Fixed Assets Revaluation and Profitability: A Cross -Sectional Study of Commercial Banks in Nigeria

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Abstract

This study was undertaken with the objective of examining the effect of fixed assets revaluation on the profitability of commercial banks in Nigeria. Using a sample of fifteen quoted banks for a period of 5 years (2013-2017), the study employed cross sectional panel data. Return on assets was modeled as a function of revaluation of building, revaluation of land and revaluation of equipment. Ordinary least square methods were used as data analysis methods. Unit root test and granger causality test was used to determine the dynamic effect of fixed asset revaluation on the profitability of selected commercial banks. The findings revealed that revaluation of land and buildings have negative but insignificant effect on return on assets of the commercial banks while revaluation of equipment have positive and insignificant effect on return on assets. Unit root test found that the variables are stationary at first difference while the granger causality found no causal relationship among the variables. The study concludes that fixed assets revaluation have no significant effect on the profitability of Nigeria commercial banks. The study recommends that management of commercial banks should adopt fixed assets revaluation method that are in line with the relevant statute and accounting standard so as to enable informed performance evaluation.

Keywords: fixed assets revaluation, profitability, commercial banks, cross sectional study, Nigeria.

Introduction

The operation of bank is illustrated in the resources profile which involves the source and application of fund as shown in the reported balance sheet. The primary function is to intermediate between surplus and deficit economic units and bridge saving- investment gap. The Banking sector roles in the development of Nigerian economy cannot be overemphasized. In the words of Soludo (2009) Nigerian banks account for over 90 percent of financial system assets and dominate the stock market. The active participation of banks in Nigerian economy dates back to late 1800, when Nigeria's first bank, the African Banking Corporation was established in 1892. Generally the assets of a bank are classified as being either financial or non-financial. Financial assets include bank deposits, bonds and shares while nonfinancial or tangible assets include items such as machinery and equipment, buildings, information technology and stockpiles of inventory (Marian and Ikpor, 2017; Akani and Lucky, 2017).

As in Aburime (2010) bank profitability can be seen as an input-output relationship. It measures the effectiveness and the efficiency of management in achieving returns on investors' fund.

Choi, Pae, Park and Song, (2013) stated that it is a qualitative measure of return on investment, return on assets, return on capital employed, earnings per share, profit after tax and net profit margin.

Corporate profitability can be examined at the micro and the macro levels. At the micro level, profitability is a function of management capacity, assets composition, source of fund, investment policy and dividend policy; while at the macro level, profitability is a critical function of Central Bank of Nigeria monetary policy and other regulatory instruments, inflation, exchange rate fluctuation, economic growth, real income and interest rate.

Fixed assets constitute an essential part of the overall resources that are available for organizational use. Fixed asset investment plays vital roles in carrying out corporate activities and also enhances the capacity of an organization in providing goods and services. These may include investment in items such as Machinery, Information and communication Technology, Buildings, Motor Vehicle, Furniture and Fittings, Office Equipment. No organization can be sustained without some investment in fixed asset. High fixed assets turnover ratio indicates efficient utilization of fixed assets in generating sales, while a low ratio indicates inefficient management and utilization of fixed assets. Effective organization of fixed assets is one of the most important parts of the entire corporation and in creating value for shareholders.

International Financial Reporting Standards (IFRS) and Nigeria Accounting Standard Board (NASB) has been gradually started since 2007. IFAS 16 has been adjusted to the International Accounting Standard (IAS) 16, which allow companies to value its fixed assets by revaluation model. However, this revaluation model choice is not mandatory, and it gives flexibility to companies for choosing either revaluation model or historical cost model. There are several factors that conceptually bridge the association between revaluation of fixed assets and future firm performance. This section explains the benefits of fixed assets revaluations in the perspective of fair value in general, reducing debt contracting which lead to more borrowing capacity, and giving a positive signal about the future performance of the firm. Fixed assets revaluation increase the asset base and increase the depreciation expense, thus it reduces the current return on assets and decreases the current earnings. Such situation needs to be compensated by better future performance. Fixed assets revaluation increases the book value of the total assets; therefore, it eases firm's effort for adhering to debt covenant restriction.

The effect of fixed assets revaluations on firm performance has well been conducted by researchers. However, there is no definite conclusion whether this revaluation of fixed assets can be either positive or negative for a company's performance, for instance Aboody et al. (1999) concluded that revaluation serves a positive effect on future firm performance in the United Kingdom, Jaggi and Tsui (2001) also found that upward asset revaluations by Hong Kong firms are significantly positively associated with the future firm performance, Zhai (2007) concluded that there is no conclusive evidence that upwards asset revaluations by New Zealand firms are associated with future operating performance while the findings of Lopes and Walker (2011) revealed that upward revaluations of fixed assets in Brazil have negative effect on future firm performance. The studies above are foreign whose findings cannot be applied in Nigeria, the effect of fixed assets revaluation on profitability of Nigeria firms is lacking in literature, therefore this study examined the effect of fixed assets revaluation on the profitability of quoted commercial banks in Nigeria.

