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Factors Influencing Credit Growth of Commercial Banks in Can Tho City

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Abstract. This study aims to assess the factors influencing credit growth among 12 commercial banks in Can Tho City. To achieve this goal, secondary data was collected from 228 quarterly observations of these banks. Descriptive statistical tools were employed to analyze the current status of credit activities and related performance indicators, providing a comprehensive overview of credit operations in the study area. Two estimation models, Ordinary Least Squares (OLS) and Tobit, were utilized to identify the factors affecting credit growth in the studied commercial banks. The results indicate five variables that influence credit growth: (1) Deposit growth, (2) Credit-to-mobilized capital ratio, (3) Total deposits, (4) Net return on total assets, and (5) Total outstanding loans. The first three factors (1, 2, 3) positively influence credit growth, while the last two factors (4, 5) exert a negative influence on the dependent variable. The findings propose necessary solutions and recommendations to enhance the efficiency of credit activities among commercial banks, particularly in Can Tho City.

Keywords: Can Tho, Credit growth, Ordinary Least Squares, Tobit.
JEL Classification: G23; H74; O1; Q14.

1. INTRODUCTION

Bank credit is a vital source of capital for economic development, particularly in developing countries such as Vietnam. Healthy credit growth is essential for businesses and households to expand production and increase output, thereby driving overall economic growth. Furthermore, when the credit structure aligns with the socio-economic development goals and the banking sector's operational characteristics, it positively impacts business efficiency, enhances banking quality, and facilitates economic growth. Conversely, a decline in credit and an increase in bad debt ratios signal potential economic difficulties, including recession and crisis.

In collaboration with local authorities, the State Bank of Vietnam's Can Tho branch has effectively implemented directives from the government, the State Bank of Vietnam's Governor, and the Can Tho City People's Committee. Specifically, the Can Tho branch has instructed local credit institutions to efficiently deploy credit programs aimed at expanding scale while enhancing credit quality, focusing on sectors prioritized by the government and supporting local enterprises and residents in accessing bank credit while curbing informal lending.

In 2022, total mobilized capital showed significant growth compared to the end of 2021, reaching 105.49 trillion VND, an increase of 13.47% year-on-year. Credit activities in the region began to increase early in the year, reflecting improved economic conditions compared to the same period last year. By the end of 2022, credit growth reached 141.83 trillion VND, up 17.59% from the end of 2021, surpassing the national average growth rate of 14.5%. This growth has notably supported local businesses and contributed to the regional economic recovery, particularly amidst challenges in public investment disbursement.

The non-performing loan ratio remains low at 1.56% of total outstanding loans. In addition to general credit support for economic recovery and production expansion, credit for priority sectors and local strengths has also been reinforced. By the end of 2022, outstanding loans for agricultural and rural development reached 41.47 trillion VND (up 20.42%), export loans totaled 13.58 trillion VND (up 12.09%), and loans to small and medium-sized enterprises reached 32.20 trillion VND (up 11.3%).

Overall, these figures indicate that the banking system's credit flow has adequately met capital demands, alleviating production and business difficulties, supporting the market, creating jobs, reducing poverty, and contributing to high-standard rural development in Can Tho City, thus promoting the economy. However, to date, no research has been conducted evaluating the factors influencing credit growth among commercial banks in Can Tho City. Therefore, this study will dedicate time to examining the factors affecting credit growth in commercial banks in the region, proposing solutions to further enhance the efficiency of the studied banks' credit activities.

2. LITERATURE REVIEW

Numerous studies have been conducted in Vietnam and internationally regarding the factors influencing bank credit growth. Based on the author's best understanding, a selection of significant literature has been reviewed as follows:

2.1. Studies in Vietnam

Yen and Yen (2020) examined the factors affecting credit growth in Vietnamese commercial banks during the period from 2014 to 2019. The study analyzed data collected from 19 banks, including 4 state-owned banks and

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15 listed joint-stock banks, using financial reports from 2014 to 2019. The findings revealed that the variables of non-performing loan ratio, inflation rate, and average lending interest rate exhibited a negative correlation with credit growth. Conversely, bank liquidity, deposit growth rate, and economic growth rate (GDP) positively influenced credit growth. The study indicated that the variables of net profit/equity (ROE) and net interest income ratio did not significantly impact credit growth during this period.

Nguyen and Dang (2020) empirically tested specific bank-level factors affecting loan growth in the Vietnamese banking system from 2007 to 2019. Utilizing the CAMELS framework and applying the Generalized Method of Moments (GMM) for unbalanced panel data across 31 commercial banks, the authors identified the impact of each CAMELS component on banks' lending activities. The results indicated that a larger capital buffer tends to accelerate banks' lending expansion. High asset quality contributes positively to higher loan growth; in contrast, banks with high credit risk are discouraged from lending. Inefficiently managed banks are more likely to adopt aggressive lending strategies, thereby increasing moral hazard risks. Banks with higher profitability and competitive advantages can expand their lending operations more significantly. Furthermore, liquidity levels were positively correlated with loan growth, while perceived interest rate risk tends to inhibit lending growth, as interest-sensitive banks may be concerned about adverse and unpredictable future interest rate changes.

