

Nexus Between Financial Deepening and Stability of Financial Sector in Nigeria

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ABSTRACT

Extant studies focused on investigating the relationship between financial deepening and aggregate economy with no consideration for whether or not financial deepening is responsible for or affects financial sector's stability. Sequel to the foregoing, this study examined the nature of causation between financial deepening and financial sector's stability with special interest in the direction of causality between the two. Financial sector's stability (FSSI) was proxied with bank z-score while financial deepening by deposit money banks (FDDMB), Central Bank of Nigeria (FDCBN), insurance sector (FDINS), financial market (FDSTM) and the entire financial system (FSD) was proxied with the ratio of the bank assets to GDP, ratio of the Bank assets to GDP, ratio of insurance assets to GDP, the ratio of market capitalization to GDP and financial system deposit as a percentage of GDP respectively. Time series data were collected from the World Bank development database for the period between 1999 and 2021 and were analysed by employing Autoregressive Distributed Lags Model following the integration of the study's variables at I(0) and I(1). Although, the result revealed that most of the proxies of financial deepening showed positive but insignificant relationship with financial sector's stability in Nigeria: FDINS (p-value = 0.3181>0.5), FDSTM (p-value =0.6477>0.5), FSD (0.6565>0.5); FDCBN was negative and insignificant with p-value = 0.0939>0.5. However, financial deepening by the deposit money banks was the only significant predictor with p-value = 0.0365<0.05. Furthermore, the causality test revealed that there was an element of bidirectional causality between the financial deepening and financial sector's stability in Nigeria. This means that financial deepening causes financial sector's stability and vice versa. Consequently, the study concluded that there is a mutual cause and effect relationship between the financial deepening and financial stability in the Nigerian banking sector and recommended aggressive deposit mobilization among others by the both bank and non-bank financial agents, so as to further deepen finance and stabilize Nigerian financial sector.

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INTRODUCTION

Background to the Study

Financial sector is the bud that houses all the financial institutions which are the operators within the Nigerian financial system. This implies that financial sector is the hub for all the important financial intermediaries such as banks, insurance firms, finance houses, etc. that are powerfully instrumental to transporting financial resources in forms of savings and other financial instruments from areas of less use to areas where they can be productively deployed. This is to say that financial sector is more or

less the major connecting pipe between the owners of funds who have no immediate use for them and the productive users of funds who are in short of financial supply. Thus, through licenced financial intermediaries operating within the financial sector, finances for various productive investments travel to the investors and entrepreneurs. Therefore, the stability of the sector within which the aforementioned critical role is performed is pivotal. For instance, most infrastructural developments like telecommunications, railway, power, roads, bridges are made possible because of the existence of stable financial sector which makes finance available; in the same vein, many productive investments being witnessed across all sectors of the economy today, and mobilization of factors of production, by the extractive industry, through manufacturing, and to marketing and distributions of final products may not have seen the light of the day should there be no stable financial sector in place to facilitate them.

One of the key and largest agents of financial intermediation within the financial sector is the bank; therefore, a stable banking sector determines the stability of the financial sector to a very large extent. Consequently, the stability of the Nigerian banking sector at any time is sacrosanct, as this is highly correlated to the stability of the entire economy and underpins the survival of businesses and infrastructural development. Affirming the foregoing, Nwosu *et al.* (2021), citing Levine (1997) noted that a well-developed (and stable) financial system is an important driver of economic growth due to its role in mobilising savings, promoting information sharing, boosting the efficiency of resource allocation, and facilitating the management and diversification of risk, thereby spurring real sector growth. They argued further that the general belief is that a more developed financial system is more stable, and therefore, "less fragile". This is based on the fact that deep and liquid financial systems, with varied instruments tend to absorb more shocks than a shallow one. This thus accounts for why the monetary authorities put in place a lot of macroprudential guidelines and ensure implementation of strong corporate governance practices among the operators within the financial sector; so as to stem the tide of weakness and strengthen the sector from external and internal shocks which can throw it off balance, with attendant negative impacts on the entire economy.

Furthermore, the above submission on the need for financial sector's stability is corroborated by Ajogbeje (2016) while also reverberating on the importance of financial sector; Ajogbeje had noted that the financial sector performs key functions in the economy, amongst which are; funds or savings mobilisation, investment allocation, corporate governance and control, diversification and risk management, amongst others. Therefore, it can be implied that financial sector as the engine room of economic growth must be stable and steady for economic growth to be attained; and one of the major ways to prove the stability of the support system role being played by the financial sector for the economy is through increased and sustained provision to productive sectors, of financial services and products from time to time: a term that is otherwise known as financial deepening.

However, International Monetary Fund [IMF] (2015) emphasised that financial stability risks increase with financial institution depth. An argument in favour of this is that countries with excessive financial resources see more booms and busts, which ultimately worsen their situation and slow down real GDP development. The IMF also makes the case that an excess of money causes talent and human capital to be diverted from the financial sector and towards the productive sectors. A very large financial sector may be especially vulnerable to moral hazard or the taking of rent from other sectors, according to some, which would result in an inefficient use of resources (IMF, 2015/16). There is therefore a need for investigation of how financial deepening affects financial stability in a developing countries like Nigeria where financial reform activities of government and relevant monetary authorities are only emphasized and geared towards promoting deepening in the financial sector and inclusion, with little or no cognizance of the dangers it portends for financial sector stability.

