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HOW BANK SIZE INFLUENCES CREDIT GROWTH: EVIDENCE FROM VIETNAMESE COMMERCIAL BANKS

Abstract

The paper aims to analyze the impact of bank-specific factors on credit growth and examines the moderating role of bank size in this relationship. Research data were collected from the audited financial statements of 27 commercial banks in Vietnam, covering the period from 2013 to 2024. The study employs the system generalized method of moments (SGMM) estimator to address dynamic panel bias and endogeneity issues. The research results indicate that non-performing loans, bank liquidity, and equity capital hurt credit growth; however, this effect is mitigated in large-scale banks due to their strong financial state. In contrast, factors such as profit, deposit growth, and net interest income have a positive impact on credit, with deposit growth and net interest margin having a more substantial effect in large banks, while profit is used less for credit growth in this group. The study confirms that size is an important moderating factor, which can weaken or amplify the impact of bank characteristics on credit activities. On this basis, the study recommends that banks expand the scale of their operations to improve credit efficiency. At the same time, it suggests that the Government issue policies to support capital increases, ensuring that the role of financial intermediation is effectively performed and contributing to promoting sustainable economic growth.

Keywords

bank size, credit growth, large banks, moderating role, Vietnam

JEL Classification

G21, E51, G28, O16

INTRODUCTION

Credit growth plays a crucial role in promoting economic development, particularly in emerging markets where the banking system remains the primary financial intermediary channel. In Vietnam, bank credit plays a crucial role in the country's economic development. The theory is that if the economy relies too heavily on bank credit capital, it becomes hazardous and does not create room for monetary and financial policies to support businesses during difficult times or resist external pressure. However, in reality, for many consecutive years, bank credit capital in Vietnam has consistently accounted for half of the total capital supply to the economy. Due to its importance, the Vietnamese Government has consistently issued regulations to create favourable conditions for credit institutions to provide credit capital for the economy. Specifically, the State Bank has publicly announced the principles for credit institutions to proactively implement credit growth, gradually implementing a roadmap to reduce and remove regulations on assigning credit growth targets to credit institutions. In addition, the State Bank requires credit institutions to strictly implement instructions on monetary and credit activities, regulations on credit granting to improve business efficiency, ensure system safety and stabilize the financial market, including providing safe, effective and healthy credit growth, limiting the increase and occurrence of bad debts; directing credit to production sectors, priority sectors and

economic growth drivers according to the Government's policy; strictly controlling credit for potentially risky sectors. In addition, the Vietnamese commercial banking market presents an interesting context for studying credit more closely, as it is a market with a diverse structure, ranging from state-owned commercial banks with a dominant market share to smaller joint-stock and private banks that fiercely compete in the retail and SME lending sectors. While larger banks benefit from stronger capital bases and broader access to low-cost funding, smaller banks often exhibit greater flexibility in extending credit, especially to underserved sectors. However, existing empirical studies on credit dynamics in Vietnam, such as those by the IMF (2023) and the World Bank (2022, 2023), mainly focus on macroeconomic conditions, financial stability, or post-crisis recovery, with little attention paid to bank-level characteristics, such as size. Therefore, the extent to which bank size affects credit growth positively, negatively, or conditionally has not been thoroughly studied in the context of the Vietnamese market. Thus, when bank credit is actually considered a factor in disguise, it is necessary and academically meaningful to understand the factors that determine credit or credit growth, especially considering the role of scale and the financial capacity of banks.

1. LITERATURE REVIEW

In recent years, numerous studies have focused on identifying the factors that affect commercial bank credit growth. Shingjergji and Hyseni (2015) employed econometric models to assess the impact of macroeconomic factors, including GDP growth, remittances, interest rates, and inflation, as well as internal bank indicators such as non-performing loans and liquidity. The results showed that GDP growth and remittance flows are significant positive drivers of credit expansion, reflecting the importance of both domestic economic efficiency and external financial resources in the Albanian credit market. Similar results were found in Awdeh's (2017) study in the Lebanese banking market. Awdeh (2017) also found that economic growth is positively correlated with credit expansion, consistent with the pro-cyclical lending model. Regarding inflation, Shingjergji and Hyseni (2015) found that high interest rates and inflation hurt credit growth, highlighting the sensitivity of credit supply to macroeconomic stability. High-inflation economies are likely to constrain lending, as macroeconomic instability weakens banks' ability and willingness to extend credit (Awdeh, 2017). Macroeconomic factors affecting credit growth are also confirmed in reports by Quaglietti (2024) and the IMF (2024). The reports emphasize that economic growth, interest rates, and monetary policy direction are determinants of the speed and selectivity of credit growth, especially in the context of monetary tightening cycles.

Considering bank-specific factors, Ivanović (2016) emphasized in his study of the factors affecting credit growth in Montenegro that non-performing loans (NPLs) are a significant obstacle to the lending activities of the banking sector. Specifically, a high NPL ratio reduces the asset quality of credit institutions, forcing them to increase risk provisions, thereby narrowing the ability to supply new credit. This situation not only reflects an increase in credit risk but also weakens the financial capacity and willingness of banks to accept risks (Shingjergji & Hyseni, 2015; Chun & Ardaaragchaa, 2024). At the same time, the spread of non-performing loans also creates a cautious mentality among potential customers, especially in the context of economic instability, thereby reducing credit demand. This dual impact from both the supply and demand sides has significantly constrained credit growth, especially in small economies where debt management and resolution tools are limited. Concluding the same conclusion about the role of non-performing loans, Rizkullah et al. (2023) also pointed out the ability of non-performing loans to restrain credit growth. Increasing non-performing loans indicates that customers' ability to repay debts is reduced, and the quality of the loan portfolio needs to be reshaped. As a result, banks are more cautious in their credit growth to limit losses. On the contrary, Kharabsheh (2019) shows that rapid credit growth reflects banks loosening lending standards to expand scale or deciding to grant credit with less scrutiny to achieve growth targets. These loans are more vulnerable to risks, particularly when economic conditions decline, leading to an increase in non-performing loans

(Abbas et al., 2019). However, the study by Tehulu and Olana (2014) discussed how banks with reasonable credit growth rates are often able to select customers more carefully, assess risks more thoroughly, and implement better controls, leading to lower NPL ratios. In addition, when banks expand credit slowly or steadily, they have the conditions to manage credit more closely, limiting non-performing loans.

