



# Financial Stability and Economic Growth Nexus in Nigeria: An Econometric Analysis

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## I. INTRODUCTION

Financial stability is considered an important panacea for a nation to experience growth in output and perform well other macroeconomic parameters. The last global financial crisis of 2007-2009 has clearly shown that financial stability is an essential ingredient for economic growth and also development. The crisis also showed that for there to be growth, it is expedient to have a stable financial system. A stable financial system supports a broader economic growth and higher living standards. The financial system plays one of the most critical roles in the welfare of citizens by encouraging the ability of firms and households to hold and transfer financial assets with confidence. (CBN, 2010)

A stable financial system would naturally lead to efficient allocating of scarce resources, and would be resilient in managing financial risks, it could also engender the achieving natural rate of employment as well as reducing relative price oscillation of real or financial assets that will impact on employment levels and monetary stability. A financial system is in the vicinity of stability when it dissipates financial imbalances that arise endogenously or because of significant unforeseen and adverse events. The stage of stability in the financial system would absorb any shocks primarily via self-corrective mechanisms, averting adverse events from having a disruptive effect on the financial systems and by extension to the real economy (World Bank, 2016)

As observed by European Central Bank (2016), financial stability is one of the principal goals of macroeconomic management and it is a functional responsibility of some central banks and other public authorities. It is expedient to note that financial stability is cardinal for economic growth, as many businesses in the real economy are consumers in the financial system. The actual value of financial stability is best seen in its absence, that

is in periods of financial instability (World Bank, 2016)

Historically, the relevance of finance in economic growth is linked to the works of Schumpeter (1912), Goldsmith (1969) and McKinnon (1973). The growth of the Financial Industry supports the mobilization of savings necessary for the production process and for investment activities by businesses and firms, thus offering the avenue for supplying the required finance for economic growth. King and Levine (1993a, 1993b) and Levine and Zervos (1998) identify three (3) major ways in which financial development impacts economic growth. They are the level of intermediation, efficiency and composition. The level of intermediation is often parameterized by the size of bank credit to GDP ratio and to stock market capitalisation ratio. Efficiency is assessed by ratio of private sector credit to GDP, turnover ratio, legal and institutional development, total value of shares traded on the stock market to GDP ratio, and composition by maturity of bank credit as a ratio of fixed income securities.

Financial Stability is a public good as the economy and society at large benefits from its existence, it is non-excludable and non-rivalrous in nature because everyone has access to use them, and or one can be deprived from its use or its use does not deplete their availability for future usage by other (Boyer et al., 2004; Cartapanis, 2011).

As opined by Borio, (2003), financial stability has to be maintained to avert idiosyncratic shocks which exhibits a systemic impact over different contagion links namely informational, contractual, or psychological. A good example is the case of Lehman Brothers' bankruptcy in September 2008 which affected the entire financial system through several channels. In line with the contract terms its creditors were the first to be hit. Then swiftly the bankruptcy was analysed as having



an acute negative signal on financial markets and interbank markets in particular. This culminated to a grave uncertainty and suspicion among banking and financial institutions that became unexpectedly to take part in the money market. Furthermore, payment systems are cardinal to the efficient operation of market economies and financial instability could potentially disrupt these spontaneously. (Creel, Hubert, & Labondance, 2014)

The last Global Financial Crisis (GFC) revealed that micro-prudential regulation and supervision alone is not sufficient to the pursuit of financial stability. The aim of Micro-Prudential regulation and Supervision (MIPR) is to avert the failure of an individual financial institution within the financial system (Udom et al, 2018). Financial institutions in modern times have progressively become more inter-connected and interrelated with the coming of technological advancement and globalization. MIPR deals mainly on the supervision and regulation of a single entity with a view that the safe and soundness of the single would lead into the safety and soundness of the entire financial system.

Following the insufficiency of MIPR, Macro-Prudential Regulation and Supervision (MAPR) was introduced as a fall out of the GFC. The macro-prudential approach encompasses micro-prudential as it deals with the safety and soundness of the entire financial system. MAPR employs the examination of macroeconomic and market-based data, alongside qualitative and structural information. It is essentially a combination of several components which are; Financial Soundness Indicators (FSI), Market based data (stock prices and capital market indices) Macroeconomic data (prices, interest rate and inflation rate), and they reflect the subcomponents of the financial system (Cheang & Choy, 2009).

Financial stability objectives can only be achieved with an effective macro-prudential policy (Constâncio, 2015). Macro-prudential policy is distinct from the well known traditional macroeconomic policies as it portends to address cardinal issues of financial stability in a more holistic manner. As stated earlier prior to the global economic meltdown, the primary purpose of traditional monetary policy was price stability with the belief that this would eventually lead to financial stability. Supervision of banks and other financial institutions were focused mainly on individual financial institutions with the expectation that this would engender the stability of the whole financial system. However, after GFC it is now evident that traditional monetary and micro-prudential policies

alone cannot achieve financial stability. The macro-prudential policy framework is, therefore, aimed at preventing the accumulation of systemic risk within the financial system and the need to promptly address issues relating to the systems' stability. (Adegbite, 2012)

The objective of the study is to empirically investigate the impact of financial stability on economic growth in Nigeria. The study is important as it intend to determine the nexus between financial stability and economic growth of Nigeria. The dearth of research on this subject matter in Nigeria also makes it imperative that a detailed study be conducted with a view of ascertaining the relationship as well as proffering recommendations thereof.

