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Effect of Liquidity Creation on the Relationship between Interest Rate Spread and Firm Performance

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Abstract

The interest rate spread plays a crucial role in shaping the performance of commercial banks, as a wider interest spread allows banks to generate higher interest income, leading to improved profitability and overall performance. However, by effectively creating liquidity, banks can expand their lending capacity and generate wider interest rate spread, which positive impacts their overall performance. The goal of this study was to determine the relationship between interest rate spread, liquidity creation and performance of commercial banks in Kenya. A descriptive research design was employed, utilizing secondary data from 38 commercial banks in Kenya spanning from 2008 to 2018. The Baron and Kenny approach, employing a random effects model, was used to assess the potential intervening effect of liquidity creation. The findings revealed a significant and positive relationship between interest rate spread and performance of the banks; however, the results indicated that liquidity creation did not act as an intervening variable in this relationship.

Keywords: *Interest rate spread, liquidity creation, commercial banks in Kenya, firm performance*

Introduction

Commercial banks have a decisive role in any economic system since they are the pivot through which the savers and borrowers are linked. Their intermediation role mitigates adverse selection and moral hazards (Howells & Bain, 2008). The industry also chooses who will use society's savings through their allocation, thus driving economic growth. As they lend to the government and the private sector due to the underdeveloped security markets, the banks contribute significantly by lowering the cost of capital and promoting efficient resource allocation. It is vital, therefore, to shrewdly examine and appraise commercial banks' performance to ensure their financial system remains healthy for a vibrant economy.

The dynamics of interest rate spread and its profound implications on the performance of commercial banks have been a subject of extensive exploration by various scholars. Interest rate spread, often defined as the difference between deposit and loan rates, serves as a critical metric reflecting the net income relative to all earning resources of a financial institution (Brock & Rojas, 2000). The intricate relationship between interest rate spread and firm performance is characterized by the risks associated with volatile interest rate

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regimes, including diminished equity value, lower asset returns, and increased cost of funds for risk-averse banks (Crowley, 2004; Emmanuelle, 2003).

The Klein-Monti Model postulates that monopolistic banks, armed with market power, can manipulate interest rate spreads by adjusting the difference between deposit and loan rates (Klein, 1971). However, this model introduces unpredictability, particularly concerning loan requests and deposits, and the subsequent risk associated with defaulting customers (Da Silva et al., 2007). The resulting inefficiencies manifest in high operational costs, market risks, and a lack of competitiveness, hindering economic development and regional financial integration (Gilchris, 2013). Nevertheless, wide interest rate spreads may enhance bank returns and overall system health in certain scenarios (Saunders & Marcia, 2004).

The variation in interest rate spreads across economies is attributed to the nature and efficiency of their financial sectors, influencing the cost of deposit mobilization and allocation to productive uses (Jayaraman & Sharma, 2003). Macro instability in interest rates poses a threat to a bank's financial performance, diverting resources to markets with stable interest rates and impeding local and foreign investments (Sayedi, 2013). The direction of the association between financial performance and interest rates remains elusive, with contradictory findings in existing studies (Gilchris, 2013).

Amidst the complexities of interest rate spread and firm performance, liquidity creation emerges as a pivotal factor. Liquidity creation, the process through which banks transform illiquid assets into liquid liabilities, plays a crucial role in a bank's ability to finance growth and meet short and long-term monetary requirements (Diamond & Rajan, 2000). Prudent liquidity management is essential for optimal bank performance, preventing low profitability, insolvency, and negative impacts on shareholder value (Bank of International Settlements, 2008). Liquidity creation introduces a dimension of risk, especially for risk-averse managers and shareholders, who seek to balance the creation of liquidity with minimizing risk. The risk associated with funding illiquid assets and customer defaulting contributes to the widening of interest rate spreads (Andreou, Philip & Robejsek, 2015).

The relationship between interest rate spread and liquidity creation is intricate. An increase in interest rate spread encourages banks to focus more on lending, reducing the share of liquid assets and consequently influencing the bank's overall performance (Andreou et al., 2015). Managing liquidity creation within the

context of interest rate spread is crucial to preventing system-wide fragility and optimizing the performance of financial institutions (Berger & Bouwman, 2015). Existing studies suggest that liquidity creation has a positive impact on a bank's worth, with higher liquidity enabling increased distributable dividends to stakeholders (Berger & Bouwman, 2009). Investments in near-liquid assets are associated with lower funding expenditures and higher net income, emphasizing the importance of effective liquidity creation strategies (Bordeleau & Graham, 2010).

