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Empirical Analysis of Non-Performing Loans Trend and Growth Rate in Nigerian Banking System

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Abstract

Increasing trend in Non-performing loans (NPLs) adversely affected availability of credits to economic agents in all sectors of the economy thereby constraining financial intermediation and economic activities. The study examined the trend and growth rates of NPLs in the Nigerian banking system during the major banking policy reforms regimes namely: pre-consolidation (1979 – 2004) and post consolidation era (2005 – 2014). Time series data collected were analyzed using descriptive and regression analyses. Results indicated irregular fluctuations in NPLs' trend in both periods. This result suggested prevalent of high credit risk and corresponding reduction in lending capability of banks in the economy. Regression estimates of NPLs' trend in the two regimes showed significant negative growth rates. This implies that, financial policies implemented in the country yielded positive impacts over time. NPLs assumed an exponential growth rate of -1.39% and -15.55% during the pre and post consolidated eras respectively. An average exponential growth rate of -5.2% was obtained during the entire period. Quadratic trend analysis revealed that, increase influence of time variable significantly reduced NPLs during pre-consolidation regime and the entire period considered. However, this influence was stagnated during post consolidation period. Based on the result, it is recommended that, prudent lending coupled with swift and orderly clean-up of banking system loan portfolios should be adopted to decelerate NPLs trend and growth rate in Nigeria. Time is an important element in designing and implementing any banking and macroeconomic policy.

Key Words: Non-performing loans, Banking system, Trends, Growth rates, Credit risk, Nigeria.

JEL classification: G2

Introduction

In any economy, the banking system plays crucial roles which predominantly include the provision of loans and advances to the real sectors like agriculture and manufacturing/industry. However, huge proportion of these loans are often not repaid as when due. (Umoren, Udoh and Akpan,2014) These non- repayments of loans over a prolong period ranging from 90 days constitute what is called nonperforming loans (Badar and Javid, 2013, IMF, 2006; CBN, 1991). Some of the major causes of NPLs include: excessive credits creation by the banks, relaxed credit condition and poor loan recovery strategies, business cycles, macroeconomic and bank specific factors among others. The proportion of non-performing loans (NPLs) to total loans and advances of the banking system is a major indicator of the viability of the credit system in the economy. The persistent high value of this index has been linked to the financial crisis in developing and developed nations (Badar and Javid, 2013; Fofack, 2005 Elegbe, 2013; Hou and Dickson, 2007). For instance, in Indonesia, over 60 banks collapsed during the 1997 East Asian financial and banking crisis. The NPLs also affected a large population of Sub-Saharan African nations in the 1990s (Fofack, 2005).

In Nigeria, NPLs are believed to have fueled the banking system crises which affected several banks and other financial institutions from 1979 to 2012. In the mid-1990s, the financial system was at the verge of collapse due to the existence of rising levels of NPLs. For example, in 1992, 8 deposit money banks were declared insolvent with 45 percent of NPLs. Furthermore, in 1995, Central bank of Nigeria (CBN) classified almost half of the 81 local banks as terminally distressed. Similarly in 2009, 6 banks failed and were closed. (CBN, 2009 and CBN, 2010). A greater proportion of the basic conditions of these distressed banks were ascribed to requirements associated with lending to risky sectors with lower credit standards. This contributed to high NPLs ratio (Brownbridge, 1998). The existence of high NPLs constrained the availability of loanable funds for economic activities such as agriculture and manufacturing activities. For example, as at end of December, 2009, the CBN financial stability report showed NPLs to total gross loans ratio as 38.80% (CBN, 2010). The statistics from Nigerian deposit insurance corporation (NDIC) showed that NPLs to total gross loans ratio oscillated from 33.44% in 2004 to 26.77% in 2005; it continued to fall to 10.34% in 2006 and grew to 15.95 in 2007, declined to 6.75% in 2008 and rose again to 38.80% in 2009 (NDIC 2010). The significant upward trend in NPLs was a reflection of erosion of the banks' capital which led to credit crunch and economic recession.

The existence of high level of NPLs constitutes a major challenge in banks' credit administration in all economies. Over the years, a lot of the existing macroeconomics and banking policies were reformed in order to mitigate the effects of high NPLs. The major banking policy reforms regimes in the country were the pre-consolidation (1979-2004), and post- consolidation regimes (2005-2014). The pre-consolidation banking policy reforms regime was mostly characterized with guided regulations with some relaxed credit control measures, liberalization banking policy and universal banking model; and later deregulated economic policy instruments were adopted to reflect market forces as to determine values for economic activities. The main focus of the consolidation reform regime was on recapitalization of banks and other financial institutions. This was aimed at ensuring stability and soundness which would transcend to increased credit flow in the economy. The post consolidation banking reforms regime which was aimed at addressing the instability in the banking system witnessed the hallmark of huge aggregate NPLs in Nigerian banks. Macro-prudential polices were strictly institutionalized in the financial service sector (CBN, 2010; CBN, 2009). Though existence of high NPLs has ignited deep interest among scholars around the globe yet in Nigeria, not much study has been conducted as regards evaluating NPLs trend and their growth rates. The novelty in the current study is the adoption of dynamic approach in analyzing NPLs trend and growth rates.