The paper is organized into five sections. Following the introduction, Section 2 considers literature review on the relationship between financial stability and economic growth, while Section 3 details the methodology. Section 4 presents the data analysis and discussion of the results. Lastly, Section 5 summaries the paper with conclusion and policy recommendations.

## II. LITERATURE REVIEW

Globally there are several studies that has examined the nexus between financial stability and economic growth, in Europe and other parts of the world the subject matter has been well research upon. However, there are few research on the subject matter in Africa and Nigeria in particular. Previous studies conducted had produced mixed finding and conclusion. Some studies observed positive relationship between financial stability and economic growth and this include the finding of Creel, Hubert and Labondance, (2013), Torabi et al. (2017) Nasreen and Anwar (2017) and Sonmez and Uysal (2018) etc.

On the other hand, some studies observed negative relationship between financial stability and economic growth and these include the finding of Ma (2019), Tosunoglu (2018) and Fouejieu et al. (2019), etc, The study is therefore a contribution to the current argument and attempts to examine the existence or otherwise of a nexus between financial system stability and economic growth, as well as the nature of macro-prudential regulation and supervision in Nigeria.

Amali, Igwe & Obalum (2022) examined the impact of financial stability on economic growth in Nigeria using data from 2006 to 2022. The Autoregressive Distributed Lag (ADRL) technique was employed. The dependent variable, economic



growth was proxied by real GDP, while capital adequacy, non-performing loans, liquidity ratios and return on assets of the banking sector as well as the All-share Index of the stock market were utilized as proxies for financial stability. The findings showed that capital adequacy, non-performing loans and liquidity ratios impact negatively on economic growth. For the All-share Index, the result had a positive and significant relationship with economic growth. The implication is that financial stability policy alone cannot create growth, thus it requires other complementary financial development objectives.

Njang et al (2020) research on the effect of financial system stability on economic growth in Nigeria. The studies used the Principal Component Analysis (PCA) and the period of study was from 1986 to 2016. A Financial System Stability Index (FSSI) was constructed as a measurement for financial stability. The granger causality test, Johansson Cointegration test and Vector Error Correction Model (VECM) were the econometrics techniques utilized in reaching the goals of this study. The VECM results indicate that financial stability has a negative connection with economic growth and has no significant impact on economic growth in Nigeria. The study concluded that financial stability in Nigeria is a necessary condition for initiating economic growth, but not sufficient for sustaining economic growth in Nigeria.

Torabi et al. (2017) evaluated the nexus between financial stability and economic performance in the Organisation of Petroleum Exporting Countries (OPEC) from 2000 to 2013. The paper employed the system Generalized Method of Moments and annual time series and panel data. Economic Growth which stood in for economic performance was the dependent variable while financial stability and financial liberalization were proxied by ratio of liquidity to GDP and net capital inflow to GDP, respectively, were the independent variables. The finding revealed that the impact of financial stability on economic growth (performance) in OPEC countries is significant and positive, it was also observed that the result with respect to the impact of financial liberalisation on economic performance in OPEC countries was also significant and positive.

Ma (2020) examines the trade-off between financial stability and economic growth and the effect of macroprudential policy in a small open economy. The result suggests that optimal macroprudential policy such as higher capital to risk-weighted assets ratio reduces the frequency of crisis but has a small negative effect on growth as it

reduces borrowings by firms and households. The result of the OLS regression and system GMM further showed that macroprudential policies encourage a greater buildup of buffers, which mitigate the negative growth effects of unstable capital flows and limit financial vulnerability.

Yonusi and Nafla (2019) examine the relationships among financial stability, monetary policy and economic growth based on a sample of 40 developed and developing countries using yearly data from 1993 to 2015. The explained variable is economic growth, proxied by real GDP per capita and the explanatory variables include a suite of financial development and stability indicators as well as the traditional monetary stability measures across the selected countries. The study shows that financial crisis, bank liquid reserves and non-performing loans are harmful to financial stability, financial development and economic growth. The impact depends, however, on the vulnerability and fragility of the banking system. The key findings reaffirm the complementarity and the importance of real, financial, monetary variables and banking sector soundness and resilience as well as their significant influences on financial stability and economic growth.

Ndebbio (2004) noted that the stagnant growth of output in an economy is often caused by "shallow - finance". He considered a shallow financial depth as having a narrow range of financial assets. The study recommended that Sub Sahara Africa should strive to make real money balances to grow and issue regulations that would improve financial development/intermediation. Thus, Financial intermediation/ development has positive impact on output growth.

Yusifzada et al (2015) in their research observed that financial stability is essential for economic growth, nevertheless it noted that an excessively high stability index though ensures a sound financial system, it may activate a reversal in economic growth since it results in underutilization of financial assets and resources in the economy.

Udom, Eze & Inim (2018) in their evaluation of the Nigeria Financial System Stability between 1997 and 2016 employed macro prudential approach and indicators of capital adequacy, asset quality and profitability. They noted that sequel to the last GFC the concept of financial stability is now a major macroeconomic policy objective in Nigeria. The findings reveal that by the end of 2016, clear signs of imminent crises had begun to emerge in the Nigeria financial system. The recommendations offered to cushion the impact of any impending crises include the effective



monitoring of the risk management framework of financial institutions especially banks, moderating inflation and implementation of sound corporate governance practices in the financial system.

Manu, et al. (2011) investigated the nexus between financial stability and economic growth in Africa. The panel data analysis employed dynamic fixed-effect model, the finding showed that financial stability has a positive impact on economic growth. Particularly, the finding revealed that capital adequacy, asset quality and liquidity have significant impact on the GDP growth rate both in the short run and long run. The study recommended the establishment of Financial Stability Authorities agencies as most central banks in Africa are overburdened. Also monetary authorities and the governments of African countries, should pursue policies that boost the stability of their financial systems in order to stimulate economic growth in their respective countries.

