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An Empirical Analysis of Capital Structure, Liquidity and Banking Sector Performance in Nigeria (2011-2021)

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Abstract The study examines the relationship between capital structure, liquidity, and banking sector performance in Nigeria from 2011 to 2021. Utilizing the Panel Least Square (PLS) method and drawing upon the theoretical frameworks of trade-off theory, pecking order theory, and agency theory, the study provides valuable insights into the determinants of banking sector performance. The findings reveal that long-term debt has a statistically significant positive impact on returns on assets, indicating that an increase in the long-term debt ratio is associated with higher bank performance. However, the relationship between short-term debt and returns on assets is positive but statistically insignificant, suggesting that short-term debt may not significantly influence bank performance. The analysis shows that the debt equity ratio does not have a significant impact on returns on assets, suggesting that the level of debt relative to equity may not be a major determinant of bank performance. On the other hand, the equity to asset ratio has a statistically significant positive effect on returns on assets, emphasizing the importance of higher equity levels in contributing to improved bank performance. Furthermore, the study finds that a more concentrated ownership structure has a statistically significant negative impact on returns on assets, indicating that a higher level of bank ownership hinders bank performance. Conversely, the net loan to total asset ratio demonstrates a statistically significant positive relationship with returns on assets, suggesting that increased lending activity contributes to improved bank performance. In terms of other factors, the analysis reveals that larger firm size has a statistically significant positive impact on returns on assets, indicating that larger banks tend to exhibit better performance. However, the age of the bank is not found to be a statistically significant determinant of performance. These findings provide important insights for banking industry practitioners, policymakers, and regulators in Nigeria. The results suggest that long-term debt, equity levels, ownership structure, liquidity, and firm size are significant factors influencing bank performance. Hence, it was therefore recommended that policymakers should encourage banks to access long-term debt financing options by promoting long-term debt instruments, emphasizing the importance of sufficient capital requirements and encouraging banks to strengthen their equity base while promoting a diverse ownership structure in the banking sector to enhance performance.

Keywords: *Capital Structure, Liquidity, Banking Sector Performance*

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1. Introduction

1.1. Background to the Study

Capital structure refers to the mix of debt and equity financing used by banks to support their operations and investments. It plays a vital role in determining a bank's risk profile, cost of capital, and overall financial performance. Optimal capital structure decisions are essential for achieving sustainable growth and profitability in the banking sector. However, striking the right balance between debt and equity financing can be a complex task, influenced by various factors such as bank size, profitability, and regulatory requirements [1]. Liquidity management is another critical aspect of bank performance. Liquidity risk, the risk of insufficient liquid assets to meet obligations, is a significant concern for banks, as it can lead to severe financial instability. Effective liquidity management involves maintaining an appropriate level of liquid assets while balancing the trade-off between profitability and liquidity risk. The ability of banks to effectively manage their liquidity positions is crucial for maintaining stability and meeting customer demands [2]. The banking sector is a critical component of a country's financial system. In Nigeria, the sector has undergone significant changes in recent years, which has affected its performance. Empirical studies suggest that the banking sector's performance is positively influenced by adequate capital structure, high levels of liquidity, and effective risk management practices [3].

The Nigerian banking sector has experienced significant changes and challenges over the past decade. The global financial crisis of 2008 and subsequent economic downturn had a profound impact on the stability and performance of banks worldwide. In Nigeria, the banking sector faced its own set of unique challenges during this period, including regulatory reforms, economic fluctuations, and increased competition [4,5,6,7] Against this backdrop, understanding the determinants of banking sector performance, particularly in relation to capital structure and liquidity management, becomes crucial for policymakers, regulators, and market participants. The period from 2011 to 2021 witnessed notable changes in the Nigerian banking sector. The Central Bank of Nigeria (CBN) implemented various regulatory reforms aimed at strengthening the sector, enhancing risk management practices, and promoting financial stability. These reforms included increased capital requirements, stricter corporate governance standards, and improved risk-based supervision. Furthermore, the Nigerian banking sector faced economic challenges, such as fluctuating oil prices, currency devaluations, and the impact of the COVID-19 pandemic.

Given the significance of capital structure and liquidity management for banking sector performance, conducting an empirical analysis focusing on the Nigerian banking sector during the period from 2011 to 2021 can provide valuable insights. This study aims to examine the determinants of capital structure, assess liquidity management practices, and investigate the relationship between capital structure, liquidity, and banking sector performance in Nigeria. By analyzing financial data from Nigerian banks over this period, the research aims to contribute to the understanding of the factors influencing the performance and stability of the banking sector. The findings of this study can have important implications for bank management, policymakers, and regulators in Nigeria. Understanding the dynamics of capital structure and liquidity management can help banks make informed decisions regarding their financing choices and liquidity risk management strategies. Additionally, policymakers and regulators can benefit from the insights gained to formulate effective policies and regulations that support the stability and growth of the Nigerian banking sector. By examining the factors influencing capital structure decisions, evaluating liquidity management practices, and exploring the relationship between these variables and banking sector performance, this research seeks to contribute to the existing knowledge base and provide valuable insights for stakeholders in the Nigerian banking sector.

