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THE EFFECT OF FINANCIAL STRUCTURE ON PROFITABILITY OF FINANCIAL FIRMS ON NASDAQ AND NYSE STOCK EXCHANGES

NASDAQ ve NYSE Borsalarında İşlem Gören Finansal İşletmelerin Finansal Yapılarının Karlılıklarına Etkisi

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Keywords:
Financial Firms,
Banking Sector,
Panel Data.

JEL Codes:
C23, G21, O1.

Abstract

This study examines how financial structure impacts the profitability of banks and financial institutions listed on the New York Stock Exchange (NYSE), one of the largest stock exchanges in the United States, and the National Association of Securities Dealers Automated Quotations (NASDAQ), the leading global technology stock exchange. In this context, a panel data regression analysis was conducted by taking into account the financial data between 2015 and 2024 of 320 enterprises with complete financial statement data. In the first stage of the study, cross-sectional dependence of the series was tested, and then second-generation unit root tests that take into account cross-sectional dependence were performed. To decide between the random effects model and the fixed effects model, the Hausman test is conducted to choose the suitable regression model. Then, Durbin-Watson and Wald tests were performed to solve the autocorrelation and variance problems in the series, respectively, and regression models were estimated for the series for which autocorrelation and variance problems were eliminated. The empirical findings of the research are that the financial structures of all dependent variables are affected more by macroeconomic variables than by bank-specific variables and that this situation affects the profitability of banks and financial institutions.

Anahtar Kelimeler:
Finansal Firmalar,
Bankacılık Sektörü,
Panel Data.

JEL Kodları:
C23, G21, O16.

Öz

Bu çalışmada Amerika Birleşik Devletleri'nde faaliyet gösteren dünyanın en büyük borsalarından biri olarak kabul edilen New York Stock Exchange (NYSE) ve dünyanın teknoloji borsası kabul edilen National Association of Securities Dealers Automated Quotations (NASDAQ) borsalarında işlem gören işlem gören banka ve finansal kuruluşların finansal yapılarının karlılıklarına etkisi araştırılmıştır. Bu kapsamda, mali tablo verilerine eksiksiz ulaşılabilen 320 adet işletmenin 2015-2024 yılları arası finansal verileri ile panel veri regresyon analizi yapılmıştır. Çalışmada ilk olarak, serilere ait yatay kesit bağımlılığı test edilmiş ve yatay kesit bağımlılığını dikkate alan ikinci nesil birim kök testleri yapılmıştır. Sabit etkiler mi yoksa tesadüfi etkiler modelini mi tercih edeceğimize karar vermek için Hausman testi yapılarak uygun regresyon modeli seçilmiştir. Daha sonra seride otokorelasyon ve değişen varyans problemini çözmek için sırasıyla Durbin Watson ve Wald testleri yapılmış, otokorelasyon ve değişen varyans problemi ortadan kaldırılan serilere ait regresyon modelleri tahmin edilmiştir. Çalışmanın ampirik bulguları, bağımlı değişkenlerin tamamının finansal yapılarının bankaya özgü değişkenlerden ziyade makroekonomik değişkenlerden daha fazla etkilendikleri ve bu durumun banka ve finansal kuruluşların karlılıklarına etki ettiği sonucuna ulaşılmıştır.

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1. Introduction

The banking sectors, which constitute a very large part of the financial system, are among the most significant institutions in financial markets. Banks are financial institutions that convert funds received from legal entities and individuals into consumption and investment through lending. Banks play a major role in wealth maximization through financial services (Kirimi et al, 2020). Although the banking sector is defined as financial service organizations that bring together those who demand funds with those who supply funds, it has an important role in ensuring the stability of national economies. Most factors, such as the unfavorable developments in the country's economy, the state of international markets, the rate of repayment of loans, and the decline in interest income deteriorating in the financial structures of banks.

In today's world, where technology is changing at a dizzying pace, the banking sector's understanding of sustainable profitability has also changed, and this has affected the financial structures of banks. Deposits collected from savers constitute the majority of banks' financial structures. Usually, low-cost demand deposits are one of the important sources of funds in banks (Dietrich and Vollmer, 2003). Since the main activity of banks is the intermediation of monetary transactions, banks have an effective and strong financial structure. One of the most important tasks of the financial structure of banks is to cover possible or very high unexpected losses that may arise from the financial risks undertaken by banks (Güngör and Dilmaç, 2020). The general expectation in the banking sector is that banks' ROE is inversely interested to the high equity/asset ratio, which indicates how much of their assets are financed by the bank's owners or holders. This expectation is based on several factors. One such factor is that a high capital ratio decreases equity risk, ultimately reducing the return expected by investors. Another expectation is that a high capital ratio will reduce the tax shield advantage of interest payments, leading to a decrease in banks' after-tax income and hence profitability (Berger, 1995).

Banking system profitability is one of the important variables that reveal the strength of banks' financial structures. For this reason, bank profitability is used as the main variable in financial stability measurements conducted by international organizations (Albulescu, 2015; Salina et al., 2020). Generally speaking, bank profitability is influenced by internal and external factors. Internal factors are determined based on the values in the financial statements of banks and consist of internal criteria that the bank can control. External factors, however, are beyond the bank's control and require data collection. These factors consist of the country's GDP, inflation, and economic conditions (Kılıç, 2019).

This investigation aimed to analyze how the financial structure impacts the profitability of banks and financial institutions traded on the NASDAQ, NYSE stock exchanges, which are considered the world's first and largest electronic stock exchanges. In this context, the annual financial statement data of 320 banks and financial institutions listed on NASDAQ and NYSE stock exchanges, for which complete financial data are available, for the years 2015-2024, were used. To explore the impact of financial structure on the profitability of the banks under this research, three dependent variables were incorporated into the analysis: ROE, the ratio of net interest income to total assets, and ROA. Three regression models were created for the analysis. Noninterest income or total assets, asset size, capital ratio, deposits or total assets, loans or total assets, and liquidity risk are included in the analysis as business-specific variables, and inflation rate, annual GDP, and bank market concentration are included as independent macroeconomic variables. In the study, the large number of periods in the data set has increased the power to accurately predict the findings. Thus, the study's strength lies in its contribution to the literature by describing the current effect of financial structure on the banks' profitability and financial institutions listed on the US stock exchanges, covering a significant 10-year period. This long-term analysis helps address a notable gap in existing research.

The paper is structured as follows: the second section reviews academic literature, summarizing the conceptual model that analyzes the effect of financial structure on the banks' profitability and financial institutions traded on NASDAQ and NYSE. In the third section, the independent and dependent variables and econometric methods implemented in this investigation are explained in detail. The final part presents the conclusions and the results of the analysis.

2. Literature Review

Many scholarly studies in finance explore how banks' financial structure influences their profitability. ROA and ROE are commonly used variables to assess bank profitability. In this section, the literature compiled from academic studies on the effects of banks' financial structures on their profitability will be presented.

Demirgüç-Kunt and Huizinga (2000) examined how the financial composition of banks influences their profit performance. In this context, they examined the financial data of banks and financial institutions operating in both developed and developing countries between 1990 and 1997. In this study, regression techniques were employed to conclude that the financial structure of banks does not affect bank performance alone.

