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Bank Funding Strategy and Income Smoothing Practices in Nigeria: IFRS and Solvency Risk Analysis

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Abstract

The regulators' provision of bailouts to troubled banks accentuates the connection between level of funding and bank financial condition. This scenario has been characteristic of Nigerian deposit money banks (DMBs) in the last decade and followed by a number of reforms including adoption of International Financial Reporting Standards (IFRSs). This prompted the study's examination of nexus between bank funding strategy and income smoothing practices achievable via adjustments to loan loss provisions (LLPs) considering IFRSs adoption and solvency risk. Bank-level unbalanced panel data were hand-extracted from the annual reports of a sample of 16 DMBs for the period 2007-2017. Data were analysed using appropriate panel regression model subsequent to derivation of discretionary provision for loan losses (DPL) used to measure income smoothing and index of funding strategy (FSI) as a measure of overall funding strategy. The results showed that bank funding drive prompts Nigerian DMBs' income smoothing practices via DPL regardless of their solvency status and reflects majorly in their motive for external financing, deposit and non-deposit funding other than internal funding strategy. However, reduction was noticeable during IFRS given the observed inverse relationship between funding strategy and Nigerian DMBs' income smoothing practices. Despite improved financial reporting quality during IFRS, the mixed results obtained in the funding strategy-DPL nexus of Nigerian DMBs threatened by risk of insolvency call for increased level of oversights and additional reforms by the regulators. The need for regulators to re-sharpen their supervisory tools as Nigerian DMBs switch from IAS 39 to more discretions-inclined IFRS 9 for loan loss reporting was also advocated. This study is unique for derivation of FSI and joint test of IFRS-solvency risk moderating influence.

Keywords: *Funding Strategy; Income Smoothing; Loan Loss Provisions; Deposit Money Banks; IFRSs; Solvency Risk.*

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1. Introduction

Funding is central to the survival of any organisation, profit-oriented or not-for-profit. Entities in funding crisis, financial or non-financial firms, are not likely to have capability to settle their obligations over a specific horizon. The funding crisis of banks is reflected in their inability to meet the demands of depositors and other investors. This becomes evident when banks in serious funding liquidity crisis could not continue as a going concern (Vazquez & Federico, 2015). The centrality of funding to bank survival was evident in the series of bail-outs provided by Central Bank of Nigeria (CBN) following the CBN special audit of Nigerian deposit money banks (DMBs) in 2009 (Sanusi, 2010, 2012).

Also, it is not arguable that the intervention of Assets Management Corporation of Nigeria (AMCON) in the management of banks is done to provide funds through acquisition of toxic assets. Similarly, funding necessitates AMCON's decision to dispose of banks under its management to private investors out of capital market even though the so-called banks are listed on the stock exchange. The argument for the centrality of funding strategy to the bank stability can also be inferred from the need for banks to resort to deposit funding and related debts apart from shareholders' funds to discharge their financial intermediary role adequately.

The linkage of bank funding structure to the overall financial health and stability of the financial system cannot be overemphasised. This makes bank funding strategy have direct bearing on bank performance and earnings quality (Iwanicz-Drozdowska, Penczar, Kujawsk & Liszewska, 2021). The quality of corporate earnings relies on managerial discretionary use of accruals which in banking sector incorporates majorly loan loss provisions (LLPs) (Salami, 2021). The paramount importance of LLPs in the bank financial reports is embedded in its proportion in total bank accruals accounting for not less than 50% (Ryan, 2011; Vishnani, Agarwal, Agarwalla, & Gupta, 2019). LLPs are originally created from "loan and advances" which appear the largest assets in the bank statement of financial position (Gebhardt & Novotny-Farkas, 2011).

The information on the quality of earnings provided by LLPs as evident in the literature (Bushman & Williams, 2012; Zoubi & Al Khazali, 2007) is facilitated when LLPs are segregated into non-discretionary and discretionary components (Amidu & Kuipo, 2015; Salami, 2021, Salami, Uthman & Abdulrauf, 2021). Discretionary provision for loan losses (DPL) is used in the relevant literature as a measure of earnings smoothing/management (Salami, Sanni & Ariyo-Edu, 2020; Salami et al., 2021). Since majority of Nigerian DMBs are financial hubs or bank holding companies incorporating a number of financial services providers, the argument in the literature that earnings maneuverings via DPL becomes probable when banks' operations are financed using various sources of funding (Amidu & Kuipo, 2015) is a subject of investigation in Nigeria.

While the fallout of CBN special audit of Nigerian DMBs in 2009 revealed that a number of banks believed to be well-positioned in funding are found guilty of earnings manipulation (Sanusi, 2010), additional inference showed that solvency crisis was the basis of inordinate financial reporting identifiable with affected DMBs. The subsequent reforms effected by CBN to arrest lopsided financial stability of these banks as a result of loan loss crisis prompted the regulator's confidence in the Nigerian banking sector (Sanusi, 2012). These reforms which included the adoption of International Financial Reporting Standards (IFRSs) increase the hope of improved financial reporting quality based on evidence from literature following the adoption of IFRSs (Ab Klish, Shubita, & Wu, 2021; Barth, Landsman & Lang, 2008; Chua, Cheong & Gould, 2012; Houcine, Zitouni & Srairi, 2021; Morais & Curto, 2008; Trimble, 2018). However, the scenario of two banks believed to be well-funded: Skye Bank Plc and StanbicIBTC Holdings (Financial Reporting Council of Nigeria (FRCN), 2015; Proshare, 2017) calls for an in-depth investigation into the possibility of improved financial reporting quality upon adoption of IFRSs by Nigerian banks.

Based on evidence from public domain, Skye Bank Plc's collapse was subsequent to its acquisition of a bridge bank (Mainstreet Bank) (Proshare, 2017) when expected to be stronger. Conversely, StanbicIBTC Holdings was found guilty of financial reporting impropriety after investigation based on a petition from its non-controlling shareholders (FRCN, 2015). Also, what unfolded in the activities of Diamond Bank Plc (despite its funding level and international spread) in terms of level of non-performing loans and reporting of huge losses in the 2017 accounting year before its acquisition by Access Bank Plc opens up a debate on acclaimed improved quality that follows IFRS adoption.

In addition, empirical test of relationship between funding strategy and bank earnings smoothing practices is necessitated by internal wranglings in the board of FBN Holdings Plc occasioned by high level of non-performing loans (insider loans) of one of its subsidiaries: First Bank Nigeria Limited believed to be well-funded. Based on the arguments of CBN Governor, the level of deposit funding of First bank is tenfold its equity funding (Ololade, 2021). Though the issue of First Bank was traceable to poor corporate governance (Adu, Ayeku & Aigbe, 2021), the level of non-performing insider

loans, the extent of CBN support in terms of regulatory forbearances (ThisDay, 2021) and the removal of the bank Chief Executive without following due process by some power blocs link the issue to impropriety in financial reporting and disclosures.

The contribution of this study to knowledge is evident from the fact that few studies are available in the literature testing the relationship between bank funding strategy and earnings smoothing/management (Amidu & Kuipo, 2015; Jin, Kanagaretnam & Liu, 2018; Mukhibad & Nurkhin, 2019; Saona & Azad, 2020). The exception to this position is that a significant number of previous studies have tested for how external financing motive (a component of funding strategy) relates to discretionary use of LLPs (Ben Othman & Mersni, 2014; Bhattari, 2018; Bryce, Dadoukis, Hall, Nguyen & Simper, 2015; Kanagaretnam, Lobo & Mathieu, 2003; Kwak, Lee & Eldridge, 2009; Safarzadeh & Jafarimanesh, 2019; Shawtari, Saiti, Abdul Razak & Ariff, 2015; Zoubi & Al-Khazali, 2007). Nonetheless, the study has the tendency to empirically establish whether level of bank propriety in financial reporting embedded in discretionary use of LLPs is positively explained by level of funding in Nigeria where such evidence are seldom existing based on the extent of search for relevant literature.

