

Impact of Liquidity Management on Financial Performance of Commercial Banks: Evidence from Zambia

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ABSTRACT

Liquidity management is a critical determinant of financial stability and performance in the banking sector, particularly in emerging economies characterised by macroeconomic volatility and evolving regulatory frameworks. This study examines the relationship between liquidity management and financial performance of commercial banks in Zambia using panel data spanning the period 2019-2023. A quantitative research design is adopted, incorporating financial ratio analysis, trend analysis, and Karl Pearson's coefficient of correlation to assess the relationship between liquidity indicators and profitability measures.

The study evaluates three anonymised bank tiers. The Large Tier A Bank, Tier B Bank, and Tier C Bank classified based on market positioning and supervisory segmentation principles. The findings reveal a strong and statistically significant positive relationship between liquidity and financial performance across all bank tiers, with correlation coefficients of 0.94, 0.78, and 0.99 respectively. The coefficient of determination indicates that liquidity explains up to 98 percent of profitability variation in smaller banks.

However, the results also confirm the existence of a liquidity profitability trade-off, where excessive liquidity holdings reduce earnings due to underutilised funds. While a regression framework is specified, the empirical analysis primarily relies on correlation techniques; therefore, the findings should be interpreted as indicative of association rather than strict causality. The study contributes to the limited empirical literature in emerging economies by introducing a tier-based liquidity performance framework and provides policy-relevant recommendations for regulators and financial institutions.

Keywords: Liquidity management, financial performance, banking sector, Zambia, profitability

INTRODUCTION

Liquidity management remains one of the most critical aspects of banking operations because it directly influences a bank's ability to meet its obligations while maintaining profitability. Liquidity management plays a critical role in determining bank performance, particularly in emerging markets where financial systems are still developing (Kushner, 2022).

Banks operate under a fundamental constraint. They must ensure sufficient liquidity to satisfy deposit withdrawals and short-term liabilities, while also deploying funds into income-generating assets.

This dual objective creates a trade-off between safety and profitability, which is particularly pronounced in emerging economies such as Zambia (Kushner, 2022; Beaver, 2020).

Recent monetary policy tightening by the Bank of Zambia has further increased the importance of liquidity management, as reserve requirements and interest rate adjustments have constrained the availability of funds for lending (Bank of Zambia, 2024). This study therefore seeks to examine how liquidity management affects financial performance within the Zambian banking sector across different bank tiers. By adopting a tier-based analytical approach, the study provides a more nuanced understanding of liquidity-performance dynamics within the Zambian banking sector.

LITERATURE REVIEW

Conceptual Review

Liquidity is measured using current ratio, cash reserve ratio, and loan-to-deposit ratio, while financial performance is measured using Return on Equity (ROE). These measures were chosen because they jointly capture short-term liquidity strength, efficiency of converting deposits into earning assets and shareholder return. Return on equity is widely used as a key indicator of financial performance, as it reflects the efficiency with which banks utilise shareholder funds (Nyamador, 2021).

Liquidity management has been widely studied in banking literature due to its central role in financial stability and performance. Liquidity refers to the ability of a bank to meet its financial obligations as they fall due without incurring significant losses (Beaver, 2020). It is commonly measured using indicators such as current ratio, cash reserve ratio, and loan-to-deposit ratio (Wewege, 2020).

Theoretical Review

The theoretical foundation of liquidity management is anchored in several key frameworks. The liquidity preference theory developed by John Maynard Keynes explains the demand for liquidity based on transaction, precautionary, and speculative motives (Keynes, 1936). This theory highlights the trade-off between liquidity and returns, suggesting that highly liquid assets typically yield lower returns.

Banking theory further highlights the role of liquidity creation in financial intermediation and performance (Berger & Bouwman, 2009; Freixas & Rochet, 2008).

Empirical Review

The study employs ratio analysis, trend analysis, and correlation analysis to examine relationships between variables. Correlation analysis was used to examine the relationship between liquidity management and profitability. This approach is consistent with prior studies that investigate bank liquidity and performance using accounting-based indicators (Mairafi et al., 2018).

The shiftability theory emphasises the importance of holding assets that can easily be converted into cash without significant loss (Elliott, 2014), while the anticipated income theory links liquidity to expected cash flows from loan repayments (Ikram, 2021). Additionally, the Bank Run Theory highlights the vulnerability of banks to liquidity shocks arising from sudden withdrawals.