Preponderance of literature has affirmed that stability of the financial sector is crucial for structural economic growth. Equally, the Nigerian financial sector consists of both financial institutions and market which play complementary roles as agents of financial deepening and in maintaining the stability of the financial sector. thus, it is important that the financial sector is deepened and stable before it can adequately provide needed support to spur economic growth. The crises that have repleted the Nigerian financial sector over the years despite the financial deepening-focused reforms calls for attention and require investigation. Despite this, studies with respect to financial deepening and financial sector's stability and/or fragility in Nigeria is very scanty. Myriads of studies however abound in areas of financial stability with respect to aggregate economy as demonstrated in Nwosu *et al.* (2021), Njang *et al.* (2020), Ahulu *et al.* (2021), and others studies. Moreover, other existing studies focused on relationship between financial deepening and other aspects of the economy to the exclusion of the financial sector as revealed in Egbuche *et al.* (2020), Ahankhai (2019), Eke (2022), Tuzcuoglu (2020), Adam *et al.* (2021), Ozili (2019), including Enebili-Uzor and Ifelunini (2020). Although Adolphus (2014) evaluated the effect of financial fragility on banking sector performance, the scope of the study terminated in 2009 and its study restricted to the banking sector, thereby making its finding very outdated especially in the light of today's proliferation of digital channels that help to deepen the financial sector rapidly with little or no regards for standards and ethics in financial service provision, which further underscores the increased fragility or instability in the financial sector. It cannot be gainsaid therefore, that the finding reported in 2014 based on the data collected up to 2009 may no longer be valid considering the prevailing financial landscape in Nigeria that has witnessed enormous and impactful technological revolution with increased risk of financial fragility.

Also, when it comes to measuring financial deepness, attention has always been skewed in favour of the deepness in the banking sector; whereas, banking sector is just a component of the various other constituents of the financial sector like insurance, pension

firms, financial market, etc. This trend has left existing findings and conclusions to be based on evidence derived from the banking sector only which may certainly be biased and lacks adequate representation of other constituents that help to deepen the financial sector. This problem is addressed by the present study as it spreads collection of data on financial deepening beyond the banking sector to insurance sector, including the financial market so as to reflect adequate representation of the entire financial sector unlike the existing studies that made use of only the banking sector deepness. This is because deepness is transmitted through all the operators in the financial sector. Consequently, this study aims to generally investigate the nexus between financial deepening and financial sector's stability in Nigeria from 1999 through 2022; specifically, the study objectives are to:

- i. investigate the effect of financial deepening by banks on banking sector's stability in Nigeria;
- ii. evaluate the effect of financial deepening by non-bank financial institutions on banking sector's stability in Nigeria;
- iii. examine the direction of causality between the financial deepening and banking sector's stability in Nigeria.

LITERATURE REVIEW

Conceptual Review

This section provides a review of relevant concepts relating to financial deepening and financial stability in the context of the Nigerian banking sector.

Financial Deepening: Benefits and Dangers

According to IMF (2012), A variety of services and instruments are offered by financial institutions and markets as part of the multifaceted process of financial deepening. These enable the financial sector to develop a wide range of assets for risk sharing purposes, such as hedging or diversification, as well as efficient exchange of goods and services, such as payments services.

In other words, According to Goyal et al. (2011), financial deepening is the process of making financial systems more efficient, deep (such as credit intermediation and market turnover), broad (such as the variety of markets and instruments), and reach (such as access). Consistent with the preceding discussion, Nwosu et al. (2021) define financial deepening as the expansion of financial service offerings, catering to a broader range of societal strata. More liquidity is usually implied by it. This supports Ezeocha's (2020) argument that financial deepening actively draws savings and idle capital and distributes it to individuals, companies, and the government for investment projects and other uses with an eye towards returns, which serves as the foundation for economic development; and apparently makes Yahaya and Kolapo (2020) to affirm that financial deepening refers to achieving a greater penetration of financial services to all levels of society.

All the definitions above commonly agree that financial deepening connotes increasing provision financial services and products which can only be guaranteed or accomplished via efficient intermediation process. Consequently, this study views financial deepening as expansion in the range of available financial products and services and the efficient provisions of these products and services to financial consumers in manner that is affordable. In addition, since financial deepening is accomplished via the financial intermediaries whose primary incomes, and by extension, business continuity depends on the quantum of financial services provided, cautions are sometimes thrown to the winds by bending rules and eschewing ethical practices in a bid to maximize incomes and profits. This is the point at which financial deepening becomes dangerous and may eventually trigger financial crises if reckless financial deepening is not contained within a reasonable time. Thus, considering the aggressiveness of the financial sector's operators winning customers and business patronages largely driven by the deployment of technology, coupled by the stiff competition among these operators, it is imperative to measure the effect of financial deepening activities in Nigeria, especially as related to an important sector like the banking sector that is likened always to a pillar that hold the economy together. This thus accounts for why this study is aims at investigating the nexus of financial deepening and Nigerian financial sector.

