



THE CYCLICALITY OF LOAN LOSS PROVISIONS IN NIGERIA: DO MANAGERIAL DISCRETIONS MATTER?

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ABSTRACT

The series of non-performing loans crises, lopsided financial reporting and corporate collapse for which Nigerian financial system is characterised with in the last decade and half and the fluctuation noticeable with aggregate economy questions the stability of Nigerian banking sector. The purpose of this study is, however, to investigate loan loss cyclical dependence when managerial opportunistic behaviour is taken into consideration. Data, at macroeconomic level, were obtained from regulatory databases while those at bank-level were extracted from annual reports of 16 deposit money banks (DMBs) selected for investigation between 2007 and 2017. The analysis was performed largely using Prais-Winsten regression correlated with Panel Corrected Standard Errors (PCSE-PWT) subsequent to a number of diagnostic verifications. Results showed that loan loss provisioning behaviour of Nigerian DMBs is pro-cyclical at both bank and macroeconomic levels. The findings further revealed that the possibility of change from pro-cyclical to counter-cyclical provisioning behaviour is subject to managerial discretions. The managerial opportunistic behaviour in loan loss cyclical reflects more in capital management and earnings signaling while real GDP growth and unemployment rates appear more reliable measures of business cycle. The study concluded, given evidence of pro-cyclical, that provisioning behaviour in Nigeria is imprudent. It was also inferred, subject to the influence of managerial discretions, that loan loss cyclical can be a ruse rather than reality. The study recommended a revisit of 2019 exposure draft on review of prudential guidelines, strengthening of capitalisation and earnings signaling and maintaining a balance among architectures of bank regulation,



financial system and bank prudential behaviour among others to guarantee true counter-cyclical provisioning.

Keywords: Business cycle, Deposit money banks, Loan loss cyclicity, Managerial discretions.

1. INTRODUCTION

Based on guidance provided by both financial reporting standards' setters and bank regulators, it is evident that loan loss provisions (LLPs) as a financial reporting issue has a linkage to the aggregate economy. Guidelines on provisions are embedded in the requirements of International Financial Reporting Standards (IFRS) 9 of "expected credit loss model" and International Accounting Standard (IAS) 39 of "incurred loan loss model". Provisioning by corporate entities had also been subject to the requirements of IAS 32, IAS 37 and IFRS 7 previously. The requirements contained in the prudential guidelines issued by bank regulators/supervisory authorities and Basel Standards set by Basel Committee on Banking Supervision (BCBS) incorporate largely the link between bank financial condition and macroeconomic performance. The linkage of LLPs to the economic cycle can also be attributed to the fact that customers' loan default probability is subject to the fluctuations in the economy in addition to the individual characteristics of the borrowers.

LLPs are not only central to the bank financial reporting as the largest accrual (Malik, Aziz, Saiti & Din, 2021; Salami, 2021) with over 50% proportion (Andries, Gallemore & Jacob, 2017) of non-cash expenses, their sources, "loans and advances", in the bank statement of financial position appear the largest in the bank asset structure (Gebhardt & Novotny-Farkas, 2011, Salami, 2021). Although LLPs can be regarded as a cushioning mechanism when borrowers could not repay their loans in part or full, the cushioning effect may be ineffective during economic upheaval. This is an emphasis on the cyclical dependence of LLPs on business cycle. Loan loss cyclicity, therefore, represents cyclical dependence of LLPs on business cycle (Bonin & Kosak, 2013). Business cycle represents general contractions, recessions and revivals identifiable with the aggregate economy of a nation over a period of time (CBN, 2016b). Considering contractions-revivals characteristic over the business cycle, loan loss cyclicity can be pro-cyclical or counter-cyclical (Adzis, 2017; Huizinga & Laeven, 2019). While counter-cyclicity is desirable because of the ability of banks to absorb losses during economic bust, pro-cyclicity



is however unfavourable. At bank level, loan loss cyclical dependence is subject to relationship of LLPs with loans growth (Bonin & Kosak, 2013) while at macroeconomic level, loan loss cyclicality is all about LLPs' reliance on changes in the economic prospects (Berger & Udell, 2004).

As evident in the literature, LLPs play significant role in the determination of profit of a bank (Ozili, 2015b; Salami, Uthman & Abdulrauf, 2021; Vishnani, Agarwal, Agarwalla & Gupta, 2019). The profit of a bank aggregated in "retained earnings" is a component of bank core capital called Tier 1 capital while the increase in LLPs, to investors, is a sign of bank ability to absorb losses during shocks (Salami *et al.*, 2021). This means that to smooth earnings, manage capital and signal earnings by a bank, LLPs have to be adjusted. These three financial reporting acts encapsulate discretionary powers of bank managers in loan loss reporting (Pramono, Rossietta & Soedarmono, 2019; Soedarmono, Pramono & Tarazi, 2017). Since loan loss provisioning is subject to discretionary power of bank managers, loan loss cyclical dependence is likely to be affected by bank managerial discretions embedded in earnings smoothing, capital management and earnings signaling. The discretions inherent in LLPs can also be inferred from its separation into discretionary and non-discretionary components in the literature (Salami *et al.*, 2021; Salami, Sanni & Ariyo-Edu, 2020).

From the fallout of Nigerian banking crisis of 2009, non-performing loans crisis formed part of the failure of many banks (Sanusi, 2010) although not evident until discovered by the Central Bank of Nigeria (CBN) special audit of deposit money banks (DMBs) (Otusanya & Lauwo, 2010; Otusanya & Uadiale, 2014; Sanusi, 2010). The series of responses to 2009 Nigerian banking crisis were encapsulated in a reform programme by CBN to ensure the stability of Nigerian financial sector and the reality of its contribution to the real economy (Sanusi, 2010). As a follow-up, guidelines for loan loss provisioning in the CBN 2010 prudential guidelines are claimed to be geared towards entrenching provisioning rules that are counter-cyclical and support the life cycle and gestation periods of the various specialised loans (CBN, 2010). The Asset Management Corporation of Nigeria (AMCON) was established as another follow-up to address the issue of non-performing loans crisis (Sanusi, 2012) from which unfavourable loan loss cyclicality often emanates. Against the reforms, the collapse of Skye Bank Plc which occurred during economic recession and the acquisition of Diamond Bank Plc by Access Bank Plc as a result of inability of the former to absorb huge losses incurred during recession are issues prompting investigation into loan loss cyclicality in Nigeria. Since the issue of



collapse of Skye Bank was also linked to lopsided financial reporting disclosures and transparency (Proshare, 2017), an inquiry into loan loss cyclical dependence may be incomplete without moderating influence of bank managerial discretions.

The switch of provisioning rules from IAS 39 to IFRS 9 as at 1 January 2018 based on CBN directives (CBN, 2016a) and the recent move to effect the implementation of Basel III (CBN, 2021) require an investigation into how discretions affect loan loss cyclical behaviour in the previous regime. This is premised on the fact that IFRS 9 and/or Basel III allow banks to make differing judgements while providing for impairment charges (Deloitte, 2019; Soedarmono *et al.*, 2017) though claimed to be in-built (Salami, 2021). The extant attempt in the literature to examine how managerial discretions affect loan loss cyclical behaviour is credited to the work of Soedarmono *et al.* (2017) with focus on Islamic banks which apply “expected credit loss model” of provisioning. This is an indication of post-adoption examination. In contrast, this study is a case of pre-adoption examination of the role of managerial discretions in loan loss cyclical behaviour to establish the level of precaution required in applying expected credit loss model.

