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Determinants of Bank Lending in Nepal: The Role of Regulatory, Macroeconomic, and Internal Factors

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Abstract: *This study examines how the rule of law, regulatory quality, internal factors, and macroeconomic factors affect bank lending. Arellano-Bond and Blundell-Bond estimators are used in this study to analyze how predictor variables affect response variable. The study utilizes balanced panel data from 220 observations from twenty Nepalese commercial banks for the period from 2012 to 2022. The findings reveal that the lagged value of loans and advances positively and significantly impacts the loans and advances of the current year. Similarly, bank concentration, capital adequacy, and liquidity positively affect the loans and advances made by Nepalese commercial banks, contributing to the banking industry's stability. On the other hand, lending rates significantly and negatively impact loans and advances. Conversely, regulatory quality and the rule of law positively impact Nepalese commercial banks' loans and advances. On the other hand, advances and loans are adversely affected by inflation rates. Lastly, a notable positive correlation exists between predictor variables like GDP growth rates and loans and advances. This study emphasizes the significance of regulatory quality, macroeconomic stability, and internal bank factors in shaping bank lending practices. It indicates that improving regulatory frameworks, ensuring capital adequacy, and managing inflation can promote stable lending in Nepalese banks.*

Keywords: capital, liquidity, concentration, regulatory quality, rule of law

I. INTRODUCTION

The banking system as the financial intermediary is a crucial sector for the growth of any economy (Menicucci & Paolucci, 2022), and central banks have a great deal of importance on banking sector's performance and sustainability (Bucevska & Hadzi Misheva, 2017; Athari, 2021). Lending credit is one of the major functions of commercial banks and lending is a major determinant of bank profits (Ekpu & Paloni, 2016).

The nexus between loans and advances and capital adequacy is currently being studied in this context. It is vital to consider any potential adverse effects of increased bank capital, even though it may seem beneficial for bank lending. It could raise the bank's cost of capital and diminish the demand for bank loans. The empirical findings of Karim et al. (2014), Yitayaw (2021), and Osei-Assibey and Asenso (2015) provide evidence that bank capital has a favorable effect on lending. However, it is essential to consider the potential disadvantages associated with this. Bank concentration also has a positive and negative impact on bank lending, creating uncertainty in the lending market. A higher level of competition (low level of concentration) can lead to uncertainty, which can reduce loan growth and increase both credit risk and lending rates (Dang & Nguyen, 2023). Conversely, competition among banks can boost lending by drawing in additional customers to gain a larger portion of the market. The connection between liquidity and bank lending is still inconclusive. Sufficient liquidity allows banks to meet their deposit withdrawals and enhance lending capacity. Bank liquidity positions directly affect the bank's fund costs and lending rates. The liquidity problem may lead to higher borrowing costs for banks and hurt bank credit expansion strategies. Furthermore, the types of deposits held by banks directly influence credit expansion. However, the excess liquidity of banks fueled the fire in real estate markets and pushed up the stock market (Liu & Wray, 2010).

Similarly, changes in interest rates have a positive or negative effect on the demand for loans and advances. Lower interest rates, on the one hand, stimulate demand for loans as they become more affordable. Conversely, higher interest rates can reduce loan demand by increasing the cost of funds. Furthermore, lower interest rates stimulate economic growth by encouraging investment and consumption, increasing demand for loans and advances.

Inflation rates can also have a positive or negative impact on bank lending. Interest rates directly correlate with the inflation rate; (1) a higher inflation rate positively correlates with lending rates, potentially increasing borrowing costs for borrowers. This, in turn, can reduce the demand for loans and advances. (2) On the other hand, high inflation rates reduce consumers' purchasing power and confidence, affecting borrowers' ability to repay loans and advances, and increasing credit risk. This, in turn, causes banks to tighten credit standards to mitigate credit defaults, which can reduce demand for loans and advances. Similarly, economic growth can also have a positive or negative impact on bank lending. Favorable economic growth boosts both investment and consumption, which in turn increases demand for loans

and advances. Furthermore, favorable economic growth enhances banks' profitability and can improve their capital base, which supports lending activities.

Regulatory quality—corruption control, entrance obstacles, and bank capital quality—individually or jointly affects bank lending behavior. Bank lending can be negatively or positively impacted by corruption. Put simply, corruption hinders bank lending; on the other hand, it can boost bank lending by paying bribes that raise the chances of loans being approved for borrowers (Weill, 2011a; Weill, 2011b). Similarly, bank lending is affected by the entrance barrier in one of two ways: positively or negatively. Thamae and Odhiambo (2022), for example, observed that strong entrance barriers are beneficial up to a 62.8% threshold. Beyond this point, however, the effect would be negative. Furthermore, for banks to continue lending during a crisis, high-quality bank capital is needed, including tier 1 capital, retail deposits, and government support. During the global crisis, a bank with high-quality capital kept lending continued to BRIC and non-OECD countries. In contrast, interbank deposits and tier 2 capital might facilitate lending during normal times, but not during the financial crisis (Kosak et al., 2015).