Moreover, even though financial deepening carries some risk, there are also many advantages. For example, less liquid markets tend to allocate capital less effectively, which can lead to cycles of boom and bust in the credit, investment, and overall economy (IMF, 2011). Additionally, by definition, they are less able to absorb newcomers without experiencing significant fluctuations in real exchange rates and asset values (IMF 2012, citing World Bank 2011). Deep financial systems can therefore lessen the liquidity constraints that businesses and industries face, which lowers output and investment volatility. In a similar vein, having access to savings options and insurance plans enables households to more effectively manage their consumption over time. (IMF, 2012).

Ahonkhai (2019), citing Abur *et al.* (2013) discloses that financial deepening indirectly benefits the non-financial sectors (areas) of the country's economy, paving the path for improved economic performance through increased ability to compete efficiently within the confines of the financial markets. Increased risk and a faster capital transfer between economies are two benefits of financial deepening. Acharya and Xu (2017) concurred with the previous viewpoint and pointed out that quick and inexpensive access to capital for enterprises to finance working capital requirements, investments in cutting-edge technology, and other recent creative operations can promote economic development.

Financial Sector's Stability

The financial system is what makes it possible for lenders and borrowers to trade money on a regional level. It deals with money exchanges and financial transactions between borrowers, lenders, and investors. They are made up of intricately linked

markets, institutions, and services that are meant to link depositors and investors in a regular and effective manner (O'Sullivan & Sheffrins, 2003, and Gurusamy, 2008). Furthermore, according to Ahonkhai (2019), who cites Creel et al. (2015), the primary job of a country's financial system is to facilitate the allocation and deployment of economic resources as quickly as possible. Lenders, investors, and borrowers can trade financial resources, or monies, thanks to the financial system. A set of established protocols that monitor financial transactions can be referred to as the financial system at the international, regional, or company level (Anureev, 2017).

As argued by World Bank (2016), the best time to demonstrate financial stability is during financial instability, which is otherwise known as financial fragility. Therefore, granted that the period of financial fragility would better demonstrate what financial stability looks like, this study adopts bank z-score as a metric to measure bank financial stability following the World Bank (2016) recommendation that bank z-score is the appropriate firm level since this metric combines buffers with risk to measure bank solvency.

In addition, evidence has suggested a link between the financial deepening and the stability of the financial sector within which bank is a key operator. To this end, IMF (2012) notes that all else being equal, a quicker rate of financial deepening entails a higher risk of crisis and macroeconomic instability. Financial instability thus increases in tandem with the rate of deepening. One possible explanation is that more risk-taking and high leverage are often associated with faster institution growth, especially in situations when the financial system is not well regulated and overseen. As a result, the foregoing views show that financial deepening can equally be destabilizing to the financial sector; this thus justifies the necessity for carrying out this study so as to measure the relationship between financial deepening and financial stability in Nigeria.

Theoretical Framework

This study is built on concentration-stability theory. In 1986, Boyd and Prescott established the theoretical framework. By providing empirical support for these theories, researchers like Schaeck, Cihak, and Wolfe (2006) and Beck, Demirgüç-Kunt, and Levine (2006) furthered the promotion of these theories. According to the concentration-stability theory, banking systems generate higher profits as the concentration of the banking market rises. By providing larger capital buffers that shield the banks from external macroeconomic and liquidity shocks, the reinvestment of some of these profits has the effect of lowering financial fragility (Boyd et al. 2004). Similar to this, Keely (1990) puts forth the "charter value hypothesis," which states that a higher charter or franchise value would discourage the bank's management from taking on excessive risk.

This is due to two factors: first, higher franchise value results in higher opportunity costs when bankruptcy occurs; second, bank management and shareholders are unwilling to approve riskier investments that could jeopardise their future profits, according to Park and Peristiani (2007). Bigger banks are thought to engage in credit rationing, selecting only those few investments that will boost the return on their loan portfolio and promote financial soundness, in addition to their comparative advantages in offering credit monitoring services (Boot & Thakor, 2000). The concentration-stability view's proponents also contend that big banks profit from geographic risk diversification effects as a result of their cross-border operations and functional diversification effects, which allow them to more effectively diversify the risks in their loan portfolios due to their larger economies of scale and scope (Boyd & Prescott, 1986). Additionally, it has been proposed that as a market with a small number of major banks may be simpler to watch, bank supervision may be more fruitful and the chance of a system-wide contagion reduced (Allen & Gale, 2000).

By applying this theory into Nigeria's context and the focus of this study, the Nigerian banking sector is designed to observe the tenets of concentration-stability theory since majority of the Nigerian banks are concentrated as deposit money banks (commercial banks) with each having N25bn capital base; this, in the judgement of the banking regulators is sufficient to keep any bank financially sound, considering the prevailing economic and political situation in Nigeria. This is because, Soludo (2004) argued that it is the expectation that a bank with N25 billion worth of capital would be able to efficiently perform its roles as financial deepening agent in a manner that keeps the economic steadily progressive while having enough buffer to absorb shocks without impairment to the shareholders' fund. Furthermore, Ahmed *et al.* (2020) aligns with the foregoing by positing that following the global financial crisis of the late 2000s, Nigeria implemented a number of policies aimed at bolstering its financial industry. To mitigate the impact of a comparable crisis in the future, a number of tactics and changes were implemented to guarantee that the financial industry is robust and well-positioned to support Nigeria's economic expansion. However, the extent to which concentration of banks is potent in stimulating financial stability remains debatable as many banks since 2004 has equally gone under in the name of various mergers and acquisitions schemes.