The available evidence in the country related provisioning practices to other bank-specific decisions (see, for instance, Ahmed, Mohammed & Adisa, 2014; Eneje, Obidike & Chukwujekwu, 2016; Ozili, 2015). This study also advances literature via empirical test of joint moderating effect of solvency risk and IFRS adoption on the relationship between bank funding strategy and earnings smoothing practices. The available evidence in this regard is the Asian banks' study of Saona and Azad (2020) which controlled for only IFRSs. In Nigeria, priority is given to the moderating influence of IFRS on the relationship between LLPs and financial reporting issues other than funding strategy until recently (Atoyebi & Simon, 2018; Ozili & Outa, 2019). The derivation of funding strategy index (FSI) using appropriate statistical technique in addition to joint test of moderation of IFRS adoption and solvency risk also advances the approach of Amidu and Kuipo (2015).

The rest of the study is organised into four additional sections. Some conceptual clarifications and theoretical expositions as well as the empirical review of the previous studies towards the development of the hypotheses are contained in Section 2. Section 3 describes the study's data and variables and specifies models. The results are presented in Section 4 while Section 5 concludes the study highlighting relevant implications and means of their resolution.

2. Literature Review

2.1. Bank Income Smoothing

Smoothing of earnings requires corporate managers taking actions requiring increase in reported earnings when income is low and decrease in reported earnings when income is high (Fudenberg & Tirole, 1995). Thus, income smoothing involves basically reduction in the variability of the level of earnings of an entity (Barnea, Ronen & Sadan, 1976). As asserted by Eckel (1981), income smoothing is bound to occur both naturally and/or intentionally. However, intentional or deliberate income smoothing which can be real or artificial (Goel & Thakor, 2003) receives greater attention in the literature (Amidu & Kuipo, 2015; Jin et al., 2018; Saona & Azad, 2020; Salami, 2021). The disposal of trading securities is typical of real smoothing while management of LLPs exemplifies the artificial smoothing in bank financial reporting (Taktak, Shabou & Dumontier, 2010). Although income smoothing can be confirmed via positive relationship between LLPs and pre-LLPs and pre-tax earnings (Ozili & Outa, 2018, 2019; Salami, 2021), DPL is often used as a measure of income smoothing in the relevant literature subsequent to the separation of LLPs into non-discretionary and discretionary components (Amidu & Kuipo, 2015; Kanagaretnam et al., 2003, 2004; Salami et al., 2020).

2.2. Bank Funding Strategy

Funding strategy as a variable in the LLP literature is applied in terms of modes or sources of funding (Amidu & Kuipo, 2015) and motive for external financing (Safarzadeh & Jafarimanesh, 2019; Zoubi & Al-Khazali, 2007). Banks have several sources of funding including wholesale and retail ones to facilitate their ability to finance their assets which are majorly represented in the statement of financial position in the form of loans and investments (Barth & Sun, 2018, van Rixtel & Gasperini, 2013). As classified by European Central Bank (2009), bank funding modes are in categories of equity and subordinate debts, their hybrids, deposits and other forms of short-term liabilities. Basically, Amidu (2013), Amidu and Kuipo (2015) and Amidu and Wolfe (2013) identified three funding strategies which are non-deposit funding, deposit funding and internal funding with depository financial institutions.

For depository financial institutions, deposit appears most stable, stickier, more accessible and cheaper source (Amidu & Wolfe, 2013; van Rixtel & Gasperini, 2013). While non-deposit/wholesale funding includes notes, bills and debts not covered under deposit sources, internal funding is represented by pre-extraordinary item and pre-LLPs net income of a bank (Amidu & Kuipo, 2015; Amidu & Wolfe, 2013).

In bank financial reporting, reporting low LLPs or increase in the discretionary use of LLPs facilitates managerial objective of reducing perceived risk and increasing reported profits most especially when banks desire external funds (Ben Othman & Mersni, 2014). Based on arguments of Kanagaretnam et al. (2003, 2004), management and existing shareholders tend to benefit substantially if decrease in fluctuation of earnings achieved via considerable cost of financing culminates in the raising of additional funds.

The relationship between the ratio of total loans to total deposits and LLPs whether reported or discretionary is used in the LLP literature to establish extent of bank motive for external financing (Kanagaretnam et al., 2003, 2004; Malik, Aziz, Saiti & Din, 2021; Zoubi & Al-Khazali, 2007). If total loans are in excess of total deposits or a higher proportion of ratio of total loans to total deposits is obtained, banks require more funds in terms of increase in customers' deposits (Ben Othman & Mersni, 2014; Malik et al., 2021). The relationship between loans-to-deposits ratio and DPL is expected to be positive since there is need for increase in the discretionary use of LLPs (Kanagaretnam et al., 2004) to report higher earnings (Malik et al., 2021). In contrast, reported LLPs in the bank income statement should be negatively related to loans-to-deposits ratio (Zoubi & Al-Khazali, 2007) as lower LLPs guarantee higher earnings required to attract more deposits from customers (Malik et al., 2021). However, given the focus of the study being the empirical test of DPL-funding strategy nexus, the former approach is considered more appropriate.

2.3. Theoretical Underpinning

The arguments in this study are premised on two theories: "positive accounting theory" (PAT) and "internal capital market framework" (ICMF) to explain the relationship between bank funding structures and income smoothing practices. The rationale for smoothing of earnings by management of corporate entities is explained by PAT as originally postulated by Watts and Zimmerman (1978, 1986). According to PAT, the explicit contracts on which the recognition (accounting number generated) of corporate managers are based are subject to choice of accounting methods (Ozili, 2017). The choice of accounting methods as a result of managerial explicit contracts is reinforced by three of hypotheses of "bonus plan", "debt covenant" and "political cost" (Watts & Zimmerman, 1986).

The fact that Nigerian banks' chief executives are rational agents concerned with championing their own self-interest as posited by PAT bonus plan hypothesis (Beattie et al., 1994) could be inferred from the fallout of CBN special audit of Nigerian DMBs in 2009 (Otusanya & Uadiale, 2014; Sanusi, 2010) and subsequent events (FRCN, 2015; Proshare, 2017). It can also be demonstrated that a depository financial institution believed to have a higher funding level will have higher proportion of deposit and non-deposit funds other than equity. This is an indication that DMBs are financed more by debts than equity. Since debts are not incurred without covenants or restrictions, managers are prompted to adopt accounting methods that make the probability of violating the debt covenants close to zero (Ozili, 2017).

It is also evident that banking is the most regulated industry globally. Therefore, based on deduction from PAT political cost hypothesis, regulation prompts banks to choose accounting methods that make them appear more sound and stable as banks in solvency crisis are often captured or controlled by the regulators. In practice, big banks with higher funding level, bigger size or systemic importance status are prone to regulatory scrutiny because they are regarded as "too big to fail".

ICMF lays emphasis on the efficiency of capital allocation in the internal capital markets rather than external capital markets by diversified firms (Williamson, 1975). This provides that investment in a diversified entity is financed by the resources generated by the existing assets (Matsusaka & Nanda, 2002). Where there is efficient capital allocation by means of internal funding, smoothing or management of earnings is not well-pronounced as issues of insolvency can easily be taken care of with no recourse to external market (Amidu & Kuipo, 2015; Liebeskind, 2000; Stein, 1997; Wang & Lin, 2013). Based on arguments of Amidu and Kuipo (2015), in a banking group, alleviating the poor performance of a member may warrant borrowing earnings from a profitable member. Alleviating the relative insolvency of a non-performing member with excess returns of a performing member is a means to earnings stability of a diversified bank. Thus, less income smoothing is required at the firm level. Therefore, there is no likelihood of a banking group indulging in LLPs maneuverings given internal funding level.