Similarly, the rule of law significantly influences bank lending behavior through contract enforcement and legal certainty (Beck et al., 2003), which reduces the risk for lenders when extending credit; property rights protection (Djankov et al., 2007), which states that banks are willing to lend more when borrowers can offer tangible assets as collateral, which reduces default risk and facilitate more lending; a transparent legal system (Porta et al., 1998) reduces information asymmetry between lenders and borrowers, improves the assessment of creditworthiness of borrowers and rises the lending; investor confidence and economic stability (World Bank, 2012), which elucidates that robust rule of law enhance investors' confidence and attract both domestic and foreign investment and stimulate economic growth, which boost demand for bank lending; and regulatory compliance and risk management (Barth et al., 2004), which interprets that adherence to regulatory standards and prudent risk management practices are guaranteed by compliance with the rule of law. This fosters sustainable lending activities and enhances financial stability and resilience to economic disruptions.

Most previous studies focused on how banks' internal and macroeconomic variables impact bank performance in international and Nepalese contexts. Very few studies have been conducted on how regulatory quality and the rule of law affect bank lending behavior in South Asia, and to the best of our knowledge, none of the studies focus on the Nepalese context. This study contributes new empirical evidence on the influence of regulatory quality and the rule of law on bank lending in the context of Nepal. Hence, this study aims to examine the impact of capital adequacy, liquidity, bank concentration, lending rates, inflation rates, economic growth, regulatory quality, and rule of law on bank lending in the Nepalese context.

II. LITERATURE REVIEW

Theoretical review. Diamond (1984) developed the Financial Intermediation Theory (FIT), which explains how capital adequacy, liquidity, bank concentration, inflation, economic development, regulatory quality, and the rule of law affect banking lending. FIT indicates that a higher level of capital enables banks to resist unexpected shocks, allowing them to absorb more significant losses without jeopardizing solvency. A higher level of liquidity enables banks to extend more loans, whereas liquidity problems diminish their lending capacity. In contrast, higher bank concentration reduces competition, resulting in increased interest rates for borrowers and a diminished lending environment for banks. By contrast, competition enhances efficiency (Merton & Bodie, 1995) and boosts banks' lending capacity. Increased interest rates may decrease banks' lending volume, as borrowers tend to allocate their borrowed funds towards high-risk projects, potentially resulting in nonperforming loans. This scenario can create hesitance among banks to extend credit (Thakor, 1996). A higher inflation rate can increase lending rates and reduce banks' lending capacity. In contrast, FIT posits that economic growth fosters a favorable lending environment due to the increased demand for bank loans as businesses expand. Regulatory quality contributes to the banking system's stability, reducing banks' risks and promoting increased lending activities. Furthermore, regulatory quality reduces the cost of monitoring and information collection and reduces moral hazard problems (Diamond, 1984). FIT asserts that the rule of law is crucial for the enforcement of contracts and the equitable resolution of disputes, which diminishes the risk of loan defaults and promotes a favorable lending environment, provided that legal protections for both lenders and borrowers are strong.

Empirical studies and hypothesis development. This section presents an empirical review of relevant studies on the relationship between loans and advances and key variables, including capital adequacy, liquidity, bank concentration, lending rates, inflation rates, GDP growth, regulatory quality, and the rule of law. It examines prior research findings and their implications for bank lending behavior and the subsequent hypothesis formulation.

Loans and advances and capital adequacy. Nguyen and Nguyen (2022) used sample data from Vietnamese commercial banks from 2005 to 2021 to investigate the effects of liquidity and bank capital on loan growth. Using fixed effect and system GMM, the analysis uncovered a favourable correlation between bank capital and bank lending. Therefore, this study confirmed the importance of bank capital in driving lending growth in Vietnam. Similarly, Osei-Assibey (2015) investigated the impact of regulatory capital on loan growth, NPLs, and bank efficiency using panel data spanning the period from 2002 to 2012. Using the system GMM estimator, the findings revealed that regulatory capital positively affects loan growth in Ghana. Furthermore, this study found that excess capital increases the risk-taking behavior of banks, which in turn increases NPLs. This finding is like the documentation of Modugu and Dempere (2022), who argued that well-capitalized banks are financially sound and face fewer liquidity problems. Furthermore, a large pool of

capital would enhance depositor confidence. Yitayaw (2021), Thornton and Di Tommaso (2020), Karim et al. (2014), Kim and Sohn (2017), and Karmakar and Mok (2015) draw the same conclusion about the nexus between capital adequacy and bank lending. This study proposes the first hypothesis based on the previous empirical findings.