The banking sector in Kenya has grappled with the repercussions of economic downturns, including inflationary episodes and stringent regulatory policies. The unprecedented inflationary period in the 1990s prompted a shift in banking investments towards safer government bonds and bills, limiting lending to the private sector (Ngugi, 2001). While such measures aimed at stabilizing the economy, they led to a decline in interest income and increased non-performing loans, triggering a significant crisis with repercussions such as layoffs and the closure of networks. Additionally, regulatory interventions, such as the Banking Act of 2016, which imposed limitations on interest rates, have generated mixed reactions within the industry. While intended to enhance access to credit by controlling overall credit costs, these measures have faced resistance from industry players, leading to calls for their repeal (Central Bank of Kenya (CBK), 2017). Navigating these policy challenges has proven to be a persistent hurdle for banks in Kenya.

The Kenyan banking sector has witnessed instances of bank failures, with institutions such as Dubai Bank Kenya Limited, Imperial Bank, Euro Bank Limited, and Chase Bank placed under receivership. Reasons attributed to these failures include non-performing loans, poor management practices, and inadequate lending policies (Ongore & Kusa, 2013). These failures underscore the importance of effective risk management strategies and prudential oversight to safeguard the stability of the banking sector.

Moreover, risk exposure associated with interest rate spread and liquidity creation adds another layer of complexity. A delicate balance is required to optimize interest rate spreads for enhanced returns without compromising liquidity and exposing banks to undue risks (Lucchetta, 2007).

Despite the significant contributions of past studies, gaps persist in understanding the interplay between interest rate spread and liquidity creation in the Kenyan commercial banking sector. Existing literature lacks a comprehensive analysis of the mediating role of liquidity creation on the relationship between interest

rate spread and the performance of commercial banks in Kenya. This study aimed to fill this gap by providing empirical evidence and insights into how liquidity creation influences the dynamics between interest rate spread and performance of commercial banks in the Kenyan context.

Objective of the Study

To determine the influence of liquidity creation on the relationship between interest rate spread and performance of commercial banks in Kenya.

Literature Review

Theoretical Framework

The study was based on three theoretical perspectives; Liquidity Preference Theory (LPT), Asset Liability Management (ALM) theory and Modern Portfolio Theory (MPT). This study is anchored on the Liquidity Preference Theory (LPT), which was introduced by Keynes. According to LPT, the decision on how much income to save or spend is defined as liquidity preference, and interest rates are determined by the overall demand and supply of money (Keynes, 1936). Transaction, precautionary, and speculative needs influence this demand (Akpan, 2004). Transaction needs arise due to limited incomes and continuous expenditures, leading individuals to keep assets in cash for daily requirements. Precautionary needs involve holding cash to mitigate future unforeseen outcomes, directly proportional to income. Speculative needs depend on interest rate movements, creating an inverse relationship. LPT explores interest rates from both demand and supply perspectives, emphasizing the role of monetary policies (Keynes, 1936).

However, LPT faces limitations, such as indeterminacy disorder in interest rate determination until earnings are established (Hicks, 1980). The theory also oversimplifies investor behavior, assuming a binary choice between riskless cash and risky bonds. Real factors are often neglected, and applicability is limited to well-organized markets (Clair, 2004). Despite these limitations, LPT plays a crucial role in understanding the impact of interest rates on monetary policies and the banking sector's performance, especially in managing interest rate spread and liquidity creation.

The Asset Liability Management (ALM) theory, pioneered by Leibowitz, focuses on managing assets and liabilities differently based on the firm's stage in the macroeconomic cycle (Leibowitz, 1986). ALM involves aligning the effects of interest rates on assets and liabilities to mitigate risks and enhance

profitability. By matching cash inflows to outflows, firms can control liquidity risks associated with market, credit, operational, and business factors (Choundhry, 2011). ALM aims to optimize returns while managing exposures, providing insights into liquidity creation and risk control. However, ALM faces challenges such as the need for accurate data, differing institutional frameworks, and the reliance on estimates and assumptions. ALM's significance lies in its ability to link returns and top management team skills to the liquidity creation variable, emphasizing the compromise between returns and liquidity initially (Leibowitz, 1986). As firms grow, effective liquidity management improves income and overall performance.

