BIS Economics and Business

Volume 2 2025 | DOI: 10.31603/biseb.231
6th Borobudur International Symposium on Humanities and Social Science (BIS-HSS) 2024

UNIMMA PRESS
Universitas Muhammadiyah Magelang

Navigating risk and growth: how loan quality and credit growth shape bank profitability in ASEAN commercial banks

Linda Putri Nadia[1], Adisty Savira Putri[1], Wahidatun Nailis Sa'adah[1]

[1] Universitas Muria Kudus, Kudus, Indonesia
*Corresponding author email: linda.putri@umk.ac.id

Abstract

ASEAN is a dynamic economic region that contributes significantly to global growth but faces challenges such as high levels of non-performing loans (NPLs) in its banking sector. This study analyzes the impact of bank credit management and bank-specific factors on ASEAN commercial banks' financial performance. This study uses secondary data from commercial banks in ASEAN countries over 10 years (2010-2023). Fixed Effects and Random Effects methods and OLS are applied to estimate the coefficients and assess their robustness tests. The results show that credit risk negatively and significantly affects bank performance, particularly Return on Assets (ROA) and Return on Equity (ROE). Meanwhile, credit growth positively and significantly influences ROA and ROE. Factors from bank-specific variables show mixed results on the financial performance of ASEAN commercial banks. Furthermore, the study finds that the previous financial crisis had a lingering negative impact on bank performance, particularly on ROA and ROE, underscoring banks' vulnerability to economic shocks. This study recommends that ASEAN policymakers create a robust financial environment by implementing monetary policy that regulates interest rates to reduce high NPL ratios through a better monitoring system. This study contributes to the literature by focusing on ASEAN commercial banks, providing region-specific insights into the interaction between bank credit management and financial performance. This study uniquely combines accounting-based and market-based measures, comprehensively evaluating banking performance in ASEAN.

Published:
May 2, 2025

Selection and Peer-review under the responsibility of the 6th BIS-HSS 2024 Committee

Keywords

ASEAN countries, Credit risk, Credit growth, Bank-specific factors

Introduction

The literature on the banking industry shows that regulation and institutional aspects, such as regulatory policies, market dynamics, market supervision and corporate governance, are the main factors that affect bank profitability, leaving a gap in the literature on how loan quality and credit growth significantly affect bank profitability [1], [2].

Various risks, such as credit, market, operational, and others, constantly threaten the financial sector [3]. According to [4], even well-performing firms can experience large losses due to exposure to credit risk, where default risk often stems from debtors' failure to fulfill payment obligations [5]. Credit risk (NPL) is a phenomenon that almost always exists in the banking sector. Rapid credit growth is often followed by sustained high NPLs, which often trigger financial crises. For example, in East and Southeast Asia, a surge in NPLs occurred during and after the Asian financial crisis in the late 1990s, while in Europe, particularly the euro area, NPL problems peaked due to the global financial crisis in 2008 and the sovereign debt crisis that began in 2010 and the fallout from COVID-19 that had hit countries around the world [6], [7], [8]. Global financial crises, such as the 2008-2009 crisis and the Covid-19 pandemic, have significantly weakened the performance of the banking system, where overly rapid credit growth often triggers an increase in non-performing loan risk that negatively affects the overall performance of banks [9].

Non-performing loans (NPLs) have been shown to negatively impact credit growth, with a highly significant effect on loan demand across regions and bank types. This suggests that the impact is due to the reduced supply of credit from affected banks [10]. When the financing gap exceeds a certain threshold, where the amount of loans is much larger than the amount of deposits, the cost of obtaining external loans earmarked to cover the shortfall becomes higher than the cost of managing the risk itself. This ultimately leads to a decline in the bank's overall performance [11], [12]. High levels of NPLs are undesirable for investors and can lead to a dramatic drop in bank share prices, loss of profitability, and potentially a financial distress scenario. The increasing problem of NPLs is evident in the post-COVID-19 recession especially for countries with weak macroeconomic, institutional, corporate and banking sector conditions [13].

Several previous studies have studied credit risk and bank profitability with mixed findings. For example, [14] showed that high NPLs reduce profitability, which is in line with [15], who found a negative relationship between credit risk and profitability in US banks. [16] found similar results, although the impact was insignificant for smaller banks. [17] confirmed the negative impact of credit risk on profitability in Jordanian and MENA banks. However, some studies [18] showed a positive relationship, attributing this to higher interest income from high loan-to-asset ratios. [19] show that NPL harms ROE but positively impacts ROA. This difference in results indicates the uncertainty in research related to the relationship between credit risk, NPLs, and bank performance. However, the findings are inconclusive, and most ignore the critical ASEAN region. Besides that, existing studies focus more on the direct effect of NPL on bank performance. Still, few discuss the process of interaction between the two in dealing with economic crises such as those that occurred during the COVID-19 pandemic.

Related to credit growth studies, [20] examines the impact of loan growth on bank performance in Vietnam, their research focuses on specific regions and banking systems. Both highlight the impact of credit growth, showing its potential to increase

profitability simultaneously. [21] Extend this discussion by showing that rapid credit growth can undermine bank health, especially during credit booms, due to inadequate risk management and weakened credit standards. However, their findings are largely framed in the context of advanced economies and the global financial crisis, leaving a gap in understanding how these dynamics manifest in the ASEAN region's unique and rapidly evolving banking environment. Certainly, these results also underscore the need for further exploration of how credit growth interacts with risk and profitability in ASEAN commercial banks.

Emerging economies often face vulnerability to changes or disruptions in international credit conditions [22]. As economic conditions deteriorate, a decline in production across various sectors decreases payment capacity, increasing non-performing loans. This increase in non-performing loans then affects credit ratings, which may lead to a shortage of financial resources to support operational continuity and market expansion. In other words, increasing non-performing loans due to economic difficulties may decrease the credit supply, creating a negative loop that hinders economic recovery and slows the process [23]. Therefore, it highlights the need to explore how credit risk and growth affect bank performance. Although previous studies have extensively examined regulatory and institutional factors, the impact of credit risk and credit growth in developing countries, which is very important in shaping bank performance, is still largely unexplored concerning profitability and stability. Inefficient credit risk management and aggressive credit expansion can significantly damage banks' financial health, especially during economic uncertainty, underscoring the importance of further investigating their relationship.

