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Financial Risk Management In Banking: A Key Mediator In Bank Competition And Liquidity Creation

Asad Ali^{1*}, Dr. Usman Ahmad²

¹*PhD Scholar, DHA Suffa University, Karachi Campus, Email: asadali.bukc@bahria.edu.pk

²Assistant Professor, DHA Suffa University, Karachi Campus, Email: usman.ahmad@dsu.edu.pk

Corresponding Author: Asad Ali

*PhD Scholar, DHA Suffa University, Karachi Campus, Email: asadali.bukc@bahria.edu.pk

ABSTRACT

The study examines the impact of bank competition on liquidity creation and the mediating role of financial risk management. The simple regression technique is employed to test the hypotheses. The time series data is gathered from the financial statements of the conventional banks in Pakistan from 2004-2022. The Thomson Reuters economic data stream is used for data collection. The findings suggest that bank competition has a positive significant impact on liquidity creation in Pakistan. This means that the higher competition among conventional banks results in liquidity creation. The more the banks compete, the more the banks create liquidity and boost economic growth. The findings of the study align with the competition stability theory. The State Bank of Pakistan must effectively use the monetary policy rate to control the amount of liquidity creation in the economy. The extremes of liquidity creation, either the highest or lowest, harm the bank's performance and raise the risks for the banks.

Keywords: Bank Competition, Liquidity Creation, Financial Risk Management

JEL CODE: C22, G21, O47

1. INTRODUCTION

Liquidity creation pertains to the capacity of financial entities, particularly banks, to transform comparatively illiquid assets into liquid liabilities. This process enhances the smooth operation of financial markets and sustains economic activities. Liquidity is a vital element within a properly functioning monetary system. It ensures that depositors have timely access to their funds and enables banks to meet their commitments, including honoring withdrawal requests. The mechanism of liquidity creation encompasses the strategic adjustment of bank balance sheets to offer services such as deposit acceptance, loan provision, and efficient risk management. Banks generate liquidity by funding less liquid assets, such as business loans for plant and equipment, using liquid liabilities like household deposits (Diamond & Dybvig, 1983).

Additionally, banks contribute to public liquidity through off-balance sheet endeavors, such as credit lines that can be utilized at borrowers' discretion. Research on bank liquidity creation is facilitated by a comprehensive measure encompassing the total liquidity generated by a bank for the public. This measure considers the liquidity created by individual bank assets, liabilities, and off-balance sheet activities and the liquidity offset by other balance and off-balance sheet items (Berger & Bouwman, 2009). Through various versions of this measure, researchers globally present findings on factors influencing bank liquidity creation, including bank competition (Boubakri et al., 2023; Horvath et al., 2016; Jiang et al., 2019).

Banks play a vital role in the economy by facilitating the flow of funds from savers to borrowers, fostering investment, and supporting overall economic growth. Banks serve as crucial financial intermediaries by providing various financial services, such as accepting deposits, granting loans, and effectively managing associated risks. This role involves connecting individuals with surplus funds (depositors) to those needing funds (borrowers). The liquidity creation process within banks encompasses converting short-term liabilities (deposits) into longer-term assets (loans), coupled with the effective management of associated risks. In the context of heightened competition, banks may strive to offer more appealing interest rates on deposits, thereby attracting increased funds. This intensified competition can expand lending activities, making credit more accessible to businesses and individuals.

The financial industry plays a pivotal role in ensuring any nation's stability and economic progress. An essential component of a robust banking system lies in its capacity to effectively generate and manage liquidity, a critical factor in sustaining economic activities and upholding financial stability. A bank can only produce liquidity if it manages the risks it encounters adequately. Therefore, it is critical to understand the methods a bank might employ to control risks to improve its capacity to generate liquidity. A significant concern arises in the current financial environment due to insufficient liquidity across diverse markets. This insufficiency results in heightened transaction costs, increased price volatility, and a limited market depth. Market participants, including investors, traders, and financial institutions, face substantial obstacles in conducting seamless asset transactions. The liquidity problem stems from market fragmentation, regulatory constraints, and information asymmetry, fostering an environment that hampers active participation and effective capital allocation. Consequently, a vital need exists to formulate innovative strategies, tools, and frameworks to bolster liquidity creation, thereby nurturing a more resilient and

robust financial ecosystem (Almeshari et al., 2023).

While extensive research has been conducted on the competition levels within the banking sector, a gap in focused exploration concerning the specific impact of bank competition on liquidity creation exists. Existing research indicates that the liquidity capacity of banks is associated with their market power from two distinct perspectives. On the one hand, the creation of bank liquidity is likely to increase through the "price channel" (Love & Peria, 2015), suggesting that intense competition may enhance credit availability, a notion supported by previous studies (Valverde et al., 2009; Love & Peria, 2015). In the pursuit of market share and clientele, banks employ diverse strategies that can potentially affect their ability to create liquidity. The primary objective is to comprehend the intricate relationship between bank competition and liquidity creation, aiming to discern how competition influences the liquidity dynamics inherent in the banking sector.

On the contrary, heightened competition may lead to declining bank profitability, thereby increasing bank insolvency risk (Jimenez et al., 2013). Consequently, adherence to banking supervision standards may be compromised, threatening liquidity and exposing fragility. Petersen and Rajan (1995) contended that intensified competition diminishes liquidity generation, thereby reinforcing the perspective of the "fragility channel." Banks' vulnerability is rooted in providing security and converting maturity into liquidity to fulfill creditors' demands (Diamond & Dybvig, 1983). Both mechanisms highlight the strong correlation between the effects of market power in a competitive market and the ability of banks to create liquidity. The Pakistani banking system is considered the economic backbone and is subject to stringent regulation by the State Bank of Pakistan (SBP). Considering the above points, we will look at the impact of Bank Competition on Liquidity Creation and see if Financial Risk Management mediates this relationship. The study seeks to comprehend and assess the influence of bank competition on the liquidity creation of conventional banks in Pakistan. The research will specifically concentrate on the twenty conventional banks listed on the PSX website. The scope of the research is restricted to investigating the effects of bank competition on liquidity creation by Conventional banks in Pakistan, employing the Berger and Udell (2009) model.

Understanding the dynamics of liquidity creation is essential for maintaining stability within the financial system. The presence of liquidity ensures that financial institutions can meet their obligations, and any disturbances in liquidity can potentially lead to financial crises. The role of liquidity creation by banks is pivotal in supporting economic activities. Banks can effectively provide the necessary funds for investments and loans by transforming illiquid assets into liquid liabilities, thereby contributing significantly to economic growth. Examining the impact of bank competition on liquidity creation offers valuable insights into how competitive forces shape the behavior of financial institutions. This understanding is indispensable for cultivating a competitive environment that fosters innovation and the delivery of efficient financial services. The findings derived from research on liquidity creation have direct implications for formulating regulatory policies. Policymakers can leverage these insights to design regulations that encourage healthy competition and effectively mitigate risks, ensuring stability. Furthermore, contributions to academic knowledge through research in this field enrich the ongoing discourse on financial economics. Such research serves as a foundational resource for subsequent studies, aiding in developing a comprehensive understanding of the intricate role played by liquidity creation in the broader economic context.