Creel et al. (2013) in their study of financial stability and economic performance, examined the relationship between financial stability, financial depth and economic performance in the European Union. Data from 27 EU member states were used and the period of study was from 1998-2011. The study used three separate categories of indicators that were proxy for micro and macro elements of financial stability. The 3 indicators were; the Composite Indicator of Systemic Stress (CISS), cumulative macro-prudential ratio for banks of each nation and indicators of financial stability index built with the aid of the Principal Component Analysis (PCA). The study indicates that financial depth has a negative relationship with economic performance (or components of aggregate dynamics like consumption, investment or disposable income) for 27 EU nations. Moreso, the study employed different measures of financial instability (microeconomic indicators, institutional index and our own statistical index derived from a Principal Component Analysis) and result revealed that financial instability has a negative effect on economic growth.

### **The Financial Instability Hypothesis**

The financial instability hypothesis (FIH) was propounded by Hyman Minsky an economist, through his publications in 1972, 1975, 1986, 1992. The theory argued that financial crises are prevalent in a market economy as periods of economic boom encouraged borrowers and lender to become more irresponsible and less cautious in the quest for profit. In the light of not being cautious in spending

excess optimism is built and this in turn creates financial bubbles which may later bust. FIH states that a market economy is predisposed to move from periods or seasons of financial stability to financial instability. The theory can be summed up by saying: financial stability itself breeds instability spontaneously.

According to Edgar (2010) FIH emphasizes the role of leverage as the cause of continuous financial instability in advanced capitalist economies. The instability may be aggravated by the growth of various types of derivative financial instruments and by structural weaknesses of finance theory that have led to risk mismeasurement.

The theoretical underpinning of the financial instability hypothesis begins from the classification of the economy as a free market economy with costly capital assets and a sophisticated and intricate financial system. The theory is linked to Keynes's General Theory and noted that the value of any long-term asset is determined by its own rate of interest and asserts that cyclical instability is inherent in a capitalist economies. It also leverages on the credit view of money and finance by postulated by Joseph Schumpeter. (Minsky, 1992)

The theory states that over periods of continued prosperity and optimism about future economic scenarios, banks and other financial institutions in the quest to make more profit invest more in riskier assets, these investments makes the economic system more vulnerable and susceptible to financial crisis. The theory believes that despite the complexity of financial relations, the main determinant of system behavior remains the level of profits: it incorporates the view that aggregate demand determines profits. Hence, aggregate profits equal aggregate investment plus the government deficit (Bhattacharya, 2014)

In the observation of Minsky, finance is categorized into three (3) parts of "hedge finance"; "speculative finance,"; and "Ponzi finance." The stages of economic cyclical changes will witness the replacement of "hedge finance" by "speculative finance," and then "speculative finance" by "Ponzi finance." Widespread "replacement" will hike up the asset prices for the assumed beneficiaries, and then cause overheating and overinvesting, which will be soon followed by intensified speculations and bubbles in the entire economy. It is in this phase that the worry about the future takes holds, which will develop into panic prior to a market meltdown once the bank loan payments are not kept up. This shows that financial fragility is decided by the behavioral traits of lenders and borrowers. (Minsky, 1992)



The FIH is a model of a capitalist economy that does not rely on exogenous shocks to generate business cycles of varying severity. Historically, business cycles comes from internal dynamics of free market economies, and the system of policies and interventions that are created to maintain the economy functioning within acceptable bounds.

The financial instability stage that may lead to financial crisis is considered as market failure and thus the need for effective and efficient financial regulation by government agency of the financial system regulator (Pettinger, 2018)

The financial regulation should include and address the following:

- a) Policies on how to prevent speculative and Ponzi lending.
- b) Sound prudential guidelines for banks that requires certain liquidity in cash reserves.
- c) Creation of a Stabilization fund which can come in the form of Counter cyclical buffers during boom years, which is to be used in times of crisis.
- d) Stringent regulations for mortgage lending in line with economic realities
- e) There should be commitment to function and take actions to cut asset price inflation
- f) Ring fencing banks traditional banking activities from more risky non-core banking activities
- g) A strong and virile Central Bank willing and able to act as lender of last resort.

FIH opines that financial structures and interrelations essential to the capitalist system and inevitably result in the frequent fluctuations of the economy. In essence, certain financial aspects of the capitalist economy, which are inseparable from its capitalist nature, make such an economy inherently unstable.

### III. Methodology

The study employs the Autoregressive Distributed Lag (ARDL) to examine the impact of financial stability on economic growth in Nigeria. The model follows the approach of Pesaran and Shin (1999) and Pesaran et al. (2001). The ARDL Bounds test approach to cointegration is employed

$$GDPGR = f(BS, INFL, LDR, \frac{CPS}{GDP}, \frac{MS}{GDP}, \frac{MS}{EXTR}, NPLR, ASI) \quad (3.2)$$

The above was transmogrified into an econometric model, we then have:

$$GDPGR = \beta_0 + \beta_1 BS + \beta_2 INFL + \beta_3 LDR + \beta_4 \frac{CPS}{GDP} + \beta_5 \frac{MS}{GDP} + \beta_6 \frac{MS}{EXTR} + \beta_7 NPLR + \beta_8 ASI + \mu \quad (3.3)$$

Where: GDPGR = Gross Domestic Product Growth Rate; BS = Bank Stability; INFL = Inflation; LDR = Loan Deposit Ratio; GDP = Nominal Gross Domestic Product; CPS = Credit to Private Sector; MS = Broad Money

because of its ability to demonstrate the presence of short and long-run relationships between economic time-series data and applicability to nonstationary time series when the data are integrated of different orders.

