

### **The Impact of credit risk and liquidity risk on bank performance**

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#### **Abstract**

Imbierowicz and Rauch (2011) employed a structural equation (simultaneous) approach to examine panel data. This decision was made due to the failure of the underlying premise to establish a connection between credit risk and liquidity risk. The preliminary testing of the idea, conducted at both stages, demonstrated its potential for clear communication. At Habib Bank, there is a strong correlation (95% chance) between credit risk and liquidity risk, with credit risk tending to have a positive effect on liquidity risk. Additionally, there is a significant probability that liquidity risk would have a detrimental impact on credit probability. Hence, it is logical to deduce that the interconnection within the bank is mutually advantageous, with diverse risks exerting influence on each other. This highlights the significance of banks giving priority to the effective management of these risks. The findings from the initial stage of hypothesis 1, which investigated the impact of liquidity risk on credit risk, indicated that the bank's credit risk would escalate in direct correlation with the magnitude of the growth in the operational expenses to profits ratio. This outcome was entirely contrary to the anticipated result. Increasing the amount of short-term deposits compared to long-term deposits has the benefit of reducing the bank's vulnerability to credit risk. Conversely, reducing the bank's credit risk would increase both the interest margin ratio and the return on investment. Moreover, the results of the second stage of hypothesis 1 indicated that a drop in the bank's liquidity risk would result from a reduction in the ratio of the bank's operational costs to earnings. This outcome arose from the credit concerns of the bank. In addition, the bank's credit risk will rise when the proportion of short-term deposits compared to long-term deposits increases. Upon analysing such data, an increase in return on investment decreases the bank's liquidity risk. Liquidity risk, as defined by Tripe (1999), refers to the probability of a financial institution being unable to fulfil its obligations, such as timely loan extensions or deposit payments. The primary factor contributing to the risk being examined is a discrepancy between the time of banks' incoming and outgoing funds, resulting from the combination of their assets and liabilities (Crouhy and Mark, 2000). "Liquidity" is the term used to describe the presence of cash or other types of currency. In the context of banking, the term "credit risk" denotes the possibility that a financial organisation may be incapable of delivering authorised services or fulfilling its financial obligations within the specified timeframe (Banks, 2005). Assessing the significance of risk and risk management is crucial when evaluating reputable financial organisations globally. If the most unfavourable circumstances occur, this risk could lead to complete financial bankruptcy. The approval process for facilities or assets in banking typically requires more time compared to deposits or debt collections. This is due to the extended duration required to complete the approval process. The probability of the bank not receiving payment within the stated deadlines is higher,

hence elevating the risk of inadequate liquidity. This is a result of a difference between the dates of payment and receipt. The correlation between credit risk and liquidity risk has not yet been determined. The researchers have not been able to ascertain this. However, there is a connection between the two forms of risk, which can be attributed to two distinct approaches of financial intervention and the bank's industrial element. In their study, Prizman, Slowin, and Soscheck (1986) investigated the impact of borrower default and unexpected financial withdrawals on bank profit in the Manti kiln scenario and its subsequent iterations. This study demonstrated that these factors resulted in a decline in bank profitability.

### **Introduction**

The present financial crisis has caused large financial institutions to fail, hurting the economy. We must carefully assess the consequences of unstable financial markets. Agnello and Sousa (2012) reached an economics consensus. In a market-deficient environment, depositors must be protected from bank insolvency (Dewatripont and Tirole, 1994). The banking sector must identify the causes of financial system vulnerability. Conversely, banks face many financial risks. Cecchetti and Schoenholtz (2011) list liquidity, credit, interest rate, and operational financial concerns. Depositors' unexpected withdrawals are liquidity risk. Credit risk involves late loan repayment. Interest rate risk involves rate swings. Operational risk includes bank computer systems and building destruction. While credit and liquidity risks are the biggest risks banks face, they are also intimately linked to bank actions and failures. Bank liquidity and credit risk are linked. Traditional banking economics say credit and liquidity are linked.

