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## THE DEPOSIT INSURANCE SCHEME AND THE MORAL HAZARD HYPOTHESIS: NIGERIAN EVIDENCE

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This study empirically investigates the nexus between the moral hazard hypothesis and the adoption of the Deposit Insurance Scheme (DIS) in Nigeria. Using the secondary data sourced from the Nigerian Deposit Insurance Corporation's (NDIC) annual reports and accounts, a multiple regression model was formulated, comprising a deposit insurance fund as a proxy for moral hazard (the dependent variable), whereas the asset quality indicators of Nigerian banks were the independent variables. The estimation technique according to the Generalized Method of Moments (GMM) was used to test the relationships between the variables. The study revealed a significant positive relationship between the asset quality indicators of Nigerian banks and the deposit insurance fund, which supports the moral hazard hypothesis. It is recommended that governments should strengthen their banking regulatory systems in order to mitigate the unintended risks which the adoption of the DIS portends.

**Keywords:** moral hazard hypothesis, total loans and advances, nonperforming loans, ratio of nonperforming loans to total loans, shareholders' fund

JEL Classification: G21, G28

### INTRODUCTION

Globally, the functionality and sustainability of any economy is incumbent upon the ability of Deposit Money Banks (DMBs) to effectively discharge their financial intermediation role by ensuring a seamless flow of funds from surplus to deficit economic units; hence governments and financial service regulators constantly fine-tune measures and policies so as to further consolidate the banking operations aimed

at safeguarding their customers' deposits. However, it is common knowledge that banks' intermediation role is very strategic, where long-term assets are, in most cases, financed with short-term deposits, which is a practice that could precipitate bank distress and failure. The need to mitigate this ugly scenario informed the design and implementation of the DIS as a financial safety net in Nigeria.

G. A. Ogunleye (2002, 2) defines a deposit insurance scheme (DIS) as a financial guarantee designed to protect customers' deposits, principally a small unsophisticated category, in the event of bank failure so as to boost their confidence in the financial

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system and forestall bank runs, equally serving as a regulatory measure utilized by the monetary authorities to efficiently manage disruptions and ensure that disruptions usually associated with distressed and failed deposit-taking financial institutions are resolved amicably. The scheme avails the government a regulatory framework in order to intervene and mitigate the potential disruptive effects that a failure of deposit-taking institutions might inflict on the stability of financial systems. Industry experts and scholars alike have argued that, despite the good economic intentions of establishing a DIS, its implementation comes with an unintended consequence by inadvertently increasing the risk-taking appetite of banks, the phenomenon referred to as the moral hazard hypothesis (Davis & Obasi, 2009, 3; Ume, Oleka & Obasikene, 2017, 38).

Basically, it entails a situation in which banks recklessly adopt a *laissez-faire* attitude towards granting loans and advances without recourse to conducting due diligence on potential borrowers, as it is erroneously believed that any loss arising therefrom will be indemnified by a deposit insurance mechanism (Forssbaeck, 2011). The extant literature identifies two distinct schools of thought as far as the reaction of banks to the DIS is concerned. The group of those who argue that the DIS is justified because it acts as a palliative for small unsophisticated depositors and ensures the stability of financial systems oppose the moral hazard hypothesis (Ogunleye, 2002, 2; Enkhbold & Otgonshar, 2013), whereas the other researchers posit that an explicit DIS encourages increased risk-appetite and financial recklessness amongst financial institutions, which, if not checked, could ultimately result in a systemic collapse (Demirgüç-Kunt, Kane & Laeven, 2015; Sahadewo, Purwanto & Pradipto, 2018)

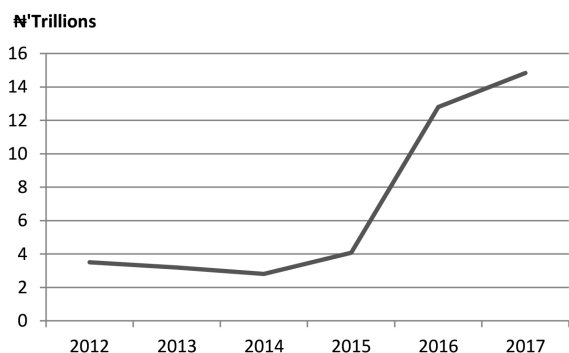
### Rationale for the Study

Given the fact that the economy is still recovering from a recession, Nigeria's banking sector continues to confront daunting challenges in its bid to efficiently perform its intermediation role and promote economic growth (World Bank, 2016, 4). The oil price shock of