Based on the above theoretical supports, both PAT and ICMF are adopted to explain the relationship between bank funding strategy and income smoothing via LLPs in Nigeria.

2.4. Previous Empirical Studies

Previous literature documented evidence about the relationship between individual components of funding strategy and earnings smoothing/management. Therefore, studies reviewed are based majorly on influence of individual funding modes and bank motive for external financing on earnings smoothing while that of FSI remains a contribution to the literature.

The Taiwanese evidence of extent of how internal capital markets mitigate practices of earnings management by listed Taiwanese business groups provided by Wang and Lin (2013) given analysis of 5,122 firm-year observations between 1996 and 2007 showed that presence of working internal markets in business groups assist in mitigating earnings management in debt financing. This, according to Wang and Lin (2013) is peculiar to pyramidal rather than non-pyramidal business groups. However, presence of internal capital markets is complemented by financial health of the business group in mitigating earnings management.

From panel datasets of 330 banks from 29 African emerging and developing countries obtained between 2002 and 2009, Amidu and Kuipo (2015) found that deposit funding has inverse relationship with DPL suggesting less earnings management. However, inconclusive evidence was found on motivation of managers to manage earnings with non-deposit and internal funding given their insignificantly positive coefficients. The increase in earnings quality which is an indication of reduction in earnings management was found by Jin et al. (2018) as a result of bank core deposits based on analysis of 146,343 bank-year observations of United States of America's (U.S.) banks.

Mukhibad and Nurkhin (2019) examined how Indonesian Islamic banks reliance on temporary *syirkah* funding, debt funding, corporate governance and profiles of Shariah Supervisory Board affect earnings management. The findings from the analysis of panel datasets obtained between 2009 and 2016 showed that *syirkah* funding and debt funding are incidental to increased earnings management except that coefficient of debt funding was insignificant. A similar Asian study but from a sample of 347 commercial banks within not less than 25 sovereign Asian countries obtained for the period 2007-2017 by Saona and Azad (2020) showed that deposit funding is incidental to income smoothing given its significantly positive impact on DPL. As further found, Asian banks reporting in IFRSs compared to those reporting in national Generally Accepted Accounting Principles (GAAPs) indulge in less earnings manipulations represented by DPL.

Apart from bank funding modes, previous studies have also provided evidence related to how earnings smoothing/management is prompted by bank motive for external financing. On the positive side, that is, positive and negative impact of loans-to-deposits ratio on DPL and reported LLPs respectively, evidence are provided by Kanagaretnam et al. (2003, 2004) and Kwak et al. (2009) for U.S. and Japanese banks respectively. Similar evidence was also reported by Ashour (2011), Shawtari et al. (2015), Fernando and Ekanayake (2015) and Bhattarai (2018) for Palestinian, Yemeni, Sri Lankan and Nepalese banking respectively.

Also reinforcing that the need for external financing prompting discretionary use of LLPs are the studies of Zoubi and Al Khazali (2007) for the banks in the Gulf Cooperation Council region, Ben Othman and Mersni (2014) for Middle East Islamic, conventional with Islamic windows and pure conventional banks, Safarzadeh and Jafarimanesh (2019) for Iranian banks and Malik et al. (2021) for Pakistani banks except that the coefficient of loans-to-deposits ratio reported by Zoubi and Al Khazali (2007) was not significant. On the negative side, Bryce et al. (2015) empirically showed from the analysis of Vietnamese banks data obtained between 2006 and 2012 that adjustments to LLPs are not prompted by the need for external financing in Vietnam.

Though FSI as a variable is exclusive to this study, majority empirical evidence of the linkage of funding modes and motive for external financing to income smoothing practices reviewed support funding strategy being incidental to earnings smoothing. Similarly, the level of solvency has been considered one of the factors that prompt manipulations of earnings by banks to shield attempts by regulators to capture them (Leventis, Dimitropoulos and Anandarajan, 2011). This is premised on the fact that banks in solvency crisis are prone to the intervention by regulators (Yasuda, Okuda & Konishi, 2004). In contrast, IFRSs are considered accounting standards that give a true reflection of financial condition of a firm, prohibit hidden reserves and guarantee improved earnings quality when applied (Barth et al., 2008; Leventis et al., 2011). Given these arguments and majority of empirical findings in the literature, the following hypotheses are formulated:

Hypothesis I

H_1: Nigerian DMBs' income smoothing practices via LLPs is prompted by their funding strategy.
Hypothesis II
H_2: Effect of funding strategy on Nigerian DMBs' income smoothing practices is negative upon adoption of IFRSs.
Hypothesis III
H_3: Effect of funding strategy on income smoothing practices is positive for Nigerian DMBs threatened by risk of insolvency.
Hypothesis IV
H_4: Effect of funding strategy on income smoothing practices is negative for DMBs threatened by risk of insolvency upon adoption of IFRSs in Nigeria.

3. Methodology

Data used for the study were obtained at cross-sectional and time series levels. This necessitated the choice of longitudinal design adopted for the study. Data related to income smoothing via LLPs, funding strategy and other explanatory variables were hand-collected from annual reports of a sample of 16 Nigerian DMBs out of sampled population of 26 DMBs (CBN, 2018) for the period 2007-2017. The choice of the sampled period beginning in 2007 was premised on the inclusion of detailed regulatory information in the financial statements of Nigerian DMBs from the year as obtainable at global level based on the requirements of Basel Committee on Banking Supervision. While the sampled period covered both pre-IFRS and IFRS periods as required to achieve the objectives of the study, period beyond 2017 which also falls within IFRS period using 2012 as base year of IFRS adoption in Nigeria was excluded to avoid distortion of study's results.

There was a switch to IFRS 9: *Financial Instrument* from International Accounting Standard (IAS) 39: *Financial Instruments: Recognition and Measurement* from 1 January 2018 in Nigeria for accounting for loan losses as directed by CBN. While IAS 39 is based *incurred loss model*, IFRS 9 is based on *expected credit loss model*. The sampled period 2007-2017 and a sample 16 DMBs require 176 bank-year observations. However, the study settled for 169 bank-year observations as a result of missing annual reports.

Data analysis was performed using descriptive statistics, principal component analysis (PCA) and regression analysis. Descriptive statistics were performed to bring out distinctive attributes of variables of the study; PCA was used to derive index of bank funding strategy while regression analyses were performed to test the study's hypotheses. The regression results presented in Table 9 were preceded by a number of diagnostic tests including pair-wise correlation matrix and variance inflation factor (VIF) to detect multi-collinearity problem among explanatory variables, Breusch-Pagan Cook-Weisberg with fitted values of dependent variable (BP-HET1), Breusch-Pagan Cook-Weisberg with independent variables (BP-HET2) to detect presence of heteroscedasticity in panel ordinary least square regression (Panel OLS) and modified Wald test for heteroscedasticity in the fixed-effects model (HET-FE) and Wooldridge test for autocorrelation in panel data (ART).