Banking industrial organisation models like the Monti-Klein framework and the financial intermediation approach in Diamond and Dybvig (1983) or Bryant (1980) stress the tight correlation between a bank's asset and liability structures. This is especially true for withdrawals and debt defaults. Banks create economic liquidity through financial intermediation. They may use their balance sheets to finance riskier initiatives with consumer deposits or off-balance sheet means like credit lines to generate liquidity. Recent study analyses how credit and liquidity issues affect banking system stability. Bank collapses during the global financial crisis provided anecdotal evidence to support these theoretical and empirical findings. Most commercial bank failures during the current financial crisis were caused by credit and liquidity problems, according to FDIC and OCC studies. Dermine (1986) states that loan default increases liquidity risk by decreasing cash inflows and depreciating assets. Profits are reduced by liquidity risk. The investigation shows a

positive link between credit risks and liquidity. Banks worried about interbank market shortages rather than clients withdrawing their savings or bank runs throughout the crisis.

However, the lending market's knowledge inequality exposed banks to credit risk (Heider et al., 2009). Thus, credit problems and cash issues have increased, causing bank failures. This suggests that cash access issues, particularly the interwoven relationship between borrowing and cash availability, have contributed to bank failures. These facts make it vital to assess how credit and liquidity risks affect a bank's financial stability. Acharya and Mora (2013), Acharya, Mehran, and Thakor (2016), Brunnermeier, Crocket, Goodhart, and Shin (2009), Calomiris, Heider, and Hoerova (2015), Distinguin, Roulet, and Tarazi (2013), He and Xiong (2012), Imbierowicz and Rauch (2014), and Vazquez and Federico (2015) have also suggested regulating credit and liquidity risks together. Tirole (2011) and Acharya, Shin, and Yorulmazer (2011) recommend explicit liquidity regulation. Conversely, if banks heavily rely on the interbank market, higher capital requirements may reduce bankruptcy and liquidity concerns. This study also explores how credit and liquidity issues affect banking stability.

However, He and Xiong (2012c), Heider et al. (2009), and Acharya and Viswanathan (2011) have illustrated how credit and liquidity concerns affect bank stability. Imbierowicz and Rauch (2014) show in a US commercial bank sample that credit and liquidity issues significantly impact bank stability and strength. Vazquez and Federico (2015) say credit and liquidity issues increase bank crises. This conclusion is based on a survey of European and American banks. This research takes a different method by empirically investigating the Pakistani financial system problem. We examine the impact of liquidity and credit risks on bank stability over a longer time period after the last financial crisis. This article examines how liquidity and credit risk affect bank stability. This thought inspired this inquiry. We determine if credit risk and liquidity risk are positively or negatively correlated in the first phase. Based on this first discovery, we move on to assess if liquidity and credit issues contribute to bank instability.

### **Literature Review**

Dermine (1986) defines liquidity risk as a financial constraint that lowers earnings. A liquidity constraint is more likely after a loan failure due to cash inflow reduction and devaluation. Credit risk and liquidity are linked by Bryant, Prisman, Slovin, and Sushka (1986)'s financial intermediation and the Monti-Klein model of banking firms' industrial organisation approach.

Diamond and Dybvig's (1983) research and the Monti-Klein financial organisation model support the hypothesis. These models suggest that hazardous bank assets cause bank shocks, according to Samartin (2003) and Iyer and Puri (2012). According to these theories, credit risk and liquidity should be positively correlated, causing bank instability. Credit risk and liquidity are linked, according to Diamond and Rajan (2005). The bank specifically states that it cannot honour depositor requests if loans fund an excess of economic efforts. Thus, depositors can recover their funds if these assets lose value.

Thus, credit risks and liquidity worries rise simultaneously. Using all loans reduces the bank's liquidity. Due to depositor demand, credit risk and liquidity risk are linked. Increasing bank loans increases the risk of a "bank run" (Acharya & Viswanathan, 2011). Thus, financial organisations establish obligations that must be renewed to fund assets. Nikomara, Taghavi, and Diman examined Iranian financial institutions' credit risks and liquidity hazards in 2013. The analysis includes all 2005–2012 commercial and government banks. The data showed a strong link between credit risks and liquidity problems. Credit and liquidity issues and Nigerian bank failure risk are examined by Ejoh, Okpa, and Inyang (2014). Additionally, they evaluate how these hazards affect default likelihood. Experimental research is used in this First Bank of Nigeria Plc study. A representative sample of 80 people completes the survey after receiving questionnaires. It appears that credit and liquidity risk are positively correlated. Imbierowicz and Rauch (2014) study American financial institutions' credit-liquidity risk connection. Their sample comprised all US commercial banks from 1998 to 2010.