The Modern Portfolio Theory (MPT), developed by Harry Markowitz, guides investors in constructing portfolios to minimize risk for a given return (Iraya, 2014). MPT emphasizes diversification to reduce unsystematic risk while acknowledging the inherent market/systematic risk. It assumes investors are risk-averse and aims to balance risk and return in a portfolio. However, MPT faces challenges in aligning with real financial markets due to assumptions of perfect rationality and information symmetry (Howells & Bain, 2008). The model assesses assets based on variance rather than underlying risk. MPT serves as a foundation for understanding the dependent variable of firm performance by evaluating portfolios for positive returns. It aids investors in navigating changing interest rate regimes and limited cash resources, contributing to sound decision-making and positive shareholder outcomes.

Empirical Review

Several studies have explored the relationship between interest rate spread, liquidity creation and firm performance. Ahmad, Mohammad and Muhamad (2013) examined liquidity management in Malaysian Islamic banks, revealing that economic conditions influenced liquidity creation. While underscoring the crucial role of steady returns, the study's small sample size limited generalizability and omitted other potential moderating variables.

Samad (2004) explored bank performance in Bahrain, finding no major differences in liquidity and profitability between conventional and Islamic banks. The study's limited sample size raised concerns about drawing broad conclusions. Kumbirai and Webb (2010) studied South African banks, emphasizing credit quality, profitability, and liquidity. The 2007 global crisis impacted initial performance, but financial ratios offered insights into liquidity effects. The study, however, faced challenges related to backward-looking data and susceptibility to manipulation.

Hamid and Akhi (2016) analyzed liquidity and performance in Bangladesh's pharmaceutical industry, finding no statistically significant correlation. The study's small sample size and Bangladesh's economic growth posed challenges in generalizing the results. Vodová (2013) examined Hungarian commercial banks, revealing an unexpected decrease in liquidity with increasing bank size. The study highlighted the impact of interest rates on liquidity but did not explicitly focus on the mediating role.

Celikoz and Arsian (2011) studied interest rate volatilities on money demand in Turkey, indicating inconclusive correlations between treasury-bill interest-rate volatility and money demand. However, the study did not explicitly address the mediating role of liquidity creation. Ibe (2013) investigated liquidity management in Nigeria, suggesting increased holdings in treasury bills and certificates. The study's small sample size and potential impact on economic growth raised concerns about generalizability.

Sahyouni and Wang (2018) analyzed 491 banks in the MENA region, highlighting a negative correlation between liquidity creation and banks' return on average equity (ROAE). The study acknowledged the bankruptcy cost hypothesis but did not explicitly delve into the mediating effect of liquidity creation on the interest rate spread and firm performance. Zygmunt (2013) explored the relationship between profitability and liquidity in Poland's IT firms, indicating a positive causal relationship. The study emphasized the need for a larger sample size and panel data for broader applicability.

Salim and Bilal (2016) studied Omani commercial banks' liquidity management, suggesting causal relationships between various liquidity indicators and performance. However, the lack of diagnostic tests on panel data limited the study's reliability and robustness to generalize. Shafana (2015) examined financial institutions in Sri Lanka, revealing positive associations between total deposits, cash position, and company performance. The study, however, did not explicitly focus on the mediating effect of liquidity creation on the relationship between interest rate spread and firm performance.

In summary, the highlighted studies offer insights into the broader relationship between interest rate spread, liquidity creation, and firm performance. However, few studies explicitly focus on the mediating role of liquidity creation, indicating a gap in the existing literature on this specific aspect. This study aimed to research this mediating dynamic to provide a more comprehensive understanding of the interplay between these variables in the context of commercial banks in Kenya.

