Chapter 4

The Relationship Between Credit Volumes and Profitability: Findings from the BIST Banking Index

Nevzat Çalış[1]

Abstract

In this study, the effect of the loan amount given by the banks operating in the BIST banking index on the profitability of the banks was examined. The data for the periods 2009-2023 were analysed with the help of regression analysis. Two different models were created and ROA and ROE were determined as dependent variables. Total loans were determined as independent variables, while Non-Performing Loans / Total Loans, Shareholders' Equity / Total Assets, Deposits / Total Assets and Liquid Assets / Total Assets ratios were used as control variables. As a result of the study, a negative and significant relationship was found between ROA and NPL at a significance level of 5%, and between ROE and NPL at a significance level of 1%. In addition, a positive relationship was found between ROA and equity-fixed assets/ total assets ratio. In addition, significant relationships were found between ROA and equity/total assets and liquid assets/total assets ratios at the 10% significance level. On the other hand, a positive correlation was found between the equity/total assets ratio and ROE, indicating that a stronger equity structure of banks could increase their return on equity.

1. Introduction

Financial systems are examined in two groups as market-based and bank-based. In countries where the financial system is based on a market basis, retirement and investment funds form the basis of the system. In financial systems based on banking, banks are at the center of the system (Acikalin and Yildirim, 2021; Medetoglu and Saldanli, 2022). In countries with a bank-based financial system, achieving financial stability depends on having

1 Assoc. Prof. Dr., Bandırma Onyedi Eylül University, ncalis@bandirma.edu.tr, https://orcid.org/0000-0002-5604-0728

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strong and durable banks. When the share and function of the banking sector in the country's economy are taken into account, it can be said that Turkey's financial system has a bank-based structure (Yıldırım and Sakarya, 2019).

The banking sector is at the heart of the financial system, playing a critical role in economic growth and development (Acikalin and Yildirim, 2021). The main function of banks is to provide funds for economic activities by converting savings into loans, and at the same time achieve profitability in the process. Banks' lending activities account for a large part of their earnings (Yildirim et.al, 2018; Kavas and Medetoglu, 2024). Therefore, the relationship between loan volume and the profitability of banks is of great importance for the sustainability of the sector and the health of the economic system. Understanding this relationship helps both banks make strategic decisions and regulators manage risks.

While the loan volume refers to the amount of credit provided by banks to the economy through the financial products offered; Profitability is usually measured by indicators such as net profit margin, return on equity (ROE) and return on assets (ROA) (Keskin and Kurt, 2022). Although the increase in loan volume has the potential to increase banks' revenues, the increased loan volume also comes with credit risk. This situation reveals the importance of banks' risk management strategies. In the literature, it has been stated that an increase in loan volume can have both positive and negative effects on the profitability of banks (Kashyap, Stein, & Wilcox, 1993; Berger and Bouwman, 2013).

Although an increase in loan volume means an increase in potential revenues for creditors, an increased loan volume also increases banks' exposure to credit risk. This can increase the risk of insolvency faced by banks, which can put pressure on profitability (Berger and Udell, 2004). On the other hand, with an efficient credit distribution mechanism and effective risk management, the increase in loan volume can significantly increase the profitability of banks (Dietrich and Wanzenried, 2011).

Banks perform important intermediary activities for financial markets. Banks are economic establishments that accept deposits and use deposits in various credit transactions in the most productive way or obtain or provide credit in a regular way, which is the main focus of their activities (Yıldırım, 2020). The impact of banks' loans on profitability examines the decisive role of credit transactions, which are an important part of the financial system, on bank performance. Through loans, banks meet the financial needs of their customers on the one hand and generate income from this process on the other. Interest income from loans is one of the main income items of banks

and directly affects their profitability. However, this profitability is not only limited to interest income but is also affected by many factors such as credit risks, economic conditions, and the quality of the loan portfolio. Banks try to manage these risks by carefully monitoring the repayment performance of the loans they provide (Keskin and Calisir, 2024). The increase in credit risk will adversely affect the profits of banks in case of problems in repayments. Therefore, banks' credit strategies and lending policies are a determining factor on profitability. In this study, the relationship between the financial performance of banks and credit management is investigated by examining the effect of loans given by banks operating in the BIST banking index on profitability.