Nevertheless, this theory has relevant to the present study since the concentration of banks within the banking sector since banks are categorized into regional, national and international banks based on their financial strengths; this is thus expected to reduce financial instability and strengthen the balance sheet of the banks which are, based on each classification expected to assume business scale in proportional to their licence status, thereby guaranteeing the stability of the banking sector in the course of doing their ordinary business and functioning as financial deepening agents. This therefore, underpins the need for this study to be carried out to confirm if financial deepening is responsible for financial stability in the Nigerian banking sector. This theory thus forms the basis of hypotheses' testing and charts the way for discussion of findings and conclusion in this study.

Empirical Review

Bakare (2022) looked at how financial deepening affected Nigeria's efforts to reduce poverty. The World Development Indicator and the Central Bank of Nigeria's statistical bulletin were the sources of secondary data from 1999 to 2019. Granger causality and OLS were used in the data analysis to determine the short-term relationships between the variables. Results showed that there was a long-term association between the variables, and OLS showed that financial deepening and the decline in poverty and unemployment rate in Nigeria had a positive and significant relationship. The Granger Causality Test demonstrated that improvements in national development are caused by giving credit to the private sector. This study focused on financial stability in the Nigerian banking industry, whereas the current study focused on financial deepening, although the dependent variable in this study was poverty reduction.

Okere *et al.* (2021) the study investigated the effect of financial deepening on entrepreneurial development in Nigeria from 1999- 2018. Ordinary Least Squares (OLS) econometric technique and granger causality tests were adopted for the analysis. Given the ordinary least squares result, the study revealed that financial deepening exhibited positive and significant relationship with entrepreneurial development in Nigeria within the period under study. This positive and significant relationship was stimulated by the number of bank branches (BBCH) and banks credit to small and medium scale enterprises (SMEs). The study therefore recommends that since banks' credits to small and medium scale enterprises (SMEs) are significant in entrepreneurial development. However, the proxies used by this study for financial deepening are all banking-based with no considerations for the financial deepening activities of other sub-sectors like insurance, pension, financial market, etc. Furthermore, the focus of the study which is financial deepening in relation to entrepreneurial development is quite different from the present study.

The impact of financial deepening on economic growth in Nigeria was assessed by Nwakobi et al. (2019) over a thirty-three-year period, from 1986 to 2018. The effect was calculated in accordance with the Granger Causality analysis using the Autoregressive Distributive Lag (ARDL) approach in the study. The study discovered that financial deepening had little effect on Nigeria's economic growth. The study also indicated that the degree of economic growth determines the degree of development in the banking industry. This study also did not focus on financial stability but aggregate economic growth unlike the present study; in addition, the scope of the study ended in 2018, which is about three years behind while the present study collects and updates data analysis up to 2021.

Using kernel quantile regression, simple ordinary least squares (OLS), and autoregressive distributed lag (ARDL) models, Ayadi (2019) examined the contributions of savings and financial development to economic growth in Nigeria between 1981 and 2015. While broad money as a percentage of GDP had a considerable negative influence on economic growth, the study revealed that two indicators of financial development had a reasonably large positive impact on growth in Nigeria. The results were inconsistent. The expansion of the economy was positively impacted by savings to a considerable extent. Consequently, the report suggests that in order to increase savings in Nigeria, governments at all levels should encourage savings mobilisation efforts. Despite the fact the scope of this study is limited to 2015, it equally the not include financial stability as its focus but dwelled on aggregate economic growth which is at variance with the focus of the present study altogether.

Mbah and Okoli (2020) examined the relationship between Nigeria's growing manufacturing production and the development of the financial sector from 1986 to 2019. The Toda-Yamamoto test of causality was used to examine whether or not there was a feedback loop between the deepening of the financial sector and the growth of Nigeria's manufacturing output. The study was centred around structural vector autoregressive models. The study discovered that the development of the financial sector and the rise in manufacturing production can have an impact on one another. Additionally, as measures of financial deepening, the ratios of credit to the private sector and the broad money supply are more reliable than the market capitalisation ratio in predicting industrial production in Nigeria. Financial deepening boosts domestic investment over time, but this has a detrimental long-term impact on the expansion of industrial output. This study primarily focusses on economic growth rather than the relationship between financial deepening and banking sector financial soundness. Furthermore, the study did not address financial deepening in Nigeria's other financial subsectors, in contrast to the current study.

The relationship between Nigeria's financial system stability and financial deepening was empirically demonstrated in Ahonkhai's (2019) study. Secondary data encompassing the years 1989 through 2017. Using Econometric software, the Ordinary Least Square approach was used to estimate the Research Model. During the study period, financial stability in Nigeria was found to be positively and considerably impacted by financial deepening. It is advised that the government and policymakers employ both fiscal and monetary policies to promote financial stability in Nigeria based on the research's findings. To maintain Nigeria's financial stability, a focus on broad money management is necessary. This study although examined financial deepening in respect of financial stability. However, the study did not focus on the Nigerian banking sector like the present study while its scope is limited to 2017, and hence, can best be described as outdated.

