Financial stability determinants in Nigeria: role of profitability, capital regulation, financial inclusion, inflation, unemployment and economic growth

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Abstract

This study investigates the determinants of financial stability in Nigeria. The two-stage least squares regression and fully modified ordinary least squares (OLS) regression methods were used to estimate the determinants of financial stability in Nigeria from 2002 to 2021. The findings reveal that banking sector return on asset, regulatory capital ratio, the level of financial inclusion, economic growth, inflation and the total unemployment rate are significant determinants of financial stability in Nigeria. Return on asset and the rate of unemployment have a significant positive impact on financial stability. The regulatory capital ratio, the level of financial inclusion, economic growth and inflation have a significant negative impact on financial stability in Nigeria. The implication of the findings is that high bank profitability (or high return on asset), low regulatory capital ratio and low inflation are crucial for financial stability in Nigeria. The results suggest that policymakers in Nigeria should use a mix of macroprudential and macroeconomic policy tools to ensure that banks remain profitable, maintain a minimum regulatory capital ratio and operate in a low inflation and low unemployment environment in order to preserve financial stability in Nigeria.

Keywords: financial stability, return on assets, regulatory capital ratio, financial inclusion, economic growth, inflation, unemployment, efficiency, Nigeria, determinant, capital regulation.

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1. Introduction

Financial stability is crucial for the economic performance of any country. Without it, individuals and firms will experience difficulty in accessing the financial resources they need for consumption, production, and investment to stimulate economic growth and development (Levine, 2005). The financial system is stable when individual financial institutions are stable from a micro prudential standpoint. However, financial institutions as a whole may become fragile if they cannot withstand internal and external shocks that threaten their survival. Take the case of Nigeria, for example. In the last two decades, Nigeria experienced several economic downturns and recessions during the 2007 to 2009 financial crisis, the 2016 to 2017 oil price recession, and the 2020 to 2022 COVID-19 pandemic. During these crises, the financial system appeared resilient on the surface. But the reality was that some Nigerian banks relied on the central bank's discount window and the standing lending facility to meet their liquidity needs and navigate the crises. Without central bank intervention in Nigeria, some banks would have failed, and the contagion effect would lead to a financial crisis. These events have led scholars to investigate the pertinent drivers of financial stability or financial crisis in the Nigerian financial system. Such insight can assist bank regulators in making timely interventions to resolve troubled financial institutions and to make the Nigerian financial system more stable.

We focus our research inquiry on Nigeria's financial stability determinants while controlling for inflation, unemployment and economic growth rates as external macroeconomic factors affecting financial stability in Nigeria. Our attempt to examine the financial stability determinants in Nigeria complement the previous efforts made by other researchers to examine the determinants of financial stability in other contexts. Existing studies focus on multi-country contexts such as European and Asian countries (Salas et al, 2024; Ferreira, 2022; Sethy and Goyari, 2022; Kryzanowski et al, 2023), with few studies focusing on the African region or specific African countries (e.g., Isayas, 2021; Ozili, 2018).

Studies focused on Nigeria are not abundant in the literature. Among the few studies that focus on Nigeria, Olusegun et al (2021) examine financial inclusion as a determinant of financial stability but they did not consider the role of inflation and unemployment in influencing financial stability. Similarly, Chukwudi and Henry (2020) investigate the effect of

monetary policy on financial stability in Nigeria from 2008 to 2016. They also did not consider the role of unemployment and inflation in influencing financial stability. Chizoba et al (2022) also consider monetary policy and prudential regulatory ratios to be determinants of bank stability in Nigeria, but they did not control for any external determinant affecting bank stability.

What is missing in the Nigerian financial stability literature is the lack of research on the external and macroeconomic determinants of financial stability in Nigeria. The lack of research on the macroeconomic determinants of financial stability in Nigeria makes it difficult for policymakers to identify the external macroeconomic factors that have a significant impact on financial stability in Nigeria. We identify the absence of research on the external determinants of financial stability in Nigeria. This is the research gap we intend to fill in this study.

In the empirical analysis, we assess the bank-specific and macroeconomic factors affecting financial stability in Nigeria. We narrow our focus to the effect of bank profitability, regulatory capital ratio, bank efficiency, the level of financial inclusion, economic growth, inflation rate and unemployment on financial stability. The findings reveal that return on asset, regulatory capital ratio, the level of financial inclusion, economic growth, inflation and the total unemployment rate are significant determinants of financial stability in Nigeria.