The study was planned in four parts. In the first part, the introductory part, the relationship between profitability and credit is discussed, while in the second part, the summaries of the studies on the research subject are included. In the third part, information about the data and method is presented, and then in the fourth part, the findings of the research are included. In the fifth and last section, the results and recommendations of the study are included and the study is concluded.

2. Literature Review

In this section, summaries of national and international studies dealing with the effects of loans given by banks on profitability are included.

Molyneux and Thornton (1992) examined the factors affecting the profitability of European banks in their study. In the study, a positive relationship was found between the expansion of loan volume and profitability. It has been stated that banks with high loan volumes, in particular, can increase their revenues with the increase in credit demand, but this effect is associated with the capital structure of banks and the general economic situation. In addition, it was emphasized that the growth in loan volume is decisive on the performance of banks in the long run.

Kashyap, Stein and Wilcox (1992) examined the relationship between loan volume and profitability of banks from a macroeconomic perspective. The authors argued that the volume of credit reflects economic cycles and that changes in the supply of credit have a direct impact on the profitability of banks. Expansions in loan volume have made a positive contribution to the profitability of banks, especially during growth periods; In periods of contraction, it has been observed that it has negative effects on profitability due to the increase in credit risk.

Dietrich and Wanzenried (2011) analysed the factors affecting the profitability of banks in the Swiss banking sector. In the study, it was observed that the increase in loan volume had a positive effect on the profitability of banks. However, the authors state that this relationship may vary depending on the credit quality and risk management processes of banks. It has been concluded that banks' tendency to provide risky loans, especially in times of crisis, puts pressure on profitability.

Berger and Bouwman (2013) examined the effects of banks' capital structure on banks' performance during crisis periods. In the study, it was concluded that the increase in loan volume has a significant positive effect on the profitability of banks in times of crisis. However, it was emphasized that factors such as capital adequacy and risk management are important for this relationship to remain strong. The study shows that keeping the capital structure in balance while increasing the loan volume of banks can increase profitability.

Fidanoski et al. (2018) investigated the effect of bank-specific, sector-specific and macro-variable-specific determinants on return on assets (ROA) and net interest margin ratio (RNIM). In this study, the data of Croatian banks for the period 2007-2014 were analysed using dynamic estimation technique (DOLS). As a result of the study, it was determined that asset size (economies of scale), loan portfolio and GDP growth had a significant positive effect on the profitability of banks. In addition, it was concluded that capital adequacy ratio (CAR) and leverage had a positive effect on ROA and RNIM.

Aydemir et al. (2018) analysed the relationship between the profitability of the Turkish commercial banking sector and the loan deposit ratio using quarterly data between 2002-2015 with the help of the GMM model. In the study, three different variables as profitability indicators; net interest margin, return on assets and equity. As a result of the study, a statistically significant and positive relationship was found between loan deposit ratio and banking profitability.

Türkdönmez and Babuşçu (2019) examined the factors affecting the return on assets (ROA) and return on equity (ROE) of 11 banks, which constitute 83.8% of the total assets of the Turkish banking sector between 2010 and 2017, using the panel data analysis method. As a result of the study, a positive and significant relationship was found between inflation, average deposit interest and GDP selected as external factors and ROA and ROE selected as dependent variables, while a positive and significant relationship was found between equity/total assets and ROE selected as internal factors.

In addition, a positive and significant relationship was found between sector share and asset quality and ROA/ROE.