The stationarity test (unit root test) will be carried out first using the Augmented Dickey Fuller (ADF) test on each variable to test for stationarity and avoid for spurious regression as suggested by Granger and Newbold (1975). If variables are found to be non-stationary, the co-integration test, which is a pre-test for spurious regression will first be carried out. The ARDL bound test by Pesaran (2001) co-integration test will be used to test for long run relationship between variables. Furthermore, the Error Correction mechanism will be used to check for short-run relationship.

### Measuring Bank Stability

According to financial literature such as Ahmad et al. (2019); Setiawan et al. (2021); Amara and Mabrouki (2019) amongst others, bank performance can be measured using the z score which is computed as;

$$z \text{ score} = \frac{(u+k)}{\sigma} \quad (3.1)$$

Where; u is defined as bank asset which is measured in terms of Return on Asset (ROA). K is the capital ratio which is measured as equity as a percentage of total asset.  $\sigma$  represent volatility of returns which is measured as the standard deviation of ROA. An increase in the Z score implies a better bank performance and thus the likelihood of bankruptcy decreases.

### Multivariate Analysis

To accomplish the prime objective of this paper, a linear regression model was prepared for the conduct of the analysis. The study adapted the model of Amali, Igwe & Oballum (2022) who examined the impact of financial stability on economic growth in Nigeria. Other financial indicator are included to cover the banking sector, the capital market and the external sector. The model is presented as follows;



Supply; EXTR = External Reserves; NPLR = Non-Performing Loan Ratio; ASI = All Share Index.

Theoretically, the signs of the coefficients above are expected to be :

$b_1 > 0, b_2 > 0, b_3 > 0, b_4 > 0, b_5 > 0, b_6 > 0, b_7 < 0, b_8 > 0.$

$b_0$  represents the constant ;  $b_1$ -  $b_8$  represents the coefficients of the regressor variables;

$U_t$  = Error term

Instructively, the ARDL representation of the model is specified below as;

$$\begin{aligned} \Delta GDPGR_t = & \alpha_0 + \sum_{j=1}^m \alpha_{1j} \Delta GDPGR_{t-j} + \sum_{j=1}^m \alpha_{2j} \Delta BS_{t-j} + \sum_{j=1}^m \alpha_{3j} \Delta INFL_{t-j} \\ & + \sum_{j=1}^m \alpha_{4j} \Delta LDR_{t-j} + \sum_{j=1}^m \alpha_{5j} \Delta CPS/GDP_{t-j} + \sum_{j=1}^m \alpha_{6j} \Delta MS/GDP_{t-j} + \sum_{j=1}^m \alpha_{7j} \Delta MS/EXTR_{t-j} \\ & + \sum_{j=1}^m \alpha_{8j} \Delta NPLR_{t-j} + \sum_{j=1}^m \alpha_{9j} \Delta ASI_{t-j} + \theta_1 GDPGR_{t-1} + \theta_2 BS_{t-1} + \theta_3 INFL_{t-1} + \theta_4 LDR_{t-1} \\ & + \theta_5 CPS/GDP_{t-1} + \theta_6 MS/GDP_{t-1} + \theta_7 MS/EXTR_{t-1} + \theta_8 NPLR_{t-1} + \theta_9 ASI_{t-1} + U_t \end{aligned}$$

(3.4)

$\alpha_0 - \alpha_9$  and  $\theta_0 - \theta_9$  are Coefficients to be estimated,

$U_t$  Is the Gaussian white noise that is independently and identically distributed random variable.

#### IV. Data Analysis and Interpretation

The data analysis begins identifying the statistical properties of the variables as well as the trend analysis as presented in table 4.1

	GDPGR	ASI	BS	INFL	LDR	CPS_GDP	MS_EXTR	MS_GDP	NPLR
Mean	5.337727	28514.30	1.66E-06	12.77091	65.20864	0.150244	4.38E-07	0.190931	8.999460
Median	5.839527	26246.38	0.209023	12.24677	63.40003	0.176290	3.53E-07	0.214392	6.723269
Maximum	16.49882	61004.61	1.446878	25.64055	100.2633	0.231159	1.14E-06	0.251574	41.37648
Minimum	-2.074257	7394.743	-5.182930	5.351172	34.06031	0.070111	8.42E-08	0.110620	2.295968
Std. Dev.	3.611519	11683.44	1.072507	4.135352	15.08492	0.053276	3.28E-07	0.047013	7.773318
Skewness	0.504565	0.466687	-3.574562	0.712247	0.163775	-0.379899	0.602671	-0.506725	2.559112
Kurtosis	4.166606	3.231605	16.45411	3.754635	2.658603	1.500054	2.009674	1.594600	9.872595
Jarque-Bera	8.724153	3.391034	851.1177	9.528407	0.820749	10.36615	8.923190	11.00818	269.2388
Probability	0.012752	0.183504	0.000000	0.008530	0.663402	0.005611	0.011544	0.004070	0.000000
Sum	469.7200	2509258.	0.000146	1123.840	5738.360	13.22150	3.86E-05	16.80196	791.9524
Sum Sq. Dev.	1134.747	1.19E+10	100.0736	1487.799	19797.26	0.246935	9.35E-12	0.192292	5256.929
Observations	88	88	88	88	88	88	88	88	88

Table 4. 1 Descriptive Statistics

Source: Author's Computation using Eviews 11

The descriptive statistics above, includes the mean, standard deviation, minimum and maximum, etc. The table also showed the distribution of the variables, from the JB statistics and its probability, ASI and LDR were normally distributed while GDPGR, BS, INFL, CPS/GDP, MS/GDP, MS/EXTR and NPLR were not normally distributed. However non normality of the variables does not affect parameter estimates as stated by the Central Limit Theorem (CLT).