This study contributes to the existing literature that examine the external determinants of financial stability in single-country contexts, but which have not examined the external determinants of financial stability in Nigeria. Two, the study extends the literature by exploring the role of financial inclusion in promoting financial stability. Financial inclusion is a development policy priority in many developing countries including Nigeria (Arun and Kamath, 2015). Our analysis establishes a link between financial stability and financial inclusion in terms of the number of bank depositors in a developing country. Three, the study contributes to the literature that examine the role of Basel risk-capital regulation in promoting financial stability. This study adds to this literature by examining the potential role of regulatory capital ratio in preserving financial stability in Nigeria.

In the subsequent parts of the article, the relevant literature is discussed in section 2 while the research design is described in section 3. The empirical results are presented and discussed in section 4 while the conclusion of the article is presented in section 5.

2. Theory and relevant literature

2.1. Theoretical framework

The classic theory of bank runs by Diamond and Dybvig (1983) provides a theoretical framework for understanding financial stability and the cause of financial crisis. The theory of bank runs argues that bank instability or bank failure is caused by panic among depositors who receive information about the impending failure of a bank (Diamond and Dybvig, 1983). Depositors will promptly act on the information and seek to withdraw all their money from the bank at once. This will cause liquidity problems for banks and can lead to the failure of the bank in the absence of government intervention (Diamond and Dybvig, 1983). The theory essentially demonstrates that financial instability or crisis occurs when there is a shock in the financial system caused by panic. The theory of bank runs has greatly influenced modern-day understanding of financial stability even though it is not the only theory that explains financial stability.

Another theory is the financial instability hypothesis proposed by Minsky (1977) which argues that, in periods of prolonged financial stability, people will accumulate more private debt, and economic agents will increase risk-taking. Their risk-taking behaviour and actions will ultimately lead to financial instability. The hypothesis emphasize the role of private finance and debt accumulation in business cycle fluctuations. The hypothesis argues that financial stability is inherently destabilizing in the long term due to the easing of lending standards, the accumulation of private debt to support inflated asset values, the build-up of costly capital stock, profit-seeking firms taking on more debt, conservative capital structures being relaxed to generate high return on equity capital, the desire of private firms to generate higher profit margins by undertaking debt financing, and the increasing possibility that any shock to the system can result in a liquidity crisis that would expose these underlying structural insolvency, and ultimately lead to financial instability.

2.2. Relevant literature

2.2.1. Cross country studies

The existing literature have examined some determinants of financial stability. For instance, Salas et al (2024) examine the determinants of nonperforming loans as a measure of financial stability. They examine 1,631 entities from 111 countries from 2007 to 2021. They find that bank size, profitability, unemployment rate, interest rate, and exchange rate are determinants of nonperforming loans. In a cross-country study, Ferreira (2022) examines the determinants of financial stability in terms of the incidence of nonperforming loans. They examine 80 diverse countries from 1999 to 2019. They find that nonperforming loans ratio is lower in countries with high profitability, stable markets and high (or positive) economic growth while the nonperforming loans ratio is higher in countries with higher bank cost-to-income ratio, market concentration, and bank regulation. It was also found that bank regulation led to a decrease in the nonperforming loans ratio in non-high-income countries and non-OECD countries. Ozili (2025), in a review of the bank non-performing loans literature, find that corporate governance, fintech, financial inclusion, country risks, regulatory quality, political risks, shadow banking activity, the COVID-19 pandemic, public and/or external debt, country risks, real house prices, the independence of the central bank, corruption, gross domestic product (GDP), debt, loan growth, inflation, capital adequacy ratio, lending rate, competition, the regulatory environment and GDP growth are determinants of non-performing loans in the banking sector.