1.2. Statement of Problem

The Nigerian banking sector has been facing significant challenges related to capital structure, liquidity, and overall performance, which necessitate a thorough investigation [8]. First, they struggle to strike the delicate balance between risk and profitability when determining the optimal capital structure, a challenge that demands meticulous decision-making [2]. Furthermore, liquidity management remains a hurdle as Nigerian banks grapple with the unpredictability of cash flows in a volatile market environment, making effective liquidity management a daunting task [9]. Complicating matters further, the prevalence of non-performing loans engulfs Nigerian banks, leading to deteriorating asset quality and posing significant obstacles to overall performance (Ogunleye & Ige, 2020). Moreover, compliance with ever-changing regulatory frameworks strains Nigerian banks, demanding adherence to stringent requirements and the ability to adapt swiftly [10].

By addressing these specific challenges, this research will contribute to the existing knowledge on capital structure, liquidity management, and banking sector performance in Nigeria. The findings will provide valuable insights for policymakers, regulators, and bank management to develop effective strategies, policies, and risk management frameworks that enhance the stability, efficiency, and profitability of the Nigerian banking sector. Ultimately, this research aims to promote a sound and resilient banking system that supports sustainable economic growth and financial stability in Nigeria.

1.3. Research Objectives

i To examine the relationship between long term debt ratio and the financial performance of Nigerian banks.
ii To assess the impact of short-term debt ratio on the banking sector performance in Nigeria.
iii To assess the impact of liquidity management on the banking sector performance in Nigeria.
iv To evaluate the influence of financial leverage on the performance of the Nigerian banking sector.

1.4. Research Questions

i What is the relationship between the long-term debt ratio and the financial performance of Nigerian banks?
ii How does the short-term debt ratio impact the banking sector performance in Nigeria?
iii What is the impact of liquidity management on the banking sector performance in Nigeria?
iv How does financial leverage influence the performance of the Nigerian banking sector?

1.5. Research Hypotheses

i. Hypothesis One:

H0: There is no significant relationship between the long-term debt ratio and the financial performance of Nigerian banks.

ii. Hypothesis Two:

H0: The short-term debt ratio has no significant impact on the banking sector performance in Nigeria.

iii. Hypothesis Three:

H0: Liquidity management has no significant impact on the banking sector performance in Nigeria.

iv. Hypothesis Four:

H0: Financial leverage has no significant influence on the performance of the Nigerian banking sector.

2. Literature Review

2.1. Conceptual review

In this section, we provide a conceptual review of the key themes related to capital structure, liquidity management, and banking sector performance. The review aims to establish a conceptual foundation and contextual understanding of these concepts. We explore the complex relationship between capital structure and firm performance, examining how capital structure decisions can impact a firm's risk profile, cost of capital, and overall financial performance. Additionally, we delve into the significance of liquidity management in the banking sector, exploring its role in ensuring financial stability, profitability, and risk mitigation. By examining the existing literature and theoretical frameworks, we aim to shed light on the conceptual underpinnings of capital structure, liquidity management, and their implications for banking sector performance. This conceptual review sets the stage for the subsequent empirical analysis, where we will investigate the specific determinants, challenges, and effects of capital structure and liquidity management practices in the Nigerian banking sector.

2.1.1. Capital Structure

It is essential to recognize that the relationship between capital structure and firm performance is complex and influenced by multiple factors. The capital structure of a firm can influence its financial risk profile, which, in turn, affects firm performance. High levels of debt may increase financial risk and lead to potential financial distress, while lower leverage ratios may indicate lower risk but also limit growth opportunities [1]. Also, the cost of capital, determined by a firm's capital structure, can impact its profitability and overall performance. The optimal capital structure seeks to minimize the cost of capital and maximize firm value [5]. Deviations from the optimal capital structure may affect a firm's ability to generate returns and impact its performance [11]. Furthermore, the agency theory perspective emphasizes the conflicts of interest between different stakeholders in the firm, such as shareholders and managers. Suboptimal capital structure decisions may result from agency problems, potentially affecting firm performance [6]. More so, the relationship between capital structure and firm performance can be influenced by industry characteristics and firm-specific factors. Industry-specific factors, such as regulation or market competition, may impact the optimal capital structure and subsequently affect firm performance. Additionally, firm-specific factors, including size, profitability, growth opportunities, and asset tangibility, can shape the capital structure decisions and influence firm performance [8] Capital structure decisions are not static but can change over time in response to various internal and external factors. The dynamic nature of capital structure implies that the relationship with firm performance can evolve, and it is important to consider the timing and changes in capital structure decisions when analyzing their impact on firm performance [12,13].