Brastama and Yadnya (2020) aimed to determine the role of profitability in mediating Capital Adequacy Ratio (CAR) and Non-Performing Loans (NPL) in banking stock prices. In the study, the data for the periods of 2011-2018 were examined with the help of regression analysis. As a result of the study, it was determined that the CAR variable had a positive effect on the ROA variable and the NPL variable had a negative effect on the ROA variable. In addition, it has been determined that the CAR variable has a positive effect on stock prices, while the NPL variable has a negative effect on stock prices.

Al-Homaidi et al. (2020) aimed to examine the impact of internal and external determinants on the profitability of 37 commercial banks listed on the Bombay Stock Exchange (BSE) in India over the period 2008-2017. The research employed both static models (pooled, fixed, and random effects) as well as the Generalized Method of Moments (GMM). The findings revealed that bank size, asset quality, liquidity, asset management, and net interest margin are significant internal determinants influencing return on assets (ROA). Additionally, it was concluded that capital adequacy, bank size, operational efficiency, gross domestic product (GDP), and inflation rate have a significant negative impact on return on equity (ROE). However, asset quality and asset management were found to have a positive effect on ROE, while liquidity, deposits, net interest margin, and non-interest income were determined to have an insignificant impact on ROE.

Yildirim and Ildokuz (2020) analyzed annual data from 11 banks listed in the BIST Bank Index, covering the period from 2004 to 2018. Their study focused on internal factors affecting banks, including capital adequacy, asset quality, management efficiency, liquidity status, and market risk sensitivity, and how these factors influence return on assets (ROA) and return on equity (ROE). The findings revealed that capital adequacy, management efficiency, and liquidity significantly impact both ROA and ROE. In contrast, asset quality and market risk sensitivity were found to have no significant effect on these financial ratios.

Sarı and Konukman (2021) examined the relationship between sectoral credit concentration and credit risk-profitability in the Turkish banking sector with the autoregressive distributed lag (ARDL) model by using 3-month sector data and macroeconomic data for the period 2007-2018. As a result of the study, a negative relationship was found between sectoral

credit concentration and credit risk, and a positive relationship was found with return on equity (ROE).

Singh et al. (2021) investigated the impact of non-performing loans (NPLs) on the profitability of traditional commercial banks in Nepal. In the study, the data cover the period of 2015-2019 and NPL dependent variable and Return on Assets (ROA), Capital Adequacy Ratio (CAR), Bank Size, GDP growth and Inflation were analyzed using multiple regression analysis method using the independent variable. As a result of the study, it was determined that ROA, Bank Size, GDP growth and Inflation significantly affect NPLs. In addition, it was determined that CAR did not have a significant effect on NPL, whereas GDP growth had a positive and significant effect on NPL.

Chollaku and Aliu (2021) investigated the effect of non-performing loans on the profitability of Kosovo banks. In the study, the data for the periods of 2010-2019 were examined with the help of regression analysis. As a result of the study, it was determined that the effect of non-performing loans on profitability was statistically significant and the return on assets decreased by 0.19% for every 1% increase in the non-performing loan ratio.

Isayas (2022) investigated the firm-specific and macroeconomic determinants of the profitability of commercial banks in Ethiopia. In the study, the data of 14 banks for the periods of 2008-2019 were analyzed using the GMM model. As a result of the analysis, it was revealed that firm size, liquidity ratio, fixed assets, capital adequacy, leverage and real GDP growth rate have a positive and statistically significant effect on the profitability of banks, while firm age and inflation rate have a negative but statistically significant effect on the profitability of banks in Ethiopia.

Jigeer and Koroleva (2023) investigated the effect of internal and external factors on the profitability of urban commercial banks in China. In the study, the data of 16 commercial banks for the periods of 2008-2020 were examined with the help of panel regression analysis. As a result of the study, it was determined that internal factors such as bank size, capital adequacy, credit quality and operating efficiency and external factors such as GDP and inflation have a significant impact on the profitability of commercial banks, while liquidity does not have a significant effect on the profitability of the bank.