One of the major challenges of the banking system in many economies since the 1990s is the existence of rising levels of NPLs trend and growth rates with their adverse effects on economic activities. In Nigeria, NPLs adversely affect lending to various economic agents in agriculture and manufacturing industrial sectors. In fact, Nanita, Anu and Beljeet (2011) maintain that the high level of NPLs remain an area of great concern. Available data from International Monetary Fund (IMF) Global Stability Report, (2012) showed that NPLs in some advanced economies such as United States of America, United Kingdom,

France, Germany and others were declining whereas NPLs in some developing economies such as Ghana, Togo, India, Nigeria and others were increasing. Nigerian banking system had a large amount of NPLs valued at N1.143 trillion in 2010 (CBN, 2010). In the same year, the ratio of nonperforming loans (NPLs) to gross loans and advances granted by the banking system was about 32.80 per cent. High levels of NPLs continued to oscillate during the period of the study. It was too high from the regulatory benchmark of 5 per cent. The ratio of NPLs to total loans and advances indicates the quality of assets and capital adequacy of the banks and their capacities to finance diverse sectors customers' loan demands that drive economic activities over time. The major issues associated with the increased accumulation of high NPLs in Nigeria, seemed to have continued to remain elusive despite concerted efforts by the monetary authority in reforming various policies of the banking system. Ironically, not much intensive studies had been conducted in this area. To this end, the questions which the study intends to address are:

To what extent was the trend of NPLs of banks in Nigeria from 1979 to 2014?

To what extent was the NPLs growth rate in the Nigerian banking systems during the period?

How were the NPLs in the banking system distributed in accordance to major banking policy reform régimes namely: pre-consolidation policy reform regime (1979-2004); and post consolidation policy reform regime (2005-2014)?

The study examined the trend in NPLs of the Nigerian banking system from 1979 - 2014. It specifically focused on analysis of exponential trend, linear growth rate and descriptive characteristics of NPLs according to the major banking policy reforms regimes namely: pre-consolidation (1979-2004) and post-consolidation (2005-2014) and the combination of both periods.

Review of Empirical Literature

Dash and Ghosh (2006) analyzed the performance of Indian banking system during the post financial policy reforms era. Panel data used in the study were obtained from the banking system from 1992-2002. The study investigated different efficiency estimates of specific banks using non-parametric data envelopment analysis (DEA). The results indicated that technically more efficient banks were those that had on average less NPLs as ratio of total asset. Also, Quagliarello (2007) analyzed Italian banking behaviour over business cycle to investigate whether loan loss provisions, NPLs and the returns on assets had a cyclical pattern. The study used reduced vector–autoregressive model to investigate effects of changes in business cycle on the NPLs ratio (quality of loans).The results indicated that banks' riskiness and profitability were affected by the evolution of business cycle. The results indicated that business cycle affected NPLs for a large panel of Italian banks' data for the period from 1990 to 2004.

Marcucci and Quagliariel (2008) in a study on the asymmetric effects of business cycle on bank credit risk with the aim to investigate the presence of asymmetry effects at aggregate and bank level. The study used Italian dataset of banks loan beneficiaries default rates from 1985-2002 to investigate the effects of changes in business cycle on the NPLs ratio (quality of loans). The authors employed threshold regression models that recognized endogenously established various regimes which identified whether the threshold was over/below which credit risk was more/less cyclical. Empirical results indicated that NPLs follow a cyclic trend, increase during boom and decline during depression. Results indicated that effects of business cycle on credit were more pronounce during depression but the cycles were higher for banks with riskier portfolios. The finding showed among others that defaults /NPLs grew worse as economic growth weakened and interest rates increased.   The results also indicated that NPLs declined in good macroeconomic times and increase during downturns. Fadare (2010) studied the effects of banking reforms on Nigerian economic growth over the period of 1999 to 2009 with the purpose of investigating the effects of financial reforms on Nigerian economic growth. The empirical results among others showed that there was high variation in economic growth due to banks reforms. Bebeji (2013) examined consolidation and asset quality of banks in Nigeria over the period of 2002 to 2008. The study used historical and descriptive methodology with t-test to confirm the research hypotheses based on the secondary data collected from 10 sampled banks. The results indicated that consolidation had positive effects on NPLs. It also indicated that credit policies and administration were not sufficient enough to prevent rising NPLs.