2.1.2. Liquidity Management

The conceptual issues surrounding liquidity management and firm performance highlight the crucial role that liquidity plays in supporting a firm's operations, growth, and resilience. Effective liquidity management practices are essential for maintaining financial stability, seizing growth opportunities, and navigating challenging market conditions. By understanding and addressing these conceptual issues, firms can enhance their liquidity management strategies and ultimately improve their overall performance. [14] noted that liquidity management is a critical aspect of firm operations that can significantly impact firm performance. Effective management of liquidity ensures that a firm has sufficient resources to meet its short-term obligations and fund its daily operations. Liquidity management encompasses the processes and strategies employed by firms to optimize their cash flows, maintain adequate working capital, and mitigate liquidity risks. The relationship between liquidity management and firm performance is complex and multifaceted, influenced by various conceptual issues. Firstly, liquidity management is closely tied to the firm's ability to meet its financial obligations promptly. Adequate liquidity enables firms to honor their payment commitments to suppliers, creditors, and employees, thereby maintaining healthy relationships and avoiding disruptions in business operations. Conversely, poor liquidity management can lead to cash shortages, delayed payments, and a tarnished reputation, ultimately affecting firm performance [15]. Secondly, liquidity management plays a crucial role in supporting investment decisions and growth opportunities. Firms with sufficient liquidity are better positioned to seize favorable investment prospects, undertake expansion projects, and pursue strategic initiatives. Liquidity constraints, on the other hand, may limit a firm's ability to capitalize on growth opportunities, potentially hindering its performance [16].

Furthermore, liquidity management affects a firm's ability to weather financial crises and economic downturns. Firms that maintain robust liquidity positions are better equipped to navigate adverse market conditions, sustain operations, and capitalize on distressed asset acquisition opportunities. In contrast, firms with inadequate liquidity may face difficulties in accessing credit or raising funds, potentially leading to financial distress and hampering overall performance [17]. Additionally, the impact of liquidity management on firm performance can be influenced by firm-specific factors such as size, industry, and financial structure. Large firms often have greater access to capital markets and may employ sophisticated liquidity management techniques. Industry characteristics, such as the level of competition and demand volatility, can also shape liquidity management practices. Firms operating in highly competitive and volatile industries may face greater

liquidity challenges, impacting their performance [2]. It is worth noting that the dynamic nature of liquidity management requires firms to adapt their strategies and policies to changing market conditions and regulatory frameworks. Rapid technological advancements, shifts in customer preferences, and evolving market dynamics necessitate continuous monitoring and adjustment of liquidity management practices to ensure optimal firm performance [18].

2.1.3. Capital Structure, Liquidity Management and Banking Sector Performance

The relationship between capital structure, liquidity management, and banking sector performance is indeed complex and subject to various influencing factors. Several studies have explored this relationship and shed light on its dynamics within the banking sector. The capital structure of a bank, which refers to the composition of its funding sources, can have significant implications for its performance. Higher levels of debt may increase a bank's financial risk and potentially lead to financial distress. On the other hand, a higher equity ratio can enhance the bank's ability to absorb losses and maintain stability. Past empirics have examined the impact of capital structure on banking sector performance. For instance, a study by [19] investigated the relationship between capital structure and bank performance in the Indian banking sector. Their findings indicated a negative relationship between leverage and bank performance, suggesting that excessive debt can hinder bank profitability. Another study by [15] examined the impact of capital structure on the financial performance of Indian public sector banks. The results revealed a positive relationship between equity capital and bank performance, emphasizing the importance of adequate capital buffers. Also, liquidity management is crucial for banks as it ensures their ability to meet short-term obligations and maintain solvency. Effective liquidity management involves maintaining an appropriate level of liquid assets to meet customer withdrawals and other funding needs. Inadequate liquidity can lead to liquidity crises, while excessive liquidity can result in reduced profitability and inefficient resource utilization. Research has explored the relationship between liquidity management and banking sector performance. A study by [8] examined the impact of liquidity management practices on the financial performance of Indian commercial banks. The findings suggested a positive association between efficient liquidity management and bank profitability. Furthermore, the role of regulatory frameworks in shaping liquidity management practices and their impact on banking sector performance has also been explored. For example, a study by [20] examined the impact of liquidity regulations on the financial performance of Saudi Arabian banks. The results indicated that stringent liquidity regulations positively influenced the financial performance of banks.

2.2. Theoretical Review

Theoretical foundations of capital structure, including the trade-off theory, pecking order theory, and agency theory. Capital structure refers to the mix of debt and equity financing used by a company to finance its operations and investments. It represents the way a company chooses to finance its assets through a combination of debt, represented by loans and bonds, and equity, represented by shares issued to shareholders. The decision on capital structure is crucial for a firm as it affects its risk profile, cost of capital, and ultimately its financial performance. According to [5] the capital structure of a firm is irrelevant in a perfect capital market, where there are no taxes, transaction costs, or information asymmetry. However, in the real world, firms face various factors that influence their capital structure decisions. One important factor influencing capital structure is the trade-off between debt and equity financing. The trade-off theory suggests that firms aim to balance the tax advantages of debt (interest tax shield) with the costs of financial distress and agency problems associated with high levels of debt [7]. This theory posits that firms with stable cash flows and tangible assets are more likely to use higher levels of debt to take advantage of the tax shield, while firms with riskier cash flows and intangible assets may opt for lower levels of debt to reduce financial distress costs.

Another perspective on capital structure is provided by the pecking order theory proposed by Myers and Majluf in 1984. This theory suggests that firms prioritize internal financing (retained earnings) over external financing (debt and equity) due to information asymmetry between managers and external investors. According to this theory, firms prefer to rely on internal funds to finance their investments, and they only resort to external financing when internal funds are insufficient. The agency theory perspective emphasizes the role of conflicts of interest between shareholders and managers in shaping capital structure decisions. Managers may have incentives to choose a capital structure that maximizes their own interests rather than those of shareholders. [6] argue that high levels of debt can act as a disciplinary mechanism by reducing agency costs and aligning the interests of managers and shareholders.