Besides non-performing loans, bank liquidity also has a significant impact on credit growth. Higher bank liquidity significantly stimulates credit growth (Awdeh, 2017; Pasaribu & Mindosa, 2021; Bhowmik & Karmakar, 2025). High liquidity often indicates that banks are holding a large amount of assets that can be easily converted into cash or are highly liquid. However, if banks focus too much on liquid assets, it limits their financial resources for profit-making, mainly lending activities, leading to slower credit growth. In addition, maintaining high liquidity often comes at the cost of reduced income, as highly liquid, low-risk assets typically have lower interest rates than riskier loans. Therefore, banks usually maintain liquidity and promote loan growth as part of their business strategies.

Regarding the Capital Adequacy Ratio (CAR), Awdeh (2017) and Rizkullah et al. (2023) argue that CAR, which represents financial capacity, has a positive impact on credit growth. When CAR is high, banks are better able to absorb risks, increase market confidence, and have the conditions to expand lending. The study confirms that maintaining a safe capital level is one of the key factors that help commercial banks increase outstanding loans, contributing to banks' stability and sustainable development. However, excessive credit growth can undermine bank stability (Pasaribu & Mindosa, 2021), particularly when small banks lack a solid capital base, thereby increasing credit risk and harming profitability in the medium to long term. For banks with significant equity or good risk management, they can maintain their ability to withstand shocks, thereby mitigating the negative impact of bad debts on profits (Rossi et al., 2019). In addition to equity, funding from customer deposits is the primary source of capital for banks' business activities. Ivanović (2016) examined the determinants of credit growth in the

Montenegrin banking system from 2005 to 2014, employing OLS and VAR regression models. The results showed that when capital mobilized from deposits increased, banks had the conditions to expand their credit supply capacity, reflecting the key role of customer deposits as the primary capital channel in an economy that heavily relies on the banking system. In the context of a relatively underdeveloped capital market like Montenegro, banks primarily rely on deposits from the residential and business sectors to finance their lending activities. Therefore, the increase in deposits plays a crucial role in expanding the available capital for lending, enabling banks to increase their loan balances. However, this positive impact is only sustainable when banks effectively manage credit risks. If credit growth is excessive without quality, bad debt risk will reduce profits (Ohiomah & Izuagie, 2022; Tahu, 2025).

Assessing the impact of profits on credit growth, many studies argue that profits act as both an available internal source of finance and an indicator of market confidence. When banks are highly profitable, internally accumulated capital increases, allowing credit expansion without relying too much on externally mobilized capital at high costs. At the same time, good profits strengthen a bank's prestige and increase trust from investors and customers, thereby helping banks access capital more easily to lend. On the contrary, when profits decline, banks are forced to tighten credit activities to control risks and maintain liquidity. From there, the study emphasizes the key role of profits in ensuring sustainability for credit growth. (Le, 2020; Nguyen & Le, 2022).

The rapid development of financial technology (FinTech) has drawn attention to assessing its impact on various aspects of banking operations. Sheng (2021) utilizes data from Chinese commercial banks to examine the effect of FinTech on the ability of small and medium-sized enterprises (SMEs) to access credit. The empirical results indicate that the development of FinTech has a significant positive impact on banks' ability to provide credit to SMEs. This positive relationship is explained by FinTech's ability to reduce information asymmetry, one of the primary barriers to lending to SMEs. When customer information becomes more transparent and accessible through

digital data, banks can accurately determine SME creditworthiness and extend loans more effectively (Ismanto et al., 2023; Zhang et al., 2023). In addition, FinTech also helps reduce transaction costs and improve loan processing speed, thereby encouraging credit growth for the SME sector. Approaching the concept of Fintech credit as the use of emerging technologies to facilitate credit growth (Nguyen et al., 2022), research by Wang et al. (2023) has shown that the development of digital technology platforms has expanded access to finance and increased competition in the credit market. The research results confirm that FinTech credit and traditional bank credit are not mutually exclusive, but coexist in the financial ecosystem: banks serve large, safe segments, while FinTech expands credit coverage, promoting financial inclusion in segments that banks have not fully met, such as SMEs, high-risk households, and customers in rural areas, without collateral. Anestiawati et al. (2026) demonstrate that the application of FinTech in banking in emerging economies contributes to expanding access to credit, thereby promoting credit growth. However, this process is also accompanied by an increase in credit risk due to the expansion of the customer portfolio to groups with little credit history or weak financial capacity. On the contrary, in developed economies, the integration of FinTech helps improve credit appraisal and risk management processes, thereby reducing the rate of bad debt. The differences in institutional development, financial infrastructure, and risk management capacity between countries explain the above results. In emerging economies, FinTech primarily plays a role in expanding credit scale, while monitoring and risk management capacity has not kept pace. Meanwhile, in developed countries, FinTech is utilized as a tool to enhance risk management efficiency, reduce information asymmetry, and improve credit quality.