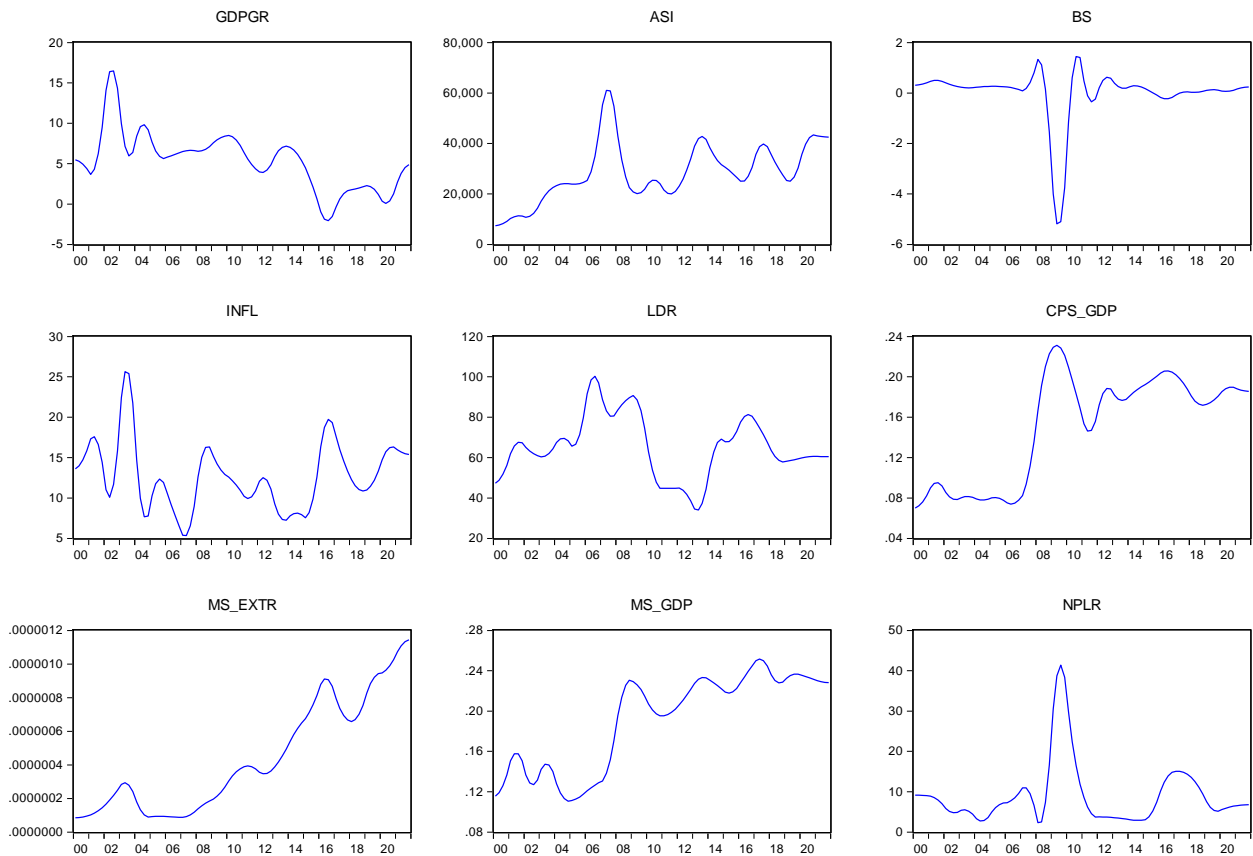


Figure 1.0: Trend Analysis

The trend analysis showed that the variables fluctuate at one period or the other, however, MS/EXTR, MS/GDP both exhibit an upward trend,

#### 4.2 Presentation of Unit Root Results

##### Results of unit root

The Augmented Dickey Fuller (ADF) unit root test was espoused to test for stationarity of all the variables. The findings are offered on the table below:

Variable	ADF-statistic @level	P-value@ Level	ADF-statistic @1 <sup>st</sup> Difference	P-value@1 <sup>st</sup> Difference	Order of Integration
GDPGR	-4.3205	<b>0.0135</b>	-5.6582	<b>0.0000</b>	I(1)
BS	-4.8571	<b>0.0045</b>	-8.1346	<b>0.0000</b>	I(0)
ASI	-3.2321	<b>0.1065</b>	-4.5883	<b>0.0001</b>	I(1)
CPS/GDP	-2.6863	<b>0.2514</b>	-4.1052	<b>0.0003</b>	I(1)
INFL	-3.8777	<b>0.0080</b>	-7.2446	<b>0.0000</b>	I(0)
LDR	-3.9964	<b>0.0289</b>	-3.7952	<b>0.0008</b>	I(1)
MS/GDP	-2.4882	<b>0.3294</b>	-4.187	<b>0.0003</b>	I(1)



MS.EXTR	-1.489	<b>0.8007</b>	-2.8654	<b>0.0065</b>	I(1)
NPLR	-2.9271	<b>0.1744</b>	-5.172	<b>0.0000</b>	I(1)

Source: Author's Computation using Eviews 11

The unit root test showed that BS and INFL were stationary at level while GDPGR, ASI, CPS/GDP, MS/GDP, MS/EXTR, LDR, NPLR were stationary at first difference. In the light of the above result, in which not all variables were not stationary at level, we can infer the presence of unit root and co-integration of variables. Therefore, to ensure that there is no misinterpretation bias that usually comes when evaluating co-integrated variables using the OLS method, the paper proceeded to tested for cointegration employing the Auto-Regressive Distributed Lag (ARDL) cointegration bound test.