Also, Soedarmono *et al.* (2017) separately tested moderating influence of earnings smoothing, capital management and earnings signaling on loan loss cyclicity. However, this study advances literature by testing for moderation of overall bank managerial discretions subsequent to derivation of bank managerial discretions index (BMDI) using appropriate statistical technique. In Nigeria, based on the extent of literature search, this study advances the work of Ozili (2015a) identifiable with empirical test of DMBs’ loan loss cyclical behaviour previously. While Ozili (2015a) relied on change in real gross domestic product (GDP) growth as an indicator of business cycle, this study included more macroeconomic indicators of real interest, inflation and unemployment rates as measures of business cycle coupled with the tests of how managerial discretions affect loan loss cyclical behaviour.

2. LITERATURE REVIEW

Loan Loss Cyclicity

Loan loss cyclicity which can be bank-specific or macroeconomic based on the relationship of LLPs to bank lending growth and macroeconomic factors respectively is an important tool for macroeconomic policy (Bonin & Kosak, 2013). The links of banking sector to the real economy can aggravate or otherwise the economic cycles (Bank for International Settlements (BIS), 2021). The extent to which LLPs guidelines, as contained in the provisioning rules set by the regulators and/or



accounting standards' setters, improve the timeliness and accuracy of LLPs recognition is an ingredient of transparency in banks' financial reporting which may make or mar loan loss cyclicity (BIS, 2021).

In the literature, bank-specific loan loss cyclicity is solely measured by the relationship between growth in bank lending and proportion of LLPs charges included in the financial statements (Araújo, Lustosa & Dantas, 2018b, Dushku, 2016; Olszak, Chodnicka-Jaworska, Kowalska, & Świtłała, 2018). However, for macroeconomic loan loss cyclicity, other macroeconomic factors (Abdullah, Ahmad & Bujang, 2015; Arbak, 2017) other than change in real GDP commonly adopted among previous studies (Adzis, 2017; Huizinga & Laeven, 2019; Soedarmono *et al.*, 2017) are measures of economic characteristics that have capability to influence banks' propensity to provide for loan losses (Parija, 2020). The pro-cyclical loan loss is evident when LLPs relationship to bank loan growth and real GDP growth is negative (Adzis, 2017; Huizinga & Laeven, 2019). In contrast, loan loss pro-cyclicity occurs when other measures of business cycle including real interest, unemployment and inflation rates exert positive influence on LLPs (Abdullah *et al.*, 2015; Ghosh, 2007).

Although the prominence of real GDP growth as a measure of business cycle focuses on economic growth which has link with production capacity of an economy (Salami, 2021), the behaviour of other macroeconomic indicators of business cycle also have some monetary and fiscal policy implications. The scenario of pro-cyclicity when real GDP growth is a measure of business cycle is that banks have tendency to increase the level of their lending activities when the economy is buoyant (Adzis, 2017). This indicates that the borrowers' risk of default will be minimal which suggests that loan impairment charges will be at manageable level and lower ebb (Abdullah *et al.*, 2015). As further argued, rate of unemployment has more direct link (than GDP) to retail lending activities of banks (Domikowsky, Foos & Pramor, 2015). Also, the higher interest rate which has tendency to cause higher cost of funds and consumer price index culminates in the repayment of loans becoming more difficult for borrowers and banks charging higher LLPs (Ghosh, 2007).

Bank Managerial Discretions

Managerial discretions in loan loss reporting are reflected in the adjustments to earnings, capital base and signal of financial strength (Salami, 2021). Thus, managerial decisions related to the use of LLPs to smooth earnings and capital and signal strength fall within the scope of managerial discretions (Soedarmono *et al.*,



2017). Since accounting standards give latitude to the managers in the choice of methods and techniques, earlier studies in the accounting for loan losses literature argued in favour of and/or empirically confirmed the possibility of bank managers using opportunistic actions embedded in loan loss reporting (Greenwalt & Sinkey, 1988; Ismail & Tan Be Lay, 2002; Moyer, 1990; Wahlen, 1994). The relationships of LLPs to bank earnings before LLPs and taxes, regulatory capital (whether core or total capital) and one-year-ahead change in bank earnings before LLPs and taxes can be used to establish bank earnings smoothing, capital management and earnings signaling respectively (Muriu & Josea, 2020; Salami, 2021). For earnings smoothing and signaling, the relationship should be positive while that of capital management should be negative (Salami *et al.*, 2021; Vishnani, Agarwal, Agarwalla & Gupta, 2019). The smoothing of earnings is geared towards reducing earnings variability while capital management and earnings signaling are employed by banks to avoid regulatory sanctions and show potential for absorbing future potential losses respectively (Dushku, 2016; Muriu & Josea, 2020; Salami, 2021). Although the possibility of managerial discretionary attributes reversing bank loan loss cyclicity behaviour has been previously tested (Soedarmono *et al.*, 2017), this study advances the contribution of Soedarmono *et al.* (2017) through the test of moderation of bank managerial discretions index (BMDI) in addition to the tests of its components.

Theoretical Underpinning

The argument in this study is premised on three theories of Institutional Memory Hypothesis (IMH), Disaster Myopia Hypothesis (DMH) and Positive Accounting Theory (PAT). Based on postulates of Berger and Udell (2004, p. 459) IMH is based on the argument that “a deterioration in the ability of bank loan officers to recognize potential loan problems may lead to an easing of credit standards as time passes since the bank’s last loan ‘bust’ that is, its last significant experience with problem loans”. The deterioration in the ability of loan officer being referred to by Berger and Udell (2004) has to do with soft rather than hard loan information. The knowledge of soft information about the borrower firms includes their management, financial profile and local market conditions. It also comprises knowledge about the efficacy of different monitoring methods, the success of different contract structures in previous loans and the best approaches for managing distressed credits to mitigate losses (Berger & Udell, 2004). The knowledge of these pieces of information which apply at every stage of loan cycle helps to mitigate moral hazard problems and problem of adverse selection. Therefore, IMH reinforces the tendency for bank-specific pro-cyclicity of LLPs as a result of loan officers’ inability to differentiate



between low-quality and high-quality borrowers. The inability of loan officers to assess the soft loan information and decrease in the proportion of experienced loan officers eventually brings about charging low provisions as bank lending increases.

The emphasis of DMH is the possibility of macroeconomic loan loss pro-cyclical behaviour (Monokroussos, Thomakos, Alexopoulos & Tsioli, 2017). In the words of Guttentag and Herring (1986, p. 2), disaster myopia is described as “a systematic tendency to underestimate shock probabilities”. Guttentag and Herring’s (1986) argument, concerning the underestimation of shock probabilities, is due to underinvestment in information. Decision makers can decide not to invest sufficiently in information if they are confident that their exposure to sudden rise in shock probabilities can be swiftly and cheaply reduced (Guttentag & Herring, 1986). Given that difficulty in assigning a probability to a future event which might be caused by changes in regulatory framework and economic situation as well as occurrence of natural and man-made disaster gives rise to disaster myopia (Guttentag & Herring, 1986; Jiménez & Saurina, 2005), banks are susceptible to expanding credits prior to the occurrence of the event but cut lending upon the occurrence of the event (Fernández de Lis & Herrero, 2009; Jiménez & Saurina, 2005). This explains rationale for granting of more credits with accompanied low provision for loan losses during the economic upswing as against the economic upheaval.