Demirhan (2010) studied the impact of financial structure decisions on the profitability of deposit banks operating in Turkey. In this context, financial statement data of deposit banks for the period 2003Q1-2008Q2 are examined. Through panel econometric analysis, deposit banks in the sample are classified into two groups as both foreign and domestic banks. In addition, the impact of financial configurations of different bank groups on their profitability is determined separately. The empirical findings of this research show significant differences in the financial structure ratios between foreign and domestic banks. Additionally, the effect of financial structure variables on banks' ROE, ROA, noninterest income, and net interest income was found to vary between foreign and domestic banks.

Dizgil (2017) analyzed the micro-level factors affecting the income of deposit banks in Turkey. In this context, he analyzed the financial statement data of the ten banks with the largest asset sizes between 2009 and 2017. The empirical findings of this research, which used return on average equity and return on average assets as dependent variables, indicate that micro-level variables influence the profitability of banks.

Simatele et al. (2018) measured the effect of financial leverage on profit margins of 11 commercial banks operating in South Africa between 1994 and 2016. In the study, the dependent variables include ROA, ROE, and net interest margin. The empirical findings of the study using the Generalized Method of Moments indicate that the financial structure of banks affects their profitability.

Kılıç (2019) analyzed the effect of the financial structure of privately owned deposit banks operating in Turkey on their profitability. This study utilizes financial data from 8 privately-owned deposit banks covering the period between 2011 and 2017, analyzed by regression analysis. The quantitative findings of the study, which used ROA and net interest margin as dependent variables, revealed statistically significant relationships among the financial structures of banks and their profitability.

Özdemir (2019) explored the relationship between financial performance and capital structure in Turkish banks. Regression analysis was conducted with financial statement data for the years 2005-2017. The empirical evidence indicates that the impact of capital structure on the financial performance of deposit banks varies across different contexts or conditions.

Güngör and Dilmaç (2020), who measure the effects of liability structure and bank financial outcomes during financial crisis periods, conducted a panel data regression analysis using the financial data of commercial banks in Turkey from 2002 to 2015. The evidence derived from the analysis argue that to increase the financial performance of banks, it would be more effective on the profitability of banks to work with long-term foreign resources and deposit and non- deposit resources rather than equity.

Blanchette and Morisson (2023) investigated the effect of the financial structure of commercial banks traded on the Australian Stock Exchange on their operational efficiency. The study employs panel data regression analysis and uses the financial data of the banks in the scope of the analysis between 2010 and 2022. The study's findings reveal that banks' financial structures have a significant influence on their operational efficiency.

Jacob (2023) investigated how the financial structure influences the profitability of financial institutions within the Irish context. The empirical findings of the study support the thesis that financial institutions can improve firm performance by reducing borrowings.

Karnik and Kajumdar (2024) examined the impact of income diversification on the profitability of public, private, and foreign banks operating in India. In this context, they applied panel data regression analysis to the financial data of banks with available information for the period 2005-2020. According to the empirical findings of the research, macroeconomic factors, mostly increases in the inflation rate, have a major impact on bank profitability.

Bahrawe (2025) investigated the effects of financial variables and financial structure on the banks' profitability operating in Saudi Arabia. In this context, the financial data of 8 banks from 2010 to 2021 were analyzed using the least squares (PLS) model. The empirical findings of the study suggest that banks should focus on their financial structures to enhance profitability and ensure financial stability.

Hidayat et. al. (2025) investigated the effects of financial structure and profitability on the enterprise value of banks operating in Indonesia. A regression analysis was performed with the help of financial data of publicly traded banks. The study's empirical results indicate that profitability positively affects firm value, but the high financial structure of banks reduces enterprise value. They also emphasize the importance of sound management, prudent debt management, and operational efficiency for sustainable growth in the banking sector.

Peace and Onyenania (2025) explored the impact of financial structure on the banks' profitability in Nigeria. Regression analysis was conducted with 5-year financial data of 10 Nigerian banks for the period 2000-2024. This study's empirical results indicate that the financial structure of banks has a significant and complex effect on their profitability. Unlike macroeconomic factors, the financing structure has a direct impact on banks' gross and net profits.

Rufus et al. (2025) investigated the effect of the financial structure of deposit banks operating in Nigeria on their profitability. Regression analysis was applied in the research in which financial data between 2012-2021 were used. Considering the research findings, they argue that the increase in the leverage ratio within the financial structures of banks positively affects the ROE as the outcome variable.

Wati and Rosyadi (2025) analyzed the profitability's key determinants for Islamic commercial banks operating in Indonesia. In this context, this study used multiple linear regression analysis with the financial data of 12 Islamic banks for a 5-year period between 2019 and 2023. They argue that banks' capital adequacy ratios positively affect their ROA and improve financial stability.

3. Econometric Methodology

In this research, panel data regression analysis was conducted to analyze the effect of financial structure on the profitability of banks and financial institutions traded on NASDAQ and NYSE. This section of the study provides information about the research model, data collection, and statistical methods related to data analysis.

3.1. Data Set

The research data set was obtained from the sector and finance pages of the stock analysis website. The data set, covering the period between 2015 and 2024, includes financial and banking institutions listed on the NASDAQ and NYSE stock exchanges. In this study, to examine the impact of the financial structure of these financial institutions on their profitability, a data set consisting of 3200 observations covering a 10-year period of 320 financial institutions whose financial statement data can be accessed completely and completely from 352 enterprises operating in the financial sector is used. 80 of these enterprises are on the NYSE stock exchange, and 240 of them are listed on the NASDAQ.

In determining the variables used in this study, the data from previous investigations analyzing the relationship between financial structure and profitability in the international literature were used as a basis. The Eviews 15 analysis program was used for this analysis. The main objective of the study is to investigate whether the financial structure of financial institutions traded on the NYSE, an organized stock exchange in the USA, and the NASDAQ, an over-the-counter stock exchange, has an impact on their profitability. In this regression model developed for the research, the variables of ROE, net interest margin and ROA were included as dependent variables to assess the impact of financial structure on the profitability of financial institutions. Three separate models were created, and the models were estimated through regression analysis conducted as part of the study. The ratio of noninterest income to total assets, asset size, capital ratio, deposits/total asset, loans/total asset, (total loans-total deposits)/total assets with liquidity risk specific to the business and inflation rate, annual GDP and bank market concentration macroeconomic variables are considered in the analysis as independent variables. The variables analyzed in the study and their definitions and calculations are presented in Table 1.

Table 1. Variables Used in the Analysis and Their Definitions and Calculations

Variables Used in the Study	Short Name of Variables	Explanations on Variables
Dependent Variable		
Net Interest Margin	NIM	Net Interest Income/Total Assets
Return On Assets	ROA	Net Profit / Total Assets
Return On Equity	ROE	Net Profit / Total Equity
Independent Variables		
Bank-specific		
Non-Interest Income	NII	Non-Interest Income/Total Assets
Capital Ratio	CR	Equity / Total Assets
Deposit Share	DS	Deposits/Total Assets
Asset Size	AS	Natural Log of Total Assets
Credit Share	CS	Loans/Total Assets
Liquidity Risk	LR	Total Loans-Total Deposits/Total Assets
Macroeconomic		
Economic Growth Rate	EGR	Natural Log of GDP % Change
Inflation Rate	IR	Inflation rate announced each year in the USA
Bank Market Density	BMD	Bank Total Assets/Sector Total Assets

In the study, macroeconomic variables, inflation rate, and economic growth rate data were received from the official website of the International Monetary Fund (IMF). Since the US GDP rate for 2024 was not known at the time of data collection, the IMF's forecast for 2024 was taken into account.