In competitive settings, financial institutions endeavor to attract deposits and allocate funds efficiently. Investigating the influence of liquidity creation on bank competition provides insights into the allocation of financial resources. This understanding is crucial for policymakers who seek to establish an environment fostering effective resource utilization for the broader economy. The impact of liquidity creation on bank competition holds importance in upholding financial stability, mitigating risks, fostering economic growth, ensuring effective resource allocation, promoting innovation, safeguarding consumers, and crafting sound regulatory policies. This knowledge contributes significantly to the general well-being and robustness of the financial system.

2. LITERATURE REVIEW:

2.1.Theoretical Background

Financial intermediation refers to the process through which financial institutions act as intermediaries or mediators in the financial system, facilitating the flow of funds between savers and borrowers. The theory of financial intermediation delves into the roles and functions of these intermediaries in efficiently allocating financial resources. Financial intermediaries play a crucial role in the economic system by directing funds from savers (entities or individuals with surplus funds) to borrowers (those seeking funds for investments). One key function of financial intermediaries is to manage and mitigate risks. They achieve this by diversifying risks across a portfolio of assets, minimizing the impact of individual defaults on the overall financial health. Additionally, financial institutions contribute to overcoming information asymmetry between savers and borrowers. Their expertise in evaluating the creditworthiness of potential borrowers helps reduce risks for savers.

A fundamental aspect of financial intermediation involves transforming the maturities of assets and liabilities. For example, financial intermediaries accept short-term deposits and utilize these funds to extend long-term loans. This practice is known as liquidity transformation. Understanding financial intermediation theory is essential for comprehending the dynamics of financial markets, ensuring the banking system's stability, and evaluating the economy's overall health. The transformation of illiquid assets into liquid liabilities, known as liquidity creation, is essential for banks to fulfill their responsibilities, ensuring stability and effectiveness in the financial system.

Quantitative asset transformation is a fundamental concept within financial intermediation, particularly in the context of banking institutions. It involves the strategic process through which financial entities modify the nature of assets on their balance sheets. This transformation aims to convert assets with lower liquidity into more liquid forms, thereby contributing to the overall liquidity within the financial system. The primary objective is to effectively handle the challenges associated with maturity and liquidity disparities between a financial institution's assets and liabilities. Financial intermediaries, notably banks, play a central role in adjusting the characteristics of their assets to align with the preferences and requirements of clients and the broader market. This adjustment encompasses the conversion of less liquid and longer-term assets into more liquid and shorter-term

forms. The deliberate engagement in quantitative asset transformation equips financial institutions with an improved capacity to navigate and control liquidity. This capability is essential for meeting the diverse needs of depositors, extending loans, and adapting to dynamic market conditions.

Quantitative asset transformation is a strategic process employed by financial intermediaries, especially banks, to modify the composition of their assets. This modification seeks to enhance liquidity management, allowing these institutions to efficiently address depositors' demands, facilitate lending activities, and adeptly respond to the fluctuations in the market environment. Financial fragility theory, associated with Hyman Minsky's work, explores the cyclical nature of financial markets and their inherent instability. Minsky's thesis suggests that periods of economic stability can lead to complacency and increased risk appetite, making the financial system vulnerable to shocks and crises. The negative impact of financial fragility on banks' liquidity-generating ability arises when debt levels rise, the share of short-term debt increases, and liquidity falls. Banks face the challenge of creating liquidity to accommodate deposit withdrawals while buffering borrowers from depositors' liquidity demands. Stabilization policies, such as capital requirements, banking restrictions, and suspension of convertibility, may impede liquidity generation (Diamond & Rajan, 2001).

2.2. Empirical Studies:

Horvath et al. (2016) investigated the relationship between capital generation and liquidity, specifically focusing on the potential effects of stricter capital requirements, such as those outlined in Basel III reforms. Granger-causality tests were conducted on a comprehensive dataset of Czech banks from 2000 to 2010, revealing a robust expansion of liquidity creation over the period, primarily driven by large banks but constrained by the financial crisis. Notably, the study found that capital negatively causes liquidity creation, indicating that Basel III changes might limit liquidity creation but could also have negative effects by decreasing bank solvency. This implies a trade-off between increased capital requirements for financial stability and the advantages of liquidity creation.

Chatterjee (2015) discovered novel evidence linking the external finance premium, a proxy for bank liquidity creation, with asset market liquidity. While the study emphasizes how banks generate liquidity, affecting the effectiveness of monetary policy, there is no conclusive evidence in the literature that monetary policy variables can explain aggregate liquidity creation. Asset market liquidity, credit spreads, and the Liquidity of the Treasury bond and stock markets were measured, with findings indicating their impact on aggregate bank liquidity creation, especially among larger banks.

Diaz and Huang (2017) focused on internal bank governance's impact on bank liquidity creation in the United States before, during, and after the 2007–2009 financial crisis. They discovered that banks with better governance, especially large bank holding companies, generated more liquidity. Governance subcategories, including CEO training, compensation, progressive practices, and ownership, significantly impacted bank liquidity, particularly during crises.

Sabahat (2017) marked the first exploration of liquidity creation in Pakistan, emphasizing that liquidity is created due to the banking system's primary purpose of facilitating saving and investing. The study quantified liquidity produced by Pakistan's banking system and identified various measures capturing liquidity creation, with large banks contributing significantly.

Ilyas and Sarwar (2018) used data from Pakistan's scheduled banks to examine the effect of bank capital on liquidity creation. The results supported the idea that larger banks with higher capital are positively associated with liquidity creation, while smaller and medium-sized banks showed a negative relationship. The study suggested that higher capital requirements could lead to more liquidity creation, even though it might limit smaller banks' liquidity creation.

Dang (2022) examined how monetary policy influences the production of bank liquidity in Vietnamese commercial banks. The findings indicated that liquidity generation grew more among smaller and more liquid institutions in response to monetary policy easing, suggesting that regulators should consider monetary policy and bank traits to influence the liquidity creation channel.

Jiang et al. (2019) investigated whether increased bank competition creates liquidity. The results, based on the U.S. interstate bank deregulation over the 1980s and 1990s, suggested that competition brought on by regulations lowered liquidity creation, with larger banks experiencing reduced liquidity creation. The researcher examined the size of the bank's impact on the influence of monetary policy on commercial banks' ability to provide liquidity in Vietnam. The findings suggested that a contractionary monetary policy might cause banks to create less liquidity, with a clearer impact on larger banks.

2.3. Hypothesis Development:

Traditionally, banks generate liquidity by acting as a go-between for lenders and borrowers of cash. To increase the liquidity of an economy, banks utilize their liquid liabilities, such as demand deposits, to fund their illiquid assets, such as consumer loans (Bryant, 1980; Gorton & Winton, 2017). Tan (2023) found an inverted U-shaped relationship between internal control and bank liquidity creation. When banks are compared based on their kind, the research discovers that bank capital, size, and risk are all associated with the banks creating more liquidity than conventional banks, especially regarding on-balance sheet liquidity generation (Toh & Jia, 2023). It is clear from the examined research that the management of financial risks has an impact on liquidity creation.

