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BANK LIQUIDITY CREATION, LOAN CONCENTRATION & LIQUIDITY RISK: A PERSPECTIVE OF SRI LANKAN LICENSED COMMERCIAL BANKS

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Abstract

This research investigates the relationship between liquidity creation and liquidity risk in Licensed Commercial Banks (LCBs) in Sri Lanka, with a focus on the moderating role of loan concentration. The study is based on secondary data collected from the annual reports of 20 LCBs (2 public and 18 private banks) and Central Bank reports, covering the period from 2015 to 2023. The data, gathered annually, were analysed using panel regression correlation analysis techniques. The results show a strong positive relationship between liquidity creation and liquidity risk, meaning that banks are increasingly vulnerable to liquidity hazards as they generate more liquidity. Nevertheless, the investigation revealed that this link is not significantly moderated by loan concentration. This implies that the effect of liquidity creation on liquidity risk is independent of the distribution of loans within a bank's portfolio. The inability to obtain comprehensive data from certain institutions was one of the study's constraints, affecting the depth of the statistical analysis. Nevertheless, the finding has significant ramifications for Sri Lankan financial procedures. It highlights the necessity of efficient liquidity management techniques in the face of strict regulatory frameworks. The results are particularly relevant to bank treasury departments, enabling them to better understand the dynamics of liquidity creation and its associated risks. This study also contributes to the understanding of loan concentration's role in liquidity risk management, providing insights that can guide both short-term and long-term strategic planning within the banking sector.

Keywords: Liquidity Creation, Loan Concentration, Liquidity Risk, Sri Lanka, Licensed Commercial Banks

1. Introduction

Particularly in Sri Lanka, where financial institutions must carefully balance short-term responsibilities with long-term sustainability, liquidity management is an essential aspect of banking operations. Hence, liquidity management is a fundamental function of banking institutions, as banks must continuously balance liquidity creation with the risk of funding shortages. By transforming illiquid assets into liquid liabilities, banks support credit

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expansion and economic growth, but this transformation process simultaneously exposes them to liquidity risk (Berger & Bouwman, 2009). Managing this trade-off between liquidity creation and liquidity risk has therefore become a central concern for regulators and bank management. Furthermore, the ability of a bank to fulfil short-term funding needs, withdrawals, and transaction settlements is referred to as liquidity (Abdul-Rahman et al., 2019). While excess liquidity can cause asset bubbles and distort monetary transmission, insufficient liquidity can endanger a bank's solvency and increase systemic risk. As a result, Sri Lanka's licensed commercial banks (LCBs) must put strong liquidity management plans in place that are in line with both operational requirements and legal requirements.

The Basel Committee on Banking Supervision (BCBS) established frameworks that offer principles for controlling liquidity creation and reducing liquidity risk, highlighting the importance of liquidity on a worldwide scale. However, banks' strategies differ based on domestic legal restrictions, financial developments, and technical capabilities. Treasury departments are crucial to the generation of liquidity in Sri Lanka because they manage funding arrangements, asset portfolios, and regulatory compliance to guarantee effective liquidity operations (International Monetary Fund, Asia and Pacific Department, 2024). Maturity mismatches, financing imbalances, and market illiquidity are prominent causes of liquidity risk in Sri Lankan banks, especially during times of macroeconomic stress (Central Bank of Sri Lanka [CBSL], 2024). Banks use tools like reserve requirements, Liquidity Coverage Ratios (LCR), and emergency liquidity support from the CBSL to deal with these issues. In particular, reserve requirements oblige banks to keep a certain percentage of deposits as liquid assets to cover short-term liabilities (CBSL, 2024). In addition to adhering to regulations, Sri Lankan banks face liquidity constraints due to variations in interest rates and exchange rates. Many institutions use liquidity stress testing and contingency planning to evaluate resilience in challenging circumstances in order to manage such risks (Anandasayanan, 2017; Acinshira & Jahfer, 2019). These procedures improve banks' ability to withstand shocks and remain stable in times of crisis.

The empirical relationship between liquidity creation and liquidity risk in Sri Lanka's banking sector is still poorly understood despite these operational and regulatory protections. Banks play a crucial role in promoting financial stability and economic growth, particularly in developing economies such as Sri Lanka. By transforming illiquid assets into liquid liabilities, banks facilitate credit expansion, investment, and overall economic

development. On the other hand, excessive or poorly managed liquidity creation can increase liquidity risk, endanger solvency and erode public trust. To protect the financial system and control systemic risk, the Central Bank of Sri Lanka continuously stresses the importance of maintaining sufficient liquidity levels.