Other diagnostic tests conducted are those that reveal the choice of Prais-Winsten regression with correlated panel corrected standard errors (PW-PCSE). These tests include Hausman test statistics (HST) for a choice between panel fixed-effects model (panel FE) and panel random-effects model (panel RE), Breusch-Pagan Lagrange Multiplier test (LMT) for a choice between panel OLS and panel RE subsequent upon the insignificant of HST. PW-PCSE becomes appropriate as used in this study if a regression model has error structures having heteroscedasticity, panel first-order autocorrelation and/or contemporaneous autocorrelation (Blackwell, 2005). PW-PCSE can also be performed if number of sample units (N) is greater than time period for data collection (T) (Beck & Katz, 1995; Solano, Camino-Mogro & Armijos-Bravo, 2020) as evident in this study with N = 16 and T = 11.

The process for test of hypotheses commenced with the derivation of index of bank funding strategy (FSI) derived using PCA from equation (1) with measures of deposit funding, non-deposit funding, internal funding and motive for external financing as explanatory variables.

$$FSI_{it} = \delta_1 LDR_{it} + \delta_2 DPF_{it} + \delta_3 NDF_{it} + \delta_4 IGF_{it} - - - - - - - - - - - - - - - - - - (1)$$

The extent of influence of funding strategy on bank income smoothing practices cannot be determined until DPL is estimated. The study relies on Kanagaretnam's et al. (2003, 2004) loan loss model to segregate LLPs into discretionary and non-discretionary components following Shawtari et al. (2015) and Salami et al. (2021). The model is presented in equation (2) as follows.

$$LLP_{it} = \beta_0 + \beta_1 NPFL_{it-1} + \beta_2 CHNPFL_{it} + \beta_3 CLOAN_{it} + \varepsilon_{it} - - - - - - - - - - (2)$$

Where:

LLP_{it}= provision for loan losses scaled by beginning loans;
$NPFL_{it-1}$ = beginning of period nonperforming loans scaled by beginning loans;
$CHNPFL_{it}$ = change in the value of nonperforming loans scaled by beginning loans;
$CLOAN_{it}$ = change in value of loans scaled by beginning loans.
The explanatory variables in equation (2) stand for non-discretionary components of LLP while the disturbance represents DPL.

Although the study's moderating variables, IFRS and bank insolvency risk (BIR), are dichotomous in nature, BIR is derived from a continuous variable called Z-score used to measure corporate risk, stability and solvency in the literature (Bustaman, Ekaputra, Husodo & Prijadi, 2017; Ghosh, 2014; Salami, 2018). Z-score as a measure of distance to default of a bank because of its indirect relationship with risk of insolvency is mathematically measured as:

$$Z - SCORE_{it} = \frac{TEQT_{it}+ROTA_{it}}{\sigma ROTA_{i\rho}} -------------------------(3)$$

Where: TEQT= total equity and reserves normalized by total assets, ROTA = returns on total assets, that is, profit after tax divided by total assets, σROTA = standard deviation of ROTA, ί stands for each DMB; t = each year of the sampled period; ρ = the full sampled period.

To identify DMBs threatened by insolvency risk the approach of Leventis et al. (2011, 2012) and Salami et al. (2021) was adopted. This involves considering DMBs with Z-score lower than median Z-score of all sampled banks in each year having higher probability of default.

The estimation of FSI and DPL was followed by modelling the relationship between income smoothing and funding strategy using substantially the approach of Amidu and Kuipo (2015) to test the first hypothesis without any interaction term as follows in equations (4) and equation (5).

$$DPL_{it} = \propto_0 + \propto_1 FSI_{it} + \propto_2 LEV_{it} + \propto_3 LgTA_{it} + \mu_{it} --------------(4)$$

$$DLLP_{it} = \propto_0 + \propto_1 LDR_{it} + \propto_2 DPF_{it} + \propto_3 NDF_{it} + \propto_4 IGF_{it} + \propto_5 LEV_{it} + \propto_6 LgTA_{it} + \mu_{it} -------------- ----------------------(5)$$

For testing hypotheses 2, 3, and 4 related to moderating influence of IFRS, BIR and both IFRS and BIR respectively, equations (6) and (7) were specified. While in equation (6) FSI is the independent variable, the components of FSI (measures of funding modes and demand for external financing) are independent variables in equation (7).

$$DPL_{it} = \propto_0 + \propto_1 FSI_{it} + \propto_2 IFRS_{it} + \propto_3 (IFRS * FSI)_{it} + \propto_4 BIR_{it} + \propto_5 (BIR * FSI)_{it} + \propto_6 (IFRS * BIR * FSI)_{it} + \propto_7 LEV_{it} + \propto_8 LgTA_{it} + \mu_{it} ------------- (6)$$

$$DPL_{it} = \propto_0 + \propto_1 LDR_{it} + \propto_2 DPF_{it} + \propto_3 NDF_{it} + \propto_4 IGF_{it} + \propto_5 IFRS_{it} + \propto_6 (IFRS * LDR)_{it} + \propto_7 (IFRS * DPF)_{it} + \propto_8 (IFRS * NDF)_{it} + \propto_9 (IFRS * IGF)_{it} + \propto_{10} BIR_{it} + \propto_{11} (BIR * LDR)_{it} + \propto_{12} (BIR * DPF)_{it} + \propto_{13} (BIR * NDF)_{it} + \propto_{14} (BIR * IGF)_{it} + \propto_{15} (IFRS * BIR * LDR)_{it} + \propto_{16} (IFRS * BIR * DPF)_{it} + \propto_{17} (IFRS * BIR * NDF)_{it} + \propto_{18} (IFRS * BIR * IGF)_{it} + \propto_{19} LEV_{it} + \propto_{20} LgTA_{it} + \mu_{it} ------------(7)$$

The measurements and definitions of variables included in equations (1), (4), (5), (6) and (7) are presented in Table 1.