Anshar (2023) examined the relationship between loan volume and profitability level and the relationship between non-performing loans and profitability. The research was carried out using the data obtained from

banks operating in Indonesia for the period 2010-2014. Descriptive analysis and correlation analysis were applied as analysis methods. According to the results of the research, it was observed that the increase in loan volume increased the profitability of the bank, but non-performing loans negatively affected the profitability. In particular, it has been determined that the level of profitability decreases as the non-performing loans increase, and profitability increases as these ratios decrease

When the literature review is evaluated in general, it is seen that the researches are examined in the context of various factors affecting the profitability of banks. There are differences in the results obtained. It has been determined that the most used micro variables in the researches are the non-performing loans ratio, capital adequacy ratio, bank size, liquidity ratio, and the most used macro variables are ratios such as GDP and inflation rate. Within the framework of the resources reached, there is no study examining the effect of the loan volumes given by the banks operating in the BIST banking index on the profitability of the banks. From this point of view, this research is expected to contribute to the literature.

3. Data and Methodology

In this study, the effect of the loans given by the banks on the profitability of the banks was investigated by using the annual data of 10 banks operating in the BIST Bank index between 2009-2023. For this purpose, 2 different models were created. In Model 1, return on assets (R1) is considered as the dependent variable, while in Model 2, return on equity (R2) is taken as the dependent variable. The main independent variable in both models is the loan amounts given by banks. In addition, Non-Performing Loans / Total Loans, (Equity – Fixed Assets) / Total Assets, Equity / Total Assets, Deposits / Total Assets and Liquid Assets / Total Assets ratios were used as the control variable of the study. The data used in the study were obtained from the Finnet database. Table 1 shows the codes and names of the banks used in the research.

Table 1. Banks Used in Research

No	Code	Banks
1	AKBNK	Akbank
2	ALBRK	Albaraka Türk
3	GARAN	Garanti Bank
4	HALKB	Halkbank of Turkiye
5	ICBCT	ICBC Turkey Bank
6	ISBTR	İş Bank (B)
7	SKBNK	Şekerbank
8	TSKB	Industrial Development Bank of Turkiye
9	VAKBN	Vakıfbank
10	YKBNK	Yapı ve Kredi Bank

The regression equations created for Model 1 and Model 2 in the study are given below. Panel data models were used in the application part of the study, and the abbreviations of the dependent and independent variables are shown in Table 2.

(Model 1) $$R1_{it} = \beta_0 + \beta_1 B1_{it} + \beta_2 B2_{it} + \beta_3 B3_{it} + \beta_4 B4_{it} + \beta_5 B5_{it} + \beta_6 B6_{it}.$$

(Model 2) $$R2_{it} = \beta_0 + \beta_1 B1_{it} + \beta_2 B2_{it} + \beta_3 B3_{it} + \beta_4 B4_{it} + \beta_5 B5_{it} + \beta_6 B6_{it}.$$

Table 2. Research Variables Details

Abbreviations	Variables Name and Details	Variable Types
B1	Loans	Independent
B2	Non-Performing Loans / Total Loans	
B3	(Equity – Fixed Assets) / Total Assets	
B4	Equity / Total Assets	
B5	Deposits / Total Assets	
B6	Liquid Assets / Total Assets	
R1	Return on Asset (Net İncome/ Total Assets)	Dependent
R2	Return on Equity (Net İncome/ Total Equity)	

In Table 3, descriptive statistics of 140 observations consisting of 14-year data of 10 banks in the BIST Banking Index are included. It is seen that the average return on assets and return on equity, which are determined as dependent variables in the two models, are 1.84 and 17.59, respectively.