The concept of Non-performing loans (NPLs)

Non-performing loan (mostly in form of ratio) is obtained by dividing the NPLs by the gross loans and advances in a given time (Amediku 2006). Legally, a loan or credit facility refers to a contractual promise between two parties in which one party, the creditor, agrees to provide a sum of money to a debtor, who promises to return the said amount to the creditor either in one lump sum or in many installments over a specified period of time. The agreement may include provision of additional payments of rental charges on the funds advanced to the borrower for the time in which the funds are in the hands of the debtors (Authur and Sheffrin 2003). The additional payments which are in the form of interest charges, processing fees, commissions, appraisal and monitoring fees, among others, are usually paid in addition to the principal amount granted. These additional payments when made in accordance with the loan contract constitute income to the lender or the creditor. A loan may therefore be considered as performing if payments of both principal and interest charges are up to date as agreed between the creditor and debtor. Central Bank of Nigeria's loans classification indicates that loans that are performing are those for which the borrowers/beneficiaries are up to date in respect of payments of both principal and interest (CBN 2010). It further shows that an overdraft would be considered as current or performing if there are regular activities on the account with no sign of a hardcore of bad loans building up. The assertion shows that loans that are up to date in terms of principal and interest payments are classified as performing facilities. These types of loans constitute quality asset portfolio of banks because of the interest incomes earned by the assets. (CBN 2010; CBN 1991)

The problem of non-performing loans is not only peculiar to Nigeria. Various studies have adopted different phrases to connote NPLs. For example, Berger and De Young (1997) consider these types of loans as "problem loans" or 'impaired loans'. These descriptions are used interchangeably throughout the study. Generally, loans that are in arrears in both principal and interest for a long time contrary to the terms and conditions contained in the loan contract are considered as NPLs. This is because, going by the description of performing loans, it follows that any loan facility that is not up to date in terms of payment of both principal and interest contrary to the terms of the loan agreement, is said to be non-performing. The term ''bad loans'' as described by Basu (1998), is used interchangeably with non-performing or impaired loans. Available literature gives different descriptions of bad loans. Some researchers report that certain countries use quantitative criteria such as the number of days by which the payments are in arrears. Other countries rely on qualitative norms like information on the customer's financial status and management judgment about future payments (Bloem and Gorter 2001).

In Nigeria, and all over many financial jurisdictions, banks usually report their ratios of non-performing loans to total loans as a measure of quality of loan balance. A proper understanding of the nature and relationship of NPLs with their casual factors has different implications. Low levels of NPLs portray a relatively stable financial system whereas high levels of NPLs points to the existence of financial stress which calls for deep concern from bank management and regulatory authorities. A low ratio points to low losses while increasing ratio signifies increasing write off of bad assets.

The issue of loan default is closely related with non-recovery or non-repayment of loans. This occurs whenever a loan beneficiary in a particular sector such as agriculture or manufacturing industry cannot repay the interest and or principal after it has become due hence it can be described as defaulted loan or non-performing loan (Hou and Dickson 2007). A loan facility is said to be non-performing because it has stopped to perform or create/generate income for the bank. Therefore, NPLs are loans/credits or assets that are not earning incomes for their institutions and of which full payment of principals and the interests are no longer anticipated; principals or interests are 90 consecutive days or more delinquent; or the maturity date has elapsed and payments in full have not been made.

Theoretical Framework

The theoretical background in which the study hinges its strength is derived from the business cycle theory.

Theory of business cycle

The theory of business cycle by Schumpeter (1939) shows the process of economic change or transition which consists of two separate stages, ''prosperity'' and ''recession''. In one stage the impulse of entrepreneurial activity pulls away from an equilibrium position while in the second stage, the impulse of entrepreneurial activity draws toward the equilibrium position. Schumpeter tags those fluctuations or cyclical processes in economic phrase as business cycle. Schumpeter indicates the intermediary role of the financial system between those that save and wish to invest via a process known as credit creation by the banking system credits. This results to economic growth and development. The ultimate effect of this process results to profit and loss caused by the lender and borrower. Studies indicate that macroeconomic variables express unique pattern of boom and recession in a business cycle. At the stage of economic expansion, firms' profit in their specific sectors increase and this also leads to rise in asset prices. Aggregate sector demand for credit facilities expands resulting to growth in bank lending which ultimately results to increased income. The banking system being over optimist may underestimate credit risk exposures, stringent credit standards and thereby lowers provisions for future losses due to increase debts in the economy. At the stage which the downturn sets in, individual firm and sector's profitability deteriorates. The decrease in firm's profitability arises due to the falls in asset prices, non-performing loans, and reduction in borrower's financial capacity, and fall in employment levels. These depress the value of borrowers' collateral as the second mean of debt servicing. Banking system risk exposure rises and this requires higher loan provisioning and higher levels of capital. At this stage, this seems more costly and may not be available. This stage may lead to the banking system's reaction by decreasing the quantum of lending specifically with minimal capital buffer above the minimum capital requirement. This reaction by the banks increases the effects of economic downturn with attendant increase in the lending rates.