2.3.1. Liquidity Creation

A few studies in the prior literature suggest the creation of liquidity between lenders and borrowers as a primary function of the banks (Diamond & Dybvig, 1983; Kashyap et al., 2002; Gatev & Strahan, 2006). Using relatively liquid deposits or short-term deposits, banks can build liquidity by offering long-term loans or illiquid loans. Banks have two different ways to generate liquidity: either on the balance sheet, using liquid liabilities and illiquid assets, or off the balance sheet, using things like loan commitments. These promises also provide the borrower the option to make unpredictable withdrawals during the term of the agreement. These bank pledges guarantee that customers will always have access to money in an emergency. Consider a

company needing long-term finance in a world without banks to comprehend liquidity creation better. In such a scenario, savers would directly support the business's financial requirements, leaving them with an illiquid claim against the corporation. In a bank-dominated environment, the bank provides the enterprise with a long-term loan and can give the savers demand deposits. As a result, the bank has an illiquid claim against the company, but savers end up with a liquid claim against the bank. Banks are said to produce liquidity because of the difference in liquidity between what they do with their money and how they finance their operations. Liquidity generation is an important function of banks since it promotes profitability and economic growth.

2.3.2. Bank Competition

Competition within the financial industry yields numerous benefits, fostering increased efficiency in producing financial services, delivering higher quality financial products, and encouraging innovation. Enhanced transparency and contestability in financial systems typically result in expanded product diversification, reduced costs associated with financial intermediation, and heightened overall competitiveness. The global financial crisis reignited interest among policymakers and scholars regarding the role of bank competition and the state's influence on competition policies—and regulations impacting the degree of competition among banks. There is ongoing debate on the effects of increased competition and financial innovation, particularly in sectors like subprime lending, with some arguing that these factors exacerbated the financial crisis. Concerns have also been raised about government assistance for major banks potentially intensifying financial concentration and limiting competition and access to credit. This, in turn, may contribute to future instability due to moral hazard concerns associated with 'too-big-to-fail' entities. Whether competition is beneficial or detrimental to financial stability remains a contention among academics and policymakers (Anginer et al., 2014). Economies that experience increasing concentration or develop into monopolies often face challenges to economic growth, particularly in terms of inefficiencies. Santoso and Jamil (2023) noted that insufficient competition can lead to price discrepancies, rendering the market inefficient. Rather than enhancing the efficiency of the banking market structure, this scenario distorts the role of banking as an effective financial intermediary. In such situations, borrowers incur higher interest rates, while savers receive less than they should. Essentially, customers of banking services end up paying a higher price for these services compared to market systems with lower concentration levels (Santoso et al., 2023).

2.3.3. Financial Risk Management

Banks face significant credit, operational, market, and liquidity concerns. These risks can lead to bank failure and have widespread impacts due to the large scale of some institutions. Banks are expected to adhere to government regulations and maintain robust risk management frameworks to mitigate these risks. Governments may consider enacting more stringent regulations to promote prudent decision-making and risk management within banks. The ability of a bank to effectively manage risk is a key factor influencing investor confidence. Despite generating substantial revenues, inadequate risk management can lead to reduced profits through loan losses. Investors are more inclined to invest in banks that can generate profits while minimizing risk. Banks are subject to stricter risk tolerance than other businesses because they are critical in national and global financial systems. The failure of banks can significantly disrupt the flow of money, with far-reaching consequences for the broader economy. Including everyone who works at the bank in risk management activities is critical, not only risk and compliance team members. Department heads should discuss with their teams before collaborating with executives to establish the bank's overall risk profile. It should be distributed to all bank stakeholders so that they understand the risks that a bank confronts and why it is critical to control them. A bank can control risk by having individuals on staff who are conversant with related rules and regulations.

2.3.4. Liquidity Creation & Bank Competition

Excessive dependence on immediate sources of funds, a concentration of illiquid assets on the balance sheet, and a decline in customer trust are among the factors contributing to liquidity difficulties faced by banks. In addition, poor management of the duration of assets and liabilities can also result in financial challenges. Ali et al. (2022) conducted a study examining the impact of a risky environment on the ability of banks of various sizes to generate liquidity. The results indicate that competition among banks significantly undermines their ability to create off-balance sheet liquidity.

H₁: Bank competition has a significant impact on liquidity creation.

2.3.5. Liquidity Creation, Bank Competition, and Financial Risk Management

In addressing the imperative for liquidity from borrowers on and off the balance sheet and depositors, the bank must carefully consider the trade-offs between costs and benefits associated with maintaining liquidity levels. The decision on how much cash and other liquid assets to retain is nuanced. Notably, deposit insurance mitigates concerns related to depositor actions that could lead to a bank run. However, a discount window may inadvertently encourage banks to hold insufficient liquidity to cover routine withdrawal risks adequately. The rationale behind this perspective lies in the multifaceted risks that banks confront within a competitive economic landscape, encompassing default risk, liquidity risk, and insolvency risk. Banks often uphold excessive cash reserves as a precautionary buffer in competitive environments to shield themselves against the potential threats of bank runs and default risks. Consequently, banks might curtail their liquidity generation in highly competitive scenarios to mitigate these risks, as Ali et al. (2022) indicated. From a market power standpoint, banks with more influence possess greater resources to navigate adverse market conditions. Conversely, when banks face market strength limitations, they may hesitate in fund issuance (Petersen & Rajan, 1995). The impact of bank competition on liquidity is a complex interplay involving both on and off-balance-sheet components. The influence of increased competition manifests in banking pricing

dynamics, leading to lower lending rates and higher deposit rates. Consequently, this stimulates heightened demand for loans and deposits. Empirical studies by researchers such as Carbo-Valverde et al. (2009) and Love & Martinez Peria (2015) support the observed relationship between competitiveness and lower loan rates. Furthermore, increased competition, as demonstrated by Becket et al. (2023), tends to raise financing barriers. Hainz et al. (2013) complement this viewpoint by connecting heightened concentration and increased collateral requirements. Thus, the 'price channel' perspective posits a positive correlation between competitiveness and liquidity generation.

H₂: Financial risk management practices mediate between bank competition and liquidity creation.

2.3.6. Conceptual Framework:

The existing research suggests a correlation between bank competition and liquidity creation. Notably, Ali et al. (2019) and Ali et al. (2022) have discussed the impact of increased bank competition on liquidity creation, emphasizing its potential reduction. The findings of these studies propose that heightened competition contributes to the financial fragility of banks, prompting a decrease in lending and deposit activities. Liquidity creation stands out as a vital function within banking activities. In addition to its role in liquidity creation, the banking sector plays a crucial role in risk transformation. The responsibility for liquidity production lies with banks, and this process is constrained by internal management efficiency and the institution's risk-taking capacity. This aspect is particularly significant as it pertains to monetary policy transmission. Considering our analysis, we posit that alterations in internal control structures and their intensity can significantly impact a bank's liquidity creation. Notably, the direction of this impact—whether positive or negative—is not explicitly determined. The prevailing assumption is that enhancements in internal control may lead to a decrease in risk appetite and a reduction in credit size. This, in turn, could potentially pose challenges for real firms seeking bank funding, potentially inhibiting overall economic development (Tan, 2023).