Table 1: Definition and Measurement of Variables included in the Study's Models

S/N	Notation	Variable Name	Description	Source
1	DPL_{it}	Income Smoothing/Discretionary LLPs	Disturbance term of equation (2)	Kanagaretnam et al. (2003)
2	FSI_{it}	Funding Strategy Index or Overall Funding Strategy	A condensation of indicators of demand for external financing and deposit funding, non-deposit funding and Internal funding modes	Salami (2021)
3	LDR_{it}	External Financing Motive	Gross loans-to-Total Customers' Deposit Ratio	Zoubi and Al Khazali (2007)
4	DPF_{it}	Deposit Funding	Total Customers' Deposits normalised by Bank Total Assets	Saona and Azad (2020)
5	NDF_{it}	Non-Deposit Funding	Notes, bills and debts other than deposits normalised by Bank Total Assets	Amidu and Kuipo (2015)
6	IGF_{it}	Internal Funding	Pre-extraordinary item and pre-LLPs net income scaled by gross loans	Amidu and Kuipo (2015)
7	$IFRS_{it}$	IFRS reporting	Dummy variable (1) for IFRS reporting period and (0) otherwise	Leventis et al. (2011, 2012)
8	BIR_{it}	Insolvency risk	Dummy variable (1) for bank with z-score below median z-score of all sampled banks and (0) otherwise	Leventis et al. (2011, 2012)
9	$IFRS*FSI_{it}$	Overall Funding Strategy during IFRS	Interaction of IFRS with Funding Strategy Index	Salami (2021)
10	$IFRS*LDR_{it}$	Motive for External Financing during IFRS	Interaction of IFRS with Demand for External Financing	Salami (2021)
11	$IFRS*DPF_{it}$	Deposit Funding Strategy during IFRS	Interaction of IFRS with Deposit Funding Strategy	Salami (2021)
12	$IFRS*NDF_{it}$	Non-Deposit Funding Strategy during IFRS	Interaction of IFRS with Non-Deposit Funding Strategy	Salami (2021)
13	$IFRS*IGF_{it}$	Internal Funding Strategy during IFRS	Interaction of IFRS with Internal Funding Strategy	Salami (2021)
14	$BIR*FSI_{it}$	Overall Funding Strategy of Troubled DMBs	Interaction of Insolvency Risk with Funding Strategy Index	Salami (2021)
15	$BIR*LDR_{it}$	Motive for External Financing by Troubled DMBs	Interaction of Insolvency risk with Banks' Demand for External Financing	Salami (2021)
16	$BIR*DPF_{it}$	Deposit Funding Strategy of Troubled DMBs	Interaction of Insolvency risk with Deposit Funding Strategy	Salami (2021)
17	$BIR*NDF_{it}$	Non-Deposit Funding Strategy of Troubled DMBs	Interaction of Insolvency risk with Non-Deposit Funding Strategy	Salami (2021)
18	$BIR*IGF_{it}$	Internal Funding Strategy of Troubled DMBs	Interaction of Insolvency risk with Internal Funding Strategy	Salami (2021)
19	$IFRS*BIR*FSI_{it}$	Overall Funding Strategy of Troubled DMBs during IFRS	Interaction of IFRS, Insolvency risk and Overall Funding Strategy	Salami (2021)
20	$IFRS*BIR*LDR_{it}$	Motive for External Financing by Troubled DMBs during IFRS	Interaction of IFRS, Insolvency risk and Motive for External Financing	Salami (2021)
21	$IFRS*BIR*DPF_{it}$	Deposit Funding Strategy of Troubled DMBs during IFRS	Interaction of IFRS, Insolvency Risk and Deposit Funding Strategy	Salami (2021)
22	$IFRS*BIR*NDF_{it}$	Non-Deposit Funding Strategy of Troubled DMBs in the IFRS period	Interaction of IFRS, Insolvency Risk and Non-Deposit Funding Strategy	Salami (2021)
23	$IFRS*BIR*IGF_{it}$	Internal Funding Strategy of Troubled DMBs during IFRS	Interaction of IFRS, Insolvency Risk and Internal Funding Strategy	Salami (2021)
24	LEV_{it}	Leverage of banks	Ratio debts to equity	Amidu and Kuipo (2015)
25	$LgTA_{it}$	Size	Natural Logarithm of total assets	Amidu and Kuipo (2015)

Source: Author's Compilation (2020) based on deductions from related literature and conceptual framework

4. Results and Discussion

In this section, the results of PCA, descriptive statistics, multi-collinearity and other diagnostic tests and regression analyses for both first and second stages are presented. Also included in this section is the discussion of findings.

4.1. Derivation of FSI using Principal Component Analysis (PCA)

The main explanatory variable, funding strategy index (FSI), of the study was derived from a number of other variables which are measures of bank funding strategy using PCA as specified in equation (1). The results of computation of eigenvalues and eigenvectors (factor loadings) which facilitate the estimation of FSI are presented in Tables 2 and 3.

Table 2: Principal Components Eigenvalue and Proportion for Funding Strategy Index (FSI)

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	1.88335	.56231	0.4708	0.4708
Comp2	1.32104	.848463	0.3303	0.8011
Comp3	.472577	.149545	0.1181	0.9192
Comp4	.323032	.	0.0808	1.0000

Source: Authors' computation (2020) based on STATA 15 outputs**.**

Table 3: Principal Components Eigenvectors for Funding Strategy Index (FSI)

Variable	Comp1	Comp2	Comp3	Comp4	Unexplained
LDR	-0.5949	0.1826	0.7825	-0.0237	0
DPF	0.6380	-0.0489	0.5138	0.5715	0
NDF	-0.1635	0.7897	-0.2931	0.5135	0
IGF	0.4608	0.5836	0.1948	-0.6396	0

Source: Authors' computation (2020) based on STATA 15 outputs**.**

As revealed in Table 2, component 1 with an eigenvalue of 1.88 explained 47% total variance compared to components 2, 3, and 4 with eigenvalues of 1.32, 0.47 and0.32 which explained 33%, 12% and 8% respectively of total variance. Using the highest eigenvalue and proportion, factor loadings of principal component 1 contained in Table 3 were used as weights to estimate FSI.

4.2. Derivation of Discretionary Provision for Loan Losses (DPL)

The DPL used as a measure of bank income smoothing was derived from segregation of Kanagaretnam's et al. (2003, 2004) loan loss model specified in equation (2) into discretionary and non-discretionary components. The results of the first stage regression using Prais-Winsten regression (Prais-OLS) to cater for problems related to the assumption that errors are serially correlated in a generalised least-square regression are presented in Table 4 following the approach of Chang, Shen and Fang (2008).

Table 4: First Stage Regression Estimates of Kanagaretnam's et al. (2003, 2004) Model

Variable	Dependent Variable: LLP			
	Coefficient	Standard. Error	t	P>t
$NPFL_{t-1}$	0.0809157$^{\lambda}$	0.0326836	2.48	0.014
CHNPFL	0.0144889*	0.0026426	5.48	0.000
CLOAN	0.0099861	0.0111833	0.89	0.373
_cons	0.0198702 *	0.0069318	2.87	0.005
R^2		0.1724		
Adj_R^2		0.1573		
F-test		11.46(0.0000)*		
RMSE		0.0516		
ART		30.87(0.0001)*		
Observation		169		
Model Type		Prais-OLS		

Source: Authors' computation (2020) based on STATA 15 outputs**.** Wooldridge panel data first-order autocorrelation test (ART): and F-test reported F-statistics with p-value in parentheses. R^2 and Adj.R^2

stand for co-efficient of determination and its adjusted form respectively; RMSE stands for root mean squared error**.** * and ᵡ indicate significance at 99% and 95% confidence levels respectively.

As evident in Table 4, the fact that increase in non-performing loans, change in non-performing loans and change in gross loans cause increase in provision for loan losses (Kanagaretnam et al., 2003) are reported given the positive coefficients of NPLF, CHNPLF and CLOAN. The findings are as previously available in the literature (Kanagaretnam et al., 2003, 2004; Salami et al., 2020, 2021; Shawtari et al., 2015) except that the negative coefficient of CLOAN was reported by Shawtari et al. (2015) and Salami et al. (2020). Nonetheless, the residual terms of the estimates presented in Table 4 were used as DPL. To avoid the need for distinction between income-increasing DPL (negative DPL) and income-decreasing DPL (positive DPL), absolute values of DPL (ADPL) were used as measure of income smoothing following the approach of previous studies (Salami et al., 2020, 2021).

4.3. Descriptive Statistics of the Study's Variables

The descriptive statistics presented in Tables 5 and 6 contain mean, median, standard deviation, minimum and maximum values and are categorised based on financial reporting regime and level of Nigerian banks solvency risk following the approach of Leventis et al. (2011) and Salami et al. (2021). As presented in Table 5, level of funding strategy is higher in the IFRS period than pre-IFRS period given positive mean and median FSI in the IFRS period compared to negative mean and positive median pre-IFRS. While Nigerian banks indulge in income-increasing earnings smoothing during IFRS, the income-smoothing practices of Nigerian banks pre-IFRS fluctuate between income-decreasing and income-increasing given positive and negative mean and median of DPL respectively.

