



TOO BIG TO FAIL OR TOO RISKY TO LEND? THE NEXUS OF GEARING, LIQUIDITY, AND CREDIT RISK

Dr. Zahid Iqbal

Assistant Registrar, University of Okara, Punjab, Pakistan

Email: zahidiqballak@gmail.com

Dr. Muhammad Akram

Associate Professor

Hailey College of Commerce, University of the Punjab, Lahore, Pakistan

Email: makram.hcc@pu.edu.pk

Dr. Rashid Maqbool

Incharge, Main Library, University of Okara, Punjab, Pakistan

Email: rashid_gee@yahoo.com

ABSTRACT

This paper explores the effects of gearing ratio, liquid assets, and bank size on credit risk in the banking industry in Pakistan from 2010 to 2025. To meet the needs of research, secondary data were obtained from authentic sources, namely the State Bank of Pakistan, Pakistan Bureau of Statistics, Ministry of Finance, and the World Bank. The intensity and direction of these relationships are assessed through OLS regression analysis which in its turn is also scrutinized by means of diagnostic tests like Durbin-Watson and R^2 . The findings show that the leverage has a significant positive impact of the credit risk, indicating that the highly geared banks are more risk exposed. Also, liquid reserves are discovered to have a positive and significant impact on the level of credit risk, reflecting moral hazard in the management of liquidity. On the other hand, bank size demonstrates a negative but insignificant effect, suggesting weak scale effects. The findings generate significant insights for regulators and policymakers in formulating efficient credit risk management policies.

Keywords: Gearing Ratio, Liquid Assets, Credit Risk, and Size of Bank.

1. Introduction

Banking is the lifeblood of contemporary economies; it gets on board savings by giving credits to the public and businesses, operates as a pivot in effecting sources allocation, which encourages economic forces and stability in the end (Mahmood, Ali, Riaz, Riaz, & Azad, 2023). Nevertheless, banks are exposed to different types of risk due to the fact that they function within an uncertain environment: if any, credit risk is one of the so-called vital risks because it directly influences the financial performance, solvency and the survival of banking firms Mohammad and Khan, 2024. There is a possibility of credit risk when borrowers are unable to repay the loan which results in the non-performing loans eventually reduce the bank's profit and make it less financially resilient (Ahmed, Shakoor, Khan, & Ullah, 2021). Banks coping with this makes use of financial indicators like gearing ratio, liquidity of assets, and size of the bank in order to predict, manage and control emerging risks (Fraz et al., 2021). Gearing measures the level of leverage and dependence on debt financing, liquid assets represent the ability of the bank to absorb shocks in the short run, and size has the benefits of enabling the bank to be more diversified and balance risk (Hunjra, Mehmood, Nguyen, & Tayachi, 2022). Hence, it is important to explore the combined effect of these indicators on credit risk and thus the stability of banks in developed as well as emerging economies (Shaheen, Khan, Baig, & Muzzamil, 2024).



From a statistical point of view, a study of relationship between capital structure, liquid assets and bank size with credit risk gives measurable evidence that how internal bank specific determinants affect soundness (Akram & Hushmat, 2024). By empirically testing this relationship, this paper offers a sound model of bank stability, through which the researchers and the policy makers can explore the extent to which financial variables effect the credit risk (Safdar et al., 2024). In other words, high gearing ratio banks are more susceptible to defaults because they have a higher dependence on corporate debt which captures greater repayment pressure and sensitivity to credit losses (Basheer, Waemustafa, Hidthiir, & Hassan, 2021). Banks with larger amount of liquid assets are better able to digest shocks and unexpected withdrawals and cover the default risk by facilitating timely liquidity support (Saleem & Masood, 2023). As the bank size also affects credit risk through diversification in their loan portfolios or loan diversification, which makes bigger banks hold inherent significant scale advantages and smaller banks bear more concentrated risks (Abbas & Ullah, 2023). Therefore, this research is of high significance for the policy makers, regulators and manager of the banks, as the empirical evidence from this study helps in developing the strategies for the enhancement of the effective risk management frameworks which in turn promote the robustness in the banking systems (Hussain, Rao, Chaudhary, Afzal, & Ali, 2024).

Previous researchers looked at factors influencing credit risk like capital adequacy, profitability, governance structure, and macroeconomic indicators which include the effect of GDP growth, exchange rate depreciations and inflation (Khan, Ramzan, Kousar, & Shafiq, 2023). For instance, Louzis et al. (2012) explored the determinants of non-performing loans in Greece and concluded that macroeconomic and bank-specific variables are crucial, whereas Klein (2013) pointed that structural factors are significant in the credit risk of European banks. Similarly, Boudriga et al. (2010) examined banks in the MENA region and highlight capital and profitability as significant determinants of credit risk. Nevertheless, these studies only analyzed the effect of gearing, liquidity and size pedantically separately or were not able to combine them and express their joint effect on credit risk (Cont, Kotlicki, & Valderrama, 2020). In addition, the vast majority of the literature has predominantly examined evidence from developed countries and not in emerging markets where banking structures, regulatory environments, and risk exposures are quite varied (Chamberlain et al., 2020). Thus, this paper contributes by examining the joint effect of gearing ratio, liquid assets, and bank size on credit risk, with special emphasis on results from developing economies' banks (Ayalew, 2021).