Empirical studies provide mixed evidence on the relationship between liquidity and profitability. Lalon and Naher (2020) find a positive relationship, while Bijoy et al. (2021) highlight diminishing returns associated with excessive liquidity. Mashamba (2018) reports that liquidity significantly influences bank performance in African banking systems, though the magnitude of this effect varies across institutions.

Empirical studies have also identified a relationship between liquidity and profitability, although the strength and direction of this relationship vary across contexts (Alzorqan, 2014). Evidence from developing economies further indicates that liquidity management practices significantly influence banking performance, particularly in African financial systems (Majakusi, 2016).

Despite extensive research, a key gap remains in understanding how liquidity-performance dynamics differ across bank categories. This study addresses this gap by introducing a tier-based framework.

Research Gap

Despite the extensive body of literature on liquidity management and financial performance, several critical gaps remain, particularly within the context of emerging economies such as Zambia. First, most existing studies have focused on developed or large emerging markets, with limited empirical evidence drawn from Sub-Saharan African banking systems. This limits the generalisability of findings to the Zambian context, where financial markets are relatively less developed and subject to unique structural and regulatory conditions.

Second, prior studies have largely treated banks as homogeneous entities, failing to account for structural differences across institutions of varying sizes, market shares, and operational capacities. In practice, banks differ significantly in their liquidity management strategies and performance outcomes, suggesting that a uniform analytical approach may obscure important variations.

Third, many empirical studies rely on cross-sectional data or short time frames, limiting their ability to capture dynamic relationships between liquidity and financial performance over time. This creates a gap in understanding how liquidity-performance dynamics evolve under changing economic and regulatory environments.

Finally, there is limited application of tier-based analytical frameworks that explicitly examine how liquidity impacts financial performance across different categories of banks. This represents a significant omission in the literature, particularly in emerging markets where banking sector segmentation is pronounced.

This study addresses these gaps by employing a panel data approach and introducing a tier-based classification of banks (Large Tier A, Tier B, and Tier C), thereby providing a more nuanced and context-specific analysis of the relationship between liquidity management and financial performance in Zambia.

METHODOLOGY

This study adopts a quantitative panel data approach using secondary data obtained from financial statements of three commercial banks in Zambia over the period 2019-2023. The banks are anonymised into Large Tier A Bank, Tier B Bank, and Tier C Bank to ensure confidentiality and analytical neutrality. The classification is based on relative market positioning, asset size, and profitability levels, ensuring representation of large, medium, and smaller institutions within the Zambian banking sector.

In addition, the classification is informed by the CAMELS regulatory rating system used by the Bank of Zambia. The CAMELS framework evaluates the overall soundness of financial institutions based on six key components: Capital Adequacy (C), Asset Quality (A), Management Efficiency (M), Earnings (E), Liquidity (L), and Sensitivity to Market Risk (S). This framework provides a structured basis for assessing bank performance and supports the analytical segmentation adopted in this study.

The simple linear regression model was used to examine how liquidity affects financial performance. The analytical model is specified as:

$$FP = \beta_0 + \beta_1 LQ + \varepsilon$$

The model specifies financial performance (FP) as a function of liquidity (LQ), where β_0 represents the intercept, β_1 measures the effect of liquidity on performance, and ε captures the influence of other unobserved factors.

FP represents the dependent variable of financial performance, proxied by return on equity. LQ represents liquidity, the independent variable, measured using Current Ratio (CR), Cash Reserve Ratio (CRR), Loan-to-Deposit Ratio (LDR), and Liquid Assets Ratio (LAR). These indicators reflect the bank's ability to meet short-term obligations.

β_0 is the intercept of the model, representing the level of financial performance when liquidity is zero. It captures baseline profitability not explained by liquidity, including effects of factors such as management efficiency and market conditions. β_1 is the coefficient of liquidity and measures the change in financial performance resulting from a one-unit change in liquidity. A positive β_1 indicates that liquidity increases profitability, while a negative β_1 indicates the opposite.

ϵ represents the error term or disturbance, capturing all other factors affecting financial performance not explicitly included in the model, such as interest rate fluctuations, inflation, credit risk, and broader macroeconomic conditions.