Literature Review

Fixed Assets Revaluation: Accounting Perspective

The revised IFAS 16 regarding fixed assets was mainly adopted from IAS No. 16 for Property, Plant, and Equipment. This standard stated that cost model is applied in initial recognition of fixed assets items (DSAK, 2011). Similar to IAS 16, this standard allows discretion for firms to adopt either the cost model or the revaluation model in valuing fixed assets for subsequent measurement (DSAK, 2011). When the revaluation model is adopted, fixed assets which its fair value can be measured reliably must be adjusted at a revalued amount, by measuring its fair value at the date of the revaluation less subsequent accumulated depreciation and subsequent accumulated impairment losses (DSAK, 2011). Other mechanisms of revaluation are similar to IAS 16, in which the revaluation needs to be done periodically and conducted for all assets that belong to the same class. Most of the publicly listed firms in Indonesia adopt the cost model instead of the revaluation model for measuring their fixed assets. Zakaria (2015) found out that on average, during 2008-2012, only 7 out of 457 firms listed in Indonesia Stock Exchange (IDX) adopt the revaluation model for fixed assets each year. This low level of revalued firms mainly caused by 10% tax imposed for every Indonesian Rupiah (IDR) amount of upward revaluation, which deters the intention of adopting revaluation model, especially to the firms with cash flow problem (Zakaria et al., 2014).

Return on Assets

Return on Assets (ROA) is measures of firm's performance that reveals to the users of financial statement how well a company uses its assets to generate income. A higher ROA denotes a higher level of firm performance. A rising ROA, for instance, may initially appear good, but turn out be unimpressive if compare with other companies in same line of activities or industrial average. Hence, if company's ROA is below industrial average the company is not utilizing its full capacity. Booth et al. (1999) posit that this measure was used in their study because it was the only variable that can be calculated across countries. They conclude that country comparisons of profitability are therefore difficult. Among other authors that adopted this measure in their empirical studies are Zeitun and Tian (2007), Zeitun (2009), Tze-Sam and Heng (2011), Onaolapo and Kajola (2010) and Khan (2012). The ROA ratio may thus be more useful when compared to the risk free rate of return to be rewarded for the additional risk involved. If a firm's ROA is equal or even less than the risk free rate, investors will be indifferent and better off just purchasing a bond with a guaranteed yield.

$$\text{ROA} = \frac{Profit\ before\ Interest\ and\ Tax}{Total\ Asset}$$

Theoretical Review

Agency Theory

Agency theory suggests that the firm can be viewed as a nexus of contracts between resource holders. An agency relationship arises whenever one or more individuals, called principals, hire one or more other individuals, called agents, to perform some service and then delegate decision-making authority to the agents. The primary agency relationships in business are those between stockholders and managers; and between debt holders and stockholders. These relationships are not necessarily harmonious; indeed, agency theory is concerned with so-called agency conflicts, or conflicts of interest between agents and principals. This has implications for, among other things, corporate governance and business ethics. When agency occurs it also tends to give rise to agency costs, which are expenses incurred in order to sustain an effective agency relationship. Accordingly, agency theory has emerged as a dominant model in the financial economics literature, and is widely discussed in business ethics texts. Agency theory

in a formal sense originated in the early 1970s, but the concepts behind it have a long and varied history (Bowie & Edward, 1992).

The agency problem was developed by Coase (1960), Jensen and Meckling (1976) and Fama and Jensen (1983). The theory states the relationship between principals such as a shareholders, and agents such as a firm's senior management. The principal delegates work to an agent. The theory attempts to deal with firstly, the agency problem where there is a conflict of interest between a company's management and the company's stockholders, and secondly, that the principal and agent settle for different risk tolerances. There are two main agency relationships in a firm that are normally in conflict; those between the company's management and stockholders and between the stockholders and the debt holders. These agency conflicts have implications on corporate governance and business ethics. Such relationships have expensive agency costs that are incurred so as to sustain an effective agency relationship. Incentive fees paid to agents to encourage behavior consistent with the principal's goals are common examples of agency costs Bowie and Edward (1992).

One of the ways of reducing agency problems is debt financing which helps those problems that are normally related to free cash-flow and asymmetric information problems especially in the case of privately held debt. Secondly, Conflicts of interest between managers and shareholders also arise from the divisions between ownership and control. Managerial ownership can align the interest between them, hence; reduce the total agency costs. The relationship between managerial ownership and agency costs is linear and the optimal point for the firm is achieved when the managers acquires all of the shares of the company Jensen and Meckling (1976). Thirdly, Ownership concentration is the other option of reducing agency costs by shareholders proactively taking active roles in monitoring. This is however dependent on the amounts of their equity stakes. The more the investor's stake, the more motivated they are to monitor and protect their investment Gilson and Lang (1990).