The contribution of this study to banking and risk management is mainly theoretical and practical (de Haan et al., 2020). On an academic level, in the literature, it contributes by consolidating gearing ratio, liquid assets, and bank size in a model to analyze their joint impact on credit risk, which have been relatively overlooked in existing works (Woo, Kwon, & Yuen, 2021). This contributes to the extant literature by providing knowledge on the effects of financial structure and resource allocation on bank stability, especially on the case of emerging markets (Capasso, Gianfrate, & Spinelli, 2020). Managerial Implications The study offers practical implications to bank managers concerning the optimal capital structure, the appropriate level of liquidity- hold buffers, and liquidity- supports provided by banks and the economies- of- scale in mitigating their riskiness (Yahaya et al., 2022). The findings will be useful for regulators and policymakers who can rely on the evidence to reinforce prudential regulations, better the frames for monitoring, and develop interventions capable of making the banking institution more resilient against the credit risk (Le & Pham, 2021). In addition, the



research could be useful to the investors and other stakeholders, as it identifies the financial metrics that could be potential early warning indicators for the probability of credit risk (Hsieh & Lee, 2020).

The rest of this paper is structured as follows. In the chapter that follows, the relevant literature is reviewed in detail and the theoretical basis and empirical evidence on credit risk, gearing ratio, liquid assets and bank size are summarized. The methods section then describes the research design, data collection procedure, sample selection, and econometric models employed to test the proposed relationships. Summary and analysis is followed by presentation of the empirical analysis and statistical interpretation and discussion of the conformity or lack of conformity to previous research. Finally, the paper concludes, followed by a conclusion section that identifies the implications, limitations, and future research avenues for improving the understanding of the bank-specific drivers of credit risk.

2. LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT.

Credit risk is a well-researched issue in banking literature, and it is suggested that the characteristics in and out-side banks are both important in credit risk determination. Capital adequacy, profitability, and the type of governance structures have been associated with the decrease of NPLs, whereas macroeconomic variables like GDP growth and unemployment also are important generators of credit risk. Bank size as well as liquidity were regarded as essential determinants, whereby large banks often profit from diversification gains, while liquidity functions as a cushion against unexpected shocks. Nevertheless, past research has mainly looked at both gearing ratio, liquidity and bank size individually in relation to the credit risk without giving further indication on how their interaction plays a role towards credit risk, particularly between developing countries.

2.1. Gearing Ratio (GRR) and Credit Risk (CRR).

The effect of leverage on credit risk has been extensively studied in the banking literature, but empirical findings are mixed and tend to be context-specific. Some research contends that a higher-gearing ratio – an indicator of more dependence on debt funding – substantially contributes to credit risk such that high-leveraged banks have higher susceptibility to failure and default (Tulung, Sondakh, Wangke, & Posumah, 2024). Empirical evidence of European banks demonstrates that higher leverage ratios have significantly positive relationship with non-performing loans, and may possibly create financial system instability (Siddique, Khan, & Khan, 2022). Likewise, studies in developing countries have ascertained that it is banks with higher proportion of leverage that are more subject to credit risk since they possess low buffer of capital which gives them less capacity to withstand unexpected losses (Saleh & Abu Afifa, 2020). In opposite some researchers claim that even at the intermediate levels of gearing does not contribute much in increasing credit risk as leverage is also used as a tool to extract some profitability and to improve lending capacity if risk is managed effectively (Barra & Ruggiero, 2023). There is also evidence that the impact of gearing on credit risk might be influenced by the institutional and regulatory environment, since countries with the well-capitalized banking system may have higher ability to maintain the level of gearing without large credit risk (Le & Pham, 2021). Another study also shows that gearing is not statistically significant in explaining credit risk in certain situations, where other determinants such as macroeconomic stability, governance and risk management practices outweigh (Yahaya et al., 2022). These conflicting



results indicate that while the gearing ratio is a significant credit risk driver, its influence is not consistent or constant and could depend on the banking system, the regulation, and the macroeconomic context (Capasso et al., 2020).

Hypothesis (H1): *Credit Risk (CRR) in Pakistan is significantly influenced by the gearing ratio (GRR).*