The use of correlation and regression frameworks is widely supported in financial research for examining relationships between variables (Gujarati, 2004). However, while the model is specified in regression form, the empirical analysis in this study primarily relies on correlation and ratio-based techniques due to data limitations. As such, the findings should be interpreted as indicative of association rather than strict causality.

Although a regression framework is specified, the study does not implement full panel econometric estimation due to sample size constraints. Consequently, the analysis focuses on correlation and trend techniques to establish the strength and direction of relationships between liquidity and financial performance.

Furthermore, diagnostic tests such as multicollinearity, heteroskedasticity, and stationarity were not conducted due to data and scope constraints. While these tests are important for econometric robustness, their omission does not invalidate the exploratory nature of the study. In addition, potential endogeneity between liquidity and financial performance is acknowledged, as both variables may be jointly determined. Future research should apply panel data techniques such as fixed effects or instrumental variable approaches to address this limitation. These limitations reflect the exploratory nature of the study and do not undermine the validity of the observed relationships.

RESULTS

Overview

This section presents the empirical results of the study based on liquidity indicators and financial performance measures for the period 2019-2023. The results are presented using descriptive statistics and correlation analysis.

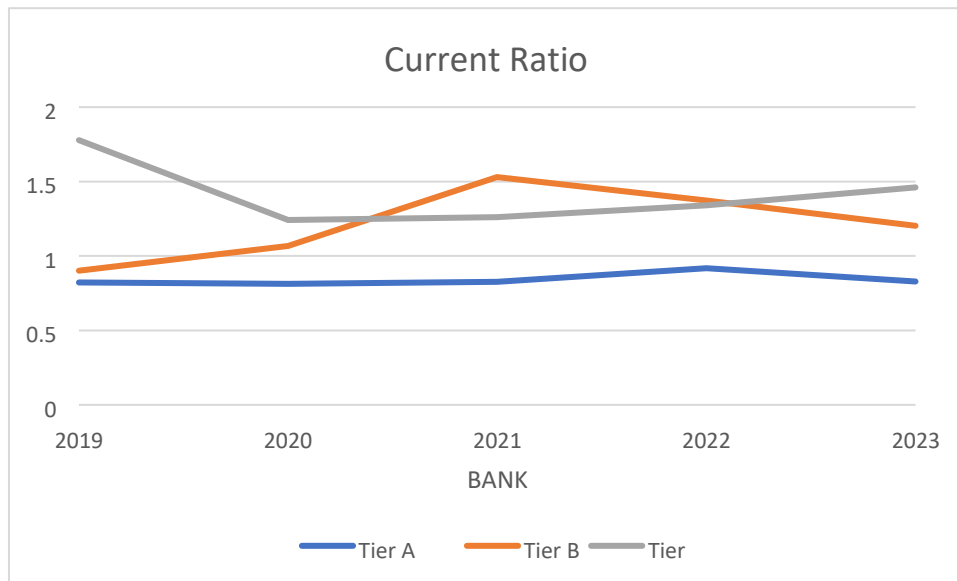
Descriptive Statistics

Table 4.2: Current Ratio

Year	Tier A Bank	Tier B Bank	Tier C Bank
2019	0.82	0.9	1.78
2020	0.81	1.07	1.24
2021	0.83	1.53	1.26
2022	0.92	1.37	1.34
2023	0.83	1.2	1.46
Total	4.21	6.07	7.08
Mean	0.84	1.21	1.42
Standard Deviation	0.04	0.25	0.22
Coefficient of Variation	0.05	0.18	0.14

Source: Authors' computation

Figure 4.2: Current Ratio



Source: Authors’ computation

Table 4.2 and Figure 4.2 present the current ratios of the three commercial banks under analysis across the five-year period. The table also includes the total, mean, standard deviation, and coefficient of variation for each bank. The current ratio of the Tier A bank, though fluctuating, consistently remained below 1. In contrast, the Tier B bank exhibited significant variability, ranging from below 1 to exceeding 1.5 in 2021. The Tier C bank maintained a current ratio consistently above 1. The relatively low ratios of Tier A and Tier B suggest that their liquidity positions were frequently below recommended levels, whereas Tier C demonstrated the strongest liquidity position among the three.