Stakeholder Theory
This theory states that managers react to pressures put forth by owner-stakeholders because of legitimacy, power, and urgency considerations. Freeman (1984) suggests that the firm stakeholders influence the top managers who are in charge of strategy development and implementation through resource usage and withholding mechanisms. Murtha and Lenway (1994) suggest that states are able to influence management because they control authority, markets, and property rights which are the main strategic resources by their involvement in the appointment of a firm's top management as well as board members and providing direct or indirect subsidies and incentives. States involvement in the markets can negatively affect the degrees of openness (free market) or control (closed market). This influence can also manifest itself through property rights in countries where the stakeholders have undue powers in regard to property ownership. The implication of this theory is that most of the policies and market approaches implemented by commercial banks are highly subjective to stakeholders' strategies being rolled out in that period. The assumption is that the state as the major stakeholder supplies resources to these banks but with a lot of 'strings attached'. Therefore, banks will perform well if and only if the ruling government influences competitive strategies.

Efficiency Theory
The efficiency theory was formulated by Demsetz (1973) as an alternative to the market power theory. The efficiency theory presupposes that better management and scale efficiency results to higher concentration thus greater and higher profits. Accordingly, the theory posits that management efficiency not only increases profits, but also results to larger market share gains

and improved market concentration (Athanasoglou, Brissimis& Delis, 2005). The efficiency theory also states that a positive concentration profitability relation may be a sign of a positive connection relating to efficiency and size. The theory postulates that positive association between the concentration and profit arise from a lower cost which is mainly achieved through production efficient practices and increased managerial process (Birhanu, 2012).

The efficiency theory supports that the most favorable production can be attained through economies of scale. Thus, maximum operational efficiency in the short run is achieved at a level of output where all economies of scale available are being employed in an efficient manner (Odunga et al., 2013). Additionally, the efficiency theory explains that attaining higher profit margins arises from efficiency which allows banks to obtain both good financial performance and market shares (Mirzaei, 2012).

According to Fisseha (2015), the efficiency theory presupposes that profitability and high concentration results from efficient cost reduction practices and better management strategies across the organization. Thus, efficient firms in the market lead to an increase in their market share and the size of their firm because of aggressive production and management techniques (Birhanu, 2012). In the banking industry, the efficient theory advocates that large commercial banks which have better and experienced management and up to date production technologies are able to reduce their operational costs, therefore earned higher returns on investment in comparison to smaller banks (Soana, 2011). Basically, the theory is based on the premise that banks attain profits if they operate efficient than their competitors which lowers operating costs leading to good profits (Onuonga, 2014). The efficiency theory also assumes that internal efficiencies influence profitability of commercial banks (Obumuyi, 2013). Further, the theory explains that banks which operates efficiently in comparison to their competitors increase their profits due from low operating costs. The efficiency hypothesis prevails when a positive significant correlation between profitability and the market share is signaled (Mensi & Zouari, 2010).

Empirical Review

Lopes and Walker (2012) concluded that there is a negative relationship between fixed assets revaluations and future firm operating income, which was arguably caused by the revaluers which engaged in opportunistic action and having a low score of BCGI index. , Jaggi and Tsui (2001) found out that the association between upward fixed assets revaluations and future firm operating income is significantly positive. They concluded that fixed asset revaluation arises from the motive of conveying fair value to the user of financial statements. Chainirun and Narktabtee (2009) found out that firms are willing to conduct fixed assets revaluation for signaling their opportunity in expanding their scale of business and the improvement in liquidity. Zakaria (2015) found out that on average, during 2008-2012, only 7 out of 457 firms listed in Indonesia Stock Exchange (IDX) adopt the revaluation model for fixed assets each year. This low level of revalued firms mainly caused by 10% tax imposed for every Indonesian Rupiah (IDR) amount of upward revaluation, which deter the intention of adopting revaluation model, especially to the firms with cash flow problem

Martina (2015) investigated the relationship between tangible assets and the capital structure of Croatian small and medium-sized enterprises. The study was conducted on a sample of 500 Croatian SMEs for the period between 2005 and 2010. The data used for the empirical analysis were taken from companies' annual reports. The results of the research found that tangible assets are differently correlated with short-term and long-term leverage. The relationship between tangible assets and short-term leverage was negative and statistically significant in all observed years. The relationship between tangible assets and long-term leverage was positive

in all observed years and statistically significant. The results showed that small and medium-sized companies use their collateral to attract long-term debt, which means that small and medium-sized companies use lower costs and the interest rate of long-term debt in relation to short-term debt.