Yahaya and Kolapo (2020) looked at how Nigeria's economic growth was affected by financial deepening. Regression analysis and the error correction model were used, and the results showed that the capital market-related financial deepening variables and the banking sector are important drivers of economic growth in Nigeria, with coefficient values of 3.28E-09 and 4.6015 at the 5% significant level, respectively. According to the study's findings, Nigeria's economy grows when financial

deepening occurs. This study was not carried out to investigate the connection between financial stability and financial deepening in the banking industry, based on its stated purpose. The primary objective of the study, which is distinct from the current study's focus, is how the financial deepening affects the whole economy.

Ezeocha (2020) focused on the relationship between financial deepening and growth of the Nigerian economy. Ordinary Least Square Regression method was employed in analyzing the data covering 1986-2018. Essentially, it was revealed among other things that the financial sector development is a great determinant of the level of growth in the Nigerian economy, and recommended that, though the financial sector development affects economic growth, external factors such as political unrest, insecurity, international influence, etc, which also exert influence on economic growth, should be properly addressed by the government. This study is not different from its counterparts like Ayadi (2019), Mbah and Okoli (2020) and others that focused on aggregate economy other than the financial stability in the banking sector. Furthermore, the scope of the study is rather outdated as it is about 5 years behind the present time.

METHODOLOGY

Research Design

The study's design is quantitative in nature, as such, the study obtains time series data from the secondary source in accordance to the stated objectives and research questions. These data are sourced after reviewing sufficient empirical works enough insights gained into the relationship between financial deepening, the independent variable, and financial stability, the dependent variable in Nigeria.

Model Specification

The model of this study was formulated from the one specified by Ahonkhai (2019) when he investigated the effect of financial deepening on financial system stability. His original model was specified thus:

$$AFSI = f(FDEP).....(1)$$

Where:

AFSI = aggregate financial stability index; and FDEP = aggregate financial deepening.

Hence, the above model was adapted for this study by disaggregating FDEP since the study considers financial deepening both in the bank and non-banking sector thus:

$$FSSI = f(FDEPB, FDEPNB) (2)$$

Where:

FSSI = Bank financial stability index; and FDEP = financial deepening

FDEPB is the financial deepening by the banks; and FDEPNB is the financial deepening by

the non-bank financial institutions. Furthermore, since financial deepening by banks is measured by taking deposit money banks and Central Bank into context while financial deepening by non-bank financial institutions is considered from the view of insurance firms and stock market because the previous studies have only focussed on the financial deepening by the banks alone, the present study expands its evaluation to other sub-financial sectors other than banks. hence, the various proxies are substituted in the model Eq(2) thus:

$$FSSI = f(FDDMB, FDCBN, FDINS, FDSTM, FSD)..... (3)$$

In econometric form, the above model can be stated thus:

$$FSSI_t = \beta_0 + \beta_1 FDDMB_t + \beta_2 FDCBN_t + \beta_3 FDINS_t + \beta_4 FDSTM_t + \beta_5 FSD U_t(4)$$

The ARDL model form of (4) is stated thus:

$$\Delta FSSI_t = \beta_0 i + \beta_1 FDDMB_{t-1} + \beta_2 FDCBN_{t-1} + \beta_3 FDINS_{t-1} + \beta_4 FDSTM_{t-1} + \sum_{i=1}^p \theta_i \Delta FSSI_{t-1} + \sum_{i=1}^q \gamma_i \Delta FDDMB_{t-1} + \sum_{i=1}^q \lambda_i \Delta FDCBN_{t-1} + \sum_{i=1}^q \phi_i \Delta FDINS_{t-1} + \sum_{i=1}^q \delta_i \Delta FDSTM + \sum_{i=1}^q \pi_i \Delta FSD + U_t.....(5)$$

Where: β_0 = model constant or intercept; $\gamma_i, \lambda_i, \phi_i, \delta_i, \pi_i$ = Short run dynamic coefficients of the parameters to equilibrium; p = lag order of the endogenous variable; q = lag order of the exogenous variable; β_0 = Constant term or intercept of the model

Variable Description and Measurement

The variables in (4) are described thus:

FSSI = financial sector's stability index which is measured and proxy by bank z-score, which measures the amount of buffers the banking system has to guard against shocks to earnings. A lower z-score means a lower distance-to-distress, that is, bigger financial stability risks (IMF, 2016)

FDDMB = financial deepening by the deposit money banks measured by the ratio of the bank assets to GDP

FDCBN = financial deepening by the CBN measured by the ratio of the Bank assets to GDP

FDINS = financial deepening by the insurance sector, measured by the ratio of insurance assets to GDP

FDSTM = financial development in the stock market, measured by the ratio of market capitalization to GDP

FSD = This is the financial system deposit as a percentage of GDP; β_0 = constant of the regression equation; $\beta_1 - \beta_4$ = the parameters for estimation.

A priori Expectation

All the independent variables (financial deepening proxies) are expected to maintain positive relationship with the dependent variable (banking sector stability) in line with concentration stability theory; or maintain negative relationship in line with concentration fragility theory.

Sources of Data

The study is carried out using data obtained from secondary source i.e Central Bank of Nigeria (CBN) statistical bulletin and World Bank Development Database for the period covered by the study.

Method of Data Analysis

The study began the analysis with conduct of Unit root test by using Augmented Dickey Fuller approach; Sequel to the integration of some of the variables at levels and some at first differencing, the study proceeded to conduct ARDL co-integration bound test, and thereafter employed Autoregressive Distributed Lags Model as estimation technique following Peasaran et al. (2001).