3.2. Research Model

In this research, to search the impact of financial structure on the profitability of banks and financial institutions traded on NASDAQ and NYSE stock exchanges, three different regression models were estimated with the dependent variables including ROA, ROE, and net interest margin. These models are presented in Equation (1), Equation (2), and Equation (3).

$$ROA_{i,t} = a + \beta_1 NII_{i,t} + \beta_2 CR_{i,t} + \beta_3 DS_{i,t} + \beta_4 AS_{i,t} + \beta_5 CS_{i,t} + \beta_6 LR_{i,t} + \beta_7 EGR_{i,t} + \beta_8 IRi_{,t} + \beta_9 BMD_{i,t} + \varepsilon_{I,t} \quad (1)$$

$$ROE_{i,t} = a + \beta_1 NII_{i,t} + \beta_2 CR_{i,t} + \beta_3 DS_{i,t} + \beta_4 AS_{i,t} + \beta_5 CS_{i,t} + \beta_6 LR_{i,t} + \beta_7 EGR_{i,t} + \beta_8 IRi_{,t} + \beta_9 BMD_{i,t} + \varepsilon_{I,t} \quad (2)$$

$$NIM_{i,t} = a + \beta_1 NII_{i,t} + \beta_2 CR_{i,t} + \beta_3 DS_{i,t} + \beta_4 AS_{i,t} + \beta_5 CS_{i,t} + \beta_6 LR_{i,t} + \beta_7 EGR_{i,t} + \beta_8 IRi_{,t} + \beta_9 BMD_{i,t} + \varepsilon_{I,t} \quad (3)$$

3.3. Data Analysis

In the study, firstly, Breusch-Pagan (1980) Lagrange Multiplier (LM) test will be used to test whether the variables that make up the panel data set are independent of each other, and Pesaran (2004) cross-section dependence tests will be used since both are large. In the presence of cross-section dependence in the series, this dependence will be removed. Stationarity tests, accounting for the cross-section dependence, will then be conducted on the series after the removal of the dependence. In this context, PANIC and Pesaran CIPS unit root tests, which are second generation unit root tests, be performed to test whether the series are stationary. In the panel data regression analysis, we will determine whether to use the fixed effects or random effects model based on the results of the Hausman test. After the tests for variance and autocorrelation of the panel data set, the regression models for the dependent variables will be estimated.

3.3.1. Cross Sectional Dependence

The assumption of cross-sectional dependence in panel data implies that all other variables in the series are influenced to the same extent by a shock to any of the variables in the series. In fact, considering that global economies are interrelated nowadays, it is more realistic to assume that a shock to one of the cross-sectional entities that constitute the panel data would affect the units at different levels (Mercan, 2014). Proceeding with the analysis without testing for cross-sectional dependence among the series can substantially distort the empirical results (Breusch and Pagan, 1980; Pesaran, 2004). Therefore, at the beginning of the panel data analysis, it should be tested whether there is a cross-sectional dependency between the series, and the rest of the analysis should be continued based on the cross-sectional dependency test results. Omitting cross-sectional dependence testing can render the results statistically invalid and inconsistent (Mercan, 2014). The presence of cross-section dependence can be tested using the Breusch-Pagan (1980) LM test when the temporal dimension of the panel is greater than the cross-sectional dimension. Alternatively, the Pesaran (2004) Cross-Section Dependence test can be used when both dimensions are larger. On the other hand, this test is biased when the group mean is zero and the individual means differ from zero. Pesaran et al. (2008) addressed this bias by incorporating the mean into the test statistic. That's why the test is called the bias-corrected LM test (LM_{adj}). The LM test statistic in its original form is as follows (Breusch and Pagan, 1980).

There are four widely used cross-section dependence tests in the literature. The first of these tests is the LM test. The LM test is preferred when the cross-section (N) is smaller than time (T). LM test statistics are formulated as in Equation 4 (Sarafidis and Wansbeek, 2012; Qamruzzaman and Jianguo, 2020):

$$M = T\sum_{i}^{N-1}\sum_{j=i+1}^{N}\rho^2 ij \tag{4}$$

ρ_{ij}^2 in Equation (5) the pairwise correlation of the residuals. The LM test is inappropriate for cases with a greater cross section (N). The LM (CD_{LM}) test overcomes this limitation to test for zero value of error correlations and the test for cross section dependence is formulated as in Equation 5 (Sarafidis and Wansbeek, 2012; Qamruzzaman and Jianguo 2020).

$$CD_{LM} = T\sum_{i=1}^{N-1}\sum_{j=i+1}^{N}\rho^2 ij. \sim\ X^2\ \frac{N(N-1)}{2} \tag{5}$$

Under the null hypothesis of cross-sectional independence, as both $T\rightarrow\infty$ and $N\rightarrow\infty$, the CD_{LM} test statistics follow an asymptotic normal distribution. However, when N is larger than T, the CD_{LM} test is not appropriate. Therefore, the CD test is recommended, which is appropriate for a situation where N is greater than T (Sarafidis and Wansbeek, 2012; Qamruzzaman and Jianguo 2020). The CD test is formulated as in Equation 6:

$$CD = \sqrt{\frac{2T}{N(N-1)}} \sum_{i}^{N-1} \sum_{j=i+1}^{N} \rho ij \tag{6}$$

The CD test in Equation 7 follows the asymptotically standard normal distribution is used in testing the null hypothesis of cross-sectional independence, T→∞ and N→∞, interdependence (Nazlioglu et al., 2011). However, the CD test may yield skewed results in certain cases. LM_{adj} utilizes LM statistic's expectation and dispersion in the case of a large panel, first T→∞ and then N→∞. Limiting the negative effect (Pesaran et al., 2008), a deviation- adjusted LM test was proposed. The deviation-adjusted LM statistics are calculated by the equation in Equation 7:

$$LM_{adj} = \sqrt{\frac{2T}{N(N-1)}} \frac{\sum_{i}^{N-1} \sum_{j=i+1}^{N} T\rho ij (T-k)\rho^2 ij \; \mu_{Tij}}{\sqrt{u_{Tij}^2}} \tag{7}$$

Here, μ_{Tij} denotes the mean, u_{Tij} the variance. The test statistic follows an asymptotically standard normal distribution (Pesaran, et al., 2008). In this presence of cross section dependence in the series, second-generation unit root tests can be utilized to test the stationarity of the series, which is the next step of the analysis. A review of the literature reveals that Ahn and Horenstein and Bai and NG- PANIC - PANIC unit root tests are applied in panel data regression analyses.

3.3.2. PANIC Unit Root Test

In panel data regression analysis, stationarity tests are conducted when cross-sectional dependence is detected between the series. In the presence of cross cross-section, second-generation unit root tests should be performed. Second-generation unit root tests are the tests that take into account the dependence of units in the series. In other words, the goal is to remove the cross-sectional dependence in the data.