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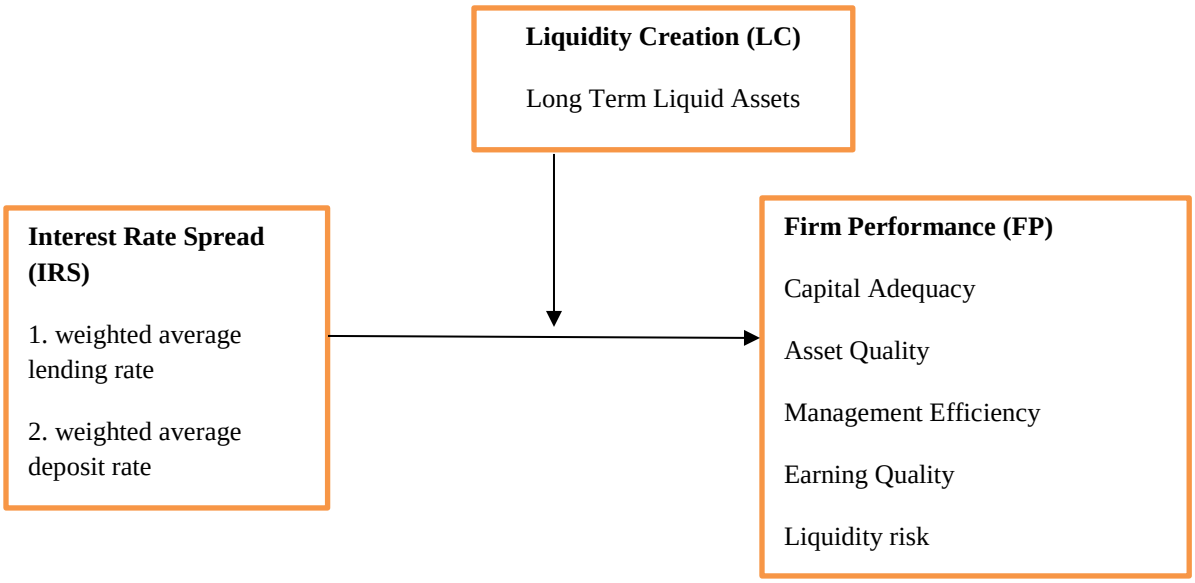
Research Hypothesis

H_{01}: Liquidity Creation does not have a significant intervening effect on the relationship between Interest Rate Spread and the Performance of Commercial Banks in Kenya.

Conceptual Model

Figure 1 below is a visual representation of the relationship among the study variables which is the influence of Liquidity Creation on the relationship between Interest Rate Spread, and Performance of Commercial Banks in Kenya.

Figure 1- Conceptual Framework



Methodology

This study adopted a descriptive design grounded on the positivism research philosophy. Positivism embodies the view that knowledge is dependent on observable evidence that can also be experienced (Cooper & Shindler, 2008). The positivist view was adopted because the study sought to establish gaps, test the hypothesis and deduce knowledge from the resulting observations while considering quality or essence of the participants' experience. A descriptive design allows for a fine-grained description of a phenomenon occurring within a given population (Mugenda & Mugenda, 2003). Therefore, this design was considered ideal for this study. Besides, it enabled generation of a representative picture of the target population over time.

The study targeted the 42 commercial banks operational as of December 2018. A census approach was used to study these banks. The data collected was secondary in nature and covered the period 2008 to 2018. STATA software was employed in the analysis of the data. Descriptive statistics including mean, standard deviation, minimum and maximum were computed. Panel regression analysis following the Baron and Kenny approach was utilized in assessing the intervening effect of liquidity creation on the relationship between interest rate spread and performance of commercial banks in Kenya.

Results and Interpretation

Descriptive Statistics: -Table 1 shows a summary of the descriptive statistics associated with the variables of interest.

Variable	N	Mean	*SD*	Minimum	Maximum
Firm Performance (FP)	380	0.08	0.02	0.05	0.11
Interest Rate Spread (IRS)	380	2.38	0.51	1.5	3.2
Liquidity Creation (LC)	380	551.97	131.02	350	800

Table 1 reveals important insights into the financial characteristics of the banks under study. The analysis of performance banks under study provides valuable insights into their financial performance. The average performance ratio was 0.08 (*SD* = 0.02), indicating that, on average, these banks were able to generate an 8% return on their assets. This signifies a reasonably healthy level of profitability. Additionally, the low standard deviation of 0.02 suggests that there was relatively limited variability in the performance ratio values, implying a degree of consistency in historical performance across these banks.

Interest rate spread represents a crucial historical financial metric for banks as it reflects their profitability through the difference between borrowing and lending rates. The mean IRS across the sample was 2.38 (*SD* = 0.51), indicating that, on average, the spread between these rates was approximately 2.38 percentage points during the study period. This suggests that banks in the sample had a significant margin for profit in their lending and investment activities. However, it is important to note the standard deviation of 0.51, indicating some variability in this spread among the banks.

Liquidity creation is a fundamental function of banks, and its measurement provided insight into their ability to manage their assets and liabilities efficiently during the study period. The average liquidity creation,

which stood at 551.97 (*SD* = 131.02), suggests that, on average, these banks were capable of creating liquidity amounting to 552.05 units during the study period. However, the standard deviation of 130.83 underlines the variation in this ability. Some banks were more effective at liquidity creation than others, reflecting differences in their operational strategies and customer demands during the study period.