2.3. Empirical Review

Empirical studies have provided mixed evidence on the determinants and effects of capital structure. Some studies have found a positive relationship between leverage and firm value (e.g., [8], while others have found a negative relationship (e.g., [1]). Factors such as firm size, profitability, growth opportunities, industry characteristics, and macroeconomic conditions have also been found to influence capital structure decisions [3]. In conclusion, capital structure decisions play a critical role in shaping a firm's risk profile, cost of capital, and financial performance. The trade-off theory, pecking order theory, and agency theory provide different perspectives on the determinants and effects of capital structure. Empirical research is essential to understand the specific factors that influence capital structure decisions and their implications for firm performance.

Empirical studies have been conducted to explore the determinants of capital structure in the banking sector, with a specific focus on Nigeria. These studies have aimed to understand the factors that influence the capital structure decisions of banks in the Nigerian context. [21]

investigated the determinants of capital structure in Nigerian banks. Their findings revealed that profitability, asset tangibility, size, and liquidity significantly influenced the capital structure choices of banks in Nigeria. [17] examined the impact of regulatory factors on the capital structure of Nigerian banks. Their study found that regulatory requirements and capital adequacy regulations were significant determinants of the capital structure decisions of banks in Nigeria. [11] conducted a study on the determinants of capital structure in the Nigerian banking sector, considering factors such as profitability, liquidity, firm size, and growth opportunities. Their results indicated that profitability and liquidity significantly influenced the capital structure choices of banks in Nigeria. [22] investigated the impact of macroeconomic factors on the capital structure of Nigerian banks. Their study found that inflation and exchange rate volatility had a significant influence on the capital structure decisions of banks in Nigeria. These empirical studies provide valuable insights into the determinants of capital structure in the Nigerian banking sector. By considering factors such as profitability, asset tangibility, size, liquidity, regulatory requirements, and macroeconomic factors, these studies contribute to our understanding of the specific drivers of capital structure decisions in the Nigerian banking context.

Also, empirical studies have been conducted to examine liquidity management practices in the Nigerian banking sector. For instance, [9] investigated the liquidity management practices of Nigerian banks and their impact on financial performance. Their findings revealed that efficient liquidity management significantly influenced the profitability and stability of banks in Nigeria. [23] examined the determinants of liquidity risk management in Nigerian banks. Their study identified factors such as bank size, capital adequacy, and loan portfolio quality as significant determinants of liquidity risk management in Nigerian banks. [24] analyzed the impact of liquidity management on the financial performance of Nigerian banks. Their study found a positive and significant relationship between liquidity management and bank profitability in Nigeria. [10] examined the liquidity management practices of Nigerian banks in the context of regulatory requirements. Their study highlighted the challenges faced by Nigerian banks in effectively managing liquidity and complying with regulatory frameworks. These empirical studies contribute to our understanding of liquidity management practices in the Nigerian banking sector. By examining the determinants, impact, and challenges associated with liquidity management, these studies provide insights that can help banks and policymakers enhance liquidity management strategies and promote financial stability.

2.4. Research Gap

While empirical studies have explored the determinants of capital structure and liquidity management practices in the Nigerian banking sector, there is a need for further research that investigates the relationship between capital structure, liquidity management, and banking sector performance in the Nigerian context. Although individual studies have examined these factors separately, there is limited research that comprehensively analyzes the interplay between capital structure decisions, liquidity management practices, and their combined impact on the financial performance of Nigerian banks. Moreover, existing studies primarily focus on identifying the determinants and practices without fully exploring the implications of capital structure and liquidity management decisions on banking sector performance. There is a gap in understanding how specific capital structure choices, liquidity management strategies, and their interaction influence the overall performance, stability, and profitability of Nigerian banks. Therefore, the current research should aim to bridge this gap by conducting an empirical analysis that integrates capital structure, liquidity management, and banking sector performance measures. This research could employ robust econometric techniques to examine the joint effects of capital structure and liquidity management practices on various performance indicators, such as profitability, risk management, and stability of Nigerian banks.

3. Methodology

3.1. Research Design

The research design used for the study is the Ex Post Facto Research approach. This approach involves the observation and analysis of existing data to establish cause-and-effect relationships between variables. In this study, historical financial data from banks will be collected and analyzed to determine the impact of capital structure and liquidity on banking sector performance.

3.2.Population of the Study

The study will encompass all banks operating in Nigeria. This includes both domestic and international banks that are registered and authorized to conduct banking activities within the Nigerian banking sector. According to reports by the CBN in 2022, the Nigerian banking sector has about 22 banks currently in operation [8,16]

3.3. Sample Selection

The investigation sample comprises of twelve (12) listed commercial banks with the Nigeria Exchange Commission (NGX) as of 2021. According to the NGX (2021), we have about 22 listed commercial banks. These firms chosen on the criteria that their banks are listed in the market and thus have their data verified and available. Data for the study are derived from banks cope database which is a reliable data source that allows for making sound, accurate and generalized statements about the banking sector. The study period is from 2011 to 2021.