H1: Capital adequacy has a positive impact on bank lending.

Loans and advances and liquidity. Nguyen and Nguyen (2022) examined the impact of liquidity and bank capital on lending growth by taking sample data from Vietnamese commercial banks over the period 2005–2021. By employing the fixed effect and system GMM, the findings revealed a positive impact of funding liquidity on bank lending. As a result, this study confirmed the importance of bank deposits in Vietnam's lending growth. In a similar vein, Tran (2020) conducted a study that examined the correlation between financing liquidity and bank lending. Using multivariate analysis, the study revealed that banks that heavily depend on deposits had a decrease in loan growth. Thornton and Di Tommaso (2020) investigated the impact of capital on bank lending in the presence of liquidity. This study utilized panel data from 521 banks in European countries. Using the fixed-effect estimator, this study found that liquidity has a positive and significant impact on bank lending. Furthermore, this study revealed that a strong capital base alone is not sufficient to enhance bank lending, but a combination of a strong capital base and sufficient liquidity can do so. This study proposes the second hypothesis based on the previous empirical findings.

H2: Liquidity has a positive impact on bank lending.

Loans and advances and bank concentration. Dang and Nguyen (2023) investigated the nexus between uncertainty and lending by employing bank competition as a moderating variable. This study used a panel dataset of Vietnamese banks covering the period 2007–2019. Using a two-step GMM estimator, findings revealed that a lower level of concentration brings more certainty to bank lending. In contrast, uncertainty leads to a lower rate of loan growth and raises both credit risk and lending rates. In other words, a higher level of competition results in a decrease in banks' lending. However, Yitayaw (2021) found that bank concentration negatively impact banks' lending. High competition, according to this finding, encourages banks to develop new lending products with flexible terms and lower fees to attract and retain customers. This study proposes the third hypothesis based on the previous empirical findings.

H3: Bank concentration has a positive or negative impact on bank lending.

Loans and advances and lending rates. Using a panel dataset of 15 banks from 2011 to 2019, Yitayaw (2021) examined the determinants (firm-specific, industry-specific, and macroeconomic) that affect banks' lending in Ethiopia. The research employed an

explanatory research design and a quantitative approach. This study discovered that the average lending rate in Ethiopia has a significant and negative impact on the lending of banks, as anticipated when employing a random effect model. Thornton and Di Tommaso (2020) investigated how capital affected bank lending when liquidity was present. Panel data from 521 banks in European nations were used in this study. Using the fixed-effect estimator, this study discovered that policy rates have a positive and significant impact on bank lending. This study proposes the fourth hypothesis based on the previous empirical findings.

H4: Lending rate has a negative impact on bank lending.

Loans and advances and inflation rates. Karim et al. (2014) examined the impact of capital adequacy on lending and deposits using a sample of conventional and Islamic banks from 57 Organization of Islamic Conference (OIC) countries. Using multivariate analysis, the findings revealed mixed outcomes. On the one hand, the findings showed that the inflation rate has a negative and significant impact on loans and advances at conventional banks. This finding suggests that conventional banks become more cautious and conservative in granting loans and advances while inflation rates rise. On the other hand, the inflation rate has a positive and significant impact on loans and advances at Islamic banks. This result suggests that Islamic banks benefit from lower interest rates and support the idea that inflation is caused by a "low-interest rate environment and an excess supply of money in the market" (Karim et al., 2014). Similarly, Oyebowale (2020) explored the determinants that affect bank lending in Nigeria using bank-level data covering the period 1961–2016. Using the ADRL bound test and the Granger causality test, Oyebowale (2020) found that the inflation rate has no effect on bank lending, but bank lending does have an effect on inflation in Nigeria. This finding suggests that voluminous lending by banks supplies more money to the market and raises inflation. This study proposes the fifth hypothesis based on the previous empirical findings.

H5: Inflation rate has a negative impact on bank lending.

Loans and advances and GDP growth. Nguyen and Nguyen (2022) used sample data from Vietnamese commercial banks from 2005 to 2021 to investigate the effects of bank capital and liquidity on loan growth. Using the fixed effect estimator, the results showed that bank lending was positively impacted by GDP growth. Similarly, Kim and Sohn (2017) investigated the role of liquidity in the nexus between bank capital and lending. Using the quarterly dataset of US commercial banks from 1993 Q1 to 2010 Q4, this study found that the GDP growth rate has a positive impact on bank lending. This result is consistent with the claims that economic expansion promotes consumer spending, corporate expansion, and investment opportunities. Robust economic expansion increases bank profitability by lowering credit losses, reinforcing the capital structure, and strengthening lending capabilities. On the other hand, Yitayaw (2021) revealed that economic growth has an

unfavorable and significant effect on bank lending in Ethiopia. This result is consistent with the claims that strong economic growth can lead to increased interest rates, bolster competition, shifts in investment priorities, and changes in regulations that constrain banks' ability more lend. This study proposes the sixth hypothesis based on the previous empirical findings.