As provided by Watts and Zimmerman (1986), PAT answers the question of how accounting information provided by management of corporate entities is a function of choice of accounting methods. The choice of accounting methods is dependent on the managers’ explicit contracts with the firm which has direct link to accounting numbers (Ozili, 2017). The managerial explicit contracts that necessitate the choice of accounting methods may be attributed to the attachment of managers’ compensation to the firm’s performance (Watts & Zimmerman, 1986, 1990). The contracts may also be attributed to the need to reduce debts violation, keep the control by regulators (political cost) under check and meet analysts’ forecasts of earnings (Halaoua, Hamdi & Mejri, 2017; Watts & Zimmerman, 1990). Since substantial part of bank managers’ discretionary attributes are embedded in LLPs as the largest accrual, the choice of accounting methods to smooth and signal earnings and manage capital is probable. This indicates that bank managers can reverse the cyclical dependence between LLPs and business cycle from being pro-cyclical to counter-cyclical by employing the opportunistic behaviour (Soedarmono *et al.*, 2017) inherent in accounting for loan losses.



Previous Empirical Findings and Hypotheses Development

There exists to be predominance of evidence of bank-specific loan loss pro-cyclicality among the previous studies. From studies of Cavallo and Majnoni (2001), Laeven and Majnoni (2003), Bikker and Metzmakers (2005) for Italian and Japanese in a cross-country study, Wong, Fong and Choi (2011), Skala (2015) to Pool, de Haan and Jacobs (2015), the cyclical dependence between loan growth and LLPs was found to be inversely related. It was also the case of bank-specific pro-cyclicality for Mozambican, East Asian, joint Thailand and Japanese, joint UK, Brazilian and Spanish and combined Euro and Non-euro areas studies by Siueia and Wang (2017), Adzis (2017), Abdullah, Bujang and Sahudin (2017), Araújo, Lustosa and Paulo (2018a) and Huizinga and Laeven (2019) respectively. The inverse relationship between change in bank lending and LLPs found by Olszak et al. (2018), Surjaningsih, Hafidz, Adamanti Muhajir and Sari (2018), Araújo et al. (2018b), Molla (2021) and Albaity, Noman, Mallek and Al-Shboul (2022) is additional evidence of bank-specific pro-cyclicality. Alternatively, in Malaysia, Jordan, Albania, 29 members of Organisation of Economic Cooperation and Development (OECD) and both eurozone and US, as reported by Abdullah et al. (2015), Abu-Serdaneh (2018), Dushku (2016), Bikker and Metzmakers (2005) and Degryse and Huylebroek (2022) respectively, prudent provisioning behaviour of counter-cyclicality was in practice. However, evidence found by Abdullah et al. (2015) is insignificant.

Since the evidence in the previous literature supports substantially the bank-specific pro-cyclical loan loss behaviour postulates of IMH, it is hypothesised that:

H₁: The cyclical dependence between LLPs and loan growth of Nigerian DMBs is pro-cyclical.

Like predominance of bank-specific pro-cyclicality, the cyclical dependence between LLPs and macroeconomic factors is majorly found to be pro-cyclical in the previous studies. Except for the findings of Handorf and Zhu (2006), Caporale, Alessi, Di Colli and Lopez (2018), Domikowsky, Bornemann, Duellmann and Pflingsten (2014) and Muriu and Josea (2020) which revealed anti-procyclical loan loss behaviour for banks in US, Italy, Germany and Kenya respectively, majority of other evidence showed inverse relationship between economic cycle and LLPs most especially when GDP-related measure is adopted. The counter-cyclical provisioning policies of German banks are identifiable with specific LLPs rather than general LLPs (Domikowsky *et al.*, 2014) while those of UK banks are dependent on the



adoption dynamic provisioning rule (Agénor & Zilberman, 2015). Nonetheless, Cavallo and Majnoni (2001), Laeven and Majnoni (2003), Pain (2003), Fillat and Montoriol-Garriga (2010), Floro (2010), Beatty and Liao (2011), Suhartono (2012), Gaul (2014), Abdullah et al. (2015), Ozili (2015a) and Bushman and Williams (2015) found significantly negative coefficient of GDP growth rate indicating pro-cyclical provisioning.

Further significantly inverse loan loss cyclical with real GDP growth rate as a measure of business cycle was found by Adzis, Tripe and Dunmore (2016), Arbak (2017), Olszak et al. (2018), Abu-Serdaneh (2018) and Araújo et al. (2018b) for Hong Kong, Belgian, Polish, Jordanian and Brazilian banks respectively. The loan loss cyclical evidence found by Dinamona (2008) for 105 banks in 17 European countries, Frait and Komárková (2013) for a group of European countries including Czech Republic, Bonin and Kosak (2013) for 318 European banks in 11 countries and Pool et al. (2015) for 12 OECD countries including US and Japan is pro-cyclical. What Adzis (2017) found for 4 East Asian countries of Hong Kong, Malaysia, Singapore and Thailand is pro-cyclical loan loss provisioning. The case of no distinction is presented by Araújo et al. (2018a) in loan loss cyclical behaviour of UK (with incurred loan loss model), Spanish (expected loss model) and Brazil (Hybrid model) as GDP growth rate was found to be negatively significant.

Similarly, bank provisioning behaviour for banks in 28 EU members and 4 other countries of Switzerland, Canada, Norway and US is found to be pro-cyclical at macroeconomic level using real GDP growth rate (Huizinga & Laeven, 2019). The pro-cyclicity of LLPs is also confirmed by Olszak and Kowalska (2022) in a global analysis of over 70,000 bank-level data in 103 countries. The positive coefficient of “dummy recession” indicating increased LLPs during recession is a case of pro-cyclicity of LLPs as found by Chen, Dou, Ryan and Zou (2022). A US and Eurozone combined study conducted by Degryse and Huylebroek (2022) also found pro-cyclical LLPs given negative coefficient of real GDP growth. The evidence of pro-cyclicity as found by Pastiranová and Witzany (2022) is only identifiable with IFRS 9 period in EU countries given the significantly negative coefficient of GDP growth rate compared with IAS 39 period with positive coefficient.

For other indicators of economic cycle, Bikker and Metzmakers (2005), Gaul (2014), Bryce, Dadoukis, Hall, Nguyen and Simper (2015), Frait and Komárková (2013), Araújo et al. (2018a, 2018b), Olszak et al. (2018) and Degryse and Huylebroek (2022) found positive coefficient of unemployment rate/gap indicating



pro-cyclicality but the findings of Bryce et al. (2015) and Araújo et al. (2018b) are insignificant. The findings regarding interest rate are mixed. While Arbak (2017) found significantly positive signs for long-term and short-term interest spread, the pro-cyclicality evidence found by Abdullah et al. (2015) is not conclusive. Regarding inflation rate, provisioning policies of banks in 13 OECD countries examined by Olszak and Pipień (2014) are pro-cyclical while those of 179 banks in 11 Central European countries according to Skała (2015) are counter-cyclical. However, the pro-cyclical provisioning behaviour of 19 Malaysian commercial banks found by Abdullah et al. (2015) is statistically insignificant.