Considering the role of scale, studies highlight that bank size is a significant factor influencing credit allocation, although its impact varies across different contexts. Alzoubi and Obeidat (2020) find that larger Islamic banks benefit from size-related advantages in risk diversification, resulting in better quality loan portfolios. Bhowmik and Karmakar (2025) argue that larger banks have more resources in terms of capital, network, and funding capacity, and are generally more trusted in the market,

thus allowing them to extend credit more effectively. A larger size enables banks to absorb fixed costs more effectively and manage risks more efficiently. Mkhaiber and Werner (2021) studied the relationship between bank size and small business lending using an extensive dataset of over 14,000 US banks from 1994 to 2013. Their results showed an inverse relationship between bank size and the proportion of loans to small businesses. Specifically, large banks tend to reduce their lending to small and micro enterprises, although their financial capacity allows them to serve both small and large customers. The authors attribute this to informational disadvantages, economies of scale when serving larger customers, and preferences in portfolio structure. Smaller banks have a larger proportion of small business loans. This conclusion implies that large banks can weigh the risks and returns when selecting lending customers and have chosen to prioritize lending to large businesses over small businesses. Another perspective on the impact of size on credit growth is presented in a study of banks in Indonesia; Pasaribu and Mindosa (2021) reached the important conclusion that the impact of bank size on loan growth is not always linear and stable, but depends on financial capacity expressed in equity. Large banks with high equity create a “safety cushion”, which enables them to absorb shocks and increase credibility with customers and investors, allowing banks to leverage scale to promote lending and expand credit. Conversely, when the equity ratio is low, the scale advantage is not effectively promoted. In this case, banks are easily constrained by capital adequacy regulations and become more cautious in expanding credit. The result can weaken or even reverse the relationship between scale and credit growth in a bank.

Overall, the literature points to a multidimensional framework in which credit growth is shaped by macroeconomic conditions, institutional characteristics, and regulatory environments, each of which can be magnified or dampened by the size of the bank. This underscores the need for empirical work in Vietnam to examine not only the direct drivers of credit growth but also how bank size conditions their influence. Understanding how bank-specific factors influence credit risk and how bank size moderates the relationship between these factors and credit risk will enable bank managers

to devise appropriate asset-scale strategies, thereby improving asset quality and mitigating credit risk. Such insights allow managers to formulate asset-scale strategies that support credit risk management and enhance loan portfolio quality.

2. METHOD

We employ a modeling approach to empirically assess credit growth in Vietnamese commercial banks, measured as the annual percentage change in outstanding credit balance. This is a commonly used indicator in the literature to capture the dynamic lending behavior of banks. The independent variables include both macroeconomic factors and bank-specific factors. Based on prior research, our model incorporates the following macroeconomic variables: GDP growth (*GDP*), Inflation rate (*INF*), Nominal interest rate (*INR*). For bank-specific variables, the model includes non-performing Loans (*NPL*), bank liquidity (*LIQ*), deposit growth (*DeGR*), return on equity (*ROE*), net interest margin (*NIM*), bank capital (*CBZ*), and bank size (*BSZ*). The moderating variable in our model is bank size, which interacts with other independent variables to evaluate its moderating effect on credit growth. This interaction allows the article to explore how the effect of internal factors on credit expansion may differ between large and small banks, in line with the theory of economies of scale and prior findings (Pasaribu & Mindosa, 2021; Rizkullah et al., 2023; Chun & Ardaaragchaa, 2024).

The baseline regression model is specified as follows:

$$\begin{aligned} LGR_{it} = & \beta_0 + \beta_1 NPL_{it} + \beta_2 LIQ_{it} \\ & + \beta_3 DeGR_{it} + \beta_4 ROE_{it} + \beta_5 NIM_{it} \\ & + \beta_6 CBZ_{it} + \beta_7 BSZ_{it} + \beta_8 GDP_t \\ & + \beta_9 INF_t + \beta_{10} INR_t + \varepsilon_{it}. \end{aligned} \quad (1)$$

To investigate the moderating role of bank size, interaction terms between bank size and each key bank-specific factor are included in an extended model:

$$\begin{aligned} LGR_{it} = & \alpha_0 + \sum_{j=1}^6 X_{jit} \\ & + \sum_{k=1}^6 \delta_k (BSZ_{it} \cdot X_{kit}) + \alpha_{13} BSZ_{it} + \\ & \alpha_{14} GDP_t + \alpha_{15} INF_t + \alpha_{16} INR_t + \mu_{it}, \end{aligned} \quad (2)$$

where X_{jit} represents the bank-specific variables (excluding bank size), and the interaction terms ($BSZ \times X_{kit}$) capture how bank size moderates the effects of factors such as *NPL*, *LIQ*, *DeGR*, *ROE*, *NIM*, and *CBZ* on credit growth (*LGR*). All estimations are conducted using the System Generalized Method of Moments (SGMM) to correct for model deficiencies and potential endogeneity issues.

2.1. Research data

The research data include 27 Vietnamese joint-stock commercial banks, out of a total of 31, excluding 100% foreign-owned banks, for the period 2013 to 2024. Four banks are excluded from the research data because these banks have not disclosed their financial statements to the public for several years. Bank-specific indicators are calculated from audited financial statements collected via the FiinPro data platform. Macroeconomic indicators are obtained from the reports of the General Statistics Office and the State Bank of Vietnam. Our final dataset consists of balanced panel data with a total of 297 observations, enabling robust longitudinal analysis.