Some studies explore the role of financial inclusion and fintech on financial stability. Feghali et al (2021) focus on the role of financial inclusion in fostering financial stability. They rely on a narrow definition of financial inclusion in terms of access to payments and savings accounts and access to credit. In their cross-country analysis, the authors examine more than 100 countries and find that access to payments and savings accounts have a positive impact on financial stability, while access to credit increases financial fragility when credit growth increases without borrowers being able to repay. Their findings imply that higher financial inclusion, in terms of greater access to credit, impairs financial stability. Sethy and Goyari (2022) investigate the relationship between a financial inclusion index and financial stability (measured as the ZSCORE) in South Asian countries from 2004 to 2018. They find that financial inclusion has a positive impact on financial stability in south Asian countries. Their result

suggest that financial inclusion is an important driver of financial stability in Asian countries. Daud et al (2022) examine how FinTech affects financial stability in 63 countries from 2006 to 2017. They find that FinTech promotes financial stability in countries through the channels of artificial intelligence, cloud technology, and data technology. They also find that bank concentration complements the effect of FinTech on financial stability.

Other studies examine the role of competition, the COVID-19 pandemic and leverage ratio on financial stability. Carlson et al (2022) examine the effect of bank competition on growth and financial stability at a time when there was discontinuity in bank capital requirements in the nineteenth-century National Banking Era. They find that banks operating in markets with lower entry barriers extend more credit which leads to credit expansion. They take more credit risks, they are more likely to default, and it leads to financial instability. In a study focused on China, Kryzanowski et al (2023) examine the impact of the COVID-19 pandemic on nonperforming loan ratios. They find that bank NPL ratios increase during the COVID-19 pandemic while banks with high-quality capital are able to mitigate nonperforming loan ratio during the COVID-19 pandemic. In contrast, the top five banks, state-owned banks and domestic banks have lower NPL ratios than their counterparts during the COVID-19 pandemic. Acosta-Smith et al (2024) examine the effect of the introduction of the Basel III leverage ratio on bank risk-taking. They show that a high leverage ratio requirement motivates banks to increase their risk-taking which leads to financial instability.

2.2.2. African studies

Other studies focus on African countries. Ofori-Sasu et al (2023) examine the effect of bank risk exposures on bank stability. They examine 54 African countries from 2006 to 2020 and find that the relationship between bank credit risk and bank stability is non-linear. Ozili (2018) examines the determinants of bank stability in African countries and find that bank efficiency, foreign bank presence, bank concentration, banking sector size, government effectiveness, political stability, regulatory quality, investor protection, corruption control and unemployment levels are significant determinant of bank stability in Africa. In a related study, Ofoeda et al (2024) investigate the effect of financial inclusion and institutional quality on bank stability in 48 sub-Saharan African countries from 2002 to 2021. They find that financial inclusion through account ownership, ATMs, borrowers and depositors improve bank stability except for bank branches which have a negative effect while institutional quality has a positive

effect on bank stability. Adam et al (2024) examine the impact of economic freedom and corruption on bank stability in 38 sub-Saharan Africa. They find that greater economic freedom increases economic efficiency through greater bank stability. Yakubu and Bunyaminu (2023) investigate the effect of regulatory capital requirement on bank stability in Sub-Saharan Africa from 2000-2017. They find that capital requirement has a significant positive effect on bank stability. In a related study, Sodokin et al (2023) examine the effect of prudential regulation on bank stability from 2006 to 2019. They find that strict banking regulations and supervision enhance bank stability while capital regulations, activity restrictions, and supervisory authorities reduce the risk of bank insolvency. Isayas (2021) examines the determinants of financial stability in terms of financial distress of eleven insurance companies in Ethiopia from 2008 to 2019 using the random effect regression method. It was found that profitability, firm size, leverage, and company age reduce the risk of financial distress while asset tangibility and the loss ratio increase the risk of financial distress in insurance companies in Ethiopia.

2.2.3. Nigerian studies

Other studies focus on Nigeria. Ajisafe et al (2021) examine the effect of monetary policy on financial stability in Nigeria from 1986 and 2017. They examine the effect of exchange rate channel, credit channel, interest rate channel, financial deepening and price stability on financial stability. They find that exchange rate channel is the dominant channel of monetary policy transmission that affect financial stability. In a related study, Chizoba et al (2022) investigate the effect of monetary policy on bank stability in Nigeria. The monetary policy instruments examined are monetary policy rate, liquidity ratio, and cash reserve ratio. They find that monetary policy rate, liquidity ratio, and cash reserve ratio improve bank stability in Nigeria. Chukwudi and Henry (2020) also examine the impact of monetary policy on financial stability in Nigeria from 2008 to 2016. They find that monetary policy has a weak effect on financial stability. Olusegun et al (2021) investigate the relationship between financial inclusion and financial stability. They develop a financial inclusion index which is constructed from the penetration, availability and usage dimensions of financial inclusion. They find that financial inclusion improves financial stability.