Empirical evidence on the link between liquidity creation and liquidity risk is mixed. Some global studies suggest that increased liquidity creation can reduce risk by improving credit availability and stability (Calomiris et al., 2015), whereas others report no significant relationship (Wuave et al., 2020). Moreover, the potential moderating role of loan concentration, defined as the degree to which a bank's lending portfolio is concentrated among a limited number of borrowers or sectors, has not been sufficiently investigated in the Sri Lankan context. Loan concentration may influence the liquidity creation–risk relationship by affecting portfolio diversification and exposure to credit shocks, yet empirical studies from Sri Lanka are scarce, especially considering recent economic instability, liquidity shortages, and evolving regulatory reforms.

In order to close these gaps, this study looks at how liquidity creation affects liquidity risk among commercial banks with Sri Lankan licenses and whether loan concentration influences this relationship. Comprehending this dynamic is essential for directing policy, regulatory supervision, and operational choices, ultimately leading to improved financial stability and risk management. Thus, the primary goals of this study are to examine the effect of liquidity creation on liquidity risk in Sri Lankan LCBs and assess the moderating influence of loan concentration on the liquidity creation–risk relationship. By addressing these objectives, the study provides valuable insights for regulators, policymakers, and financial institutions seeking to strengthen liquidity management practices and maintain the stability of Sri Lanka's banking sector.

2. Literature Review

2.1 Theoretical Framework

The Financial Intermediation Theory illustrates the critical function banks serve in converting short-term, liquid deposits into long-term, illiquid loans and in stimulating the optimal distribution of financial resources throughout the economy (Bhattacharya & Thakor, 1993). Through this maturity transformation process, banks create liquidity by

providing depositors with liquid claims while simultaneously extending credit to borrowers whose investments are relatively illiquid (Diamond & Rajan, 2001). This liquidity creation function promotes economic growth by increasing credit availability and encouraging investments and minimizing transaction costs from direct financing (Berger & Bouwman, 2009). However, the same liquidity transformation process exposes banks to liquidity risk. Since depositors can withdraw funds on demand while loan assets remain illiquid and long-term in nature, banks face maturity mismatches that may lead to funding shortages during periods of financial stress (Diamond & Rajan, 2001). Therefore, increased liquidity creation may elevate liquidity risk by increasing banks' dependence on unstable funding sources and reducing their ability to meet unexpected withdrawal demands.

Furthermore, Financial Intermediation Theory suggests that the composition and diversification of bank assets influence the extent of liquidity risk associated with liquidity creation. Banks with highly concentrated lending portfolios are more exposed to sector-specific shocks and borrower defaults, which may impair asset quality and reduce their ability to generate liquidity when required (Goodhart, 2008). In contrast, diversified loan portfolios can enhance resilience by spreading risk across different sectors and borrowers (Lu & Wang, 2023). Consequently, loan concentration may amplify the adverse effects of liquidity creation on liquidity risk by reducing portfolio diversification and increasing exposure to funding disruptions.

Based on this theoretical perspective, liquidity creation is expected to increase liquidity risk, while loan concentration may strengthen the relationship between liquidity creation and liquidity risk.

2.2. Liquidity creation, liquidity risk and loan concentration

Two significant concepts that define the essential functions and stability of the banking industry are liquidity creation and liquidity risk. By converting illiquid assets into liquid liabilities, banks play a crucial intermediate role in the financial system's creation of liquidity. Banks are exposed to liquidity risk when they have to sell assets fast to fulfil cash flow requirements, frequently at unattractive prices, even while this liquidity creation promotes economic growth and credit availability (Diamond & Rajan, 2001; Gorton &

Winton, 2003). Thus, preserving both bank-level and systemic financial stability depends on striking a balance between liquidity creation and liquidity risk.

In order to account for the complexity of contemporary banking, the measurement of liquidity creation has changed throughout time. While more recent frameworks include capital adequacy and off-balance-sheet exposures as crucial determinants of liquidity creation, traditional approaches concentrate on the transformation of assets and liabilities. According to Thakor (2005), bank capital acts as a buffer, improving a bank's ability to withstand shocks and control liquidity demands. Further empirical research shows that capital sufficiency permits banks to participate in riskier activities and maintain larger liquidity reserves under regulatory oversight (Bhattacharya & Thakor, 1993; Repullo, 2004). Therefore, in addition to asset-liability structure, other factors that affect liquidity creation include market discipline, legal restrictions, and strategic capital management.