Figure-1: Conceptual Framework

3. RESEARCH METHODOLOGY:

The current study follows the research onion to explain the research methodology. The positivism philosophy is adopted, leading the researcher to use the deductive approach. The quantitative research design is used to evaluate the research data to determine the impact of bank competition on the liquidity creation of Conventional banks in Pakistan. The quarterly data is used for the analysis. The time series data was gathered from secondary sources such as the financial statements and the economic data stream of Thomson Reuters from 2004 to 2022. The E-views software was used to analyze the data. The simple regression technique is employed to test the relationship between the constructs.

Twenty Conventional banks listed on the PSX (Pakistan Stock Exchange) will be used to make up the research sample. These companies were selected based on the availability of their financial information in their annual financial reports. Secondary sources, especially the financial reports of companies listed under the bank sector on the PSX website, will be used to compile the data for this research. To extract relevant economic data, the annual reports of these companies covering from 2004 to 2022 will be thoroughly examined. In the given model, the dependent variable is liquidity creation, denoted by LC. The constant coefficient is represented by β_0 , the independent variable, i.e., β_1 BC denotes the bank competition, and β_2 FRM denotes the financial risk management. The error term is represented as ϵ_t . The t denotes that the data is a time series. The paper examines the following regression models for testing the hypothesis:

$$LC_t = \beta_0 + \beta_1 BC_t + \epsilon_t \quad [\text{Eq-1}]$$

Where;

LC	=	Liquidity Creation
β_0	=	Coefficients
BC	=	Bank Competition
ϵ	=	Error Term

3.1. Model for Mediation Analysis:

$$LC_t = \beta_0 + \beta_1 BC_t + \beta_2 FRM_t + \epsilon_t [\text{Eq-2}]$$

$$FRM_t = \beta_0 + \beta_1 BC_t + \epsilon_t [\text{Eq-3}]$$

Where;

LC	=	Liquidity Creation
β_0	=	Coefficients
BC	=	Bank Competition
FRM	=	Financial Risk Management
ϵ	=	Error Term

3.2. Variables & Measurement Tool:

The following are the measurement tools used for measuring the dependent, independent, and mediating variables:

Table 1: Variables & Measurement Tool

S.No.	Variable	Measurement Tool	Authors
1.	Bank Competition	Bank Competition Index	(Anginer et al., 2014)
2.	Liquidity Creation	Liquidity Creation	(Berger & Bowman, 2009)
3.	Financial Risk Management practices	Financial Risk Management Index	(Liu & Huang, 2007)

3.3. Dependent Variable (Liquidity Creation)

Berger and Bouwman (2009) proposed a three-step approach to measure liquidity creation:

3.3.1. Classification of Activities:

Assets, liabilities, and equities are categorized as illiquid, semi-liquid, or liquid based on factors like time, ease, and cost associated with banks' ability to liquidate assets or meet customer demands. The focus is on the convertibility of assets and the accessibility of funds for customers.

3.3.2. Assigning Weights:

Weights are assigned to the categories established in Step 1. The theoretical framework follows liquidity creation theory, where liquid liabilities and illiquid assets are given positive weights. Liquid liabilities, like deposits, finance less liquid assets, while negative weights are assigned to long-term liabilities, liquid assets, and capital. Capital's negative weighting reflects its impact on liquidity generation, and semi-liquid items receive zero weights.

3.3.3. Joining the Activities:

The categories of assets from Step 1 are multiplied by their assigned weights. This computation results in a measure of liquidity creation, reflecting the balance between the liquidity of assets and liabilities.

Berger and Bouwman's (2009) methodology quantifies liquidity creation by systematically categorizing, weighting, and combining balance sheet activities based on their liquidity characteristics. The approach captures the dynamic relationship between different types of assets and liabilities in influencing a bank's overall liquidity position.

3.4. Independent Variable (Bank Competition)

This study employs the Lerner index as the principal measure of insufficient competitiveness. The Lerner index serves as a proxy for a bank's profitability due to its reflection of market pricing power. It is computed at the individual bank level and has been widely utilized in various banking research studies. Our estimation is conducted using the methodologies outlined by Demircuc-Kunt and Martinez-Peria (2010). For each bank, use the following log cost function:

$$\log(C_t) = \alpha + \beta_1 + \log(Q_t) + \beta_2 \times (\log(Q_t))^2 + \beta_3 \times \log(W_{1,t}) + \beta_4 \times \log(W_{2,t}) + \beta_5 \times \log(W_{3,t}) + \beta_6 \times \log(Q_t) \times \log(W_{1,t}) + \beta_7 \times \log(Q_t) \times \log(W_{2,t}) + \beta_8 \times \log(Q_t) \times \log(W_{3,t}) + \beta_9 \times (\log(W_{1,t}))^2 + \beta_{10} \times (\log(W_{2,t}))^2 + \beta_{11} \times (\log(W_{3,t}))^2 + \beta_{12} \times \log(W_{1,t}) \times \log(W_{2,t}) + \beta_{13} \times \log(W_{1,t}) \times \log(W_{3,t}) + \beta_{14} \log(W_{2,t}) \times \log(W_{3,t}) \times \text{Year Dummies} + 2 \times \text{Bank Specialization Dummies} + \epsilon_t \quad [\text{Eq-4}]$$

In the above equation, C_t represents the aggregate costs, which encompasses interest, commission and fee, trading, personnel, administrative, and other operating expenses, all measured in millions of Rupees. Q_t denotes the output quantity, measured as total assets in millions of Rupees. W_1 signifies the ratio of interest expenses to total assets, while W_2 represents the ratio of personnel expenses to total assets. W_3 denotes the ratio of administrative and other operating expenses to total assets. The subscript t indicates the respective year. The natural logarithm of all variables is taken, and the regression is estimated for each country in the dataset using pooled ordinary least squares (OLS). The regression includes calendar year and bank specialization dummies. All variables are winsorized at the 1st and 99th percentile levels to mitigate the impact of outliers. Additionally, five restrictions on regression coefficients are imposed to ensure the homogeneity of degree one in input prices.

$$\beta_3 + \beta_4 + \beta_5 = 1; \beta_6 + \beta_7 + \beta_8 = 0; \beta_9 + \beta_{12} + \beta_{13} = 0; \beta_{10} + \beta_{12} + \beta_{14} = 0; \beta_{11} + \beta_{13} + \beta_{14} = 0 [\text{Eq-5}]$$

The coefficient estimates from the preceding regression are then used to determine the marginal cost for a bank in calendar year t :

$$MC_t = C_t / Q_t \times (\beta_1 + 2 \times \beta_2 \times \log(Q_t) + \beta_6 \times \log(W_{1,t}) + \beta_7 \times \log(W_{2,t}) + \beta_8 \times \log(W_{3,t})) \quad [\text{Eq-6}]$$

The Lerner's Index is then computed as:

$$\text{Lerner}_t = (P_t - MC_t) / P_t \quad [\text{Eq-7}]$$

The P_t is the asset price and is equal to the ratio of total revenue to total assets (interest income, commission and fee income, trading income, and other operational income).

3.5. Mediating Variable (Financial Risk Management Practices)

This study assessed the performance of traditional banks in managing financial risks by utilizing the CAMEL grading system, which evaluates capital adequacy ratio, asset quality, earnings, and liquidity. These metrics collectively reflect banks' overall financial risk management, encompassing operational performance and risk management capability. The financial risk management metrics, equations, and regulatory requirements employed in this research are presented in the table below. The CAMEL rating system provides banks with comprehensive risk management capabilities, which are utilized for internal control,

operations, and risk management. Researchers evaluated the CAMEL rating system as a measure of bank strength, while others used the CAMELS grading method to validate the bank-specific factors of loan growth in Vietnam. Indicators such as the ratios of current assets, total liabilities-to-total assets, and total sales-to-total assets are commonly used to indicate a country's financial distress.