Previous research has explored the influence of credit risk management, economic uncertainty, and geopolitical risk on bank performance and lending decisions in different regions, such as South Asia or China (e.g., [3], [24], [25], [26]), but there is still a research gap investigating how loan quality, measured through credit risk management, and credit growth jointly affect bank profitability in the context of emerging economies, particularly in ASEAN commercial banks. This research focuses on studies in developing countries, especially ASEAN countries. ASEAN countries are known as one of the most dynamic economic regions in the global economy [27]. Although ASEAN economies experienced significant challenges during the 1997–1999 financial crisis and the global financial crisis, they maintained strong growth. Between 2014 and 2019, the region achieved an impressive average growth rate of around 5 percent [28]. ASEAN was chosen as the focus of the study because markets in the region have high growth potential and continuously improving infrastructure, making them increasingly important in the global economy [29]. According to [30], emerging economies' economic and financial conditions, including ASEAN, differ significantly from developed economies, bringing challenges and opportunities for the banking sector as it plays a vital role in supporting the region's economic growth and development.

On the other hand, the level of credit risk (NPL) in ASEAN is still high, reaching 4.81%, while the G7 countries only reach 2.80% [31]. This shows a significant difference in the level of risk faced by ASEAN countries compared to developed countries, further emphasizing the importance of research in the region. Therefore, we aim to examine how loan quality, measured through credit risk management, and credit growth jointly affect bank profitability in the context of emerging economies, particularly in ASEAN commercial banks.

We find that credit risk (NPL) consistently has a significant negative impact on bank profitability, underscoring the adverse impact of poor credit quality on financial performance. This negative relationship suggests that an increase in credit risk leads to a decrease in the capital available for banks to support their investments and operations, which in turn leads to a decrease in profitability. This suggests that credit risk is a major issue affecting financial performance in the banking sector [32]. Conversely, an increase in credit can increase profitability, showing how important it is to expand lending activities to improve financial performance. However, banks must be careful with their credit growth, as excessive credit expansion can pose a serious threat to their future performance by increasing credit risk and potentially destabilizing financial operations [9].

This study contributes to the literature in three ways. First, this study serves to fill the gap in the existing literature, especially regarding the interaction between credit quality and credit growth on bank profitability. While many studies have explored regulatory and institutional factors, few have examined the combined impact of these factors, especially in the context of commercial banks in ASEAN. Given ASEAN's position as a highly dynamic economic region with rapid growth and vulnerability to financial risks, this is a relevant focus for this study. The second contribution reveals how aggressive credit growth can lead to a spike in credit risk (NPLs), highlighting the importance of balancing credit expansion with risk management to maintain bank profitability. Finally, the third contribution is the study's focus on the post-pandemic economic recovery, which provides valuable insights into the evolving financial landscape and the challenges faced by banks, especially regarding the impact of NPLs on credit supply and bank stability amid ongoing economic uncertainty.

The paper is arranged as follows: Section 2 outlines the theoretical background and hypothesis development. Section 3 describes the data and methodology. Section 4 provides the analysis and empirical result. Section 5 provides the discussion and conclusion, highlighting the study’s contribution, implication, and limitations and presenting information for future research.

Method

Data and Sample

The sample of this study consists of publicly traded banks in ASEAN countries, including Malaysia, the Philippines, Indonesia, Singapore, Thailand, and Vietnam, which are included in the Osiris database, and was determined through purposive sampling with companies meeting two criteria: being listed on the stock exchange of their respective countries and appearing on a major index at least once, with indices selected based on market capitalization and liquidity, including the HNX30 Index for Vietnam, the SET Index for Thailand, the PSEI Index for the Philippines, the LQ45 Index for Indonesia, the FTSE Index for Malaysia, and the STI Index for Singapore; this resulted in unbalanced data with a total of 81 companies selected, covering ten years from 2010 to 2022, yielding 588 observations.

Dependent Variable

This study is certainly in line with [12], [33], and [34], who position Return on Assets (ROA) and Return on Equity (ROE) as the main indicators of financial performance (Bank performance). Bank performance functions as a dependent variable, reflecting the bank's overall profitability and operational efficiency. ROA measures a bank's effectiveness in generating profits relative to its total assets, while ROE assesses the profit generated from shareholder equity. This proxy provides a comprehensive picture of bank performance and is widely adopted in empirical studies to evaluate financial results.

Independent Variables

This study uses credit growth and loan quality measured by credit risk as dependent variables to explore the determinants and their implications for bank performance. In line with previous research [9] and [26], credit growth reflects the expansion of a bank's loan portfolio, where rapid growth may signal aggressive lending and increased risk. Credit growth is measured as the annual growth of gross loans. Then, we follow [26], [35], [34] measured credit risk the non-performing loan ratio (NPLGL), which equals the summation of subordinate, doubtful, and loss loans divided by total loans. A higher non-performing loan ratio indicates greater risk and negatively impacts performance.

Control Variables

This study includes bank-specific and economic variables as control variables and the main variables analyzed. The purpose of using these control variables is to ensure that the influence of loan quality and credit growth on bank performance can be observed more accurately without bias caused by other factors. The following is an explanation of the control variables used in previous studies.

Bank-Specific Variables

Bank-specific variables refer to the internal characteristics of banks that can affect bank performance, stability, and risk. This study uses several relevant control variables found

in previous studies: this study uses control variables to explain the components that may affect bank performance. These variables include the natural logarithm of consumer and corporate loans (ln-consumer-loan) which represents the size and type of bank loans. Gross loans represent the amount of loans granted, which indicates the scale of credit operations. In contrast, the ratio of net loans to total assets shows how effectively a bank uses its assets and how dependent it is on income generated from loans. By looking at changes in asset structure and loan composition, these variables are crucial for distinguishing the impact of loan growth and credit risk on bank performance [36], [37]. In addition, we measure the capital adequacy ratio (CAR), as done by a previous study [38].

Economic Variables

As good economic conditions tend to increase the repayment capacity of borrowers, high economic growth is usually associated with lower bank risk. [39] and [40] use GDP growth as a control variable to examine the impact of economic conditions on bank risk. High inflation can also reduce purchasing power, increase credit risk, and disrupt financial stability. [41] used this variable as a controlling factor in the effect of capital regulation on bank risk. Controlled inflation helps maintain better economic stability. Other than that, we also use crisis variables measured by dummy variables equal to one if there are in the year 2020-2022 and zero otherwise to examine the effect of the COVID-19 crisis (Table 1) [42].