Table 3. Descriptive Statistics

	R1	R2	B1	B2	B3	B4	B5	B6
Mean	1.848291	17.59137	1.71E+11	3.897265	16.99812	10.30274	63.75650	3.581111
Median	1.490000	13.60000	7.26E+10	3.680000	16.03000	10.54000	63.28000	2.380000
Maximum	17.59000	150.5000	1.46E+12	13.05000	30.81000	21.94000	85.31000	54.97000
Minimum	-2.210000	-31.42000	1146684.	0.150000	13.03000	3.700000	26.06000	-62.06000

In Table 3, It is seen that the maximum value of the asset profitability variable is 17.59 and the minimum value is -2.21. Looking at the return on equity, it is seen that the maximum value is 150.50, while the minimum value is -31.42.

Table 4. Correlation Analysis Results of Variables

	R1	**R2**	**B1**	**B2**	**B3**	**B4**	**B5**
R2	0,96	1,00					
B1	0,10	0,12	1,00				
B2	-0,24	-0,32	-0,21	1,00			
B3	0,40	0,43	0,04	-0,20	1,00		
B4	0,25	0,11	-0,17	0,14	0,18	1,00	
B5	0,01	0,00	0,11	0,35	-0,31	-0,07	1,00
B6	-0,05	0,01	-0,04	-0,11	0,34	-0,27	-0,13

In Table 4, the correlation matrix of the variables used in the research is given. In the study, it is seen that there is a strong positive correlation of 0.96 between return on assets and return on equity, which are determined as the dependent variable. In other words, it is seen that these two variables tend to increase and decrease together. It is seen that there is a positive correlation between return on assets and loans, and a negative correlation between non-performing loan ratio. Additionally, it is seen that asset profitability (Equity - Fixed Assets) / Total Assets, Equity / Total Assets, Deposits / Total Assets ratios have a positive correlation and a negative correlation with the Liquid Asset / Total Assets ratio. The relationship between return on equity and other variables is parallel to the return on assets, excluding the Liquid Assets/ Total Assets ratio. When the relationship between the independent variables is examined, it is seen that the relationship is generally low.

In the study, before starting the analysis, it was tested whether the variables had cross-sectional dependency (Yıldırım, 2021). According to the results of cross-sectional analysis, the stationarity of the variables according to the first generation or second generation unit root analyzes was examined (Börekci Dilsizler ve Yüksel Yıldırım, 2022). Series should not contain stationary i.e.

unit roots. Analyses with series containing unit roots lead to the problem of spurious regression (Sarıkovanlık et al., 2019). After the non-stationary series were made stationary, the appropriate panel data analysis model was selected for the study. Here, after deciding whether the regression model has a pooled, fixed-effect or random-effect model, the test of assumptions is examined. In order to eliminate the negative situations in the assumptions, the regression model was reconstructed with the appropriate resistant estimator and more reliable results were obtained.

3.1. Findings

Table 5 shows the cross-sectional dependency test results of the variables. The Breusch-Pagan LM test (1980) and the Pesaran CD (2004) test were performed to determine whether the variables contained horizontal sections. As a result of the tests, it was determined that there was cross-sectional dependence in all 2 dependents and 6 independent variables. In this case, second-generation unit root tests will be more appropriate to perform unit root analysis of variables. For the second generation unit root test, the Bai and NP-Panic test (2004) unit root test was performed.

Table 5. Test Results of Cross Section Dependency

Variable Name	Breusch-Pagan LM		Pesaran CD Test	
	Statistics	Probability	Statistics	Probability
R1	293.4636	0.0000	15.00714	0.0000
R2	383.0820	0.0000	18.22366	0.0000
B1	624.2322	0.0000	24.95507	0.0000
B2	302.8237	0.0000	12.98201	0.0000
B3	140.7222	0.0000	9.287932	0.0000
B4	297.5893	0.0000	15.73851	0.0000
B5	100.7020	0.0000	7.212812	0.0000
B6	91.57833	0.0001	4.482860	0.0000

Table 6 shows the unit root test results of the variables. Series containing unit roots exhibit non-stationary behaviour (Yüksel Yıldırım, 2023). It was determined that all variables were stationary at the level of "0.10" in level values and did not contain unit roots. Therefore, in the analyses to be made, analyses will be made with the level values of the variables.