**Table 4.3: ARDL Bound Co-Integration Test**

ARDL Bounds Test

Date: 12/09/22 Time: 13:37

Sample: 2001Q1 2021Q4

Included observations: 84

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	22.44042	8

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	1.95	3.06
5%	2.22	3.39
2.5%	2.48	3.7
1%	2.79	4.1

Source: Author's Computation using Eviews 11

The results as contained in Table 4.3 above, indicates that the value of the F-statistics is 22.44, which is higher than the upper bound I (1) critical value at 5%, we therefore reject the null hypothesis and infer the presence of co-integration amongst the variables, we therefore, advanced to estimate the long run ARDL regression.

**Table 4.4: ARDL Regression Long Run Estimates**

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ASI	0.000197	0.000061	3.231273	0.0031
BS	11.168208	1.967995	5.674916	0.0000
INFL	0.320270	0.137745	2.325094	0.0273
LDR	0.144328	0.057991	2.488818	0.0188
CPS/GDP	139.10535	28.601375	4.863421	0.0000
MS/EXTR	5638094.4	5458524.00	1.032897	0.3102
MS/GDP	-14.148159	55.250042	-0.256075	0.7997
NPLR	-0.955047	0.159986	-5.969547	0.0000




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C	12.675324	7.329318	1.729400	0.0944
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**Source:** Author's Computation using Eviews 11

**4.5 Analysis of the Long run model**

The ARDL regression estimates from Table 4.4 above, shows the long run estimates, it reveals that All Share Index (ASI) and Bank Stability (BS) both have positive and significant impact on GDPGR such that a unit change in ASI and BS will result in 0.000197 and 11.168208 change in GDPGR.

Specifically, the result showed that inflation rate (INFL) has a positive and significant impact on GDPGR where a percentage change in inflation rate will lead to 0.320270 change in GDPGR. Also, Loan deposit ratio also has a positive impact on GDPGR such that a unit

percentage change in LDR results in 0.144328 percentage change in GDPGR. The result is statistically significant at 5% level of significance. CPS/GDP also has a positive and significant impact on economic growth. The result showed that a percentage change in the credit to private sector ratio of GDP leads to 139.10535 percent change in GDPGR. On the other hand, both MS/EXTR and MS/GDP have insignificant impact on economic growth.

A percentage change in Non-Performing Loan Ratio (NPLR) will lead to 0.955047 percentage decrease in economic growth in the long-run.

**4.6 Analysis of the Error Correction Model or Short run model**

ARDL Cointegrating And Long Run Form

Dependent Variable: GDPGR

Selected Model: ARDL(2, 2, 2, 4, 2, 0, 4, 0, 2)

Sample: 2000Q1 2021Q4

Included observations: 84

Cointegrating Form

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Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPGR(-1))	0.987568	0.028640	34.482122	0.0000
<b>D(ASI)</b>	<b>0.000146</b>	<b>0.000021</b>	<b>6.802320</b>	<b>0.0000</b>
D(ASI(-1))	0.000132	0.000023	5.746839	0.0000
<b>D(BS)</b>	<b>0.731625</b>	<b>0.242753</b>	<b>3.013863</b>	<b>0.0038</b>
D(BS(-1))	-0.818471	0.195097	-4.195192	0.0001
<b>D(INFL)</b>	<b>-0.593178</b>	<b>0.033338</b>	<b>-17.792899</b>	<b>0.0000</b>
D(INFL(-1))	0.620278	0.077083	8.046910	0.0000
D(INFL(-2))	0.047670	0.066627	0.715481	0.4772
D(INFL(-3))	-0.096162	0.035659	-2.696724	0.0092
<b>D(LDR)</b>	<b>-0.058360</b>	<b>0.016981</b>	<b>-3.436809</b>	<b>0.0011</b>
D(LDR(-1))	0.037847	0.015193	2.491025	0.0157
<b>D(CPS/GDP)</b>	<b>5.245748</b>	<b>2.595981</b>	<b>2.020719</b>	<b>0.0480</b>
<b>D(MS/EXTR)</b>	<b>8.725678</b>	<b>0.254941</b>	<b>41.12316</b>	<b>0.0000</b>
D(MS/EXTR(-1))	-6.116661	0.705054	8.031330	0.0000
D(MS/EXTR(-2))	-6.694030	0.667575	9.432420	0.0000
D(MS/EXTR(-3))	7.628882	0.293962	14.30011	0.0000
<b>D(MS/GDP)</b>	<b>-10.25254</b>	<b>2.377465</b>	<b>-4.312385</b>	<b>0.0001</b>
<b>D(NPLR)</b>	<b>-0.136013</b>	<b>0.049920</b>	<b>-2.724647</b>	<b>0.0085</b>

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D(NPLR(-1))	-0.147944	0.038196	-3.873241	0.0003
CointEq(-1)	<b>-0.156327</b>	<b>0.012913</b>	<b>-12.106078</b>	<b>0.0000</b>

**Source:** Author's Computation using Eviews 11

The short-run result revealed that a unit change in ASI will result in 0.000146 change in GDPGR. The result is significant as indicated by the probability value of 0.000 which is significant at 5% level of significance. Also, a unit change in BS will result in 0.731624 change in GDPGR. The result is significant as indicated by the probability value of 0.0038 which is significant at 5% level of significance.