Conversely, liquidity risk arises when banks are unable to fulfil their collateral or payment obligations without suffering significant losses, frequently due to funding limitations or maturity mismatches (Oldfield & Santomero, 1997; Jenkinson, 2008). Recent global financial crises have highlighted the systemic importance of liquidity risk, which was previously eclipsed in empirical literature by credit and market risk (Landskroner & Paroush, 2011). Prudent asset-liability management (ALM), keeping sufficient liquidity buffers, and reducing exposure to interest rate swings and credit defaults are all necessary for effective liquidity risk management (Iqbal et al., 2015). In response to liquidity-related crises, regulatory frameworks such as Basel III introduced formal measures, most notably the Liquidity Coverage Ratio (LCR), which mandates banks to maintain sufficient high-quality liquid assets (HQLA) to withstand 30-day liquidity stress scenarios. This regulation enhances short-term resilience and reduces systemic vulnerabilities from liquidity shocks (Douglas et al., 2001; Stanislav et al., 2019).

Loan concentration, which shows how much of a bank's lending portfolio is concentrated on a limited number of borrowers, sectors, or businesses, is another important factor that determines liquidity risk (Goodhart, 2008). A bank's total risk profile may rise as a result of a high degree of loan concentration, which can increase exposure to borrower defaults or sector-specific downturns (Drehmann & Nikolaou, 2013). Banks often mitigate such risks by diversifying their credit portfolios, imposing internal concentration limits, and

continuously monitoring client creditworthiness (Matz & Neu, 2006). However, the relationship between loan concentration and bank stability remains debated. Traditional banking theory advocates diversification to reduce default risk and strengthen financial stability (Arif & Nauman Anees, 2012), whereas institutional finance theory posits that specialization enables banks to build expertise within targeted sectors, improving monitoring efficiency and competitive advantage (Uesugi et al., 2022). Empirical findings are equally divided: some studies link concentration to greater fragility (Basel Committee, 2013), while others suggest it can enhance stability through improved risk absorption and information advantages (Beck et al., 2006).

The Herfindahl-Hirschman Index (HHI), a measure of credit portfolio diversification, is frequently used to estimate loan concentration. Despite its effectiveness, inter-sectoral interdependence and linked credit exposures are not captured by the HHI (Kalotychou & Staikouras, 2006). In order to provide a more realistic picture of portfolio concentration risk, new research advice combining sophisticated econometric and capital-based models (Karadima & Louri, 2021). Therefore, the choice of concentration measurement continues to be a crucial methodological factor in assessing the stability and risk exposure of banks.

The research also shows that while creating liquidity is good for economic growth, it can increase liquidity risk if it is not handled carefully. Banks that create a lot of liquidity are more vulnerable to funding and maturity transition risks (Berger & Bouwman, 2009). Higher liquidity generation can cause market instability during economic downturns, according to empirical research (Berger & Sedunov, 2017), although these negative consequences can be lessened by solid regulatory procedures and capital buffers (Fungacova et al., 2015). Additionally, research indicates that banks with inadequate capitalization or weak governance systems may face difficulties due to excessive liquidity creation (Diaz & Huang, 2017). On the other hand, by limiting the supply of credit, decreased liquidity generation may hinder economic activity and worsen recessionary conditions (Chatterjee, 2018). Under stable institutional environments, some research even finds no substantial association between liquidity creation and liquidity risk (Acharya & Thakor, 2016), underscoring the significance of context in establishing this relationship.

Scholarly curiosity about the role of loan concentration in modulating the link between liquidity creation and liquidity risk has grown. While diversified loan portfolios are linked

to reduced liquidity risk and increased resilience (Lu & Wang, 2023), high loan concentration has been linked to increased exposure to liquidity shocks and possible bank failures (Zheng & Cronje, 2019). Market factors, regulatory restrictions, and internal bank policies may all have an impact on how loan concentration affects liquidity dynamics (Jiang et al., 2022). For instance, Gao et al. (2023) and Kladakis et al. (2022) emphasize concentration's effect on capital adequacy and financing requirements, while Hsieh et al. (2022) discover that it can function as a mechanism to control depositor-related liquidity concerns. Concentrated loan portfolios may worsen the effects of liquidity creation on liquidity risk, decreasing banks' capacity to withstand shocks, according to more recent research from Asian financial systems (Wang et al., 2022; Hsieh et al., 2024). In a similar vein, focus increases susceptibility to unforeseen liquidity shortages during times of financial crisis (Alaoui Mdaghri & Oubdi, 2022).