Mawih (2014) examined the effects of assets structure (fixed assets and current assets) on the financial performance of some manufacturing companies listed on Muscat Securities Market (MSM), for the period 2008-2012. The assets structure was measured by fixed assets turnover and current assets turnover while the financial performance was measured by ROA and ROE. The overall result of the study was that the structure of assets does not have a strong impact on profitability in terms of ROE. Another result of the study indicated that only the fixed assets had impact on ROE unlike ROA. Further, the result suggested that the effect of asset structure had an impact on ROE only in petro-chemical sector. It also concluded that there was no impact for current assets on ROE and ROA.

Marian and Ikpor (2017) examined the impact of fixed assets investments on financial performance of selected banks in Nigeria. Specifically, the impact of cost of maintenance and repairs, additions and impairments on Return on Assets (ROA) of banks were used for this study. Expost Factor research design was used for the study. Secondary data were collected from annual reports and accounts of Deposit Money Bank of eight selected banks over the period of eleven (11) years (2002 – 2014). The eight (8) banks were selected using random sampling technique. Multiple regression were employed to analyze the relationship between the dependent variable (ROA) and independent variables – cost of maintenance and repairs, additions and impairments of fixed assets. The findings of the study show that cost of maintenance and repairs have a negative and significant impact on return on assets of banks. Also the results of the study revealed a negative and statistically significant relationship between additional acquisition of fixed assets and return on assets (ROA) of banks. Furthermore, the study shows a negative and significant relationship between impairments of fixed assets and return on asset (ROA). The implications of the findings is that increase in the cost of maintenance and repairs of fixed assets leads to decrease in return on assets of banks. The findings also implied that as additional acquisition of fixed assets and impairments of fixed assets increase, return on assets of the banks decreases.

Olatunji and Adegbite (2014) examined the effect of investment in fixed assets on profitability of selected Nigerian banks. It also analyzed the significant components of fixed assets investment of selected Nigerian Commercial Banks. Data were obtained from annual reports and accounts of selected Nigerian commercial Banks. Pearson product moment correlation and multiple regressions were employed to analyze the relationship between the dependent variable (Net profit) and independent variables (Building, Land, Leasehold premises, fixtures and fitting, and investment in computers.). Findings show that there is a significant relationship between dependent variable (Net Profit) and the independent variables (Building, information communication and technology, machinery, leasehold, land and fixture and fitting) with the adjusted R2 @ 96%. Therefore, investments in fixed assets have strong and positive statistical impact on the profitability of banking sector in Nigeria. In order to improve bank profitability through efficient management of fixed assets, Nigerian banks should increase fixed assets investments in form of ICT. Fixed assets utilization and productivity needs to be monitored to boost profitability for shareholders' satisfaction.

Gautam (2008) found out that high fixed cost can deplete a company's profit especially if sales fall. The revelation that other variables do not have significant impact on profit after tax may be explained by the fact that companies probably adjust selling prices of their products to take care of changes in variable cost other than fixed cost. Khalid (2012) examined the relationship between the asset quality management proxies and profitability nexus. Using the return on assets and profitability ratios as proxies for bank profitability for the period 2006-07 to 2010-11, operating performance of the sample banks is estimated with the help of financial ratios. Also multiple regression models were employed to examine if bank asset quality and operating performance are positively correlated. The results showed that a bad asset ratio is negatively associated with banking operating performance, after controlling for the effects of operating scale, traditional banking business concentration and the idle fund ratio.

Mwaniki and Omagwa (2017) examined relationship between the asset structure and the financial performance of the firms quoted under the commercial and service sector at the NSE, Kenya. The target population by the study was the secondary data from the annual reports of the firms. The asset structure is analyzed in term of: Property, Plants and Equipment; current assets; intangible assets; and long term investments and funds, which formed the independent variables. The dependent variable of interest was the financial performance of the firms, and was measured in terms of: earning per share; return on assets; return on equity, profit margin (return on sales); and current ratio, by aid of a composite index. A census was done on the entire firms listed under this sector by the year 2014, for a five year period, 2010 to 2014. A document review guide was used to collect the secondary data from the financial statements of the firms under study. A multiple regression analysis (standard) was conducted with the aid of statistical programs SPSS version 21. The results of the study indicate that asset structure had a significant statistical effect on the financial performance. In particular, the study found that: Property, Plants and Equipment, and long-term investments and funds have a statistically significant effect on financial performance, while current assets and intangible assets do not have statistical significance on financial performance.