3.4. Data Collection

The primary source of data for this study will be the annual reports and financial statements of the selected banks. These reports contain comprehensive and standardized financial data that provide insights into the capital structure, liquidity, and performance of the banks.

The study will collect financial data for the study period from 2011 to 2021.

3.5. Model Specification

The model specification for examining the relationship between the dependent variable, firm performance (return on assets), and the independent variables, capital structure indicators, liquidity ratios, and control variables, can be outlined as follows:

Return on Assets (ROA) = $\beta 0 + \beta 1$(Capital Structure Indicators) + $\beta 2$(Liquidity Ratios) + $\beta 3$(Control Variables) + ε

Where:

- Dependent Variable: Firm performance, ROA represents the firm's performance, specifically the return on assets, which is a measure of profitability and efficiency.
- Capital Structure Indicators refer to variables that capture the financial leverage and capitalization of the banks, such as debt-to-equity ratio, leverage ratio, and other relevant indicators.
- Liquidity Ratios include variables that assess the liquidity position of the banks, such as current ratio, cash ratio, and other relevant indicators.
- Control Variables encompass additional factors that may influence firm performance and need to be accounted for in the analysis. These may include bank size, profitability, and other relevant variables.
- $\beta 0$ represents the intercept, which captures the constant term in the regression equation.
- $\beta 1$, $\beta 2$, and $\beta 3$ are the coefficients associated with the respective independent variables, indicating the strength and direction of their impact on firm performance.
- ε represents the error term, accounting for the unexplained variation in firm performance not captured by the independent variables.

The model will be estimated using regression analysis, specifically multiple regression, to assess the simultaneous effects of the independent variables on firm performance. The coefficients (β) will provide insights into the magnitude and significance of the relationships, indicating how changes in the independent variables impact firm performance. The control variables will help control for potential confounding factors and enhance the accuracy of the analysis.

3.6. Data Analysis

PLS (Panel Least Square) regression is employed to examine the simultaneous effects of capital structure indicators, liquidity ratios, and control variables on firm performance (measured by return on assets) in the Nigerian banking sector. PLS regression extends ordinary least squares (OLS) regression by incorporating the panel data structure, which involves observations on multiple entities (banks) over multiple time periods. This method allows for the utilization of

both cross-sectional and time-series dimensions of the data, enabling a more comprehensive analysis of the relationships. PLS regression can be employed to examine the simultaneous effects of capital structure indicators, liquidity ratios, and control variables on firm performance (measured by return on assets) in the Nigerian banking sector. PLS regression extends ordinary least squares (OLS) regression by incorporating the panel data structure, which involves observations on multiple entities (banks) over multiple time periods. This method allows for the utilization of both cross-sectional and time-series dimensions of the data, enabling a more comprehensive analysis of the relationships.

4. Data Analysis and Presentation

4.1. Presentation of Empirical Results

4.1.1. Descriptive Analysis

These insights provide a preliminary understanding of the relationship between capital structure, liquidity, and banking sector performance in Nigeria. Further analysis, such as regression analysis, can help determine the significance and direction of these relationships and provide more insights into how capital structure and liquidity factors influence banking sector performance.

Table 1. Statistics on the impact of capital structure and liquidity on banking sector performance in Nigeria

	ROA	LTD	STD	DEQR	EQAR	OWN	NLTA	LTDR	FS	AGE
Mean	1.512413	10.93785	6.57968	122.1587	4.675212	10.18525	42.77863	68.89482	6.212117	50.16667
Median	1.3299	9.395352	4.040634	118.15	12.515	2.20245	43.67437	69.29543	6.221696	32
Maximum	5.6167	47.98792	47.60272	372.73	23.51	71.5975	60.54275	115.7331	7.069371	127
Minimum	-9.5318	0.1321	0	-163.899	-154.75	0.0004	15.47535	9.599302	5.194534	13
Std. Dev.	1.953777	7.826223	7.528029	78.07562	29.88658	15.47131	9.565333	17.86853	0.415979	32.27013
Skewness	-2.25322	2.511075	2.266144	-0.33249	-3.75993	1.945573	-0.53162	-0.37587	-0.16614	1.005906
Kurtosis	14.21533	10.90806	10.46911	5.827744	16.77644	6.384892	3.185096	3.433146	2.414518	2.802531
Jarque-Bera	803.5042	482.6764	419.8107	46.41089	1354.862	146.2918	6.406023	4.13995	2.492571	22.47509
Probability	0	0	0	0	0	0	0.04064	0.126189	0.287571	0.000013
Sum	199.6385	1443.796	868.5177	16124.95	617.128	1344.453	5646.779	9094.116	819.9994	6622
Sum Sq. Dev.	500.0588	8023.72	7423.93	798550.1	117010.2	31356.34	11985.92	41826.26	22.66805	136418.3
Observations	132	132	132	132	132	132	132	132	132	132

Based on the provided statistics, we can make the following insights regarding the impact of capital structure and liquidity on banking sector performance in Nigeria: The mean return on assets is 1.5124, indicating an average level of profitability among the banks in the sample. The mean long-term debt ratio is 10.9379, suggesting that, on average, banks have a moderate level of long-term debt in their capital structure. The mean short-term debt ratio is 6.5797, indicating that, on average, banks rely moderately on short-term debt to finance their operations. The mean debt equity ratio is 122.1587, suggesting a high level of debt relative to equity in the capital structure of banks.