Table 6. Unit Root Test Results of Variables

Variables	Types of Tests		Result
	Bai ve Ng- PANIC		
R1	None	-1.9566 (0.0503)	Stationary
	Constant	-1.9829 (0.0473)	
	Constant and Trend	-3.1619 (0.0015)	
R2	None	-1.9783 (0.0478)	Stationary
	Constant	-1.9146 (0.0555)	
	Constant and Trend	-3.1619 (0.0015)	
B1	None	-1.9631 (0.0496)	Stationary
	Constant	-1.9952 (0.0460)	
	Constant and Trend	-3.1619 (0.0015)	
B2	None	-1.9501 (0.0511)	Stationary
	Constant	-1.9948 (0.0460)	
	Constant and Trend	-3.1619 (0.0015)	
B3	None	-1.8588 (0.0630)	Stationary
	Constant	-1.8783 (0.0603)	
	Constant and Trend	-3.1619 (0.0015)	
B4	None	-1.9380 (0.0526)	Stationary
	Constant	-1.9607 (0.0499)	
	Constant and Trend	-3.1619 (0.0015)	
B5	None	-1.8386 (0.0659)	Stationary
	Constant	-1.8741 (0.0609)	
	Constant and Trend	-2.9997 (0.0027)	
B6	None	-1.9907 (0.0465)	Stationary
	Constant	-1.9801 (0.0476)	
	Constant and Trend	-3.1619 (0.0015)	

It is essential to assess whether a fixed effects or random effects model is more appropriate for the analysis. To make this determination, the Hausman (1978) test statistic is employed. A key distinction between the two models lies in the correlation between unit effects and independent variables. If no correlation exists, the random effects model is deemed the more suitable choice (Yıldırım, 2021). In Table 7, Hausman test (1978) and Breusch Pagan LM test (1980) were used to select the regression model for Model 1 and Model 2. According to the results of the Model 1 Hausman test and Breush Pagan LM test, it was determined that the random effect was more appropriate. According to the results of the Hausman test and the Breush Pagan LM test for Model 2, it was determined that fixed effects would be more appropriate.

Table 7. Model Selection Tests

Model 1	**Hausman Test**			**Breusch and Pagan Lagrangian Multiplier Test**	
	Chi-Square Value	Probability		Chi-Square Value	Probability
	7.30	0.1991		14.23	0.0001
Model 2	**Hausman Test**			**Breusch and Pagan Lagrangian Multiplier Test**	
	Chi-Square Value	Probability		Chi-Square Value	Probability
	12.55	0,000		5.29	0.0000

Table 8 shows the results of different variance, autocorrelation and inter-unit correlation assumptions for Model 1 compared to the random effect model. When the test results of Levene (1960), Brown and Forsythe (1974) were examined, it was determined that there was different variance. Durbin-Watson test was performed for autocorrelation and it was determined that autocorrelation existed. Pesaran, Friedman and Frees' tests (Tatoğlu, 2012:228) were performed for correlation between units and it was determined that there was no correlation between units. When the results of the assumptions for Model 1 were examined, it was determined that while there was different variance and autocorrelation, there was no correlation between the units.

Table 8. Test Results of Random Effects Assumptions for Model 1

Type of Assumption	**Test Value**
Heteroscedasticity	***Levene's Test, Brown-Forsythe Test***
	W0 = 15.0868386 df (8, 108) Pr> F = 0.00000000 W50= 2.8223331 df (8, 108) Pr> F =0.00699112 W10= 14.9577399 df (8, 108) Pr> F =0.00000000
Autocorrelation	Modified Bhargava et al. Durbin-Watson = 0.676528
Multicollinearity	Pesaran's test of cross sectional independence =-0.211, Pr= 0.8330 Friedman's test of cross sectional independence =15.111, Pr= 0.0570 Frees' test of cross sectional independence = 0.683 |----------| Critical values from Frees' Q distribution Alpha = 0.10: 0.3583 Alpha = 0.05: 0.4923 Alpha = 0.01: 0.7678