Table 1. The Definitions of Variables

Independent Variables		**Sources of the data**
Loan Quality is Measured by Credit Risk (NPLGL)	The ratio of non-performing loans to total loans	Osiris Database [43], [44], [45]
Credit Growth	The annual growth of gross loans	Osiris Database [46]
	Dependent Variables	
ROA	Return on Asset Ratio	Osiris Database [45]
ROE	Return on Equity Ratio	Osiris Database [38]
	Bank Specific variables	
CAR	Capital adequacy ratio	Osiris Database [38]
ln_consumer_loan	Annual growth of consumer loans	Osiris Database [46]
ln_corporate_loan	Annual growth of corporate loans	Osiris Database [46]
Netloan_to_total asset	Loan share: net loan divided by total assets	Osiris Database [47]
Ln_gross_loan	Natural logarithm of the total volume of loans disbursed	Osiris Database [48]
	Macroeconomic variables	
GDP Growth	GDP per capita growth rate	World Bank Database [44],[49]
Inflation	The annual growth rate of the consumer price index	World Bank Database [44], [50]
Crisis	Dummy Variable: 1 for sample in global and COVID-19 crisis times and 0 otherwise.	[51], [52]

Empirical Models

This study is motivated by a theory that links credit with banks to analyze the effect of loan quality and growth on bank profitability. We develop a model by following existing literature [38]. Therefore, we build a model as below

1. $Y_{it} = \alpha + \beta_1 CR_{it} + \beta_2 X_{it} + \gamma Z_{it} + \varepsilon_{it}$
2. $Y_{it} = \alpha + \beta_1 CG_{it} + \beta_2 X_{it} + \gamma Z_{it} + \varepsilon_{it}$
3. $Y_{it} = \alpha + \beta_1 CR_{it} + \beta_1 CG_{it} + \beta_2 X_{it} + \gamma Z_{it} + \varepsilon_{it}$
4. $Y_{it} = \alpha + \beta_1 CR_{it} + \beta_2 Crisis_{it} + \beta_3 (CR_{it} \times Crisis_{it}) + \beta_5 X_{it} + \gamma Z_{it} + \varepsilon_{it}$

Where:

Y_{it} = Bank Performance for bank i at time t.

CR_{it} = Loan Quality measured by Credit Risk

CG_{it} = Credit Growth

$Crisis_{it}$ = Dummy for crisis.

X_{it} = Macroeconomic control variables (GDP, inflation, etc.).

Z_{it} = Bank-specific variables.

ε_{it} = error term.

This study uses three econometric approaches to test the influence of credit growth and quality using Fixed Effects (FE), Random Effects (RE), and Ordinary Least Squares (OLS) as part of this study's method to test robustness tests by applying three econometric approaches while robustly testing the relationship between credit risk and credit growth on bank profitability across publicly traded banks in ASEAN. The Fixed Effects model accounts for unobservable heterogeneity by controlling for time-invariant characteristics specific to each bank [53], while the Random Effects model assumes that these individual effects are uncorrelated with the explanatory variables, allowing for greater efficiency in estimation under certain condition [54]. Including OLS provides a baseline estimate to compare results across models, ensuring robustness and reliability in capturing the dynamics of NPLGL, credit growth, and profitability [55]. These complementary methods allow for a comprehensive analysis that accommodates variation within entities and heterogeneity across sectors.

Results and Discussion

Table 2 above describes the data that this study used. The data shows various variables from 588 observations. Table 2 shows us the mean value of the bank's profitability (ROA, ROE). ROA stands at 0.011, with a standard deviation of 0.017, ranging from -0.097 to 0.058, and ROE stands at 0.105, with a standard deviation of 0.137, ranging from -8094 to 0.421. Similarly, the credit risk (NPL) has an average value of around 0.034, with

a standard deviation of 0.060, ranging from 0 to 0.969. Credit growth averages around 0.086, with a standard deviation of 0.133, ranging from -0.261 to 0.446. Other than that, for another proxy of credit risk and credit growth, we compared consumer loans, corporate loans, gross loans, net loans and capital ratios and found slight variations in means and standard deviations across different versions. Related to the control variable, Table 2 above shows the natural logarithm of inflation averaging at approximately 3.552 and GDP growth around 0.044.

Table 2. Descriptive Statistic

Variable	Obs	Mean	Std. dev.	Min	Max
ROA	588	0.011184	0.0175623	-0.0972	0.0581
ROE	588	0.105641	0.1370684	-8094	0.4211
NPLGL	588	0.03465	0.0603479	0	0.9692856
credit_growth	588	0.0864326	0.133707	-0.2616456	0.4464095
ln_consumer_loan	588	20.76002	2.509203	-1.054848	23.0238
ln_corporate_loan	588	20.36604	2.494899	13.97001	23.02559
ln_gross_loans	588	15.48165	2.025907	9.927564	19.56034
netloans_to_totalassets	588	0.6287526	0.0940775	0.1905	0.8384
total_capital_ratio	588	0.1978413	0.1275446	0.0802	1.4828
Inflation	588	3.552786	2.535178	-1.138702	16.67773
GDP growth	550	0.0444413	0.0264177	-0.0553446	0.1451975

Banks in ASEAN show low profitability (ROA, ROE) with significant variation, highlighting the need for better efficiency. While NPL ratios are low on average, some banks face high credit risks. Healthy credit growth (8.6%) and strong capital ratios (19.8%) suggest resilience, but fluctuations and low-capital banks signal risks. Strengthened oversight and governance are key to ensuring stability and supporting regional growth.