Okwo, Ugwunta and Nweze (2012) studied the investment in fixed assets and firm profitability, evidence from the Nigerian Brewery Industry. A cross sectional data was gathered for the analysis from the annual reports of the sampled brewery firms for a period of 1995 to 2009. The four brewery firms that constitute the sample were those quoted on the Nigerian Stock Exchange and their inclusion in the analysis is based on the availability of data for the sample period. Abubakar, Nasir and Haruna (2013) examined how Information and Communication Technology would impact on performance of selected banks in Nigeria. Data were obtained from annual reports of selected banks over the period of eleven years (2001-2011). Fixed and Random Effects Models were used for the analysis of the data. The results of the study reveal that additional sustained investment in ICT and bank performance/ profitability are inversely related. The researchers therefore suggested that more emphasis should be made on policies that will promote proper utilization of ICT equipment rather than additional investments.

Sveltana and Aaro (2012) examined the extent to which investment in fixed assets is related to the return on assets of selected companies in the European Union Member States. A sample of 8,074 companies was used for the study which was carried out over a period of nine years (2001-2009). The study employed multiple regression analysis to analyze the relationship between the dependent variable (ROA) and the independent variable (Level of Investment on fixed asset). The results revealed a strong positive statistical relationship between the level of fixed asset investment and return on asset.

Methodology

The study adopts the panel data method of data analyses which involve the fixed effect, the random effect and the Hausman Test. This applies to the panel data methodology to a regression model based on the relationship between fixed assets revaluation and the profitability of commercial banks in Nigeria. The idea is to subject the variables to stationary lest and subsequently remove the non- stationary trends by differencing before regressing. This removes the possibility of the so-called spurious regression not have considered the problem of unit roots. As a result, the econometric methodology used in those studies did not account for non-stationarity in the data. The analysis here is primarily based on Engle and Granger (1987), and Engle and Yoo (1987). The study cover a periods of 5 years (2013-2017), the idea is to determine the order of integration of the variables, that is, we test whether they are stationary in their levels or whether they have to be differenced once or more before they become stationary. Testing for unit roots is earned out by using an Augmented Dickey-Fuller (ADF) test. In order to examine the relationship between the dependent and the independent variables, the model for the study is hereby specified as follows:

$$ROA = f(FAR) \qquad\qquad\qquad\qquad 1$$
$$ROA = f(RB, RL, RE) \qquad\qquad\qquad\qquad 2$$

$$ROA = \alpha_0 + \beta_1 RB + \beta_2 RL + \beta_3 RE + \varepsilon i \qquad\qquad 3$$

$$\text{A-priori, } b, > 0, b_3 > 0, b_3 > 0, \qquad\qquad\qquad 4$$

Where:

ROA = Return on Assets
RB = Revaluation of building
RL = Revaluation of land
RE = Revaluation of Equipments
εí = Error Term

The analysis of short-run dynamics is often done by first eliminating trends in the variables, usually by differencing. The theory of co-integration development in Granger (1981) and elaborated in Engle and Granger (1987) addressed this issue of integrating short-run dynamics with long-run equilibrium. It is important to note that the usual starting point of ECM modeling is to assess the order of integration of both the dependent and independent variables in the model. The order of integration ascertains the number of time a variable will be differentiated to arrive at stationary. Dickey- fuller (DF), Augmented Dickey-Fuller (ADF) and Sargan - Rhargava Durban-Watson (SRDW) are the widely used lest for stationary for both individual time series and residual from OLS regressions. Co-integration is based on the properties of the residuals from regression analysis when the series are individually non-stationary, the original co integration regression is specified as follows:

$$A_t = \alpha_0 + \alpha_1 \beta_1 + \ell_1 \qquad\qquad\qquad\qquad 5$$

Where A represents the dependent variables, β stands for the independent variable, and I e is the random error term. a_n and a_j are intercept and slope coefficients respectively. To include the possibility of bi-directional causality, the reverse specification of equation 1 is considered. To provide a more defensive answer to the non-stationarity in each time series, the Dickey-Fuller (1979) regression is estimated as follows for a unit root:

$$\Delta e_t = -\lambda e_{t-1} + W_t$$

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If X Equals zero e is non-stationary. As a result, A and B are not co-integrated. In other words, if X is significantly different from zero A and B is found integrated individually. Given the inherent weakness of the root test to distinguish between the null and the alternative hypothesis, it is desirable that the Augmented Dickey-Fuller (ADF) (1981) test be applied. The desirability is warranted because it corrects for any serial correlation by incorporating logged changes of the residuals. To be co-integrated, both A and B must have the same order of integration (Eagle and Granger, 1987 and Granger, 1986). The ADF regression is specified as follows:

$$\Delta e_t = \beta_o \ell_{t-1} + \sum_{j=i}^{m} \beta_j \Delta \ell_{t-1} + \mu_t$$