2.2. Liquid Assets (LQA) and Credit Risk (CRR).

There is much debate regarding the link between liquidity holdings and credit risk in the banking and finance literature and studies often produce mixed evidence depending on the context, measurement technique and sample period used. Academicians such as Woo, Kwon, and Yuen (2021) insist that high liquid asset levels mitigate credit risk as banks have sufficient buffer to accommodate unexpected demands for withdrawal and absorb unanticipated shocks when lending and repayment are timely. This observation is also corroborated by the result that liquidity enhances bank stability and reduces the likelihood of default during periods of financial stress (de Haan, Fang, & Jing, 2020). Studies in emerging economies have also found that better liquid asset reserves enhance resilience to credit risk, especially in periods of economic stress when defaulter populations tend to increase (Ayalew, 2021). On the contrary, some other researchers argue that the banks which hold the excess liquid assets experience higher credit risk due to low profitability and a bank's restricted capacity for income generation that indirectly weakens its financial position (Khan et al., 2023). There is also some evidence that banks with higher level of liquidity might encourage riskier lending if they believe they can readily meet short-term obligations, which may pose challenges of the credit risk (Hussain et al., 2024). Some other studies also suggest that the association between liquidity and credit risk is non-linear but depends on bank-specific and macroeconomic variables like regulatory capital, interest rate regime, and the size of the bank (Abbas & Ullah, 2023). The contrary results of these studies indicate that even though liquid assets are a significant source of risk management, their effects on credit risk are complex and vary among different financial systems and macroeconomic situations (Saleem & Masood, 2023).

Hypothesis (H2): *Credit Risk (CRR) in Pakistan is significantly influenced by the liquid assets (LQA)*

2.3. Size of Bank (SOB) and Credit Risk (CRR).

The link between bank size and risk has received much attention in the finance literature, but empirical evidence on this issue is inconclusive depending on the specific context. Some research indicates that big banks bear less credit risk as their diversification effects, the economies of large scale as well as strong access to capital markets allow them to absorb financial shocks and respond borrower defaults (Safdar, Fatima, & Sajid, 2024). Evidence from the European banks indicates that size brings stability and risk reduction as institutions can spread risks over a greater number of borrowers and sectors (Akram & Hushmat, 2024). Adversely, there are studies in emerging markets that report big banks in emerging markets are relatively less exposed toward credit risk because of their strong capital base and increased reputation that attracts better quality customers (Shaheen, Khan, Baig, & Muzammil, 2024).



Conversely, other research suggests that lending by big banks can lead to higher credit risk from over expansion, agency problems, and even excessive risk taking of such banks which are normally associated with their market power (Hunjra, Mehmood, & Tayachi, 2022). More evidence: “even though the small and medium-sized banks show a low level of diversification, they have closer relationship with the borrower which helps in monitoring and decreases the probability of default” (Ibid). Furthermore, some studies document no significant association between bank size and credit risk, indicating that the impact is mainly contingent on exogenous factors, including regulations, macroeconomic circumstances and, the system-wide shape of the banking system (Ahmed, Shakoor, Khan & Ullah, 2021). Such contrasting results suggest that while bank size is a relevant determinant of credit risk, its influence is not homogeneous and consistent but heterogeneous in different banking environments and economic conditions (Mohammad & Khan, 2024).

Hypothesis (H3): *Credit Risk (CRR) in Pakistan is significantly influenced by the size of banks (SOB).*