Table 1 presents the descriptive statistics for all variables employed in the regression models. Credit growth (*LGR*) exhibits substantial variability across Vietnamese commercial banks and over time, ranging from −13.91% to 106.82%, with an average rate of 19.12% and a standard deviation of 0.1355. The evolution of credit growth from 2013 to 2024 can be delineated into four distinct phases, each shaped by specific macroeconomic conditions, policy orientations, and sectoral developments (World Bank, 2023). 2013–2015 marked the post-crisis recovery period, during which the banking sector prioritized the resolution of non-performing loans accumulated during the 2008–2012 downturn. The establishment of the Vietnam Asset Management Company (VAMC) in 2013 was pivotal in absorbing and restructuring distressed assets. Credit expansion remained moderate, with lending directed toward essential economic sectors, while lending rates were progressively reduced to stimulate business activity. 2016–2019 represented a phase of robust and sustainable expansion, with annual credit growth averaging between 15% and 18% (State Bank of Vietnam [SBV], 2020). Stable funding sources and improved asset

quality supported this growth. Banks diversified loan portfolios, particularly toward consumer finance, real estate, and production investment, facilitated by favorable macroeconomic conditions and consistent regulatory oversight. 2020–2021 saw a sharp deceleration due to the COVID-19 pandemic. Constrained borrowing demand from both corporate and household sectors, coupled with elevated credit risk, prompted banks to shift toward debt restructuring, interest concessions, and liquidity support for affected borrowers (Asian Development Bank [ADB], 2021). This period also witnessed a moderate uptick in NPL ratios (World Bank, 2022). 2022–2024 was characterized by an uneven recovery. The initial rebound following economic reopening in early 2022 was tempered by persistent real estate market stress, tighter monetary policy, and external headwinds from global economic uncertainty (IMF, 2023; World Bank, 2023). These factors, along with renewed upward pressure on NPLs, underscored the fragility of post-pandemic credit expansion.

Meanwhile, bank size (BSZ), proxied by the natural logarithm of total assets, shows a relatively wide dispersion, indicating the presence of both small and large banks in the sample. Between 2013 and 2024, total assets of Vietnamese commercial banks expanded substantially, reflecting both credit growth and strategic responses to competitive pressures and regulatory reforms. The 2013–2015 period focused on restructuring and stabilization, with moderate asset growth driven by the resolution of non-performing loans, mergers, and consolidations, particularly through the establishment and operations of the Vietnam

Asset Management Company (VAMC). From 2016 to 2019, favorable macroeconomic conditions supported rapid credit expansion, intensifying competition among banks. Large institutions consolidated market dominance, while smaller banks pursued aggressive growth strategies. Implementation of Basel standards prompted capital increases and enhanced provisioning, indirectly boosting asset size. The COVID-19 period (2020–2021) slowed asset growth, as banks shifted priorities toward debt restructuring, interest concessions, and digital service expansion. Nevertheless, Basel II compliance accelerated, with some large banks initiating Basel III adoption. In the recovery phase (2022–2024), asset growth regained momentum amid ongoing digital transformation and the development of innovative financial services. Widespread Basel II compliance and early Basel III implementation by leading banks increased capital requirements, prompting bond issuance and profit retention, further contributing to asset expansion.

2.2. Correlation matrix and variance inflation factor

Table 2 displays the Pearson correlation matrix between the dependent variable and the explanatory variables. The correlations among the independent variables are all below the threshold of 0.8, suggesting no serious multicollinearity issue that may bias the regression estimates (Gujarati, 2003). To further assess multicollinearity, we conduct a Variance Inflation Factor (VIF) test for all models. The last column of Table 2 shows that all VIF values are less than 10, confirming the absence of multicollinearity across the estimated models,

Table 1. Descriptive statistics

Variable	Number of observations	Mean value	Standard deviation	Minimum value	Maximum value
Dependent variable					
LGR	297	0.1912	0.1355	-0.1391	1.0682
Independent variable					
NPL	297	0.0219	0.0217	0.0047	0.2976
LIQ	297	0.1627	0.0672	0.0450	0.4255
DeGR	297	0.1682	0.1318	-0.1049	0.8270
ROE	297	0.1124	0.0787	-0.1233	0.3033
NIM	297	0.0340	0.0171	0.0058	0.1394
CSZ	297	0.0870	0.0331	0.0406	0.2384
BSZ	297	8.2367	0.5153	7.1668	9.3618
GDP	297	0.0580	0.0165	0.0256	0.0812
INF	297	0.0356	0.0168	0.0063	0.0660
INR	297	0.0866	0.0193	0.0620	0.1308

Table 2. Correlation matrix and variance inflation factor (VIF) test

Variables	LGR	GDP	INF	INR	NPL	LIQ	DeGR	ROE	NIM	BSZ	CBZ	VIF
LGR	1											
GDP	0.10	1										1.16
INF	0.12	0.08	1									1.25
INR	0.11	-0.21	0.33	1								1.67
NPL	-0.04	0.01	0.10	0.17	1							1.14
LIQ	0.07	-0.09	0.02	0.14	-0.01	1						1.24
DeGR	0.61	0.02	0.20	0.31	-0.00	0.16	1					1.22
ROE	0.08	-0.08	-0.18	-0.21	-0.31	-0.08	0.02	1				2.50
NIM	0.08	0.01	-0.01	-0.00	-0.05	-0.16	0.04	0.27	1			1.40
BSZ	-0.08	-0.08	-0.15	-0.14	-0.10	-0.21	-0.08	0.62	-0.02	1		2.22
CBZ	-0.12	-0.03	0.02	0.13	0.00	0.02	-0.1	-0.11	0.31	-0.40	1	1.13
Mean VIF												1.45

consistent with the standard rule of thumb. This comprehensive dataset provides a reliable empirical foundation to investigate both the direct effects of bank-specific and macroeconomic factors on credit growth, as well as the moderating effect of bank size.

