DOES EARNING PER SHARE DETERMINE MARKET PRICE OF ORDINARY SHARES? EVIDENCE FROM NIGERIA BANKING SECTOR (2000 – 2013)

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ABSTRACT: *The study aims at examining the magnitude and nature of the relationship between earnings per share and market price of ordinary shares in Nigeria banking industry from 2004 to 2013. In addition, it aims at ascertaining the impact of earnings per share on prices of ordinary shares in Nigerian banking industry. Ordinary least squares method in the form of multiple regression was applied in the analysis. Stationarity test was conducted using the Augmented Dickey- Fuller (ADF) and Phillip Perrons (PP) tests. The result reveals that earnings per share significantly and positively influence the market price of ordinary shares; with a strong and positive association too. Earnings per share also granger causes market price of ordinary shares and these characteristics are sustainable in the long run in Nigerian banking sector. The implication of the findings is that an increase in earnings has the tendency of increasing significantly the market price of shares and earnings per share is one of the key factors responsible for fluctuations in market price of ordinary shares in Nigerian banking sector. Therefore, it is pertinent for banks targeting the enhancement of their equity price to adopt workable strategies towards attracting more deposit, increasing their lending, reducing their expenditure profile and opening up other investment avenues to improve upon their earnings.*

KEYWORDS: Earnings, Shares, Regression, Granger, Banks, Nigeria.

INTRODUCTION

Earnings are very important in the life of a firm for growth, diversification, investments, and in Shareholders' wealth maximization. It provides the needed resources for the provision of returns on investment in shares and other portfolios by shareholders and other stakeholders. The value of the ordinary shares could also reflect the performance and managerial efficiency of those who manage the firms at a point in time. Earnings Per Share is also one of the measures of managerial efficiency as well as firm performance, though the debate on whether EPS has any predictive power on stock prices is not very clear in financial literature (Umar and Musa, 2013).

Consequently, to analyze equity fundamentals, what is important is to verify whether the stock price moves with its firm's fundamental which includes earnings-per-share (EPS), earnings, dividends and net asset values (NAV) (Chang, Chen, Su and Chang, 2008). They believe that the future profit of the firm is the most fundamental factor that affects stock prices and that the earnings information contain the greatest informational content of all the accounting information since it contains important discussion concerning the relationship between accounting earnings and stock prices. However, Cambell and Shiller (1988) viewed earnings

as constructed by accountants with the objective of helping proposed investors and the general public to evaluate the fundamental worth of a firm.

Share prices may rise and fall in response to fluctuations in the values of endogenous and exogenous variables within the industry, originating from government policies, arising from strategies adopted by competitors or as a result of reactions to published financial performance indicators and market forces of demand and supply (Inyiama and Ozouli, 2014). They suggested that the pattern of changes in share prices could determine the timing and extent to which people are willing to invest and generally, transact with a firm because share price, at every point in time, tends to reflect public perceptions about the firm with regards to the firm's worth. Citing Umar and Musa (2013), Inyiama and Ozouli (2014) stressed that the effectiveness and efficiency of management decisions could be appraised in the light of the impact on the firm's stock price. They pointed out that one of the components of firm performance is earning per share (EPS) which is also a measure of managerial efficiency.

The variation in price among common stocks is of considerable interest for the discovery of profitable investment opportunities, for the guidance of corporate financial policy, and for the understanding of the psychology of investment behavior (Gordon, 1999) and an investor's objective of investing in firms' stock is obtaining reasonable stock return and the stock market can be activated only if investors achieve their requirements (Ebrahimi and Chadegani, 2011). In the opinion of Beaver (1989), he stated that earnings per share is the only figure in the financial statements that receives the greatest attention by the investors. Mlonzi, and Nthoesane (2011) while citing Aharony and Swary (1980) opined that earnings, per se, are an interesting phenomenon to observe, because they carry inside information about the company's future prospects.

The researcher intends to critically examine the nature and magnitude of the relationship between earnings per share and market price of ordinary shares, with emphasis on banks in Nigerian banking industry. The study also considers the extent of influence which earnings per share exert on market price of ordinary shares of banks in Nigeria. The remaining part of the paper is arranged into four sections. Section 2, x-rays the existing related literature, Section 3 documents the methodology for data analysis, Section 4 discusses the empirical results while Section 5 summarizes and finally concludes.