Research and Methodology

Study Area and Data Source

The study was conducted in Nigeria; the country is situated on the Gulf of Guinea in the sub Saharan Africa. Nigeria lies between 4^0 and 14^0 North of the Equator and between longitude 3^0 and 15^0East of the Greenwich. The country has a total land area of about 923,769km^2 (or about 98.3 million hectares) with 853km of coastline along the northern edge of the Gulf of Guinea and a population of over 140 million people (National Population Commission, 2006). Secondary data were used in the study. These data were sourced from the statistical bulletins of the Central Bank of Nigeria (CBN).

Analytical Techniques

The study employed descriptive and regression analyses to analyse NPLs trend and growth rate from 1979-2014. The model was estimated for pre- and post- consolidation policy regimes. This was to compare the degree of fluctuations in NPLs in the banking system. A simple regression model (exponential) based on OLS estimation method was used to reveal the nature of trend in NPLs. Explicitly; it is stated as thus;

$$log_e NPL_t = b_0 + b_1 T + U_t$$

Where 'T' is the time expressed in year and NPLs = ratio of the banking system was calculated as the ratio of total non-performing loans to total loans and advances granted to the economy by the banking system in Nigeria during the study period (Amediku, 2006). The exponential growth rate in NPL is given as:

$$(r) = (e^{b1} - 1) * 100$$

Note; e is Euler's exponential constant (2.781828). To investigate the effect of increase in time component on NPL in the Nigeria's banking system; an exponential quadratic equation was specified as thus:

$$log_e NPL_t = \beta_0 + \beta_1 T + \beta_2 T^2 + U_t$$

This quadratic trend equation was estimated for each of the policy regime. Also linear growth rate was computed for the pre - consolidation and post – consolidation banking policy reform regimes. Based on the

nature of β_2, NPL was analyzed for accelerating, decelerating and stagnated trend in the regime specified. Significant positive value of the coefficient of T^2 indicates acceleration while significant negative value implies otherwise. Non-significant coefficient confirms stagnation in NPLs growth process during the study period.

Results and Discussion of Findings

Augmented Dicker Fuller Unit Root Test Result

The stationarity of series was examined by the Augmented Dicker Fuller (ADF) unit root tests. The result presented in Table 1 revealed that, non-performing loan was not stationary at levels but stationary (at 1% significance level) at first difference for the ADF equations that contained constant and zero constant respectively.

Table 1: Result of the unit root test for Non-performing loans in the Nigerian Banking System

Logged Variables	With Constant			Without Constant		
	Level	1st diff.	OT	Level	1st diff.	OT
NPLs (1)	-1.033	-6.432***	1(1)	-0.979	-6.398***	1(1)
NPLs (2)	-2.272	-6.371***	1(1)	-0.044	-6.523***	1(1)
NPLs (3)	-1.529	-2.752*	1(1)	-1.176	-2.878***	1(1)
1% (CV)	-3.77	-3.77		-3.77	-3.77	

Note: OT means order of integration. Critical value (CV) is defined at 10%, 5% and 1% significant levels and asterisks * and *** represents 10% and 1% significance level respectively. NPL (1) represents all period NPLS; while NPL (2) represents pre-consolidation period; also NPLs (3) stands for NPLS during post-consolidation period.

The result implied that, non-performing loan had instability issues at level, hence regression estimates might show signs of spurious or collinearity. However, this did not affect simple regression estimate since the study specifically focused on the trend behaviour of NPLs over specified limited period of time. Therefore, the study used the raw NPLs as de-trending could hide the true behaviour of the variable in the time period specified.

NPLs Distribution according to major Banking policy Reform Regimes in Nigeria

The results of NPLs distribution according to major banking policy reform regimes during the period of the study is presented in Table 2.

Table 2: NPLs Distribution according to major banking policy reforms (1979-2014)

Indicators of ANPL(in %)	Pre-consolidation period (1979 – 2004)	Post-consolidation period (2005 – 2014)	Entire study period (1979 – 2014)
Minimum (%)	12.94	3.50	3.50
Maximum (%)	45.40	32.80	45.40
Mean ANPL (%)	31.09	10.71	25.43
Std. dev. ANPL	8.67	9.29	12.71
Coefficient of var.	0.28	0.87	0.49

Source: Computed by authors.

The third column in Table 2 presents the distribution of the entire NPLs ratios of the Nigerian banking system from 1979-2014. Generally, the above results showed that the minimum and maximum NPLs during the study period were 3.50 and 45.40 per cent respectively. Furthermore, the mean and standard deviation for NPLs during the period under consideration were 25.43 and 12.71 respectively. However, the coefficient of variation was 49.00%. This showed the prevalence of high risk in the credit system in the

country. With this level of volatility, the banking system might be constrained to perform its major role in credit disbursement to the real sectors of the economy.

