share price. With this, the study recommends that dividend is relevant fundamental factor in determining share price of bank quoted on the Nigerian Stock Exchange. Based on this revelation, boards of directors of firms should strive to maintain adequate dividend payments. Some of the numerous ways of maintaining adequate dividend payment is by: (a) reducing the proportion of yearly retain earnings, (b) optimization of operational cost, (c) aggressive loan recovery to minimize loan assets impairments, and (d) credit risk management and strategic loan and advances to the real sector. Also, the extent that dividend per share enhance share prices, it is recommended that existing shareholders pay more attention on high dividend paying companies for capital gain. Finally, Due to the enhancing role of dividend on share price, managers may want to window dress their earnings figure through dividend smoothing. Therefore, regulators should pay extra attention on earnings management techniques employed by managers in the attempt to smooth dividend payments.

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