Credit risk and liquidity risk are positively correlated, but not mutually reliant. Louati, Abida, and Boujelbene (2015) compare traditional and Islamic banks in the financial sector. Regarding capital shortage. Twelve nations in the Middle East, North Africa, and South Asia were studied from 2005 to 2012. They show that traditional banks' liquidity ratios inversely affect credit risk. Laidroo (2016) compares privately-owned domestic banks with foreign-owned banks' loan growth and variables. They used 2004–2012 CEE bank data in their investigation. Even outside of crises, bank capital affects domestic private bank loan growth, according to the authors. In a crisis, domestic private banks worry more about liquidity. To efficiently regulate capital, a capital charge at two levels is needed to address these two issues. In the first step, leverage is lowered to the lowest capital needed to solve the asset substitution problem. However, their strength decreases.

Market regulation. Callable capital cannot be changed after the second level. Instead, invest it in cash, a low-risk investment. Thus, the authors demonstrated that two capital requirements levels improve banking system stability.

According to Brunnermeier et al. (2009), raising capital requirements may solve bank liquidity and solvency issues. Banks may experience solvency issues during refinancing, according to Ratnovski (2013). Combined liquidity and solvency disclosure requirements may alleviate bank refinancing issues. Calomiris et al. (2015) propose managing banks by assets rather than asset capital to meet liquidity needs. They advise banks to retain more liquid assets to better manage risks like liquidity risk. Credit risks and liquidity hazards correlate, affecting bank stability. Hassan et al. (2016) claim that Turkish banks' capital adequacy ratios dropped significantly under stress scenarios from January 2006 to October 2014. Berger and Bouwman (2009) found that US bank liquidity increased significantly before the 2007 financial crisis. Vazquez and Federico (2015) analyse how liquidity structure and bank leverage affect bank stability during the financial crisis. Before the crisis, financial institutions with high debt and liquidity risk were more likely to fail. Demircuc-Kunt and Huizinga (2010) discovered that interbank market dependence increases bank insolvency risk. Ozsucu and Akbostanci (2016) identify Turkish bankers' risk-taking traits.

They also examine whether Turkey used a risk-taking monetary policy channel from 2002 to 2012. The authors found that large, liquid, well capitalised institutions are less likely to take risks. He and Xiong (2012c) extend Leland (1994) and Leland and Toft (1996) models to show that market liquidity diminishes during corporate debt renewal, causing a link between liquidity and credit risks. This link raises liquidity and credit risk premiums. This relationship raises liquidity and credit risk premiums. This relationship increases a company's death risk. Berger and Bouwman (2013) discovered that capital reduces bank collapse risk. They focused on how regulatory capital improves a bank's stability and crisis resilience. Imbierowicz and Rauch (2014) examined how liquidity and credit risks affected 4300 US commercial banks from 1998 to 2010. This study investigated 254 crisis-failed institutions. The results show that debt and liquidity issues significantly increase bank collapse risk. Ejoh et al. (2014) also explore how credit and liquidity concerns affect Nigerian bank default.

The First Bank of Nigeria Plc and Pearson's correlation analysis found that liquidity difficulties and credit risks considerably raise a bank's likelihood of defaulting. According to

Acharya and Mora (2013), banks are vital liquidity sources during the financial crisis. According to research, banks that failed during the financial crisis ran out of funds before declaring bankruptcy. Research suggests that failing or near-insolvent banks may offer higher interest rates to attract deposits.

### **Methodology**

The objective of this research is to assess the existence of a substantial association between many information groups within the society of bank branches in Pakistan. This study is designed to establish a link between these groups. Conversely, this study is a prospective investigation that employed past information (the bank's financial data) for analysis. Research has the capacity to be employed by a diverse array of financial data consumers. In order to accomplish the objectives of this study, which are derived from the research inquiries, the research hypothesis has been formulated as follows:

**Hypothesis 1:** There is a strong correlation between a bank's credit risk and its liquidity risk. The research used a multiple linear regression model. As hypothesis 1 did not establish a connection between credit risk and liquidity, a panel-data based structural equation approach (simultaneous) was employed. The statistical sample for this research includes all branches of Habib Bank. A statistical sample for the study was generated using the systematic elimination technique, using the available data. A decision was made to choose 67 branches of Habib Bank throughout the province, taking into account the availability of data.