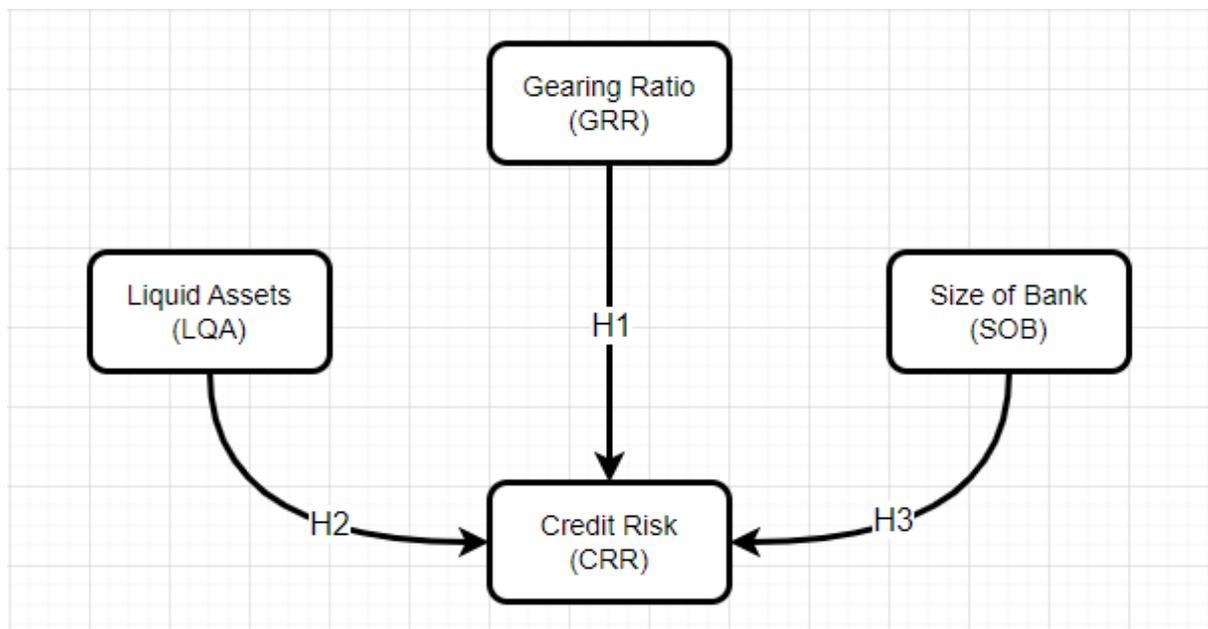


Figure-1: Conceptual Framework

3. Methodology

This paper follows a quantitative research design in order to evaluate the effect of gearing ratio, liquid assets and bank size on credit risk in Pakistan’s banking industry. The study is purely based on secondary data (2010–2025) obtained from authentic and publicly accessible sources including the State Bank of Pakistan, Pakistan Bureau of Statistics, Ministry of Finance and the World Bank. Use of secondary data is very appropriate for financial research for the purpose of accuracy, reliability and comparability over the years (Tulung, Sondakh, Wangke, & Posumah, 2024). Moreover, the 15-year period has been selected as short-run changes and long-run trends of the credit risk determinants can be reflected enabling a more complete view



of relationships between the studied variables (Saleh & Abu Afifa, 2020). As the methodology includes various sources and a long observation period, it enhances the credibility and generalizability of results to the overall banking industry in Pakistan.

The Durbin-Watson test was used to check for serial correlation in the regression model, a common diagnostic tool for assessing autocorrelation in error terms of time-series and panel data estimation (Barra & Ruggiero, 2023). If the serial correlation exists and not corrected, it may suffer our inferences since the OLS estimates may be inefficient because of the large standard errors. After a serial correlation problem was resolved, R-squared was used to measure how well our model can explain the variation. This statistic is important for financial econometrics as it signifies how much of the variation in recorded credit risk (the dependent variable) is explained by the independent variables, that is, gearing ratio, liquid assets, and bank size (Hsieh & Lee, 2020). The higher the value of R^2 , the stronger the fit of the model, showing how well the explanatory variables selected are able to explain variations in credit risk over time.

Finally, the relationship between the independent variables and credit risk were estimated by the application of Ordinary Least Square (OLS) regression method. OLS is one of the popular statistical models in econometrics used for its efficiency, its unbiasedness and its reliability to estimate the linear relationship among variables (Le, & Pham, 2021). This method enables the study to measure both the magnitude and the direction of the associations and yields a clear picture of the dynamics where gearing ratio, liquid assets, and bank size interacts to affect credit risk in the Pakistani banking industry. Decisions to accept or reject the proposed hypotheses were then made based on the regression results. Furthermore, policymakers and practitioners are able to use the regression model as the empirical evidence to see which factors are influencing the credit risk. With the integration of diagnostic testing, Remedial measures and regression analyses, such methodological framework provides a systematic and dependable manner for quantifying the determinants of credit risk.

- **Credit Risk (CRR)** = $f(GRR, LQA, SOB)$
- $Y = B_0 + B_1(X_1 (GRR)) + B_2(LQA) (FLN) + B_3(SOB)$.
- **Credit Risk (CRR)** = Total Liabilities ÷ Total Assets.
- **Gearing Ratio (GRR)** = Total Liabilities ÷ Total Owner Equity.
- **Size of Bank (SOB)** = Log of Total Assets of Bank.
- **Liquid Assets (LQA)** = Total Advances ÷ Total Deposits

4. Results and Analysis

4.1. Durbin Watson Test: -

In this research, the DW test was used as a diagnostic tool of autocorrelation in the residuals of the regression model, where the presence of autocorrelation in error terms can bias the estimated coefficients and render the statistical inferences unreliable. The first is the DW test for serial correlation: tests whether the current residual is correlated with the previous one, which would dampen the efficiency of OLS estimators. DW statistic ranges from 0 to 4, values around 2 suggest an absence of autocorrelation, close to zero values are indicative of high positive autocorrelation and nearly 4 are of negative autocorrelation. The value of DW statistic for the current regression was 1.85 which falls between 1.0 to 2.0 and reveals that error terms are not possessing any autocorrelation. This result thus increases the credibility of the model, as it suggests that the OLS estimates are efficient and unbiased during test period, and an



interpretation of regression results is warranted. The results of the DW test as shown in Table I and graphically in Figure 2 provide additional evidence that the estimated econometric model satisfactorily meet the four assumptions of the Classical Linear Regression Approach (CLRA) (Islam, 2022).