First-Level Index	Second-Level Index	Calculation Formula	Regulatory Requirements (%)
Profitability	Return on total assets (ROA)	Net profit/average total assets	-
	The weighted average return on equity (ROE)	Net profit/weighted average net asset	-
Capital adequacy	Capital adequacy ratio (CAR)	Capital/risk-weighted assets	10.5
	Tier 1 capital adequacy ratio (TCAR)	Tier 1 capital/risk-weighted assets	8.5
Asset quality	Nonperforming loan ratio (NPLR)	Nonperforming loans /total loans	5
	Performing Loan Ratio (PLR)	Loan impairment provision/nonperforming loans	150
Liquidity	Liquidity ratio (LR)	Current assets/current liabilities	25
	Loan-to-deposit ratio (LDR)	loans/deposits	75

Note: Regulatory requirements may vary depending on the bank's structure or from time to time and are listed in this table as reference standards at the time of analysis (2019).

Figure 2: Financial Risk Management Weightage Allocation

The CAMEL grading methodology encompasses the assessment of capital sufficiency, asset quality, management, profitability, liquidity, and susceptibility to market risk. In this study, the CAMEL rating method was employed for several reasons. Firstly, the qualitative examination of a bank's management necessitates a comprehensive analysis of the bank's operational circumstances by regulatory authorities. Secondly, evaluating a bank's sensitivity to market risk is challenging due to the unavailability of relevant data. Lastly, financial indicators are not directly associated with a bank's management or its susceptibility to market risk. Following a thorough review of contemporary literature, the study utilized return on equity (ROE) to assess banks' profitability, capital adequacy ratio (CAR) to evaluate banks' capital sufficiency, nonperforming loan ratio (NPLR) and performing loan ratio (PLR) to gauge banks' asset quality, and liquidity ratio (LR) and loan-to-deposit ratio (LDR) to measure banks' liquidity, as the return on assets (ROA) of banks is highly correlated with their ROE, and their CAR is linked to their Tier 1 capital adequacy ratio (TCAR).

4. FINDINGS & DISCUSSION

4.1.Descriptive Analysis

In these results, we have 76 observations for all three constructs. The researchers ran a descriptive analysis test to examine the central tendencies of variables. The mean value shows the average value of a series. For Bank Competition, the average value is 0.077; for Financial Risk Management, it is 0.19; and for Liquidity Creation, it is 0.233. The median value is the middle value in a sorted list of values. The median value for Bank Competition is 0.05; for Financial Risk Management, it is 0.199; and for Liquidity Creation, it is 0.23. Standard Deviation measures the dispersion or variability of the data around the mean. Therefore, the Bank Competition is dispersed at 0.07, Financial Risk Management is dispersed at 0.10, and Liquidity Creation is dispersed at 0.059. Skewness measures the asymmetry of the distribution. So, the value of skewness for Bank Competition is a positive 1.072, which means Bank Competition has a longer right tail. In contrast, Financial Risk Management and Liquidity Creation have a negative skewness value of -3.46 and -0.67, meaning they have a longer left tail. Kurtosis measures if the distribution is flat or has a peak. Bank Competition's kurtosis value is 2.82, meaning Bank Competition has a flat distribution, while Financial Risk Management and Liquidity Creation's kurtosis values are 24.02 and 3.74, meaning their distribution peaks.

Table 2: Descriptive Analysis

DESCRIPTIVE ANALYSIS	BC	FRM	LCF
Mean	0.077133	0.197948	0.233586
Median	0.053018	0.199199	0.230874
Maximum	0.266227	0.366295	0.343229
Minimum	0.000000	-0.469320	0.062871
Std.Dev	0.071216	0.103538	0.059833
Skewness	1.07209	-3.464343	-0.675547
Kurtosis	2.826143	24.02414	3.746934

Jarque-Bera	13.46107	1551.734	7.547316
Probability	0.001194	0.000000	0.022968
Observations	76	76	76

4.2. Normality Test

4.2.1. Unit Root Test

The Unit Root test was used to check if the data was stationary or non-stationary. The null hypothesis for this test says (H_0 = The series is non-stationary). The results suggest that the data for Liquidity Creation is stationary at Level I and First Difference because the prob value is less than 5%. Therefore, we rejected the null hypothesis.

Table 3: Unit Root Test

Variables	I(0)		I(1)	
	C	C&T	C	C&T
LCF	0.0285	0.0201	0.0001	0.0001
BC	0.0340	0.0164	0.0001	0.0000
FRM	0.0000	0.0000	0.0000	0.0000

4.3. Diagnostic Analysis:

The researcher employed simple linear regression techniques to forecast the dependent variable using time series data to assess the link between bank competition and liquidity creation. A simple regression technique is used; however, before running the regression analysis, some diagnostic tests are run, such as multi-collinearity, auto-correlation, and heteroscedasticity, and several statistical tests are run to check the existence and severity of the said problems. Some difficulties may arise while estimating econometric models. The centered variance inflation factor assesses whether the model has a multi-collinearity problem. If the centered VIF values are less than 10, the model has no multi-collinearity problem. The Variance Inflation Factor findings reveal that the model has no multi-collinearity as the value falls under the criteria of less than 10. Therefore, it is determined that the constructs do not correlate. As a result, we accept the null hypothesis (H_0 : There is no multi-collinearity in the model).

Table 4: Multicollinearity

MULTI-COLLINEARITY

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.000101	2.188101	NA
BC	0.009263	2.188101	1.000000

The Durbin Watson is used to identify auto-correlation problems in the model. The Durbin- Watson value is 0.291725, less than 2, suggesting that the model has positive autocorrelation. However, to determine the degree of auto-correlation, the researcher employed the Serial Correlation LM test with a null hypothesis (H_0 = There is no auto-correlation in the model). If the prob value is more than 0.05, we will accept the hypothesis; otherwise, we will reject it. Because our model's prob value is greater than 0.05, we may conclude that the model has no auto-correlation.

Table 5: Breusch-Godfrey Serial Correlation LM Test

BREUSCH-GODFREY SERIAL CORRELATION LM

F-Statistics	137.2628	Prob F(1,73)	0.0520
Obs*R-Squared	49.61397	Prob Chi-square(1)	0.0618

The researcher uses the Heteroscedasticity White Test to assess the degree of heteroscedasticity in the model. The result of the heteroscedasticity white test is 0.0659, which is greater than 5%. As a result, it accepts the null hypothesis, which says (H_0 = There is no heteroscedasticity in the model). The above-mentioned diagnostic output suggests no issue of multi-collinearity, auto-correlation, and heteroscedasticity in the data and the model. The researcher can apply the partial least square method to achieve the objective.