Table 3. Pearson Correlation Matrix

No	Variables	1	2	3	4	5	6	7	8	9	10	11
1	ROA	1,0000										
2	ROE	0.8924	1,0000									
3	NPLGL	-0.2004	-0.2773	1,0000								
4	ln_consumer_loan	-0.1568	-0.1452	-0.0124	1,0000							
5	ln_corporate_loan	-0.1816	-0.2207	0,0560	0.2172	1,0000						
6	ln_gross_loans	0.4266	0.4696	-0.1444	-0.3657	-0.5125	1,0000					
7	Credit_growth	0.2705	0.3321	-0.0878	0.0522	-0.0401	0.0356	1,0000				
8	netloans_to_totalassets	0.1923	0,1180	0.0189	0.0103	-0.0348	0.2138	0.0472	1,0000			
9	total_capital_ratio	-0.2946	-0.2468	0,0250	0.0615	0.0907	-0.4009	-0,1440	-0.4115	1,0000		
10	Inflation	0.0929	0.1304	0.0269	0.1094	0.1607	-0,2070	0.0767	-0.0847	-0.0979	1,0000	
11	GDP growth	0.1142	0,1830	0.0171	0.0537	0.0443	-0.0136	0.2969	0.0766	-0.1633	0.3814	1,0000

Based on the information in Table 3, it can be concluded that there are no indications of multicollinearity problems, except for the ROE to ROA variable which shows a correlation coefficient of 0.8924. Although a correlation coefficient value above 0.7 may indicate multicollinearity, Table 3 shows that most of the data does not have a correlation value of more than 0.7. Credit risk negatively correlates with ROA and ROE, indicating that higher non-performing loans reduce profitability; credit growth positively correlates with both profitability measures. The Pearson correlation matrix shows that ROE is highly positively correlated with ROA (0.8924); however, they are in different models (Table 3). NPLGL negatively correlates with ROA and ROE, indicating that higher non-performing loans reduce profitability; credit growth positively correlates with both profitability measures.

Table 4. Mean Difference During Crisis and Normal Times

Variables	G1 (0)	Mean1	G2(1)	Mean2	MeanDiff	
ROA	417	0.012	171	0.009	0.003	*
ROE	417	0.114	171	0.085	0.029	**
NPLGL	417	0.035	171	0.034	0.001	
ln_consumer_loan	417	20,760	171	20.759	0.001	
ln_corporate_loan	417	20.382	171	20.327	0.055	
ln_gross_loans	417	15.443	171	15.576	-0.132	
credit_growth	417	0.093	171	0,070	0.024	*
netloans_to_totalassets	417	0.64	171	0.602	0.037	***
total_capital_ratio	417	0.188	171	0.222	-0.034	***
Inflation	417	4.215	171	1.938	2.277	***
GDP growth	379	0.054	171	0.022	0.032	***

During the crisis, bank performance (ROA and ROE) tends to decline, credit growth and inflation decrease, while capital ratios and loan resilience increase, reflecting the impact of economic uncertainty on the banking sector.

Comparing credit risk and loan growth during the crisis and non-crisis periods, bank profitability (ROA and ROE) was lower during the crisis. Most striking is the increase in total loan resilience (Table 5). In contrast, credit risk and credit growth show lower averages during the crisis. Inflation and GDP growth also show lower averages during the crisis. This reflects the impact of economic uncertainty on the banking sector.

Table 5. Main Result

Variables	(1) ROA		(2) ROE		(3) ROA		(4) ROE		(5) ROA		(6) ROE	
NPLGL	-0,0371	***	-0,427	***					-0,0365	***	-0,426	
	(-3.61)		(-5,66)						(-3,56)		(-5,67)	
credit_growth	0,0285	***	0,275	***	0,0304	***	0,296	***	0,0282	***	0,274	***
	(5,75)		(7,54)		(6,08)		(7,93)		(5,69)		(7,53)	
ln_consumer_loan	-0,000312		-0,000788		-0,000245		-0,0000240					
	(-1,15)		(-0,40)		(-0,90)		(-0,01)					
ln_corporate_loan	0,000115		0,000842		0,000156		0,00131					
	(0,39)		(0,39)		(0,53)		(0,59)					
ln_gross_loans	0,00328	***	0,0331	***	0,00354	***	0,0361	***	0,00336	***	0,0329	***
	(7,60)		(10,43)		(8,21)		(11,19)		(9,38)		(12,53)	
netloans_to_totalassets	0,0198	***	0,0547		0,0189	**	0,0440		0,0194	***	0,0542	
	(2,66)		(1,00)		(2.51)		(0,78)		(2,61)		(0,99)	
total_capital_ratio	-0,00760		0,0534		-0,00625		0,0689		-0,00747		0,0521	
	(-1,11)		(1,06)		(-0.91)		(1,34)		(-1,10)		(1,05)	
Inflation	0,00122	***	0,0117	***	0,00123	***	0,0118	***	0,00121	***	0,0117	***
	(4,42)		(5,77)		(4,43)		(5,70)		(4,42)		(5,79)	
GDP growth	-0,0185		0,171		-0,0224		0,127		-0,0187		0,172	
	(-0,69)		(0,87)		(-0,82)		(0,62)		(-0,69)		(0,87)	
_cons	-0,0513	***	-0,510	***	-0,0584	***	-0,592	***	-0,0563	***	-0,505	***
	(-3,58)		(-4,84)		(-4,07)		(-5,52)		(-6,72)		(-8,22)	
Obs.	550		550		550		550		550		550	
R2	0.298		0.396		0.281		0.361		0.296		0.396	

t statistics in parentheses

* p<0.1, ** p<0.05, *** p<0.01

The results of the study show that Non-Performing Loans to Gross Loans (NPLGL) have a significant negative relationship to Return on Assets (ROA) and Return on Equity (ROE), with coefficients of -0.0371 and -0.427 at a significance level of 1% (p <0.01). This result indicates that an increase in the NPLGL ratio (which reflects the high number of non-performing loans to total loans) reduces bank profitability. An increase in NPLGL reflects an increase in credit risk, which lowers the quality of bank assets and reduces operational efficiency. Conversely, credit growth shows a significant positive relationship to ROA and ROE, with coefficients of 0.0285 and 0.275, respectively, at a significance level of 1% (p <0.01). This finding indicates that controlled credit growth can support increased profitability, although credit growth must be balanced with careful risk management. Control variables such as ln_gross_loans and inflation significantly contribute to profitability, while GDP growth does not significantly impact.

Information Asymmetric Theory, Principal Agency Theory, and Credit Default Theory can certainly explain this finding. Based on Akerlof's Information Asymmetric Theory, an increase in credit risk indicates an imbalance of information between banks and debtors, where banks do not have sufficient information regarding debtors' ability to pay, thus increasing credit risk as reflected in a high NPLGL ratio. This harms bank profitability due to increased loss provision costs. Within the framework of Principal Agency Theory by Jensen & Meckling, high NPLGL may indicate a failure to manage conflicts of interest between owners and management, where management may focus more on reckless credit expansion to achieve growth targets without considering higher risks. However, Credit Default Theory asserts that an increase in NPLGL illustrates an increase in default risk, which leads to the need to increase credit loss provisions. Higher provisions reduce net profits, thereby reducing bank profitability. On the other hand, credit growth, which

positively influences profitability, shows that effective management can manage credit growth carefully to support financial performance. Therefore, efficient credit risk management is very important to balance credit growth and mitigate default risk.