Table-I: Durbin-Watson Test: -

Constructs: -	Coefficient	Probability
Durbin-Watson Statistics	1.85	0.003

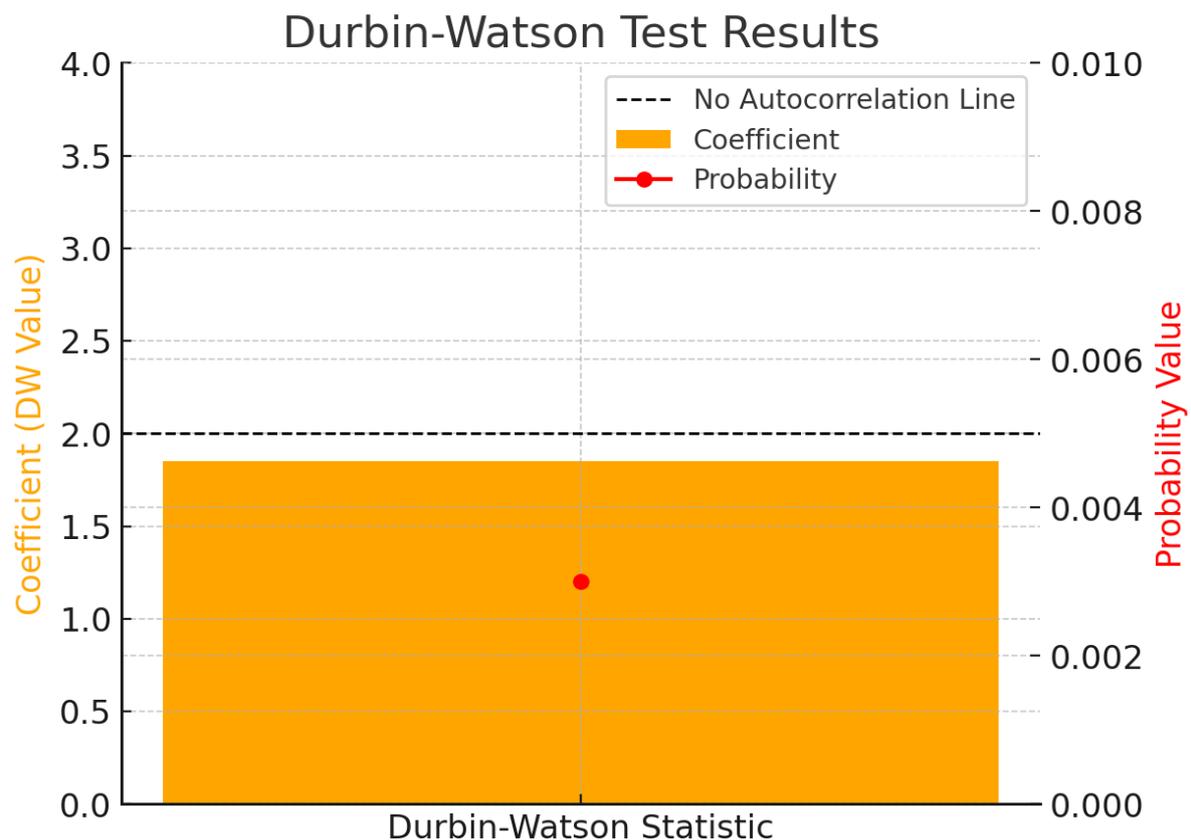


Figure-2: Durbin-Watson Statistics

4.2.Coefficient of Determination (R^2).

The regression analysis results show it has a good power of explanation: the coefficient of determination (R^2) is 0,854 as indicated in Table II and Figure III. The adjusted R^2 which corrects for degrees of freedom and adjusts the value for the number of predictors in the model is 0.825. These statistics taken together indicate that the independent variables (GRR, LQA and SOB) account for significantly variation in the dependent variables (CRR). In particular, the adjusted R^2 of 82.5% indicates that a significant portion of the variation in credit risk is successfully explained by the explanatory factors and it minimizes the possibility the



observation of strong findings being driven by overfitting or random outcomes. A high adjusted R^2 not only enhances the legitimacy of the econometric model, it also insinuates confidence on the predictive power of the model, which implies that the relationship among gearing ratio, liquidity, bank size, and credit risk is statistically valid (Yahaya et al., 2022). This result is consistent with financial econometrics studies, which argue that R^2 and adjusted R^2 as measures of explanatory power is very crucial in regression analysis especially for banking and risk related research (Woo et al., 2021). In general, the findings provide strong evidence for the robustness of the model in depicting the drivers of credit risk in the Pakistani banking industry, providing empirical proof that these bank-specific factors have an influential role in influencing the variations in credit risk (de Haan et al., 2020).