2015, which plummeted revenue from oil, coupled with the exchange rate fluctuations has precipitated adverse levels in the asset quality indicators of DMBs (the total loans and advances, nonperforming loans, the ratio of nonperforming loans to the total loans and the ratio of nonperforming loans to shareholders' funds), the data collected from the 2017 annual report and accounts of the Nigerian Deposit Insurance Corporation (NDIC) indicate that the total loans and advances from the banking industry to the economy stood at ₦15.91 trillion in 2017, thus representing a 2.33% decrease in comparison with ₦16.29 trillion recorded in 2016. The industry's nonperforming loans increased by 13.46%, i.e. from ₦2.08 trillion in 2016 to ₦2.36 trillion in 2017 (Figure 1); the industry equally witnessed a high exposure to credit risk as the asset quality (the ratio of nonperforming loans to the total loans) further declined from 12.80% in 2016 to 14.84% in 2017 (Figure 2). That figure matched unfavourably with the industry's maximum prudential threshold of 5%. It is interesting to note that, despite the adverse statistics in the asset quality indicators, the deposit insurance fund increased from ₦827.81 to ₦959.56 billion between 2016 and 2017, thus bringing up the need to investigate the argument espoused by the proponents of the moral hazard hypothesis that the DIS increased the risk-taking appetite of banks.

Equally, the majority of the studies on the DIS and moral hazard were conducted in the developed economies of the United States of America (USA), Great Britain and the European Union (Peia & Vranceanu, 2017; Demirgüç-Kunt *et al*, 2015; Anginer & Demirgüç-Kunt, 2018; Storbacka, 2018). With very few studies on economies in sub-Saharan Africa (Anyanwu, 1997; Ani & Ogar, 2018). The only recorded study on this phenomenon in Nigeria by U. Ume, C. Oleka and C. Obasikene (2017) was at best a theoretical discourse; hence, this study is aimed at bridging these observed knowledge gaps by empirically investigating the nexus between the moral hazard hypothesis and the implementation of the DIS in the Nigerian banking industry.

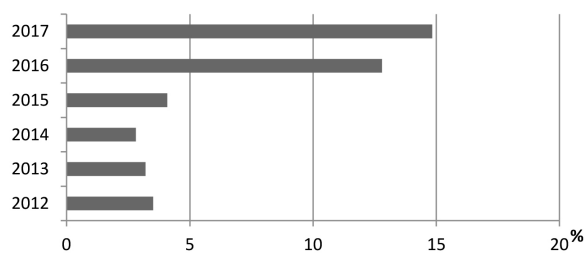
Specifically, this paper seeks to address the research question pertaining to the extent to which the growth trend in the deposit insurance fund has significantly



**Figure 1** The trend of Nonperforming Loans in Nigerian Deposit Money Banks (2012-2017)

Source: NDIC Annual Report and Accounts 2017, 117

increased banks' risk appetite by exerting an impact on the volume of the Total Loans and Advances (TLA), the Nonperforming Loans (NPLs) portfolio, the ratio of Nonperforming Loans to the Total Loans (NPLsTL) and the ratio of Nonperforming Loans to Shareholders' Funds (NPLsSHF). In order to achieve this objective, a multiple regression model was formulated, comprising the deposit insurance fund as the proxy for moral hazard (the dependent variable), whereas the asset quality indicators of Nigerian banks viz: the TLA, NPLs, the ratio of NPLsTL and the ratio of NPLsSHF were the independent variables. Furthermore, the estimation technique according to the Generalized Method of Moments (GMM) was used to ascertain the relationships between these variables.