The findings reveal that NPLGL significantly reduces both ROA and ROE (Table 6), highlighting that higher non-performing loans adversely affect profitability due to elevated credit risk and provisioning costs, as seen in emerging markets like ASEAN, where weaker credit monitoring exacerbates this issue [56], while conversely, credit growth positively influences profitability by expanding credit portfolios that generate higher interest revenues, aligning with the role of credit in driving economic growth in ASEAN economies [57], emphasizing the need for efficient credit risk management and sustainable credit expansion to balance risk and profitability, especially in the dynamic ASEAN banking sector with its evolving regulatory frameworks.

Table 6. Robustness using Fixed Effect dan Random Effect

Variables	(1) ROA		(2) ROE		(3) ROA		(4) ROE	
L.NPLGL	-0.0446	***	-0.463	***	-0.0632	***	-0.740	***
	(-3.34)		(-4.41)		(-4.84)		(-7.44)	
Credit growth	0.0126	**	0.133	***	0.0163	***	0.169	***
	(2.41)		(3.24)		(2.80)		(3.86)	
ln consumer loan	-0.000130		-0.00143		-0.000197		-0,00175	
	(-0.51)		(-0.72)		(-0.78)		(-0.91)	
Ln corporate loan	-0.0000648		-0.000332		0.0000334		0.00119	
	(-0.21)		(-0.14)		(0.11)		(0.52)	
Ln gross loans	0.000468		0.0119		0.00237	***	0.0282	***
	(0.21)		(0.69)		(3.30)		(6.42)	
Netloans to totalassets	0.02545	**	0.0309		0.0218	**	0.0296	
	(2.58)		(0.40)		(2.24)		(0.42)	
Total capital ratio	-0.0295	***	-0.0768		-0.0213	***	0.00215	
	(-3.77)		(-1.25)		(-2.88)		(0.04)	
Inflation	-0.000404		0.00940	***	0.000456		0.00671	**
	(1.35)		(4.00)		(1.30)		(2.49)	
GDP growth	0.00900		0.188		0.0238		0.711	*
	(0.39)		(1.03)		(0.50)		(1.93)	
cons	-0.00347		-0.0821		-0.0341	**	-0.391	***
	(-0.10)		(-0.30)		(-2.02)		(-3.30)	
Obs.	448		448		448		448	
R2	0.178		0.174					

t statistics in parentheses

* p<0.1, ** p<0.05, *** p<0.01

Robustness tests show that lagged NPLGL consistently has a significant negative impact on ROA and ROE, suggesting that non-performing loans increase bank profitability. In contrast, credit growth has a positive and significant impact on ROA and ROE, indicating the important role of credit in driving financial performance across all models. The robustness test results consistently emphasize that credit risk significantly negatively impacts ROA and ROE, with coefficients of -0.0446 and -0.463 in the fixed effect model and -0.0632 and -0.740 in the random effect model ($p < 0.01$). On the other hand, credit growth consistently shows a significant positive effect on ROA and ROE, with coefficients of 0.0126 and 0.133 in the fixed effect model and 0.0163 and 0.169 in the random effect model ($p < 0.05$ and $p < 0.01$). Although NPLs in ASEAN are under control, global economic tensions can worsen credit quality. The results of this study are certainly still in line with the Akerlof's Information Asymmetric Theory, which highlights

information asymmetry in credit provision, and the Principal Agency Theory by Jensen & Meckling, which shows the importance of risk management to avoid risky credit expansion. Prudent risk management and controlled credit growth are critical to maintaining financial stability in ASEAN.

Table 7. Additional Test Crisis Effect

Variables	(1) ROA		(2) ROE		(3) ROA		(4) ROE	
L.NPLGL	-0.0399	***	-0.431	***	-0.0582	***	-0.709	***
	(-2.91)		(-4.01)		(-4.31)		(-6.90)	
L.NPLGL*crisis	-0.0640	*	-0.529	*	-0.0722	**	-0.563	**
	(-1.74)		(-1.84)		(-1.97)		(-2.00)	
L.crisis	-0.0248	*	-0.269	**	-0.0291	**	-0.289	***
	(-1.86)		(-2.57)		(-2.13)		(-2.73)	
Credit growth	0.0121	**	0.128	***	0.0160	***	0.167	***
	(2.31)		(3.13)		(2.73)		(3.79)	
Ln gross loans	0.000290		0.00909		0.00246	***	0.0287	***
	(0.12)		(0.48)		(3.56)		(6.71)	
L.ln consumer loan	0.0000475		-0.000629		-0.00000586		-0.00115	
	(0.16)		(-0.29)		(-0.02)		(-0.49)	
L.consumer loan crisis	0.000658		0,00614		0.000633		0.00654	
	(1.01)		(1.39)		(1.11)		(1.47)	
L.ln corporate loan	-0.000360		-0.00277		-0.000341		-0.00185	
	(-1.10)		(-1.08)		(-1.04)		(-0.75)	
L.corporate loan crisis	0.000736		0.00787	*	0.000829		0.00813	*
	(1.38)		(1.88)		(1.52)		(1.91)	
Netloans to totalassets	0.0258	**	0.0419		0.0215	**	0.0362	
	(2.43)		(0.50)		(2.22)		(0,52)	
Total capital ratio	-0.0294	***	-0.0763		-0.0205	***	0.00929	
	(-3.77)		(-1.25)		(-2.78)		(0.17)	
Inflation	0.000392		0.00946	***	0.000538		0.00757	***
	(1.31)		(4.03)		(1.52)		(2.80)	
GDP growth	0.00481		0.170		0.0173		0.670	*
	(0.15)		(0.70)		(0.36)		(1.82)	
cons	0.00149		-0.0116		-0.0309	*	-0.352	***
	(0.04)		(-0.04)		(-1.78)		(-2.85)	
Obs.	448		448		448		448	
R2	0.194		0.196					

The Table 7 shows that NPLGL negatively impacts both ROA and ROE, with a stronger effect during crises, indicating that higher non-performing loans hurt profitability. These results imply that the COVID-19 crisis worsens financial performance, negatively impacting ROA and ROE. This finding suggests that banks that are vulnerable to external fluctuations experience a significant decline in performance. The implication is the importance of proactive risk mitigation strategies, such as diversification and prudent credit management, and strengthening macroprudential policies in ASEAN. This aligns with previous banking credit risk research [58], [59], [34]. On the other hand, credit growth positively and significantly affects both profitability measures, even during crises, suggesting that credit expansion boosts income. However, it highlights the need for careful risk management, especially during periods of rapid credit growth in ASEAN's emerging banking sectors [60], [61].