The PANIC unit root test, developed by Bai and Ng (2004), is a second-generation unit root test. Its main advantage is that it can determine whether the stationarity of the series in panel data is common across all units, specific to individual units, or a combination of both. It can also identify the extent of independent stochastic trends impacting common factors. Moreover, a key and distinctive feature of the PANIC unit root test is its focus on testing the unobserved components of the data, rather than the observed series themselves. The core of PANIC lies in the consistent estimation of the area covered by idiosyncratic errors and unobserved common factors without knowing in advance whether these processes are integrated or stationary (Bai and Ng, 2004). The data X_{it} (i= 1, . . . N, t= 1, . . . T) are considered to be generated by:

$$X_{it} = c_i + \beta_i t + \lambda'_i F_t + e_{it} \tag{8}$$

$$(I - l) F_t = C(L) u_t \tag{9}$$

$$(1 - p_i L) e_{it} = D_i(L) \varepsilon_{it} \tag{10}$$

where , $C(L) = \sum_{j=0}^{\infty} C_j L^j$, and $D_i L = \sum_{j=0}^{\infty} D_{ij} L^j$. The idiosyncratic error e_{it} is I(1) if $\rho_i = 1$, and is stationary if $|\rho_i| < 1$. The model allows for r_0 stationary factors and r_1 non-stationary common trends, such that the total number of factors is $r = r_0 + r_1$. Equivalently, the rank of $C(1)$ corresponds to r_1. The goal is to identify the value of r_1 and to test the unit root condition $\rho_i = 1$

in the absence of direct observations on F_t and e_{it}, using principal components estimation (Bai and Ng, 2004).

4. Empirical Findings

In the study, descriptive statistics of the series constituting the panel data will be presented first. The descriptive statistics for the series included in this study are provided in Table 2.

Table 2. Descriptive Statistics for the Series

						Jarque-Bera Test	
Series	**A. Ort**	**Median**	**Std. Deviation**	**Skewness**	**Kurtosis**	**Test Statistic**	**p-value**
NIM	0.03	0.03	0.02	7.43	103.85	1381219.57	0.001*
ROA	0.01	0.01	0.01	4.60	57.73	409391.30	0.001*
ROE	0.11	0.10	0.39	28.82	883.75	103547018.75	0.001*
AS	3.79	3.63	1.22	0.88	8.38	4267.98	0.001*
BMD	0.00	0.00	0.00	9.09	94.04	1145625.52	0.001*
IR	0.03	0.02	0.02	1.16	3.72	786.28	0.001*
NII	0.03	0.01	0.59	32.07	1095.46	159179147.41	0.001*
CS	0.67	0.70	0.16	-2.18	9.38	7930.81	0.001*
LR	-0.10	-0.08	0.13	-0.43	5.25	768.93	0.001*
DS	0.78	0.81	0.31	15.44	347.40	15892072.99	0.001*
CR	0.11	0.11	0.05	8.45	139.93	2530335.92	0.001*
GDP	0.02	0.03	0.02	-0.81	4.99	878.52	0.001*

Note: *, $p<0.01$.

The summary statistics provided in Table 2 reveal the distributional characteristics of the series included in this study. When the arithmetic mean values are analyzed, it is observed that the series are distributed in different scales. For example, the asset size series the highest mean value with 3.79, while the bank market concentration and ROA series the lowest means with 0.00 and 0.01, respectively. An analysis of skewness values that most of the series deviate significantly from the normal distribution; in particular, the primary income/total assets variable (32.07), ROE (28.82) and total deposits/total assets (15.44) series exhibit high positive skewness, while total loans/total assets (-2.18) and GDP (-0.81series exhibit negative skewness. In terms of kurtosis values, series of non-interest income/total assets (1095.46), ROE (883.75) and total deposits/total assets (347.40) show extreme kurtosis and exhibit distributions with sharp peaks. The Jarque-Bera test results are significant for all series ($p<0.01$), indicating that the series deviate significantly from the normal distribution.

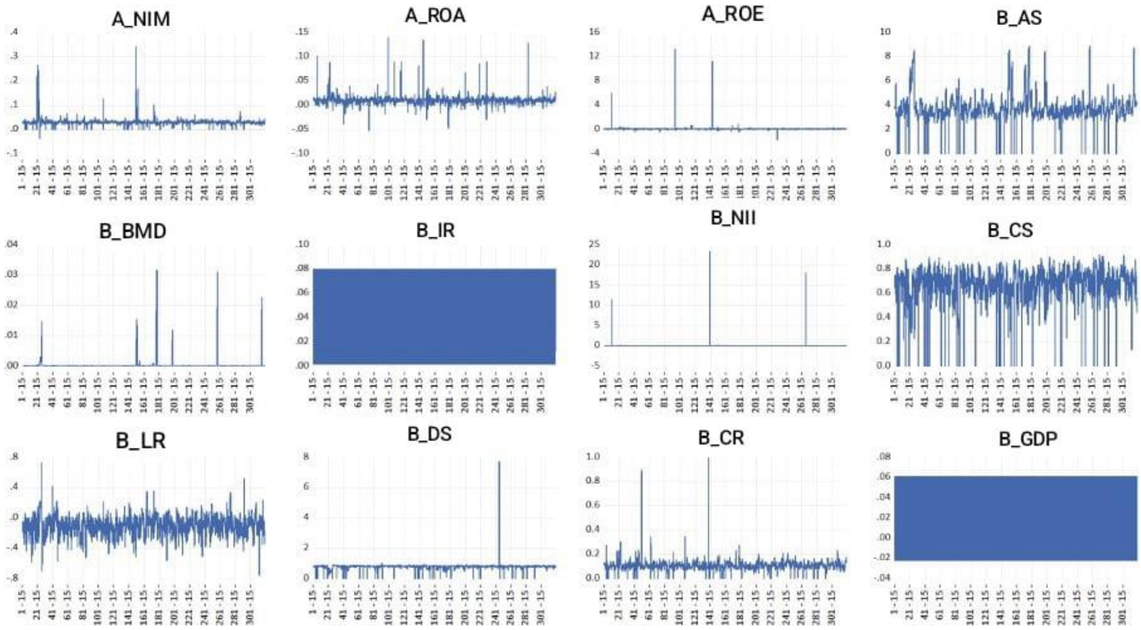

Figure 1. Changes in the Series Over Time

The time series graphs presented in Figure 1 reveal the fluctuations and possible anomalies of the variables analyzed over time. While high volatility is observed in various series, some variables stable trends as well as sudden jumps. The ROE and non-interest income/total assets ratio series exhibits significant fluctuations during certain periods. The inconsistent distribution observed in the inflation rate and GDP series may indicate possible data gaps or measurement errors. Some series, such as asset size and loan share, are generally subject to high-frequency fluctuations, which indicate that these variables are constantly changing. Table 3 presents the findings of the cross-sectional dependence tests, examining this presence of a relationship between the units in the variables.

H_0: There is no cross-sectional dependence.

H_1: There is cross sectional dependence.