Effect of Liquidity Creation on the Relationship between Interest Rate Spread and Performance of Commercial Banks in Kenya

The mediating effect of liquidity creation was assessed using Baron and Kenny (1986) approach within the random effects (RE) model framework. In particular, the approach began by conducting an initial RE model analysis to establish the direct relationship between interest rate spread and firm performance.

Once the significant relationship between interest rate spread (predictor) and firm performance (outcome) had been established, the next step entailed establishing the predictor-mediator relationship. This step involved determining whether interest rate spread significantly influenced liquidity creation (mediator). Upon establishing the significant effect of the predictor on the mediator, the next step involved introducing liquidity creation (mediator) into the initial model containing the predictor and outcome variable. A reduction in the significance or magnitude of the direct effect of interest rate spread (predictor) on firm performance would be a suggestion of mediation.

The null hypothesis for this objective was expressed as follows:

$H_{0:}$ Liquidity creation does not have a significant intervening effect on the relationship between interest rate spread and the performance of commercial banks in Kenya.

The model used to investigate this relationship utilized three equations in a three-model iterative regression. The model equations for each model were as follows;

Step a, $FP = \beta_0 + \beta_1 IRS + \varepsilon$

Where:

FP = Firm Performance;

β_0 = Regression Constant;

β_1 = Regression Coefficient;

IRS = Interest Rate Spread;

ε = is a random error term that accounts for the unexplained variations

The results of the RE model are summarized in Table 2.

Table 2: RE Model Results for the Effect of Interest Rate Spread on Performance

	Performance			
	RE Coefficients	*SE*	*z*	*p*
Constant	0.019	0.003	6.12	<.001
Interest rate spread	0.025	0.001	19.79	<.001
R^2	.509			
Wald χ^2 (1)	391.61			<.001
Observations	380			

The results from the RE model portrayed in Table 2, demonstrate the statistical significance of the regression model, Wald χ^2 (1) = 391.61, $p < 0.001$. This finding underscores the model's robustness in explaining variations in firm performance. Notably, interest rate spread exhibited a substantial influence on firm performance, accounting for 50.9% of the variability as indicated by the R squared statistic (R^2 = 0.509). The relationship between firm performance and interest spread can be concisely expressed as follows:

Firm Performance = 0.019 + 0.025 *Interest Rate Spread

Delving into the regression coefficients, it is evident that interest rate spread plays a significant role in predicting firm performance ($\beta = 0.025$, $z = 19.79$, $p < 0.001$). Specifically, a unit increase in interest rate spread corresponds to a 0.025 increase in firm performance. Based on the regression analysis performed, the null hypothesis was rejected. The results show that interest rate spread has a positive and significant in predicting the performance of commercial banks in Kenya, contributing to 50.9 % of the variations in firm performance.

Step b, $LC = \beta_0 + \beta_1 IRS + \varepsilon$

Where:

LC = Liquidity Creation;

β_0= Regression Constant;

β_1= Regression Coefficient;

IRS= Interest Rate Spread;

ε= is a random error term that accounts for the unexplained variations

The results of RE model fitted in step b are shown in Table 3.

Table 3: RE Model Results for the Effect of Interest Rate Spread on Liquidity Creation

	Liquidity Creation			
	RE Coefficients	*SE*	*z*	*P*
Constant	435.35	31.59	13.78	<.001
Interest rate spread	49.08	13.00	3.78	<.001
R^2	.036			
Wald χ^2 (1)	14.26			<.001
Observations	380			

The results derived from the RE model, showcased in Table 5.2, yield valuable insights into the intricate relationship between Liquidity creation and interest rate spread. The results confirm the statistical significance of the regression model, as indicated by a Wald χ^2 value of 14.26 ($p < 0.001$). This robust statistical significance underscores the model's capacity to elucidate variations observed in liquidity creation. It is worth noting that the model's R-squared statistic ($R^2 = 0.036$) sheds light on the extent to which interest rate spread explained variability in liquidity creation, revealing that it accounted for 3.6% of this variability.

The regression coefficients further indicate that interest rate spread was a significant predictor of liquidity creation ($\beta = 49.08$, $z = 13.00$, $p < 0.001$). This finding signifies that alterations in interest rate spread exert a noteworthy and discernible influence on liquidity creation.