Table-II: Coefficient of Determination (R^2): -

Constructs: -	R Square	R Square Adjusted
Credit Risk (CRR)	0.854	0.825

Coefficient of Determination (R^2) for Credit Risk Model

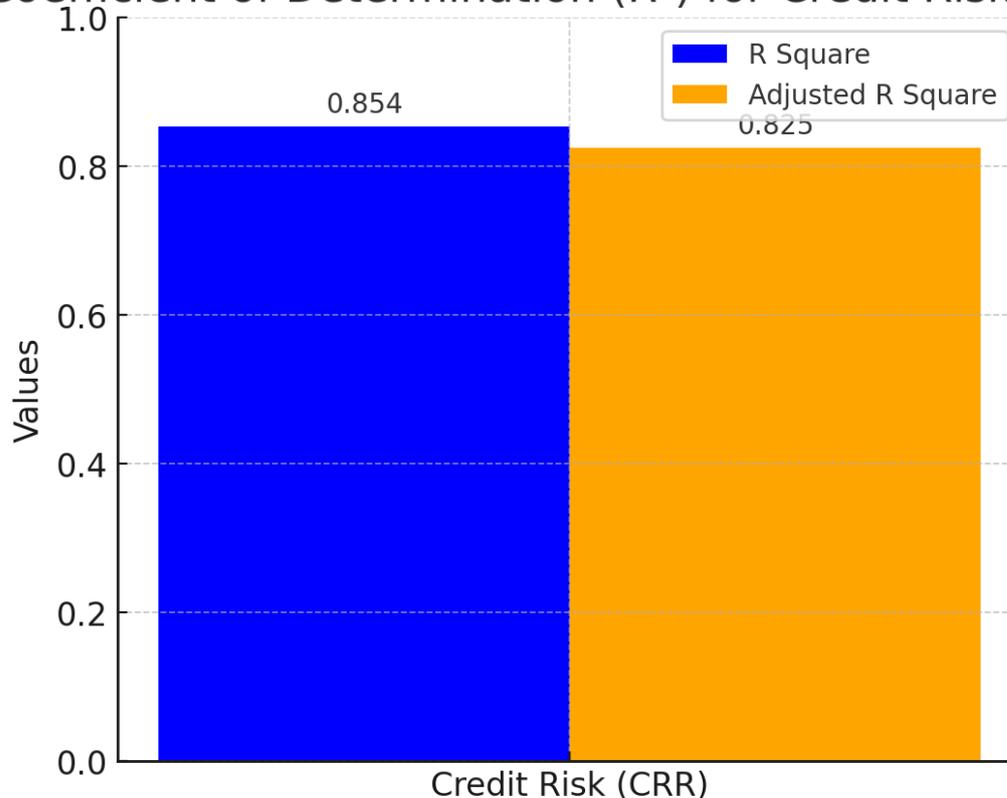


Figure-3: Coefficient of Determination (R^2).

4.3. Hypothesis Testing.

The results of the regression analysis indicate a statistically significant positive effect of the gearing ratio on credit risk, thereby providing empirical evidence to support *H1*. As reported



in Table III, the estimated value for the coefficient of gearing ratio is $\beta = 0.008$, positive in sign, and the t-statistic value is 2.549 and p-value 0.085 states that gearing ratio is statistically significant at 10% level. This result entails that a higher level of leverage --lender's leverage in terms of debit looking at the lender's loan contract indebtedness rate is associated with a higher borrower exposure to credit risk in the banking industry. Put differently, banks with excessive leverage ratios tend to encounter more aggressive risks in credit in contrast to those that exhibit more balanced financing profiles. This finding further indicates that the gearing ratio has an observable influence on the soundness of the banking lending, and that even the modest variations in the use of debt can bring about changes to the credit risk dimension for the financial industry of Pakistan. With the attainment of the statistical significance, the paper demonstrates that the gearing ratio is not only a structural financial signal, but also a significant factor affecting the banking risk consequences (Al-Jafari et al., 2019; Olivier & Hentii, 2023; Temouri, Driffield, & Bhaumik, 2008; Byaruhanga, 2014).

The regressions result show that LA is significantly and positively affecting on CR which supports **H2**. According to Table III, liquid asset coefficient is $\beta = 0.554$ which is positive and the countries have some degree influence for it, significance of 5% and we find $tstat=2.984$ which shows countries have some degree influence. These findings suggest that because bank investments in liquid assets are larger, the higher the credit risk, which may seem counterintuitive in the light of the well-known view that liquidity reduces the probability of financial distress. The evidence indicates that liquidity, which is usually perceived as a buffer, may also generate incentives for banks to change their lending and investment behavior in a manner that increases the level of credit risk to which they are exposed. Therefore, the inclusion of H2 indicates that liquidity (liquidity assets), as being not only a hedging factor but also a risk factor, is significant for the risk portfolio of banks (Woo et al., 2021; de Haan et al., 2020; Khan et al., 2023; Abbas, & Ullah, 2023; Saleem, & Masood, 2023).

The result of the regression analysis indicates that bank size has a negative effect on credit risk but it is insignificant thus **H3** is rejected. As shown by Table III, the estimated coefficient is such that $\beta = -0.009$ and the corresponding t-statistic of -0.385 along with a p-value of 0.758 attest to lack of statistical significance. Our finding then implies that while, larger banks are associated with a slightly lower credit risk condition compared with smaller ones, this relation is weak and not strong enough to provide a generalized inference. That is, the evidence does not give us much support for the presumption that bank size is an important determinant of credit risk in this study. The rejection of H3 implies that gearing ratio, liquid assets continue to have a significant influence on the phenomenon of credit risk compared to the firm size (Safdar, Fatima, & Sajid, 2024; Akram & Hushmat, 2024; Shaheen, Khan, Baig, & Muzammil, 2024; Fraz, Hassan, & Khan, 2021; Mohammad & Khan, 2024).