REVIEW OF RELATED LITERATURE

Panel cointegration methods were used by Chang, Chen, Su and Chang (2008) to investigate the relationship between stock prices and earnings-per-share (EPS). They also considered whether stock prices respond to EPS under different levels of growth rate of operating revenue. The empirical result indicated that the cointegration relationship existed between stock prices and EPS in the long-run. They also found that for firm with a high level of growth rate, EPS has less power in explaining the stock prices; however, for the firm with a low level of growth rate, EPS has a strong impact in stock prices.

To investigate whether current period earning divided by stock price at the beginning of the stock market period, current period dividend divided by stock price at the beginning of the stock market period, prior dividend divided by stock price at the beginning of the stock market period and the reverse of stock price at the beginning of the stock market period are relevant to

explain stock market returns in Iran, Ebrahimi and Chadegani (2011) used cross-section, pooled data and panel data regression models. The results indicate that in some years, shareholders take special interest in dividends and also the variable prior dividend divided by stock price at the beginning of the stock market period affects stock return. They also found that there is a significant relationship between current period earning divided by stock price at the beginning of the stock market period and stock return. The implication is that the results theoretically support the existence of relationship between earning, dividend and stock return.

Kothari, Lewellen and Warner (2003) studied the stock market reaction to aggregate earnings news. They observed that for individual firms, stock prices react positively to earnings news but require several quarters to fully reflect the information in earnings. They also found that the relation between returns and earnings is substantially different in aggregate data. It was discovered that returns are unrelated to past earnings, suggesting that prices neither under-react nor over-react to aggregate earnings news. Aggregate returns are negatively correlated with concurrent earnings and over the last 30 years, stock prices increased 6.5% in quarters with negative earnings growth and only 1.9% otherwise. Their findings suggests that earnings and discount rates move together over time, and provides new evidence that discount-rate shocks explain a significant fraction of aggregate stock returns.

The relationship between earnings figures and stock returns Dimitropoulos and Asteriou (2009). They carried out investigation of the above relationship in the context of the Greek capital market. They stated that previous studies resulted in controversial results regarding the usefulness of models which were using earnings levels or earnings changes as the explanatory variable. In an introductory context, the study examines the earnings-return relation applying four models as proposed by Kothari and Zimmerman (1995). The results indicate a significant value relevancy of accounting earnings prepared under the Greek GAAP.

Capital Asset Pricing Model (CAPM) was adopted by Mlonzi, Kruger and Nthoesane (2011) to investigate all the companies listed on the JSE-ALtX that announced annual earnings between 1 January and 31 December 2009. The result demonstrates that there is substantial negative share price reaction to earnings announcements on the small ALtX stock market. The ALtX also shows the weak form of market efficiency. The study concluded that during a recessionary period, shareholders' wealth is eroded in the small ALtX market; however, the weak form of market efficiency provides an opportunity for entrepreneurs and investors to exploit the market for profits when the market is performing well.

Hemadivya and Devi (2013) posits that the most basic factors that influence price of equity share are demand and supply factors, implying that if most of the people start buying then prices move up and if people start selling prices go down. Government policies, firm's and industry's performance and potentials have effects on demand behaviour of investors, both in the primary and secondary markets. They emphasized that factors affecting the price of an equity share can be viewed from the macro and micro economic perspectives. Macro economic factors include politics and general economic conditions. Their study tries to find out the relationship and the impact of EPS on Market price of selected companies.

Dehavi, Zarezadeh and Zraezadehand (2011) stated that the best ways of investment is investing in stock exchange. They observed that so far many researchers have tried to discover the relationship between the stock price and financial and non-financial variables by using the regression method. However, the fuzzy regression is not used thoroughly for finding this relationship. In the present study, the regression method based on the fuzzy sets theory has

been used to fit the relationship between the financial variables and stock price of Iran Khodro Company. Their financial variables for the study are Earning per Share (EPS), Dividends per Share (DPS) and Price to Earnings ratio (P/E). Eventually, the fuzzy linear regression model for examining the relationship between DPS, EPS and P/E variables and stock price of Iran Khordo Company has been presented. The empirical results of this research indicate that there is a positive and significant relationship between Earning per Share (EPS) and stock price of the company. However, there is a negative and significant relationship between Dividends per Share (DPS) and Price to Earnings ratio (P/E) of the said company.

Umar and Musa (2013) studied the relationship between stock prices and firm earning per share (EPS) which appears to be contestable like any other performance measures. The study examined the relationship between stock prices and firm EPS from 2005 to 2009 employing a simple linear regression model on a panel of 140 Nigerian firms from a total population of 216 firms' operated in Nigerian Stock Exchange (NSE). It was discovered that an insignificant relationship exists between stock prices and firm EPS in Nigeria. It was found that firm EPS has no predictive power on stock prices. They however suggested that firm EPS should not be relied upon for the prediction of the behavior of stock prices in Nigeria.