Phuoc (2016) investigated various factors impacting credit growth in Vietnamese commercial banks, using data from the banks' business reports from 2008 to 2015. Employing the Ordinary Least Squares (OLS) model, the study identified several influential factors. The results indicated a negative relationship between the non-performing loan ratio and bank credit growth. Banks with high equity ratios and substantial total assets effectively manage credit, consequently reducing excessive credit growth. Additionally, banks with high liquidity ratios aim for credit growth for profit maximization. The study also found a positive correlation between nominal interest rates, GDP growth, and bank credit growth, suggesting that increases in nominal interest rates and GDP lead to higher credit growth. Furthermore, the inverse relationship between inflation rates and credit growth highlights the need for inflation control to achieve economic objectives, credit growth, and safety within the banking system.

Loc and Thep (2014) explored factors influencing credit growth in people's credit funds in the Mekong Delta region. This study utilized secondary data collected from 121 credit funds during the period from 2010 to 2012. The fixed effects regression model revealed that the growth rate of mobilized capital, the scale of credit funds, and economic growth rates were positively correlated with credit growth among these funds. In contrast, the non-performing loan ratio and inflation rate exhibited a negative correlation with the credit growth of people's credit funds in the Mekong Delta region.

2.2. International Studies

Kisman (2017) investigated a model to overcome downturns in credit growth, focusing on Indonesia. This study utilized a Fixed Effects Model (FEM) with monthly time series data from January 2012 to December 2016. The objective was to construct a model aimed at mitigating the decline in credit growth in Indonesia. Four models were developed, with the dependent variable being private sector credit growth. In Model 1, explanatory variables included deposit growth, past GDP growth, inflation, growth in liabilities to non-residents, and the past central bank interest rate (BI rate). Model 2 added the net interest margin (NIM) as an explanatory variable. Model 3 included the non-performing loan ratio as an additional variable alongside those in Model 1. Finally, Model 4 incorporated past credit growth. Overall, except for the variable representing liabilities to non-residents, which was found to be insignificant, most variables across all models significantly affected credit growth. Specifically, in Model 1, deposit growth and past GDP growth positively impacted credit growth. Higher inflation or nominal prices led to increased credit demand, suggesting anticipated growth in lending. Conversely, the past BI rate negatively influenced credit growth, as it served as a proxy for deposit rates affecting banks' lending rates. An increase in the BI rate would consequently reduce credit growth rates. In Model 2, the introduction of the NIM did not change the significance of the other variables compared to Model 1, except for inflation. In this model, the BI rate was excluded to prevent multicollinearity issues between the BI rate and NIM. The NIM did not significantly impact credit growth, indicating a rigid banking policy where many banks did not adjust their NIM despite declining deposit rates. The NIM remained relatively stable to maintain profitability during periods of reduced credit growth, thus not influencing credit growth. In Model 3, inflation had no effect on credit growth, and while the non-performing loan ratio was negatively correlated, its impact was insignificant, suggesting that Indonesian banks appeared less cautious regarding non-performing loans. Model 4 aimed to assess the sustainability of credit growth, revealing a negative correlation between current credit growth and future credit performance, although this relationship was not statistically significant.

Shingjergji and Hyseni (2015) explored the effects of macroeconomic factors and internal banking elements on credit growth in the Albanian banking system. In this study, credit growth served as the dependent variable, while independent variables included GDP growth, inflation rate, unemployment rate, lending rates, capital adequacy ratio, bank size, and non-performing loan ratio. The relationship between credit growth and both macroeconomic and banking factors was examined using a standard Ordinary Least Squares (OLS) regression model over the period from 2002 to 2013, employing quarterly panel data for the entire Albanian banking system

with a total of 48 observations for each variable. The regression results indicated that unemployment rate, inflation rate, and bank size did not significantly affect credit growth in Albania's banking system. The study concluded that there was a positive and significant relationship between GDP growth and credit growth, suggesting that better economic conditions tend to increase credit levels within the Albanian banking system. Furthermore, a positive and significant relationship was found between the capital adequacy ratio (CAR) and credit growth, indicating that banks with higher CARs are likely to extend more credit. Additionally, the regression results showed a negative and significant relationship between interest rates and credit growth, indicating that rising interest rates would reduce credit levels in the Albanian banking system, as well as a negative and significant relationship between ineffective lending and credit growth, meaning that an increase in non-performing loans would diminish credit growth rates.