According to the literature, creating liquidity is necessary for economic growth, but it also entails risks that need to be controlled through portfolio diversification, capital sufficiency, and liquidity buffers. With little data from emerging nations like Sri Lanka, the relationship between liquidity creation, loan concentration, and liquidity risk is still context dependent. Designing efficient regulatory policies and bolstering the resilience of financial institutions in emerging nations require an understanding of this dynamic.

2.3 Hypothesis development

The main banking function is liquidity creation, which converts illiquid assets into liquid liabilities to support credit expansion and economic growth. However, when short-term obligations cannot be fulfilled without suffering losses, this procedure naturally exposes banks to liquidity risk (Berger & Bouwman, 2009). Although efficient capital and governance structures can lessen these consequences, empirical research typically shows that increased liquidity creation raises liquidity risk due to maturity mismatches and funding constraints (Berger & Sedunov, 2017; Fungacova et al., 2015).

By influencing banks' vulnerability to sectoral shocks, loan concentration may have an additional impact on this connection. While diversified portfolios improve liquidity stability (Lu & Wang, 2023), high loan concentration increases liquidity risk through less diversification (Goodhart, 2008; Drehmann & Nikolaou, 2013). Yet, some evidence suggests that concentration can improve monitoring efficiency in specialised sectors. Given

these mixed findings, understanding the moderating role of loan concentration is crucial for emerging economies such as Sri Lanka.

Although various studies have explored the relationship between liquidity creation and liquidity risk in different banking systems in the past, the empirical evidence used in the studies is mostly from developed countries or regions like the EU, China, or MENA countries. These systems are vastly different from the emerging economies (Kaya, 2021) with respect to the regulatory systems and the depth of the market. On the other hand, the banking sector of Sri Lanka faces a relatively smaller and more concentrated financial system, which has recently witnessed considerable macro-economic instability and liquidity due to the economic crisis (Shafana, 2024). Such contextual differences could potentially impact the manner in which liquidity is built within the banking system as well as the associated risks. Thus, empirical research from Sri Lanka is limited but highly relevant to the broader understanding of liquidity issues in emerging financial systems. This research aims to contribute to this body of knowledge through the investigation of the link between liquidity creation, loan concentration, and liquidity risk within licensed commercial banks in Sri Lanka.

Accordingly, this study proposes the following hypotheses:

H1: There is a significant positive impact of liquidity creation on liquidity risk.

H2: Loan concentration significantly moderates the relationship between liquidity creation and liquidity risk.

3. Materials and Methods

This study adopts a quantitative research method with a deductive approach to test hypotheses derived from existing theories on bank liquidity factors, guided by Saunders et al.'s (2012) Research Onion framework and a positive philosophy. Secondary data are sourced from annual reports of licensed commercial banks (LCBs) in Sri Lanka. For this research, the sample included 2 public sector banks and 18 private sector banks, selected to examine the relationship between bank liquidity creation, loan concentration, and liquidity risk during the period from 2015 to 2023, generating 180 firm-year observations. The Sri Lankan licensed commercial banking sector consists of a limited number of institutions;

therefore, the study covers the majority of the sector and provides a comprehensive representation of commercial banking activities in the country. The selection of banks was based on the availability of complete and consistent data required for measuring liquidity creation, loan concentration, and liquidity risk. Due to data limitations, 4 banks were excluded from the analysis. Ethical considerations are strictly observed, ensuring confidentiality, data protection, and proper consent for the use of sensitive financial data. Analytical methods include bivariate analyses, with correlation and panel regression analyses applied to assess relationships between variables. Panel regression assumptions such as linearity, multicollinearity, exogeneity, homoscedasticity, no autocorrelation, independence, stationarity, and considerations of fixed or random effects are taken into account to ensure robustness of the results.