2.2.4. Gap in the literature

The existing literature, reviewed above, has examined the financial/banking stability determinants in African countries and in Nigeria. However, the existing Nigerian studies did not examine the pertinent macroeconomic factors affecting financial stability in Nigeria. For example, Olusegun et al (2021) consider financial inclusion to be a determinant of financial stability but they did not consider the role of inflation and unemployment in influencing financial stability in Nigeria. Similarly, Chukwudi and Henry (2020) investigate the effect of monetary policy on financial stability in Nigeria from 2008 to 2016. They also did not consider unemployment and inflation to be determinants of financial stability in Nigeria. Chizoba et al (2022) considered monetary policy and prudential regulatory ratios to be determinants of bank stability in Nigeria, but they did not control for any external determinant affecting bank stability. The apparent gap in the literature is the lack of research on the external or macroeconomic determinants of financial stability in Nigeria. The lack of research on the macroeconomic determinants of financial stability in Nigeria makes it difficult for policymakers to identify the external shocks that have a significant impact on financial stability in Nigeria. Therefore, we seek to fill this gap in the literature.

3. Research design

The data used for the study is country-level data. It is annual in its trend. Nigerian financial stability data was obtained from the World Bank's global financial development indicators database which collects the national financial statistics of most countries in the world. Macroeconomic data for Nigeria was also collected from the World Bank's world development indicators (WDI) and the global financial development indicators (GFDI) database. The country-level data was collected over a 19-year period spanning from 2002 to 2021. The description of the variables included in the model is presented in table 1.

Regarding the model specification, the standard model commonly used to estimate the determinants of financial stability in the literature is the model that expresses financial stability as a function of its bank specific and external determinants. This is the approach used in notable studies such as Xu et al (2019), Radivojevic and Jovovic (2017), Makri et al (2014), Ferreira (2022), Agenor et al (2018), Chand et al (2021), Ozili (2020) and Kharabsheh and Gharaibeh (2022). Theoretical support for the model can be found in the financial instability

hypothesis which is discussed in section 2.1. Following this approach, the model used in this study is specified in equation 1 below and the description of the variables in the model is presented in table 1.

$$ZSCt = \beta 0 + \beta 1ROAt + \beta 2RISKt + \beta 3EFFt + \beta 4FINt + \beta 5GDPRt + \beta 6EFFt + \beta 7UNEMPt + \beta 8INFLt + et \quad ---------- \; equation\ 1$$

Regarding the estimation method, the model is estimated using two econometric methods namely the two-stage least squares regression method and the fully modified ordinary least squares method. The study used the two-stage least squares regression method because the two-stage least squares estimator uses instrumental variables to obtain consistent estimates when the explanatory variables are correlated with the error term in regression model, thereby addressing endogeneity issues (Sheikhi et al, 2022). The study also used the fully modified ordinary least squares regression to correct for serial correlation problems, endogeneity bias and to remove asymptotic bias in the estimates (Pedroni, 2001).

Regarding variables justification, the dependent variable is the ZSC dependent variable. It is commonly used in the literature to measure financial stability (Chand et al, 2021; Ozili, 2018; Sifrain, 2021; Kharabsheh and Gharaibeh, 2022). The independent variables in the model are variables which are commonly used in the existing literature. For example, the return on asset variable (ROA) is predicted to have a positive effect on financial stability because a high return on asset can improve bank profitability, increase banks' retained earnings, improve banks' resilience to shocks and increase bank stability (Xu et al, 2019). The efficiency ratio or cost-to-income ratio is predicted to have a negative effect on financial stability because a high cost-to-income ratio can threaten the survival and stability of banks if their cost exceeds their income (Al-Sharkas and Al-Sharkas, 2022; Ozili, 2018). The regulatory capital ratio (RISK) is predicted to have a positive effect on financial stability because a high regulatory capital ratio can improve banks' ability to withstand unexpected loss and other external shocks that threaten financial stability (Korbi and Bougatef, 2017). The economic growth variable is predicted to have a positive effect on financial stability because a positive GDP growth rate is associated with higher income, higher ability of borrowers to repay loans, lower loan defaults and higher financial stability (Sifrain, 2021). The financial inclusion variable (FIN) is predicted to have a positive effect on financial stability because a large number of bank depositors would translate to a high level of financial inclusion. It would lead to more deposit inflows