Conclusion

This study examined the impact of loan quality measured by credit risk (NPLGL) and credit growth on the profitability of commercial banks in ASEAN over 10 years, from 2010

to 2023. Utilizing data from banks across ASEAN countries, we employed various models, including Fixed Effects, Random Effects and OLS, to analyze the relationship between these variables and bank performance, measured by Return on Assets (ROA) and Return on Equity (ROE). Our findings reveal that credit risk consistently negatively impacts bank profitability, underscoring the detrimental effect of poor loan quality on financial performance. Conversely, credit growth positively influences profitability, highlighting the importance of expanding lending activities to drive financial performance.

These results emphasize the critical balance between maintaining loan quality and managing credit growth to ensure long-term success in the banking sector. Implies how to increase credit without having to increase credit risk. However, this study has several contributions to addressing a gap in the existing literature, particularly in analyzing the interaction between loan quality and credit growth on bank profitability. Many studies have investigated institutional and regulatory elements, but few have looked at the combined impact of these elements, especially in the case of commercial banks in ASEAN. The focus of this research is ASEAN as it is a highly dynamic economic region with rapid economic growth and prone to financial risks. The study of the post-pandemic economic recovery provides important insights into the evolving financial landscape and the challenges faced by banks, especially the impact of NPLs on earnings. The second contribution is an explanation of how aggressive credit growth can lead to a spike in non-performing loans (NPLs), which emphasizes the importance of balancing credit expansion with risk management to maintain bank profitability. The third contribution is a study on post-pandemic economic recovery. This study provides insights into the changing financial landscape and the issues faced by banks, especially regarding the impact of NPLs on credit supply and bank stability amid ongoing economic uncertainty.

Our findings can be used by regulators, practitioners, and stakeholders involved in shaping practices and policies in the banking sector in the ASEAN region. To improve the stability and profitability of the banking system, this information can help build better regulatory frameworks, sustainable credit growth strategies, and enhance sound risk management practices. This study has its limitations. The amount of data used only comes from the last ten years from 2013 to 2023, which may not fully illustrate the changes in the ASEAN banking industry in the long run. In addition, other variables can be incorporated into this study to expand the findings. For example, economic uncertainty in ASEAN countries may affect banking profitability.

In conclusion, this study provides a good understanding of how credit growth, credit quality, and bank profitability relate to each other. It also emphasizes how important it is to balance these two components to ensure that the banking industry continues to succeed and progress. By correcting weaknesses and building on the results of this study, future research can help improve credit growth practices and risk management strategies. These results will contribute to the establishment of better frameworks and regulations in the banking sector, especially in the ASEAN region.

Acknowledgment

We would like to express our sincere gratitude to the Faculty of Economics and Business, Universitas Muria Kudus, for the financial support provided so that we could participate in the Borobudur International Symposium.

Authors' Contributions and Responsibilities

Author 1 was responsible for the overall conceptualization of the study, data collection and analysis, and drafting and revising the manuscript. Author 2 assisted with data editing, submission process, and other administrative tasks related to the study. Author 3 contributed to the writing of the background section, assisting in the representation of the results. All authors reviewed and approved the final manuscript for publication.

References

1. Bouteska, "Do Board Characteristics Affect Bank Performance? Evidence from the Eurozone," Journal of Asset Management, vol. 21, no. 6, pp. 535–548, Oct. 2020, doi: 10.1057/s41260-020-00181-2.
2. A. Buallay, S. M. Fadel, J. Alajmi, and S. Saudagaran, "Sustainability reporting and bank performance after financial crisis: Evidence from developed and developing countries," Competitiveness Review, vol. 31, no. 4, pp. 747–770, 2020, doi: 10.1108/CR-04-2019-0040.
3. S. Sharifi, A. Haldar, and S. V. D. N. Rao, "The relationship between credit risk management and non-performing assets of commercial banks in India," Managerial Finance, vol. 45, no. 3, pp. 399–412, Apr. 2019, doi: 10.1108/MF-06-2018-0259.
4. A. M. Santomero, R. K. Mellon, and W. School, "Commercial Bank Risk Management: An Analysis of the Process," Kluwer Academic Publishers, 1997.
5. H. V. Greuning and S. B. Bratanovic, Analyzing Banking Risk: A Framework for Assessing Corporate Governance and Risk Management, 2nd ed. 2003.
6. A. Ari, S. Chen, and L. Ratnovski, "The dynamics of non-performing loans during banking crises: A new database with post-COVID-19 implications," J Bank Financ, vol. 133, Dec. 2021, doi: 10.1016/j.jbankfin.2021.106140.
7. S. C. Fell et al., "Fungal decomposition of river organic matter accelerated by decreasing glacier cover," Nat Clim Chang, vol. 11, no. 4, pp. 349–353, Apr. 2021, doi: 10.1038/s41558-021-01004-x.
8. M. O'Connell, "Bank-specific, industry-specific and macroeconomic determinants of bank profitability: evidence from the UK," Studies in Economics and Finance, vol. 40, no. 1, pp. 155–174, Jan. 2023, doi: 10.1108/SEF-10-2021-0413.
9. P. K. Bhowmik and N. Sarker, "Loan growth and bank risk: empirical evidence from SAARC countries," Heliyon, vol. 7, no. 5, May 2021, doi: 10.1016/j.heliyon.2021.e07036.
10. E. Tölö and M. Virén, "How much do non-performing loans hinder loan growth in Europe?," Eur Econ Rev, vol. 136, Jul. 2021, doi: 10.1016/j.euroecorev.2021.103773.
11. R. Boussaada, A. Hakimi, and M. Karmani, "Non-performing loans and bank performance: what role does corporate social responsibility play? A system GMM analysis for European banks," Journal of Applied Accounting Research, vol. 24, no. 5, pp. 859–888, Oct. 2023, doi: 10.1108/JAAR-10-2021-0283.
12. E. Harb, R. El Khoury, N. Mansour, and R. Daou, "Risk management and bank performance: evidence from the MENA region," Journal of Financial Reporting and Accounting, vol. 21, no. 5, pp. 974–998, Nov. 2023, doi: 10.1108/JFRA-07-2021-0189.
13. A. Kokkinis and A. Miglionico, "The role of bank management in the EU resolution regime for NPLs," Journal of Financial Regulation, vol. 6, no. 2, pp. 204–232, Sep. 2020, doi: 10.1093/jfr/fjaa007.
14. P. K. Ozili, "Bank Profitability and Capital Regulation: Evidence from Listed and non-Listed Banks in Africa," Journal of African Business, vol. 18, no. 2, pp. 143–168, Apr. 2017, doi: 10.1080/15228916.2017.1247329.
15. J. Paroush and B. Z. Schreiber, "Profitability, capital, and risk in US commercial and savings banks: Re-examination of estimation methods," Quarterly Review of Economics and Finance, vol. 74, pp.