H6: Economic growth has a positive or negative impact on bank lending.

Loans and advances and regulatory quality. The three regulatory quality factors of bank capital quality, entrance barriers, and corruption control can influence bank lending behavior separately or in combination. Shrieves and Dahl (1995) examined how regulation and recession affect bank lending behaviour by taking a sample of 1044 banks, covering the period from 1985 to 1991. Using an econometric model, this study found that supervisory climate and bank capital regulation have a negative and significant impact on bank lending. Thamae and Odhiambo (2022) examined the effect of bank regulation on bank lending using a sample of sub-Saharan African countries, covering the period from 1997 to 2017. Employing a dynamic PTR model, this study found that regulations relating to entry barriers positively affect bank lending up to the threshold point of 62.8%. After that, the entry barrier negatively affected bank lending in sub-Saharan countries. However, regulations relating to capital requirements did not significantly affect bank lending. Barry et al. (2015) investigated how different bank ownership structures (for instance, state-owned and family-owned banks) affect lending corruption in various countries. Additionally, this study found that lending corruption was more prevalent in state-owned and family-owned banks. In addition, this study found that a strong regulatory framework reduces lending corruption, particularly in countries with family-controlled banks. This study proposes the seventh hypothesis based on the previous empirical findings.

H7: Regulatory quality has a positive impact on bank lending.

Loans and advances and rule of laws. Porta et al. (1998) explored the factors that affect external financing, either equity or debt, using a sample of 49 countries worldwide. This study used OLS regression to find the impact of different factors on external funding. The study revealed that "countries with poorer investor protections, measured by the rule of law and the quality of law enforcement, have a smaller and narrower capital market" (Porta et al., 1998). This suggested that business firms mainly depend on bank financing in countries with poor rule of law. In countries with robust rules of law, business firms mostly rely on the equity and bond markets for external funding. Similarly, Djankov et al. (2007) examined the factors that affect private credit using a sample of 129 countries. Using the OLS regression, the findings showed that contract enforcement days negatively and significantly affect the private credit to GDP ratio. In contrast, creditors' rights—creditor consent for dividend payment, power to seize borrowers' collateral, and top priority for secured loans in the

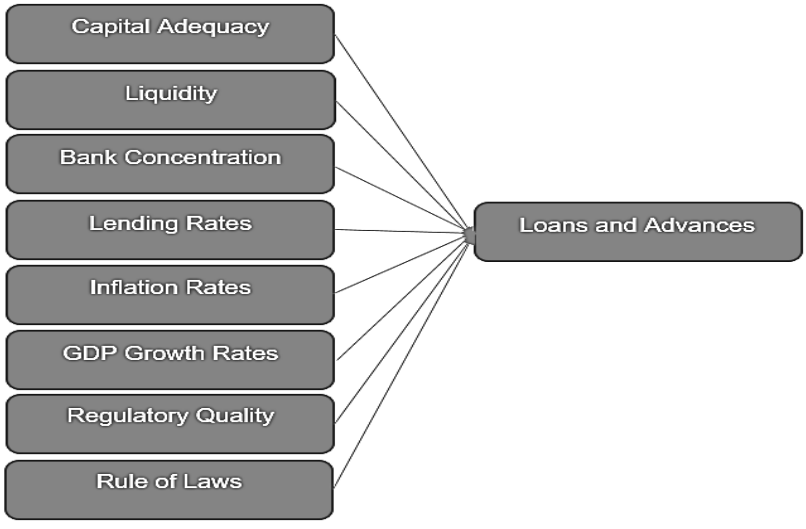
case of liquidation—positively and significantly affect the private credit-to-GDP ratio. This study proposes the final hypothesis based on the previous empirical findings.

H8: Rule of law has a positive impact on bank lending.

The conceptual framework presented in Figure 1 has been developed based on the insights gained from the preceding literature review. It reflects key findings and relationships identified in the reviewed studies, serving as a foundation for further analysis.

Figure 1

Conceptual framework of the study



III. RESEARCH METHODOLOGY

This study gathered bank-level data from 20 commercial banks from the Bank Supervision Report published by the Central Bank of Nepal (Nepal Rastra Bank) from 2012 to 2022. This study period is justifiable because, from 2012 to 2022, the commercial banking sector in Nepal experienced substantial transformations. The overall number of banks reached an all-time high of 32 in 2012 and subsequently declined due to mergers and acquisitions and legislative constraints on the new licensing policy adopted by the Nepal Rastra Bank. In addition, the Nepal Rastra Bank (NRB) implemented more stringent restrictions, including elevated minimum paid-up capital and improved credit categorization criteria. At the same time, technological progress facilitated more significant usage of digital banking. These data were primarily extracted from commercial bank balance sheets and income statements. The data relating to inflation rates, GDP growth rates, regulatory quality, and the rule of law were collected from the World Bank database. The variables, their measurements, symbol, and their similarities in previous studies are presented in Table 1.