RESULTS AND DISCUSSION

This section reports the results of data analysis as follows:

Unit Root Test

Time series data typically have unit roots and are trended; if these factors are neglected, the findings may become erroneous. As a result, the study used the Philips-Perron technique to subject the variables to a unit root test; the findings are shown in Tables 1a and b.

Table 1a: Augmented Dickey-Fuller Unit root test at logarithmic levels

H0: Each variable has a unit root; **H1:** H0 is not true

Variables	Critical value @5%	Philips-Peron-test statistics	Order of Integration	Remarks
FSSI	-3.004861	2.736442	-	Non-stationary
FDDMB	-3.012363	-2.446731	-	Non-stationary
FDCBN	-3.004861	-0.297310	-	Non-stationary
FDINS	-3.020686	-4.685029*	I(0)	Stationary
FDSTM	-3.004861	-2.542219	-	Non-stationary
FSD	-3.012363	-1.567460	-	Non-stationary

*FSSI: financial stability index; FDDMB = financial deepening by the deposit money banks; FDCBN = financial deepening by the CBN; FDINS = financial deepening by the insurance sector, FDSTM: financial development in the stock market; FSD: financial system deposit as a percentage of GDP. Notes: *Denotes significance at the 5% level and the rejection of the null hypothesis of non-stationarity.*

Source: Author's computation using E-view 10.0 (2023)

Since many of the variables are integrated at levels, they were differenced once and the result is contained on Table 1b:

Table 1b: Phillips-Perron Unit root test results at first differences

Variables	Critical value @5%	Philips-Peron-test statistics	Order of Integration	Remarks
FSSI	-3.012363	-6.895402*	I(1)	Stationary
FDDMB	-3.012363	-3.157883*	I(1)	Stationary
FDCBN	-3.012363	-3.967734*	I(1)	Stationary
FDINS	-	-	I(0)	Stationary
FDSTM	-3.012363	-6.248406*	I(1)	Stationary
FSD	-3.020686	-3.641674*	I(1)	Stationary

*FSSI: financial stability index; FDDMB = financial deepening by the deposit money banks; FDCBN = financial deepening by the CBN; FDINS = financial deepening by the insurance sector, FDSTM: financial development in the stock market; FSD: financial system deposit as a percentage of GDP. Notes: *Denotes significance at the 5% level and the rejection of the null hypothesis of non-stationarity.*

Source: Author's computation using E-view 10.0 (2023)

Table 1b reveals that when the variables were differenced once, all the variables that were not stationary at level became stationary. This thus implies that when the variables of this study are integrated of mixture of I(0) and I(1); a condition that justifies the application of Autoregressive Distributed Lags model according to Peasaran et al. (2001).

Cointegration Bound Test

To further find out if long run relationship among the study’s variables, co-integration bond test was conducted with result reflected on Table 2.

Table 2: Cointegration Bound Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
Asymptotic: n=1000				
F-statistic	0.930747	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: Author’s computation using E-view 10. 0 (2023)

As depicted on Table 2, the Null hypothesis for co-integration bond test is that there is no long run relationship among the variables. Therefore, judging from the F-statistics that is less than the lower and the upper bounds at critical value of 0.05 i.e F-stat = 0.93 < 2.39 & 3.38, the null hypothesis of no co-integration relation could not be rejected. Hence, the study concludes that there is no existence of co-integration relation among the variables of this study, implying that only short run coefficients via ARDL can be estimated as depicted on Table 3.

ARDL Estimated Results

The estimated short run coefficients are summarised on Table 3

Table 3: ARDL Short-run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
FSSI(-1)	0.115140	0.675834	0.170367	0.8756
FSSI(-2)	1.479199	0.563640	2.624370	0.0787
FDDMB	0.660673	0.714422	3.224899	0.0365
FDDMB(-1)	1.224861	0.567059	2.160024	0.1196
FDDMB(-2)	-1.960193	0.808800	-2.423582	0.0939
FDCBN	-0.155078	0.806944	-0.192179	0.8599
FDCBN(-1)	-1.751821	1.094097	-1.601156	0.2077
FDCBN(-2)	1.697225	1.252942	1.354592	0.2685
FDINS	9.994098	8.365996	1.194609	0.3181
FDINS(-1)	-25.85307	11.01661	-2.346736	0.1006
FDINS(-2)	20.64641	10.34382	1.996014	0.1399
FDSTM	0.116545	0.230298	0.506061	0.6477
FDSTM(-1)	-0.392189	0.307601	-1.274994	0.2921
FDSTM(-2)	-0.446653	0.324341	-1.377108	0.2622
FSD	0.378982	0.770472	0.491883	0.6565
FSD(-1)	-1.026768	0.489224	-2.098769	0.1267
FSD(-2)	1.468148	1.148470	1.278351	0.2911
C	-7.844112	19.38536	-0.404641	0.7129
<hr/>				
R-squared	0.947456	Mean dependent var		15.97367
Adjusted R-squared	0.649707	S.D. dependent var		2.349339
S.E. of regression	1.390469	Akaike info criterion		3.265535
Sum squared resid	5.800214	Schwarz criterion		4.160840
Log likelihood	-16.28812	Hannan-Quinn criter.		3.459839
F-statistic	3.182062	Durbin-Watson stat		2.119756
Prob(F-statistic)	0.185152			

Source: Author’s computation using E-view 10. 0 (2023)

From Table 5, the financial sector's stability index (FSSI) is positively associated with itself in its lag 1 and 2, connoting that financial stability in the previous year is largely a positive determinant of financial stability in the current year in the short run. With respect to financial deepening activities of the deposit money banks (FDDMB), the result on Table 3 reveals that it is positively and significantly associated with financial sector's stability sector; such that for every 1% increase in its value, about 66% increase is recorded in the financial sector's stability; similar positive effect is recorded for FDDMB in lag 1 whereas, the result turned negative in lag 2, perhaps, due to yearly variation in most monetary and macroeconomic policies of government which make previous year policies inadequate to sustain today's banking challenges.