Considering the current investigation focuses on examining the impact of two or more factors on the branches of a bank in Pakistan, the utilisation of the multiple regression approach was considered appropriate. The current study, however, is a forward-looking examination that was carried out by assessing historical data (the bank's financial information). It is categorized as applied research since it may be employed by a diverse group of individuals who rely on financial data. The bank's financial records are considered reliable and are used as primary sources of information to assess the study

Hypothesis. Furthermore, the hypotheses were tested and the data was analyzed using Excel and Eviews tools. After gathering and categorizing the data, the researcher proceeds to analyze it. This stage is essential since it demonstrates the extent of progress that has previously

been accomplished. In order to verify the hypothesis, the researcher will now assess the facts and information. In order to address research inquiries and evaluate hypotheses, the researcher must scrutinise evidence that is pertinent to the study's objective (Hafeznia, 2006).

This is the key factor to consider throughout the analysis procedure. This study used multiple regression models to conduct empirical research. The processes outlined below were implemented to ensure that the subsequent procedures are consistently adhered to throughout the analysis and

	<b>Credit risk</b>	<b>Liquidity risk</b>	<b>Operational efficiency of management</b>	<b>Deposit ratio</b>	<b>Loan quality</b>	<b>Interest margin ratio</b>	<b>Return on investment</b>	<b>Bank size</b>
Number	334	334	334	334	33	334	334	334
Mean	0.738	0.533	0.879	0.913	0.009	1.172	0.006	10.269
Med	0.562	0.512	0.808	0.792	0.004	1.025	-0.006	10.269
Maximum	5.138	2.357	3.295	3.944	0.365	10.105	0.359	12.892
Minimum	0.053	0.227	0.097	0.224	-0.073	0.258	-0.131	7.584
Standard deviation	0.607	0.162	0.412	0.515	0.029	0.785	0.065	0.890
Skewness	3.378	5.262	2.143	2.225	8.145	6.585	2.092	0.016
Kurtosis	18.577	55.697	10.833	9.857	102.669	64.515	10.912	3.580

approval of the regression model.

## Results

When describing research variables, tables are used together with descriptive statistics such as measures of central tendency and measures of dispersion to provide a clear understanding of the study data. Tables 1 and 2 provide the descriptive statistics for the research variables.

Based on the acquired results, the descriptive analysis of the data shown in the table above may reveal the following findings:

- The variables that exhibit the highest levels of volatility and fluctuation include bank size, interest margin ratio, and credit risk. These variables are assessed using metrics such as standard deviation, minimum and maximum values, and standard deviation. Consequently, it is possible to assert. The volatility and stability of these elements are especially apparent at bank branches. Research indicates that banks pose substantial credit and liquidity risks.

- The operating expenditures ratio, calculated using the average operational efficiency, is projected to exceed 87% of the total joint and non-joint earnings. This suggests that the bank's current status is far from optimal. On average, banks hold short-term deposits that make up around 91% of their long-term deposits, as shown by the mean deposit ratio.
- The Habib Bank has superior loan quality compared to its assets, as seen by the average loan quality. This statement is accurate since the average loan quality may be quantified as a numerical value. However, it is essential to assess the credibility of this assertion by comparing this ratio to the loan performance of other bank branches in different geographical areas. The interest margin ratio emphasises the need of effective asset management skills. Indeed, this ratio serves as an indicator of the efficiency of bank administration in handling assets. The average ratio indicates that net interest earnings are around 111% when compared to the amount of money spent on interest. Upon examining the return on assets ratio, it is apparent that the bank exhibits a comparatively low average return on assets.