The mean equity to asset ratio is 4.6752, indicating a relatively low proportion of equity in banks' total assets. The mean bank ownership structure is 10.1853, suggesting a moderate level of ownership concentration in the banking sector. The mean net loan to total asset ratio is 42.7786, indicating that, on average, a significant portion of banks' assets is allocated to loans. The mean loan to deposit ratio is 68.8948, suggesting that, on average, banks have a relatively high level of loans compared to deposits. The mean firm size is 6.2121, indicating a moderate average size of banks in the sample. The mean firm age is 50.1667, suggesting that, on average, the banks in the sample have been operating for a relatively long time.

4.1.2. Econometric Analysis

The panel regression analysis was used to examine the relationship between capital structure, liquidity, and banking sector performance. The study was used to quantitatively assess the impact of various factors on economic phenomena. By employing econometric techniques, we aim to uncover valuable insights and draw meaningful conclusions regarding the determinants of banking sector performance.

4.1.3. Haussmann Test

Based on the Haussmann test results, the chi-square statistic for the test of cross-section random effects is 2.647646 with 9 degrees of freedom, resulting in a p-value of 0.9766. This suggests that there is no evidence to reject the null hypothesis of the presence of cross-section random effects.

Table 2. Haussmann Test

Correlated Random Effects - Hausman Test				
Equation: Untitled				
Test cross-section random effects				
Test Summary		Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random		2.647646	9	0.9766
Cross-section random effects test comparisons:				
Variable	Fixed	Random	Var(Diff.)	Prob.
LTD	0.048423	0.052152	0.000067	0.6492
STD	0.048675	0.043607	0.000224	0.735
DEQR	-0.00252	-0.00239	0.000002	0.9259
EQAR	0.02937	0.030677	0.000049	0.8513
OWN	-0.03856	-0.03506	0.000054	0.634
NLTA	0.0486	0.047059	0.000054	0.8344
LTDR	-0.02164	-0.02426	0.000014	0.4851
FS	2.007221	1.564991	3.104932	0.8018
AGE	-0.04606	-0.01992	0.012809	0.8174

Table 3. Random Effects Panel Regression Result

Dependent Variable: ROA				
Method: Panel EGLS (Cross-section random effects)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7.90334	3.543538	-2.23035	0.0276
LTD	0.052152	0.025457	2.048615	0.0426
STD	0.043607	0.031165	1.399219	0.1643
DEQR	-0.00239	0.002574	-0.9282	0.3551
EQAR	0.030677	0.01148	2.672151	0.0086
OWN	-0.03506	0.016459	-2.1301	0.0352
NLTA	0.047059	0.02269	2.074019	0.0402
LTDR	-0.02426	0.014582	-1.66388	0.0987
FS	1.564991	0.581727	2.690249	0.0081
AGE	-0.01992	0.011953	-1.66692	0.0981
	Effects Specification			
			S.D.	Rho

Cross-section random			1.250038	0.4592
Idiosyncratic random			1.356653	0.5408
	Weighted Statistics			
R-squared	0.263474	Mean dependent var		0.47036
Adjusted R-squared	0.20914	S.D. dependent var		1.485277
S.E. of regression	1.320862	Sum squared resid		212.8504
F-statistic	4.849159	Durbin-Watson stat		1.855401
Prob(F-statistic)	0.000015			
	Unweighted Statistics			
R-squared	0.42107	Mean dependent var		1.512413
Sum squared resid	289.499	Durbin-Watson stat		1.36416

ROA = -7.90333464739 + 0.0521519518729*LTD + 0.043606696462*STD - 0.0023894540499*DEQR + 0.0306770691194*EQAR - 0.0350594526035*OWN + 0.0470594916505*NLTA - 0.0242624558452*LTDR + 1.56499140067*FS - 0.0199242451912*AGE + *U*

4.2. Interpretation

The table 4.3 presents the random effects panel regression analysis on the empirical analysis of capital structure, liquidity, and banking sector performance in Nigeria with observations running from 2011-2021. The coefficient of 0.052152 suggests that an increase in the long-term debt ratio is associated with higher returns on assets. This result is statistically significant at the 0.05 level (p-value = 0.0426), indicating that long-term debt has a positive impact on bank performance. The coefficient of 0.043607 implies that there is a positive relationship between the short-term debt ratio and returns on assets. However, this result is not statistically significant at the 0.05 level (p-value = 0.1643), indicating that short-term debt may not have a significant impact on bank performance. The coefficient of -0.00239 suggests that the debt equity ratio does not have a significant impact on returns on assets. This result is not statistically significant at the 0.05 level (p-value = 0.3551), indicating that the level of debt relative to equity may not be a major determinant of bank performance. The coefficient of 0.030677 indicates that an increase in the equity to asset ratio positively affects returns on assets. This result is statistically significant at the 0.05 level (p-value = 0.0086), suggesting that higher equity levels contribute to improved bank performance. The coefficient of -0.03506 suggests that a higher level of bank ownership has a negative impact on returns on assets. This result is statistically significant at the 0.05 level (p-value = 0.0352), indicating that a more concentrated ownership structure may hinder bank performance. The coefficient of 0.047059 suggests that a higher net loan to total asset ratio is associated with higher returns on assets. This result is statistically significant at the 0.05 level (p-value = 0.0402), indicating that increased lending activity contributes to improved bank performance.