The evidence in the literature is sufficient to confirm the reality of DMH with macroeconomic pro-cyclical provisioning behaviour for banks. This necessitates the second hypothesis as stated below:

H₂: The cyclical dependence between economic cycle indicators and LLPs in Nigeria is pro-cyclical.

Although Soedarmono et al. (2017) did not test the moderating influence of BMDI; the approach of the study provided the guide for testing influence of managerial discretions in loan loss cyclical behaviour. As found by Soedarmono et al. (2017), the provisioning cyclicity behaviour of 146 Islamic banks across the globe, based on panel datasets obtained between 1997 and 2012, is pro-cyclical using GDP growth rate as an indicator of business cycle. However, when the influence of the opportunistic behaviour embedded in LLPs in terms of capital management, earnings management and earnings signaling, is tested, a reversal of negative coefficient of GDP growth rate is noticeable. This reversal is, however, only significant with capital management. This suggests that discretionary attributes in loan loss reporting can cause a reversal of loan loss pro-cyclicality.

Based on the above evidence and propositions of PAT, it is hypothesised:

H₃: Bank discretionary actions in LLPs have potential to reverse the Nigerian DMBS' macroeconomic loan loss cyclical behaviour.

3. METHODOLOGY

The empirical test of loan loss cyclicity behaviour requires both macroeconomic and bank-level data (Chen *et al.*, 2022). Following the previous literature, data used for this study were extracted from annual reports of 16 DMBS selected out of 26 DMBS as at December 31, 2018 (CBN, 2018) and CBN statistical bulletin as well as World Development Indicators of the World Bank Group and National Bureau of



Statistics database. The choice of 16 DMBs was based on availability of bank annual audited financial reports and access to relevant information whether the bank is listed or not. Data were extracted for 11-year period 2007-2017 to sufficiently cover a business cycle. The choice of 2007 was based on the availability of information related to regulatory capital adequacy ratio from the year. However, data beyond 2017 were excluded because of switch to “expected credit loss model” of (IFRS 9) to “incurred loan loss model” of IAS 39 in 2018 for loan loss reporting. The inclusion of 2018 and beyond data will defeat the objective of establishing the level of caution required in the application of IFRS 9 said to have more discretionary provisions (Pastiranová & Witzany, 2022). Data collected were analysed using appropriate descriptive and inferential statistics as presented in Tables 2-7.

For regression estimates, the choice of Prais-Winsten regression with correlated Panel Corrected Standard Errors (PCSE-PWT) was largely made as evident in Tables 6 and 7 with 12 regression models based on PCSE-PWT estimates. The choice of PCSE-PWT may be subsequent to the initial choice of panel fixed-effects model (FE-Panel) if Hausman statistics (HTS), FE-panel Wald test for heteroscedasticity (WHET) and panel data Wooldridge test for first-order autocorrelation (WAR(1)) are significant at 95% confidence level. It may also be subsequent to the initial choice of pooled ordinary least squared regression (OLS-Pooled) upon the insignificance of HTS and Langrange multiplier test (LMPT) but concurrent significance of Breusch-Pagan Cook-Weisberg heteroscedasticity test in OLS with fitted values of dependent (OLS-H1) and independent (OLS-H2) variables as well as WAR(1). The choice of PCSE is best made in regression models with residuals having heteroscedasticity, autocorrelation and/or contemporaneous autocorrelation (Solano, Camino-Mogro & Armijos-Bravo, 2020). PSCE-PWT option is also based on the fact that the study’s panel datasets have higher cross-sections than period of time for data collection (Blackwell, 2005).

To test the first and second hypotheses related to bank-specific and macroeconomic pro-cyclicality, deductions were made from the approaches of Bonin and Kosak (2013), Soedarmono et al. (2017) and Huizinga and Laeven (2019). These deductions led to the specification of relationship between LLPs and business cycle as follows.

$$LLP_{it} = \alpha_0 + \alpha_1 GLOAN_{it} + \alpha_2 CHGDP_t + \alpha_3 INTR_t + \alpha_4 IFLR_t + \alpha_5 UMPL_t + \alpha_6 TLTA_{it} + \alpha_7 NPLN_{it} + \mu_{it} \text{ --- (1)}$$

The attempt to test the moderating influence of bank managerial discretions on loan loss cyclicality was preceded by the derivation of an index of bank managerial



discretions (BMDI) from the measures of capital management, earnings management and signaling as follows using principal component analysis (PCA):

$$BMDI_{it} = \delta_1 TIER1_{it} + \delta_2 TCP_{it} + \delta_3 PBT L_{it} + \delta_4 SIGL_{it} - - - - - (2)$$

$BMDI_{it}$ stands for bank managerial discretions index of Nigerian DMB ‘i’ at period ‘t’; where ‘i’ ranges between 1 and 16 and ‘t’ ranges between 2007 and 2017. The eigenvector or factor loading used as the weight of each variable towards calculating BMD is δ . Other variables are as described in Table 1.

The derivation of BMDI facilitated the test of hypothesis 3 (H_3) using the equation 3 based on the reliance of approach of Soedarmono et al. (2017).

$$LLP_{it} = \alpha_0 + \alpha_1 GLOAN_{it} + \alpha_2 CHGDP_t + \alpha_3 INTR_t + \alpha_4 IFLR_t + \alpha_5 UMPL_{it} + \alpha_6 BMDI_{it} + \alpha_7 (BMDI * CHGDP)_{it} + \alpha_8 (BMDI * INTR)_{it} + \alpha_9 (BMDI * IFLR)_{it} + \alpha_{10} (BMDI * UMPL)_{it} + \alpha_{11} TLTA_{it} + \alpha_{12} NPLN_{it} + \mu_{it} - - - - (3)$$

Despite the derivation of BMDI, the empirical test of the moderating influence of each of BMDI’s components was not ignored. This is to establish whether all or few components have overriding moderating influence on loan loss cyclicality. The relevant models in this case as related to earnings management, capital management and earnings signaling are specified following the approach of Soedarmono et al. (2017) as follows:

$$LLP_{it} = \alpha_0 + \alpha_1 GLOAN_{it} + \alpha_2 CHGDP_t + \alpha_3 INTR_t + \alpha_4 IFLR_t + \alpha_5 UMPL_t + \alpha_6 PBT L_{it} + \alpha_7 (PBT L * CHGDP)_{it} + \alpha_8 (PBT L * INTR)_{it} + \alpha_9 (PBT L * IFLR)_{it} + \alpha_{10} (PBT L * UMPL)_{it} + \alpha_{11} TLTA_{it} + \alpha_{12} NPLN_{it} + \mu_{it} - - - - (4)$$

$$LLP_{it} = \alpha_0 + \alpha_1 GLOAN_{it} + \alpha_2 CHGDP_t + \alpha_3 INTR_t + \alpha_4 IFLR_t + \alpha_5 UMPL_t + \alpha_6 TCP_{it} + \alpha_7 (TCP * CHGDP)_{it} + \alpha_8 (TCP * INTR)_{it} + \alpha_9 (TCP * IFLR)_{it} + \alpha_{10} (TCP * UMPL)_{it} + \alpha_{11} TLTA_{it} + \alpha_{12} NPLN_{it} + \mu_{it} - - - - - (5)$$