**Figure 2** The trend of Nonperforming Loans to the Total Loans in Nigerian Deposit Money Banks (2012-2017)

Source: NDIC Annual Report and Accounts 2017, 118

Following the introduction and the rationale for the study, the rest of this paper is structured as follows: in Section 2, the conceptual underpinnings and prior empirical studies on the subject matter are discussed; in Section 3, the methodological framework is developed, incorporating the model formulation and the operationalization of the variables; in Section 4, the empirical findings and discussions are presented; finally, the conclusions are given in Section 5 of the paper.

## REVIEW OF THE RELATED LITERATURE

### The Nexus Between the Moral Hazard Hypothesis and the Deposit Insurance Scheme

Although the DIS can tackle small isolated incidences of bank failures, it cannot deal on its own with the collateral consequences that a systemic banking crisis might portend, for which reason it must be emphasized that the effective implementation of the DIS as a financial safety net mechanism will only thrive in a healthy banking system; equally, its credibility is incumbent upon a proper design, a faithful implementation and sufficient understanding by the banking public. It also requires the support of adequate prudential guidelines and supervision, timely accounting and disclosure requirements, coupled with the effective enforcement of legislations by the money market regulatory agencies (the Central Bank of Nigeria - CBN, and the Nigerian Deposit Insurance Corporation - NDIC). However, despite the inherent benefits of the DIS, theoretical and empirical evidence alludes to the argument that it orchestrates moral hazards in banking operations. Moral hazard represents a major negative consequence of implementing explicit deposit insurance. K. Ume, C. Oleka and C. Obasikene (2017, 39) assert that moral hazard refers to "any situation in which someone makes a decision on how much risk to take and someone else bears the cost if anything goes wrong". The proponents of the moral hazard hypothesis argue that the implementation of explicit deposit insurance tends to

increase the risk-taking appetite of stakeholders in the financial services sector and encourages depositors' complacency in monitoring their bank deposits. In the same vein, P. A. McCoy (2007, 4) opines that, while the explicit DIS may significantly reduce the incidences of bank runs in countries with effective institutions and proper regulatory safeguards, on the flip side, it may exacerbate systemic banking crises by allowing unfettered leverage to take more risk by acting as a disincentive for insured claim holders to regulate the operations of bank management. However, M. J. Flannery and R. R. Bliss (2018, 7) espoused the relevance of financial structures, incentives and market discipline in stemming excessive risk-taking.

### Review of the Developments of the Nigerian Banking Sector and the Deposit Insurance Framework

The period between 1994 and 2015 witnessed the closure of 49 DMBs by the Central Bank of Nigeria, with a sizeable number concentrated around 1998 (27) and 2006 (13), as is shown in Table 1. The 1998 and 2006 bank closures were largely triggered by the regulatory requirements geared towards enhancing bank capitalization, (Alford 2010; Alford 2012; Obienusi & Obienusi, 2015). The Central Bank increased the uniform minimum paid-up capital for commercial and merchant banks to ₦500 million in December 1998. Furthermore, in 2014, the Central Bank of Nigeria implemented far-reaching reforms to shore up bank capitalization, the major elements of this reform being the fixing of the minimum capital base for the DMBs at ₦25 billion and the establishment of the Asset Management Company (AMCON) (World Bank, 2016, 12). Between 2004 and 2007, there was a further reduction in the number of commercial banks from 89 to 25 by the CBN, which was effected through mergers and outright liquidation.

In 2002, all the commercial banks operating in Nigeria received universal banking licenses, borrowing from the European banking model. This universal banking model permitted the commercial banks to offer collateralized loans far in excess of equity securities, which exposed them to high levels of margin loans

witnessed between 2007 and 2009. Nigeria's response to this financial turbulence was similar to that of the other countries that witnessed the government and central bank support programs for banks, which made provisions for government guarantees for all deposits and interbank lending, recapitalization, liquidity and the establishment of the Asset Management Corporation of Nigeria (AMCON), whose role was to buy back nonperforming loans from banks, thus allowing them to focus on intermediation activities rather than on managing toxic assets. These policy interventions were quite successful in averting systemic crises and enhancing the stability of the financial systems within the Nigerian banking industry by 2014.