Table 1

Variables and unit of measurements used

Variables	Measurements	Symbol	Sources	Previous studies
Loan & advances	Natural logarithm of loan & advances	LA	Authors own calculation	Yitayaw (2021)
Capital adequacy	Capital adequacy	CA	NRB	Yitayaw (2021)
Liquidity	Loan and advances/total deposits	LIQ	Authors own calculation	Yitayaw (2021)
Bank concentration	Total assets of banks/total assets of banking industry	BC	Authors own calculation	Yitayaw (2021)
Lending rates	Interest income /Loan and advances	LR	Authors own calculation	Yitayaw (2021)
Inflation rates	Inflation rates	IR	World Bank	Yitayaw (2021)
Economic growth	GDP growth rates	GDP	World Bank	Yitayaw (2021)
Regulatory quality	Regulatory quality	RQ	World Bank	Thamae and Odhiambo (2022)
Rule of laws	Rule of laws	RL	World Bank	Djankov et al. (2007)

Note. The variable capital adequacy is directly adapted from bank supervision report published by Nepal Rastra Bank. The variables namely inflation rates, GDP growth rates, regulatory quality, and rule of laws are taken from the World Bank (2024).

This study demands a dynamic panel model because the current level of loans and advances is affected by the past level of loans and advances. Therefore, this study was specifically designed for the panel system GMM. As a result, we collected data in the form of small T (11 years) and large groups (20 commercial banks).

Panel data frequently have problems with endogeneity (Arellano & Bond, 1991), serial correlation (Drukker, 2003), heteroscedasticity (Greene, 2008), homogeneity across cross-sections and periods (Baltagi, 2005), and omitted variable bias (Wooldridge, 2010). These problems can result in estimates that are inefficient and biased. Similarly, fixed effect models assume homogeneous slopes (Greene, 2008), consume more degrees of freedom (Baltagi, 2005), control all time-invariant characteristics (Wooldridge, 2010), ignore potential endogeneity (Arellano & Bond, 1991), and capture noise rather than the underlying relationship (Hsiao, 2003). Comparably, different GMMs have encountered problems with serial correlation (Arellano & Bover, 1995), finite sample bias (Arellano & Bond, 1991), weak instrument problems, and possible endogeneity (Blundell & Bond, 1998).

Measurement errors, autocorrelation, omitted variable bias, endogeneity, and unobserved panel heterogeneity are all taken into account by GMM (Ullah et al., 2018). Hence, we employed the Arellano-Bond (1991) and Blundell-Bond (1998) dynamic panel-data

estimation methods in this investigation. This study investigates the influence of a bank's internal determinants, macroeconomic variables, and regulatory environment on the lending of commercial banks. We employed the following regression model to investigate the influence of predictor variables—internal determinants, macroeconomic variables, and regulatory environment—on the response variable—loans and advances of commercial banks in Nepal. Therefore, we developed the following dynamic panel data model to test the hypothesis.

Loan & advances = f (capital adequacy, liquidity, bank concentration, lending rates, inflation rates, GDP growth rates, regulatory quality, and rule of laws)

More specifically,

$$lnLA_{it} = a + \delta\ lnLA_{it-1} + \beta_1 CA_{it} + \beta_2 LIQ_{it} + \beta_3 BC_{it} + \beta_4 LR_{it} + \beta_5 IR_{it} + \beta_6 GDP_{it} + \beta_7 RQ_{it} + \beta_8 RL_{it} + \mu_i + V_t + \varepsilon_{it} \ldots\ldots\ldots \quad (1)$$

where, lnLA denotes natural logarithm of loans and advances, CA represents capital adequacy, LIQ denotes liquidity ratio, BC represents bank concentration, LR stands for lending rates, IR refers inflation rates, GDP denotes gross domestic product, RQ stands for regulatory quality, RL denotes rule of laws, μi stands for a bank-specific unseen effect, Vt denotes time-specific effect, εit stands for error term, i denotes ith banks, and t stands for time.

IV. RESULTS AND DISCUSSION

Results. This section presented the results of descriptive statistics, correlation, and regression. *Table 2* shows summary statistics of nine variables from 2012 to 2022 with 220 observations. Loans and advances range from a low of 9.295 to a maximum of 12.816, with an average of 11.241 and a standard deviation of .772. Also, capital adequacy ranges from -.002 to .191 with a mean and standard deviation of .105 and .029, respectively. The liquidity ranges from .483 to 1.065, averaging .824, with a standard deviation of .107. Bank concentration ranges from .0151 to .089, with an average and standard deviation of .042 and .0150 respectively. In addition, the lending rates vary from .0740 to .171. The mean and standard deviation are 0.107 and 0.0190, respectively. The inflation rates' minimum, maximum, mean, and standard deviation are 3.217, 8.261, 6.148, and 1.171, respectively. The variable regulatory quality ranges from -.870 to -.640, with an average and standard deviation of -.774 and .076, respectively. Finally, the variable representing the rule of law falls within the range of -.810 and -.450. Summary statistics provide a more in-depth understanding of the distribution of study variables and the potential influence of predictor variables on the response variable.