$$LLP_{it} = \alpha_0 + \alpha_1 GLOAN_{it} + \alpha_2 CHGDP_t + \alpha_3 INTR_t + \alpha_4 IFLR_t + \alpha_5 UMPL_t + \alpha_6 TIER1_{it} + \alpha_7 (TIER1 * CHGDP)_{it} + \alpha_8 (TIER1 * INTR)_{it} + \alpha_9 (TIER1 * IFLR)_{it} + \alpha_{10} (TIER1 * UMPL)_{it} + \alpha_{11} TLTA_{it} + \alpha_{12} NPLN_{it} + \mu_{it} - - - - (6)$$

$$LLP_{it} = \alpha_0 + \alpha_1 GLOAN_{it} + \alpha_2 CHGDP_t + \alpha_3 INTR_t + \alpha_4 IFLR_t + \alpha_5 UMPL_t + \alpha_6 SIGL_{it} + \alpha_7 (SIGL * CHGDP)_{it} + \alpha_8 (SIGL * INTR)_{it} + \alpha_9 (SIGL * IFLR)_{it} + \alpha_{10} (SIGL * UMPL)_{it} + \alpha_{11} TLTA_{it} + \alpha_{12} NPLN_{it} + \mu_{it} - - - - - (7)$$

The definitions and measurements of the variables included in equations 1-7 are presented in Table 1.

Table 1
Variables' Definitions and Measurements

S/N	Notation	Variable Name	Measurement
1	LLP _{it}	Reported Loan Loss Provisions	Ratio of LLPs scaled by gross loans
2	GLOAN _{it}	Growth in bank lending	Difference between previous and current loans scaled by previous period loans
3	CHGDP _t	GDP growth rate	Real growth rate of GDP testing for pro or counter-cyclicality
4	INTR _t	Interest rate	Average lending rate testing for pro or counter-cyclicality
5	IFLR _t	Inflation rate	Annual consumer price index (CPI) testing for pro or counter-cyclicality
6	UMPL _t	Unemployment rate	Unemployment Rate testing for pro or counter-cyclicality
7	BMDI _{it}	Bank Managerial Discretions Index	Index of Bank Managerial Discretions estimated from equation (2)
8	BMDI*CHGDP _{it}	Bank Managerial Discretions and GDP Growth	Interactions of BMDI with GDP Growth Rate
9	BMDI*INTR _{it}	Bank Managerial Discretions and Interest Rate	Interactions of BMDI with Average Lending
10	BMDI*IFLR _{it}	Bank Managerial Discretions and Inflation Rate	Interactions of BMDI with Annual CPI
11	BMDI*UMPL _{it}	Bank Managerial Discretions and Unemployment Rate	Interactions of BMDI with Unemployment
12	PBTL _{it}	earnings before LLPs and tax	PBTL scaled by total assets
13	PBTL*CHGDP _{it}	Earnings management and GDP growth	Interaction of pre-LLP and tax earnings with real GDP growth rate
14	PBTL*INTR _{it}	Earnings management and interest rate	Interaction of pre-LLP and tax earnings with interest rate
15	PBTL*IFLR _{it}	Earnings management and Inflation rate	Interaction of pre-LLP and tax earnings with inflation rate
16	PBTL*UMPL _{it}	Earnings management and unemployment rate	Interaction of pre-LLP and tax earnings with unemployment rate
17	TCP/TIER1 _{it}	Bank regulatory capital	Ratio of Tier1 and sum of Tier 1 & Tier 2 capitals to risk-weighted assets
18	TCP/TIER1*CHGDP _{it}	Capital Management and GDP growth	Interaction of regulatory capital with GDP
19	TCP/TIER1*INTR _{it}	Capital management and lending rate	Interaction of regulatory capital with interest
20	TCP/TIER1*IFLR _{it}	Capital Management and Inflation	Interaction of regulatory capital with CPI
21	TCP/TIER1*EMPL _{it}	Capital management and unemployment	Interaction of regulatory capital with unemployment rate
22	SIGL _{it}	Solvency risk and earnings signaling	Interaction of change in earnings with earnings signaling
23	SIGL*CHGDP _{it}	Earnings signaling and GDP growth	Interaction of change in earnings with GDP
24	SIGL*INTR _{it}	Earnings signaling and interest rate	Interaction of change in earnings with interest
25	SIGL*IFLR _{it}	Earnings signaling and inflation rate	Interaction of change in earnings with CPI
26	SIGL*UMPL _{it}	Earnings signaling and unemployment rate	Interaction of change in earnings with unemployment rate
27	TLTA _{it}	Credit risk	ratio of total loans to total assets
28	NPLN _{it}	Non-performing loans	Non-performing loans scaled by gross loans

Source: Authors' Compilation (2020) from deductions from conceptual framework and related literature

4. DATA ANALYSIS AND RESULTS PRESENTATION

Data were analysed using descriptive statistics of mean, median, standard deviation and range, PCA and multi-collinearity diagnostics of pairwise correlation and VIF analysis. The study's hypotheses were tested using largely PCSE-PWT.



Construction of Bank Managerial Discretions Index

A condensed form of issues related to earnings management and signaling and capital management was constructed using PCA as depicted in Table 2.

Table 2 (Panel A)
PCA Eigenvalues and Proportion for BMDI

Component	Comp1	Comp2	Comp3	Comp4
Eigenvalue	1.98014	1.47183	0.443632	0.104392
Difference	0.50831	1.0282	0.33924	.
Proportion	0.495	0.368	0.1109	0.0261
Cumulative	0.495	0.863	0.9739	1

Table 2 (Panel B)
PCA Eigenvectors for BMDI

Variable	TIER1	TCP	PBTL	SIGL
Comp1	0.6692	0.6488	0.3437	-0.1145
Comp2	0.2016	0.2441	-0.6115	0.7252
Comp3	0.0195	-0.2689	0.6926	0.669
Comp4	-0.715	0.6687	0.1682	0.1155
Unexplained	0	0	0	0

Source: Authors' computation (2020) based on STATA 14 outputs

As depicted in Table 2, the factor loadings of component 1 with the highest eigenvalue 1.98 explaining over 49% total variation were applied as the weights for the computation of BMDI.

Descriptive Statistics

The summary statistics of the study's variables are presented in Table 3. From Table 3, it is evident that there is higher positive change in gross loans given an average growth rate of 25% for GLOAN despite a negative minimum change of 97.5%. The state of economic growth within the sampled period appears not too bad given positive mean (median) real GDP growth rate of 5.1% (5.5%) but constrained by a negative minimum of 1.6%. This negative change in CHGDP can be traced to the economic recessions of 2015-2017. The real interest, inflation and unemployment rates are on the high side at average rates of 8.7%, 11.7% and 24.4% respectively. The fluctuation in the aggregate economy within the sampled period is evident based on the higher range of each of measures of business cycle adopted. There is low discretionary use of LLPs by Nigerian DMBs if negative mean value of BMDI is given a priority but positive median value gives an indication of balance between low and high use of managerial discretions. With earnings before taxes and LLPs

below 3% at PBTL mean value of 2.6%, it is evident that the level profitability of Nigerian DMBs is low. Equally low is the level of signaling as mean one-year-change in PBTL (SIGL) is <1%. However, Nigerian DMBs appear to be well-capitalised within the sampled given mean TIER1 and TCP of 14.6% and 18.1% respectively though negative minimum value of 198% is a source of concern. At 4.8%, LLP appears to be within regulatory benchmark of 5% but the highest value 293% reveals the level non-performing exposure crisis in Nigeria. This is also similar to the proportion of non-performing loans (NPLN) which is on the high side.