3. RESULTS AND DISCUSSION

The results of the SGMM regression are presented in Table 3. The Sargan and Hansen overidentification tests confirm the validity of the instruments used, while the AR(2) test shows no evidence of second-order autocorrelation, indicating that the moment conditions are valid and the model is well specified.

The estimation results indicate that bank size (SIZE) hurts credit growth, with a significant effect at the 1% level. This finding suggests that large banks may be more cautious in lending due to concerns about credit risk management. In contrast, smaller banks may pursue more aggressive lending strategies to expand market share (Alzoubi & Obeidat, 2020; Mkhaiber & Werner, 2021; Bhowmik & Karmakar, 2025).

The regression results reveal that the NPL coefficient is negative (Table 3, Model [2]), indicating that higher non-performing loans are associated with lower credit growth (Tehulu & Olana, 2014; Kharabsheh, 2019; Rizkullah et al., 2023). This finding suggests that an increase in credit risk constrains banks' lending activities, as they become more cautious in extending new loans to avoid further deterioration in asset quality.

However, the interaction term between NPL and bank size (Table 3, Model [2]) is positive, implying that larger banks are better able to mitigate the adverse impact of non-performing loans on credit growth. This result could be due to economies of scale, more substantial capital buffers, diversified loan portfolios, and more advanced risk management systems, which enhance their capacity to absorb credit losses and sustain lending even in the presence of higher NPL ratios. Consequently, bank size appears to play a moderating role in the relationship between credit risk and credit expansion, supporting the notion that larger financial institutions possess structural advantages in managing credit risk while maintaining growth.

Table 3, Model [1], indicates that bank liquidity (LIQ variable) has a negative and statistically significant effect on credit growth, suggesting that higher liquidity levels are associated with slower lending expansion (Pasaribu & Mindosa, 2021; Bhowmik & Karmakar, 2025). This finding may reflect a precautionary stance, where banks holding excess liquid assets allocate fewer resources to loan portfolios, possibly due to risk aversion or limited profitable lending opportunities. However, the positive coefficient of the interaction term between bank liquidity and bank size (Table 3, Model [3]) implies that larger banks can offset this negative relationship. Their stronger market position, diversified funding sources, and more advanced asset-liability management enable them to leverage liquidity more effectively, sustaining or even expanding lending despite holding high liquidity. This result suggests that bank size plays a moderating role, allowing large banks to utilize liquidity for growth rather than merely having it as a safety buffer.

Table 3. SGMM regression results

Model	[1]	[2]	[3]	[4]	[5]	[6]	[7]
Dependent variable	LGR	LGR	LGR	LGR	LGR	LGR	LGR
L.LGR	−0.0793 [−0.80]	0.2835* [1.83]	0.3590*** [2.77]	0.2710 [0.71]	0.4880*** [2.87]	−0.2090 [−1.23]	0.2057 [1.39]
NPL	0.3030 [1.59]	−64.8898** [−2.16]	0.0703 [0.31]	0.0561 [0.15]	0.2115 [0.80]	−1.5515 [−1.31]	−0.0418 [−0.16]
BSZ × NPL		8.1136** [2.17]					
LIQ	−0.3387** [−2.01]	−0.2294 [−1.16]	−16.3605 [−2.02]	−0.2737 [−0.82]	0.3262 [1.41]	−0.2371 [0.76]	−0.0911 [−0.71]
BSZ × LIQ			1.9624** [2.01]				
DeGR	0.1384* [1.77]	0.1852*** [2.94]	0.1911** [2.52]	−5.4542 [−1.58]	0.1035 [1.42]	0.0220 [0.21]	0.1162** [2.23]
BSZ × DeGR				0.6950* [1.66]			
ROE	0.7278*** [3.22]	0.4665** [2.12]	0.1139 [0.61]	0.5208* [1.13]	17.2845* [1.68]	0.1291 [0.22]	0.1473 [1.18]
BSZ × ROE					−2.1298* [−1.67]		
NIM	0.8787 [0.68]	0.4731 [0.58]	1.8396* [1.78]	1.2645 [1.27]	0.9501 [1.04]	−323.3625 [−1.64]	0.5403 [0.88]
BSZ × NIM						39.5638* [1.66]	
CBZ	−0.5092 [−0.68]	−1.0856** [−2.07]	−0.7536** [−1.96]	−1.4153* [−1.76]	0.7699 [1.30]	−3.1907 [−1.52]	−17.8901*** [−2.73]
BSZ × CBZ							2.1361*** [2.80]
BSZ	−0.1563*** [−3.14]	−0.2680** [−2.11]	−0.4173** [−2.19]	−0.2810* [−1.67]	0.4046 [1.55]	−1.5618* [−1.71]	−0.2104** [−2.44]
GDP	0.5659** [2.52]	−0.5089 [1.22]	0.7078* [1.85]	0.2627 [0.99]	1.3988*** [2.01]	0.9671* [1.86]	0.6905*** [2.72]
INF	−2.309** [−2.06]	−2.4475 [−1.12]	−4.0007* [−1.78]	−0.2810 [−0.68]	−4.2540 [−1.80]	−2.7360** [−2.23]	−2.3802** [−2.02]
INR	1.4617*** [2.86]	0.5408 [0.67]	0.9488 [1.27]	0.3542 [0.71]	0.9505 [1.08]	2.8914** [2.01]	0.9103* [1.92]
Number of instruments	19	16	16	15	15	19	17
Number of groups	27	27	27	27	27	27	27
Hansen test	0.925	0.860	0.969	0.365	0.554	0.251	0.622
Arellano–Bond test for AR(2)	0.341	0.240	0.777	0.606	0.649	0.997	0.979

Note: *, **, ***: coefficients are statistically significant at the 10%, 5%, and 1% levels, respectively.