into the banking industry, increase the deposit base of banks, improve banking sector liquidity, increase banks' resilience to shocks and improve financial stability (Kharabsheh and Gharaibeh, 2022). The inflation variable (INFL) is predicted to have an adverse effect on financial stability because loans tend to be expensive in a high inflation environment. Banks tend to increase interest rates on loans in times of high inflation. As loans become expensive in an inflationary environment, it leads to a reduction in demand for new loans which can affect banks' interest income and their survival and stability in a high inflationary environment (Ozili, 2018). The unemployment variable (UNEMP) is predicted to have an adverse effect on financial stability because a high total unemployment rate leads to a reduction in demand for new loans if people lose their jobs and do not have any income which they can use to repay loans. This can increase default on loan repayments and increase financial stability risks (Ozili, 2018).

In terms of correlation, the Pearson correlation analysis in table 2 shows that the level of financial inclusion and unemployment rate are significant and negatively correlated with the ZSC banking sector solvency variable which is the measure of financial stability. The efficiency ratio and inflation rate are also negatively correlated with the ZSC banking sector solvency variable. The regulatory capital ratio and the economic growth rate are positively correlated with the ZSC banking sector solvency variable. Meanwhile, the descriptive statistics in table 3 reports a wide dispersion between the mean and median of the EFF, FIN and ROA variables. The regulatory capital ratio is significantly higher than the 8% minimum regulatory capital requirement under Basel rules, indicating strong capital buffer in Nigeria over the period examined. However, despite the high capital buffer, the average banking sector return on assets is very low at 0.76% for the period. Also, the average inflation rate, and the cost-to-income ratio are all high, reaching a double-digit number. This indicates that Nigeria's macroeconomic environment has not been very stable over the period examined.

Table 1. Description of variables used in the study

S/N	Variable symbol	Variable Name	Short definition	Source
1.	ZSC	Bank Z-score	It captures the probability of default of a country's commercial banking system.	GFDI, World Bank database
2.	ROA	Bank return on assets (%, after tax)	Commercial banks' after-tax net income to yearly averaged total assets.	GFDI, World Bank database
3.	RISK	Bank regulatory capital to risk-weighted assets (%)	The capital adequacy of deposit-taking banks. It is a ratio of total regulatory capital to its assets held, weighted according to risk of those assets.	GFDI, World Bank database
4.	EFF	Bank cost to income ratio (%)	Operating expenses of a bank as a share of sum of net-interest revenue and other operating income.	GFDI, World Bank database
5.	FIN	Bank accounts per 1,000 adults	Number of depositors with commercial banks per 1,000 adults.	GFDI, World Bank database
6.	GDPR	GDP growth (annual %)	Annual percentage growth rate of GDP at market prices based on constant local currency.	WDI, World Bank database
7.	UNEMP	Unemployment, total (% of total labor force)	Unemployment refers to the share of the labor force that is without work but available for and seeking employment.	WDI, World Bank database
8.	INFL	Inflation, consumer prices (annual %)	Inflation as measured by the consumer price index.	WDI, World Bank database

Source: GFDI & WDI database, World Bank.

Table 2. Pearson correlation matrix

Variable	ZSC	ROA	RISK	EFF	FIN	GDPR	INFL	UNEMP
ZSC	1.000							

ROA	0.462	1.000						
	(0.13)	-----						
RISK	0.439	0.275	1.000					
	(0.15)	(0.38)	-----					
EFF	-0.134	0.022	0.556*	1.000				
	(0.67)	(0.94)	(0.06)	-----				
FIN	-0.614**	-0.079	-0.798***	-0.290	1.000			
	(0.03)	(0.81)	(0.00)	(0.36)	-----			
GDPR	0.401	0.263	0.739**	0.638**	-0.801***	1.000		
	(0.19)	(0.41)	(0.01)	(0.02)	(0.00)	-----		
INFL	-0.377	-0.239	-0.764***	-0.716**	0.543*	-0.751***	1.000	
	(0.22)	(0.45)	(0.00)	(0.01)	(0.06)	(0.00)	-----	
UNEMP	-0.503*	-0.101	-0.687**	-0.359	0.931***	-0.821***	0.541*	1.000
	(0.09)	(0.75)	(0.01)	(0.25)	(0.00)	(0.00)	(0.06)	-----

