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Earnings Management of Listed Deposit Banks (DMBs) in Nigeria: A Test of Chang, Shen and Fang (2008) Model

Musa Adeiza Farouk[1,*], Muhammad Aminu Isa[2]

[1]Department of Accounting, Ahmadu Bello University, Zaria, Nigeria
[2]Department of Accounting, Bayero University, Kano, Nigeria

Abstract **Purpose:** The study examine the effect of loan loss provision on earnings management of listed DMBs in Nigeria. Using Chang, Shen and Fang (2008) model. **Methodology:** Earnings management variables comprises loan loss provision, total assets, loan charge off and beginning balance of loan loss. The population consist of 15 listed DMBs in Nigeria as at 2015. Annual reports were used to obtain data and accounts of banks which covers the period from 2008-2015. Panel regression technique was adopted and Stata 13 used as tool of data analysis. **Findings:** The findings revealed that, all the variables (loan loss provision, total assets, loan charge off and beginning balance of loan loss) have significant effect on discretionary loan loss provision of the banks. **Practical Implications:** Interested researchers in the area of earnings management of financial sector should consider the use of Chang, Shen and Fang (2008) model. **Originality:** The use Chang et al model to examine the level of earnings management of banks in Nigeria.

Keywords Earnings Management, Discretionary Loan loss provision, DMB's

1. Introduction

The tendency for earnings management has been witnessed amongst companies in Nigeria which suggest that earnings management is fast becoming a key challenge for stakeholders in the Nigerian corporate setting. The challenges of the banking sector such as the collapse of Savannah Bank, Oceanic Bank and Intercontinental Bank has led the Economic and Financial Crimes Commission (EFCC), to summon top management of these banks. The result of fraudulent financial reporting has affected the stability of the financial system. This event is an indication that threat of earnings management lurks around. The implication of this is that, there will be continuous rise of skepticisms in the mind of investors, shareholders and other stakeholders on the credibility of financial reports of companies in Nigeria.

In addition, earnings management practices have increased in recent years in the Nigerian banking industry to allure unsuspecting investors, or gain undeserved accounting-based rewards by presenting an exaggerated deceptive state of bank financial affairs. This can be attributed to the regulatory inconsistency and the choice available in accounting policies which have often called for the exercise of judgement in preparing financial statements. The implication of exercising these judgments is that, the self-serving information provided by managers may be as a result of manager's intention to influence a particular contractual outcome which relies on reported earnings or to mislead the stakeholders about the underlying economic reality of the firm.

Despite provisions enshrined in the accounting standards, it is an unimaginable situation to have accounting systems that are totally rule based without room for occasional judgement [1]. If at all this situation must be, it means providing rules for all facts and conceivable circumstances, which is totally and inhumanly impossible. Since new situation may require new accounting rules which arise regularly, the issue of occasional judgement in accounting has come to stay rather than its possible elimination. Therefore, serious efforts need to be made by researchers in order to devise ways through which the level of discretion by management can be detected and managed.

Consequently, previous researchers such as [2] has shown that loan loss provision is one of the components of banks' earnings subject to manipulation. Loan loss provisions is an item of expense listed on the income statement that reflects the evaluation management's current period of the level of future loan losses. Based on recognized risk of default on certain credit facilities, specific provisions were made while general provisions were made based on recognition of the fact that, the performance of credit facility accommodates some risks of loss no matter how little [3].

Studies such as [4-6] in relation to earnings management in Nigerian Banking sector have considered using other

* Corresponding author:
musafarouk@yahoo.com (Musa Adeiza Farouk)
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models which are not useful in the financial sector without considering the most suitable model like discretional loan loss provision models such as [7] model. However, studies such as [8], [9] used [10] model. Also, [11] assessed the effect of discretionary loan loss provision using the same model but failed to use the most appropriate model for the financial sector. Furthermore, [12] used model developed by [13] which had been heavily criticized ignoring superior models. It is to this end, that the study seek to investigate the extent of earnings management in listed DMBs in Nigeria using the [7] model as a test.

Based on the above highlighted objective, the study hypothesized that, [7] model do not significantly predict the level of earnings management in Listed DMBs in Nigeria.

2. Literature Review

Earnings management involves the repetitive selection of accounting measurement or rules reported in a particular pattern. It is aimed at reporting a flow of income with a smaller variation, from trend than would otherwise have appeared [14].