The coefficient of -0.02426 suggests a negative relationship between the loan to deposit ratio and returns on assets. However, this result is not statistically significant at the 0.05 level (p-value = 0.0987), indicating that the level of loans relative to deposits may not have a significant impact on bank performance. The coefficient of 1.564991 indicates that larger firm size has a positive impact on returns on assets. This result is statistically significant at the 0.05 level (p-value = 0.0081), suggesting that larger banks tend to exhibit better performance. The coefficient of -0.01992 suggests a negative relationship between firm age and returns on assets. However, this result is not statistically significant at the 0.05 level (p-value = 0.0981), indicating that the age of the bank may not be a major determinant of performance. Overall, the regression model has an R-squared value of 0.263474, indicating that the independent variables explain approximately 26.35% of the variation in returns on assets. The F-statistic is statistically significant (p-value = 0.000015), indicating that the overall regression model is valid. The Durbin-Watson statistic of 1.855401 suggests no significant autocorrelation in the residuals.

4.3. Policy Implications

Based on the findings from the regression analysis on capital structure, liquidity, and banking sector performance in Nigeria, the positive coefficient suggests that increasing the long-term debt ratio can have a positive impact on returns on assets. Policymakers could encourage banks to access long-term debt financing options to improve their performance. This can be achieved through initiatives such as providing incentives for long-term borrowing or facilitating the development of long-term debt markets. The negative coefficient for bank ownership structure indicates that a more concentrated ownership structure is associated with lower returns on assets. Policymakers should consider measures to promote a more diverse ownership structure in the banking sector. This can be achieved through policies that encourage the entry of new players, enhance competition, and address potential conflicts of interest. The positive coefficient suggests that increasing the equity to asset ratio can lead to higher returns on assets. Policymakers should encourage banks to maintain adequate levels of equity capital to enhance stability and absorb potential losses. This can be done by implementing capital adequacy

regulations that ensure banks maintain sufficient capital buffers.

The positive coefficient implies that a higher net loan to total asset ratio is associated with higher returns on assets. Policymakers should promote responsible lending practices and ensure that banks have effective risk management frameworks in place. This can be achieved through prudent lending regulations and supervision, which can help maintain the quality of loan portfolios. The negative coefficient suggests that a higher loan to deposit ratio is associated with lower returns on assets. Policymakers should encourage banks to maintain a balanced loan to deposit ratio to avoid excessive lending and potential liquidity risks. This can be achieved through monitoring and supervision of banks' lending practices and ensuring compliance with prudent liquidity requirements. The positive coefficient indicates that larger firms tend to have higher returns on assets. Policymakers could focus on supporting the growth and expansion of smaller banks to improve their performance and competitiveness. This can be done through initiatives such as providing access to financing, facilitating mergers and acquisitions, and creating a favorable business environment for smaller banks. The negative coefficient suggests that older firms may have lower returns on assets. Policymakers should consider measures to support the growth and innovation of both new and established banks. This can include providing incentives for technology adoption, promoting fintech collaborations, and fostering an environment that encourages innovation and adaptation to changing market dynamics. Overall, these policy implications aim to enhance the performance and stability of the Nigerian banking sector. Policymakers should consider implementing appropriate regulations, incentives, and supervisory measures to encourage responsible lending, maintain adequate capital buffers, and promote a diverse and competitive banking landscape. Additionally, ongoing monitoring and evaluation of these policies' effectiveness are crucial to ensure their alignment with the changing dynamics of the banking sector.

5. Summary, Conclusion and Recommendations

5.1. Summary of the Findings

The regression analysis conducted on the empirical analysis of capital structure, liquidity, and banking sector performance in Nigeria from 2011 to 2021 revealed several key findings. The positive and statistically significant coefficient suggests that an increase in the long-term debt ratio is associated with higher returns on assets. This implies that banks in Nigeria can enhance their performance by utilizing long-term debt financing options. Long-term debt may provide stability and enable banks to invest in long-term projects or seize profitable opportunities. The coefficient is positive but not statistically significant, indicating that the short-term debt ratio does not have a significant impact on returns on assets. This implies that banks' reliance on short-term debt does not directly contribute to their overall performance in terms of returns on assets. However, it is worth noting that short-term debt may play a role in supporting liquidity management and meeting short-term obligations. The negative coefficient suggests that the debt equity ratio does not have a significant influence on banking sector performance in Nigeria. This implies that the mix of debt and equity financing in a bank's capital structure does not strongly affect its returns on assets. Other factors such as profitability, asset quality, and management efficiency may have a more substantial impact on performance.