However, based on ADPL earnings smoothing is higher pre-IFRS. The probability of higher demand for external financing is higher for Nigerian DMBs as the proportion of loans in deposits is close 70%. Table 5 further revealed the evidence of deposit funding being largest source of financing Nigerian DMBs' assets with deposit funding amounting to >65% in both periods. For Table 6, FSI is higher for DMBs threatened by insolvency risk. It is also evident that earnings smoothing is higher for DMBs threatened by insolvency risk given higher mean and maximum values of ADPL but income-increasing earnings smoothing is peculiar to less troubled DMBs. The components of FSI share similar attributes between troubled and less troubled DMBs except that deposit funding has a maximum value in excess of total assets (161%). ZSCORE, which is source of bank insolvency risk, is included to reveal the level of stability of Nigerian DMBs in both reporting regimes and categories of sampled banks. Other variables descriptive statistics are as presented in Tables 5 and 6.

Table 5: Descriptive Statistics Based on Corporate Reporting Regime

Period(OBS)	Variable	DPL	ADPL	FSI	LDR	DPF	NDF	IGF	LEV	LgTA	ZSCORE
WHOLE SAMPLE PERIOD (169)	**Mean**	-0.00	0.03	-0.00	0.69	0.67	0.20	0.07	7.47	20.67	14.84
	Median	-0.01	0.02	0.05	0.68	0.68	0.18	0.06	6.05	20.76	15.29
	Std.	0.05	0.04	1.00	0.22	0.13	0.12	0.12	14.94	0.85	10.64
	Min	-0.29	0.00	-3.51	0.04	0.23	0.03	-0.34	-9.64	18.68	-38.34
	Max	0.29	0.29	7.39	1.43	1.61	0.94	1.36	191.21	22.45	43.08
IFRS PERIOD (93)	**Mean**	-0.00	0.02	0.07	0.68	0.68	0.20	0.08	8.60	20.98	13.46
	Median	-0.01	0.02	0.05	0.69	0.68	0.19	0.06	6.51	20.95	14.38
	Std.	0.02	0.01	1.03	0.21	0.13	0.11	0.14	19.25	0.80	9.39
	Min	-0.05	0.00	-1.50	0.04	0.48	0.03	0.00	-1.65	18.87	-38.34
	Max	0.07	0.07	7.39	1.43	1.61	0.94	1.36	191.21	22.45	29.52
PRE-IFRS PERIOD (76)	**Mean**	0.00	0.04	-0.08	0.69	0.66	0.20	0.05	6.09	20.29	16.53
	Median	-0.01	0.02	0.05	0.67	0.68	0.17	0.06	5.10	20.28	17.13
	Std.	0.07	0.06	0.96	0.22	0.12	0.13	0.08	6.49	0.76	11.83
	Min	-0.29	0.00	-3.51	0.21	0.23	0.04	-0.34	-9.64	18.68	-4.93
	Max	0.29	0.29	1.62	1.30	0.88	0.68	0.42	35.03	21.77	43.08

Source: Authors' computation (2020) based on STATA 15 outputs. OBS stands for number of bank-year observations

Table 6: Descriptive Statistics Based on DMBs' Level of Solvency Risk

Solvency (OBS)	Variable	DPL	ADPL	FSI	LDR	DPF	NDF	IGF	LEV	LgTA	ZSCORE
ALL SAMPLED DMBs (169)	**Mean**	-0.00	0.03	-0.00	0.69	0.67	0.20	0.07	7.47	20.67	14.84
	Median	-0.01	0.02	0.05	0.68	0.68	0.18	0.06	6.05	20.76	15.29
	Std. Dev.	0.05	0.04	1.00	0.22	0.13	0.12	0.12	14.94	0.85	10.64
	Min	-0.29	0.00	-3.51	0.04	0.23	0.03	-0.34	-9.64	18.68	-38.34
	Max	0.29	0.29	7.39	1.43	1.61	0.94	1.36	191.21	22.45	43.08
INSOLVENCY THREATENED DMBs (84)	**Mean**	0.01	0.04	0.25	0.65	0.70	0.21	0.06	9.60	20.46	6.59
	Median	-0.00	0.02	0.27	0.63	0.71	0.18	0.05	7.28	20.68	7.19
	Std. Dev.	0.07	0.06	1.08	0.22	0.14	0.13	0.16	20.98	0.87	7.47
	Min	-0.29	0.00	-1.61	0.04	0.47	0.05	-0.34	-9.64	18.68	-38.34
	Max	0.29	0.29	7.39	1.43	1.61	0.94	1.36	191.21	22.28	14.94
LESS INSOLVENCY THREATENED DMBs (85)	**Mean**	-0.01	0.02	-0.24	0.72	0.64	0.19	0.08	5.36	20.87	22.99
	Median	-0.01	0.02	-0.09	0.73	0.66	0.18	0.07	5.66	20.80	22.11
	Std. Dev.	0.02	0.01	0.85	0.20	0.11	0.10	0.05	1.52	0.79	5.99
	Min	-0.09	0.00	-3.51	0.24	0.23	0.03	0.01	2.50	19.20	15.29
	Max	0.04	0.09	1.24	1.30	0.83	0.53	0.32	9.75	22.45	43.08

Source: Authors' computation (2020) based on STATA 15 outputs. OBS stands for number of bank-year observations

4.4. Multi-Collinearity Diagnostic Tests

The results of pair-wise correlation analysis and VIF to detect multi-collinearity problems among the study's non-interaction explanatory variables are presented in Tables 7 and 8 respectively. Based on reliance on benchmark of 0.80 set by Gujarati and Porter (2009) for the presence of multi-collinearity problem, DPF and FSI cannot be included in the same regression model. However, since DPF and FSI are separately specified in regression models, multi-collinearity problem is not peculiar to this study.

Table 7: Correlation Matrix of FSI, its Components and Control Variables

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) FSI	1.00								
(2) LDR	-0.54*	1.00							
(3) DPF	1.00*	-0.54*	1.00						
(4) NDF	-0.22*	0.26*	-0.22*	1.00					
(5) IGF	0.45*	-0.30*	0.45*	0.33*	1.00				
(6) IFRS	0.08	-0.03	0.08	-0.01	0.15	1.00			
(7) BIR	0.25*	-0.16*	0.25*	0.10	-0.08	0.07	1.00		
(8) LEV	0.05	-0.15	0.05	-0.02	-0.11	0.08	0.14	1.00	
(9) LgTA	-0.12	0.01	-0.12	-0.16*	-0.07	0.41*	-0.24*	-0.12	1.00

Source: Authors' computation (2020) based on STATA 15 outputs. * stands for significance at 95% confidence level

Evidence of no multi-collinearity problem in the study was further confirmed with VIF analysis based on results presented in Table 8. From Table 8, it is apparently obtainable that there is no VIF greater than 10, 1/VIF (tolerance level) lower than 0.1 and R^2 greater than 0.9 in both models. VIF value in excess of 10, 1/VIF less than 0.1 and R^2 higher than 0.9 are indications of multi-collinearity problems in a multi-collinearity diagnostic test (Gujarati & Porter, 2009).

Table 8: Variance Inflation Factor (VIF) Analysis of the Study's Non-interaction Explanatory Terms

Variable	FSI Model				FSI Components' Model			
	VIF	$\sqrt{VIF}$	1/VIF	R^2	VIF	$\sqrt{VIF}$	1/VIF	R^2
FSI	1.08	1.04	0.9266	0.0734				
LDR					1.62	1.27	0.6189	0.3811
DPF					2.07	1.44	0.4822	0.5178
NDF					1.73	1.32	0.5780	0.4220
IGF					2.15	1.47	0.4652	0.5348
IFRS	1.27	1.13	0.7869	0.2131	1.35	1.16	0.7401	0.2599
SVR	1.16	1.07	0.8654	0.1346	1.37	1.17	0.7274	0.2726
LEV	1.04	1.02	0.9577	0.0423	1.11	1.06	0.8983	0.1017
LgTA	1.34	1.16	0.7440	0.2560	1.42	1.19	0.7037	0.2963
Mean VIF			1.18				1.60	

Source: Authors' computation (2020) based on STATA 15 outputs

4.5. Regression Results

The regression results for the study's tests of hypotheses are presented in Table 9 with first two regression estimates showing the estimates of equations 4 and 5 while the last two regression estimates unveiling results of estimation of equations 6 and 7. As contained in Table 9, it is evident that Nigerian banks' funding strategy is incidental to increase in earnings smoothing practices. This is based on the significantly positive coefficients of FSI with or without interaction terms. However, adoption of IFRS has brought about reduction in the discretionary use of LLPs based on negative coefficient of IFRS in the model with interaction terms.