The reviewed literature reveals that due to the distinct characteristics of each research scope and methodology, the factors influencing credit growth rates vary among empirical studies. Nevertheless, these studies generally demonstrate that credit growth is affected by multiple factors, encompassing both macroeconomic elements and internal banking issues. Based on these analyses, the author has selected appropriate factors to include in this research.

3. RESEARCH METHODOLOGY

3.1. Data Collection Method

The secondary data utilized in this study was collected from quarterly credit activity reports and annual business summaries of 12 commercial banks operating in Can Tho City, covering the period from the first quarter of 2019 to the third quarter of 2023. Additionally, data were sourced from the balance sheets of these 12 banks.

3.2. Data Analysis Method

The study employed Excel as a tool for data entry and calculation to derive values for the variables to be analyzed within the model. This approach facilitated the construction of a dataset by integrating time-series data on a quarterly basis (from 2019 to 2023) for spatial observations involving the 12 commercial banks in Can Tho City.

According to Baltagi (2008), the use of panel data in estimation offers several advantages. Firstly, Heterogeneity Consideration: Panel data involves individuals, firms, states, countries, etc., over time, necessitating distinctiveness (heterogeneity) among these units. Estimation techniques based on panel data can explicitly account for this heterogeneity by including specific variables for each study entity. Secondly, Richness of Information: By combining time-series data with cross-sectional observations, panel data provides richer, more diverse information, reducing multicollinearity among variables, increasing degrees of freedom, and enhancing efficiency. Thirdly, Dynamic Analysis: Through the examination of repeated spatial observations, panel data is better suited for studying the dynamics of change, allowing for the investigation of more complex behavioral models. Fourthly, Unobserved Effects: Panel data can better detect and measure unobservable influences that may not be captured in pure time-series or cross-sectional data. Lastly, Bias Minimization: By aggregating available data from thousands of units, panel data can minimize potential biases that may occur when summarizing individuals or firms into aggregate figures.

Based on the collected and processed data, this research employs descriptive statistical methods and comparative analysis to evaluate the operational status of the 12 commercial banks in Can Tho City.

Descriptive statistics involve methods related to the collection, summary, presentation, calculation, and description of various characteristics to reflect the research subject comprehensively. The objective of descriptive statistics is to illustrate the fundamental features of the dataset by providing specific numerical values, such as mean, maximum, minimum, and standard deviation, to assess the distribution of the collected data. In addition, the purpose of comparison is to clarify differences or unique characteristics and to identify trends and patterns in the research subject, thereby providing stakeholders with a basis for decision-making. When employing the comparative method, several considerations must be taken into account. Firstly, comparability Conditions, The indicators being compared must ensure consistency in economic content, calculation methods, time frames, and measurement units. Secondly, comparison Basis, The choice of comparison basis can be spatial or temporal, depending on the analytical objectives. Spatial comparisons may involve contrasting one unit with another or comparing different sectors. Temporal comparisons focus on past periods (previous quarters or years) or plans and forecasts. When determining trends and growth rates, the basis of comparison is typically the indicator's value in previous periods. To evaluate the achievement of set goals, the comparison basis is the planned value of the analyzed indicator. In assessing a company's position within the industry, performance indicators are compared against the industry average or competitors. Thirdly, forms of Comparison are commonly used forms of comparison in analysis include absolute and relative comparisons. Dynamic relative figures are used to reflect the pace of change or growth rates and are often presented as fixed base ratios or chain ratios.

3.3. Research Model

Given that the data utilized in this study consists of panel data, with N representing 12 subjects (the

commercial banks) and T representing 228 time periods (from the first quarter of 2019 to the third quarter of 2023), the analysis of factors affecting credit growth employs two estimation models: Ordinary Least Squares (OLS) and Tobit (censored) models to estimate the credit growth rates of the banks in the study area.

The decision to employ both OLS and Tobit models is informed by the practical operational outcomes of the banks within the research context. Specifically, the OLS model is used to estimate the credit growth rate of any given bank, which can yield random values (negative, zero, or positive). The dependent variable in this model measures the credit growth rate as the difference between total outstanding loans at time t and total outstanding loans at time t-1, divided by total outstanding loans at time t-1. This indicator is contingent on the operations of each bank and can take on values ranging from negative to zero and positive.

The estimation model can be expressed as follows:

$Yit=Ci+\beta Xit+uit$

Where:

Yit: the value of Y for entity i at time t.

Y: the dependent variable, which measures credit growth over the eleven years (2012 - 2022), defined by the formula:

$\text{Credit Growtht}(\%)=(\text{Total Outstanding Loanst}-\text{Total Outstanding Loanst}-1)/\text{Total Outstanding Loanst}-1\times 100$

Ci (i = 1, 2, 3, ..., 12): the intercept for each bank branch under study.

β: the coefficient representing the correlation between the independent variables and the dependent variable.

uit: the residual or error term for entity i at time t.

Xit: the value of the independent variable for entity i at time t.