**Table 1** Closings of the Nigerian Deposit Money Banks, 1994-2015

1994	1995	1998	2000	2003	2006	2003	Total
4	1	27	2	1	13	1	49

Source: World Bank 2016, 19

The Nigerian Deposit Insurance Corporation (NDIC) is saddled with the responsibility for insuring deposits held in the vaults of the licensed banks and in other deposit-taking institutions, such as the Deposit Money Banks, Microfinance Banks and Primary Mortgage Banks, so as to boost public confidence in the Nigerian banking industry. The NDIC membership is compulsory for all deposit-taking institutions and it comprises all deposits, yet with certain specific exceptions to it. The coverage limit is variable, with the limits of ₦500,000 per account holder for the DMBs and ₦200,000 for the other deposit-taking institutions on a netted basis. The corporation is statutorily empowered to annually collect premiums from the member institutions and manage the Deposit Insurance Fund (DIF) set aside for the reimbursement of the insured deposits lost in the event of the failure of a financial institution and defray the costs of failure-resolution. It also has the authority to extend financial assistance or purchase the assets of an ailing bank outright, and also to

assume the receivership responsibility in the event of liquidation.

Recent legislative amendments have also enhanced the ability of the NDIC to liquidate banks and sell their assets in order to reimburse the depositors insured under the scheme. Given the fact that Nigeria's financial system strategy permits significant government intervention and support through open bank assistance to ailing financial institutions, the strategy aims to mitigate the collateral consequences of moral hazard by instituting timely corrective actions, which on their part might include supervisory intervention for solvent but poorly capitalized banks, setting limits for government lending and liquidity support to viable solvent banks and outright calls for the liquidation of all non-viable banks by the NDIC.

## Empirical Review

There are several empirical and theoretical studies that have been conducted on the Deposit Insurance Scheme and moral hazard. Most of them are, however, concentrated abroad. In their study, G. Reint and V. Jukka (2001), examined the relationship between deposit insurance, bank charter values, the monitoring of the debt holder and risk-taking for European banks. Their findings revealed the fact that explicit insurance arrangements were more risk-prone when compared to the implicit ones. They advocate for the effective monitoring and faithful implementation of safety nets for the mutual benefits of all stakeholders. This view was further corroborated by U. W. Ani and A. Ogar (2018), who posit that, apart from moral hazard coming from deposit insurance, there were also the other factors hitherto overlooked, which accounted for the banking crises. They identified the mismanagement of not risk-taking as a factor that increased when insurance became a disincentive for depositors to monitor and react promptly to the soundness and safety of the DMBs.

In their study comprising 203 DMBs drawn from 10 Central and Eastern European countries, D. Isabella, R. Tchudjane, M. Amine and H. Tarazi (2011) discovered that the introduction of the explicit DIS in these countries actually incentivised higher

risk-taking amongst the DMBs in their operations. This empirical opinion corroborates the views of A. Demirguc-Kunt and E. Detragiache (1999), and A. Demirguc-Kunt and E. Detragiache (2002).

H. Ngalawa (2011) studied the nexus between the DIS and banking instability, with an emphasis on the effect of moral hazard. They developed the empirical framework that differentiated the banking instability occasioned by bank runs from the instability caused by the insolvency of banks or their illiquidity. The study revealed a weak relationship between the DIS and moral hazard, although the result did invalidate the empirical findings that deposit insurance may result in a moral hazard, but opened up the areas neglected by other studies by distinguishing between the bank runs caused by illiquidity and insolvency from those triggered by careless risk-taking by bank managers, because of the existence of deposit insurance.

In their study comprising a relatively large sample of countries, Z. W. Calomiris and S. Chen (2018) discovered that the introduction of deposit insurance orchestrated higher debt-to-equity ratios and higher loan-to-asset ratios, which resulted in incessant bank defaults as a result of higher leverage and asset risk. A similar view was canvassed in the research study conducted by H. Ngalawa, F. Tchana and V. Viegi (2016) who argued that the costs imposed by moral hazard far outweighed the perceived benefits of deposit insurance.

D. Bonfim and J. Santos (2019) examined the Portuguese depositors' attitudes. After the adoption of deposit insurance in Cyprus, they discovered that the insured Portuguese depositors exhibited an inclination to reduce their savings in smaller, less profitable banks.