These findings emphasize that variations in interest rate spread have a significant impact on liquidity creation. These results laid the foundation for the subsequent steps in the mediation analysis, confirming the essential predictor-mediator relationship required to explore the potential mediating effect of liquidity creation on the relationship between interest rate spread and firm performance.

In the third step, both the interest rate spread and liquidity creation were regressed on firm performance. The RE model was expressed as follows:

Step c, $FP = \beta_0 + \beta_1 IRS + \beta_2 LC + \varepsilon$

Where:

FP = Financial Performance;

β_0 = Regression Constant;

β_1; β_2= Regression Coefficient;

LC= Liquidity Creation;

ε= is a random error term that accounts for the unexplained variations

The results obtained from fitting the RE model are illustrated in Table 4.

Table 4: RE Model Results for the Effect of Interest Rate Spread and Liquidity Creation on Performance

	Performance			
	RE Coefficients	*SE*	*z*	*P*
Constant	0.025	0.004	6.78	<.001
Interest rate spread	0.026	0.001	20.20	<.001
Liquidity creation	-0.000	0.00	-2.99	.003
R^3	.520			
Wald χ^2 (2)	408.83			<.001
Observations	380			

The results presented in Table 4 show that the statistical significance of the regression model was clearly established, with a Wald χ^2 value of 408.83 ($p < 0.001$). This highlights the model's efficacy in explaining variance in firm performance. The model's R^2 squared statistic (R^2 = 0.520) signifies that the model accounted for 52% of the variability within firm performance. The assessment of the potential mediation effect of liquidity creation is facilitated by the summary of the regression results in each step as shown in Table 5.

Table 5: Summary of Mediation Assessment Models

Model	**Dependent Variable**	**Predictors**	**(β)**	**Sig**
Step a	FP	IRS	0.025	<.001
Step b	LC	IRS	49.08	<.001
Step c	FP	IRS	0.026	<.001
		LC	-0.000	.003

Discussion of Findings

The results indicate that the first step affirmed the presence of a direct and significant influence of interest rate spread on firm performance, thus fulfilling the first condition of Baron and Kenny (1986). In the second step, it was confirmed that interest rate spread was a significant predictor of liquidity creation, thus establishing the second condition of predictor-mediator relationship. In the third step, liquidity creation still remained as a significant predictor of firm performance, thus fulfilling the third condition that the mediator must significantly predict the outcome variable. However, the predictor variable (interest rate spread) does not decrease after control for the mediating variable as such the forth condition of Baron and Kenny was not met. This implies that there was no evidence of mediation by liquidity creation. Consequently, the null hypothesis that liquidity creation does not have a significant intervening effect on the relationship between interest rate spread and the performance of commercial banks in Kenya was not rejected.

Conclusion

The focus of this study was to determine the intervening effect of liquidity creation on the relationship between interest rate spread and the performance of commercial banks in Kenya. The study's results indicate that liquidity creation does not significantly mediate the relationship between interest rate spreads and firm performance. This contradicts Sahyouni and Wang's (2018) findings, suggesting a negative impact of liquidity creation on bank performance, particularly with ROE. This emphasizes the need for financial institutions to monitor market forces for optimal firm performance.

These findings deviate from Lucchetta's (2007) study, which suggested that an increased interest rate spread prompts financial institutions to focus more on lending, decreasing the share of liquid assets. Unlike Lucchetta's negative relationship between liquidity creation and interest rate spread, this study introduces a negative link between interest rate spread and firm performance when incorporating liquidity creation. However, liquidity creation's strong influence enhances the overall predictability of the model for firm performance.

Inconsistencies also emerge with Ibe's (2013) Nigerian study, recommending increased holdings in treasury bills and certificates, while Salim and Bilal (2016) found a strong positive relationship between liquidity variables and firm performance in Oman. These results are aligned with Sahyouni and Wang (2018),

Kumbirai and Webb (2010), and Shafana (2015), collectively highlighting the significant impact of liquidity creation on bank performance.

These results suggest that practitioners in the Kenyan banking industry should be cautious about assuming an intervening role of liquidity creation, emphasizing the need for a nuanced understanding of how interest rate spreads impact liquidity creation and subsequently influence firm performance. Policymakers, in light of this, may reconsider regulatory frameworks that presume a direct mediating role of liquidity creation and tailor them to the complex dynamics revealed by the study.

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