Table 1: Credit growth, deposits, non-performing loan ratios, and average lending rates of commercial banks.

Unit: %

Bank Branch	Credit Growth (%)	Deposit Growth (%)	Non-Performing Loan Ratio (%)	Average Lending Rate (%)
VIETINBANK	101.57	239.01	12.20	14.17
BIDV	-20.93	2.59	12.84	14.17
VCB	186.85	218.30	12.12	14.17
AGRIBANK	-39.39	-36.72	14.57	14.17
MARITIMEBANK	-60.56	-63.22	14.66	14.17
SACOMBANK	255.56	377.51	12.72	14.17
EXIMBANK	-31.99	-50.25	13.21	14.17
ACB	90.27	45.88	13.91	14.17
VIP	-53.54	-56.23	14.51	14.17
TECHCOMBANK	2.34	15.48	12.87	14.17
MB	121.13	141.36	13.14	14.17
IB	52.79	-8.69	14.23	14.17
Average	50.34	68.75	13.42	14.17

Source: State Bank of Vietnam, Can Tho Branch (2019-2023).

4. RESEARCH RESULTS AND DISCUSSION

4.1. Descriptive Statistics

Table 1 presents the average performance indicators related to credit activities for the 12 banks under study. Overall, the credit growth rate for the surveyed banks shows a positive average of 50.34%. This figure indicates robust credit growth, suggesting that these banks are well-positioned to meet the credit demands of both institutions and individuals in Can Tho City from the first quarter of 2019 to the third quarter of 2023. This is a promising sign for investment and lending activities in the city.

However, when examining credit growth on a bank-by-bank basis, it is evident that managers, particularly those from the State Bank, need to pay closer attention to this sector. The sample is distinctly divided into two groups: one exhibiting positive growth, including Vietinbank, VCB, Sacombank, ACB, MB, IB, and Techcombank, and another displaying negative growth, comprising BIDV, Agribank, Maritimebank, Eximbank, and VIP. Among the first group, Sacombank reported the highest growth rate at over 255%, followed by VCB at 186%, MB at over 121%, and ACB at more than 90%. The banks with the lowest growth rates in this group were IB and Techcombank, with respective rates of 52.79% and 2.34%.

Conversely, the second group displayed negative credit growth during the study period, with Maritimebank experiencing the most significant decline at -60.56%, followed by VIP at -53.54%. Agribank and Eximbank recorded declines ranging from -30% to -40%, while BIDV's negative growth was approximately -20%. These data indicate that credit growth from 2019 to 2023 varied significantly among the banks in Can Tho, with larger joint-stock commercial banks showing a tendency to decrease their focus on credit growth compared to their smaller counterparts.

As a direct consequence, the inconsistency in credit growth has resulted in varying levels of attention to deposit growth among the banks. The findings suggest that deposit growth is similarly divided into two distinct groups: one with positive growth, including Vietinbank, VCB, Sacombank, ACB, MB, Techcombank, and BIDV,

and another with negative growth, including Agribank, Maritimebank, Eximbank, VIP, and IB. Among the first group, Sacombank exhibited the highest deposit growth at over 337%, followed by Vietinbank at 239%, VCB at 218%, MB at over 141%, and ACB at more than 45%. The bank with the lowest deposit growth was Techcombank, at a mere 15%. In the second group, Maritimebank again showed the largest decline in deposits at -63%, followed by VIP at -56%. Agribank and Eximbank recorded negative growth rates ranging from -30% to -50%, while IB experienced a decline of approximately -8%. This data reveals that deposit growth from 2019 to 2023 across the banks was inconsistent, indicating that the focus on deposit growth among the commercial banks in the study area may not have been adequately prioritized.

The non-performing loan ratios were consistently monitored among the banks, with average ratios ranging from 12.12% to 14.57%. Notably, VCB reported the lowest average non-performing loan ratio, while Agribank had the highest. Additionally, the average lending rate across the 12 banks during the study period was recorded at 14.17%.

Table 2: Credit Indicators and Operational Efficiency of Commercial Banks

Unit: %

Bank Branch	Loan-to-Deposit Ratio (LDR)	Size (Billion VND)	Return on Assets (ROA) (%)	Cost Efficiency Ratio (%)
VIETINBANK	170.53	40.08	13.22	17.08
BIDV	127.71	39.65	14.16	18.49
VCB	115.11	40.65	13.78	17.26
AGRIBANK	108.68	39.93	13.86	17.14
MARITIMEBANK	124.21	38.58	13.72	19.42
SACOMBANK	93.14	39.88	13.63	15.46
EXIMBANK	139.04	39.15	13.01	19.34
ACB	184.56	39.68	13.10	18.49
VIP	202.61	38.52	14.01	19.75
TECHCOMBANK	172.57	38.44	13.85	17.29
MB	163.08	39.12	13.22	18.20
IB	294.98	39.43	13.79	16.93
Average	158.02	39.43	13.61	17.90

Source: State Bank of Vietnam, Can Tho Branch (2019-2023).