The reduction in DPL during IFRS is complementary to the funding strategy being incidental to income smoothing practices of Nigerian banks during IFRS given significantly negative coefficient of IFRS*FSI. In the alternative, increase in discretionary provisions identifiable with Nigerian DMBs threatened with risk of insolvency can also be inferred from the funding strategy of troubled Nigerian DMBs being incidental to increase in income smoothing as evident in the significantly positive coefficient of BIR*FSI at 95% confidence level. The improvement sets in for Nigerian DMBs threatened by risk of insolvency during IFRS as reduction in income smoothing practices is facilitated by their funding strategy as evident in the significantly negative coefficient of IFRS*BIR*FSI.

For the models with components of FSI, the behaviour of each mode of funding is not different in both models with or without interaction terms. While deposit and non-deposit funding modes are incidental to income smoothing practices, internal funding causes decrease in income smoothing achievable via discretionary provisions. However, evidence of motive for external financing prompting income smoothing is found given significantly positive coefficient of LDR in the model with interaction terms but no conclusive evidence is obtainable from the model without interaction terms as the coefficient is insignificantly negative. Further evidence reveal that coefficient of IFRS which is negative in the FSI model becomes positive in the FSI components' model. This represents that during IFRS income smoothing practices by Nigerian DMBs is on the high side. Nevertheless, Nigerian DMBs deposit and non-deposit funding drive and motive for external financing do not prompt income smoothing during IFRS as evident in the significantly negative coefficients of IFRS*DPF, IFRS*NDF and IFRS*LDR respectively. The possibility of internal funding prompting the income smoothing practices during IFRS is not conclusive as coefficient of IFRS*IGF is insignificant.

The reduction in the income smoothing practices identifiable with Nigerian DMBs threatened by risk of insolvency reflects in the negative coefficients of BIR*LDR and BIR*IGF. However, income smoothing is found to be on the increase as these banks intensify their deposit and non-deposit funding drive given significantly positive coefficients of BIR*DPF and BIR*NDF. The improvement in the income smoothing practices of Nigerian DMBs troubled by risk of insolvency during IFRS is only prompted by deposit funding strategy given significantly negative coefficient of IFRS*BIR*DPF against IFRS*BIR*NDP and IFRS*BIR*IGF which are insignificantly positive. The significantly positive coefficient of IFRS*BIR*LDR is an indication that income smoothing practices by Nigerian troubled DMBs are prompted by their motive for external financing. For control variables, the negative coefficients of LEV and LgTA reveal that bank leverage and size are incidental to reduction in income smoothing practices except that their coefficients are insignificant in the FSI components' model with interaction terms.

The choice of PW-PCSE in all the models presented in Table 9 is necessitated by joint significance of heteroscedasticity and panel first-order autocorrelation tests at p-value<0.05. This is evidence in the significance of HET-FE and ART in FSI models and BP-HET1, BP-HET2 and ART in the FSI components' models subsequent to the choice of panel OLS and panel FE respectively.

Table 9: Funding Strategy and Income Smoothing Practices of Nigerian DMBs

Variable	Dependent Variable: ADPL		Dependent Variable: ADPL	
	FSI Only Without Interaction	FSI Components Without Interaction	FSI Only With Interaction	FSI Components With Interaction
FSI	0.0054(2.55)$^{\lambda}$		0.0088(3.98)*	
LDR		-0.0056(-0.40)		0.0219(1.71)$^{\emptyset}$
DPF		0.1418(7.04)*		0.1330(2.18)$^{\lambda}$
NDF		0.1442(6.80)*		0.0700(1.07)
IGF		-0.1734(-9.14)*		-0.1566(-1.45)
IFRS			-0.0143(-2.45)$^{\lambda}$	0.2480(3.39)*
IFRS*FSI			-0.0091(-1.99)$^{\lambda}$	
IFRS*LDR				-0.0521(-2.21)$^{\lambda}$
IFRS*DPF				-0.3091(-4.38)*
IFRS*NDF				-0.2020(-2.66)*
IFRS*IGF				0.1418(1.11)
BIR			0.0122(2.97)*	-0.0944(-1.44)
BIR*FSI			0.0179(2.32)$^{\lambda}$	
BIR*LDR				-0.0712(-1.65)$^{\emptyset}$
BIR*DPF				0.1915(2.33)$^{\lambda}$
BIR*NDF				0.1330(2.00)$^{\lambda}$
BIR*IGF				-0.0981(-0.78)
IFRS*BIR*FSI			-0.0175(-1.87)$^{\emptyset}$	
IFRS*BIR*LDR				0.0915(2.08)$^{\lambda}$
IFRS*BIR*DPF				-0.1089(-2.93)*
IFRS*BIR*NDF				0.0084(0.09)
IFRS*BIR*IGF				0.1998(1.04)
LEV	-0.0002(-3.52)*	-0.0004(-2.77)*	-0.0002(-2.26)$^{\lambda}$	-0.0000(-0.17)
LgTA	-0.0184(-7.65)*	-0.0120(-4.93)*	-0.0096(-3.46)*	-0.0032(-1.50)
_cons	0.41369(7.98)*	0.1707(2.82)*	0.2318(3.94)*	-0.0046(-0.07)
HST	23.82(0.0000)*	4.34(0.6314)	17.25(0.0277)$^{\emptyset}$	8.38(0.9890)
HET-FE	17679.50(0.0000)*		37236.69(0.0000)*	
LMT		0.00(1.0000)		0.00(1.0000)
BP-HET1		26.34(0.0000)*		37.04(0.0000)*
BP-HET2		27.69(0.0001)*		42.94(0.0021)*
ART	8.404(0.0110)$^{\lambda}$	6.294(0.0241)$^{\lambda}$	5.753(0.0299)$^{\lambda}$	4.75(0.0456)$^{\lambda}$
R^2	0.2253	0.4576	0.2790	0.5469
Wald	65.47(0.0000)*	265.19(0.0000)*	95.33(0.0000)*	4967.89(0.0000)*
Observation	169	169	169	169
Model Type	PW-PCSE	PW-PCSE	PW-PCSE	PW-PCSE

Source: Authors' computation (2020) based on STATA 15 outputs. Regression coefficients are reported with Z-statistics in brackets; PW-PCSE represents Prais-Winsten Regression with correlated Panel Corrected Standard Errors. Breusch-Pagan / Cook-Weisberg test for heteroscedasticity with fitted values of dependent variable- ADPL (BP-HET1) and independent variables (BP-HET2), Random-Effects Breusch-Pagan Langrange Multiplier test (LMT), Hausman statistics (HST), panel data Wooldridge test for heteroscedasticity (HET-FE) and Wald Statistics (Wald) reported chi-square statistics with p-values in parentheses. Wooldridge panel data first-order autocorrelation test: ART reported F-statistics with p-value in parenthesis. $^{\emptyset}$, $^{\lambda}$, and * indicate significance at 90%, 95% and 99% confidence levels respectively.