Table 2

Descriptive statistics

Variables	Observations	Mean	SD	Min.	Max.
Loan & advances	220	11.241	.772	9.295	12.816
Capital adequacy	220	.105	.029	-.002	.191
Liquidity	220	.824	.107	.483	1.065
Bank concentration	220	.042	.0150	.0151	.089
Lending rates	220	.107	.0190	.0740	.171
Inflation rates	220	6.148	1.171	3.217	8.261
GDP growth rates	220	4.296	3.156	-2.370	8.977
Regulatory quality	220	-.774	.076	-.870	-.640
Rule of laws	220	-.617	.117	-.810	-.450

Note: Loans and advances are scaled by taking the natural logarithm of loans and advances. The capital adequacy ratio is measured by dividing eligible regulatory capital by total risk-weighted exposure. Liquidity is calculated by dividing loans and advances by total deposits. Bank concentration is measured by dividing the top three banks' total assets by the total assets of the banking industry. The Inflation rate, GDP growth rate, regulatory quality, and rule of law are directly sourced from the World Bank (2024). The regulatory quality and rule of laws range from -2.5 (weak) to 2.5 (strong).

Table 3 presents the results of the relationship between the variables under study. The table highlights a positive relationship between capital adequacy and bank lending, suggesting that a rise in the capital adequacy ratio increases loans and advances in Nepalese commercial banks. Additionally, the study reveals that liquidity, bank concentration, regulatory quality, and rule of law have a significant positive correlation with bank lending in Nepalese commercial banks. Likewise, while lending rates show a positive correlation with loans and advances, this relationship is not statistically significant. These findings suggest that higher liquidity, bank concentration, regulatory quality, and rule of law contribute to increased bank loans and advances. On the other hand, the study identifies a negative correlation between the inflation rate and bank lending, indicating that higher inflation leads to increased lending rates and reduced bank lending. According to Yarso et al. (2024), the correlation matrix detects multicollinearity and with all Pearson correlations below 0.8, confirming its absence in this study.

Table 3

Correlation matrix

Variables	Loan & advances	Capital adequacy	Liquidity	Bank concentration	Lending rates	Inflation rates	GDP growth rates	Regulatory quality	Rule of laws
Loan & advances	1								
Capital adequacy	.229*** (.000)	1							
Liquidity	.520*** (.000)	.458*** (.000)	1						
Bank concentration	.493*** (.000)	-.177*** (.008)	-.212*** (.001)	1					
Lending rates	.063 (.353)	.084 (.214)	.096 (.158)	-.007 (915)	1				
Inflation rates	-.183*** (.007)	-.199*** (.003)	-.109 (.104)	-.017 (.797)	-.249*** (.000)	1			
GDP growth rates	-.108 (.109)	.141** (.036)	.086 (.203)	-.064 (.345)	-.019 (.774)	.406*** (.000)	1		
Regulatory quality	.652*** (.000)	.057 (.399)	.332*** (.000)	.112 (.099)	.020 (.768)	.237*** (.000)	-.259*** (.000)	1	
Rule of laws	.729*** (.000)	.167** (.013)	.469*** (.000)	.089 (.188)	.223*** (.000)	-.352*** (.000)	-.307*** (.000)	.536*** (.000)	1

Note. ***, **, and * denotes p< .01 and p <.05, respectively.

Table 4 presents the findings of the Arellano-Bond dynamic panel-data estimation. This study employed three statistical tests—the Sargan test, AR (1), and AR (2)—to assess the validity of results using dynamic panel data. Firstly, this study focuses on analyzing the second-order serial correlation using AR (2) and concludes that AR (2) is not statistically significant. As a result, the study finds that system GMM is consistent. Additionally, this study examined the validity of instruments by conducting the Sargan test. The Sargan test confirms that the null hypothesis of overidentifying restrictions is valid. The results of the test mentioned above indicate that the estimated coefficients are valid in this model.