Table 3
Descriptive Statistics

Variables	Observation	Mean	Median	Std. Dev.	Minimum	Maximum
GLOAN	169	0.2525	0.1910	0.3687	-0.9750	2.1181
CHGDP	169	0.0507	0.0549	0.0314	-0.0158	0.0954
INTR	169	0.0869	0.0669	0.0443	0.0107	0.1818
IFLR	169	0.1168	0.1180	0.0353	0.0656	0.1855
UMPL	169	0.2438	0.2470	0.0696	0.1270	0.3823
BMDI	169	-6.09E-10	0.0734	1.0000	-10.0466	1.5488
PBTL	169	0.0261	0.0289	0.0319	-0.1955	0.0865
TCP	169	0.1812	0.1970	0.2152	-1.9807	0.5145
TIER1	169	0.1460	0.1593	0.2368	-1.9807	0.4780
SIGL	169	0.0046	0.0040	0.0317	-0.1504	0.1602
TLTA	169	0.4463	0.4523	0.1256	0.0605	1.0119
NPLN	169	0.0976	0.0483	0.1388	0.0089	0.8846
LLP	169	0.0480	0.0184	0.2284	-0.2836	2.9347

Source: Authors' computation (2020) based on STATA 14 outputs

Multi-collinearity Diagnostic Analyses

The pairwise correlation analysis and VIF were used to detect level of collinearity among the explanatory variables of the study as presented in Tables 4 and 5. From Table 4, two variables with >0.80 correlation coefficient are UEMPL and CHGDP, TIER 1 and TCP, BMDI and TIER1 and BMDI and TCP. In Table 5, collinearity is evident with EMPL, TCP and TIER1 having VIF values >5 and tolerance <0.2 (Shrestha, 2020). Though collinearity is evident with many variables, only EMPL and CHGDP which are jointly included in the same model require post-diagnosis attention. For this reason, EMPL and CHGDP were separately estimated. This brought the number of regression models presented in Tables 6 and 7 to 12 instead of 6 specified.

Table 4
Correlation Matrix

Variables	GLOAN	CHGDP	INTR	IFLR	UMPL	BMDI	PBTL	TCP	TIER1	SIGL	TLTA	NPLN
GLOAN	1.00											
CHGDP	0.25	1.00										
INTR	0.09	0.09	1.00									
IFLR	-0.20	-0.48	-0.23	1.00								
UMPL	-0.53	-0.82	-0.17	0.44	1.00							
BMDI	0.29	0.18	0.01	-0.11	-0.19	1.00						
PBTL	0.03	-0.22	-0.08	0.08	0.22	0.15	1.00					
TCP	0.29	0.18	0.01	-0.11	-0.19	1.00	0.15	1.00				
TEIR1	0.36	0.12	-0.03	-0.11	-0.15	0.88	0.27	0.88	1.00			
SIGL	0.05	0.02	0.20	-0.14	-0.07	0.04	-0.52	0.04	0.06	1.00		
TLTA	-0.03	0.00	0.13	0.19	0.07	-0.07	-0.28	-0.07	-0.08	0.18	1.00	
NPLN	-0.12	0.32	0.10	0.07	-0.33	-0.25	-0.55	-0.25	-0.43	0.06	0.29	1.00

Source: Authors' computation (2020) based on STATA 14 outputs

Table 5 (Panel A)
VIF Analysis of BMDI Models

Variable	BMDI	CHGDP	GLOAN	IFLR	INTR	UMPL	TLTA	NPLN
VIF	1.22	3.96	1.96	1.56	1.14	5.51	1.23	1.71
\sqrt{VIF}	1.1	1.99	1.4	1.25	1.07	2.35	1.11	1.31
Tolerance	0.82	0.25	0.51	0.64	0.88	0.18	0.81	0.59
R ²	0.18	0.75	0.49	0.36	0.12	0.82	0.19	0.41
Mean VIF	2.29							

Table 5 (Panel B)
VIF Analysis of Models with Components of BMDI

Variable	CHGDP	GLOAN	IFLR	INTR	UMPL	PBTL	SIGL	TCP	TIER1	TLTA	NPLN
VIF	4.03	1.98	1.61	1.19	5.62	2.37	1.71	5.06	6.28	1.31	2.57
\sqrt{VIF}	2.01	1.41	1.27	1.09	2.37	1.54	1.31	2.25	2.51	1.14	1.6
Tolerance	0.25	0.50	0.62	0.84	0.18	0.42	0.59	0.198	0.16	0.76	0.39
R ²	0.75	0.50	0.38	0.16	0.82	0.58	0.42	0.80	0.84	0.24	0.61
Mean VIF	3.07										

Source: Authors' computation (2020) based on STATA 14 outputs

Study's Regression Results.

It is evident from Table 6 that provisioning behaviour in Nigeria is pro-cyclical. This is based on the coefficients of loan growth (GLOAN) and real GDP growth rate (CHGDP) in models 1 and 2 which are negative. The positive coefficients of other

macroeconomic indicators: real interest rates (INTR); inflation rate (IFLR) and unemployment rate (UMPL) are also evident of macroeconomic loan loss pro-cyclicality. This is an indication that Nigerian banks charge higher loan impairments in their income statements during economic upheaval/bust.

Table 6
Regression Estimates (Without Interaction and With Interaction of BMDI)

Variables	Dependent Variable: LLP		Dependent Variable: LLP	
	1	2	3	4
	Without Interaction (Excluding UMPL)	Without Interaction (Excluding CHGDP)	With BMDI Interaction (Excluding UMPL)	With BMDI Interaction (Excluding CHGDP)
GLOAN	-0.1536(-5.91)*	-0.1308(-4.77)*	-0.0159(-0.80)	-0.0185(-1.85) ^o
CHGDP	-0.6468(-1.34)	-----	0.4197(1.44)	-----
INTR	0.4527(1.77) ^o	0.4971(1.91) ^o	0.2863(1.76) ^o	0.0907(1.16)
IFLR	0.6560(1.65) ^o	0.6880(1.75) ^o	0.4303(1.78) ^o	0.1332(1.10)
UMPL	-----	0.3697(1.49)	-----	-0.0216(-0.24)
BMDI	-----	-----	-0.4086(-6.98)*	0.0592(1.35)
BMDI*CHGDP	-----	-----	2.4257(8.33)*	-----
BMDI*INTR	-----	-----	0.3226(1.26)	0.4219(2.58)*
BMDI*IFLR	-----	-----	0.7565(2.30) ^λ	0.8087(2.61)*
BMDI*UMPL	-----	-----	-----	-1.2382(-10.70)*
TLTA	-0.7089(-8.11)*	-0.7380(-8.19)*	-0.4969(-6.66)*	-0.1913(-4.65)*
NPLN	0.2178(4.07)*	0.2408(3.91)*	0.1166(1.66) ^o	0.1660(2.12) ^λ
_cons	0.3184(3.95)*	0.1929(2.61)*	0.1552(3.40)*	0.0842(3.46)*
HTS	9.82(0.1326)	9.76(0.1353)	38.55(0.0000)*	51.79(0.0000)*
WHET	-----	-----	3873.45(0.0000)*	2812.87(0.0000)*
LMPT	1.17(0.1393)	1.24(0.1327)	-----	-----
OLS-H1	21.64(0.0000)*	21.86(0.0000)*	-----	-----
OLS-H2	23.34(0.0007)*	23.39(0.0007)*	-----	-----
WAR(1)	11.243(0.0044)*	15.989(0.0012)*	0.107(0.7477)	10.618(0.0053)*
R ²	0.1839	0.1847	0.8401	0.9221
F-test/Wald	160.97(0.0000)*	151.84(0.0000)*	97.46(0.0000)*	1831.46(0.0000)*
Model Type	PCSE-PWT	PCSE-PWT	FE-Panel	PCSE-PWT
Observation	169	169	169	169