***,**,* represent statistical significance at the 1%, 5% and 10%. P-value in parenthesis

Source: Authors own work

Table 3. Descriptive statistics of the variables

Statistics	ZSC	ROA	RISK	EFF	FIN	GDPR	INFL	UNEMP
Mean	16.23	0.76	15.37	75.15	703.9	5.2	12.2	4.1
Median	16.36	2.04	17.11	62.28	652.02	6.1	12.3	3.7
Maximum	22.05	3.80	23.40	202.04	1310.3	15.3	17.8	5.7
Minimum	12.19	-23.25	1.75	51.14	296.2	-1.7	5.3	3.5
Std. Dev.	2.41	5.69	5.54	40.77	301.8	3.9	3.2	0.6
Observation	18	20	17	20	14	20	20	20

Source: Authors own work

4. Discussion of results

The empirical results in table 4 show that the ROA variable has a positive significant effect on the ZSC variable. The result is robust in the two estimations in columns 1-2. The ROA coefficient is economically significant, indicating that a one percent increase in ROA would increase the ZSCORE by 2.5 percent. The result implies that bank profitability significantly improves financial stability in Nigeria. The result supports the findings of Ozili (2018) who find a positive relationship between bank profitability and bank stability in Africa. The RISK variable has a negative significant effect on the ZSC variable. The result is robust in the two estimations and suggests that a too high regulatory capital ratio can impair financial stability in Nigeria. The result is inconsistent with Thakor (2014) who argue that a high regulatory capital ratio would improve financial stability. Notwithstanding, the result implies that Nigerian financial supervisors should be cautious and should not impose a very high regulatory capital ratio on Nigerian banks due to its detrimental effect on financial stability in Nigeria. The EFF variable reports mixed statistical significance in the two estimations in relation to the ZSC variable. The FIN variable has a significant negative effect on the ZSC variable. The result is robust in the two estimations in columns 1-2, and it suggests that having a large number of bank depositors does not significantly improve financial stability in Nigeria. This indicates that a high level of financial inclusion may not necessarily improve financial stability in Nigeria. The result is consistent with Feghali et al (2021) who document evidence of a negative relationship between financial inclusion and financial stability. The GDPR variable has a significant negative effect on the ZSC variable. The result is robust in the two estimations in columns 1-2, and it suggests that a high level of economic growth may not be enough to increase financial stability in Nigeria. The result is inconsistent with Golitsis et al (2022) who document a positive relationship between economic growth and financial stability. The INFL variable has a significant negative effect on the ZSC variable. The result is robust in the two estimations in columns 1-2, and it suggests that a low level of inflation improves financial stability in Nigeria. The result is consistent with Radivojevic and Jovovic (2017) who document evidence of a negative relationship between inflation and financial stability. The UNEMP variable has a significant positive effect on the ZSC variable. The result is robust in the two estimations in columns 1-2, and it suggests that a high unemployment rate in Nigeria is associated with greater financial stability in Nigeria. The result is inconsistent

with Ozili (2018), Nkusu (2011) and Makri et al. (2014) who document evidence of a negative relationship between unemployment and financial stability in African countries, the Eurozone and advanced economies, respectively. The result is intuitive because as more people in the economy become unemployed and lose their income, they won't be able to access loans. This reduces the risk of loan defaults and improves financial stability in Nigeria (Nkusu, 2011; Makri et al, 2014).

Next, we perform a sensitivity analysis. We exclude the year 2020 and 2021 from our dataset and re-estimate the financial stability model to determine the factors affecting financial stability before the COVID-19 pandemic. The result is reported in table 5. The two-stage least squares regression estimation result in table 5 shows that the return on asset, regulatory capital ratio, level of financial inclusion, economic growth rate, inflation rate and unemployment rate are significant determinants of financial stability in Nigeria while the fully modified least squares regression estimation results do not report a significant coefficient for all the determinants even though they report consistent coefficient signs.