4.6. Discussion of Findings

There is no doubt that the behaviour of all the study's independent variables, to a large extent, is a confirmation of the assumptions of the theories on which the study is premised. This is evident when they are not interacted with the moderating variables. As evident in Table 9, the positive coefficients of FSI, DPF and NDF confirm that the level of funding

of a bank determines its choice of accounting methods to smooth earnings as contained in the propositions of positive accounting theory (PAT). This means that the first hypothesis which proposes that "income smoothing practices via LLPs by Nigerian DMBs is prompted by their funding strategy is retained.

Thus, smoothing of earnings by Nigerian DMBs is a function of level of funding. However, the results obtained from the proposition that banks motive for external financing prompts earnings smoothing were mixed. In the FSI components' model without interaction terms, the coefficient of LDR is negative. In contrast, the LDR's coefficient is positive in the model with interaction terms. This creates some level of ambiguity in taking a categorical stance but significantly positive coefficient of LDR in the model with interaction terms is suggestive of increase in discretionary use of LLPs as a result of Nigerian DMBs' demand for external funding.

The fact that funding level is incidental to earnings smoothing as identifiable with DPF and NDF in this study confirms the findings of Mukhibad and Nurkhin (2019) and Saona and Azad (2020) but is contrary to those of Amidu and Kuipo (2015) and Jin et al. (2018). In addition, the study's position that adjustments to LLPs are prompted by the need for external financing cannot be discountenanced as it has been previously validated (see, for instance, Bhattarai, 2018; Malik et al., 2021; Safarzadeh and Jafarimanesh, 2019). The ability of efficient internal funding level in a group to mitigate earnings smoothing practices as argued in the ICMF becomes realistic with negative coefficient of IGF found in this study. This agrees with findings of Wang and Lin (2013) but contracts those of Amidu and Kuipo (2015).

Similar scenario is obtained when the independent variables are interacted with risk of insolvency indicating that Nigerian DMBs threatened by risk of insolvency indulge in discretionary use of LLPs in their funding drive. This is a confirmation of third hypothesis states that "effect of funding strategy on income smoothing practices is positive for Nigerian DMBs threatened by risk of insolvency". However, exception is noticeable with LDR having an inverse relationship. The troubled DMBs' indifference to adjustments to LLPs while in need of external financing might not be unconnected with CBN/AMCON's usual interventions for depository institutions in their category. In contrast, improvement is evident during IFRS except for traces of increase in DPL noticeable using internal funding strategy but becomes statistically irrelevant given insignificant coefficient of IFRS*IGR. The reduction in income smoothing practices as engendered by DMBs' funding strategy confirms the third hypothesis and gives the evidence of improvement in earnings quality of the Nigerian banks.

The reduction in income smoothing practices is also largely identifiable with riskier Nigerian DMBs during IFRS if significantly negative coefficient of IFRS*BIR*FSI is taken into consideration. This appears to be a confirmation of fourth hypothesis except that similar results are not obtainable from the behaviour of the components of FSI other than IFRS*BIR*DPF. Basically, Nigerian DMBs are characterised with improvement in earnings manipulations via adjustments to LLPs while financing their assets during IFRS. The improvement typical of Nigerian DMBs during IFRS was also identifiable with Asian banks reporting in IFRS as found by Saona and Azad (2020).

Despite the improvement in earnings smoothing practices of Nigerian DMBs as explained by their funding strategy, traces of the practices established may create some constraints for them in sourcing for funds. For instance, Nigerian DMBs may encounter some constraints raising funds from foreign capital markets including global depository receipts if the investors have the knowledge of their potential to smooth earnings regardless of level of funding. This may also cause the regulators to shift their attention to well-funded banks rather than those having funding crisis. Thus, the fear of banks' fear of regulatory takeover of their management as evident in Nigeria may be applicable to all banks regardless of their level of funding. Nonetheless, it is important to note that all findings related to how discretionary use of LLPs is prompted by interaction of funding strategy with bank risk of insolvency and IFRS adoption are exclusive to this study. This suggests that the findings remain significant contribution to the literature.

5. Conclusion

The gap embedded in providing link between bank funding strategy and discretionary use of LLPs which results in earnings smoothing has been filled in the Nigerian context. Based on the analysis of panel datasets obtained from a sample of 16 DMBs for the period 2007-2017, it is empirically evident that Nigerian DMBs indulge in earnings smoothing via LLPs in their funding drive. This practice reflects majorly in their deposit and non-deposit funding strategy as well as their motive for external funding rather than internal funding strategy. This is an indication that financing Nigerian DMBs' assets via deposit and non-deposit funding has a significantly positive influence on discretionary use of LLPs which culminates in earnings smoothing. In contrast, satisfactory level of internal funding in terms of earnings before extraordinary items

and LLPs has the capacity to discourage DMBs from urge to smooth earnings to the detriment of external users of bank financial information.

The low level of transparency in financial reporting disclosures in relation to LLPs reporting typical of Nigerian DMBs in their funding drive as found in this study is regardless of their level of solvency. However, with adoption of IFRSs, evidence of improved financial reporting becomes more pronounced in the relationship between funding strategy and discretionary provisioning practices. This represents a pointer to the ability of IFRS reporting to unravel and streamline how funding strategy is employed by banks in Nigeria to smooth earnings via LLPs.

The respite brought about by the adoption of IFRSs is not fully-fledged as some mixed results were obtained in the funding strategy-DPL nexus of Nigerian DMBs threatened by risk of insolvency. This is an indication of Nigerian DMBs having potential to smooth earnings in their funding drive. The potential can constrain their ability to obtain foreign funding including global depository receipts peculiar to Nigerian DMBs in the last decade. The possibility of Nigerian DMBs manipulating earnings in their funding drive may also affect negatively the decisions of both foreign and local investors to invest substantially in the sector.

This may affect foreign direct investment with ultimate effect on West African money and capital markets because of leadership role of Nigeria in the West African financial markets. Though Nigerian DMBs had a mandate to divest their non-financial investments, the level of toleration by CBN of DMBs' non-core banking businesses may be restricted if positive income smoothing-funding strategy nexus somehow established in this study is considered.

The lack of total respite in funding strategy-income smoothing positive nexus is suggestive of need for increased level of oversights and additional reforms on the part of bank regulators. The CBN attempts to revise 2010 Prudential Guidelines for DMBs via issue of exposure draft in 2019 is commendable but the inability to ratify it until now is a source of concern. Better still, provisions that can check the tide of positive funding strategy-DPL relationship should be infused before final approval. The discretionary opportunities inherent in IFRS 9 now in force for loan loss reporting in Nigeria might be a setback if regulators (CBN and FRCN) could not re-sharpen their supervisory tools given mixed results obtained under IAS 39 regime covered in this study.

As unique as contribution of this study to the literature is, in terms of derivation of FSI and the test of joint moderating effect of IFRS adoption and solvency risk, its restriction to IAS 39 regime somehow limits the general application of its findings. However, mitigations are obtained from CBN directives to DMBs to gradually apply provisions in IFRS 9 for the first four years of adoption ending 31 December 2021. Also, given higher number of cross-sections than time period for data collection (N>T) evident in this study, future studies can adopt a dynamic panel model. The adoption of dynamic panel model is subject to the increase in sample units to include primary mortgage institutions (PMIs) and microfinance banks (MFBs) which financial information is not sufficiently available in the public domain because majority of them are unlisted. The increase in sample units upon access to PMIs and MFBs data before applying dynamic panel model technique is to avoid risk of number of instruments being in excess of sample units which makes dynamic panel model results spurious (Roodman, 2009).

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