Source: Authors' computation (2020) based on STATA 14 outputs. The figures in brackets for regression estimates are z-statistics for PCSE-PWT and t-statistics for FE-Panel in addition to regression coefficients reported. Diagnostic tests other than R² reported various statistics with p-value in parentheses. *, ^o, and ^λ, stand for significance at 99%, 90% and 95% confidence levels respectively.

However, for the empirical test of moderating influence of bank managerial discretions, the possible reversal of bank loan loss cyclical behaviour is found. This is regardless of change in the sign of coefficients of CHGDP and UMPL. As shown in models 3 and 4 of Table 6, evidence of inconclusive counter-cyclical provisioning



using CHGDP and UMPL as measures of business cycle becomes truly counter-cyclical when both variables interact with BMDI. Thus, their coefficients become significantly positive and negative respectively. Similar rationale may also be adduced for the behaviour of INTR and IFLR with somewhat drop and increase respectively in pro-cyclical provisioning. The significantly negative coefficient of BMDI in model 3 suggests that managerial opportunistic behaviour while reporting loan losses has tendency to lower loan impairment charges in bank income statements. This may reflect in income-increasing smoothing of earnings and increase in capital adequacy ratio where “retained earnings” is a major component.

For the moderating influence of the components of BMDI, the possibility of bank managerial discretionary attributes reversing bank loan loss cyclical behaviour is also found as presented in Table 7. While the management of capital and signaling of earnings facilitate the reversal from pro-cyclical to counter-cyclical provisioning, smoothing of earnings aid the reversal from counter-cyclical to pro-cyclical provisioning if CHGDP and UMPL are considered measures of business cycle. The evidence of management of earnings and capital is identifiable with models including CHGDP given significantly positive and negative coefficients of PBTL and TCP/TIER1 respectively. In contrast, the signaling of earnings based on significantly positive coefficient of SIGL is evident in the models including UMPL.

Table 7
Regression Estimates (With Interactions of Components of BMDI)

MODEL	1		2		3		4		5		6		7		8	
Variable	With PBTL Interaction		With TCP Interaction		With TIER1 Interaction		With SIGL Interaction									
	Excluding UMPL	Excluding CHGDP	Excluding UMPL	Excluding CHGDP	Excluding UMPL	Excluding CHGDP	Excluding UMPL	Excluding CHGDP	Excluding UMPL	Excluding CHGDP	Excluding UMPL	Excluding CHGDP	Excluding UMPL	Excluding CHGDP	Excluding UMPL	Excluding CHGDP
GLOAN	-0.11(-5.58)*	-0.16(-5.45)*	-0.02(-0.80)	-0.02(-1.79) ^p	-0.01(-1.37)	-0.03(-2.75)*	-0.15(-4.97)*	-0.06(-2.62)*								
CHGDP	3.501(4.59)*		-1.62(-3.9)*		-1.70(-6.13)*		-0.92(-2.08) ^λ									
INTR	0.414(1.67) ^p	1.17(6.01)*	0.015(0.05)	-0.223(-1.16)	0.544(4.20)*	0.244(1.79) ^p	0.267(0.99)	0.469(2.46) ^λ								
IFLR	-0.81(-2.12) ^λ	0.60(1.66) ^p	-0.21(-0.54)	-0.58(-1.70) ^p	0.16(0.64)	-0.43(-1.91) ^p	-0.03(-0.07)	0.62(2.41) ^λ								
UMPL		-2.22(-5.13)*		1.052(6.12)*		1.170(8.47)*		0.346(2.17) ^λ								
PBTL	8.52(5.10)*	-10.4(-5.25)*														
PBTL*CHGDP	-14(-8.87)*															
PBTL*INTR	-6.05(-0.92)	-20.8(-3.30)*														
PBTL*IFLR	19.06(2.25) ^λ	-7.77(-0.87)														
PBTL*UMPL		67.74(8.31)*														
TCP			-1.9(-6.98)*	0.320(1.55)												
TCP*CHGDP			11.27(8.33)*													
TCP*INTR			1.50(1.26)	1.81(2.47) ^λ												
TCP*IFLR			3.52(2.30) ^λ	3.75(2.65)*												
TCP*UMPL				-5.9(-10.72)*												
TIER1					-1.489(-7.74)*	0.915(6.25)*										
TIER1*CHGDP					14.020(13.62)*											
TIER1*INTR					-0.564(-1.17)	-0.074(-0.15)										
TIER1*IFLR					2.118(1.78) ^p	3.139(3.14)*										
TIER1*UMPL						-7.1(-19.26)*										
SIGL							-8.03(-3.79)*	17.31(11.20)*								
SIGL*CHGDP							142.8(10.59)*									
SIGL*INTR							11.65(2.59) ^λ	8.725(2.79)*								
SIGL*IFLR							-32.2(-2.69)*	-62.5(-5.79)*								
SIGL*UMPL								-58(-12.09)*								
TLTA	-0.35(-4.50)*	-0.87(-8.53)*	-0.5(-6.66)*	-0.19(-4.30)*	-0.48(-11.32)*	-0.104(-2.55) ^λ	-0.35(-4.64)*	-0.168(-2.25) ^λ								
NPLN	0.086(1.06)	-0.279(-2.04) ^λ	0.117(1.66) ^p	0.175(2.15) ^λ	0.007(0.12)	0.145(2.32) ^λ	0.168(2.20)*	0.271(4.01)*								
_cons	0.034(0.46)	0.772(6.72)*	0.499(7.25)*	0.025(0.51)	0.355(8.04)*	-0.12(-2.85)*	0.26(3.26)*	-0.091(-1.65) ^p								
HTS	83.0(0.00)*	105.34(0.00)*	38.55(0.00)*	51.79(0.00)*	42.91(0.00)*	30.59(0.001)*	9.70(0.467)	11.73(0.304)								
WHET	16502(0.00)*	2376.2(0.00)*	3874(0.00)*	2813(0.00)*	2115(0.00)*	11817(0.00)*										
LMPT							0.00(1.00)	0.00(1.00)								
OLS-H1							68.29(0.00)*	78.61(0.00)*								
OLS-H2							69.95(0.00)*	80.02(0.00)*								
WAR(1)	8.353(0.011) ^λ	10.18(0.006)*	0.107(0.748)	10.62(0.005)*	17.89(0.001)*	12.4(0.003)*	14.1(0.002)*	7.48(0.015) ^λ								
R ²	0.5245	0.4230	0.8401	0.9227	0.8792	0.9057	0.4974	0.6534								
F-test/Wald	306.9(0.00)*	169.31(0.00)*	97.46(0.00)*	1933.3(0.00)*	1890.4(0.00)*	2647.3(0.00)*	229.60(0.00)*	248.95(0.00)*								
Model Type	PCSE-PWT	PCSE-PWT	FE-Panel	PCSE-PWT	PCSE-PWT	PCSE-PWT	PCSE-PWT	PCSE-PWT								
Observation	169	169	169	169	169	169	169	169								

Source: Authors' computation (2020) based on STATA 14 outputs. The figures in brackets for regression estimates are z-statistics for PCSE-PWT and t-statistics for FE-Panel in addition to regression coefficients reported. Diagnostic tests other than R² reported various statistics with p-value in parentheses. *, ^p, and ^λ, stand for significance at 99%, 90% and 95% confidence levels respectively.