Table 4. Determinants of financial stability in Nigeria: the ZSC dependent variable

Variable	Two-stage least squares regression estimation	Fully Modified Ordinary Least Squares regression estimation
	Coefficient (p-value)	Coefficient (p-value)
C	31.469** (0.02)	30.773*** (0.00)
ROA	2.586** (0.01)	2.482*** (0.00)
RISK	-0.995** (0.02)	-0.964*** (0.00)
EFF	0.146 (0.37)	0.145* (0.09)
FIN	-0.022** (0.01)	-0.022*** (0.00)
GDPR	-0.830** (0.04)	-0.800** (0.01)
INFL	-0.629** (0.01)	-0.601** (0.01)
UNEMP	3.416* (0.06)	3.286** (0.02)
R^2	0.9447	0.869
Adjusted R^2	0.8478	0.564

***,**,* denote statistical significance at the 1%, 5% and 10% levels. P-values are in parenthesis

Source: Authors own work

Table 5. Determinants of financial stability in Nigeria: the ZSC dependent variable

Variable	Two-stage least squares regression estimation	Fully Modified Ordinary Least Squares regression estimation
	Coefficient (p-value)	Coefficient (p-value)
C	29.656** (0.01)	31.154 (0.27)
ROA	3.085** (0.04)	2.578 (0.52)
RISK	-1.372* (0.06)	-1.136 (0.00)
EFF	0.233 (0.32)	0.155 (0.81)
FIN	-0.027** (0.04)	-0.022 (0.59)
GDPR	-0.634 (0.17)	-0.548 (0.49)
INFL	-0.713* (0.05)	-0.557 (0.59)
UNEMP	4.707 (0.11)	3.355 (0.72)
R^2	0.968	0.899
Adjusted R^2	0.855	0.197

**,* denote statistical significance at the 5% and 10% levels. P-values are in parenthesis

Source: Authors own work

5. Conclusion

This study examined the determinants of financial stability in Nigeria over an extended period of time covering the 2002 to 2021 period. The study found that return on asset, regulatory capital ratio, the level of financial inclusion, economic growth, inflation and the total unemployment rate are significant determinants of financial stability in Nigeria. In terms of the directional effect, it was found that return on asset and the rate of unemployment have a significant positive impact on financial stability in Nigeria while regulatory capital ratio, the level of financial inclusion, economic growth and the inflation rate have a significant negative impact on financial stability in Nigeria.

The implication of the result is that high bank profitability, low regulatory capital ratio and low inflation are crucial for maintaining financial stability in Nigeria. The results signal that policymakers in Nigeria need to use macroeconomic policies and prudential regulations to ensure that banks remain profitable in order to have a stable financial system. They should use effective regulation to remove impediments to bank profitability so that banks can remain profitable and stable in Nigeria. Policymakers also need to be cautious in raising the regulatory capital ratio threshold because our analysis in this study showed that excessive regulatory capital ratio can impair financial stability in Nigeria. Policymakers should require Nigerian banks to keep a minimum level of regulatory capital ratio that is neither too high nor too low in order to preserve financial stability. Policymakers also need to ensure that there is low inflation in the economic environment since high inflation leads to lower demand for new loans which can affect bank survival and stability in Nigeria. Policymakers in Nigeria should use appropriate monetary policy tools to reduce the inflation rate to a low single-digit inflation rate to preserve financial stability. They also need to pay attention to the total unemployment rate. Efforts should be made to reduce the total unemployment rate to promote financial stability in Nigeria. Furthermore, the monetary and fiscal authorities should use the monetary and fiscal policy tools at their disposal to promote macroeconomic stability by delivering low inflation which is essential for preserving financial stability in Nigeria.

A limitation of the study is that the study relied on industry or country-level data to understand the determinants of financial stability in Nigeria. The study did not use bank-specific data which may provide additional insights into the determinants of financial stability

in Nigeria. Relying on industry or country-level data to understand the determinants of financial stability in Nigeria was important for this study to obtain an industry-level understanding of the factors affecting financial stability in Nigeria. Another limitation of the study is that it did not explore the socio-economic determinants of financial stability, rather the study focused on the macroeconomic determinants of financial stability in Nigeria. These limitations provide some interesting avenues for future research in this area.

Future research studies can explore the bank-specific determinants of financial stability for each type of licensed banks in Nigeria such as deposit money banks, primary mortgage banks, payment service banks, merchant banks and non-interest banks. Future research studies can also explore the socio-economic determinants of financial stability in Nigeria, such as income level, gender, population size and the geographic location of banks if the data for these variables are available.

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