Furthermore, a unit change in INFL leads to 0.593178 decrease in GDPGR. This result is significant at 5% level. The result further showed that inflation and economic growth are inversely related in the short run. Also, a unit change in LDR will result in 0.058360 decrease in GDPGR. The result is significant as indicated by the probability value of 0.0038 which is significant at 5% level of significance.

Both CPS/GDP and MS/EXTR have positive and significant impact on GDPGR such that a percentage change in CPS/GDP and MS/GDP will result in 5.245748 and 8.725678 changes in GDPGR respectively. On the other hand MS/GDP and NPLR both have negative and significant impact on GDPGR such that a percentage change in MS/GDP and NPLR will result in 10.25254 and 0.136013 changes in GDPGR respectively.

The estimated coefficient of the error correction term is highly significant. Furthermore, the magnitude of the estimated coefficient of the error correction term suggests a relatively low speed of adjustment to any disequilibrium in the short run. In other words, the estimated  $ECT_{t-1}$  is equal to 0.156327 which states that the departure from the equilibrium is adjusted by 15.6% per year.

#### 4.6 Post Estimation Diagnostic Tests

##### 4.6.1 Serial Correlation

Breusch-Godfrey Serial Correlation LM Test: Result			
F-Statistic	0.195201	Prob. F(1,56)	0.6603
Obs*R-Square	0.291784	Prob. Chi-Square(1)	0.5891

**Source:** Author's Computation using Eviews10

From the result of the Breusch-Godfrey serial correlation LM test above, accepted the null hypothesis of no serial correlation in the residual, since the probability of its F-statistic value is 0.6603 cent which is greater than the 5% level, hence concluding that the model is free from the problem of autocorrelation

##### 4.6.2 Heteroskedasticity Test:

Breusch-Pagan-Godfrey Test Result			
F-Statistic	1.447739	Prob. F(26,57)	0.1224
Obs*R-Square	33.40894	Prob. Chi-Square(26)	0.1506

**Source:** Author's Computation using Eviews10

From the result of the Breusch-pagan-Godfrey test above, accepted the null hypothesis of no heteroscedasticity in the residual, since the probability of its F-statistic value is 0.1224 cent which is greater than the 5% level, hence concluding that the model is free from the problem of heteroscedasticity .

##### 4.6.3 Residual Specification Error Test:

Ramsey RESET Test Result			
t-Statistic	0.838653	df (56)	Prob (0.4052)
F-Statistic	0.703340	df (1, 56)	Prob (0.4052)

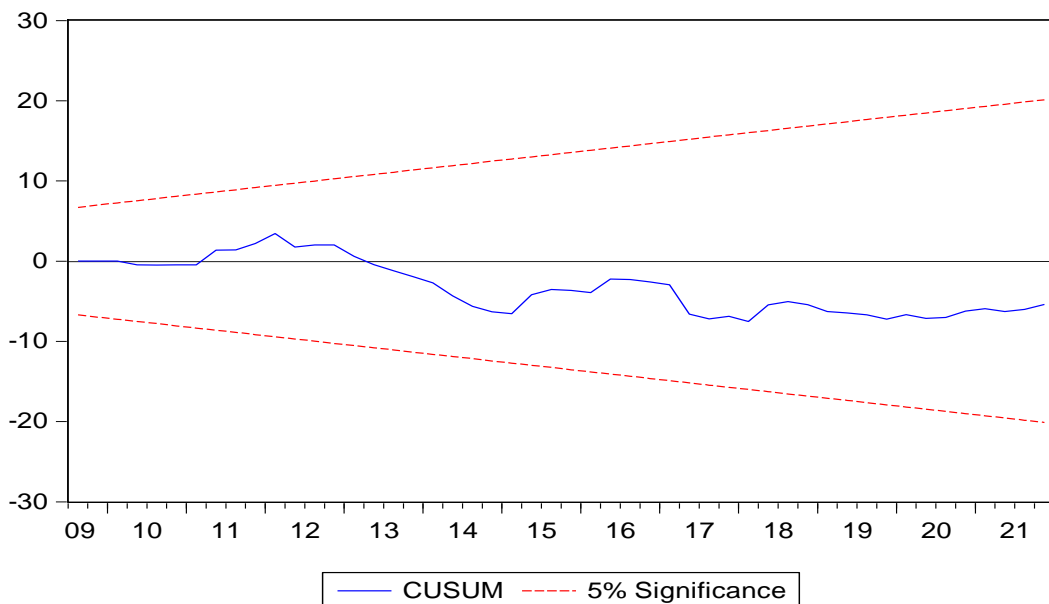
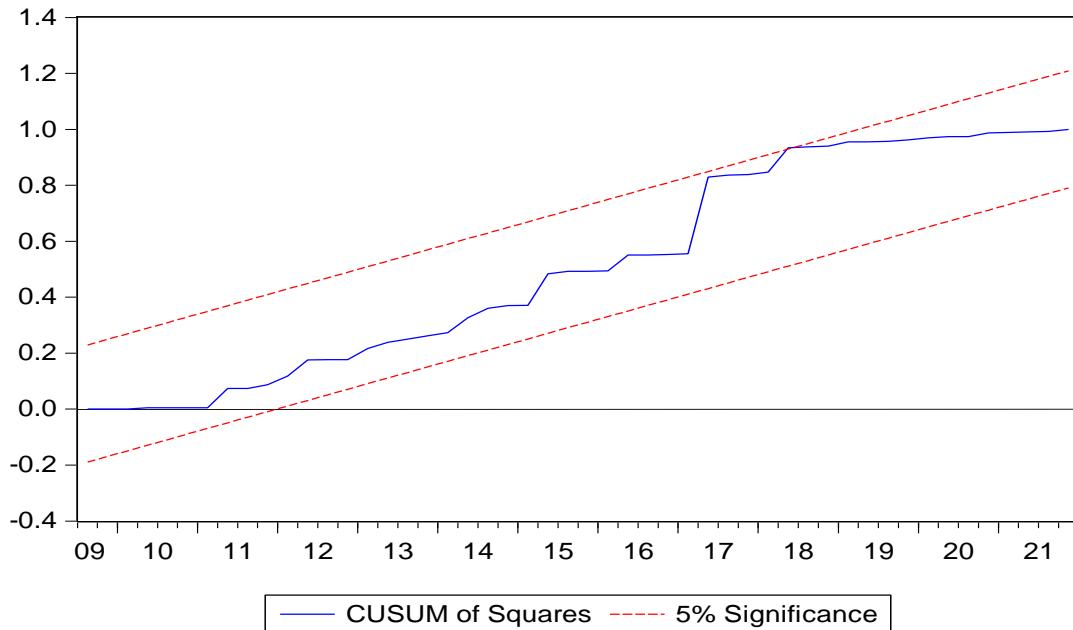
**Source:** Author's Computation using Eviews10