Table 6: Heteroscedasticity Test: White

HETEROSCEDASTICITY TEST: WHITE

F-Statistics	3.841574
Obs*R-Squared	7.237190
Prob. F(2,73)	0.0659
Prob. Chi-Square (1)	0.0768

4.4. RegressiOn Analysis:

We have used the Least Squares estimation approach to test the hypotheses to achieve the research objective. Nineteen years of data were used to run the regression model. According to the R-squared value, the independent variable, Bank Competition, predicts 29% of the change in Liquidity Creation. The value for F-Statistics is less than 5%, which suggests that there is also a combined effect in the model. The constant parameter has a positive value of 0.22, indicating that all other factors are constant;

the value for Liquidity Creation would remain at 0.22. If Bank Competition rises by one unit, the value for LC increases by 0.143, assuming all other variables remain constant. Bank competition has a positive significant impact on the creation of liquidity. The prob value is significant at a 5% significance level, and t-statistics is also significant.

Equation – 1: $LC_t = \beta_0 + \beta_1 BC_t + \epsilon_t$

Estimated Equation – 1: $LC_t = 0.22 + 0.143BC_t + \epsilon_t$

Table 7: Regression Analysis

REGRESSION ANALYSIS

Variable	Coefficient	Std. Error	T-Statistics	Prob. Value
C	0.222576	0.010072	22.09844	0.0000
BC	0.142785	0.096246	1.483542	0.0142
R-Squared	0.288883			
Adjusted R-Squared	0.015760			
F-Statistics	2.200897			
Prob (F-Statistics)	0.0142			
Durbin Watson	0.291725			

4.5. Mediation Analysis:

Equation - 2: $FRM_t = \beta_0 + \beta_1 BC_t + \epsilon_t$

Estimated Equation - 2: $FRM_t = 0.133 + 0.829 BC_t + \epsilon_t$

Table 8: Mediation Analysis (Eq-2)

Coefficients

Model	Unstandardized Coefficients		T	Prob. Value
	B	Std. Error		
(Constant)	0.133953	0.014522	9.224	0.000
BC	0.829882	0.138769	5.980	0.000
R-Squared	0.32589			
Adjusted R-Squared	0.31671			
Prob (F-Statistic)	0.00000			
Durbin Watson	1.609			

a. Dependent Variable: Financial Risk Management

The researcher calculates the equation in equation 1 by using bank competition as an independent variable and financial risk management as a dependent variable to meet the first assumption of Barron and Kenny's (1983) mediation analysis approach. The equation is computed using multiple regression techniques and time series data. The model's r-square value is 0.325, showing that BC accounts for just 32.5% of the variation in financial risk management, with the remaining 67.5% ascribed to other variables. Time series data multiple regression results reveal that commercial bank rivalry has a considerable favorable influence on their FRM.

Equation - 3: $LC_t = \beta_0 + \beta_1 BC_t + \beta_2 FRM_t + \epsilon_t$

Estimated Equation - 3: $LC_t = 0.2250 + 0.1582 BC_t - 0.01860 FRM_t + \epsilon_t$

Table 9: Mediation Analysis (Eq-3)

Coefficients

Model	Unstandardized Coefficients		T	Prob
	B	Std. Error		
(Constant)	0.2250	0.014863	15.142	0.000
BC	0.15822	0.11797	1.3411	0.1840
FRM	-0.01860	0.081147	-0.2292	0.8193
2 R-Squared	0.29582			
Adjusted R-Squared	0.0299			
Prob (F-Statistic)	0.332197			
Durbin Watson	0.29782			

a. Dependent Variable: Liquidity Creation

In equation 2, the mediator is included as an independent variable, i.e., financial risk management, to meet the second assumption of Barron and Kenny's (1983) mediation analysis approach. Results show that the model's r-square value is 0.29582, indicating that BC accounts for just 29.58% of the variation in the Liquidity Creation in the commercial banks of Pakistan,

while the other 70.42% could be attributed to other factors. The time series data multiple regression results show that the BC has an insignificant positive impact on Liquidity Creation when the mediator is used as the independent variable. Moreover, adding the mediator as an independent variable makes BC insignificant, as in the equation, we have a significant positive impact of BC on Liquidity Creation.

Table 10: Sobel Test

Test	t-Statistics	Std. Error	P-Values
Sobel	0.0227	0.6791	0.9818
Aroian	0.0227	0.6791	0.9818
Goodman	0.0227	0.6791	0.9818

The Sobel test results show that financial risk management does not mediate the relationship between bank competition and liquidity creation. The result of Aroian and Goodman also suggests that FRM does not mediate the relationship between BC and LC. The mediation analysis shows that after fulfilling the above four assumptions of Baron & Kenny (1986) and the Sobel test, the findings suggest that FRM does not mediate between BC and LC.

4.6. Discussion

Pakistan witnessed substantial economic growth spanning four decades until 1988-89, with an average growth rate exceeding 5%. Consequently, the poverty rate saw a notable decline from 40% to 18% by the end of the 1980s. However, an analysis of crucial economic and social indicators from 1947 to 2003 reveals a nuanced reality—while the nation achieved significant economic progress, its social development record remained underwhelming. Table I presents a comprehensive overview of these indicators, illustrating the divergence between substantial economic advancements and shortcomings in social development.