Reasonable opinion in respect of provision of large loan losses to influence earnings came up in the early 80s when there was revelation that Banks in the United State provided insufficient loan losses to understate net assets and profits [15]. Before this time, Authors such as [16] recognized the fact that, firms manage income for purposes of tax, confidence of the shareholders and expectations which are likely to follow the report of high earnings. But attention on the use of discretion to manage earnings, received worldwide drive after the crisis of Enron and other cases which was similar to cases of earnings management that came up. Most literature have acknowledged that loan losses also play significant roles in the financial crises witnessed, whose provision had direct effect on companies' cash flows and also the earnings reported by them [7], [17]. Loan loss provision is an expense on the income statement which indicates managers' evaluation of anticipated future losses. This signify that, an increase in loan loss provision reduces net income and vice versa. Since it is the result of managers' evaluation of the probable loss that the company would incur if the borrower fails to repay his obligations as at when due, then the provision for it, is considered to have two parts: the discretionary and the non-discretionary portions. The Non-discretionary is a function of specific quality determinants in the loan portfolio non-accrual loans, renegotiated loans, loans past due over 90 days and specific analyses on troubled large credits, which implies internal grading system [15]. The discretionary portion are those accruals that largely depend on the outcome of the managers' future expectation of uncertain events while non-discretionary portion, therefore, is the provision that is based on fair and objective analysis of the firm's economic conditions [17].

The use of definite accruals, including loan loss provision to detect earnings management had two advantages as suggested by [18]. The first advantage was that, the approach allows researchers to advance instinct for the important features that impact the behavior of the accrual, while the second advantage was that the approach could be useful in industries, where a certain form of trade can result in a specific accrual being material. However, he noted that, problems attributed with measuring earnings management through definite accruals do not affect banks and insurance because some particular accruals accounts are very essential. This was as a result of the specific nature of the business, and since it is composed of large accruals for banks and its provision also has a noticeable influence on earnings, loan loss provision is an important tool for earnings management in banking sector. It is worthy of being examined especially in the listed DMBs in Nigeria.

3. Methodology

The research design adopted was Ex-post facto. The study's approach was quantitative and deductive in nature. Positivism paradigm was employed because it is dependent on quantifiable observations. This lead to statistical analysis through quantitative data collection and interpretation to establish what is without any form of human interaction within the study. Population of this study covers fifteen listed DMBs in Nigeria as at 31st December, 2008 and remain listed up till 2015. The data were extracted from the published annual reports and accounts of the banks. Variables such as loan loss provision, total asset, loan charge off and beginning balance of loan loss provision were used for the analysis. Panel regression technique was employed and Stata 13 was used as a tool of data analysis. Robustness tests such as heteroscedasticity test, multicolinearity test, langrange multiplier test and Hausman specification test were conducted to validate the result.

Table 1. Variable Measurement

Variable	Proxy	Measurement
Earnings Management	LLPTL	Loan loss provision to loans
,,	COTL	Loan charge off to loans
,,	LLPBB	Beginning loan loss provision to loans
,,	TA	Total amount of assets

The study analyzed the [7] model of discretionary loan loss provision which was specifically built for financial sector. The model is shown below.

$$DLLP_i/TA_{t-1} = LLP_{it}/TA_{t-1} - \{\alpha_0\, 1/TA_{t-1} + \alpha_1\, LCO_i/TA_{t-1} + \alpha_2\, BBAL_i/TA_{t-1}\}$$

Where

DLLP = Discretionary loan loss provision
LLP = Loan loss provision
LCO = Loan Charge-off
BBAL = Beginning Balance of loan loss

TA_{t-1} = Lagged Total Assets
α_0 = Constant

4. Result and Discussion

This section discusses the loan loss provision model developed by [7] for financial sector and its applicability and usefulness in the listed DMBs in Nigeria. It also discusses the strength and significance of the relationship between the independent variables (Ratio of loan loss provision to total assets, inverse of total assets, loan charge off and beginning balance of loan loss provision) and the dependent variable (Discretionary loan loss provision).