Table 3 (Models [1], [2], [3], and [7]) reveals that deposit growth (DeGR variable) has a positive and statistically significant impact on bank credit growth, indicating that an expansion in customer deposits provides banks with greater funding capacity to extend loans (Ohiomah & Izuagie, 2022; Tahu, 2025). The positive effect of deposit growth on credit growth aligns with the traditional view

that deposits are a primary and relatively stable source of lending capital. Moreover, the positive and significant coefficient of the interaction term between deposit growth and bank size (Table 3, Model [4]) suggests that larger banks benefit even more from deposit inflows in driving credit expansion. The positive coefficient of the BSZ*DeGR variable may be due to their stronger brand repu-

tation, wider branch networks, and greater ability to attract and retain depositors, enabling them to convert deposit growth into loan growth more efficiently than smaller banks. Overall, the results highlight that deposit growth is a key driver of lending activity, and its effect is amplified in larger banking institutions.

The regression results in Table 3, Models [1], [2], [4], and [5], indicate that return on equity (ROE variable) has a positive and statistically significant effect on bank credit growth, suggesting that more profitable banks are better positioned to expand lending activities (Le, 2020; Nguyen & Le, 2022). Higher profitability can enhance internal capital generation, strengthen financial stability, and improve the bank's capacity to take on additional credit risk. However, the negative and significant coefficient of the interaction term between ROE and bank size (Table 3, Model [5]) implies that the positive impact of profitability on credit growth diminishes as bank size increases. This result may be due to the fact that larger banks face greater regulatory scrutiny, adopt more conservative lending strategies, or prioritize capital preservation over aggressive loan expansion, even when profitability is high. In contrast, smaller banks may rely more heavily on profitability as a driver of lending growth, using it to fuel competitive expansion in the credit market.

Table 3, Model [4], reveals that net interest margin (NIM variable) exerts a positive and significant effect on bank credit growth, indicating that banks with higher interest spreads are better able to expand lending (Le, 2020; Nguyen & Le, 2022). A higher NIM reflects more efficient interest income generation relative to interest expenses, providing greater capacity to support loan portfolio expansion. Moreover, the positive and significant coefficient of the interaction term between NIM and bank size (Table 3, Model [6]) suggests that this beneficial effect is amplified in larger banks. Larger banks may have stronger market power, diversified funding sources, and better risk management capabilities, enabling them to leverage higher NIM levels more effectively to drive credit growth. This finding suggests that profitability from core intermediation activities is not only a direct driver of lending

but also interacts positively with scale advantages, further stimulating credit expansion.

Table 3 (Models [2], [3], [4], and [7]) indicates that equity (CBZ) has a negative and significant effect on bank credit growth, suggesting that banks with higher equity ratios tend to expand lending at a slower pace (Awdeh, 2017; Rossi et al., 2019; Rizkullah et al., 2023). The observed slowdown in credit expansion among highly capitalized banks may be due to the fact that a larger equity base often reflects a more conservative capital structure, where banks prioritize financial stability and risk mitigation over aggressive credit expansion. However, the positive and significant coefficient of the interaction term between equity and bank size (Table 3, Model [7]) implies that this restraining effect diminishes as bank size increases. Larger banks, due to their stronger market position, diversified income streams, and greater risk-bearing capacity, can leverage higher equity levels to support lending activities without compromising stability. This pattern suggests that while higher capitalization generally tempers credit growth, scale advantages can offset this effect, allowing large banks to maintain or even accelerate lending despite higher equity ratios.

Regarding macroeconomic factors, GDP growth shows a significantly positive effect on credit growth, supporting the idea that economic expansion boosts loan demand (Shingjergji & Hyseni, 2015; Awdeh, 2017). Conversely, inflation negatively affects credit growth, as rising prices reduce the real value of lending and discourage borrowing (Shingjergji & Hyseni, 2015; Awdeh, 2017). Unexpectedly, nominal interest rates have a positive effect on credit growth, possibly due to increased deposit mobilization under higher rates, which expands lending capacity.

These findings highlight the dual role of bank size: as both a direct factor affecting credit growth and a moderator that reshapes the influence of internal variables (Table 4). The results underscore the need for differentiated credit management policies according to bank scale, particularly in emerging markets like Vietnam, where the banking sector exhibits substantial structural diversity and varying risk appetites.

Table 4. Bank size as a moderator of the impact of bank-specific factors on credit growth

Independent var	Impact on LGR	Role of bank size
NPL	Negative	Larger banks are better at mitigating the negative impact of non-performing loans on credit growth.
BSZ × NPL	Positive	
LIQ	Negative	Larger banks offset the negative relationship between bank liquidity and credit growth.
BSZ × LIQ	Positive	
DeGR	Positive	Larger banks benefit even more from deposit inflows in driving credit expansion.
BSZ × DeGR	Positive	
ROE	Positive	Larger banks can expect a diminished positive impact of profitability on credit growth.
BSZ × ROE	Negative	
NIM	Positive	Larger banks are more effective in translating the positive effect of net interest margin to drive credit growth.
BSZ × NIM	Positive	
CBZ	Negative	Larger banks' restraining effect diminishes the negative impact of equity on credit growth.
BSZ × CBZ	Positive	

CONCLUSION AND RECOMMENDATIONS

This study aims to investigate the bank-specific and macro factors affecting credit growth in Vietnamese commercial banks and to assess the moderating role of bank size in these relationships. The empirical results show that bad debts, low liquidity, and equity have a restraining effect on credit growth; however, their adverse effects gradually decrease as bank size increases. In contrast, profitability, deposit growth, and net interest income stimulate credit expansion, but their interaction with bank size produces different results: large banks are less dependent on profitability to support lending but benefit more from deposit growth and net interest margin. These findings suggest that bank size, as a decisive moderating factor, can reduce or amplify the effects of bank-specific characteristics on lending decisions. Accordingly, at the micro level, banks should prioritize expanding their scale to strengthen their financial capacity, enhance their reputation, and support more sustainable credit growth. At the macro level, policymakers should implement policies to encourage banks to increase capital, ensuring they operate as flexible and efficient financial intermediaries and thereby contributing to stable economic growth in an emerging market like Vietnam.