148–162, Nov. 2019, doi: 10.1016/j.qref.2018.12.007.
16. I. Serwadda, "Impact of credit risk management systems on the financial performance of commercial banks in Uganda," Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, vol. 66, no. 6, pp. 1627–1635, 2018, doi: 10.11118/actaun201866061627.
17. I. Saleh and M. Abu Afifa, "The effect of credit risk, liquidity risk and bank capital on bank profitability: Evidence from an emerging market," Cogent Economics and Finance, vol. 8, no. 1, Jan. 2020, doi: 10.1080/23322039.2020.1814509.
18. [18] V. Flamini, C. Mcdonald, and L. Schumacher, "The Determinants of Commercial Bank Profitability in Sub-Saharan Africa; Valentina Flamini, Calvin McDonald, and Liliana Schumacher; IMF Working Paper 09/15; January 1, 2009.," 2009.
19. Y. L. Chen, H. I. Ting, and M. C. Wang, "Government support and bank performance during the 2007–2008 financial crisis," North American Journal of Economics and Finance, vol. 55, Jan. 2021, doi: 10.1016/j.najef.2020.101301.
20. H. N. Dang, V. T. T. Vu, X. T. Ngo, and H. T. V. Hoang, "Study the Impact of Growth, Firm Size, Capital Structure, and Profitability on Enterprise Value: Evidence of Enterprises in Vietnam," Journal of Corporate Accounting and Finance, vol. 30, no. 1, pp. 144–160, Jan. 2019, doi: 10.1002/jcaf.22371.
21. A. Demirgüç-Kunt and E. Detragiache, "Basel Core Principles and bank soundness: Does compliance matter?," Journal of Financial Stability, vol. 7, no. 4, pp. 179–190, Dec. 2011, doi: 10.1016/j.jfs.2010.03.003.
22. C. Y. Park and K. Shin, "COVID-19, nonperforming loans, and cross-border bank lending," J Bank Financ, vol. 133, Dec. 2021, doi: 10.1016/j.jbankfin.2021.106233.
23. S. H. Chun and N. Ardaaragchaa, "Analysis of Factors Affecting the Loan Growth of Banks with a Focus on Non-Performing Loans," Journal of Risk and Financial Management, vol. 17, no. 5, May 2024, doi: 10.3390/jrfm17050203.
24. Z. Jijian, L. Yichan, and D. Xuhui, "Can green credit policy improve the overseas investment efficiency of enterprises in China?," J Clean Prod, 2022.
25. S. A. Al-Thaqeb, B. G. Algharabali, and K. T. Alabdulghafour, "The pandemic and economic policy uncertainty," International Journal of Finance and Economics, vol. 27, no. 3, pp. 2784–2794, Jul. 2022, doi: 10.1002/ijfe.2298.
26. E. Demir and G. O. Danisman, "The impact of economic uncertainty and geopolitical risks on bank credit," North American Journal of Economics and Finance, vol. 57, Jul. 2021, doi: 10.1016/j.najef.2021.101444.
27. O. Crocco, Introduction: The Dynamic Region of Southeast Asia. 2021. doi: 10.1007/978-3-030-79697-6_1.
28. The ASEAN Secretariat, "ASEAN STATISTICAL YEARBOOK 2021," Jakarta, Dec. 2021.
29. A. B. Khan, M. Fareed, A. A. Salameh, and H. Hussain, "Financial Innovation, Sustainable Economic Growth, and Credit Risk: A Case of the ASEAN Banking Sector," Front Environ Sci, vol. 9, Oct. 2021, doi: 10.3389/fenvs.2021.729922.
30. C. H. P. Ho, N. N. T. Pham, and K. T. Nguyen, "Economic Growth, Financial Development, and Trade Openness of Leading Countries in ASEAN," Journal of Asian Finance, Economics and Business, vol. 8, no. 3, pp. 191–199, 2021, doi: 10.13106/jafeb.2021.vol8.no3.0191.
31. The Global Economy.com, "Economic indicators data for over 200 countries." Accessed: Nov. 17, 2024. [Online]. Available: https://www.theglobaleconomy.com/indicators_list.php
32. R. Ekinci and G. Poyraz, "The Effect of Credit Risk on Financial Performance of Deposit Banks in Turkey," in Procedia Computer Science, Elsevier B.V., 2019, pp. 979–987. doi: 10.1016/j.procs.2019.09.139.
33. E. Aslam and R. Haron, "Does corporate governance affect the performance of Islamic banks? New insight into Islamic countries," Corporate Governance (Bingley), vol. 20, no. 6, pp. 1073–1090, Aug. 2020, doi: 10.1108/CG-11-2019-0350.
34. A. Siddique, M. A. Khan, and Z. Khan, "The effect of credit risk management and bank-specific factors on the financial performance of the South Asian commercial banks," Asian Journal of Accounting Research, vol. 7, no. 2, pp. 182–194, May 2022, doi: 10.1108/AJAR-08-2020-0071.
35. K. Hamdi and G. Hassen, "Economic policy uncertainty effect on credit risk, lending decisions and banking performance: evidence from Tunisian listed banks," Journal of Economic and Administrative Sciences, vol. 38, no. 2, pp. 287–303, 2021, doi: 10.1108/jeas-09-2020-0159.
36. T. D. Q. Le, V. T. H. Nguyen, and S. H. Tran, "Geographic loan diversification and bank risk: A cross-country analysis," Cogent Economics and Finance, vol. 8, no. 1, Jan. 2020, doi: 10.1080/23322039.2020.1809120.