The coefficients of variation for the current ratios of Tier A, Tier B, and Tier C were 5%, 18%, and 14%, respectively. This indicates that Tier A bank had the most stable liquidity levels, with fewer large deviations from its mean compared to the other two banks.

Loan-to-Deposit Ratio

Table 4.3: Loan-to-Deposit Ratio

Year	Tier A	Tier B	Tier C
2019	51%	110%	62%
2020	48%	33%	55%
2021	51%	3%	42%
2022	41%	12%	36%
2023	57%	49%	77%
Total	2.48	2.06	2.73
Mean	0.5	0.41	0.55
Standard Deviation (S.D)	0.05	0.38	0.15
Coefficient of Variation (C.V)	0.1	0.92	0.27

Source: Authors’ computation

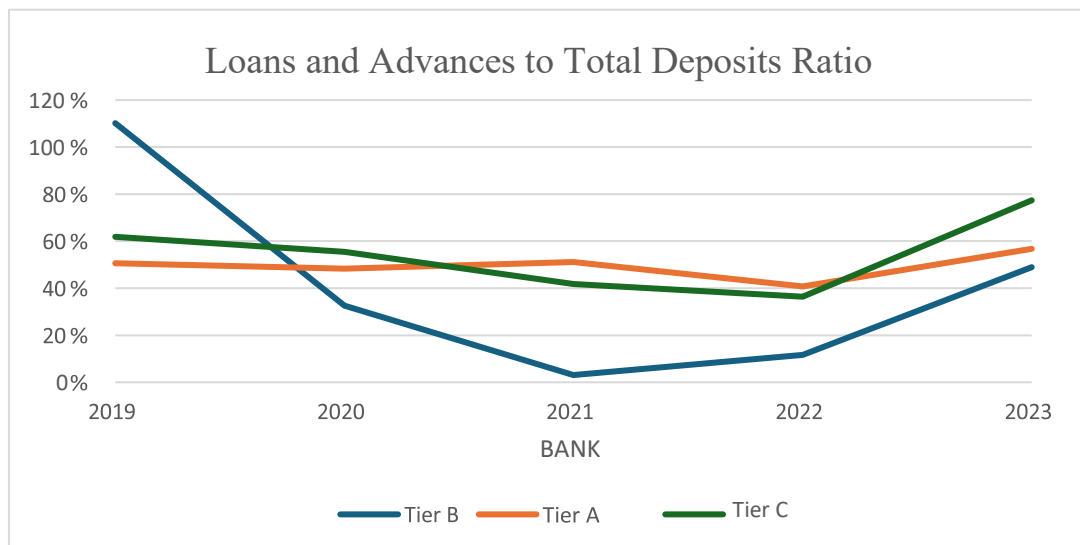
Table 4.3 presents the total, mean, standard deviation, and coefficient of variation (C.V.) of the loans and advances to total deposits ratio for the three commercial banks. The table highlights fluctuations in the ratios across the years, with all three banks showing an upward trend in 2023. Tier B bank recorded the lowest mean value at 41%, while Tier A bank demonstrated a notably lower coefficient of variation, indicating greater stability.

From Table 4.3, Tier C bank appears to have a strong position in utilizing deposits for loans and advances. However, this strength is not reflected in its after-tax profits, despite loans typically being a bank’s most profitable asset. This suggests that Tier C’s profitability may be constrained by high funding costs required to meet liquidity needs. Importantly, a high loans-to-deposits ratio does not necessarily imply better liquidity, as loans and advances are not liquid assets.

Conversely, Tier A bank’s low C.V. indicates that its loans and advances are the most consistent and stable among the three. With a mean loan-to-deposit ratio of 50%, this consistency supports its high return on shareholders’ funds, as deposits effectively sustain both assets and liquidity requirements.

Loan-to-Deposit Ratio

Figure 4.4: Loan-to-Deposit Ratio



Source: Author’s compilation

Figure 4.4 further demonstrates that Tier A bank maintains the most consistent loan and advance levels compared to its peers, underscoring its strong management of loans and advances.