Table 9 shows the results of different variance, autocorrelation, and multicollinearity assumptions for Model 2 compared to the fixed-effect model. When the result of the Wald test for different variance was examined, it was determined that there was different variance. Durbin-Watson test was performed for autocorrelation and it was determined that there was an autocorrelation. Tests of Pesaran, Friedman and Frees were carried out for multicollinearity and it was determined that there was a correlation between units. Looking at the result of the assumptions for model 2, it was determined that there was a correlation, autocorrelation and different variance between the units.

Table 9. Test Results of Random Effects Assumptions for Model 2

Type of Assumption	**Test Value**
Heteroscedasticity	Wald Test
	1296.78, Pr= 0.0000
Autocorrelation	Modified Bhargava et al. Durbin-Watson = 1.255269
Multicollinearity	Pesaran's test of cross sectional independence =3.621, Pr = 0.0003 Friedman's test of cross sectional independenc = 30.159, Pr = 0.0002 Frees' test of cross sectional independence = 1.213 |----------| Critical values from Frees' Q distribution Alpha = 0.10: 0.3583 Alpha = 0.05: 0.4923 Alpha = 0.01: 0.7678

Table 10 shows the results of regression analysis with the Beck-Katz resistive estimator to eliminate problems in the unprovided assumptions of Model 1. Table 11 presents the results of regression analysis with the Driscoll-Kraay resistive estimator to eliminate the problems in the unmet assumptions of Model 2.

Table 10. Regression Results of BECK-KATZ Robust Estimator for Model 1

Model	**Model 1 Dependent Variable R1**		
Independent Variables	**Coefficient**	**Standard Error**	**Probability**
B1	-1.30	1.39	0.993
B2	-0.37	0.15	**0.013****
B3	0.15	0.05	**0.002****
B4	0.31	0.18	**0.097*****
B5	0.06	0.04	0.172
B6	-0.01	0.01	**0.090*****
Constant Term	-7.82	5.39	0.147
R-sq	0.3037		
Sigma_u	0.5080		
Sigma_e	1.7744		
Rho	0.0757		
Note: Statistical significance of the variables was used for 1% (*), 5% (**) and 10% (***).			

Table 10 presents the results of random effects GLS regression. In the study, ROA (return on assets) was used as the dependent variable in the planned model 1. As a result of the regression analysis, a statistically negative and significant relationship was found between return on assets and non-performing loans at the level of 5% significance. In this context, it can be stated that the increase in non-performing loans of banks decreases the return on assets of banks. A statistically positive and significant relationship has been identified between Return on Assets and the Equity – Fixed Assets/ Total Assets ratio at a 5% significance level. In addition, a statistically significant relationship was found between return on assets and Equity / Total Assets and Liquid Assets / Total Assets at the level of 10% significance. While there is a positive relationship between the Equity / Total Assets ratio and ROA, a negative relationship was found between the Liquid Assets / Total Assets ratio.

Table 11. Regression Results of Driscoll-Kraay Standard Errors for Model 2

Model	Model 2 Dependent Variable R2		
Independent Variables	**Coefficient**	**Standard Error**	**Probability**
B1	-2.24	7.42	0.770
B2	-4.44	0.92	**0.001***
B3	1.13	0.67	0.133
B4	3.45	1.07	**0.013****
B5	0.55	0.34	0.146
B6	0.04	0.11	0.692
Constant Term	-70.61	31.90	0.058
R-sq	0.4248		
Prob> F	0.0012		
Note: Statistical significance of the variables was used for 1% (*), 5% (**) and 10% (***).			