The positive and statistically significant coefficient indicates that a higher equity to asset ratio is associated with higher returns on assets. This finding suggests that maintaining adequate levels of equity capital is crucial for enhancing the performance of banks in Nigeria. Higher equity levels provide a buffer against potential losses and contribute to the overall stability and resilience of the banking sector. The negative and statistically significant coefficient suggests that a more concentrated ownership structure is associated with lower returns on assets. This highlights the importance of promoting a diverse ownership structure in the banking sector. Diverse ownership can bring in different perspectives, expertise, and governance mechanisms, which may positively impact a bank's performance. The positive and statistically significant coefficient implies that a higher net loan to total asset ratio is associated with higher returns on assets. This finding emphasizes the importance of responsible lending practices and effective risk management frameworks. Banks that are able to maintain a healthy loan portfolio and effectively manage credit risks tend to achieve better performance.

The coefficient is negative but not statistically significant, indicating that the loan to deposit ratio does not have a significant impact on returns on assets in the Nigerian banking sector. This suggests that the level of loans in relation to deposits does not directly affect a bank's overall performance. However, it is important to note that maintaining an appropriate loan to deposit ratio is still important for liquidity management and meeting customer credit demands. The positive and statistically significant coefficient suggests that larger firms tend to have higher returns on assets. This finding implies that supporting the growth and expansion of smaller banks could enhance their performance. Policies that promote competition, access to capital, and market entry for smaller banks may contribute to a more dynamic and efficient banking sector. The coefficient is negative but not statistically significant, suggesting that firm age does not have a significant influence on banking sector performance in Nigeria. This implies that the age of a bank, in itself, does not strongly affect its returns on assets. Other factors such as market conditions, management practices, and adaptation to technological advancements may have a more substantial impact.

5.2. Conclusion

In conclusion, this empirical analysis aimed to investigate the relationship between capital structure, liquidity, and banking sector performance in Nigeria from 2011 to 2021. The study utilized the panel least square (PLS) method and was underpinned by the theoretical frameworks of trade-off theory, pecking order theory, and

agency theory. The findings from the regression analysis provide valuable insights into the determinants of banking sector performance in Nigeria. The results indicate that long-term debt has a statistically significant positive impact on returns on assets, suggesting that an increase in the long-term debt ratio is associated with higher bank performance. Similarly, the analysis reveals a positive but statistically insignificant relationship between short-term debt and returns on assets, implying that short-term debt may not significantly influence bank performance. The study also examines the debt equity ratio and finds that it does not have a significant impact on returns on assets, indicating that the level of debt relative to equity may not be a major determinant of bank performance. However, the equity to asset ratio is found to have a statistically significant positive effect on returns on assets, highlighting the importance of higher equity levels in contributing to improved bank performance. Furthermore, the analysis reveals that a more concentrated ownership structure has a statistically significant negative impact on returns on assets, indicating that a higher level of bank ownership hinders bank performance. Conversely, the net loan to total asset ratio shows a statistically significant positive relationship with returns on assets, suggesting that increased lending activity contributes to improved bank performance. Regarding other factors, the analysis finds that larger firm size has a statistically significant positive impact on returns on assets, indicating that larger banks tend to exhibit better performance. However, the age of the bank is not found to be a statistically significant determinant of performance. Overall, this empirical analysis provides important insights into the determinants of banking sector performance in Nigeria. The findings suggest that long-term debt, equity levels, ownership structure, liquidity, and firm size play significant roles in influencing bank performance. These results can be valuable for banking industry practitioners, policymakers, and regulators in formulating strategies and policies to enhance banking sector performance and stability in Nigeria.

5.3. Recommendations

i The study found that a higher long-term debt ratio is associated with higher returns on assets. Policymakers and regulatory authorities should encourage banks to access long-term debt financing options, as it can contribute to improved performance. This can be achieved through the promotion of long-term debt instruments and the provision of incentives for banks to engage in long-term borrowing.

ii The analysis revealed that a higher equity to asset ratio is linked to higher returns on assets. It is crucial for banks to maintain adequate levels of equity capital to enhance their performance. Regulators should emphasize the importance of sufficient capital requirements and encourage banks to strengthen their equity base through capital injections or retained earnings.

iii The study found that a more concentrated ownership structure is associated with lower returns on assets. Policymakers should focus on promoting a diverse ownership structure in the banking sector to enhance performance. This can be achieved through policies that encourage the entry of new players, foster competition, and prevent excessive concentration of ownership.

iv The analysis showed that a higher net loan to total asset ratio is associated with higher returns on assets. Banks should prioritize effective risk management frameworks and responsible lending practices to improve their performance. This includes thorough credit assessments, robust risk monitoring systems, and proactive measures to mitigate credit risk.

v The study revealed that larger firms tend to have higher returns on assets. To promote a more competitive and inclusive banking sector, policymakers should provide support and incentives for the growth and expansion of smaller banks. This can include measures such as targeted funding programs, regulatory flexibility, and capacity-building initiatives.

Given the dynamic nature of the banking sector, it is crucial to continually monitor and evaluate the impact of capital structure and liquidity management on bank performance. Regular assessments and data-driven analysis can provide valuable insights for policymakers and help identify emerging trends and potential areas for intervention.

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