Return on Equity

Table 4.5: Return on Equity

Year	Tier A	Tier B	Tier C
2018	18%	14%	18%
2019	59%	17%	9%
2020	26%	27%	6%
2021	129%	75%	9%

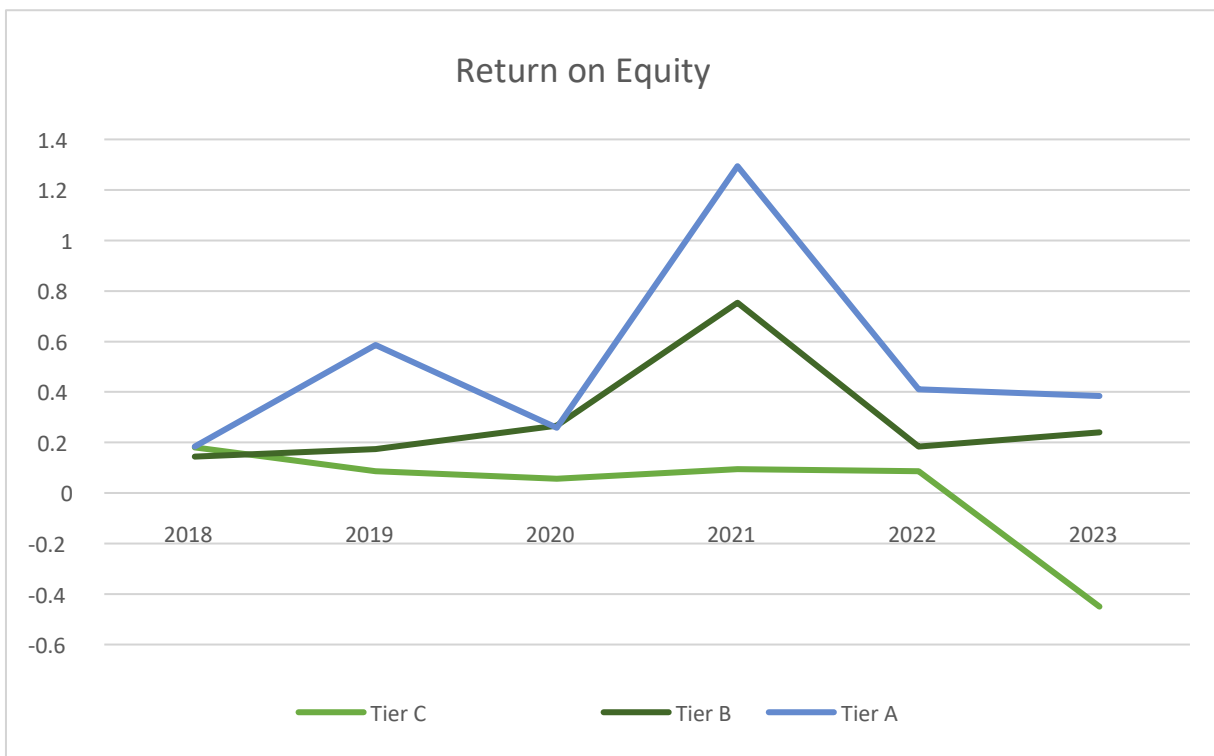
Year	Tier A	Tier B	Tier C
2022	41%	18%	9%
2023	38%	24%	-45%
Total	3.12	1.76	0.06
Mean	52%	29%	1%
Standard Deviation (S.D)	0.37	0.21	0.21
Coefficient of Variation (C.V)	0.71	0.71	22.63

Source: Authors' compilation

Table 4.5 shows the total, mean, standard deviation and coefficient of variation of return on equity ratio of Tier A, Tier B and Tier C banks. The trends of all banks were up and down with a significant increase in the return on equity for both Tier A and Tier B banks in 2021 with 129% and 75% respectively.

The mean analysis shows that Tier A bank recorded the highest mean ratio and the lowest coefficient of variation. This is an indication that Tier A bank investment policy is efficient and results in consistent and stable profits. As it has proportionately been able to consistently provide its shareholders with the highest return on their investment.

Figure 4.5: Return on Equity



Source: Authors' compilation

As shown in Figure 4.5, Tier C bank's return on equity is lower than that of Tier A and Tier B banks, with Tier A recording the highest return. This outcome suggests that Tier A bank's investment policy is the most efficient, as reflected in the trendline developed.