AUTHOR CONTRIBUTIONS

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REFERENCES

1. Abbas, F., Iqbal, S., & Aziz, B. (2019). The impact of bank capital, bank liquidity and credit risk on profitability in postcrisis period: A comparative study of US and Asia. *Cogent Economics & Finance*, 7(1), Article 1605683. <https://doi.org/10.1080/23322039.2019.1605683>
2. Alzoubi, T., & Obeidat, M. (2020). How size influences the credit risk in Islamic banks. *Cogent Business & Management*, 7(1), Article 1811596. <https://doi.org/10.1080/23311975.2020.1811596>
3. Anestiawati, C. A., Amanda, C., Khantinyano, H., & Agatha, A. (2026). Bank FinTech and credit risk: Comparison of selected emerging and developed countries. *Studies in Economics and Finance*, 43(2), 281-309. <https://doi.org/10.1108/SEF-12-2023-0714>
4. Asian Development Bank (ADB). (2021). *Asian development outlook 2021: Financing a green and inclusive recovery*. <https://doi.org/10.22617/FLS210163-3>
5. Awdeh, A. (2017). The determinants of credit growth in Lebanon. *International Business Research*, 10(2), 9-19. <https://doi.org/10.5539/ibr.v10n2p9>
6. Bhowmik, P. K., & Karmakar, G. (2024). Loan growth drivers in state-owned banks: A fixed effects model approach. *Journal of Ekonomi*, 7(1), 28-39. Retrieved from <https://dergipark.org.tr/en/pub/ekonomi/article/1560944>
7. Chun, S. H., & Ardaaragchaa, N. (2024). Analysis of factors affecting the loan growth of banks with a focus on non-performing loans. *Journal of Risk and Financial Management*, 17(5), 203. <https://doi.org/10.3390/jrfm17050203>
8. Gujarati, D. N. (2003). *Basic econometrics* (4th ed.). McGraw-Hill.
9. International Monetary Fund (IMF). (2023). *Regional Economic Outlook - Challenges to Sustaining Growth and Disinflation*, October 2023. Retrieved from <https://www.imf.org/en/publications/reo/apac/issues/2023/09/27/regional-economic-outlook-for-asia-and-pacific-october-2023>
10. International Monetary Fund (IMF). (2024). Rethinking transmission of monetary policy in Vietnam. In *Vietnam: Selected issues* (IMF Country Report No. 24/307, pp. 3-12). <https://doi.org/10.5089/9798400290503.002>
11. Ismanto, H., Wibowo, P. A., & Shofwatin, T. D. (2023). Bank stability and fintech impact on MSMEs' credit performance and credit accessibility. *Banks and Bank Systems*, 18(4), 105-115. [https://doi.org/10.21511/bbs.18\(4\).2023.10](https://doi.org/10.21511/bbs.18(4).2023.10)
12. Ivanović, M. (2016). Determinants of credit growth: The case of Montenegro. *Journal of Central Banking Theory and Practice*, 5(2), 101-118. <https://doi.org/10.1515/jcbtp-2016-0013>
13. Kharabsheh, B. (2019). Determinants of bank credit risk: Empirical evidence from Jordanian commercial banks. *Academy of Accounting and Financial Studies Journal*, 23(3), 1-12. Retrieved from <https://www.abacademies.org/articles/determinants-of-bank-credit-risk-empirical-evidence-from-jordaniancommercial-banks-8197.html>
14. Le, T. D. Q. (2020). The interrelationship among bank profitability, bank stability, and loan growth: Evidence from Vietnam. *Cogent Business & Management*, 7(1), Article 1840488. <https://doi.org/10.1080/23311975.2020.1840488>
15. Mkhaiber, A., & Werner, R. A. (2021). The relationship between bank size and the propensity to lend to small firms: New empirical evidence from a large sample. *Journal of International Money and Finance*, 110, Article 102281. <https://doi.org/10.1016/j.jimonfin.2020.102281>
16. Nguyen, D. T., & Le, T. D. Q. (2022). The interrelationships between bank profitability, bank stability and loan growth in Southeast Asia. *Cogent Business & Management*, 9(1), Article 2084977. <https://doi.org/10.1080/23311975.2022.2084977>
17. Nguyen, L., Tran, S., & Ho, T. (2022). Fintech credit, bank regulations and bank performance: A cross-country analysis. *Asia-Pacific Journal of Business Administration*, 14(4), 445-466. <https://doi.org/10.1108/APJBA-05-2021-0196>
18. Ohiomah, S. S., & Izuagie, A. U. (2022). The impact of bank deposit on bank lending for economic growth in Nigeria. *International Journal of Management Science and Business Analysis*, 24(7), 211-222. Retrieved from https://www.cambridgenigeriapub.com/wp-content/uploads/2022/05/CJMS-BA_Vol24_No7_March_2022-14.pdf
19. Pasaribu, P., & Mindosa, B. (2021). The bank specific determinants of loan growth and stability: Evidence from Indonesia. *Journal of Indonesian Economy and Business*, 36(2), 93-123. Retrieved from <https://journal.ugm.ac.id/v3/jieb/article/view/1385>
20. Quaglietti, L. (2024). *Recent credit dynamics across advanced economies: Drivers and effects* (OECD Economics Department Working Papers No. 1826). OECD Publishing. <https://doi.org/10.1787/458e2f58-en>
21. Rizkullah, A. R., Suhel, & Andaiyani, S. (2023). Determinants of credit growth: An empirical study of commercial banks in Indonesia. *Journal of Applied Economic Research*, 22(2), 404-424. <https://doi.org/10.15826/vestnik.2023.22.2.017>
22. Rossi, S., Borroni, M., Piva, M., & Lippi, A. (2019). Abnormal loan growth and bank profitability: Some evidence from the recent crisis. *International Journal of Business and Management*, 14(7), 36-53. <https://doi.org/10.5539/ijbm.v14n7p36>
23. Sheng, T. (2021). The effect of fintech on banks' credit provision to SMEs: Evidence from China. *Finance Research Letters*, 39, Article 101558. <https://doi.org/10.1016/j.frl.2020.101558>