37. A. Jreisat, "Credit risk, economic growth and profitability of banks," International Journal of Economics and Business Research, vol. 20, no. 152, 2020, doi: 10.1504/IJEBR.2020.109150.
38. A. Siddique, M. A. Khan, and Z. Khan, "The effect of credit risk management and bank-specific factors on the financial performance of the South Asian commercial banks," Asian Journal of Accounting Research, vol. 7, no. 2, pp. 182–194, 2022, doi: 10.1108/AJAR-08-2020-0071.
39. T. C. Nguyen, "Economic policy uncertainty and bank stability: Does bank regulation and supervision matter in major European economies?," Journal of International Financial Markets, Institutions and Money, vol. 74, Sep. 2021, doi: 10.1016/j.intfin.2021.101387.
40. J. Wu, Y. Yao, M. Chen, and B. N. Jeon, "Economic uncertainty and bank risk: Evidence from emerging economies," Journal of International Financial Markets, Institutions and Money, vol. 68, Sep. 2020, doi: 10.1016/j.intfin.2020.101242.
41. B. N. Ashraf, C. Zheng, C. Jiang, and N. Qian, "Capital regulation, deposit insurance and bank risk: International evidence from normal and crisis periods," Res Int Bus Finance, vol. 52, 2020, doi: https://doi.org/10.1016/j.ribaf.2020.101188.
42. L. P. Nadia, W. F. R. Sudirman, and A. Pratiwi, "Do the more women on the board, the higher the firm's performance during a COVID-19 crisis? Evidence from ASEAN countries," Equality, Diversity and Inclusion, 2024, doi: 10.1108/EDI-05-2023-0178.
43. A. T. Le, T. P. Tran, and A. V. Mishra, "Climate risk and bank stability: International evidence," Journal of Multinational Financial Management, vol. 70–71, no. May, p. 100824, 2023, doi: 10.1016/j.mulfin.2023.100824.
44. M. Shabir, P. Jiang, Y. Shahab, W. Wang, Ö. Işık, and I. Mehroush, "Diversification and bank stability: Role of political instability and climate risk," International Review of Economics and Finance, vol. 89, no. September 2023, pp. 63–92, 2024, doi: 10.1016/j.iref.2023.10.009.
45. M. Shabir, P. Jiang, S. Bakhsh, and Z. Zhao, "Economic policy uncertainty and bank stability : Threshold effect of institutional quality and competition," Pacific-Basin Finance Journal, vol. 68, no. May, p. 101610, 2021, doi: 10.1016/j.pacfin.2021.101610.
46. E. Demir and G. O. Danisman, "The impact of economic uncertainty and geopolitical risks on bank credit," North American Journal of Economics and Finance, vol. 57, no. November 2020, p. 101444, 2021, doi: 10.1016/j.najef.2021.101444.
47. G. O. Danisman, E. Demir, and P. Ozili, "Loan loss provisioning of US banks: Economic policy uncertainty and discretionary behavior," International Review of Economics and Finance, vol. 71, pp. 923–935, 2021, doi: 10.1016/j.iref.2020.10.016.
48. B. N. Ashraf and Y. Shen, "Economic policy uncertainty and banks' loan pricing," Journal of Financial Stability, vol. 44, p. 100695, 2019, doi: 10.1016/j.jfs.2019.100695.
49. E. Demir and G. Ozturk, "North American Journal of Economics and Finance The impact of economic uncertainty and geopolitical risks on bank credit," North American Journal of Economics and Finance, vol. 57, no. April, p. 101444, 2021, doi: 10.1016/j.najef.2021.101444.
50. E. Demir and G. O. Danisman, "The impact of economic uncertainty and geopolitical risks on bank credit," North American Journal of Economics and Finance, vol. 57, no. April, p. 101444, 2021, doi: 10.1016/j.najef.2021.101444.
51. D. V. Tran and C. Nguyen, "Policy uncertainty and bank's funding costs: The effects of the financial crisis, Covid-19 pandemic, and market discipline," Res Int Bus Finance, vol. 65, no. August 2021, p. 101986, 2023, doi: 10.1016/j.ribaf.2023.101986.
52. G. O. Danisman and A. Tarazi, "Economic policy uncertainty and bank stability: Size, capital, and liquidity matter," Quarterly Review of Economics and Finance, vol. 93, no. December 2023, pp. 102–118, 2024, doi: 10.1016/j.qref.2023.11.008.
53. J. B. Chatelain and K. Ralf, "Inference on time-invariant variables using panel data: A pretest estimator," Econ Model, vol. 97, pp. 157–166, Apr. 2021, doi: 10.1016/j.econmod.2021.01.014.
54. J. E. McKenzie and A. A. Veroniki, "A brief note on the random-effects meta-analysis model and its relationship to other models," J Clin Epidemiol, vol. 174, Oct. 2024, doi: 10.1016/j.jclinepi.2024.111492.
55. S. Varin, "COMPARING THE PREDICTIVE PERFORMANCE OF OLS AND 7 ROBUST LINEAR REGRESSION ESTIMATORS ON A REAL AND SIMULATED DATASETS," International Journal of Engineering Applied Sciences and Technology, vol. 5, 2021, doi: 10.33564/IJEAST.2021.v05i11.002.
56. C. P. Nguyen, T. H. Le, and T. D. Su, "Economic policy uncertainty and credit growth: Evidence from a global sample," Res Int Bus Finance, vol. 51, Jan. 2020, doi: 10.1016/j.ribaf.2019.101118.
57. M. Albaity, R. Saadaoui Mallek, and H. Mustafa, "Bank stock return reactions to the COVID-19 pandemic: The role of investor sentiment in MENA countries," Risks, vol. 10, no. 2, p. 43, 2022, doi: https://doi.org/10.3390/risks10020043.

58. E. Aslam and R. Haron, "Corporate governance and risk-taking of Islamic banks: evidence from OIC countries," Corporate Governance: The International Journal of Business in Society, 2021, doi: 10.1108/CG-08-2020-0311.
59. S. Mohapatra and S. M. Purohit, "The implications of economic uncertainty for bank loan portfolios," Appl Econ, vol. 53, no. 45, pp. 5242–5266, 2021, doi: 10.1080/00036846.2021.1922589.
60. G. Danisman and A. Tarazi, "Financial Inclusion and Bank Stability: Evidence from Europe," 2020.
61. M. F. Ekinci and T. Omay, "Current account and credit growth: The role of household credit and financial depth," North American Journal of Economics and Finance, vol. 54, Nov. 2020, doi: 10.1016/j.najef.2020.101244.