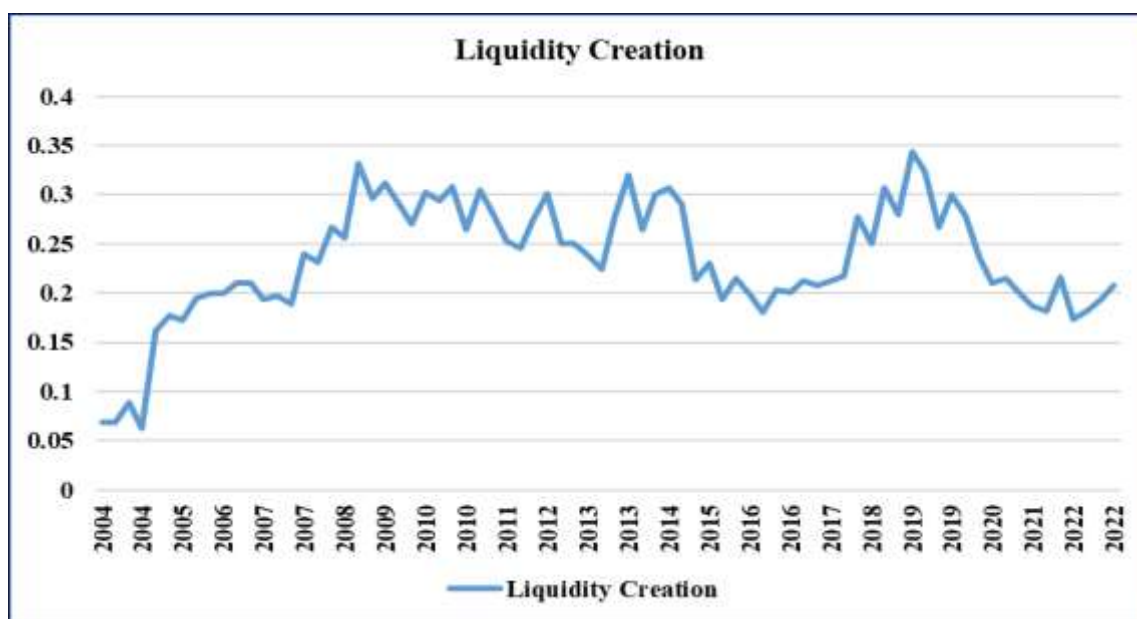


Figure 3: Liquidity Creation by commercial banks from 2004 to 2022

Figure 1 shows the growth in liquidity creation created by the conventional banks in Pakistan. Ali & Ahmad (2022) has estimated the amount of liquidity created by commercial banks in Pakistan using the financial data streams of Thomson Reuters. The current study uses the estimated amount to see the impact of bank competition on liquidity creation. However, there has been an increasing trend in the past few years during COVID-19. The bank's performance has increased drastically, as the monetary policy rate fell during COVID-19 to 5%. The lowest monetary policy rates allow the banks to lend the amount at the cheapest rates and give the lowest interest on deposits. Following the relaxation of monetary policy by the State Bank of Pakistan (SBP), banks increased lending and deposit activities, resulting in higher liquidity creation compared to the previous period. The financial system in Pakistan plays a pivotal role in propelling the country's economic development. It catalyzes economic growth by providing access to credit, investment opportunities, and efficient resource allocation. A well-functioning financial system is essential for sustainable economic growth and heightened global competitiveness. It ensures effective fund utilization, stimulates economic expansion, and creates a secure environment for investment and credit, contributing to long-term economic growth.

The line graph shows the trend of the bank competition in Pakistan. The trend indicates that bank competition decreased in 2013. After that, it increased until 2020 and then began declining afterward. Overall, there is an increasing trend in the bank competition. The factors for the increasing bank competition could be political instability, the creation of more and more banks, and the fact that banks operate in a dynamic requirement characterized by technological innovation, regulatory

requirements, and economic changes. The recent decrease in bank competition could be because of the interest and inflation rates increase, which have slowed the country's overall financial activities. The study aims to identify the impact of bank competition on liquidity creation. It will help academicians and researchers know how competition among commercial banks in Pakistan affects liquidity creation.

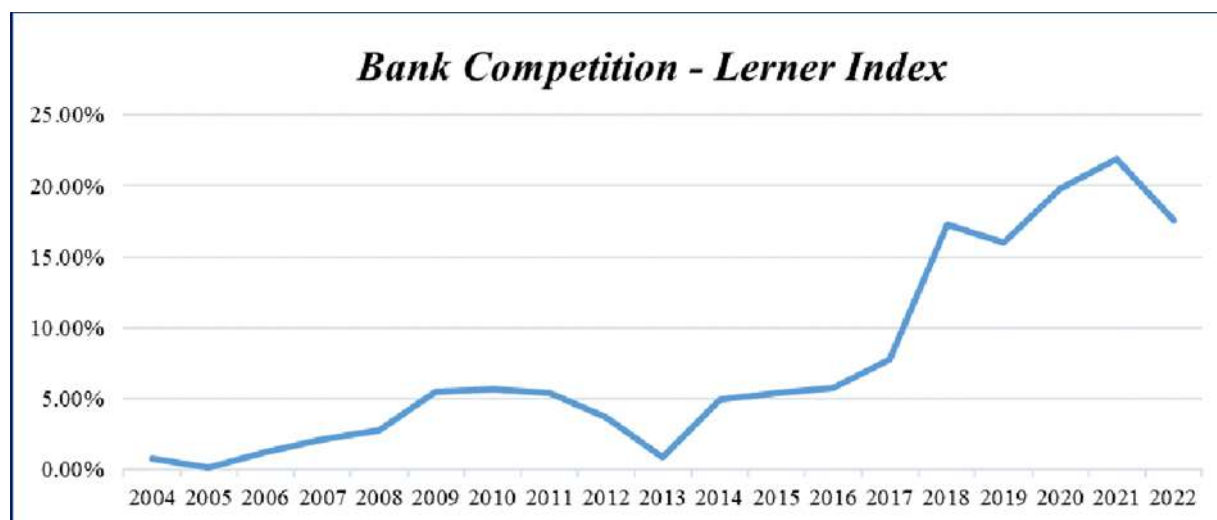


Figure 4: Bank Competition in Pakistan from 2004 – 2022

Additionally, a stable financial system enhances Pakistan's international competitiveness, fostering a stable and reliable atmosphere for foreign investment. Developing robust capital markets supported by a solid financial system is crucial for attracting foreign investment, diversifying the economy, and reducing dependence on traditional sectors—factors contributing to overall economic resilience and growth. Financial institutions are essential to advancing the financial industry by accepting deposits, providing loans, facilitating investments, and managing risks. They enable individuals and businesses to access credit, participate in financial markets, and effectively manage vulnerabilities. Financial institutions significantly contribute to economic growth by efficiently allocating capital and resources. Their role in progressing the financial sector involves introducing innovative financial products and services, enhancing financial literacy, and promoting financial inclusion.

Moreover, financial institutions are pivotal in maintaining financial stability by managing risks and sufficient capital reserves. In conclusion, financial institutions are instrumental in developing the financial sector, fostering economic growth, and ensuring financial stability. The financial performance of commercial banks in Pakistan is intricately linked to the country's monetary policy formulated and implemented by the State Bank of Pakistan (SBP). SBP's decisions on monetary policy can have diverse effects on commercial banks' financial performance. For instance, an increase in interest rates by the SBP may lead to higher net interest income for commercial banks but also raise their cost of funds. Conversely, a reduction in interest rates can result in lower net interest income for commercial banks but may decrease their cost of funds.

Additionally, SBP's monetary policy decisions can impact commercial banks' liquidity position, affecting the demand for credit and the availability of funds in the money market. Lastly, these decisions can influence commercial banks' asset quality, as changes in interest rates can impact borrowers' creditworthiness and the value of banks' loan portfolios. In conclusion, the financial performance of commercial banks in Pakistan is closely tied to monetary policy, and the decisions made by the SBP in this regard can have diverse implications for these banks.

5. CONCLUSION

The competition among traditional banks significantly influences liquidity production within Pakistan's banking industry. The drive for competitiveness compels banks to devise innovative strategies to attract deposits and increase loan volumes, ultimately fostering increased liquidity creation in the financial sector. The competitive landscape compels banks to offer appealing interest rates on deposits, enticing more depositors and expanding the pool of funds available for lending. It, in turn, contributes to economic growth and development, as heightened lending activities play a pivotal role in the liquidity production process, given that loans constitute a substantial portion of the money supply in the economy. Moreover, competition compels banks to enhance operational efficiency by incorporating modern technology and optimizing procedures. This improves customer service and accelerates loan disbursement, enhancing overall banking industry liquidity management.

Additionally, the competitive environment prompts banks to introduce new financial services and products, creating additional avenues for liquidity production. For instance, customized loan products targeted at specific industries or customer groups can increase credit availability, further contributing to liquidity in those particular regions. Monitoring how competition impacts liquidity production is crucial to maintain financial stability. Competitive pressures may lead to aggressive lending practices, elevating the risk of non-performing loans. Therefore, regulatory bodies must maintain close supervision to mitigate excessive risk-taking and uphold financial stability. In conclusion, competition among Pakistan's conventional banks catalyzes innovation, heightened loan activity, improved operational efficiency, and the introduction of new financial products, all of which positively influence liquidity generation. Striking a balance between robust competition and financial stability requires vigilant observation and regulatory oversight.