Correlation Analysis

Table 4.6: Coefficient of Correlation between Liquidity and Profitability

Evaluation Criteria	Tier A	Tier B	Tier C
r	0.94	0.78	0.99
r²	0.88	0.61	0.98

Source: Authors' computation

From the results in Table 4.6, the coefficients of correlation (r) between liquid assets and profit after tax for Tier A, Tier B, and Tier C banks were 0.94, 0.78, and 0.99, respectively. These values indicate a strong positive relationship between the variables across all three banks. The coefficient of determination (r^2) for Tier A was 0.88, meaning that 88% of the variation in profit after tax is explained by liquid assets. For Tier B, r^2 was 0.61, showing that 61% of profit after tax is accounted for by liquid assets. Tier C recorded the highest r^2 at 0.98, suggesting that 98% of the variation in profit after tax can be attributed to liquid assets.

Summary of Results

The results indicate variation in liquidity indicators and financial performance across bank tiers over the study period.

DISCUSSION OF FINDINGS

Overview

This section interprets the empirical results presented in Section 4 by linking them to the study objectives, theoretical frameworks, and selected empirical studies. The discussion draws on liquidity ratios, asset management indicators, profitability measures, trend analysis, and correlation results across the three bank tiers.

Liquidity Position Across Bank Tiers

The findings reveal significant differences in liquidity positions across the three banks. Tier C Bank consistently maintains the highest liquidity levels, followed by Tier A Bank, while Tier B Bank records comparatively lower liquidity ratios.

The strong liquidity position observed in Tier C Bank reflects a conservative approach to liquidity management, where banks prioritise financial stability over profitability. This is consistent with the view that higher liquidity buffers reduce exposure to liquidity risk but may constrain returns (Wewege, 2020).

Despite having relatively lower current ratios, Tier A Bank demonstrates the most stable liquidity profile over time, suggesting efficient liquidity management practices. This stability indicates the ability to maintain optimal liquidity levels rather than excessive reserves.

Asset Management Efficiency

The analysis of asset management ratios shows clear differences in how banks utilise their deposits. Tier B Bank allocates a larger proportion of its deposits to investment securities, which are generally more liquid but yield lower returns compared to loans.

In contrast, Tier C Bank records the highest level of loans and advances, indicating a more aggressive lending strategy aimed at generating income. However, this approach may expose the bank to higher credit risk if not properly managed.

Tier A Bank demonstrates a more balanced and consistent asset allocation strategy, reflecting efficient intermediation between liquidity and profitability. This aligns with the broader financial intermediation theory, which emphasises the need for optimal allocation of resources to maximise returns (Saunders and Cornett, 2014).

Profitability Performance

The profitability analysis indicates that Tier A Bank outperforms the other banks in terms of return on equity, suggesting superior efficiency in converting liquidity and investments into shareholder value.

Bank profitability is influenced by both internal and external factors, including liquidity, interest margins, and regulatory conditions (Demirgüç-Kunt & Huizinga, 1999; Molyneux & Thornton, 1992).

Although Tier C Bank achieves higher returns on loans and advances, this does not translate into overall superior performance. This finding suggests that profitability is not solely driven by lending activity but also by effective liquidity management and risk balancing, consistent with empirical findings in banking studies (Athanasoglou et al., 2008).

Liquidity Trends and Future Outlook

The trend analysis reveals an increasing pattern of liquid assets to total deposits across all bank tiers, with Tier C Bank exhibiting the highest growth rate. This indicates a strengthening liquidity position over time.

Maintaining adequate liquidity is also essential for financial stability, particularly in mitigating systemic risks within the banking sector (Allen & Gale, 2004; Bordeleau & Graham, 2010).

While this trend enhances financial stability, it may also signal the risk of excessive liquidity accumulation, which can reduce profitability if funds are not effectively deployed. This supports the argument that liquidity must be actively managed to avoid inefficiencies (Baldo et al., 2022).

Liquidity–Profitability Relationship

The correlation analysis confirms a strong positive relationship between liquidity and profitability across all bank tiers. However, the strength of this relationship varies, with Tier C Bank showing the highest dependence on liquidity levels.

This finding reinforces the theoretical proposition that liquidity plays a critical role in financial performance. However, the relationship is not strictly linear, as excessive liquidity reduces returns due to idle funds. This observation is consistent with the liquidity preference theory developed by John Maynard Keynes, which highlights the trade-off between liquidity and returns (Keynes, 1936).