An examination of the predictability of accounting earnings using changes in share prices of companies listed at the Nairobi Stock Exchange in the finance and investment sector was carried out by Musyoki (2011). Their study covered the period between the year 2001 and 2005. The data was obtained from the Nairobi Stock Exchange, where the information selected were Earnings per share, Dividend yield, Price to earnings ratio and the share price. Eleven companies were analyzed and all of them had positive change towards the accounting earnings in relation to the share price. Additionally, the relationship between accounting variables and the Nairobi Stock Exchange information indicated mixed results, with some companies showing a strong positive correlation and others weak correlation.

Wang, Fu and Luo (2013) empirically analyzes the relationship between accounting information and stock price with a few accounting information indexes. The results, based on 60 listed companies in Shanghai Stock Exchange for 2011, reveal that positive relationship exists between accounting information and stock price, but the significant degree varies. The result further reveals that earnings per share and return on equity have the most significant correlation.

The above review of relevant works reveals that studies on the relationship between earning per share and market price of ordinary shares is still scanty and unbalanced amongst the leading sectors of the economy. Most of the existing studies on the subject centres on non-financial and allied institutions. Hence, this study aims at examining the magnitude and nature of the relationship between earning per share and market price of ordinary shares in Nigeria banking industry.

METHODOLOGY

The research variables were structured into dependent and independent variable for the purpose of analysis. The dependent variable of the study is the market price of ordinary shares while the independent variable is Earnings Per Share (EPS). The study used simple regression analysis in the form of Ordinary Least Square (OLS) method to test the effect of earnings per

share on share price of listed banks in Nigeria banking industry. The simple regression model shows the dependent variable (market price of shares) as a function of a single independent variable, earnings per share, in line with the stated objective of the study. Correlation analysis was employed to determine the extent of association of the variables under study.

$$MPS_{t,i} \quad = \quad \beta_o + \beta_1 \, EPS_{t\text{-}1i}, \; + e_t \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..(1)$$

Where,

MPS $\quad$ = Market Price of Ordinary Shares

EPS $\quad$ = Earnings Per Share

β_o = Coefficient (constant) to be estimated

t = Current period

t-i (i = 1) = One year lag period

e = Stochastic disturbance (error) term

The EViews software provides the signs and significance for interpretation of the result for test of regression and correlation analysis. The output from Eviews software tallies with the decision rule that the coefficient is significant if the p-value is equal to or less than 0.05.

Variable Description

- **Market Price of Ordinary Shares**

Market Share Price is the value of a firm's equity per unit of the outstanding shares. Equity share is a measure of the unit of ownership of a bank. Banks make new issue of shares to the public to generate fund for expansion, diversification, investment and generally growth. In the stock exchange, price of equity shares is determined ultimately through the interactions of the forces of demand and supply. This demand and supply forces are also believed to be propelled by other forces and factors which may not be unconnected with the earnings capacity of the firm. The dependent variable of the study is the Market Price of Ordinary Shares which is calculated as the average price of equity share. The highest market share price in the year is added to the lowest market price of the equity share in the same year and the average found. This average price is the market price of equity shares for the purpose of this study.

$$MPS \quad = \quad \frac{\text{Highest Share Price} + \text{Lowest Share Price}}{2} \quad - \quad - \quad - \quad (2)$$

- **Earnings Per Share (EPS)**

Earnings Per Share is calculated by dividing the bank's total earnings or income by the number of shares the bank has outstanding. EPS is defined, for the purpose of this study, as the ratio of profit after tax after dividend on preference shares to number of outstanding equity shares. When a bank shows convincing signs that it has the capacity and potentials of earnings both in the short and the long term, investors are most likely to be attracted to such bank. This attraction, logically, could lead to an increase in demand of its equity shares and by extension, the market share prices. After the payment of preference share dividend, the left- over of

earnings becomes the exclusive right of the ordinary shareholders, which the bank either share to shareholders as dividend or retain in the bank for growth and expansion.