3.1.Conceptual Framework

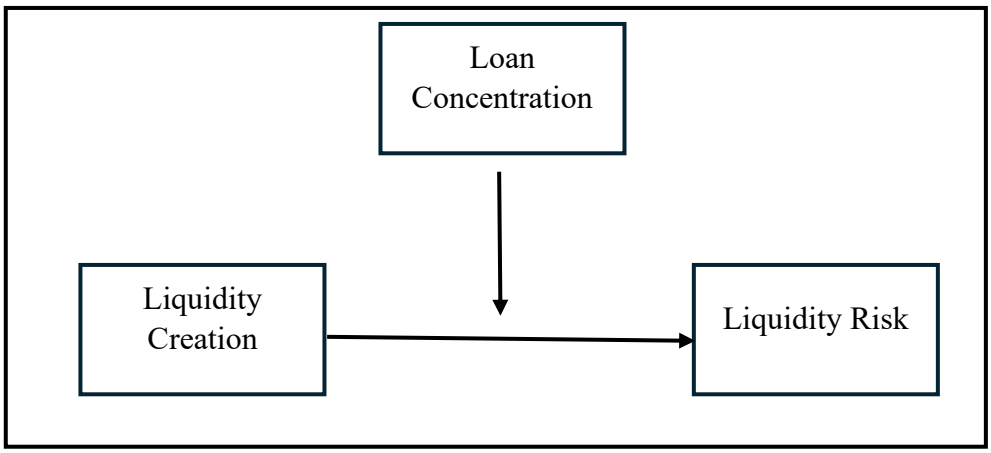


Fig 1: Conceptual Framework

3.2.Operationalization of Variables

This study measures three key variables: Bank Liquidity Creation, Loan Concentration, and Liquidity Risk, each calculated using established quantitative techniques.

The ability of a bank to transform illiquid assets into liquid liabilities, thereby providing liquidity to the economy and impacting financial stability, is known as bank liquidity creation. This study classifies bank assets, liabilities, and off-balance-sheet activities using the methodology suggested by Berger & Bouwman (2009) and Berger & Sedunov (2017). Often referred to as the "cat fat" formula, the liquidity creation metric is computed as:

Liquidity Creation (CatFat)=0.5(IA+LL+IG)+0(SA+SL+SG)−0.5(LA+IL+E+LG+LD)

Where,

IA = Illiquid assets; LL = Liquid liabilities; IG = Illiquid guarantees; SA = Semiliquid assets; SL= Semiliquid liabilities; SG = Semiliquid guarantees; LA = Liquid Assets; IL = Illiquid liabilities; E = Equity; LG = Liquid guarantees; LD = Liquid derivatives

Loan Concentration indicates possible default risk by quantifying a bank's exposure to particular industries, borrowers, or loan types. The Herfindahl-Hirschman Index (HHI), which is commonly used in banking research, is used to quantify this. The equation is:

$$HHI = \sum_{i=1}^{n} \left(\frac{Li}{Total\ Loan\ Portfolio}\right)^2$$

Where,

Li=Loan amount in a specific category; N=Number of categories

Liquidity Risk is proxied using the inverse of the Liquidity Coverage Ratio (LCR). Under Basel III, LCR measures the adequacy of high-quality liquid assets relative to projected 30-day net cash outflows, where higher LCR values indicate stronger liquidity buffers and lower liquidity risk. To maintain directional consistency in the regression analysis, liquidity risk is calculated as:

$$LCR = \frac{\text{High} - \text{Quality Liquid Assets (HQLA)}}{\text{Total Net Cash Outflows over 30 Days}} \times 100$$

Liquidity risk (LRISK) = 1/LCR

The LCR was selected because it is the primary regulatory measure of short-term liquidity risk under the Basel III framework and is widely used by banking regulators and practitioners. LCR directly reflects a bank's capacity to withstand short-term liquidity stress through the maintenance of sufficient high-quality liquid assets. In addition, consistent LCR data was available for all sample banks throughout the study period, facilitating comparability across institutions and time.

It is important to acknowledge the potential endogeneity between liquidity creation and liquidity risk, as these variables may be simultaneously determined. Banks with stronger liquidity positions may create more liquidity, while excessive liquidity creation may also increase liquidity risk through maturity mismatches. The fixed effects panel regression model used in this study helps control unobserved bank-specific heterogeneity.

4. Results and Discussion

4.1.Relationship between Bank Liquidity Creation and Liquidity Risk

Pearson Correlation Coefficient was used to identify the relationship between bank liquidity creation and liquidity risk.

Table 1: Results of the Correlation Analysis

	Coefficient	Significant Value
Liquidity Creation & LRISK	0.6622	0.0327

According to the results of the correlation analysis in Table 2, since the p-value of the correlation test is less than the significance level (0.05), it can be identified that there is a significant correlation between bank liquidity creation and liquidity risk in the licensed commercial banks in Sri Lanka.