In their study, G. A. Sahadewo, B. M. Purwanto and R. Pradipto (2018) simulated laboratory experiments, involving actual bankers to assess the impact of the implementation of a differential premium regime on the bankers' attitude and found no significant relationship between the deposit offer rate and the coverage limit regimes. Equally, they found out that the coverage limits for the deposits had incentivized

smaller banks to take on more risky projects, thus evidencing moral hazard especially within small banks.

In Nigeria, K. Ume *et al* (2017) carried out a theoretical review on the phenomenon of moral hazard and harped on the necessity to institute deposit insurance as a financial safety net; those efforts, however, should be intensified so as to mitigate the untoward consequences of moral hazard, which is an unintended offshoot of the DIS implementation.

## METHODOLOGY

The study is an *ex-post facto* research adopting a longitudinal research design, the population of interest comprising all 24 DMBs operating in Nigeria as at December 31<sup>st</sup>, 2017. The secondary data were sourced from the NDIC annual reports and accounts for the period between 2006 and 2017, as accounted for in Table 2. The employed data analysis method is statistical, through a descriptive analysis of the sourced data. The data collected for the study were analysed by applying multiple regression using

the GMM estimation technique in order to test the formulated hypothesis. The validity and consistency of the results obtained in the system GMM technique depend on its statistical diagnostics of the estimated model.

## Arellano and Bond Test of Hypothesis

According to M. Arellano and S. Bond (1991), the GMM estimator requires the existence of first-order serial autocorrelation, the AR (1) process, in residuals, but simultaneously the non-existence of second-order serial autocorrelation, the AR (2) process, in residuals. This test is particularly important since lags are used as instruments. This examines the hypothesis of the non-existence of second-order serial autocorrelation in a disturbance term. Hence, the null hypothesis of no first-order serial autocorrelation is rejected, but that of the second-order serial autocorrelation test is not rejected in order to obtain appropriate diagnostics. Therefore, the GMM approach can be regarded as consistent in the case when there is no significant second-order serial autocorrelation, the AR (2) process, in residuals.

**Table 2** The asset quality indicators of the Deposit Money Banks in Nigeria 2006-2017

Year	Total loans and advances (TLA)	Nonperforming loans (NPLs) (₦ billions)	Ratio of nonperforming loans to total loans (NPLsTL) (in %)	Ratio of non-performing loans to shareholders' funds (NPLsSHF) (in %)
2006	2,840.1	225.08	7.92	22.5
2007	4,676.34	387.99	7.39	23.98
2008	7,411.43	-	6.86	25.46
2009	8,912.14	2,922.80	32.8	135.7
2010	7,166.76	1,077.66	15.04	250.85
2011	7,273.75	360.07	4.95	17.13
2012	8,150.03	286.09	3.51	14.34
2013	10,042.73	321.66	3.2	13.35
2014	12,626.96	354.84	2.81	12.01
2015	13,328.77	648.91	4.88	12.79
2016	16.26 trillion	2.08 trillion	12.80	43.84
2017	15.91trillion	2.36 trillion	14.84	69.21

Source: NDIC Annual Report (Several Editions) and Insurance & Surveillance Department 2017

## F-Test of Joint Significance

According to this test, estimated coefficients on the regressors are jointly equal to zero ( $P = 0.000$ ) at any conventional level of significance.

## Research Hypothesis

The following hypothesis is formulated in order to achieve the objectives of this study:

H1: There is no significant relationship between the growth of the deposit insurance fund and a bank's volume of total loans and advances, nonperforming loans, ratio of nonperforming loans to the total loans and ratio of nonperforming loans to shareholders' funds.

## Model Specification and the Operationalization of the Variables

Following the M. Arellano and S. Bond (1991) Generalized Method of Moments - GMM, a linear reduced form dynamic panel data model of the following pattern is specified, namely as follows:

$$y_t = \beta y_{t-1} + \delta' X_t + \varepsilon_t \quad (3.1)$$

where:

$y_t$  - the observation of the dependent variable denoted by the Deposit Insurance Fund, which serves as the proxy for moral hazard, and

$X_t$  - the natural logarithm of the total loans and advances (TLA), nonperforming loans (NPLs), the ratio of nonperforming loans to the total loans (NPLsTL) and the ratio of nonperforming loans to shareholders' funds (NPLsSHF).