Earnings Per Share

$$= \frac{\text{Net Profit After Tax – Preference Share Dividend}}{\text{Number of outstanding ordinary shares}} \qquad - \quad - \quad - \quad (3)$$

Time series data were collected from annual report and accounts of Access Bank Plc, First Bank Plc, United Bank of Africa Plc and Zenith Bank Plc. In order to accommodate Zenith Bank Nig Plc which is one of the leading banks in Nigeria banking sector, the time frame for the study was 2004 to 2013. This is because Zenith Bank became a public limited company on June 17, 2004 and was listed on the Nigerian Stock Exchange (NSE) on October 21, 2004 following a highly successful Initial Public Offering (IPO). Zenith Bank Plc currently has a shareholder base of about one million and is Nigeria's biggest bank by tier-1 capital (https://www.zenithbank.com/CorporateInfo.aspx). The collected data were tested for stationarity as non-stationary data series could lead to spurious regression which could mislead the users of the research outcome.

DISCUSSION OF FINDINGS

The Augmented Dickey Fuller Test carried out on the data series, as shown in Table 1, reveals that market price of shares data series attained stationarity at the second differential (I(2)) while earnings per share series became stationary at level and intercept (I(0)).

Table 1: Augmented Dickey Fuller (ADF) Unit Root Test Results

Variables	Test Critical Values			Test Statistics Status	
	1 %	5 %	10 %	ADF	(Stationarity)
MPS	-3.689194	-2.971853	-2.625121	-7.779644	I(2)
EPS	-3.615588	-2.941145	-3.815871	-3.683826	1(0)

Source: Author's EView 8.0 Computation

However, sequel to the criticisms of low power in determining unit root in data series credited to Augmented Dickey Fuller Test, we made use of Phillip's Perron Test for unit root in data series as a confirmatory test. The results confirmed further that market price of shares data series are stationary at second difference while that of earnings per share are stationary at level and intercept (see Table 2).

Table 2: Phillip's Perrons (PP) Unit Root Test Results

Variables	Test Critical Values			Test Statistics Status	
	1 %	5 %	10 %	PP	(Stationarity)
MPS	-3.626784	-2.945842	-2.611531	-16.23892	I(2)
EPS	-3.615588	-2.941145	-3.815871	-3.384110	1(0)

Source: Author's EView 8.0 Computation

Table 3 explains the characteristics of the research variables. It reveals the mean, median, standard deviation and other frequency distribution indices for the study, as well as the maximum and minimum values of the time series data under study.

Table 3: Descriptive Statistics of the Variables

STATISTICS	MPS	EPS
Mean	16.34575	1.631750
Median	13.66500	1.635000
Maximum	46.09000	3.990000
Minimum	2.590000	-0.320000
Std. Dev.	10.90494	1.067266
Skewness	1.124446	0.233015
Kurtosis	3.722257	2.426871
Jarque-Bera	9.298621	0.909434
Probability	0.009568	0.634627
Sum	653.8300	65.27000
Sum Sq. Dev.	4637.790	44.42318
Observations	40	40

Source: Author's EView 8.0 Computation

The coefficient of skewness for EPS has a value below one (1) signifying a normal frequency distribution. Kurtosis coefficient is 2.426871 and 3.722257 for EPS and Market Price of Shares respectively. Jarque-Bera statistic confirms also that EPS has an insignificant p-value of 0.634637, hence a normal frequency distribution. Both Kurtosis and Jarque-Bera statistic confirm that the EPS time series data were normally distributed. The standard deviation of MPS is more volatile than that of EPS.

Table 4 reveals that earnings per share significantly influence the market price of ordinary shares.

Table 4: Regression Analysis Results

Dependent Variable: MPS

Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EPS	5.717217	1.402490	4.076476	0.0002
C	7.139688	2.758597	2.588159	0.0137
R-squared	0.309929	Mean dependent var		16.67718
Adjusted R-squared	0.291278	S.D. dependent var		10.84148
S.E. of regression	9.126965	Akaike info criterion		7.310264
Sum squared resid	3082.155	Schwarz criterion		7.395575
Log likelihood	-140.5501	Hannan-Quinn criter.		7.340873
F-statistic	16.61766	Durbin-Watson stat		1.714856
Prob(F-statistic)	0.000233			

Source: Author's EView 8.0 Computation

Equation: MPS = 7.139688 + 5.717217(EPS)

(2.758597)   (1.402490)

Table 4 indicates that a unit / one naira change in Earnings Per Share, would result in an increase of 5.71721 in market price of ordinary shares. Earnings per share exert a positive and significant influence on market price of ordinary shares in Nigeria banking industry. The implication of the findings is that an increase in Earnings Per Share will lead to an increase in market price of ordinary shares in Nigeria banking industry. This is revealed by a coefficient of 5.717217 and p-value of 0.0002. This is in accord with logical reasoning and also with our a priori expectations. In this case, the Durbin-Watson Statistic is 1.714856. This indicates the absence of autocorrelation in the data series.