Table 2 illustrates the credit indicators and operational efficiency of the 12 commercial banks in Can Tho City. Overall, these indicators are relatively consistent across the banks, adhering to the regulations set forth by the State Bank. Specifically, the average loan-to-deposit ratio (LDR) across the banks is approximately 158%, with the highest ratio observed at International Bank (IB) at 294%, followed by VIP at 202.6%. Other banks operate within an LDR range of 100% to 185%, with Sacombank reporting the lowest ratio at 90%. This suggests that the banks under study are utilizing their mobilized capital efficiently.

Furthermore, the total asset size of the 12 banks is similar, with an average nearing 40 billion VND. Notably, the return on assets (ROA) across the banks is also comparable, averaging 13.6%. BIDV achieved the highest ROA at over 14%, while Eximbank reported the lowest at 13.01%. Another critical indicator of credit operations is the cost efficiency ratio, measured by total operational costs relative to total assets, which averages 17.09% across the 12 banks. VIP recorded the highest cost ratio at 19.75%, whereas Sacombank operated with the lowest at 15.46%. In general, the indicators related to credit operations and efficiency of the studied commercial banks fall within the acceptable limits as prescribed by the State Bank, and bank managers are continually striving to optimize these metrics within the constraints of their respective resources.

Table 3: Operational Indicators of Commercial Banks in Can Tho City.

Unit: %

Bank Branch	Total Loans (Billion VND)	Total Assets (Billion VND)	Total Deposits (Billion VND)	Income (Billion VND)
VIETINBANK	6,905.64	7,124.74	4,127.93	479.35
BIDV	4,490.85	4,560.05	3,665.78	427.83
VCB	12,821.79	13,168.96	11,685.27	986.08
AGRIBANK	5,723.51	6,048.35	5,595.47	459.03
MARITIMEBANK	1,369.31	1,484.30	1,159.69	154.70
SACOMBANK	4,788.73	5,763.88	5,555.37	323.71
EXIMBANK	2,546.86	2,719.01	1,905.18	243.81
ACB	4,596.52	4,753.16	2,526.41	394.44
VIP	1,498.64	1,527.56	723.49	157.35
TECHCOMBANK	1,269.05	1,334.98	750.67	109.89
MB	2,630.12	2,669.81	1,651.26	210.23
IB	3,582.61	3,619.91	1,237.77	271.49
Average	*4,351.97*	*4,564.56*	*3,382.02*	*351.49*

Source: State Bank of Vietnam, Can Tho Branch (2019-2023).

4.2. Operational Indicators of Commercial Banks in Can Tho City

Table 3 provides a detailed overview of the total loans, total assets, total deposits, and income of the banks under study. The average total loans across these banks amount to 4,351 billion VND, with VCB holding the largest total loans at over three times the average figure. Conversely, Maritimebank and Techcombank report the lowest total loans, at 1,369 billion VND and 1,269 billion VND, respectively.

In terms of total assets, the average across the 12 commercial banks is 4,564 billion VND. VCB again leads with total assets reaching 13,168 billion VND, while Techcombank has the lowest total assets at slightly over 1,334 billion VND. This disparity highlights the varying capacities of these banks to support banking operations effectively.

The total deposits from individuals and organizations at these banks are also substantial, with an average of 3,382 billion VND. VCB is the most trusted bank, attracting deposits exceeding 11,685 billion VND, followed by Agribank with over 5,595 billion VND and Sacombank with over 5,555 billion VND. Conversely, VIP holds the lowest deposit average at 723 billion VND. Overall, the studied banks have successfully mobilized a considerable amount of idle capital from society, facilitating resource allocation to areas with a higher demand for capital.

The final column in Table 3 illustrates the income generated by the banks in question. On average, the banks reported an income of 351 billion VND, though there are notable disparities among them. VCB again ranks highest in income, with over 986 billion VND, followed by Vietinbank at more than 479 billion VND. In contrast, Techcombank recorded the lowest income at just over 109 billion VND.

4.2.1. Statistical Analysis

Table 4 presents the correlation matrix between the variables in the research model. The correlations provide insights into the relationships among the various indicators. Notably, there is a strong positive correlation between credit growth and deposit growth (0.9105), indicating that increases in deposits are associated with greater credit expansion. Conversely, a significant negative correlation exists between the non-performing loan (NPL) ratio and both credit growth and deposit growth, suggesting that higher NPLs are detrimental to lending activities.

Additionally, the average lending rate shows a moderate positive correlation with both credit growth and income, which may indicate that higher lending rates can contribute to increased income generation for banks. The loan-to-deposit ratio (LDR) exhibits a complex relationship with other variables, highlighting the need for careful management of liquidity and credit risk in banking operations.