Before conducting inferential statistical tests on the research hypothesis, the Spearman correlation test was used to determine the presence of a relationship among all the variables. The collected findings are shown in the table provided below. An assumption of the Spearman correlation test is that all variables included in the test have a normal distribution. This is a matter that warrants consideration. Consequently, due to the non-normal distribution of the independent variables, we were unable to use the Pearson correlation test. Instead, we used the Spearman correlation test. Prior to conducting the regression test, the Spearman test was used to ascertain the level of correlation between the independent factors and dependent variables. The data shown in Table 2 unequivocally demonstrates that there is no significant correlation between credit risk and liquidity risk, as hypothesized in the study. The study hypothesis was assessed using a multiple regression test. Prior to using multiple linear regressions, it is vital to verify that certain assumptions have been examined. If the model incorporates an intercept, the initial classical assumption, which posits the absence of any mean of mistakes, remains unchallenged. When evaluating the traditional assumptions of the linear regression model, it is important to realise that there are five of them. The error sentence of the model is associated with the explanatory components, which serve as independent variables. These elements are often external and deterministic, rather than random. Therefore, the fourth classical assumption, which is the co-



linearity between independent variables, will remain unchallenged and does not need a separate test.

Table 2: Spearman Correlation test

		Credit risk	Liquidity risk	Operational efficiency of management	Deposit ratio	Loan quality	Interest margin ratio	Return on investment	Bank size
credit risk	Spearman correlation coefficient	----	0.0704	- 0.668	- 0.0135	0.4027	0.6636	0.6031	0.3081
	Sig level	----	0.198	0.000	0.804	0.000	0.000	0.000	0.000
	correlation type	----	significant relation	significant relation	significant relation	significant relation	significant relation	significant relation	significant relation
	correlation rate	----	----	strong and reverse	----	average and direct	strong and direct	strong and direct	average and direct
liquidity risk	Spearman correlation coefficient	0.0704	----	- 0.2868	0.8666	- 0.0063	0.2441	0.3402	0.2577
	Sig level	0.198	----	0.000	0.000	0.907	0.000	0.000	0.000
	correlation type	no relation	significant relation	significant relation	no relation	significant relation	significant relation	significant relation	significant relation
	correlation rate	----	----	average and reverse	strong and direct	----	average and direct	average and direct	average and direct

Moreover, if we satisfy the extra prerequisites of a traditional regression model and have a sufficiently enough statistical sample size (greater than thirty observations), the distribution of erroneous phrases will resemble a normal distribution. Although the erroneous phrases may not follow a normal distribution in this scenario, the model coefficient will exhibit minimal variance and high efficiency (Aflatooni). In 2013, specifically in Passage 242. The linear regression model has maintained two common assumptions, as outlined below:

The symbol  $\delta^2$  denotes the postulation that the variance of error terms stays invariant. This assumption is commonly known as heteroscedasticity, which precisely describes it. Heteroscedasticity is the condition when the error terms have a varying variance, rather than a constant one. Reject the null hypothesis of heteroscedasticity if the test result is below the 5% significance requirement. Heteroscedasticity may arise in this context. The findings of the heteroscedasticity analysis are presented in Table 3, accessible on this website.

The null hypothesis of heteroscedasticity can be confidently rejected based on the results of the F test and probability coefficient. This is because the test value in both hypotheses is below the critical threshold of 5%. There is evidence of heteroscedasticity in this scenario. In order to mitigate heteroscedasticity, the ultimate regression model employed the statistical technique referred to as Estimated Generalised Least Squares. However, even though independence is expected, error components in regression models can exhibit dependence over different time intervals. Under such conditions, error terms may display sequence correlation or autocorrelation. The autocorrelation assumption in the regression model's error components was assessed using Eviews. If the test result is lower than the critical threshold of 5%, the null hypothesis, which asserts the absence of autocorrelation, will be rejected. The results of the autocorrelation test can be found in Table 4, accessible by clicking on the provided link. Based on the F test results and probability coefficients, it can be inferred that there is not enough evidence to reject the null hypothesis of autocorrelation. In all instances, the test outcome surpassed the critical threshold of 5%. In other words, the factors mentioned in this example are not correlated.