Adjusted R^2 measures the percentage of share price movements that could be explained by changes in the independent or explanatory variables. In this case, adjusted R^2 is 0.291278 (29%). This implies that about 29% of the variations in Market Price of Shares could be explained by movements in Earnings Per Share while about 71% could be attributed to other factors capable of influencing changes in share prices in Nigeria banking sector.

Table 5 indicates that Market Price of Ordinary Shares is strongly related to Earnings Per Share. The strength of the relationship is about 56% which is adjudged significant.

Table 5: Correlation Analysis Results

	MPS	EPS
MPS	1.000000	0.556712
EPS	0.556712	1.000000

Source: Author's EView 8.0 Computation

The relationship is also positive; implying that as earnings per share is increasing, market price of ordinary share will tend to respond positively by also increasing and vice versa.

Table 6 reveals that, at Lag 2, there is a bidirectional causality running from Earnings Per Share to Market Price of Ordinary Shares and from Market Price of Ordinary Shares to Earnings Per Share. This implies that earnings per share granger causes market price of ordinary shares and vice versa.

Table 6: Pairwise Granger Causality Tests

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
EPS does not Granger Cause MPS	37	4.36009	0.0212
MPS does not Granger Cause EPS		11.2350	0.0002

Source: Author's EView 8.0 Computation

However, at Lag 1, there is a unidirectional causality running from market price of ordinary shares to earnings per share. This implies that market price of ordinary shares granger causes earnings per share. There is no causality running from earnings per share to market price of ordinary shares and vice versa.

Table 7: Pairwise Granger Causality Tests

Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
EPS does not Granger Cause MPS	38	4.05160	0.0519
MPS does not Granger Cause EPS		5.13985	0.0297

Source: Author's EView 8.0 Computation

Table 8: Johansen Cointegration Results

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.416748	34.94206	15.49471	0.0000
At most 1 *	0.316407	14.45493	3.841466	0.0001

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.416748	20.48713	14.26460	0.0046
At most 1 *	0.316407	14.45493	3.841466	0.0001

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Author's EView 8.0 Computation

The presence of two cointegrating equations, as shown in Table 8, indicate that the relationship which both variables share in the short run is sustainable in the long run.

SUMMARY AND CONCLUSION

The aim of this study is to examine the nature and magnitude of the relationship between earnings per share and market price of ordinary shares; as well as the causes and effects of earnings per share on market price of ordinary shares. The analysis reveals that earnings per share significantly and positively influence the market price of ordinary shares. In terms of the extent of association, it was found that earning per share has a strong and positive relationship

with market price of ordinary shares. However, with regards to causality, the analysis reveals that earnings per share granger causes market price of ordinary shares in Nigerian banking sector. The researcher also tried to examine the possibility of sustaining the relationship which earnings per share presently share with market price of ordinary shares. Johansen Cointegration analysis showed two cointegrating equations which indicates that the short run relationship is sustainable in the long run.

The implication of the findings is that when other factors capable of affecting or influencing market price of ordinary shares are held constant, an increase in earnings and by extension, earnings per share has the tendency of increasing significantly the market price of shares in Nigeria banking industry. It further implies that earning per share is one of the key factors responsible for market price of ordinary share fluctuations especially in the banking sector.

The findings of this study is in tandem with the position of Wang, Fu and Luo (2013) which revealed that earnings per share and return on equity have the most significant correlation with stock price. The study carried out by Musyoki (2011) on eleven companies where the information selected were Earnings per share, Dividend yield, Price to earnings ratio and the share price reveal that all of them had positive change towards the accounting earnings in relation to the share price; in line with this study. The finding of Kothari, Lewellen and Warner (2003) is also in consonance with these research findings. In addition, for the firm with a low level of growth rate, EPS has a strong impact in stock prices as stated by Chang, Chen, Su and Chang (2008).

In conclusion therefore, banks in Nigerian banking space pursues increased earnings in an effort to enhance the price of its' equity. In line with the signaling theory of dividend, banks that pay dividend are believed to be more stable in terms of earnings and this scenario appeals much to shareholders and could propel them into more investment. Hence, it becomes pertinent for banks targeting the enhancement of their equity price to adopt workable strategies towards attracting more deposit, increasing their lending, reducing their expenditure profile and opening up other investment avenues to improve upon their portfolio.

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