4.2.Bank Liquidity Creation, Liquidity Risk and Loan Concentration

Descriptive Statistics

Table 2: Results of the Descriptive Analysis

Variable	Mean	Std. Dev.	Min	Max	Observations
LRISK	55.20392	33.70971	7.508929	141.5724	N = 180
Liquid~n	315.8763	117.252	101.8528	496.0215	N = 180
HHI	1250.898	432.9047	536.6012	1996.901	N = 180
interaction	398820.8	217338.7	80024.86	949780.3	N = 180

Table 3 shows that the dataset exhibits substantial variation across banks and overtime. The Liquidity Coverage Ratio (LCR) averages 55.20 with high variability (SD = 33.71), while liquidity creation has a mean of 315.88 and moderate within-entity variation. The Herfindahl-Hirschman Index (HHI) displays pronounced within-entity variation (SD = 418.50), and the interaction term between liquidity creation and HHI shows considerable heterogeneity (mean = 398,820.8, SD = 217,338.7). These descriptive statistics indicate significant differences across entities and periods, justifying the use of panel data methods to analyse dynamic relationships.

Pooled vs fixed vs Random effect model

Table 3: Results of the model comparison

F-test		LM-test		Hausman test	
F (6, 143)	24.27	chibar2 (01)	0.00	chi2 (2)	0.01
Prob > F	0.00	Prob > chibar2	1.00	Prob > chibar2	0.9936

Table 4 indicates that the fixed effects model is the most appropriate for analysis. The F-test shows significant individual effects (p = 0.00), rejecting the null hypothesis of no fixed effects. The LM test suggests random effects are not significant (p = 1.00), and the Hausman test (p = 0.9936) shows no significant difference between fixed and random effects. However, overall results support the use of the fixed effects model over pooled or random effects models.

Results of Panel regression model

Table 4: Results of the Panel Regression Model

Number of observations	180
Number of groups	20
F (2, 177)	37.39
Prob > F	0.00
Within R-squared	0.41
Between R-squared	0.62
Overall R-squared	0.44

Variable	Coefficient	Standard Error	t value	P value
Liquidity creation	0.15	0.0568	10.43	0.008
HHI	-0.002	0.0150	1.45	0.885
Interaction	0.00002	0.00004	0.63	0.528
Constant	-1.16	19.4322	-1.49	0.052

The fixed effects regression (180 observations, 20 banks) explains 41% of within-entity variation in LRISK, with moderate overall fit ($R^2 = 0.44$). Liquidity creation significantly increases LRISK (coefficient = 0.15, p = 0.008), while HHI and its interaction with liquidity creation are not significant, indicating no meaningful effect of loan concentration or moderation. The constant term is also insignificant. Overall, liquidity creation is the primary determinant of LRISK in this model.

Test for multicollinearity

Table 5: Results of Correlation Analysis

	LRISK	Liquidity Creation	HHI
LRISK	1		
Liquidity Creation	0.65	1	
HHI	0.13	0.07	1
interaction	0.04	0.07	0.01

Table 6 shows that correlations among variables are generally low. LRISK and Liquidity Creation have a moderate positive correlation (r = 0.65), while correlations with HHI and the interaction term are weak (ranging from 0.01 to 0.13). These low intercorrelations indicate that multicollinearity is unlikely to affect the regression results.

Test for Heteroscedasticity

Table 6: Results of Wald test

chi2(20)	138.55
Prob > chi2	0.00

Table 7 shows the results of the Modified Wald Test for Heteroscedasticity, which showed that there was heteroscedasticity in the data, with a chi-squared value of 138.55 and a p-value of 0.00. The fixed effects panel regression model was subjected to robust standard errors in order to address this. Table 4.11 shows the Robust results of the panel regression model.

Panel regression model after robust

Table 7: Panel regression model after robust

Variable	Coefficient	Standard Error	t value	P value
Liquidity creation	0.18	0.017	10.66	0.00
HHI	0.01	0.005	1.35	0.19
interaction	0.002	0.006	0.25	0.45
Constant	-12.65	7.82	-1.57	0.04

Test for Serial Correlation

Table 8: Results of the Wooldridge test

F (1, 19)	0.486
Prob > F	0.4944

The F-statistic and p-value for the Wooldridge test for serial correlation in panel data are 0.486 and 0.4944, respectively. The null hypothesis that there is no serial correlation in the error term cannot be rejected since the p-value is higher than the standard significance level of 0.05. This shows that the error terms do not show autocorrelation over time within panels, and the model's residuals show no apparent signs of serial correlation. Consequently, it seems that serial correlation is not a problem in this analysis.