In terms of financial deepening activities by the Central Bank of Nigeria (FDCBN), a negative and insignificant association is recorded in relationship with financial sector's stability both at the current value and at lag 1. To this end, increase in FDCBN by 1% generates about 15% decrease in FSSI. The lag 2 however shows positive and insignificant relationship, thereby suggesting that it takes about 2 years for financial deepening actions of CBN to culminate in the stability of the banking sector financially. In addition, the current value and lag 2 of the financial deepening by the insurance sector (FDINS) produces positive but insignificant relationship with financial sector's stability. however, at lag 1, FDINS is inversely related to FSSI, suggesting that previous year financial deepening activities by the Nigerian insurance firms do not manifest into financial sector's stability in Nigeria.

Financial deepening via the financial market (FDSTM) is also associated with FSSI positively in its current year value, to the extent that should there be increase in financial deepening activities in the financial market by 1%, it would culminate in about 11% increase in the stability of the banking sector in the short run and vice versa. The reverse of the foregoing is true with lag 1 and lag 2 which are negatively and insignificantly associated with FSSI. This justifies how dangerous the past years volatility in the Nigerian stock market impairs the current year financial sector's stability and portends grave danger for the entire Nigerian economy. The financial system deposit (FSD) also follows similar trends as its current year value is positive in predicting banking sector stability, such that 1% increase in FSD triggers about 38% increase in the financial sector's stability. This is not unexpected as banks depends largely on mobilized deposits to propagate financial deepening in the economy. The positive effect of FSD was reversed judging from the negative effect had by its lag 1 and 2 on FSSI, meaning that accumulated financial system deposit in the previous years are not helpful in maintaining financial sector's stability in the current year; this cannot be far from high default rate on loans created from those deposits which creates risk assets for the banks; since the use to which deposits are best put is to optimally creates financial products (financial deepening) from them to enhance banking stability.

The R^2 which is the coefficient is determination is 0.95%, connoting that all the financial deepening proxies modelled in this study predicted financial sector's stability in the Nigeria by 95%, thereby leaving the remaining 5% to be determined by other extraneous factors which could predict financial stability in the financial sector but not modelled in this study. The value of the R^2 is notably robust and attests to the goodness of fit of the estimated model; in addition, the adjusted- R^2 is also very robust at 0.65, which further reinstates the potency of the independent variables to adequately predict the financial stability in the banking sector. Also, the Durbin-Watson statistics is 2.11; this is within the tolerable level and indicates absence of either positive or negative serial correlation in the model estimates. The standard errors of the estimates are generally low, thereby confirming the result earlier obtained with descriptive statistics.

Causality Test

One of the specific objectives of this study is to establish the direction of causation between financial deepening and financial sector's stability. Thus, the study employed Granger pairwise causality approach the result are as displayed on Table 4.

Table 4: Pairwise Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
FDDMB does not Granger Cause FSSI	21	1.35107	0.2870
FSSI does not Granger Cause FDDMB		5.61932	0.0142
FDCBN does not Granger Cause FSSI	21	2.60347	0.1050
FSSI does not Granger Cause FDCBN		0.46336	0.6374
FDINS does not Granger Cause FSSI	21	0.29564	0.7480
FSSI does not Granger Cause FDINS		2.08805	0.1564
FDSTM does not Granger Cause FSSI	21	0.82933	0.4543
FSSI does not Granger Cause FDSTM		2.40887	0.1218
FSD does not Granger Cause FSSI	21	4.42989	0.0294
FSSI does not Granger Cause FSD		1.78013	0.2004

FSSI: financial stability index; FDDMB = financial deepening by the deposit money banks; FDCBN = financial deepening by the CBN; FDINS = financial deepening by the insurance sector, FDSTM: financial development in the stock market; FSD: financial system deposit as a percentage of GDP.

Source: Author's computation using E-view 10. 0 (2023)

The study further checked the relationship between financial deepening and financial sector's stability in Nigeria by conducting Granger causality test. The result of this test as reflected on Table 6 shows that there is a unidirectional causality between FDDMB and FSSI. The result shows in this wise that it is the FSSI that granger caused FDDMB i.e the financial stability in the banking sector is responsible for the financial deepening activities by the deposit money banks in Nigeria. Furthermore, between FDCBN and FSSI, no form of causality is revealed; furthermore, between FDINS and FSSI, there is no evidence of causality detected; Also, no evidence of causality is found between FDSTM and FSSI. However, a unidirectional causality is detected from the FSD to the FSSI. This implies that financial system deposit (FSD) is significantly responsible for the financial stability in the banking sector and not vice versa.