Table 3. Cross-Sectional Dependence Findings for Variables

	Breusch-Pagan LM		Pesaran Scaled LM		Bias-corrected Scaled LM		Pesaran CD	
	Statistics	**p-value**	**Statistics**	**p-value**	**Statistics**	**p-value**	**Statistics**	**p-value**
NIM	104558.90	0.001*	169.04	0.001*	151.31	0.001*	95.47	0.001*
ROA	92041.61	0.001*	129.74	0.001*	112.01	0.001*	136.00	0.001*
ROE	90813.83	0.001*	125.88	0.001*	108.16	0.001*	137.22	0.001*
AS	378536.98	0.001*	1029.25	0.001*	1011.53	0.001*	571.63	0.001*
BMD	386133.94	0.001*	1053.10	0.001*	1035.38	0.001*	587.74	0.001*
IR	507068.02	0.001*	1432.80	0.001*	1415.08	0.001*	712.09	0.001*
NII	118133.05	0.001*	211.66	0.001*	193.93	0.001*	104.95	0.001*
CS	126665.57	0.001*	238.44	0.001*	220.72	0.001*	151.98	0.001*
LR	141870.46	0.001*	286.18	0.001*	268.46	0.001*	245.48	0.001*
DS	121674.08	0.001*	222.77	0.001*	205.05	0.001*	144.76	0.001*
CR	134066.68	0.001*	261.68	0.001*	243.96	0.001*	115.40	0.001*
GDP	507210.00	0.001*	1433.25	0.001*	1415.53	0.001*	712.19	0.001*

Note: *, p<0.01.

The cross-sectional dependence test results, shown in Table 3, indicate the existence of a significant dependence between the variables. The p-values of Breusch-Pagan LM, Bias-corrected scaled LM, Pesaran CD tests, and Pesaran scaled LM are all below 0.01, which supports the alternative hypothesis (H1) that there is a relationship between different units. Therefore, since the first-generation unit root tests have lost their effectiveness, second-generation unit root tests are utilized. Table 4 reports the Bai and NG-PANIC and Ahn and Horenstein-PANIC stationarity test results of the series, in which the null and alternative hypotheses are the following:

H_0: The series contains a unit root.

H_1: The series does not contain a unit root and is stationary.

Table 4. 2nd Generation Unit Root Test Results (PANIC)

Variables	Bai and NG - PANIC		Ahn and Horenstein - PANIC	
	Statistics	p-value	Statistics	p-value
NIM	+/- Inf	0.00010*	+/- Inf	0.00010*
ROA	+/- Inf	0.00010*	+/- Inf	0.00010*
ROE	+/- Inf	0.00010*	+/- Inf	0.00010*
AS	+/- Inf	0.00010*	+/- Inf	0.00010*
BMD	+/- Inf	0.00010*	+/- Inf	0.00010*
IR	+/- Inf	0.00010*	-17.86	0.00010*
NII	+/- Inf	0.00010*	+/- Inf	0.00010*
CS	+/- Inf	0.00010*	+/- Inf	0.00010*
LR	+/- Inf	0.00010*	+/- Inf	0.00010*
DS	+/- Inf	0.00010*	+/- Inf	0.00010*
CR	+/- Inf	0.00010*	+/- Inf	0.00010*
GDP	-2.19	0.030**	1.65	0.0990***

Note: *, $p<0.01$ **, $p<0.05$ ***, $p<0.10$ [a], model with constant and trend +/- inf, higher value.

The second-generation PANIC unit root test results, presented in Table 4, assess the stationarity properties of the analyzed variables. The statistical values and p-values obtained from the PANIC tests suggest that the null hypothesis, which states that all variables contain unit roots, is largely rejected. Statistically significant ($p < 0.01$) results are obtained for net interest margin, asset size, ROE, ROA, bank market concentration, inflation rate, income/total assets ratio, non-interest loan share, liquidity risk, deposit share and capital ratio variables in both tests, and it is concluded that these variables are stationary. However, for the GDP variable, the null hypothesis is rejected by the Bai and Ng test at the 5% significance level, with a statistic value of 2.19, while the statistic value of 1.65 for the Ahn and Horenstein test indicates stationarity at the 10% significance level. Generally, it can be stated that the majority of the variables in the panel data set are stationary, and the stationarity assumption is largely met in the analysis. Table 5 presents the findings of the Pesaran CIPS unit root test, which is one of the second-generation unit root tests.

Table 5. 2nd Generation Unit Root Test Results (Pesaran CIPS)

Variables	t-statistic	Critical Values			p-value
		1%	5%	10%	
NIM[a]	-3.65	-2.98	-2.75	-2.63	<0.01
ROA	-2.07	-2.25	-2.08	-1.99	<0.10
ROE	-2.18	-2.25	-2.08	-1.99	<0.05
AS	-2.81	-2.25	-2.08	-1.99	<0.01
BMD	-2.37	-2.25	-2.08	-1.99	<0.01
IR	-2.74	-2.25	-2.08	-1.99	<0.01
NII	-2.33	-2.25	-2.08	-1.99	<0.01
CS	-1.97	-1.69	-1.52	-1.43	<0.01
LR	-2.27	-2.25	-2.08	-1.99	<0.01
DS	-2.95	-2.25	-2.08	-1.99	<0.01
CR	-2.01	-2.25	-2.08	-1.99	<0.10
GDP	0	-2.25	-2.08	-1.99	>0.10

Note: a, model with constant and trend. b, model without constant and trend

Table 5 presents the results of the Pesaran CIPS unit root test to assess the stationarity of the variables in the panel data set. Depending on the test results, the t-statistics calculated for net interest margin, asset size, bank market concentration, inflation rate, non-interest income / total assets, loan share, liquidity risk, and deposit share variables are below the critical values at the 1% significance level, indicating that these variables exhibit stationarity ($p < 0.01$). The ROE variable is stationary at the 5% significance level ($p <0.05$), while the ROA and capital ratio variables are stationary at the 10% significance level ($p <0.10$). Alternatively, the t statistic calculated for the GDP variable is greater than the critical values, indicating that it includes a unit root and is not stationary ($p> 0.10$). In addition, a fixed and trended model is used for the net interest margin series, a constant and trendless model for the loan share series, and a constant model for the other series. In general, the results most of the series are stationary, thus the stationarity assumption is largely satisfied in the analyses.

At this stage of the study, ROA, net interest margin, and ROE were selected as dependent variables, and the corresponding models were constructed. VIF (Variance Inflation Factor) values, which are used to assess multicollinearity between variables in regression analyses, were then analyzed. The analysis of VIF values is important to determine the degree of the relationship between the independent variables in the model and its effect on the reliability of linear regression (O'Brien, 2007; James et al., 2023). The VIF values of this model are shown in Table 6.