Test for Time-Fixed Effects

Table 9: Results of time-fixed effect

F (8, 169)	1.33
Prob > F	0.2313

The results of the F-test for time-fixed effects show an F-statistic of 1.33 with a p-value of 0.2313. Since the p-value is greater than the typical significance level of 0.05, we fail to reject the null hypothesis that the time-fixed effects are jointly insignificant. This suggests that the time dummies do not have a statistically significant effect on the dependent variable (LRISK), implying that there is no need to include time-specific effects in the model.

Corrected Panel Regression Model

Table 10: Results of Corrected Panel Regression Model

Dependent Variable: Liquidity Risk			
Independent variables	Estimates	Standard errors	P value
Liquidity creation	0.18	0.017	0.00
HHI	0.01	0.005	0.19
interaction	0.002	0.006	0.45
Constant	-12.65	7.82	0.04
Time-fixed effect		No	
No. of groups		20	
No. of observations		180	
P-value		0.00	
R-squared - within		0.41	
R-squared –between		0.61	
R-squared - overall		0.44	

The panel regression (180 observations, 20 banks) shows that liquidity creation significantly increases liquidity risk (coefficient = 0.18, p = 0.00). The coefficient of liquidity creation (0.18) indicates that a one-unit increase in liquidity creation is associated with an average increase of approximately 0.18 units in liquidity risk (measured as the inverse of the Liquidity Coverage Ratio). To further assess the economic significance of this finding, a one-standard-deviation increase in liquidity creation (117.25 units) is associated with an

increase of approximately 21.11 units in liquidity risk (117.25 × 0.18). Given that the average liquidity risk in the sample is 55.20, this increase represents approximately 38.2% of the mean liquidity risk. This indicates that the effect of liquidity creation is not only statistically significant but also economically meaningful. Therefore, increases in liquidity creation can substantially increase banks' exposure to liquidity pressures, highlighting the importance of maintaining adequate liquidity buffers and effective liquidity risk management practices. This occurs because liquidity creation typically involves transforming illiquid assets into liquid liabilities, which increases maturity mismatches and funding obligations. Consequently, although liquidity creation supports credit expansion and financial intermediation, excessive liquidity transformation may increase vulnerability to liquidity shocks if not supported by adequate liquidity buffers. HHI and its interaction with liquidity creation are not significant, suggesting that concentration does not affect liquidity risk or moderate this relationship. The model explains moderate variation in liquidity risk (R^2 within = 0.41; between = 0.61; overall = 0.44) and is statistically significant overall ($p = 0.00$).

According to the panel regression, it can be identified that there is a significant relationship between liquidity risk and liquidity creation. But there is no moderating effect from loan concentration under these data. The non-significant moderating effect of loan concentration (HHI) shows that concentration may not significantly alter the relationship between liquidity creation and liquidity risk within the Sri Lankan banking context. This may be due to the rigorous regulatory framework governing licensed commercial banks. Under Basel III liquidity standards, particularly the Liquidity Coverage Ratio, banks are required to maintain adequate high-quality liquid assets, which may mitigate the destabilising effects of concentrated lending portfolios. However, institutional finance theory suggests that sectoral specialisation may enhance monitoring efficiency and information advantages, potentially stabilising performance (Uesugi et al., 2022). Hence, the lack of a significant moderate effect in this study may capture this theoretical ambiguity in the case of emerging markets, where lending patterns are highly responsive to regulation and policy prioritisation in the respective sectors.

5. Conclusion and Recommendations

5.1.Conclusion

This study explored the relationship between liquidity creation, loan concentration, and liquidity risk in Sri Lankan licensed commercial banks (LCBs) over the period 2015 to 2023. The findings indicate that liquidity creation has a significant positive effect on liquidity risk (measured as the inverse of LCR), implying that higher levels of liquidity creation increase short-term liquidity vulnerability. While liquidity creation is essential for financial intermediation and economic growth, excessive liquidity transformation may expose banks to greater funding and maturity mismatch risks. Higher levels of liquidity generation raise vulnerability to possible liquidity shortfalls, according to the analysis, which showed that liquidity creation had a strong positive effect on liquidity risk. The Herfindahl-Hirschman Index (HHI), which measures loan concentration, on the other hand, did not show a statistically significant moderating influence on the relationship between liquidity creation and liquidity risk.

Although some descriptive differences were observed between public and private sector banks, these were not formally examined through subgroup or interaction-based regression analysis. Therefore, no conclusive inference is made regarding sector-wise differences in liquidity dynamics. Overall, the results highlight how crucial it is to strike a balance between efficient risk management and liquidity creation. Although the creation of liquidity promotes financial stability and economic progress, excessive or uncontrolled liquidity creation may raise systemic risk. Furthermore, the findings imply that, despite its conceptual significance, loan portfolio diversification had little effect on liquidity risk in the Sri Lankan setting using the existing measuring methodology. The study offers a solid empirical foundation for comprehending liquidity dynamics and how they affect the stability of the banking industry in a developing market.