The fundamental procedures of econometrics are based on the premise that all variables included in the model are reliable, which is necessary for accurate estimation. Unreliable variables or variables with unit roots will compromise the basic validity of the T and F tests, leading to inaccurate regression results. The results of the PP test for each analysed variable are displayed in Table 5. The results of PP's reliability test indicate that all of the model variables exhibit a significant degree of reliability. The obtained P-values for each variable were below the required 5% significance level for the test. This is the cause of the problem. After establishing all the assumptions associated with the linear regression model and the panel test, it is necessary to estimate the final regression model for all hypotheses. The estimate obtained from the regression approach produces the subsequent outcomes: The table shown earlier presents the conclusive testing outcomes of the regression model. Given that the probability coefficient of the F value is below 5%, the results indicate that the entire regression model is statistically significant. The Durbin-Watson value falls within the range of 1.5 to 2.5, suggesting the absence of any autocorrelation issue.

The adjusted coefficient of determination suggests that it is justifiable to infer that the independent and control variables of the research explain approximately 73% of the fluctuations

in the dependent variable (credit risk). This assumption is reasonable. The regression model revealed a statistically significant and positive correlation between credit risk and liquidity risk. One method for establishing this is to analyse the probability coefficient of the t value. This information validates the basic concept of the study. Moreover, the bank's credit risk will increase in direct correlation with the rise in the operating cost-to-profit ratio, when considering control considerations. Moreover, the proportion of short-term deposits compared to long-term deposits plays a crucial role in mitigating a bank's exposure to credit risk. Reducing the bank's credit risk would lead to higher interest margin ratio and return on investment. The table above displays the conclusive testing outcomes of the regression model. Given that the probability coefficient of the F value is below 5%, the results indicate that the entire regression model is statistically significant.

The Durbin-Watson value falls within the range of 1.5 to 2.5, suggesting the absence of any autocorrelation issue. According to the adjusted coefficient of determination, it can be inferred that the dependent variable (liquidity risk) is affected by the control and dependent variables in such a way that around 47% of the variations in the dependent variable can be attributed to them. The regression model's findings indicate that credit risk exerts a substantial and favourable impact on liquidity risk. One way to determine this is by examining the probability coefficient of the t value. After conducting a comprehensive examination, it was determined that the second condition of Hypothesis 1 is accurate. Moreover, augmenting the proportion of operational expenses to profits, which acts as a regulatory gauge, diminishes the bank's vulnerability to liquidity risk. In addition, the bank's credit risk exposure will increase the proportion of short-term deposits compared to long-term deposits. Based on the preceding comment, an increase in return on investment would decrease the bank's liquidity risk. The following table provides a succinct summary of the results achieved by applying the study hypothesis to the topic matter.

**Table 3: Heteroscedasticity (White test)**

Hypothesis	Test	Test value	Probability coefficient
1.1	F-Statistic	1.7098	0.003
1.2	F-Statistic	77.5587	0.000

**Table 4: Autocorrelation Test (LM test)**

Hypothesis	Test	Test value	Probability coefficient
1.1	F-Statistic	2.5465	0.0798
1.2	F-Statistic	0.5647	0.567

**Table 5: Reliability Test of PP**

Variables	Reliability test of PP	
	F value	Probability coefficient
Credit risk	321.671	0.000
Liquidity risk	221.671	0.000
Operational efficiency of management	376.617	0.000
Deposit ratio	226.535	0.000
Loan quality	373.35	0.000
Interest margin ratio	470.912	0.000
Return on investment	245.545	0.000
Bank size	309.112	0.000

**Table 6: Results of Final Regression Model**

Independent variable	Credit risk	Probability value 95%	Importance coefficient 5%
<b>Method: Panel EGLS (Period Weights)</b>			
Variables	Coefficients	t value	Probability coefficient
Liquidity risk	0.962	8.068	0.000
Liquidity risk of previous year	0.452-	5.408-	0.000
Credit risk of previous year	0.318	10.818	0.000
Operational efficiency of management	0.132	2.188	0.030
Deposit ratio	0.191-	5.525-	0.000
Loan quality	0.057-	1.121-	0.263
Interest margin ratio	7.391-	7.571-	0.000
Return on investment	4.988-	8.850-	0.000
Bank size	0.055	2.600	0.010
Constant value (C)	0.275-	1.124-	0.260
<b>R-squared</b>	0.7430	<b>F-statistic</b>	104.5441
<b>Adjusted R-squared</b>	0.7362	<b>Prob.(F-statistic)</b>	0.0000
<b>Durbin-Watson stat</b>	2.0978		