Table 2. Regression of Discretionary Loan Loss Provision Model

Variables	Coeff	T-Stat	Prob.	
Constant	9.80e-11	1.37	0.173	
LLPTA	1.167	16.2	0.000	
TA	-0.98	-23.6	0.000	
LCOTA	2.337	15.7	0.000	
BBALTA	1.041	17.8	0.000	
R^2				0.9178
Adjusted R^2				0.9150
F-Statistics				321.07
F-Significance				0.0000

Source: Result output from Stata 13

From the cummulative result, the model recorded an R^2 of 0.9178 which showed the extent to which the discretionary loan loss provision was explained. This was achieved by loan loss provision scaled by total assets, inverse of total assets, loan charge off scaled by total assets and beginning balance of loan loss provision scaled by total assets. The entire independent variables from the [7] model explained the dependent variable in the model by about 92%. This implied that other factors not captured in the model covered only 8% which is infinitesmal. Even after adjusting for error, the adjusted R^2 depicted that, this variable can still be explained by the explanatory variables by 91.50% leaving an error of 0.28%. This showed the strength of the model as developed by [7] and its applicability as well as the usefulness of the model in ascertaining the extent of earnings management of listed DMBs in Nigeria. Hence, this justified the adoption of the model in this study.

Furthermore, the Fisher exact test (F-Statistics) value of 321.07 indicated that, the model of the study was well fitted and as such, the variables in the model were properly selected, combined and used. It further implied that, the relationship between the dependent variable and the independent variables was not due to mere occurrence as the outcome and inferences made from the findings could be relied upon by 99.9% based on the significance level of 1%.

Loan loss provision, scaled by total assets was found to have positive and significant effect on discretionary loan loss provision as already indicated in their model. This was supported with a coefficient and t-values of 1.167 and 1.167 respectively, and it was significant at 1% level. This implied that, when the ratio of loan loss provision to total assets increased, the discretionary loan loss provision would also increase proportionately by the coefficient value.

The inverse of total assets was found to be negatively and significantly influencing the level of discretionary loan loss provision as predicted by the model. This was substantiated by the coefficient value of -0.98 and t-value of -23.6 was recorded, which was significant at 1% level. This indicated that, discretionary loan loss provision decreased, when the inverse of total assets increased.

Also, the loan charge off scaled by total assets recorded a coefficient value of 2.337 and t-value of 15.7 which was significant at 1% level. This showed that, loan charge off, had a positive and significant influence on discretionary loan loss provision. It implied that, an increase in discretionary loan loss provision was also caused by an increase in the loan charge off by banks.

Furthermore, the ratio of beginning balance of loan loss provision was found to have significant positive effect on discretionary loan loss provision of banks. The coefficient value of 1.041 and t-value of 1.041 which was significant at 1% level, confirmed the finding reported above. It however implied that, an increase in the beginning balance of loan loss provision, increased the discretionary loan loss provision of banks in Nigeria.

5. Conclusions and Recommendations

The study concluded that [7] model, significantly explained the level of discretionary loan loss provision in listed Deposit Money Banks in Nigeria. It is therefore, recommended that, future researchers who are interested in examining the earnings management of banks in Nigeria should adopt this model.

Appendix A

Appendix A1 (Ordinary Least Square Regression Result)

```
. xtset id year, yearly
       panel variable:  id (strongly balanced)
        time variable:  year, 2008 to 2015
                delta:  1 year

. reg dllpta llpta ta lcota bbalta
```

Source	SS	df	MS	Number of obs =	120
				F(4, 115) =	321.07
Model	2.6522e-16	4	6.6306e-17	Prob > F =	0.0000
Residual	2.3749e-17	115	2.0652e-19	R-squared =	0.9178
				Adj R-squared =	0.9150
Total	2.8897e-16	119	2.4283e-18	Root MSE =	4.5e-10

dllpta	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
llpta	1.166628	.0718842	16.23	0.000	1.024239	1.309017
ta	-.9760165	.0414213	-23.56	0.000	-1.058064	-.8939688
lcota	2.336735	.1487939	15.70	0.000	2.042003	2.631467
bbalta	1.041475	.0585122	17.80	0.000	.9255734	1.157376
_cons	9.80e-11	7.14e-11	1.37	0.173	-4.34e-11	2.39e-10

Appendix A2 (Heteroscedasticity Test Result)

```
. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of dllpta

         chi2(1)      =     0.54
         Prob > chi2  =   0.4637
```

Appendix A3 (Multicollinearity Test Result)

```
. vif
```

Variable	VIF	1/VIF
lcota	1.91	0.523429
llpta	1.45	0.688041
bbalta	1.41	0.706869
ta	1.09	0.918424
Mean VIF	1.47	