Synthesis of Findings

Overall, the findings suggest that liquidity is a key determinant of financial performance, but its impact varies across bank tiers. Tier A Bank demonstrates the most efficient balance between liquidity and profitability, while Tier C Bank, despite being highly liquid, does not achieve proportionate returns.

These results align with empirical evidence suggesting that optimal liquidity levels enhance performance, whereas excessive liquidity leads to diminishing returns (Bijoy et al., 2021).

While the results indicate strong relationships between liquidity and financial performance, these findings should be interpreted as indicative of association rather than causality, given the analytical approach adopted.

CONCLUSION

This study examined the impact of liquidity management on the financial performance of commercial banks in Zambia using panel data for the period 2019-2023. The findings indicate a strong positive relationship between

liquidity and financial performance across all bank tiers, confirming that liquidity is a significant determinant of profitability.

However, the results also reveal a non-linear liquidity-performance relationship, where excessive liquidity reduces returns due to underutilised funds. The study further demonstrates that the impact of liquidity varies across bank tiers, highlighting the importance of adopting differentiated liquidity management strategies.

Overall, the study concludes that maintaining optimal liquidity levels rather than maximising liquidity is critical for balancing financial stability and profitability in the banking sector.

These findings can also be interpreted within the CAMELS framework, particularly with respect to liquidity and earnings performance.

RECOMMENDATIONS

Overview

This section presents practical recommendations derived from the empirical findings of the study. The recommendations are directed at bank management, regulators, and policymakers, with the objective of improving liquidity management practices while enhancing financial performance.

Recommendations for Bank Management

Adoption of Optimal Liquidity Levels

Banks should avoid both excessive and insufficient liquidity holdings by maintaining optimal liquidity thresholds. While adequate liquidity is necessary for operational stability, excessive liquidity leads to underutilisation of funds and reduced profitability.

Enhancement of Asset Allocation Efficiency

Banks should improve the allocation of liquid assets into income-generating investments such as loans and financial securities. This will ensure that liquidity contributes positively to financial performance rather than remaining idle.

Strengthening Liquidity Forecasting Systems

Banks should invest in advanced liquidity forecasting tools to accurately predict cash inflows and outflows. This will enable proactive liquidity management and reduce the need for excessive precautionary reserves. Empirical evidence from European banking systems further supports the importance of liquidity management in determining bank performance (Vodová, 2011).

Tier-Specific Liquidity Strategies

Liquidity management strategies should be tailored to the size and operational characteristics of each bank:

- (a) Large Tier A Banks should focus on optimising liquidity for profitability
- (b) Tier B Banks should improve efficiency and stabilise liquidity practices
- (c) Tier C Banks should reduce excessive liquidity and enhance asset utilisation

Recommendations for Regulators

The Bank of Zambia should consider adopting a differentiated regulatory approach that reflects structural differences across banks. Regulatory frameworks such as Basel III emphasise the importance of maintaining

adequate liquidity buffers through instruments such as the liquidity coverage ratio (Basel Committee on Banking Supervision, 2013).

Implementation of Tier-Based Liquidity Requirements

Regulatory frameworks should incorporate tier-based liquidity thresholds to ensure that requirements are aligned with the size and risk profile of banks.

Strengthening Supervisory Monitoring

Regulators should enhance monitoring of liquidity positions across banks to ensure compliance and detect potential risks early.

Promotion of Risk-Based Liquidity Management

Supervisory guidelines should encourage banks to adopt risk-based liquidity management practices rather than relying solely on static regulatory ratios.

Recommendations for Policymakers

Policymakers should ensure that monetary policy strikes a balance between financial stability and economic growth.

Flexible Monetary Policy Framework

Policies affecting liquidity, such as reserve requirements and interest rates, should be flexible to avoid constraining bank lending and profitability.

Support for Financial Market Development

Developing deeper financial markets will provide banks with more liquidity management options, reducing reliance on conservative liquidity strategies.

Implications for Future Research

Future research should:

- (a) Apply panel regression models to establish causality
- (b) Incorporate macroeconomic variables such as inflation and interest rates
- (c) Expand the study to include more banks and longer time periods

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