Table 4

Arellano-Bond dynamic panel-data estimation

	Coefficients	Std. error.	Z	P-value
Loan and advances (-1)	.741***	.030	24.70	.000
Capital adequacy	.749	.498	1.50	.133
Liquidity	1.279***	.118	10.84	.000
Bank concentration	20.524***	2.759	7.44	.000
Lending rates	-2.697***	.412	-6.55	.000
Regulatory quality	.465***	.150	3.10	.002
Rule of laws	.148**	.064	2.31	.020
Inflation rates	-.016***	.003	-5.33	.000
GDP growth rates	.002	.001	1.38	.169
Constant	1.917***	.436	4.40	.000
No. of obs.	180			
No. of instruments	54			
AR (1) (p-value)	.061			
AR (2) (p-value)	.836			
Sargan test (p-value)	.998			

Note. *** and ** denotes p< .01, and p < .05, respectively.

The coefficient of loan and advances (-1) (δ =.741, p <.01) indicates that the previous year's loan and advances positively and significantly affect the current year's loan and advances. Similarly, the coefficients of capital adequacy (β_1 =.749, p >.05), liquidity (β_2 = 1.279, p <.01), and bank concentration (β_3 = 20.524, p <.01) indicate that they have a favorable impact on the loans and advances of Nepalese commercial banks, which provides a sense of stability in the banking sector. However, the coefficient of capital adequacy is not statistically significant. The findings supported the FIT and concluded that a high level of bank capital, liquidity, and concentration fosters a favorable lending environment in Nepal. The findings align with Nepal Rastra Bank's policies regarding minimum capital requirements, liquidity, and mergers and acquisitions.

In contrast, the coefficient of lending rates (β_4 = -2.697, p <.01) shows that lending rates have a negative and significant impact on loans and advances. This finding also supported

the financial intermediation theory (FIT), indicating that a higher interest rate reduces loan demand. It also increases loan default because borrowers invest in risky projects to cover funding costs. Furthermore, it raises moral hazard problems. Hence, Nepal Rastra Bank should fix a maximum cap for the lending rate.

On the other hand, coefficients of regulatory quality (β_5 =.465, p <.01) and the rule of law (β_6 =.148, p <.05) reveal that these two variables positively influence the loans and advances of Nepalese commercial banks. The regulatory quality and rule of law findings did not support the financial intermediation theory (FIT), indicating that Nepalese bankers and borrowers did not consider these factors when making loan contracts.

By contrast, inflation rates (β_7 = -.016, p <.01) negatively impact loans and advances. Finally, predictor variables such as GDP growth rates (β_8 = .002, p >.1) had an insignificant positive impact on loans and advances. The inflation rates and GDP growth rate did support the financial intermediation theory (FIT), indicating that economic growth creates a favorable lending environment, while an inflationary environment creates an unfavorable lending environment. Thus, policymakers such as Nepal Rastra Bank should implement monetary policy that increases economic growth and decreases the inflation rate.

Table 5 presents the results of the Blundell-Bond dynamic panel data estimation. The three statistical tests used in this study were the Sargan test, AR (1), and AR (2). They were similar to the Arellano-Bond dynamic panel data estimation and the Blundell-Bond dynamic panel data estimation. The results of AR (2) reveal the absence of second-order serial correlation. The study's conclusion states that the GMM system is consistent. The Sargan test confirms the validity of the null hypothesis regarding over identification restrictions.

The coefficient of loan and advances (-1) (δ =.793, p <.01) indicates that the previous year's loan and advances positively and significantly affect the current year's loan and advances. In the same way, capital adequacy (β_1 =1.249, p <.05), liquidity (β_2 = 1.020, p <.01), and bank concentration (β_3 = 20.279, p <.01) all have positive and statistically significant effects on the loans and advances of Nepalese commercial banks. This makes the banking sector feel stable. In contrast, the coefficient of lending rates (β_4 = -2.492, p <.01) shows that lending rates have a negative and significant impact on loans and advances. On the other hand, coefficients of regulatory quality (β_5 =.172, p >.1) and the rule of law (β_6 =.057, p >.1) reveal that these two variables positively but insignificantly influence the loans and advances of Nepalese commercial banks. By contrast, inflation rates (β_7 = -.006, p <.05) negatively impact loans and advances. Finally, predictor variables, such as GDP growth rates (β_8 =.004, p <.01), had a significant positive impact on loans and advances.

Table 5

Blundell-Bond dynamic panel-data estimation

	Coefficients	Std. error.	Z	P-value
Loan and advances (-1)	.793***	.039	20.33	.000
Capital adequacy	1.249**	.551	2.27	.023
Liquidity	1.020***	.221	4.63	.000
Bank concentration	20.279***	2.859	7.09	.000
Lending rates	-2.492***	.335	-7.44	.000
Regulatory quality	.172	.124	1.38	.167
Rule of laws	.057	.063	.90	.368
Inflation rates	-.006**	.002	-2.31	.021
GDP growth rates	.004***	.001	3.50	.000
Constant	1.180***	.392	3.01	.000
No. of obs.	180			
No. of instruments	54			
AR (1) (p-value)	.101			
AR (2) (p-value)	.456			
Sargan test (p-value)	.997			

Note. *** and ** denotes p< .01 and p < .05, respectively.