Overall, the data suggest that the operational indicators of the commercial banks in Can Tho City reflect a diverse and dynamic banking environment, with varying performance across institutions. These insights can guide policymakers and bank managers in making informed decisions to enhance financial stability and promote sustainable growth in the banking sector.

Table 4: Correlation Between Variables in the Research Model.

	Credit Growth	Deposit Growth	NPL Ratio	Avg Lending Rate	LDR	Size	ROA	Cost Efficiency	Total Loans	Total Assets	Total Deposits	Income
Credit Growth	1.0000											
Deposit Growth	0.9105	1.0000										
NPL Ratio	-0.3830	-0.4078	1.0000									
Avg Lending Rate	-0.0005	0.0012	-0.0314	1.0000								
LDR	-0.1360	-0.2962	0.1236	-0.0113	1.0000							
Size	0.5816	0.5629	-0.2916	0.0263	-0.1635	1.0000						
ROA	-0.1028	-0.0491	-0.0301	0.6264	-0.0259	-0.0165	1.0000					
Cost Efficiency	-0.2637	-0.2633	0.1049	0.8584	0.0088	-0.2279	0.5525	1.0000				
Total Loans	0.5445	0.5257	-0.3134	0.0207	-0.1976	0.6881	0.0642	-0.1668	1.0000			
Total Assets	0.5829	0.5661	-0.3189	0.0201	-0.2368	0.6020	0.0474	-0.1845	0.6951	1.0000		
Total Deposits	0.5529	0.5591	-0.3039	0.0232	-0.4443	0.6285	0.0833	-0.1707	0.6425	0.6573	1.0000	
Income	0.3684	0.3515	-0.2385	0.4895	-0.1758	0.6886	0.3874	0.3221	0.7885	0.7799	0.7552	1.0000

Source: Calculated from data from the State Bank of Vietnam, Can Tho Branch (2019-2023)

Table 5: Estimation Results from OLS and Tobit Models on Factors Influencing Credit Growth of Commercial Banks.

Variable	OLS Coefficient	OLD SD	OLS P>|t|	Tobit Coefficient	Tobit SD	Tobit P>|t|
TTTGUI	0.606	0.025	0.000	0.607	0.025	0.000
TLNOXAU	-1.181	1.729	0.495	-1.348	1.695	0.427
LSCVBQ	4.104	7.915	0.605	3.798	7.743	0.624
LDR	0.494	0.071	0.000	0.500	0.070	0.000
QUYMO	-0.029	9.343	0.998	0.991	9.170	0.914
ROA	-9.951	3.155	0.002	-9.794	3.087	0.002
HQQLCP	1.073	1.912	0.575	1.170	1.872	0.532
TONGDUNO	-0.026	0.009	0.007	-0.027	0.009	0.006
TONGTAISAN	0.178	0.012	0.141	0.017	0.011	0.142
TONGTIENGUI	0.014	0.004	0.002	0.015	0.004	0.002
N0. Observations	228			N0.Observations	228	
Prob>F	0.000			Prob>Chi2	0.000	
R2	0.8766			Pseudo R2	0.1723	

Source: Calculated from data from the State Bank of Vietnam, Can Tho Branch.

4.2.2. Factors Influencing Credit Growth at Commercial Banks in Can Tho City

Table 5 presents the estimation results for the factors influencing credit growth at the commercial banks in Can Tho City. Both estimation models (OLS and Tobit) yield similar results, indicating that five variables significantly influence the credit growth rate of the studied banks. Among these, three variables positively affect credit growth: the growth rate of deposits, the loan-to-deposit ratio (LDR), and total deposits, while two variables negatively influence credit growth: return on assets (ROA) and total loans.

Firstly, the growth rate of deposits is found to have a statistically significant positive impact on credit growth at the 1% significance level. Specifically, if all other factors remain constant, a 1% increase in the growth rate of deposits leads to a 0.6% increase in the credit growth of the banks. This can be interpreted as banks with effective credit strategies that attract successive higher deposits will experience an increase in total credit available for customers, thereby enhancing credit growth in subsequent periods. This finding aligns with the actual credit operations observed in these banks and is statistically significant in both the general OLS model and the Tobit model.

Secondly, the loan-to-deposit ratio exhibits a statistically significant positive relationship with credit growth. Assuming other factors are fixed, a 1% increase in the loan-to-deposit ratio results in a 0.494% increase in credit growth. This reflects the reality that when banks increase their loan-to-deposit ratio, they have more available capital for lending activities, leading to higher credit growth. The impact of this variable on credit growth is significantly influenced by each bank's overall strategy and the execution of their credit plans.