5.2.Recommendations

The analysis validates the intrinsic trade-off between liquidity creation and liquidity risk, supporting the theoretical framework put out by Berger and Bouwman (2009). The results show that banks are vulnerable to systemic liquidity risk even if their intermediation operations are crucial for financial intermediation and economic growth. The traditional belief that portfolio concentration always increases or decreases liquidity risk is also called into question by the lack of a significant moderating effect of loan concentration. This suggests that contextual factors in emerging markets, such as the regulatory environment and sector-specific lending patterns, are important. The report emphasizes that instead of

depending just on concentration limitations, policymakers and regulators should give priority to monitoring techniques and frameworks that directly address liquidity risk. Stress testing, dynamic liquidity provisioning, contingency planning, and Liquidity Coverage Ratio (LCR) compliance should be prioritised. The results also emphasize how crucial it is to take into account how monetary and fiscal policies affect bank liquidity, especially in government-owned banks, where liquidity creation is more erratic. To preserve systemic stability, regulatory frameworks should be adaptable to external shocks like pandemics or economic crises.

Banks should improve liquidity risk management at the institutional level by implementing real-time monitoring systems, reserve sufficiency planning, and enhance stress testing. Adopting technology-driven solutions, such as forecasting based on artificial intelligence and machine learning, can improve banks' capacity to foresee and address liquidity problems. Even though loan concentration had no discernible effect on liquidity risk in this study, it is still wise to keep a diversified loan portfolio, especially during economic or sectoral downturns. To increase operational resilience, banks are urged to incorporate strong risk assessment frameworks and predictive analytics.

5.3.Limitations and future studies

The study opens avenues for further investigation into alternative measures of loan concentration, such as borrower-level exposure or sector-specific lending limits, to better understand their potential moderating effects on liquidity risk. Although descriptive differences between public and private banks were noted, these should be interpreted with caution due to the absence of formal comparative testing. The study covers most licensed commercial banks in Sri Lanka; the relatively small number of institutions may limit the generalisability of the findings. Nevertheless, the panel dataset comprises 180 bank-year observations, providing adequate variation for statistical analysis. Future studies may consider a broader sample or cross-country comparison to enhance external validity. Future studies may therefore use subgroup regression or interaction analysis to examine whether bank type significantly affects liquidity creation and liquidity risk dynamics. Liquidity risk was measured using the inverse of the Liquidity Coverage Ratio (LCR), a widely accepted

Basel III measure of short-term liquidity resilience. However, future studies may consider alternative liquidity risk measures to further validate the findings. The study focuses primarily on the relationship between liquidity creation, loan concentration, and liquidity risk. Although the fixed-effects model controls unobserved bank-specific heterogeneity, other bank-specific and macroeconomic factors may also influence liquidity risk. Future studies may incorporate additional control variables, such as bank size, profitability, capital adequacy, non-performing loans, GDP growth, inflation, and interest rates, to provide a more comprehensive analysis. Loan concentration was measured using the Herfindahl-Hirschman Index (HHI), which captures portfolio concentration but may not fully reflect borrower interconnectedness or correlated credit exposures. Therefore, the non-significant moderating effect of loan concentration should be interpreted with caution. Future studies may employ alternative concentration measures to provide a more comprehensive assessment of concentration risk. Although time-fixed effects were tested and found to be statistically insignificant, major macroeconomic events during the study period may have affected banking liquidity conditions. Future research may incorporate specific macroeconomic variables or crisis-period analyses to better capture these influences. Moreover, this study focuses solely on licensed commercial banks in Sri Lanka. Therefore, the findings may not be directly generalisable to other financial institutions, such as licensed specialised banks, finance companies, and microfinance institutions, which operate under different business models, regulatory requirements, and liquidity management practices. Future research may extend the analysis to these institutions to provide a more comprehensive understanding of liquidity creation and liquidity risk across the broader financial sector. Although the fixed-effects model controls for unobserved bank-specific heterogeneity, it may not fully address potential endogeneity arising from reverse causality or simultaneity between liquidity creation and liquidity risk. Therefore, the findings should be interpreted with some caution. Future research may employ advanced econometric techniques, such as dynamic panel models or Generalized Method of Moments (GMM) estimation, to further address endogeneity concerns and strengthen causal inference.

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