The results also showed that NPLs ratio had a minimum value of 12.94 per cent during the pre-consolidation period as compared to a minimum value measure of 3.50 per cent in the post-consolidation period. Also, the maximum NPLs during pre-consolidation period stood at 45.40 per cent whereas it was 32.80 per cent in the post- consolidation period. This result confirmed the existence of high NPLs ratio during the pre-consolidation banking policy reform compared to the post consolidation reform era. This result corroborates with the earlier findings of Adeyemi (2011) and Bebeji (2013) in Nigeria.

Furthermore, the result for the pre-consolidation regime indicated that the mean NPLs stood at 31.09 per cent, whereas it assumes 10.71 during the post-consolidation regime. Generally, the results from the above table showed wide fluctuations between the mean NPLs in pre-consolidation and post-consolidation banking reform policies regimes during the study period. This indicated a decline in the mean NPLs as a result of the adoption of consolidation banking policy reforms from 2005-2014 which might have caused the improvement in loan performance as indicated by the decline in mean NPLs in the post- consolidation regime. The coefficient of variation of NPLs in pre-consolidation period was 28.00 per cent while it rose to 87.00 per cent in the post- consolidation period. The degree of the coefficient of variation (CV) in the two periods showed that there were increase fluctuations in the NPLs ratios between pre-consolidation and post-consolidation reform policy regime. The coefficient of variation might indicate the magnitude of riskiness in disbursement of loans and advances to the beneficiaries in the economy in view of the prevalent high degree of NPLs in the pre- and post- consolidation banking policy regimes. The above results also showed that the NPLs indicators were not homogenous in nature as they varied widely from the mean of the pre- and post-consolidation reform periods.

Further Disaggregated NPLs distribution Analysis; the Growth rate Approach

The results in Table 3 summarize statistically the growth rate in NPLs over limited periods of time. The study period was divided into four phases namely: 1979-1989; 1990-2000; and 2001-2014 as well as 1979 – 2014. The results were described on the basis of these periods using the summary statistics and taking into cognizance, specific banking policy instruments adopted during the study period. For instance, in 1979-1989; the period which was characterized with direct control banking policy instrument had mean growth rate in NPLs of 7.06%. The period also showed minimum and maximum growth rates in NPLs of -7.73% and 32.97% respectively. This indicated an upward trend in NPLs in the period.

Table 3: Summary statistics for NPLs for Nigerian banks expressed as growth rates (%)

Period	Mean	Median	Minimum	Maximum	Std Dev.	Coeff. Var.
1979- 1989	7.06	3.64	-7.73	32.97	12.39	1.75
1990-2000	2.47	7.00	-52.06	16.41	18.40	7.45
2001-2014	1.18	11.50	-52.74	62.14	30.02	25.48
1979-2014	3.37	6.40	-52.74	62.14	21.95	6.51

Source: Computed by authors.

This might indicate that the period witnessed significant rapid growth in credits to key sectors such as agriculture and manufacturing sectors during the study period. This period coincided with the period of import substitution in the country. In this era, government financial policy was focused on increase domestic and international credit to the real sectors of the country's economy. The thrust of the banking policy was on the interest rate. This included pegging of interest rates for agricultural and manufacturing sectors; compulsory credit quota allocated for different type of banks to services related sectors. Complementary banking policy of rural banking scheme coupled with the establishment of credit institutions were put in place (Akpan et al. 2012). This increased the various credit channels that promoted credit expansion. In addition, the period also witnessed the creation of many incentives that facilitated credit expansion in the economy. Agricultural as well as manufacturing- industrial credit schemes and institutions at federal and state levels were established between1979 to 1990. Interest rate was deregulated consequently banking system deposits and interest rates went up while the loan to deposit ratio was

relatively stable. The high lending rates might have created disincentive to loan repayments on borrowed funds in major priority sectors of the economy. This further caused irregular fluctuation in the NPLs. As shown in Table 3 above, from 2001-2014, the mean NPLs was 1.18% while the maximum NPLs was 62.14%. The coefficient of variation was 25.48% indicating relatively high credit risk exposure to loan disbursement during this period as opposed to previous period. The analyzed results showed that NPLs indicators were high during pre-consolidation period thus suggesting that the various policy instruments namely guided regulations with some relaxed credit controls, liberalization policy, universal banking model, and later deregulated interest rates cum inflationary rates contributed to unstable nature of NPLs However, from 2005-2014, with the adoption of consolidation policy instruments namely banks' recapitalization, merger and acquisition, macro-prudential policy, inflation targeting, monetary policy rates, risk based supervision, debt equity swaps, improved macroeconomic environment and establishment of asset management company, the growth rate of NPLs was more significantly negative as opposed to previous period.

The Exponential trend analysis of NPLs of banks in Nigeria from 1979 to 2014

Estimates of the exponential trend equation of NPLs based on Ordinary Least Squares estimation method is showed in Table 4. The analysis was done on the three policy regimes specified in the study (i.e. Pre-consolidated period (1979 -2004); Post-consolidated period (2005-2014) and the combination of both regimes (1979 – 2014). The estimated F-statistic in the three equations validated the significant of R-squared in each equation. The result revealed that, about 12.60%, 43.50% and 53.60% of variability in NPLs in each of the policy regime respectively, were accounted for by the time factor. These showed that the estimated regression equation had goodness of fit and was reliable in interpreting changes in the dependent variable.