The regression model is specified below:

$$DIF_t = \alpha_0 + \alpha_1 TLA_t + \alpha_2 NPLs_t + \alpha_3 NPLsTL_t + \alpha_4 NPLsSHF_t + \mu \quad (3.2)$$

where:

$DIF_t$  - the deposit insurance fund of the DMBs in the year  $t$

$TLA_t$  - the total loans and advances of the DMBs in the year  $t$

$NPLs_t$  - the nonperforming loans of the DMBs in the year  $t$

$NPLsTL_t$  - the ratio of nonperforming loans to the total loans in the year  $t$

$NPLsSHF_t$  - the ratio of nonperforming loans to shareholders' funds

$\mu$  - the error term

## EMPIRICAL FINDINGS AND DISCUSSIONS

The first step is to determine the order of integration for each variable include in the study so as to find out potential correlations between the consecutive variables.

Table 3 above presents some basic statistics on the deposit insurance fund, the measure of moral hazard and the four measures of bank worthiness or the asset quality, which includes nonperforming loans, nonperforming loans to shareholders' funds, nonperforming loans to the total loans and the total loans and advances, as regards the financial sector. The mean value of nonperforming loans and total loans and advances (6.476) and (9.059), respectively, suggests that, for the selected period, national banks face a higher credit risk on average, as this is reflected in the deposit insurance fund's mean value (7.585). This implies that the aforementioned asset quality indicators portray an impending hazard to the deposit insurance fund, which in turn implies that, according to Table 3, nonperforming loans to shareholders' funds is below the required fixed maximum percentage, implying that the DMBs still maintain a high level of capital in relation to their risk profiles.

Table 4 shows a correlation relationship between the adopted variables. It is evident that nonperforming loans show a negative relationship with the deposit insurance fund, with the correlation coefficient value of (-0.329), which implies that increases in nonperforming loans will trigger a negative impact

**Table 3** The summary statistics of the variables

Panel A: Summary statistics (without a log)							
	N	Mean	Std. Dev.	Min.	Max.	Jarque- Bera	Prob.
Deposit Insurance Fund (DIF)	12	440088.6	279348.9	90179.09	920776.0	0.944	0.623
Nonperforming loans (NPLs)	12	964.66	943.869	225.080	2922.800	2.557	0.278
Nonperforming loans to shareholders' funds (NPLsSHF)	12	53.430	71.674	12.010	250.850	12.540	0.001
Nonperforming loans to total loans (NPLsTL)	12	9.750	8.466	2.810	32.800	9.799	0.007
Total loans and advances (TLA)	12	9549.918	4221.590	2840.100	16260.00	0.542	0.762
Panel A: Summary statistics (with a log)							
Deposit Insurance Fund (DIF)	12	7.585	2.542	5.413	12.076	2.548	0.279
Nonperforming loans (NPLs)	12	6.476	0.896	5.416	7.980	1.387	0.499
Nonperforming loans to shareholders' funds (NPLsSHF)	12	3.425	0.993	2.485	5.524	2.023	0.363
Nonperforming loans to total loans (NPLsTL)	12	2.006	0.741	1.033	3.490	0.646	0.723
Total loans and advances (TLA)	12	9.059	0.507	7.951	9.696	0.974	0.614

Source: Author

on the deposit insurance fund, thus constituting a major risk to the financial sector. The nonperforming loans to shareholders' funds ratio suggests a negative correlation with the deposit insurance fund, with the correlation coefficient value of (-0.235). Also, the nonperforming loans to the total loans ratio shows a negative correlation with the deposit insurance fund, with the correlation value of (-0.169), and the total loans and advances show a negative correlation with the deposit insurance fund, with the correlation coefficient (-0.551). These suggest that increasing percentages/ratios constitute a potential hazard and risk to the financial sector. Banking regulations should essentially be aimed at cutting down excesses so as to reduce the disk profiles related to the Nigerian banking sector.