The Ramsey's RESET Test (Residual Specification Error Test) was conducted to test if the model was misspecified. To test for model misspecification. The decision remains that, if the P-value of the computed F-statistics is more than

0.05 we accept the null hypothesis, which says that the model is correctly specified. From the result above, since the Prob is (0.4052), we note that the model was not misspecified

#### 4.6.4 Stability Test - CUSUM test and CUSUMQ



The stability of the model was tested using Cumulative Sum of Recursive Residual stability (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMQ) within the 5% critical lines. The result showed that the model is

stable and confirms the stability of the long-term coefficients of the regressors and therefore the model is fit for use in decision making in Nigeria.



## V. Conclusion and Recommendation

### 5.1 Conclusion

This study assessed the effect of financial system stability on economic growth in Nigeria from 2000 to 2021. The study utilizes time series quarterly data on the independent variables BS (Bank Stability); INFL (Inflation Rate); LDR (Loan Deposit Ratio); CPS/GDP (Credit to Private Sector ratio of Nominal Gross Domestic Product); MS/GDP (Broad Money Supply ratio of Nominal Gross Domestic Product); MS/ EXTR (Broad Money Supply Ratio of External Reserves); NPLR (Non-Performing Loan Ratio); ASI (All Share Index). The Dependent variable is GDPGR (Gross Domestic Product Growth Rate). Annual reports of Central Bank of Nigeria (CBN) Statistical Bulletins and World Bank Annual Account Data were sources for the quarterly Time series secondary data. The study employed descriptive statistics and unit root test. The result of the Unit root showed that BS and INFL were stationary at levels while GDPGR, ASI, CPS/GDP, MS/GDP, MS/EXTR, LDR, NPLR were stationary at first difference. The study further employed autoregressive distributive lag (ARDL) bound test, Error Correction model and some diagnostic tests were performed using Eviews 11.

The empirical results from the long run estimates showed that Bank stability has a positive and significant effect on growth rate of gross domestic product, proxy for economic growth, this in line with the findings of Njang et al (2020); Torabi et al. (2017). Bank stability thus, is a major driver of economic growth in Nigeria. Also All Share Index has a positive and significant impact on economic growth, this is in tandem with the findings of Amali, Igwe & Oballum (2022) Yonusi and Nafla (2019). Interestingly, inflation rate and loan deposit ratio both have positive and significant impact on economic growth in the long-run. Furthermore, credit to private sector ratio of GDP also impacted on economic growth positively. Conversely, non performing loan ratio has a negative impact on economic growth. This result agrees with the findings of Nafla (2019) and Yusufzada et al (2015). The result also conforms to a priori expectations.

Finally, the study concludes that the results suggest that financial stability is a key driver of economic growth in Nigeria. Overall, the findings may be explained by the structure of the Nigerian economy, which is characterized by some incidence of financial system instability between the reference period of 2000 to 2021, therefore to achieve sustained economic growth, the financial

system which incorporates the money market, capital market and the external sector must be strengthened.

### 5.2 Recommendations

In the light of the above findings in this study, the following recommendations are proposed:

1. The financial system regulatory authorities should ensure that the banking sector is stable, this can be achieved by ensuring that banks adhere to Prudential guidelines, adopt sound corporate governance practices and effective supervision to ensure that crisis are nipped at the bud.
2. Banks should be encouraged to lend to the real sector while the regulatory and supervisory authorities should implement policies that would aid lending to the real sector. The use of the Credit Risk Management System (CRMS) and the Global Standing Instruction (GSI) should be maintained and strengthened in Nigeria.
3. The Securities and Exchange Commission and Nigeria Exchange Group should ensure that policies that would encourage growth in the Stock Market are pursued and government should put in place policies that would stimulate foreign investment in the market.

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