Table 11 shows the results of regression analysis according to the fixed effects model. Driscoll-Kraay standard errors were used and ROE (return on equity) was considered as the dependent variable among the variables. As a result of the analysis, a negative and significant relationship was found between return on equity and non-performing loans at the level of 1% significance. In this case, it can be said that the increase in non-performing loans reduces the return on equity of banks. On the other hand, a statistically positive and significant relationship was found between return on equity and equity/total assets ratio at the level of 5% significance. In other words, when the equity/total assets ratio of banks increases, the return on equity of banks will also increase. There was no statistically significant relationship between the dependent variable and the other independent variables.

4. Conclusions and Recommendations

In this study, the effect of the loan amount given by the banks operating in the BIST banking index on the profitability of the banks was examined. The data for the periods 2009-2023 were analysed with the help of regression analysis. Two different models were created and ROA and ROE were determined as dependent variables. Total loans were determined as independent variables, while Non-Performing Loans / Total Loans, Shareholders' Equity / Total Assets, Deposits / Total Assets and Liquid Assets / Total Assets ratios were used as control variables

As a result of the regression analysis, some factors affecting the return on assets and return on equity of banks were identified. These findings show how the underlying financial ratios that determine performance in the banking sector interact.

First, a negative and significant relationship was found between return on assets and non-performing loans at the 5% significance level. This situation shows that the increase in non-performing loans of banks negatively affects asset profitability, that is, problematic loans weaken the profitability performance of banks. The results obtained are Anshar (2023); Chollaku and Aliu (2021) and Brastama and Yadnya (2020) support the results obtained in their studies. In addition, a positive relationship was found between return on assets and equity-fixed assets/total assets ratio. This means that banks can increase their return on assets when they have a stronger equity structure. In addition, significant relationships were found between return on assets and equity/total assets and liquid assets/total assets ratios at the 10% significance level. A positive correlation was observed between the equity/total assets ratio and return on assets, and a negative relationship was observed with the liquid assets/total assets ratio. These findings suggest that banks' use of more equity increases profitability, but the increase in liquid assets may have a negative impact on return on assets.

In terms of return on equity, a negative and significant relationship was found between non-performing loans and return on equity at the level of 1% significance. This result shows that the increase in non-performing loans reduces the return on equity of banks. On the other hand, a positive correlation was found between the equity/total assets ratio and return on equity, indicating that a stronger equity structure of banks could increase their return on equity. In conclusion, these findings reveal that banks need to reduce non-performing loans and strengthen their equity structures in order to increase their return on assets and equity. Liquidity management is also a factor that needs to be carefully considered in this process.

This study reveals the various factors that affect the profitability performance of banks and provides new areas of examination and in-depth analysis opportunities for future research. Future studies can be expanded to the following recommendations:

1. **Review of Other Financial Ratios:** In this study, only certain financial ratios were analysed. In future studies, more comprehensive models can be developed by including different ratios (e.g., loan-to-deposit ratio, leverage ratio) that may have an impact on banks' profitability.

2. **Contribution of Macroeconomic Variables:** It should be considered that not only financial ratios but also macroeconomic variables such as inflation, interest rates, and economic growth can be effective on the profitability performance of banks. Studies assessing the impact of these factors on banks' profitability can provide a broader perspective.
3. **Segregation by Banks' Scale and Fields of Activity:** The size of banks, their field of activity (operating at regional, national, international level) and the market conditions in which they operate can affect profitability performance. Future studies could examine the impact of these factors by comparing the performance of banks of different sizes and operating in different markets.
4. **International Comparisons:** The banking sector has different regulations, market conditions, and economic structures from country to country. Future studies could examine the impact of these variables by comparing the profitability performance of banks in different countries.
5. **Evaluation of Risk Management Strategies:** Considering the negative impact of non-performing loans on profitability, the impact of banks' risk management strategies on profitability can be investigated in more detail. Understanding the impact of different risk management approaches on banks' performance can help banks develop sustainable profitability strategies.

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