Thirdly, total deposits positively and significantly affect the credit growth rate. An increase in total deposits indicates that the available capital for lending activities is also increasing, thus enhancing credit growth. Specifically, holding other factors constant, an increase of one unit in total deposits results in a 0.014 units increase in credit growth. This aligns with the fundamental banking operation of borrowing to lend, where effective borrowing strategies lead to increased deposits, ensuring sufficient capital to meet customer loan demands.

Fourthly, the ROA from the previous year has a negative coefficient, indicating an inverse relationship between net income relative to total assets and credit growth among the banks in Can Tho City. This means that, holding other factors constant, a higher ROA from the previous year corresponds to lower current-year credit growth. Specifically, a 1% increase in prior year ROA results in a 9.95% decrease in current credit growth. This observation is consistent with practical observations, as banks tend to allocate higher profits towards infrastructure rather than new customer loans. The relationship between prior year ROA and credit growth is statistically significant at the 1% level.

Lastly, the total loans from the previous year also exhibit a negative coefficient, indicating an inverse relationship with current credit growth. This suggests that, all else being equal, banks with higher total loans from the previous year experience lower current credit growth. Specifically, if total loans increase by one unit, current credit growth decreases by 0.26%. This aligns with observed practices, as increased total loans typically lead banks to exercise caution in lending, focusing on creditworthy clients to mitigate the risk of non-performing loans. The relationship between total loans and credit growth is statistically significant at the 1% level.

Overall, these findings contribute valuable insights to the existing literature and practice regarding the factors influencing credit growth in commercial banks, affirming results from earlier studies.

4.3. Strategies for Enhancing Credit Growth at Commercial Banks in Can Tho City

4.3.1. Enhancing Capital Mobilization Efforts

To ensure that mobilized capital effectively contributes to credit growth, commercial banks must adopt specific strategies regarding the types of capital raised, the maturity of deposits, and particularly the interest rates offered. In an environment where banks engage in unhealthy competition for mobilizing funds, driving costs upward, these expenses inevitably impact the cost of capital for lending activities.

Currently, modern banks compete not solely on price but also on service quality, customer relations, and the

diversification of deposit products to meet varied customer needs. Additionally, banks should implement a range of reward mechanisms to motivate employees, thereby enhancing operational efficiency. This approach will create competitive advantages in capital mobilization at reasonable prices, minimizing lending rates, facilitating access to significant projects, attracting quality clients, and reducing credit risk, all while ensuring adequate resources to support the credit growth objectives of the banks.

4.3.2. Solutions for Managing Capital Adequacy

A bank's capital adequacy directly influences its capacity to absorb losses. Consequently, when making lending decisions, banks in Can Tho City should carefully consider the capital adequacy of their clients. Banks need to enhance lending to those clients whose equity constitutes a substantial portion of their total capital and who demonstrate effective business operations. Conversely, lending should be restricted to clients with low equity relative to total capital and poor business performance. Ideally, banks should develop a set of criteria reflecting the relationship between capital adequacy and the effective use of borrowed funds, allowing them to select low-risk clients for lending.

4.3.3. Additional Solutions

In addition to the aforementioned strategies, banks in Can Tho City should focus on several other solutions:

Improving the Quality of Credit Assessment: It is essential to enhance the evaluation of borrowers' capacities and project feasibility. The assessment process should be fundamentally revised to manage credit based on the customer rather than solely on the project. To improve evaluation quality, banks should assign capable and experienced staff, regularly conduct discussions and training sessions on project assessment, and prioritize the collection and analysis of information regarding projects and loans. Utilizing criteria such as Net Present Value (NPV), Internal Rate of Return (IRR), and sensitivity analysis is crucial, along with a thorough assessment of the financial capacity and reputation of clients and project investors.

Establishing an Internal Credit Rating System: This system should provide a consistent scoring methodology based on both financial and non-financial indicators relevant to the current context of the banks. It should assess the risks associated with different types of clients. The internal credit rating system should include: (1) Legal frameworks related to the establishment and business activities of clients; (2) Comprehensive economic indicators regarding business, financial conditions, asset management, and the ability to meet commitments; (3) Reputation with previous financial institutions; (4) Detailed criteria for evaluating clients, specifically considering industry and regional factors. The results of this internal credit rating will guide banks in determining credit limits, appropriate credit conditions, and the classification of debts, as well as in provisioning for risks according to regulations.

Enhancing Monitoring and Management of Loans: Strengthening the monitoring and management of loans is a vital measure to mitigate credit risks, particularly ethical risks associated with the misuse of funds by clients. Effective implementation requires that loan disbursements are directed to the intended beneficiaries. Disbursement should occur through the bank's payment system, with regular (quarterly) analyses and assessments of the financial situation of enterprises, including a focus on the purpose of loan utilization, collateral, and the operational performance of clients, especially those with overdue debts.