Table 4: NPLs trend equation estimates for Nigerian banking system (1979-2014)

Variable	Pre-consolidated period (1979 -2004)	Post-consolidated period (2005-2014)	All- periods (1979 -2014)
Constant	3.587(30.35)***	3.015(7.122)***	4.007(22.43)***
Time (β_0)	-0.014(-1.86)*	-0.169 (-2.48)**	-0.053(-6.27)***
Exponential growth rate (%)	-1.39	-15.55	-5.20
Diagnostic Statistics			
R- squared	0.126	0.435	0.536
F-cal.	3.446*	6.154**	39.326***
Adjusted R-Square	0.089	0.364	0.523
Durbin Watson	0.846	1.546	0.751

Note: Asterisks *, ** and *** represents 10%, 5% and 1% significance level respectively.

The results indicated that, coefficient of time was significant and negatively related with NPLs in the two regimes. This implied that, NPLs assumed a declining trend in all the three regimes. For instance, during the pre-consolidated period, the coefficient of time variable was -0.014 and significant at 10% significant level. This means that, a year increase in time will lead to a significant reductions in NPLs in Nigeria. This might suggest either improvement in the levels of loan quality or being reluctance of banking system in granting new loans/advances to economic agents. All these suggested downward trend in NPLs, an indication of effectiveness of improvement in asset quality of banks at post –consolidation period. It should be noted that after consolidation, there was stable inflationary rate and interest rate coupled with low liquidity pressure in the economy and these were favourable to economic agents thus suggesting that loan repayments improved resulting to low NPLs.

The degree of NPLs decline was more effective in the post consolidated era compared to the pre-consolidated period. A unit increase in time reduces the NPLs significantly during this period. A negative exponential growth rate of 15.55% was revealed during this period. Similarly, during the whole period (during pre and post consolidated periods), time element exhibited significant negative impact on NPLs. This implies that, increase in planning horizon significantly slows the accumulation of NPLs in the country. A negative exponential growth rate of about 5.20% was discovered during the period. The results indicated

that, stream of financial policies had positive effects on NPLs. The various policy instruments adopted during consolidation and after consolidation collectively reduced the NPLs trend in the Nigerian banking system. The results suggested that, effect of reform policies adopted during and after consolidation led to stable interest rates, inflationary rates coupled with less pressures on banking system liquidity; and these led to significant negative growth rate in NPLs trend. This was contrary to the less negative growth rate during the pre-consolidated period, which was characterized with unstable interest rates, inflationary rates and high liquidity pressure.

Analysis of Quadratic trend in NPLs according to different policy reform Regimes

Table 5 presents the results of the estimated quadratic trend equations of NPLs according to the major banking policy reform regimes.

Table 5: Quadratic estimates: trend and growth rates of NPLs based on policy reform regimes

Variable	Pre-consolidated period (1979 -2004)	Post-consolidated period (2005-2014)	All- periods (1979 -2014)
Constant (β_0)	3.235(19.60)***	2.452(3.34)**	3.125(15.79)***
Time (β_1)	0.061(2.17)**	0.112(0.37)	0.086(3.51)***
Time^2 (β_2)	-0.003(-2.75)**	-0.026(-0.94)	-0.004(-5.82)***
Inference	Significance decline	Stagnation	Significance decline
Diagnostic Statistics			
R- squared	0.342	0.498	0.771
F-cal.	5.986***	3.478**	55.665***
Adjusted R-Square	0.285	0.355	0.757
Durbin Watson	1.154	1.796	1.479

**Note:** Asterisks *, ** and *** represents 10%, 5% and 1% significance level respectively.

The diagnostic results for each regime estimates were satisfactory and validated the appropriateness of the specified model. The result connotes that, over increase period of time in the pre-consolidated period, the decline in the NPLs was significant. In other words, the result revealed a significant deceleration in NPLs during pre-consolidation period. However, the result was contrary to the post-consolidated period. Though there was rapid deceleration in NPLs during post consolidated era, but it becomes stagnated over increase in time horizon.

Figure 1 presents a graphic representation of the NPLs trend in the Nigerian banks. The graph showed that between 1980 and 1995 and there about, NPLs were rising but the fluctuations were moderate. Beyond 1995, NPLs declined but with wider oscillations and marked peaks and troughs over increased time. The above graphic presentation of NPLs trend is characterized with accelerating and decelerating in amplitudes during the study period. The oscillation in NPLs trend might be ascribed to changes in banking policy instruments during the period. There was sharp fluctuation in NPLs ratio in 2009 during the post-consolidation reform period.