Diagnostic Tests

Table 5: Heteroskedasticity Test: Breusch-Pagan-Godfrey

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.307763	Prob. F(17,3)	0.4706
Obs*R-squared	18.50317	Prob. Chi-Square(17)	0.3578
Scaled explained SS	0.403705	Prob. Chi-Square(17)	1.0000

Source: Author's computation using E-view 10. 0 (2023)

The above Table 5 reveals that F-stat = 1.30 while its p-value = 0.47. The null hypothesis for this test states that residuals are homoskedastic; considering the p-value at 0.47 which is greater than 0.05 critical value the null hypothesis cannot be rejected due to insufficient evidence. Hence, the study concludes that the residuals of the estimated model are of equal variance and free from heteroskedasticity.

Discussion of Findings

This study has obtained evidence of how financial deepening by different sub-sectors within the Nigerian financial sector affects financial stability in the banking sector. The study showed that only the financial deepening by deposit money banks was significant in predicting the financial stability of the banks. This indeed, aligns with a priori expectation of positive relationship and help to corroborate evidently the main tenet of concentration stability theory that concentration of banks that are big within economy brings about growth of the financial institutions and investment diversifications that further help to stabilize the financial system. The reason for the significant positive relationship of the financial deepening by deposit money banks with financial stability may not be unconnected to the size of the banks in this category which accounts for the largest form of banks in Nigeria in terms of assets and deposits. This study corroborates those of Olawumi and Oladeji (2017) and aligns with Ahonkhai (2019) who respectively examined how financial deepening affected bank performance and financial system stability with documented evidence of positive relationship.

Furthermore, It was discovered that the financial stability would suffer from the Central Banks of Nigeria's financial deepening in the current year. The aforementioned may have its roots in the way the CBN currently supports the government through direct lending, which is mostly utilised for recurrent expenditure of the yearly budget forecasts rather than being backed by production. The recipients of the funding include businesspeople, politicians, and government employees. Some of them, being paid humongous salaries or overpaid for work done or not done. At the end of the day, parts of the money go into the foreign exchange market to buy foreign currencies and depreciate the naira gradually or massively while others are kept in personal vaults for use during the campaigns leading to elections. All these antics are putting the core mandate of the banking sector in to risk and impairs stability of the sector. the foregoing is thus a confirmation of the concentration fragility theory by Boyd and Prescott (1986).

Findings in this study however contradict Loayza and Ranciere (2006, as cited in Nwosu *et al.*, 2021) who argued that as an economy develops, financial development could make the sector more prone to systemic risk, cycles of booms and busts, and overall financial volatility. In addition, the causality test further proved the foregoing as showed that a unidirectional causality flowed from the financial system deposits to the stimulate financial stability in Nigeria. The causality test however, showed further that financial sector's stability granger caused the financial deepening activities of the deposit money banks. This may not be far from the fact that deposit money banks are the largest agents of financial deepening as far as Nigeria is concerned today and dominate

the financial sector. This finding indeed corroborates Ahonkhai (2019) but contradicts the insinuation by IMF (2012) that financial deepening poses risk of financial and macroeconomic instability to the financial sector.

CONCLUSION AND RECOMMENDATION

Conclusion

The study provides the evidence of whether or not financial deepening is responsible for financial stability in Nigeria. Previous studies have concentrated largely on financial deepening and aggregate or disaggregate economic growth to the exclusion of the financial sector; and selected financial deepening proxies only from the banking sector. The foregoing has made existing evidence skewed unjustifiably in favour of the banking sector only with attendant biases. This study however relied on these gaps to investigate cause and effect relationship between the financial deepening and financial stability in Nigeria. Evidence obtained so far by this study showed that financial deepening both by the bank and non-bank financial institutions were positively associated with financial sector's stability; in addition to this, the causality test showed evidence that there was causality running from the financial sector's stability to the financial deepening by the banking sector, just as financial stability in the banking sector was equally granger caused by the financial system deposit. Based on the foregoing evidence therefore, the study concludes that financial deepening stimulates financial sector's stability while a bidirectional causality is said to exist between the financial deepening and financial stability in Nigeria.

Recommendations

Based on the documented evidence in this study:

- i. It is suggested that there is need for the regulators and operators in the non-bank financial institutions to scale up awareness of their products so as to further deepen finance activities by them and reverse the insignificant nature of their effect on financial sector's stability to significant.
- ii. Central Bank is advised to desist from reckless direct lending to federal government in the name of ways and means advances via printing of digital and other forms of money that is not justified or backed up by production so as to reverse the negative effect its lag 1 financial deepening activities have on banking sector's stability in the short run.
- iii. Both banks and non-bank financial institutions should step up efforts to embark on aggressive deposits mobilization since this helps to stimulate financial stability in the banking sector according to evidence obtained by this study. Upward adjustment of saving interest rate may be helpful in attracting deposit in this wise.

Contribution to Knowledge

The frontier of knowledge in literature has been shifted forward by outcomes of this study for its novelty in investigating and documenting evidence on the relationship between the financial deepening and financial stability in the banking sector. Moreover, the study flavours the literature with evidence of the effect of financial deepening from non-bank financial institution on banking sector's stability, just and it remains novel in providing evidence of causality between the financial deepening and the banking sector's stability in Nigeria.

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