Table 6. Findings on VIF Values

Independent Variables	NIM Model	ROA Model	ROE Model
AS	1.525	1.525	1.525
BMD	1.490	1.490	1.490
IR	1.200	1.200	1.200
NII	1.004	1.004	1.004
CS	1.739	1.739	1.739
LR	1.541	1.541	1.541
DS	1.366	1.366	1.366
CR	1.092	1.092	1.092
GDP	1.158	1.158	1.158

The VIF (Variance Inflation Factor) values shown in Table 6 are examined to assess the multicollinearity among the independent variables in the model. The fact that VIF values for all variables are generally below 10 indicates that there is no serious multicollinearity problem. In particular, the non-interest income/total assets variable has the lowest VIF value of 1.004, while the loan share variable has the highest VIF value of 1.739. These findings indicate that there is an acceptable level of correlation between the independent variables and no significant linear dependence problem in the regression analysis.

In panel data analysis, the Hausman test is used to compare the fixed effects model with the random effects model, helping to determine which model provides a more appropriate fit for the data. The purpose of this test is to determine which model is more suitable for the data set (Hausman, 1978). Table 7 r eports the findings of the Hausman test.

H_0: A random effects specification is justified.

H_1: Fixed effects model is suitable.

Table 7. Findings Related to Hausman Test

	Test Statistic	**p-value**
NIM Model	43.57	0.00001*
ROA Model	23.56	0.001*
ROE Model	1351.93	0.00001*

Note: *, p<0.01*

Depending on the Hausman Test results in Table 7, the test statistics for all models are quite high, and the p-values are below 0.01. In particular, the test statistic for the ROE model is 1351.93 with a p-value of 0.00001. Similarly, the test statistic for the net interest margin model is 43.57 with a p-value of 0.00001, while the test statistic for the ROA model is 23.56 with a p-value of 0.001. These low p-values indicate that the null hypothesis should be rejected. Therefore, it is concluded that the fixed effects model should be preferred for all models based on the results of the Hausman test.

After the determination of the appropriate models, the findings of the Durbin-Watson autocorrelation test for the presence of autocorrelation, which is one of the assumptions of the model, are given in Table 8.

Table 8. Durbin Watson Autocorrelation Test Findings

		Critical Value range (α=0.01)	
	Test Statistic	**dL**	**dU**
NIM Model	1.423	1.582	1.768
ROA Model	1.568	1.582	1.768
ROE Model	1.524	1.582	1.768

Depending on the test results in Table 8, the test statistic is measured as 1.423 for the net interest margin model, 1.568 for the ROA model, and 1.524 for the ROE model. When the critical value range (1.582-1.768) is considered, it is seen that the net interest margin and ROE models are below this range; hence, there is a possibility of positive autocorrelation. The ROA models are quite close to the critical value, but slightly below the threshold. In light of this information, the logarithms of the series in the models were taken to remove autocorrelation. The findings of the logarithm-adjusted Durbin Watson autocorrelation test are reported in Table 9.

Table 9. Adjusted Durbin Watson Autocorrelation Test Results

		Critical Value Range (α=0.01)	
	Test Statistic	**dL**	**dU**
NIMd1 Model	2.406	1.582	1.768
ROAd1 Model	2.564	1.582	1.768
ROEd1 Model	2.144	1.582	1.768

Table 9 reports the adjusted Durbin-Watson test statistics for the NIM, ROA, and ROE models, evaluating whether residual autocorrelation is present in each specification. The test statistics are above the upper-bound critical value of 1.768 in all three models, indicating that there is no positive autocorrelation in the series. In particular, the Durbin-Watson statistics of 2.564 for the ROA model, 2.406 for the net interest margin model, and 2.144 for the ROE model are close to 2, indicating that the probability of negative autocorrelation in these models is low. Therefore, the findings indicate that there is no significant autocorrelation problem in the error terms of the analyzed models. After this stage, the Wald test was conducted to evaluate whether a problem exists with changing variance among the series. Wald test findings are presented in Table 10.

H_0: The model does not have constant variance, and there is no problem of changing variance.

H_1: The model does not have constant variance, but there is a problem of varying variance.

Table 10. Wald Test Findings for the Detection of Constant Variance Problem

	Test Statistic	**Degrees of Freedom**	**p-value**
NIMd1 Model	0.000080	319	0.0001*
ROAd1 Model	0.000072	319	0.0001*
ROEd1 Model	0.00000047	319	0.0001*

Note: *, p<0.01.

Table 10 presents the findings of the Wald test for the determination of the constant variance problem. The p-value indicates significance at the 1% level (p<0.01). According to these findings, the test results lead to rejection of the null hypothesis and support for the alternative hypothesis at conventional significance levels. In other words, the test indicates that the assumption of constant variance in the model is not valid, and there is a problem of varying variance. To address the issue of heteroskedasticity in the model, the use of heteroskedasticity robust standard errors, such as the White test or corrective methods such as logarithmic transformations, can be applied (Greene, 2012). Therefore, logarithmically transformed the series since logarithmic transformation makes the problem of heteroskedasticity less important. Regression models of the logarithmically transformed variables were estimated. Table 11 reports the regression model results for the NIM variable.

Table 11. Coefficients and Model Findings for the NIM Model

	Coefficients (β)	Std. Error	t	p value
ln_NII	0.001	0.001	0.570	0.570
ln_AS	0.001	0.002	0.430	0.671
ln_CR	0.047	0.005	8.560	0.00001*
ln_DS	-0.001	0.003	-0.370	0.712
ln_CS	0.045	0.006	7.710	0.00001*
ln_LR	-0.010	0.004	-2.680	0.007*
ln_IR	0.002	0.007	0.270	0.785
ln_GDP	0.004	0.008	0.510	0.613
n_BMD	-0.203	0.236	-0.860	0.388
Fixed	0.001	0.001	0.700	0.486

Note: *, p<0.01.

The coefficient estimates and statistical significance findings for the net interest margin model presented in Table 11 assess the impact of the independent variables on the net interest margin. According to the results, capital ratio (β=0.047, p<0.01) and loan share (β=0.045, p<0.01) variables have a positive and statistically significant effect on net interest margin. On the contrary, the coefficient of the liquidity risk variable is negative and statistically significant (β=- 0.010, p<0.01), that it negatively affects the net interest margin. The coefficients of other variables such as non-interest income/total assets, asset size, deposit share, inflation rate, GDP, and bank market concentration are not statistically (p>0.05), indicating that these variables do not affect on net interest margin. The constant term is also not statistically significant (p= 0.486). In general, only the capital ratio, loan share, and liquidity risk variables significantly affect the net interest margin variable in the model, while the effects of other variables are statistically insignificant. Table 12 presents the regression model results for the ROA variable.

Table 12. Coefficients and Model Findings for the ROA Model

	Coefficients (β)	Std. Error	t	p-value
ln_NII	0.002	0.001	1.340	0.182
ln_AS	0.000	0.002	-0.180	0.858
ln_CR	0.029	0.005	5.290	0.00001*
ln_DS	0.001	0.003	0.380	0.706
ln_CS	0.008	0.006	1.380	0.167
ln_LR	0.000	0.004	0.040	0.972
ln_IR	0.043	0.007	5.850	0.00001*
ln_GDP	0.023	0.008	3.000	0.003*
ln_BMD	-0.086	0.235	-0.360	0.715
Fixed	0.002	0.001	1.420	0.155

Note: *, p<0.01.