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Where Δ the first different operator and u. is, is the new rand or error term. M is the optimum number of lags needed to obtain "white noise". This is approximated when the DW value approaches 2.0 numerically. The null hypothesis of non-co-integration is rejected, if the estimated ADF statistics is found to be larger than its critical value at 1 or 5 or 10 per cent level of significance. If A, and B, arc found to be co-integrated, then there must exist an associated error-correlation Model (ECM), according to Engle and Granger (1987). The usual ECM may take the following form:

$$\Delta G_t = \sigma_o e_{t-1} + \sum_{j=1}^{T} \sigma_1 \Delta A_{t-j} + \sum_{j=1}^{T} \theta_j \Delta B_{t-j} + V_t$$

8

Where Δ denotes the different operator CM is the error correction term, T is the number of lags necessary to obtain white noise and V, is another random disturbance *term*. If a$_0$CM is significantly different from zero, then A and B have long-Run relationship, the error-correction term (e_{t-1}) depicts the extent of disequilibrium between A and B The HCM, reveals further that the change in A, not only depends on lagged changes in B, but also on its own lagged changes.

Pooled Effect Model

$$ROA_{it} = \beta_0 + \beta_1 RB + \beta_2 RL + \beta_3 RE + U.$$

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Fixed Effects
The fixed effects focus on whether there are differences by using a fixed intercept for each of the different cross-sectional structures. If we assume that the dummy variable for a conglomerate company is 1 or 0, then D_i, which is the dummy variable for firm i, can be expressed as:

$$D_i = \begin{cases} l, i-1 \\ 0, otherwise \end{cases} \quad D_2 = \begin{cases} l, i-2 \\ 0, otherwise \end{cases} \dots D_N = \begin{cases} l, i-1 \\ 0, otherwise \end{cases}.$$

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The regression of total samples can be expressed as:[1]

$$Y_{it} = \sum_{i=1}^{N} \beta_{oi} D_i + \beta_i D_s + \beta_2 D_{ma} + \beta_3 s_1 + \beta_{oi} D_4 s_2 + \varepsilon_{it}$$

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The dummy variables are expressed as follows: if $j = i$, then $Di = 1$; otherwise $Di = 0$.[2]

To further investigate the fraud effect, Adebayo (2012) analyzed whether the independent variables affect the dependent variable, this regress the effect of the independent variables on the dependent variables.

$$ROA_{it} = + \mu i + \beta_0 + \beta_1 RB + \beta_2 RL + \beta_3 RE + \beta_4 U \ldots$$
<div align="right">12</div>

Because the fixed effects account for both cross-sectional and time-series data, the increased covariance caused by individual-firms differences is eliminated, thereby increasing estimation-result efficiency.

Random Effects
Random effects focus on the relationship with the study sample as a whole; thus, the samples are randomly selected, as opposed to using the entire population. The total sample regression (a function of the random effect) can be expressed as:

$$ROA_{it} = \sum_{j=1}^{N} \beta_0 + \beta_1 RB + \beta_2 RL + \beta_3 RE + UT$$
<div align="right">13</div>

If this is represented with random variables, then $\beta_{oj} = \overline{\beta}_0 + \mu_j$, which indicates that the difference occurs randomly, and the expectation value of β_{oi} is $\overline{\beta}_0{}^5$.
<div align="right">14</div>

Hausman Test
The Hausman test (Yai, 1978) is the most commonly used method for evaluating fixed and random effects. If variables are statistically correlated, then the fixed-effects estimation is consistent and efficient, whereas the random- effects estimation is inconsistent, and the fixed-effects model should be adopted. Conversely, if the variables are statistically uncorrelated, then the random-effects estimation is consistent and efficient, whereas the fixed-effects estimation is consistent but inefficient, and the random-effects model should be adopted.-

A-priori Expectation of the Result
The explanatory variables are expected to have positive and direct effects on the dependent variables. That is a unit increase in any of the variables is expected to increase ROA. This can be express mathematically as $a_1, a_2, a_3 > 0$.

Results and Discussion
The objective of this section is to analyze the effect of fixed assets revaluation on the profitability of commercial banks in Nigeria. This section also reported the results of a panel estimator as the panel character of data set allows using the panel estimation techniques. The panel estimation exploits the time-series (as well as the cross-section) dimension of the data set and control for the probability that there is an important micro economic variables inducing omitted variable bias. The researcher conducted the analysis for the 15 commercial banks sampled from Nigeria stock exchange over a period of 5 years. The panel data estimations are considered most efficient analytical methods in handling of econometric problem such as omitted variables and edogeneity biases. The tables below have details of the panel data results.