24. Shingjergji, A., & Hyseni, M. (2015). The impact of macroeconomic and banking factors on credit growth in the Albanian banking system. *European Journal of Economics and Business Studies*, 1(2), 107-114. <https://doi.org/10.26417/ejes.v2i1.p113-120>
25. Tahu, G. P. (2025). The effect of savings growth, deposit growth and credit growth on profitability. *Jurnal Manajemen dan Bisnis Equilibrium*, 11(1), 62-75. https://doi.org/10.47329/jurnal_mbe.v11i1.1450
26. Tehulu, T. A., & Olana, D. R. (2014). Bank-specific determinants of credit risk: Empirical evidence from Ethiopian banks. *Research Journal of Finance and Accounting*, 5(7), 80-85. Retrieved from <https://iiste.org/Journals/index.php/RJFA/article/view/12319>
27. Wang, X., Hou, S., Kyaw, K., Xue, X., & Liu, X. (2023). Exploring the determinants of fintech credit: A comprehensive analysis. *Economic Modelling*, 126, Article 106422. <https://doi.org/10.1016/j.econmod.2023.106422>
28. World Bank. (2022). *Taking Stock: Vietnam Economic Growth Update*, August 2022. Retrieved from <https://www.worldbank.org/en/country/vietnam/publication/taking-stock-vietnam-economic-growth-update-august-2022>
29. World Bank. (2023). *Taking Stock, August 2023: Making Public Investment Work for Growth*. World Bank. Retrieved from <https://openknowledge.worldbank.org/entities/publication/6f97a3f6-15a9-4301-877b-c65d3f951768>
30. Zhang, Y., Ye, S., Liu, J., & Du, L. (2023). Impact of the development of FinTech by commercial banks on bank credit risk. *Finance Research Letters*, 55, Article 103857. <https://doi.org/10.1016/j.frl.2023.103857>

APPENDIX A

Table A1. List of Vietnamese commercial joint stock banks

Stock code	Bank name	Total Asset at the end of 2024 (million USD)	Equity
BID	Joint Stock Commercial Bank for Investment and Development of Vietnam	104,181	5.2%
CTG	Vietnam Joint Stock Commercial Bank for Industry and Trade	90,015	6.2%
VCB	Joint Stock Commercial Bank for Foreign Trade of Vietnam	78,712	9.4%
MBB	Military Commercial Joint Stock Bank	42,596	10.4%
TCB	Vietnam Technological and Commercial Joint Stock Bank	36,936	15.1%
VPB	Vietnam Prosperity Joint Stock Commercial Bank	34,862	15.9%
ACB	Asia Commercial Joint Stock Bank	32,604	9.7%
STB	Saigon Thuong Tin Commercial Joint Stock Bank	28,230	7.3%
SHB	Saigon Hanoi Commercial Joint Stock Bank	28,207	7.8%
HDB	Ho Chi Minh City Development Joint Stock Commercial Bank	26,316	8.1%
LPB	Lien Viet Post Commercial Joint Stock Bank	19,182	8.5%
VIB	Viet Nam International Commercial Joint Stock Bank	18,610	8.5%
TPB	Tien Phong Commercial Joint Stock Bank	15,775	9.0%
SSB	Southeast Asia Commercial Joint Stock Bank	12,291	10.7%
MSB	Vietnam Maritime Commercial Joint Stock Bank	12,081	11.5%
OCB	Orient Commercial Joint Stock Bank	10,593	11.3%
NAB	Nam A Commercial Joint Stock Bank	9,250	7.9%
EIB	Vietnam Commercial Joint Stock Export Import Bank	9,048	10.5%
ABB	An Binh Commercial Joint Stock Bank	6,668	7.9%
BAB	North Asia Joint Stock Commercial Bank	6,245	7.1%
VAB	Vietnam Asia Commercial Joint Stock	4,522	7.4%
NVB	Nam Viet Commercial Joint Stock Bank	4,472	5.1%
BVB	Viet Capital Bank	3,907	5.9%
KLB	Kien Long Commercial Joint Stock Bank	3,478	7.2%
VBB	Vietnam Thuong Tin Commercial Joint Stock Bank	3,420	5.3%
PGB	Prosperity and Growth Commercial Joint Stock Bank	2,755	7.1%
SGB	Saigon Bank For Industry and Trade Joint Stock Bank	1,255	12.3%