The coefficient estimates and statistical significance levels of the ROA model presented in Table 12 reveal the effect of the independent variables on ROA. The findings show that capital ratio (β=0.029, p<0.01), inflation rate (β=0.043, p<0.01) and GDP (β=0.023p<0.01variables have a statistically significant positive impact on ROA. Alternatively, the coefficients of noninterest income/total assets, asset size, deposit share, loan share, liquidity risk and bank market concentration variables are not statistically significant (p>0.05), thus the effects of these variables on ROA are not considered significant. The constant term is also not statistically significant (p=0.155). In general, only the capital ratio, inflation rate and GDP variables have an impact on

ROA in the model, the effects of other variables are not statistically Table 13 the regression model results for the ROE variable.

Table 13. Coefficients and Model Findings for ROE Model

	Coefficients (β)	Std. Error	t	p-value
ln_NII	0.018	0.018	1.020	0.306
ln_AS	-0.010	0.029	-0.350	0.725
ln_CR	0.044	0.069	0.640	0.521
ln_DS	-0.002	0.037	-0.060	0.952
ln_CS	0.097	0.074	1.310	0.190
ln_LR	0.016	0.049	0.340	0.736
ln_IR	0.662	0.094	7.080	0.00001*
ln_GDP	0.130	0.096	1.350	0.178
ln_BMD	-2.962	2.970	-1.000	0.319
Fixed	0.034	0.014	2.510	0.012**

Note: *, p<0.01. **, p<0.05.

The coefficient values and statistical significance levels of the ROE model, as shown in Table 13 illustrate the effects of the independent variables on ROE. Based on the results, the inflation rate variable (β=0.662, p<0.01) has a statistically significant and positive impact on ROE. Moreover, the coefficient of the constant term (β=0.034, p<0.05) is statistically significant. Alternatively, the coefficients of noninterest income/total assets, asset size, capital ratio, deposit share, loan share, liquidity risk, GDP, and bank market concentration variables are not statistically (p>0.05), thus the effects of these variables on ROE. For this reason, only the inflation rate variable and the constant term have a significant effect on ROE in the model, while the effects of other variables are not statistically significant. Table 14 shows the Granger causality test findings for all variables in the analysis.

The findings of the Granger causality test presented in Table 14 indicate that the causal relationships between the various variables are significant at different levels. According to the p-values, these relationships are assessed at 1%, 5% and 10% significance levels. relationships marked with p<0.01 indicate strong and statistically significant causal relationships. Relationships at this level reveal stronger and more reliable causal links. For example, relationships such as "ROA→ NIM" (F=24.290, p=0.0001), "AS→ NIM" (F=28.102, p=0.0001), and "DS→ NIM" (F=7.002, p=0.001) indicate that these variables significantly affect each other and there is a strong causal link. Moreover, relationships such as "CS→ IR" (F=57.804, p=0.0001), "LR→ IR" (F=92.248, p=0.0001) and "GDP→ NIM" (F=11.778, p=0.0001) also strong causal effects. Examples of these relationships "IR→ ROE" (F=3.626, p=0.027), "NIM→ AS" (F=0.405, p=0.667), and "NII→ IR" (F=1.347, p=0.260). Relationships at this level indicate that there are significant but weaker links between variables. For example, relationships such as "NIM→ ROA" (F=2.385, p=0.092) and "ROE→ BMD" (F=0.040, p=0.961) also show causal effects at a significance level, but this effect may be less pronounced and weaker. Furthermore, relationships such as "NII→ CS" (F=17.010, p=0.0001) also show a significant causal relationship. Relationships marked with p<0.10 indicate a causal effect at weaker levels of significance. Associations at this level usually link that have lower reliability but should still be taken into account. For example, results such as "NII→ NIM" (F=0.086, p=0.918) and "ROA→ DS" (F=0.078, p=0.925), although not statistically significant, may be worth examining. Overall, the Granger causality tests in the table reveal that the interactions between various variables have different levels of statistical significance and that some variables have significant causal effects on others. Relationships with high levels of significance indicate reliable causal links, while relationships with lower levels of significance indicate weaker effects or possible interactions that need more attention.

Table 14. Granger Causality Analysis Findings

Direction of Causality	F	p-value	Direction of Causality	F	p-value	Direction of Causality	F	p-value
ROA→NIM	24.290	0.0001*	BMD → ROE	0.040	0.961	YGDP→BMD	1.289	0.276
NIM→ROA	2.385	0.092***	ROE → BMD	0.237	0.789	BMD → GDP	0.741	0.477
ROE→NIM	1.120	0.326	IR → ROE	3.626	0.027**	NII → EO	1.347	0.260
NIM→ROE	0.632	0.532	ROE → IR	0.359	0.698	IR → NII	0.387	0.679
AS→NIM	28.102	0.0001*	NII → ROE	0.041	0.960	CS → IR	57.804	0.0001*
NIM→AS	0.405	0.667	ROE → NII	0.016	0.985	IR → CS	54.034	0.0001*
BMD→NIM	0.207	0.813	CS → ROE	0.040	0.961	LR → IR	92.248	0.0001*
NIM→BMD	0.831	0.436	ROE → CS	0.825	0.439	IR → LR	186.954	0.0001*
IR→NIM	14.546	0.0001*	LR → ROE	1.177	0.308	DS → IR	0.914	0.401
NIM→IR	11.258	0.0001*	ROE → LR	0.410	0.664	IR → DS	7.485	0.001*
NII→NIM	0.086	0.918	DS → ROE	0.275	0.759	CR → IR	26.298	0.0001*
NIM→NII	2.612	0.074***	ROE → DS	0.006	0.994	IR → CR	14.291	0.0001*
CS→NIM	26.047	0.0001*	CR → ROE	0.228	0.796	GDP → IR	11669.73	0.0001*
NIM→CS	4.030	0.018**	ROE → CR	0.014	0.986	IR → GDP	3199.924	0.0001*
LR→NIM	0.171	0.843	GDP → ROE	2.448	0.087***	CS → NII	17.010	0.0001*
NIM→LR	11.843	0.0001*	ROE → GDP	2.173	0.114	NII → CS	0.463	0.630
DS→NIM	7.002	0.001*	BMD → AS	0.069	0.933	LR → NII	0.764	0.466
NIM→DS	0.003	0.997	AS → BMD	0.247	0.781	NII → LR	0.780	0.459
CR→NIM	1.925	0.146	IR → AS	9.652	0.0001*	DS → NII	5.906	0.003*
NIM→CR	5.505	0.004*	AS → IR	5.665	0.004*	NII → DS	0.001	0.999
GDP→NIM	11.778	0.0001*	NII→ AS	0.004	0.996	CR → NII	1.846	0.158
NIM→GDP	10.918	0.0001*	AS → NII	25.31	0.0001*	NII → CR	0.306	0.736
ROE→ROA	0.605	0.546	CS → AS	2.000	0.136	GDP → NII	0.210	0.811
ROA→ROE	0.519	0.595	AS → CS	7.884	0.0001*	NII → GDP	0.297	0.743
AS→ROA	32.445	0.0001*	LR → AS	1.993	0.137	LR → CS	14.655	0.0001*
ROA→AS	0.684	0.505	AS → LR	2.562	0.077	CS → LR	2.080	0.125
BMD→ROA	0.020	0.981	DS → AB	0.008	0.992	DS → CS	2.846	0.058***
ROA→BMD	0.031	0.970	AS → DS	2.077	0.126	CS → DS	0.611	0.543
IR→ROA	22.089	0.0001*	CR → AS	1.340	0.262	CR → CS	2.514	0.081
ROA→IR	21.547	0.0001*	AS → CR	18.73	0.0001*	CS → CR	25.139	0.0001*
NII→ROA	0.493	0.611	GDP → AS	1.107	0.331	GDP → CS	126.102	0.0001*
ROA→NII	0.157	0.854	AS → GDP	6.523	0.001	CS → GDP	45.756	0.0001*
CS→ROA	13.649	0.0001*	IR → BMD	3.427	0.033**	DS → LR	0.500	0.606
ROA→CS	5.395	0.005*	BMD → IR	0.403	0.669	LR → DS	3.220	0.040**
LR→ROA	5.888	0.003*	NII → BMD	0.000	1.000	CR → LR	10.388	0.0001*
ROA→LR	7.132	0.001*	BMD → NII	0.000	1.000	LR → CR	8.409	0.0001*
DS→ROA	10.967	0.0001*	CS → BMD	0.310	0.734	GDP → LR	258.365	0.0001*
ROA→DS	0.078	0.925	BMD → CS	0.209	0.811	LR → GDP	172.220	0.0001*
CR→ROA	6.803	0.001*	LR → BMD	0.072	0.930	CR → DS	0.522	0.594
ROA→CR	1.029	0.358	BMD → LR	0.015	0.985	DS → CR	2.814	0.060***
GDP→ROA	0.932	0.394	DS → BMD	0.075	0.928	GDP → DS	3.238	0.039**
ROA→GDP	6.982	0.001*	BMD → DS	0.104	0.901	DS → GDP	5.729	0.003*
AS→ROE	0.381	0.683	CR → BMD	0.055	0.946	GDP → CR	11.413	0.0001*
ROE→AS	0.000	1.000	BMD → CR	0.006	0.994	CR → GDP	38.015	0.0001*