Improving the Effectiveness of Internal Audits: To enhance the quality of internal control, it is necessary to reorganize the structure and activities of the Audit Committee and the Internal Audit Department at the bank's headquarters. Internal audit teams at branches should integrate horizontal and vertical management approaches. Additionally, to achieve high efficacy in internal audits, it is essential to: (1) Increase staff capacity within the internal audit system; (2) Professionalize and specialize internal auditing; (3) Innovate auditing methods and provide adequate incentives for internal audit personnel.

Developing a Risk Prevention Information System: To effectively implement measures to mitigate credit risks, banks must establish and continuously improve a risk prevention information system. This involves enhancing the collection of information about clients, projects, economic conditions, and market trends through various channels, ensuring systematic filtering, processing, and storage of information. Furthermore, investments in upgrading information technology systems and relevant software are necessary to facilitate timely customer transactions.

Enhancing the Professional Skills of Credit Staff: High-quality human resources are critical for the successful implementation of measures aimed at improving credit quality. To build a robust workforce capable of meeting the demands of credit management, banks should focus on several key tasks: standardizing the credit staff, implementing appropriate training and compensation policies through salary, bonuses, training opportunities, and career advancement for staff involved in credit operations, assessment, and risk management. Additionally, banks should establish clear procedures concerning individual responsibilities.

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

Bank credit serves as a vital source of capital for economic development, particularly in developing countries like Vietnam. Healthy growth in bank credit is essential for enabling businesses and households to expand production and increase output, thereby stimulating overall economic growth. Furthermore, when the structure of credit aligns with the strategic objectives of socio-economic development and is tailored to the operational characteristics of commercial banks, it positively impacts the efficiency of enterprises, enhances banking operations, and facilitates economic growth.

This paper aimed to evaluate the factors influencing credit growth among twelve commercial banks in Can Tho City. To achieve this objective, secondary data from 228 quarterly observations of these banks were utilized. Descriptive statistical tools were applied to analyze the current state of credit activities and related performance indicators of the twelve banks, providing a comprehensive and practical overview of credit operations in the studied area. Two estimation models—Ordinary Least Squares (OLS) and Tobit—were employed to identify the factors impacting credit growth in the banks under study. The results indicated that five variables significantly influence credit growth: (1) growth in deposits, (2) the credit-to-deposit ratio, (3) total deposits, (4) return on assets (ROA), and (5) total loans. Among these, the first three factors positively affect credit growth, while the latter two have a negative impact on the dependent variable.

The findings have been discussed in conjunction with practical experiences and knowledge acquired during the research process. These insights enabled the author to propose six solutions aimed at enhancing the utilization of available resources, market advantages, and human capital to strengthen credit activities and improve the efficiency of monetary operations. Additionally, factors that the banks cannot independently control will be addressed in recommendations directed towards relevant authorities.

5.2. Recommendations

5.2.1. For the State Bank of Vietnam and the Can Tho Branch

Non-performing loans (NPLs) represent a significant barrier to the growth and development of bank credit activities. High levels of NPLs compel banks to increase provisions for credit risk, tighten lending policies, and negatively impact interest income and profitability, ultimately reducing their capacity to meet payment obligations. Therefore, addressing NPLs is paramount for stabilizing credit operations. The resolution of NPLs is not solely the responsibility of the State Bank of Vietnam (SBV) and the Asset Management Company (VAMC) but also rests with commercial banks and society at large.

Banks should intensify efforts to manage NPLs through risk provisions, selling bad debts to VAMC, pursuing debt collection, managing collateral, supporting legal actions against borrowers, and cooperating with enforcement agencies in executing enforceable judgments and other measures. Moreover, it is crucial to monitor the quality of credit and manage NPLs and overdue debts effectively.

Facilitating access to capital for enterprises is fundamental for banks to enhance their credit operations. Banks should develop lending programs with reasonable interest rates, coupled with streamlined lending processes that simplify borrowing procedures while ensuring loan safety and compliance with legal requirements. Enhancing assessment capabilities is essential for reducing loan processing times and enabling enterprises to access credit more readily.

Increasing deposit mobilization enhances the capital available for banks to develop credit activities. However, mobilizing deposits from customers is not always cost-effective, as competitive pressures may drive up the costs associated with raising deposit funds. Therefore, banks need to devise appropriate capital mobilization strategies to minimize costs and improve lending efficiency.

5.2.2. For the Government and Local Authorities

Bank credit operations are closely tied to the broader economic environment. Thus, the government must implement solutions to foster economic development. Specific measures should include strengthening macroeconomic stability, controlling inflation, proactively and flexibly managing monetary policy tools, and closely coordinating with fiscal policy. Additionally, the government should support markets, address inventory issues, alleviate challenges in the real estate sector, and enhance support for enterprises in accessing affordable loans, providing interest rate subsidies, and promoting investment, trade, and tourism.

Furthermore, the government should work to improve legal procedures related to land use rights and property ownership, thereby facilitating the management and disposal of collateral assets.

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