Appendix A4 (Fixed Effect Model Regression Result)

```
. xtreg dllpta llpta ta lcota bbalta, fe

Fixed-effects (within) regression               Number of obs      =       120
Group variable: id                              Number of groups   =        15

R-sq:  within  = 0.9923                         Obs per group: min =         8
       between = 0.7154                                        avg =       8.0
       overall = 0.8734                                        max =         8

                                                F(4,101)           =   3244.54
corr(u_i, Xb)  = -0.1224                        Prob > F           =    0.0000

------------------------------------------------------------------------------
      dllpta |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       llpta |    1.005589     .01883    53.40   0.000     .9682357    1.042943
          ta |   -.9802646    .016028   -61.16   0.000     -1.01206   -.9484694
       lcota |    1.298023   .0504504    25.73   0.000     1.197943    1.398103
      bbalta |    .9925108   .0147785    67.16   0.000     .9631941    1.021827
       _cons |    1.71e-10   2.51e-11     6.78   0.000     1.21e-10    2.20e-10
-------------+----------------------------------------------------------------
     sigma_u |   5.656e-10
     sigma_e |   1.133e-10
         rho |   .96143071   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(14, 101) =   124.98             Prob > F = 0.0000

. est store fixed
```

Appendix A5 (Random Effect Model Regression Result)

```
. xtreg dllpta llpta ta lcota bbalta, re

Random-effects GLS regression                   Number of obs      =       120
Group variable: id                              Number of groups   =        15

R-sq:  within  = 0.0000                         Obs per group: min =         8
       between = 0.0000                                        avg =       8.0
       overall = 0.0000                                        max =         8

                                                Wald chi2(4)       =  10884.68
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000

------------------------------------------------------------------------------
      dllpta |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       llpta |    1.010116   .0206069    49.02   0.000     .9697275    1.050505
          ta |   -.9793132   .0173925   -56.31   0.000    -1.013402   -.9452245
       lcota |    1.326744   .0549306    24.15   0.000     1.219082    1.434407
      bbalta |    .9939721   .0161883    61.40   0.000     .9622437    1.025701
       _cons |    1.67e-10   1.01e-10     1.66   0.097    -3.05e-11    3.65e-10
-------------+----------------------------------------------------------------
     sigma_u |   3.435e-10
     sigma_e |   1.133e-10
         rho |   .90188399   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. est store random
```

Appendix A6 (Hausman Specification Test Result)

```
. hausman fixed random
```

	Coefficients (b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
llpta	1.005589	1.010116	-.0045269	.
ta	-.9802646	-.9793132	-.0009514	.
lcota	1.298023	1.326744	-.0287217	.
bbalta	.9925108	.9939721	-.0014613	.

```
                b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test:  Ho:  difference in coefficients not systematic

              chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                      =    -2.12    chi2<0 ==> model fitted on these
                                    data fails to meet the asymptotic
                                    assumptions of the Hausman test;
                                    see suest for a generalized test
```

Appendix A7 (Seemingly Unrelated Estimate Result)

```
. hausman fixed random, sigmamore
```

	Coefficients (b) fixed	(B) random	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
llpta	1.005589	1.010116	-.0045269	.0010193
ta	-.9802646	-.9793132	-.0009514	.0024334
lcota	1.298023	1.326744	-.0287217	.0061925
bbalta	.9925108	.9939721	-.0014613	.0003864

```
                b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test:  Ho:  difference in coefficients not systematic

              chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                      =       22.61
            Prob>chi2 =      0.0002
```

Appendix B

Table 3. Population of the Study

S/N	BANKS	DATA PERIOD	OBSERVATION
1	Access Bank Plc	2008 – 2015	8
2	Diamond Bank Plc	2008 – 2015	8
3	EcoBank Plc	2008 – 2015	8
4	Fidelity Bank Plc	2008 – 2015	8
5	First Bank of Nigeria Plc	2008 – 2015	8
6	FCMB Plc	2008 – 2015	8
7	Guaranty Trust Bank Plc	2008 – 2015	8
8	Skye Bank Plc	2008 – 2015	8

S/N	BANKS	DATA PERIOD	OBSERVATION
9	Stanbic IBTC Plc	2008 – 2015	8
10	Sterling Bank Plc	2008 – 2015	8
11	United Bank for Africa Plc	2008 – 2015	8
12	Union Bank of Nigeria Plc	2008 – 2015	8
13	Unity Bank Plc	2008 – 2015	8
14	Wema Bank Plc	2008 – 2015	8
15	Zenith Bank Plc	2008 – 2015	8
	Total Observations		120

Source: NSE Fact Book 2015

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