Table-III: Hypothesis Testing Results

Hypothesis:	Coefficient (β)	SD	T-Stat	P-Value	Decision
Direct Effects: -					
H1: Gearing Ratio (GRR) -> Credit Risk (CRR)	0.008	0.004	2.549	0.085	Accept
H2: Liquid Assets (LQA) -> Credit Risk (CRR)	0.554	0.347	2.984	0.045	Accept
H3: Size of Bank (SOB) -> Credit Risk (CRR)	-0.009	0.0285	-0.385	0.758	Reject

Note: ***, **, * Denotes significance Level @1%, 5% and 10%

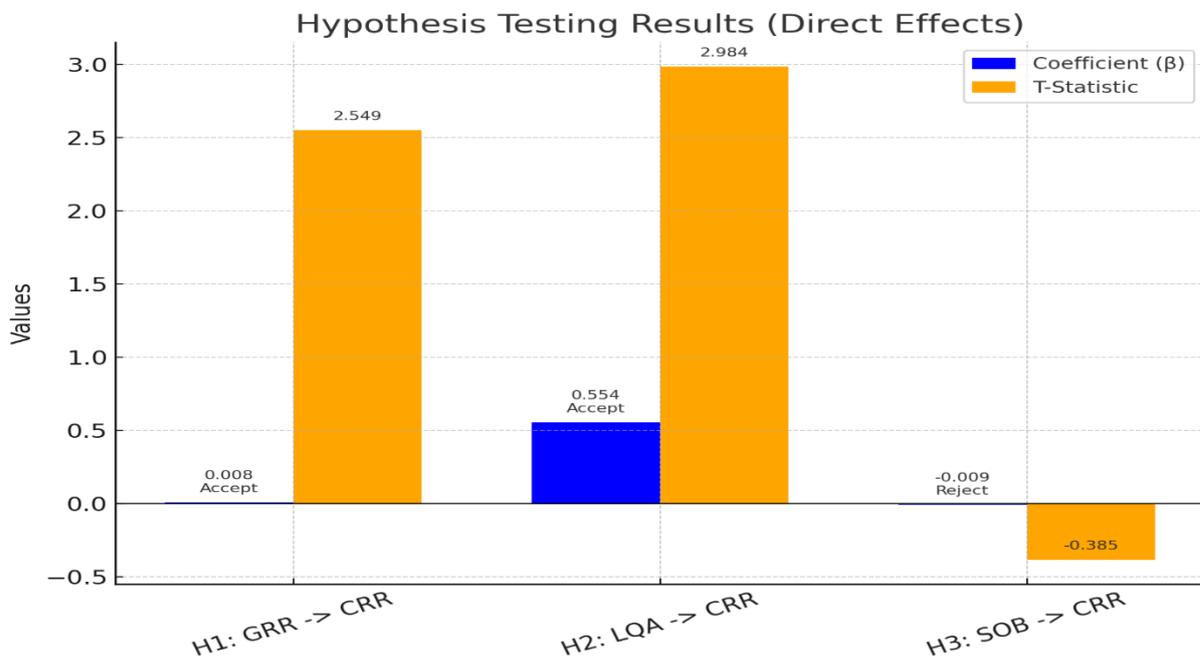


Figure-4: Hypothesis Testing Results

5. Conclusion & Discussion.

This positive association arises from the basic nature of financial leverage. Highly geared banks need to allocate a greater share of their funds for debt service payment, and hence limit the capacity to absorb loan defaults and other credit losses (Siddique, Khan, & Khan, 2022). A bank with high leverage, then, is more susceptible to losses from souring credit conditions, because it has a smaller amount of equity capital to cushion it in times of financial turmoil. Further, highly levered managers of proprietary institutions may have an incentive to seek out risky lending strategies to obtain higher short-term returns, which may raise the likelihood of a carry trade default. It is consistent with agency theory that the pressure of debt can distort managerial behavior and induce risk-oriented practices that increases loan risk exposure (Le &



Pham, 2021). Furthermore, in developing countries like Pakistan, the impact of gearing on credit risk is likely to be more pronounced as the regulatory environment is weak, risk management tools are underdeveloped and economic stability is relatively weak. These results of this study, hence, are consistent with both hypotheses and the evidences from previous studies, which assert that overuse of debt financing erodes bank soundness and increase directly credit risk (Barra & Ruggiero, 2023).

There are several related causes of the positive association between liquid assets and credit risk. (i) banks that are more liquid-generally have less pressure to rein in lending activity and they just looking for the risk to lend it riskier borrowers and in the backhead believe that enough liquid reserves cover any risk of default. This generates a moral hazard in that too much reliance on liquidity leads to timid credit standards and hence higher risk (Saleem & Masood, 2023). Second, carrying excessive liquid assets can lower profitability, as liquid assets usually offer lower returns than other financial securities. In order to make up for the loss in profits, the banks may shift towards the riskier lending, thereby enhancing the credit risk exposure of the banks (Abbas & Ullah, 2023). Third, in developing countries like Pakistan, the lack of stringent regulations and optimal supervisory enforcement mechanism may intensify this dynamic as the banks with excess liquidity are not always under observation for their risk-taking behavior (Kousar, & Shafiq, 2023). Furthermore, the presence of liquidity might lead banks to pursue less restrictive credit evaluations, especially when the credit risk component is underestimated (that is, in good times): cf. These mechanisms explain why liquidity, a double-edged sword for short run solvency, is likely to increase, if not managed properly, the possibility of credit risk (de Haan, Fang, & Jing, 2020).