Table I: Test of the Appropriate Model

Redundant Fixed Effects Tests			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	26.716853	(14,72)	0.0007
Cross-section Chi-square	11.744219	14	0.0008
Correlated Random Effects - Hausman Test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	42.184274	3	0.0000

Table II: Pooled effect Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RB	-0.008498	0.008752	-0.970996	0.3343
RL	-0.007916	0.010451	-0.757491	0.4508
RE	0.013944	0.011013	1.266152	0.2089
C	0.497493	0.097081	5.124498	0.0000
R-squared	0.024893	Mean dependent var		0.461222
Adjusted R-squared	-0.009123	S.D. dependent var		0.090552
S.E. of regression	0.090964	Akaike info criterion		-1.913283
Sum squared resid	0.711600	Schwarz criterion		-1.802181
Log likelihood	90.09775	Hannan-Quinn criter.		-1.868480
F-statistic	0.731802	Durbin-Watson stat		2.109933
Prob(F-statistic)	0.535825			

Table III: Fixed Effect Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RB	-0.008045	0.010328	-0.778931	0.4386
RL	-0.010052	0.013757	-0.730660	0.4674
RE	0.012277	0.013441	0.913417	0.3641
C	0.533211	0.142478	3.742397	0.0004
	Effects Specification			
Cross-section fixed (dummy variables)				
R-squared	0.744183	Mean dependent var		0.461222
Adjusted R-squared	0.557885	S.D. dependent var		0.090552
S.E. of regression	0.093136	Akaike info criterion		-1.732663
Sum squared resid	0.624546	Schwarz criterion		-1.232702
Log likelihood	95.96986	Hannan-Quinn criter.		-1.531049
F-statistic	4.713538	Durbin-Watson stat		2.358110
Prob(F-statistic)	0.000151			

Table IV: Random Effect Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RB	-0.008498	0.008961	-0.948354	0.3456
RL	-0.007916	0.010700	-0.739827	0.4614
RE	0.013944	0.011275	1.236627	0.2196
C	0.497493	0.099399	5.005001	0.0000
	Effects Specification			
Cross-section random			0.000000	0.0000
Idiosyncratic random			0.093136	1.0000
	Weighted Statistics			
R-squared	0.224893	Mean dependent var		0.461222
Adjusted R-squared	0.109123	S.D. dependent var		0.090552
S.E. of regression	0.090964	Sum squared resid		0.711600
F-statistic	0.731802	Durbin-Watson stat		2.109933
Prob(F-statistic)	0.535825			
	Unweighted Statistics			
R-squared	0.024893	Mean dependent var		0.461222
Sum squared resid	0.711600	Durbin-Watson stat		2.109933

Table V: Constant Parameter of the Commercial Banks

Intermediate Phillips-Perron test results D(ROA)			
Cross Section	Prob.	Bandwidth	Obs
ACCESS	0.4107	0.0	4
ECOBANK	0.4613	2.0	4
DAIMOND	0.0388	0.0	4
FCMB	0.1383	1.0	4
FIDELITY	0.2775	1.0	4
GTB	0.1904	2.0	4
FIRST BANK	0.0242	3.0	4
SKYE	0.7673	3.0	4
STERLING	0.0519	3.0	4
STANBIC	0.2497	0.0	4
UBA	0.0170	2.0	4
UNION	0.0217	1.0	4
UNITY	0.2729	2.0	4
WEMA	0.0545	3.0	4
ZENITH	0.4648	1.0	4

Table VI: Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
RB does not Granger Cause ROA	60	0.20664	0.8139
ROA does not Granger Cause RB		0.38346	0.6833
RL does not Granger Cause ROA	60	0.95959	0.3894
ROA does not Granger Cause RL		0.82141	0.4451
RE does not Granger Cause ROA	60	1.49205	0.2339
ROA does not Granger Cause RE		1.17205	0.3173

Table VII: Test of Unit Root

ROA		
Method	Statistic	Prob.**
PP - Fisher Chi-square	74.9173	0.0000
PP - Choi Z-stat	-4.11845	0.0000

RB		
PP - Fisher Chi-square	62.0850	0.0005
PP - Choi Z-stat	-3.77562	0.0001
RL		
Method	Statistic	Prob.**
PP - Fisher Chi-square	89.3247	0.0000
PP - Choi Z-stat	-3.81586	0.0001
RE		
Method	Statistic	Prob.**
PP - Fisher Chi-square	65.0676	0.0002
PP - Choi Z-stat	-1.73735	0.0412

Analysis and Discussion of Results

The Hausman test presented in table I was used to test whether fixed or random effects are preferred. In essence, it tests whether it is valid to assume that the unobserved effects are uncorrelated with the observed variables. The basis of the test is that, if the unobserved effects are correlated with the observed effects, the random-effects estimator is inconsistent, but the fixed-effects estimator is not. However, if the unobserved effects are not correlated with the observed effects then the fixed-effects estimator is still consistent, while the random-effects model is both consistent and efficient. The results of Hausman test favours fixed effects model, the analysis is purely based on supported model.