Discussion. Findings revealed that in Nepalese commercial banks, the lag value of loans and advances has a positive and significant effect on bank lending. Similarly, the capital adequacy ratio favourably affects bank lending. This finding is similar to the findings of the previous studies of Osei-Assibey (2015), Nguyen and Nguyen (2022), and Moduge and Dempere (2022). The argument that well-capitalized banks are financially sound can attract more funds from depositors and face fewer liquidity problems can explain this finding. In a similar vein, liquidity has a positive impact on bank lending in Nepalese commercial banks. This finding is similar to the previous studies of Nguyen and Nguyen (2022) and Thornton and Di Tommaso (2020). Sufficient liquidity, which enables banks to meet their deposit withdrawals and enhance lending capacity, explains the study's findings.

Furthermore, with sufficient liquidity, the bank can reduce its cost of funds without disrupting its credit expansion strategy. Similarly, in Nepalese commercial banks, the coefficient of bank concentration showed a positive effect on bank lending. This finding is similar to Dang and Nguyen's (2023) findings and contrasts with Yitayaw's (2021) findings. This suggested that a high level of competition brings more uncertainty to the lending market, can increase deposit rates, and can decrease lending rates. Conversely, a high lending rate negatively impacts bank lending, corroborating the findings of Yitayaw (2021) and contradicting those of Thornton and Di Tommaso (2020). This suggests that a higher interest rate reduces loan demand by increasing the cost of funds. In contrast, a lower interest rate enhances both investment and consumption, increasing demand for loans and advances. By contrast, regulatory quality positively impacts bank lending in Nepal. This finding is consistent with Thame and Odhiambo (2022) and in contrast with

Shrieves and Dahl (1998). This suggested that corruption control, reduction of entrance barriers, and improved quality of bank capital enhance bank lending.

Similarly, in Nepalese commercial banks, the rule of law has a positive impact on bank lending. This finding is similar to the findings of Djankov et al. (2007) and contrasts with the findings of Porta et al. (1998). This implied that creditors' rights—creditor consent for dividend payment, power to seize borrowers' collateral, and top priority for secured loans in the case of liquidation—have a positive and significant impact on bank lending. Furthermore, compliance with the rule of law ensures that banks adhere to regulatory standards and prudent risk management practices. This contributes to financial stability and resilience against economic shocks, promoting sustainable lending activities.

The inflation rate, on the other hand, has a negative and significant impact on bank lending in Nepal. This finding is similar to Karim et al.'s (2014) findings and differs from Oyebowale's (2020) findings. This finding can be explained by the higher rising bank lending rates, which can reduce banks' loan demand, reduce consumers' purchasing power, erode borrower confidence, and reduce loan demand. Finally, as expected, GDP growth positively impacts bank lending. This finding is consistent with those of Nguyen and Nguyen (2022), Kim and Sohn (2017), and Yitayaw (2021). Economic growth can explain this finding by promoting investment and consumption, increasing banks' profitability, and enhancing lending capabilities.

V. CONCLUSION AND IMPLICATIONS

This study examines the impact of internal factors, macroeconomic factors, regulatory quality, and rule of law on bank lending. This study employs Arellano-Bond and Blundell-Bond estimators to explain the effect of predictor variables on response variable. The lag value of loans and advances indicates that the previous year's loans and advances positively and significantly affect the current year's loans and advances. Similarly, capital adequacy, liquidity, and bank concentration favorably impact the loans and advances of Nepalese commercial banks, providing a sense of stability in the banking sector. However, the coefficient of capital adequacy is not statistically significant.

In contrast, the lending rates have a negative and significant impact on loans and advances. On the other hand, coefficients of regulatory quality and the rule of law positively influence the loans and advances of Nepalese commercial banks. By contrast, inflation rates negatively impact loans and advances. Finally, predictor variables such as GDP growth rates have a significant positive impact on loans and advances. Bankers, policymakers, and borrowers are the primary concern of banking sector credit expansion and contraction. Hence, these findings can assist regulators and policymakers in taking effective action to maintain the optimal credit level and foster the country's economic welfare. Nepal Rastra Bank should strictly implement policies concerning minimum capital requirements, liquidity, and mergers and acquisitions to foster a favorable lending and borrowing environment

in Nepal. In contrast, the Nepal Rastra Bank should aim to maintain minimal lending and inflation rates to promote a conducive lending and borrowing environment in Nepal.

The study examines the influence on bank lending by focusing on eight predictor variables: capital adequacy, liquidity, bank concentration, lending rates, inflation rates, economic growth rates, regulatory quality, and rule of law. Therefore, other variables like bank size, the development of the stock market, the expansion of the non-deposit financial sector, and Nepalese political stability should be included in future studies.

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