5. Conclusion and Recommendations

Banks are financial institutions that mediate the balance between deposits and loans, playing an important role in promoting the growth of the national economy in alignment with their interests. The banking sector is a fundamental component in the economic development and functioning of a country. The financial structure of banks, unlike businesses, to the composition of deposits and shareholders' equity in the liabilities of their balance sheets, which they finance from savers in exchange for a specific interest rate in order to continue their activities. Therefore, banks to access the funds they need under the most favorable conditions, with regard to the economic conditions of the country. Because financial structures of banks are thought to affect their profitability. This study investigates how financial structure affects the profitability of banks and financial institutions in the market on the NYSE, one of the most significant stock exchanges worldwide, and NASDAQ, the world's technology stock exchange, is investigated with the help of financial statement data for the years 2015-2024. In this context, 3 different models were established for panel data regression analysis. The empirical findings of the research that the first model, net interest margin, and capital ratio ($\beta=0.047$, $p<0.01$) and loan share ($\beta=0.045$, $p<0.01$) variables have a positive and statistically notable impact on net interest margin. The increase in the net interest margins of banks means that the amount of loans they provide increases and, as a natural result, their profitability increases. In parallel with this, the capital ratios within their total assets also increase with the increasing profitability. Alternatively, the coefficients of another variable are not statistically significant ($p>0.05$), indicating that these variables do not have a significant effect on the net interest margin. It is observed that macroeconomic variables have a greater impact on bank profitability, especially in these analysis periods. Generally, when the literature is examined, it is expected that the inflation rate and net interest margin are directly proportional. An increase in the inflation rate means that the net interest margin will also increase. However, in periods of economic growth, an inverse relationship is expected between bank market concentration and net interest margin. Because the decreases in interest rates in periods of economic growth mean a decrease in the net interest margins of banks. In the second model of the study, ROA is positively and statistically affected by the capital ratio ($\beta=0.029$, $p<0.01$), inflation rate ($\beta=0.043$, $p<0.01$), and GDP ($\beta=0.023$, $p<0.01$). This means that with the increase in inflation rates, bank revenues increase more than bank costs. These results are parallel to the findings of Karnik and Kajumdar (2024). However, the repayment performance of the loans in question should also be taken into account. It should not be ignored that the risk of non-repayment of loans will cause serious decreases in the profitability of banks in the following periods and will negatively affect their liquidity levels. However, the coefficients of the other variables are not statistically significant ($p>0.05$), meaning their effects on ROA are not considered significant. The last model of the study, ROE and inflation rate variable $\beta=0.662$, $p<0.01$) a positive and statistically significant effect on ROE. Moreover, the coefficient of the constant term ($\beta=0.034$, $p<0.05$) statistically significant. Alternatively, the coefficients of other variables lack statistical significance ($p>0.05$), thus effects of these variables on ROE are not significant. In general, the impact of financial structure on the profitability of financial institutions and banks within the scope of the analysis more affected by macroeconomic factors as opposed to bank-specific determinants. These findings support the findings of Demirhan (2010), Dizgil (2017), Simatele et al. (2018), Kılıç (2019), Jacob (2023), Karnik and Kajumdar (2024), Bahrawe (2025), Peace and Onyenania (2025), Rufus et al. (2025), Wati and Rosyadi (2025). The common features of these studies are that banks and financial institutions should pay attention to their financial structures and increase their profits by ensuring financial stability with prudent debt management. In other words, they found that business-specific factors affect the profitability of financial institutions more. Karnik and Kajumdar (2024) argue that macroeconomic factors affect the profitability of banks more, and that there is a very serious relationship between the inflation rate and bank profitability.

When the Granger causality test findings are analyzed, the relationships such as "ROA→ NIM" (F=24.290, p=0.0001), "AS→ NIM" (F=28.102, p=0.0001), and "DS→ NIM" (F=7.002, p=0.001) indicate that these variables affect each other significantly and there is a strong causal link. The increase in net interest margin shows that banks' asset profitability ratios and asset sizes increase. In addition, the increase in net interest margin allows banks to accept more deposits. Moreover, the relationships such as "CS→ IR" (F=57.804, p=0.0001), "LR→ IR" (F=92.248, p=0.0001) and "GDP→ NIM" (F=11.778, p=0.0001) also strong causal effects. There is a strong causal relationship between the inflation rate and the liquidity levels and credit shares of banks. When the inflation rate increases, the liquidity levels of banks increase.

In this study, empirical results were obtained by including both bank-specific and macroeconomic variables to analyze the impact of financial structure on the profitability of banks and financial institutions listed on NASDAQ and NYSE, the largest stock exchanges in the USA. The findings indicate a strong association between banks' profitability and their financial structure. It is thought that the findings obtained by using the economic methodology used in this study for other developed countries, such as the USA, will be essential for making comparisons of the financial structures of the banking sector across countries, revealing similar and different aspects and contributing to the literature.

Declaration of Research and Publication Ethics
This study which does not require ethics committee approval and/or legal/specific permission complies with the research and publication ethics.

Researcher’s Contribution Rate Statement
I am a single author of this paper. My contribution is 100%.

Declaration of Researcher’s Conflict of Interest
There is no potential conflicts of interest in this study.

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