It is suggested that, the sharp fluctuations in the NPLs trend might have been ascribed to the series of innovations and developments generated by the major banking policies and macroeconomic environment. This finding is in consonant with results of a study conducted by Hou and Dickson (2007). They found that banks' specific and macroeconomic variables influenced the level of NPLs ratio in Romania and India respectively. The sharp fluctuations in NPLs ratio in the post-consolidation regime might be typical of economic parameters which needed time to adjust in response to banking policy reform of consolidation and other macroeconomic policy instruments.
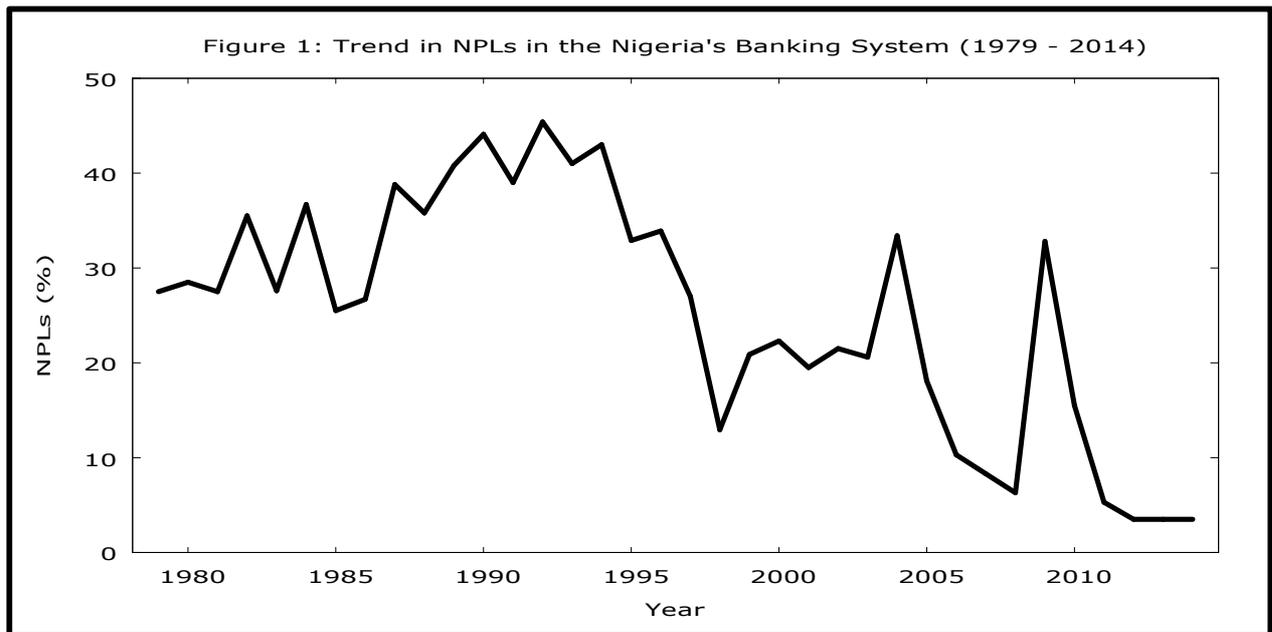
Figure 1: Trend in NPLs in the Nigeria's Banking System (1979- 2014)
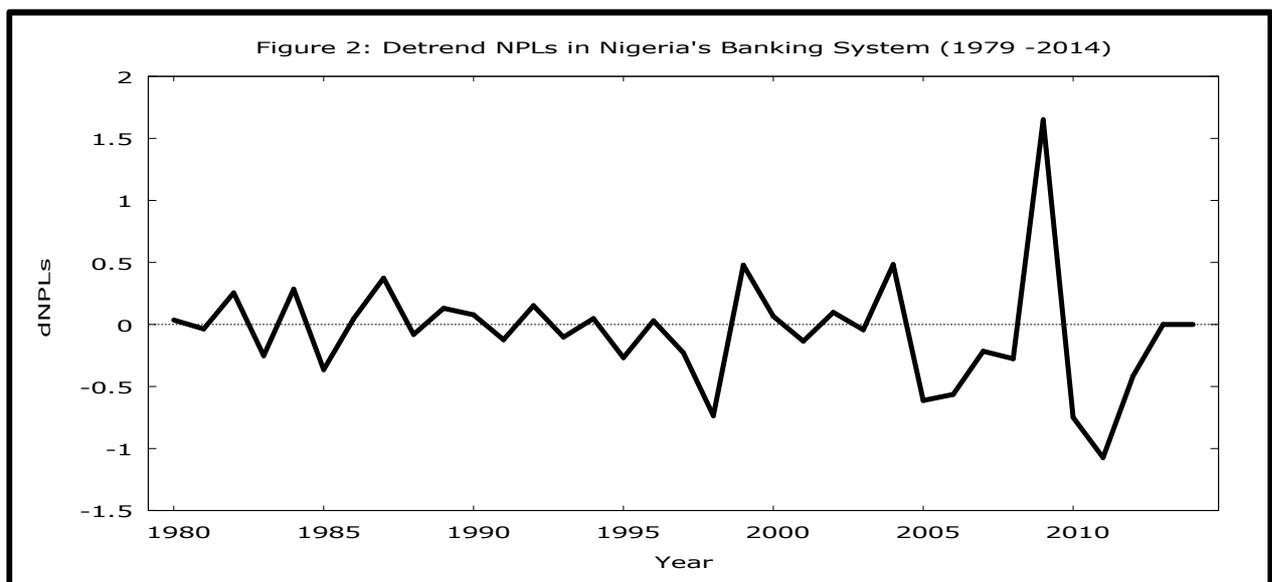
Figure 2: Detren NPLs in Nigeria's Banking System (1979- 2014)