**Conclusion:**

Imbierowicz and Rauch (2011) employed a structural equation (simultaneous) approach to examine panel data. This decision was made due to the failure of the underlying premise to establish a connection between credit risk and liquidity risk. The preliminary testing of the idea, conducted at both stages, demonstrated its potential for clear communication. At Habib Bank, there is a strong correlation (95% chance) between credit risk and liquidity risk, with credit risk tending to have a positive effect on liquidity risk. Additionally, there is a significant probability that

liquidity risk would have a detrimental impact on credit probability. Hence, it is logical to deduce that the interconnection within the bank is mutually advantageous, with diverse risks exerting influence on each other.

This highlights the significance of banks giving priority to the effective management of these risks. The findings from the initial stage of hypothesis 1, which investigated the impact of liquidity risk on credit risk, indicated that the bank's credit risk would escalate in direct correlation with the magnitude of the growth in the operational expenses to profits ratio. This outcome was entirely contrary to the anticipated result. Increasing the amount of short-term deposits compared to long-term deposits has the benefit of reducing the bank's vulnerability to credit risk. Conversely, reducing the bank's credit risk would increase both the interest margin ratio and the return on investment. Moreover, the results of the second stage of hypothesis 1 indicated that a drop in the bank's liquidity risk would result from a reduction in the ratio of the bank's operational costs to earnings.

This outcome arose from the credit concerns of the bank. In addition, the bank's credit risk will rise when the proportion of short-term deposits compared to long-term deposits increases. Upon analysing such data, an increase in return on investment decreases the bank's liquidity risk. Liquidity risk, as defined by Tripe (1999), refers to the probability of a financial institution being unable to fulfil its obligations, such as timely loan extensions or deposit payments. The primary factor contributing to the risk being examined is a discrepancy between the time of banks' incoming and outgoing funds, resulting from the combination of their assets and liabilities (Crouhy and Mark, 2000). "Liquidity" is the term used to describe the presence of cash or other types of currency. In the context of banking, the term "credit risk" denotes the possibility that a financial organisation may be incapable of delivering authorised services or fulfilling its financial obligations within the specified timeframe (Banks, 2005). Assessing the significance of risk and risk management is crucial when evaluating reputable financial organisations globally. If the most unfavourable circumstances occur, this risk could lead to complete financial bankruptcy.

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the dates of payment and receipt. The correlation between credit risk and liquidity risk has not yet been determined. The researchers have not been able to ascertain this. However, there is a connection between the two forms of risk, which can be attributed to two distinct approaches of financial intervention and the bank's industrial element. In their study, Prizman, Slowin, and Soscheck (1986) investigated the impact of borrower default and unexpected financial withdrawals on bank profit in the Manti kiln scenario and its subsequent iterations. This study demonstrated that these factors resulted in a decline in bank profitability.

In the event of loan default, the risk is heightened due to decreased cash flows and depreciation, leading to a decline in profit. Due to the significant influence of liquidity risk on profitability, the extent of this risk would see a substantial escalation. Ideally, there should be a mutually beneficial and proportional correlation between the level of credit risk and the level of liquidity it offers. Various scholars, such as Diamond and Daiboyck (1983) and Briant (1980), have developed models regarding the concept of financial intervention theory, which offer substantiation for the matter in the current body of research. These models indicate a direct correlation between credit risks and liquidity concerns, and both factors might impact a bank's instability. Several recent studies have provided evidence for the hypothesis that there is a direct correlation between liquidity and credit risks, particularly in the context of the financial crises that occurred in 2007 and 2008. The research undertaken by Diamond and Rajan (2003), Hay and Aykesong (2010), and Asharia and Vidvatan (2011) are widely recognised as highly significant in this field.

The current study's findings align with the conclusions drawn from previous research conducted by Diamond and Rajan (2003), Hay and Aykesong (2010), Asharia and Vizvatan (2011), Briant (1980), Diamond and Daiboyck (1983), and Imbierowicz and Rauch (2014). The conclusions of this study, however, are in direct opposition to the findings of Saeeda Ardakani and Farhadipoor (2012) as well as Saeeda Ardakani et al. (2012)..

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