The additional evidence of bank-specific pro-cyclicality can be inferred from the significantly negative coefficient of the gross loans-total assets ratio (TLTA) in all models. This confirms that there is reduction in LLPs during economic boom when Nigerian DMBs grant more loans to their customers. In the meantime, the fact that the high level of non-performing loans in Nigeria causes the increase in LLPs is reflected in the positive coefficient of NPLN across all models except in model 2 of Table 7.

Discussion of Findings

The inability of loan officers to assess the soft loan information as proposed by Institutional Memory Hypothesis (IMH) is confirmed as evidence of decrease in LLPs as the bank lending increases is found. This is encapsulated in the negative coefficient of GLOAN in all models with or without interaction terms. This might be due to usual employment of graduate trainees in the Nigerian banking sector as emphasis is usually laid on the youthfulness of bank staff. The new staffs who often replace the old experienced loan officers cause the decrease in the proportion of experienced loan officers. The inexperience of the new staff aggravates problem of adverse selection evident in the mismatch between growth in bank lending and LLPs charges. The case of bank-specific pro-cyclicality established in this study agrees with findings of a number of studies. These include Olszak et al. (2018), Surjaningsih et al. (2018), Araújo et al. (2018b), Huizinga and Laeven (2019), Malla (2021) and Albaity et al. (2022). However, study's findings are contrary to evidence provided by Dushku (2016), Abu-Serdaneh (2018) and Degryse and Huylebroeck (2022).

The case of banks charging less LLPs during economic boom/upswings or vice versa is largely established if behaviour of CHGDP, INTR, IFLR and UMPL is taken into consideration. This confirms the proposition of Disaster Myopia Hypothesis (DMH). The difficulty in assigning probability to a future event which gives rise to disaster myopia has been characteristic of Nigerian banks in the recent time. The collapse of Skye Bank Plc during recession might be indicative of Nigerian DMBs' falling into the trap of disaster myopia. Also, the accumulation of huge losses by Diamond Bank Plc during recession which precluded its continuity in its known brand is also typical of assumptions of DMH. The increase in bank lending followed by low LLPs established in this study might be due to the application of IAS 39 which is based on incurred loss model during the substantial part (2010-2017) of the study's sampled period. The evidence of macroeconomic loan loss pro-cyclicality found is not in



isolation but a further confirmation of the position of the previous literature including recent ones of Chen et al. (2022), Degryse and Huylebroek (2022) and Olszak and Kowalska (2022) but a reversal of that of Domikowsky et al. (2014) and Muriu and Josea (2020).

The cyclical behaviour of banks in accounting for losses is a subject of the level of discretionary attributes of managers. This is linked to the palpable reversal to counter-cyclicity from pro-cyclicity or improved counter-cyclicity sequel to the interactions with BMDI. The case of improved counter-cyclicity and change from pro-cyclicity to counter-cyclicity found is peculiar to real GDP growth and unemployment rates as measures of business cycle. This is practically a case of the fact that counter-cyclical provisioning behaviour of bank may not be real. The power of discretions in reversing pro-cyclicity to counter-cyclicity is found to be identifiable with capital management and earnings signaling in this study. However, as previously found by Soedarmono et al. (2017), it was only realistic with capital management.

5. CONCLUSION AND RECOMMENDATIONS

Generally, there is substantial evidence that cyclical dependence between LLPs and business cycle in Nigeria is inversely related both at bank and macroeconomic levels. The inverse loan loss cyclicity otherwise known as pro-cyclicity is an indication of imprudent provisioning practices in Nigeria. The improvident provisioning practices are a source of the banks' inability to absorb losses during economic bust/upheaval. This was the scenario of the former Skye Bank Plc and Diamond Bank Plc which ceased to operate during recession. The pro-cyclical provisioning also informs why the instability is witnessed in the Nigerian financial system. Since the loan loss counter-cyclicity subsequently found in this study is a product of discretionary attributes of bank managers, managerial discretions can be considered a source of the destabilisation of cyclical dependence between LLPs and business cycle. Thus, loan loss counter-cyclicity can be a ruse rather than reality. Based on the level of cyclicity reversal found in this study with substantial IAS 39 period covered, the tendency for the reversal of the loan loss cyclicity while reporting in IFRS 9 is higher. IFRS 9 is considered to be characterised with higher reliance on managerial discretions for future cash flows projections and build-ups of LLPs (Pastiranová & Witzany, 2022; Soedarmono *et al.*, 2017). From the behaviour of the study's adopted measures of business cycle, it is observable that the behaviour of real



GDP growth rate and unemployment rate is to a larger extent comparable. This suggests that both measures appear more reliable in loan loss cyclical analysis.

From the fallout of the empirical analysis of substantial part of IAS 39 period covered in this study, the following recommendations related to the level of caution required in the new regime of IFRS 9 to entrench true counter-cyclical provisioning are suggested:

- i. CBN should revisit the 2019 exposure draft for the review of 2010 Prudential Guidelines which is still awaiting implementation due to outbreak of Corona virus (COVID-19). The draft requires more inputs to cater for issues that can trigger pro-cyclical provisioning.
- ii. There is need to strengthen Nigerian DMBs' capitalisation and earnings signaling. However, regulators should ensure that management of capital and signaling of earnings are not achieved via discretionary LLPs.
- iii. Since the success of IFRS 9 and/or Basel III relies on perfect prediction models, the regulators should strive to increase the predictive power of the extant expected credit loss model. Increasing the predictive power requires increase and more transparent disclosures in financial reporting, individualising stress testing rather than extant aggregate approach, and improving Nigerian DMBs' capital buffer in record time.
- iv. Pro-cyclical is relatively subject to outright elimination if there is no mismatch among the architectures of bank supervisory cum regulatory activities, those of financial system and banks' prudential behaviour.

While the possibility of the increased pro-cyclical and/or manipulated counter-cyclical predicted for IFRS 9 period is based on the fallout of relatively IAS 39 period covered, the reality of such is subject to empirical comparative analysis of both regimes. However, this cannot become realistic until a couple of years subsequent to 31 December 2021 end of 4-year partial implementation window of IFRS 9 in Nigeria. It is also desirable that more depository institutions like microfinance and mortgage financial institutions are included to complement the present findings.

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