It was obvious that financial institution operators and the public needed time to adjust to banking reform policies. This might suggest short and long run time for adjustment to changes due to increase fluctuations in NPLs ratio. Figure 2 revealed the graphical representation of the de-trend NPLs in the Nigerian banking system. It was observed that, fluctuations were conspicuous during post consolidated era compared to pre -consolidated period. This implied that NPLs was persistence and relatively stable during pre – consolidation period as compared to post consolidated period. This portrayed the degree of effectiveness and efficiency of the implementation of various financial policies such as regulated interest rates and liquidity as well as the nature of macroeconomic environment in the country. This was aimed at achieving sound financial stability and safety in the short run. However, after consolidation, aggressive implementation of the reform policies led to relative volatility in NPLs. Furthermore, the results depicted a pattern for NPLs of the banking system in Nigeria over the study period.

Findings

The study examined NPLs distribution according to the major banking policy reform regimes in Nigeria. The result revealed that, NPLs was not homogenously distributed across the policy regimes. There were increased fluctuations in the NPLs ratios between pre- and post-consolidation policy reform regimes. These results confirmed the existence of high NPLs ratio in the banking system during the pre-consolidation regime in the country.

The results of the estimated linear trend regression analysis showed a significant and negative correlation between NPLs and trend variable. Also, the estimated quadratic trend analysis which captured the effects of increasing trend variable on NPLs also validated the presence of negative and significant relationship between NPLs and the trend variable in Nigeria. The result suggested that NPLs exhibited an average downward trend relationship in short run and over an increased period of time. An average negative exponential growth rates were discovered for NPLs during the two regimes and the entire period. Based on the degree of deceleration in NPLs in both periods, it is suggested that, financial and banking policies implemented during the post consolidated period were more efficient and proactive compared to the pre-consolidated period.

Policy implication

Premised on the findings, the following policy directions were observed: The heterogeneous distribution of NPLs between the two reform regimes as evidenced by the disparity in the summary statistics and high coefficients of variation implied a high credit risk exposure. The coefficient of variation indicated the magnitude of riskiness in disbursement of loans and advances to the beneficiaries in the economy. The prevalent of high NPLs in the two policy reform regimes pinpointed to the danger engulfing the banking sector in the country. Also, the growth of the real sector is anchored on the viability and sustainability of the banking sector.

The sharp fluctuations in the NPLs trend which followed series of innovations/shocks generated by the major banking policies and fluctuations in macroeconomic environment implied that NPLs were dynamic. Therefore, in formulating banking and macroeconomic policies, the dynamic nature of NPLs should be taken into consideration. In other words, the design of banking and macroeconomic policy framework should be sensitive to time. The upward trend in NPLs might be a precursor to financial crises and anti- real sectors growth. Time in NPLs might be needed to ensure adequate provisioning for NPLs. Therefore, policy makers and bankers should pay greater attention to time in formulating and administering loans to economic agents in all sectors of the economy.

Conclusion

The specific conclusions derived from the findings of the study following the specific objectives were drawn as stated below. The distribution of NPLs according to major banking policy reform regimes was not evenly distributed between the pre- and post-consolidation regimes during the study period. The NPLs trend was significantly high with marked irregular fluctuations within a year, but decline over an increasing period of time. The growth rate of NPLs during pre- consolidation reform regime was decelerating however it stagnated in post- consolidation regime.

Based on the findings, the following recommendations were proposed:

(1) As indicated by the result, there are outrageous levels of NPLs in the pre- and post- consolidation banking policy regimes in the country; sustainable and proactive strategies to reduce high NPLs trend should be adopted by the monetary authority.

(2) In view of the irregular fluctuations in NPLs trend, public policy makers and bankers should pay greater attention to time in formulating credit policies and administering loans to beneficiaries'.

(3) As the empirical results indicated that NPLs was at peak during economic downturn, it is recommended that lending banks should pay greater attention to developments in the

macroeconomic environment and the performances in the real sectors when packaging loans to customers in the economy.

(4) Given that NPLs upward trend continued to generate heavy credit risk and burden to the economy, prudent lending coupled with swift and orderly clean-up of banking system loan portfolio should be adopted to decelerate NPLs trend and growth rate.

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