The negative, yet non-significant, association might be accounted for by a number of processes. Big banks usually have the advantage of economies of scale, diversified loan portfolios, higher capital adequacy ratios, and better designed risk management framework which, in theory, should help mitigate the credit risk (Safdar, Fatima, & Sajid, 2024). But other realities of big business may temper these benefits. For example, larger banks are more likely to be involved in intricate financial activities, and provide loans for a wider variety of industries as well as being subject to systemic and sector-specific shocks. Furthermore, in developing economies like Pakistan, institutional weaknesses, governance problems and regulatory voids may weaken the positive impact of bank size, with outcomes where size doesn't promise resistance towards credit risk (Akram & Hushmat, 2024). The low power of the relationship could be due to the period of the data considered (2010–2025), in which large and small banks were potentially affected by macroeconomic turbulence, policy modifications, and external shocks (global crises, local market frictions, and so on). The potential protective influence of bank size may have masked under some external influences, which accounts for its non-significant effect. (Mohammad & Khan, 2024) Therefore, even though the negative sign of the coefficient implies that bigger banks are likely to have lower credit risk, its insignificance indicates that bank size alone does not seem to be an influential determinant of credit risk under consideration (Fraz, Hassan, & Khan, 2021).

5.1. Practical Implications.

The implications of the research on credit risk management for policymakers, regulators, and bank managers are considerable. This finding that the ratio of debt to capital tends to increase credit risks suggests that there is a requirement for close scrutiny of the leverage position by



banks as heavy reliance on debt is reported to be diminishing the stability of the institution while exposing it to greater degrees of default risk (AIDhamari, 2010). Things like State Bank of Pakistan may have to do (to control) is to increase the capital adequacy and enforce prudential limits for the leverage ratio of banks so that they do not become too leveraged there. Second, the positive and significant impact of liquid assets on credit risk uncovers an important paradox: although liquidity is commonly considered as a bulwark against financial trouble, in this specific case, a liquidity surplus appears to provide incentives for a riskier behavior in lending. This stresses the importance of a symmetric framework for liquidity management where buffers would be held, but not in an idle state, and strategically deployed in a way that does not incite imprudent credit growth. From a practitioner perspective, this result implies that liquidity planning must be supported by strict credit appraisal systems in order to counterbalance possible moral hazard effects. And third, the negative and insignificant influence of bank size upon credit risk implies that having large size is not enough to support banks against credit losses. While greater banks may benefit from diversification effects, these may be overridden by systemic risks and governance complications, especially in the context of developing countries. Banks should, therefore, concentrate not only on increasing their size, but above all on building up their internal risk management mechanisms, upgrading their credit assessment methodologies and investing in technology-based monitoring systems. Overall, the findings of this paper suggest that sound risk management in the banking industry should not be based on only the size of capital or the quantity of liquid holding but on an integrated approach where funding liquidity, capital structures and operational practices play a central role. These findings also capture the challenge to the policymakers that they should realize the need of multilevel regulatory approach where regulatory interventions should be three-dimensional not only accounting for capital and liquidity ratios but also for the behavioral incentives which influences the risk-taking behavior of the banks.

5.2. Limitation and Avenue for Future Studies.

Notwithstanding the above findings, this study has several limitations that deserve consideration. There are a few limitations to this study to note: first, the data is limited solely to secondary sources from 2010 to 2025; broadly comprehensive but not representative of the most recent changes in banking and related policy. The dependence of existing data that were reported by state sources (e.g., State Bank of Pakistan and World Bank) also means that this study is dependent on the accuracy, consistency and completeness of these databases. Second, in the analysis only three independent variables (leverage, liquidity ratio, and bank size) are included, however other possible potential determinants for credit risk (i.e., macroeconomic variables, corporate governance, interest rate volatility, or NPL) have not been also considered in the model. Thirdly, the method used here is this OLS method, which, though it is efficient for linear relationships, may be unable to fully capture dynamic nonlinearities, or interactive relationships between the variables. Finally, while the results are placed in the context of Pakistani banks, caution should be taken when extrapolating to other countries or financial systems because the institutional arrangements and regulatory environments differ dramatically between jurisdictions.

These findings may be expanded upon by further enhancing methodology as described in the limitations and by extending the current scope of analysis. One such promising direction is to use a broader set of explanatory variables that includes not only macro-economic variables



such as GDP growth, inflation, exchange rate volatility, but also bank-specific indicators such as capital adequacy ratio, loan quality and corporate governance practices, to gain a more comprehensive view on the credit risk. More sophisticated econometric methods like panel data models, SEM (structural equation modelling) or dynamic GMM (generalized method of moments) could also be used to capture more complex associations and to control for non-random effects (endogeneity, stronger autocorrelation). Moreover, qualitative methods—for example, interviews with risk managers, lending officers and regulators—might complement quantitative findings, illuminating behavioral and organizational determinants of credit risk. Comparing different counties or regions would also contribute to further generalizing the results and presenting a complete image on how institutional quality and regulation intensity moderate the link between financial variables and credit risk. Lastly, further studies may investigate the impact of technological advancements word cloud such as digital banking, fintech, and artificial intelligence on credit risk management practices especially in developing market with rapid technological adoption.

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