The results shown in Table 5 reveals the fact that not all the variables were stationary at the ADF adoption level. The ADF test applied to the first difference of the data rejects the null hypothesis of non-stationarity

for all the adopted variables. Based on the foregoing results, it is worth concluding that the whole null hypothesis of the unit test process using the ADF is rejected and that the null hypothesis is accepted based on the Akaike Information Criterion (AIC) and the serial correlation diagnostic test from results of the unit root test.

**Table 4** Correlation Matrix

	DIF	NPLs	NPLsSHF	NPLsTL	TLA
DIF	1.000				
NPLs	-0.329	1.000			
NPLsSHF	-0.235	0.481	1.000		
NPLsTL	-0.169	0.878	0.653	1.000	
TLA	-0.551	0.551	-0.071	0.081	1.000

Source: Author



**Table 5** The results of the unit root tests

Variable	Augmented Dickey-Fuller Unit Root Test		
	At level (prob.)	First difference (prob.)	Decision
DIF	-1.294 (0.831)	-3.844 (0.077)***	I(1)
NPLs	-1.863 (0.606)	-3.413 (0.037)**	I(1)
NPLSSHf	-2.463 (0.334)	-3.302 (0.043)**	I(1)
NPLSTL	-2.175 (0.455)	-3.526 (0.031)**	I(1)
TLA	-2.306 (0.392)	-4.284 (0.048)**	I(1)

\*significant at 1%, \*\*significant at 5%, \*\*\*significant at 10%

Source: Author

The GMM estimates given in Table 6 indicate that the unlimited DIS in Nigeria is triggered by the ratio of NPLsTL, damaging the efficiency of the allocation of deposits. With the deposit insurance new legal framework, however, the insolvency risk of a bank has become less important to depositors since there is full coverage in place. Therefore, this process damages the credit allocation mechanism with an increased nonperforming loan ratio. Also, with the high coefficient value of nonperforming loans to shareholders' funds (that value being 0.580), it simply implies that most banks were reporting huge losses and that stakeholders' funds were completely erased by the nonperforming loan portfolio within the studied period. Despite the Central Bank's cash injection intended to recapitalize the ailing DMBs, the effective regulatory measures for stemming the inept corporate governance practises resulting in poor credit ratings and the nonperforming loan portfolio did not alleviate the issues. Table 6 shows that the reported number of the instruments across all of the estimations is  $6 < 11$  observations and the  $p$ -value of the Hansen J-test for all the estimations satisfies these rules. The F-test of the joint significance reports that the null hypothesis implying that the estimated coefficients on the regressors are jointly not equal to

zero ( $p = 0.175$ ) is accepted across all the estimations. Based on the AR (2) probability value of (0.596), the hypothesis on the non-existence of any serial correlation is accepted, implying the absence of the first-order serial correlation.

**Table 6** The GMM test results

Dependent variable: LNDIF				
Variable	Coefficient	Std. Error	t-Statistics	Prob.
LnDIF(-1)	0.795	0.264	3.012**	0.023
LnNPLs	0.580	3.226	0.179	0.863
LnNPLsSHf	0.299	1.347	0.222	0.831
LnNPLsTL	-1.514	5.132	-0.294	0.777
LnTLA	-0.069	1.631	-0.042	0.967

Model Diagnostics

F-test of joint significance ( $p$ -value) = 0.175

Arrelano-Bond test for AR (2) ( $p$ -value) = 0.149 (0.596)

Number of Observations = 12

Number of Instruments = 6

\*significant at 1%, \*\*significant at 5%, \*\*\*significant at 10%

Source: Author

## CONCLUSION

This study investigates the DIS and the moral hazard hypothesis in Nigeria. The Arellano and Bond (GMM) estimation technique was used to estimate and test the hypothesis on the DIS and moral hazard. The study spanned a period of 11 years, i.e. the period 2006-2017, and all the data were generated from reliable secondary sources. Deposit insurance is one of the elements of the government safety nets that are designed to maintain depositors' confidence by protecting their savings. The reason for the implementation of such schemes lies in the fact that problems in the banking sector may degenerate to systemic distortions in financial markets, which negatively impacts the real sector, ultimately hampering economic development. However, like

any insurance venture, deposit insurance comes with attendant challenges, such as moral hazard, adverse selection, or agency problems. If not timely arrested, these pitfalls portend inherent threats to the stability of financial systems as their negative impact may exceed any benefits derivable from deposit protection. Summarily, a poorly designed deposit insurance scheme may occasion systemic distortions of the entire financial system.