5.1. Limitations

Although competition amongst Pakistan's conventional banks can be advantageous for the banking sector in general and the production of liquidity in particular, there are certain limitations to consider. Among the limitations are Regulatory restrictions that may limit banks' ability to engage in innovative liquidity-creation practices. The concentration of market power can hinder liquidity creation. Lack of information transparency may impede competition and liquidity creation. Weak infrastructure and technology may limit banks' ability to create and manage liquidity efficiently. Access to funding sources may be necessary to maintain liquidity creation efforts. Unfavorable macroeconomic conditions can hamper banks' capacity to generate liquidity.

5.2. Recommendations and Practical Implications

For Future Researchers: The effect of bank competition on the generation of liquidity has attracted the attention of both scholars and decision-makers. Comprehending the pragmatic significance of this correlation can assist in molding the next investigations and directing legislators in crafting efficacious laws. This paper summarizes several useful ramifications from previous research on the topic. Researchers should measure bank competition accurately and consider the impact of market structure. They should focus on the interplay between competition and risk-taking behavior and assess the role of institutional factors and regulations. Furthermore, technological advancements and innovation must be explored. The above-mentioned practical consequences point out the directions in which further research can help clarify the connection between bank rivalry and liquidity creation. By optimizing competition metrics, examining market dynamics and risk-taking patterns, evaluating regulatory frameworks, and investigating technical developments, scholars can contribute significantly to molding policies that promote sustainable liquidity generation within the banking industry.

For Government: How bank competition affects liquidity production in the traditional banking industry has important ramifications for Pakistan's Government. Improving the creation of liquidity fosters financial stability, economic expansion, and effective government funding. The present study presents pragmatic conclusions from available research, which can aid policymakers in devising efficacious approaches to enhance liquidity generation via bank competition—and foster competition in the banking sector. Promote financial inclusion and access to credit. Encourage innovation and technological advancements. Strengthen regulatory frameworks. Develop a supportive infrastructure. Improving bank competitiveness in the traditional banking industry to provide more liquidity has significant real-world ramifications for Pakistan's government. Policymakers may encourage liquidity creation, economic growth, and financial stability by stimulating competition, increasing financial inclusion, supporting innovation, strengthening regulatory frameworks, and establishing a supportive infrastructure. To put these practical implications into practice and build a strong banking industry that supports Pakistan's economic growth, the government must collaborate closely with regulators, banks, and other stakeholders.

For Banks: Bank rivalry is essential to improve financial stability and economic growth. Understanding how bank competition affects liquidity production has important ramifications for the government of Pakistan. This article aims to go over the practical effects of bank rivalry on the generation of liquidity for the Pakistani government as it would lead to enhanced financial inclusion, the promotion of market efficiency, and the strengthening of risk management. Bank competition has important real-world effects on Pakistan's government's ability to create liquidity. Encouraging healthy competition among banks can improve risk management, innovation, financial inclusion, market efficiency, and cooperation with the central bank. The government must create a regulatory framework that promotes competition and a stable monetary system to exploit these implications, ultimately strengthening the nation's ability to create liquidity.

REFERENCES

1. Ali, A., & Ahmad, U. (2022). Liquidity Creation by Conventional Banks In Pakistan. *GMJACS*, 12(2), 68-81.
2. Ali, S., Shah, S. Z. A., & Chughtai, S. (2019). The role of competition in influencing bank liquidity creation: Evidence from China. *Journal of Business & Economics*, 11(1), 21-34.
3. Almeshari, A., Bin Dato Haji Yahya, M. H., Bin Kamarudin, F., & Abd Hamid, S. A. (2023).
4. Liquidity Creation and Economic Growth: Are They Monotonically Related? Evidence from MENA Countries. *Economies*, 11(1), 24.
5. Anginer, D., Demircuc-Kunt, A., & Zhu, M. (2014). How does competition affect bank systemic risk? *Journal of Financial Intermediation*, 23(1), 1-26.
6. Beck, T., Döttling, R., Lambert, T., & Van Dijk, M. (2023). Liquidity creation, investment, and growth. *Journal of Economic Growth*, 28(2), 297-336.
7. Berger, A. N., & Bouwman, C. H. (2009). Bank liquidity creation. *The review of financial studies*, 22(9), 3779-3837.
8. Boubakri, N., Cao, Z., El Ghouli, S., Guedhami, O., & Li, X. (2023). National culture and bank liquidity creation. *Journal of Financial Stability*, 64, 101086.
10. Bryand, J. (1980). A model of reserves, bank runs, and deposit insurance. *Journal of banking & finance*, 4(4), 335-344.
11. Chatterjee, U. K. (2015). Bank liquidity creation and asset market liquidity. *Journal of Financial Stability*, 18, 139-153.
12. Dang, V. D. (2022). Bank funding, market power, and the bank liquidity creation channel of monetary policy. *Research in International Business and Finance*, 59, 101531.
13. Diamond, D. W., & Dybvig, P. H. (1983). Bank runs, deposit insurance, and liquidity. *Journal of Political Economy*, 91(3), 401-419.
14. Gorton, G., & Winton, A. (2017). Liquidity provision, bank capital, and the macro-economy. *Journal of Money, Credit and Banking*, 49(1), 5-37.
15. Horvath, R., Seidler, J., & Weill, L. (2016). How bank competition influences liquidity creation. *Economic Modelling*, 52, 155-161.

16. Ilyas, H., & Sarwar, S. (2018). RELATIONSHIP BETWEEN BANK CAPITAL AND LIQUIDITY CREATION: A Disaggregated Analysis of the Banking Industry of Pakistan. 2018.
17. Jiang, L., Levine, R., & Lin, C. (2019). Competition and bank liquidity creation. *Journal of Financial and Quantitative Analysis*, 54(2), 513-538.
18. Kashyap, A. K., Rajan, R., & Stein, J. C. (2002). Banks as liquidity providers: An explanation for the coexistence of lending and deposit-taking. *The Journal of Finance*, 57(1), 33-73.
19. Liu, H., & Huang, W. (2022). Sustainable financing and financial risk management of financial institutions—a case study on Chinese banks. *Sustainability*, 14(15), 9786.
20. Love, I., & Martínez Pería, M. S. (2015). How bank competition affects firms' access to finance. *The World Bank Economic Review*, 29(3), 413-448.
21. Petersen, M. A., & Rajan, R. G. (1995). The effect of credit market competition on lending relationships. *The Quarterly Journal of Economics*, 110(2), 407-443.
23. Sabahat (2017). Liquidity Creation in Pakistan: *SBP Working Paper Series*. 2017
24. Santoso, D. B., Suprpto, E., Zakaria, R. A., Kusumaningrum, H. A., & Jamil, H. (2023). Analysis of banking competition in Indonesia and its impact on profitability: Structure conduct performance (SCP) approach. *Journal of Innovation in Business and Economics*, 7(01), 19- 28.
25. Tan, Y. S. (2023). Internal Control and Bank Liquidity Creation: Evidence from China. *Research in International Business and Finance*, 102030.
26. Toh, M. Y., & Jia, D. (2023). Determinants of bank liquidity creation: A comparison between Islamic and conventional banks in a dual banking system. *The Singapore Economic Review*, 68(03), 963-999.