The parameters of the model equations were initially estimated with pooled ordinary least squares (POLS) result presented in table II. This method has the weakness of not taking into consideration the unobserved heterogeneity. It means that the pool estimation does not involve a term related to non-observed effects which express the peculiarities of the commercial banks that remain indifferent over a period of time and that can influence the behaviour of the dependent variables. The unobserved heterogeneity can be, for instance, the commercial banks impression perceived by the market or even the quality of management. To consider this aspect,

an estimation of equation (1) with panel data: fixed effect model (least square dummy variable model, LSDV) and random - effects model was made.

The fixed effects model as well as the random effects model has been used to find the fundamental determinants the effect of fixed assets revaluation on the profitability of commercial banks in Nigeria due to the fact that former takes into the firm specific effects and the later consider the time effects. The results presented in table III and IV.

The constant parameters of cross sectional effects of each commercial banks been extracted from the fixed pool data result in the above table V, shows similar relationship with dependent variable having positive coefficient of 9.543927 for 15 commercial banks under study. However, the probability coefficient revealed that Diamond, first bank, sterling, UBA, Union bank and Wema bank are significant while other banks are not significant.

As in the case of time series data, in estimating the panel data model, it may also possible that the time-series characteristics of cross-section have an important effect on the specification of the econometric model. Hence, first step is to examine the integration order of the variables to ensure the series should be integrated of order one or more. Thus, a stationarity test in the panel data is crucial. Due to the complex procedure in dealing with the panel data, the usual ADF and Philip Peron test for unit root is not desirable and hence may results in inconsistent estimators. Therefore the researcher conducted the panel unit root tests belonging to the first generation for stationarity in panel data. This study applied three first generation tests provided by Levin, Lin and Chu (2002), and Im, Pesaran and Shin (2003) and Breitung's (2000) to confirm whether the underlying variables are stationary or not (see Table VI).

Panel data methods could also be preferable because of their flexible nature (less restriction); indeed, they consider country-specific effects and heterogeneity in the direction and magnitude of the parameters across the panel. In addition, these techniques allow the model that is to be estimated to be preferred with a high degree of flexibility, offering a relatively good range of alternative specifications, from models with drift and deterministic trend up to models with no drift and no trend; within each model, there is the possibility of testing for common time effects. Nonetheless, running the unit root test with panel data is not without some additional complications. Both of the tests are based on the ADF and PP principle, it is assumed homogeneity in the dynamics of the autoregressive coefficients for all panel participants. Moreover, PP offers averaging the Augmented Dickey-Fuller (ADF) tests, permitting for different orders of serial correlation. Result shows that of the time series are nonstationary in levels form while the first difference of all the series indicates stationary process. However, some series are not stationary in difference form based criteria, but the other test statistics suggested the stationary behavior of the series. The result further suggested that given set of variables have mixed order of integration and no series is integrated of more than one order. The first generation panel unit root tests confirms that all the variables except the ROA, RB,RL and RE are non stationary at level and found to be stationary at I(1) meaning that they are nonstationary at level but stationary at first difference. All the other variables are found to be stationary at level. The causality test (table VI) found no causality among the variables. This is contrary to expectation, the none causal relationship among the variables could be traced to the fact most of the banks does revalue their fixed assets yearly within the periods covered in this study.

However, findings of the study revealed that revaluation of building and land have negative and insignificant effect on return on assets of commercial banks in Nigeria while revaluation

of equipment have positive and insignificant effect on return on assets. The negative and insignificant effect of the variables contradicts our expectation and could be blamed on non revaluation of fixed assets of commercial banks on yearly basis as requested by International Financial Accounting Standard and Nigeria Accounting Standard Board. The negative effect of the variable is supported by the findings of Lopes and Walker (2012) that there is a negative relationship between fixed assets revaluations and future firm operating income, Mawih (2014) that the structure of assets does not have a strong impact on profitability in terms of ROE. Another result of the study indicated that only the fixed assets had impact on ROE unlike ROA. Olatunji and Adegbite (2014) that investments in fixed assets have strong and positive statistical impact on the profitability of banking sector in Nigeria, the positive findings, Jaggi and Tsui (2001) that the association between upward fixed assets revaluations and future firm operating income is significantly positive and Marian and Ikpor (2017) that as additional acquisition of fixed assets and impairments of fixed assets increase, return on assets of the banks decreases.

Conclusion and Recommendations
Based on the findings from the tests conducted, the study concludes that the revaluation of buildings has an insignificant negative effect on the return on assets of commercial banks in Nigeria and an insignificant negative effect revaluation of land on the return on assets of the banks. The study also concludes that revaluation of equipment has an insignificant positive effect on return on assets. We recommend that managers should ensure that the fixed asset is reduced to the barest minimum by ensuring proper usage, efficient management of these assets and revaluation techniques and that bank operating managers should ensure that their choice of investment on fixed assets is based on quality and utility. This will help to reduce the impairment loss of the fixed assets and hence, increase profitability of banks in Nigeria.

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