The most significant research findings presented in this paper are indicative of the fact that the adoption of the DIS in Nigeria has triggered off a high coefficient value of nonperforming loans to the total loans (NPLsTL), and of nonperforming loans to shareholders' funds (NPLsSHF), thereby hampering an efficient credit allocation, thus corroborating earlier studies conducted by D. Anginer and A. Demirgüç-Kunt (2018), and G. A. Sahadewo *et al* (2018). This implies that the majority of the banks were reporting huge losses and shareholders' funds were being rapidly eroded by the burgeoning nonperforming loan portfolio within the studied period. This scenario signposts a red flag for an urgent policy intervention by the Central Bank of Nigeria through a cash injection in order to recapitalize the ailing Deposit Money Banks and strengthen its regulatory measures so as to stem inept corporate governance practises in the DMBs. However, it must be noted that this research is limited in its scope to the extent that it did not appraise the relative effectiveness of the various Central Bank's policy interventions and the regulatory measures instituted for the purpose of mitigating the associated risks of the adoption of the DIS in Nigeria. Equally, there is an urgent need to ascertain the level of enforcement and compliance on the part of the DMBs. Hence the following research questions are considered as relevant for future studies on the DIS in Nigeria:

- How effective are the CBN's policy interventions and regulatory measures in curtailing the associated risks posed by the adoption of the DIS in Nigeria?
- What is the level of the enforcement of and compliance with these directives by the DMBs operating in Nigeria?

Therefore, it is recommended that governments should put in place banking regulation systems characterised by prophylactic rules, entry restrictions, activity restrictions, examinations and sanctions. In a similar fashion, stringent bank resolution techniques, including the prompt closure of critically undercapitalized banks, are crucial safeguards against moral hazard. Conclusively, this research aligns itself with the following measures espoused by P. A. McCoy (2007), which are geared towards reducing the risk created by the implementation of the DIS. First, there is an urgent need to incorporate risk-reducing mechanisms in all deposit insurance schemes. Second, there is a need for countries to incentivize shareholders, creditors and large depositors to closely monitor their banks. Third, and finally, these safeguards will be futile if there are no institutions to faithfully implement and enforce them. Unless countries put strong institutional environments in place, explicit deposit insurance schemes will portend more risks than benefits to the overall stability of financial systems.

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## PLAN OSIGURANJA DEPOZITA I HIPOTEZA O MORALNOM HAZARDU: PRIMER NIGERIJA

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U ovoj studiji se empirijski istražuje veza između hipoteze o moralnom hazardu i usvajanja Plana osiguranja depozita (DIS) u Nigeriji. Korišćenjem sekundarnih podataka, pribavljenih iz godišnjih izveštaja i računa Korporacije za osiguranje depozita Nigerije (NDIC), formulisan je višestruki regresioni model, koji se sastoji od fonda za osiguranje depozita koji služi kao moralni hazard (zavisna varijabla), dok su nezavisne varijable indikatori kvaliteta sredstava nigerijskih banaka. Testiranje odnosa između tih varijabli je sprovedeno primenom tehnika procene po Uopštenom metodu trenutaka (GMM). Studijom je otkrivena značajna pozitivna veza između indikatora kvaliteta sredstava nigerijskih banaka i fonda za osiguranje depozita, što potkrepljuje hipotezu o moralnom hazardu. Vladi se preporučuje da ojačaju svoje bankarske regulatorne sisteme kako bi se ublažili neplanirani rizici koje nagoveštava usvajanje Plana osiguranja depozita.

**Ključne reči:** hipoteza o moralnom hazardu, ukupni zajmovi i avansne uplate, loši krediti, racio loših kredita i ukupnih zajmova, akcionarski fond

JEL Classification: G21, G30, H25, H26