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Measurement of the Financial Performance of Banks for Development and Investment in Türkiye by CAMELS Analysis

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Türkiye'de Kalkınma ve Yatırım Bankalarının Finansal Performanslarının CAMELS Analiziyle Ölçümü

Abstract

Using the CAMELS analysis approach, this study examines the financial performance of banks operating in Türkiye for development and investment. Accordingly, a comparative performance evaluation has been conducted using the financial data of 12 banks for development and investment, comprising three state-owned, seven privately owned, and two foreign-owned banks, for 2020-2022, with 22 financial ratios. At the end of the analysis, it was observed that Golden Global Investment Bank Inc. exhibited the best financial performance in 2020, Diler Investment Bank Inc. in 2021, and GSD Investment Bank Inc. in 2022, among the other banks for development and investment. The worst financial performance, however, was demonstrated in all three years by BankPozitif Credit and Development Bank Inc.

Keywords : Banks for Development and Investment Bank, Financial Performance, CAMELS Analysis.

JEL Classification Codes : E40, G24, G32.

Öz

Bu çalışma, Türkiye'de faaliyette bulunan kalkınma ve yatırım bankalarının finansal performanslarını CAMELS analizi yaklaşımı ile araştırmaktadır. Bu doğrultuda 3 kamu sermayeli, 7 özel sermayeli ve 2 yabancı sermayeli toplam 12 kalkınma ve yatırım bankasının 2020-2022 yılları arasındaki finansal verileri kullanılarak 22 finansal oranla karşılaştırmalı bir performans değerlendirmesi yapılmıştır. Analiz sonucunda diğer kalkınma ve yatırım bankaları içerisinde en iyi finansal performansı 2020 yılında Golden Global Yatırım Bankası A.Ş., 2021 yılında Diler Yatırım Bankası A.Ş. ve 2022 yılında GSD Yatırım Bankası A.Ş göstermiştir. En kötü finansal performansı ise her üç yılda BankPozitif Kredi ve Kalkınma Bankası A.Ş. göstermiştir.

Anahtar Sözcükler : Kalkınma ve Yatırım Bankaları, Finansal Performans, CAMELS Analizi.

1. Introduction

Development and investment banks aim primarily to provide project and investment contributions, attract funds from external investors interested in investing, sustain efficiency, creativity, productivity, profitability, growth, and development through forthcoming programs, and provide technical support, especially in developing economies (Martinez & Vicente, 2012: 10). The relevant banks supporting industrial and economic development not only identify relatively strategic investment areas but also provide technical, financial, and organisational contributions to enhance the capacities of organisations operating in these fields, encouraging them to develop innovative projects. Hence, development and investment banks can contribute to social welfare by directing local resources and channelling resources obtained from international markets into efficient projects (Karahanoğlu, 2017: 168).

An enterprise's continuity and growth are related to its competitive strength. The healthy determination of competitive strength depends on the measurement of financial performance (Acar, 2003: 21). Through the measurement of financial performance, information is obtained not only regarding the extent to which resources are effectively utilised and profitability levels are determined but also about cost control processes and the measurement of firm activities (Özçelik & Kandemir, 2015: 98). The outputs obtained from financial performance measurement have an impact on decisions such as investments, credits, and company mergers, making them significant for top-level management responsible for making decisions related to the enterprise (Karaoğlan & Şahin, 2018: 63-64). The data necessary for financial performance measurement is mainly obtained from financial statements, and measurement is generally conducted using tools such as ratio analysis, horizontal evaluation, trend evaluation, and vertical evaluation (Ceyhan & Demirci, 2017: 279).

As one of the methods developed to analyse the performance of banks, the CAMELS evaluation system initially consisted of five components; however, with the inclusion of sensitivity to market risks into the system after 1997, the system comprises six components represented by its initial letters. The components that make up the CAMELS concept represent "C-capital adequacy", "A-asset quality", "M- management quality", "E-earnings", "L-liquidity", and "S-sensitivity to market risks" (Öztürk-Karaçor et al., 2017: 49).

This study uses the CAMELS analysis technique to examine the financial performance of 12 development and investment banks operating in Türkiye, comprising three state-owned, seven privately-owned, and two foreign-owned banks, between 2020 and 2022. The study used ratios of capital adequacy (4 pcs), ratios of asset quality (4 pcs), ratios of management quality (4 pcs), ratios of profitability (4 pcs), ratios of liquidity (3 pcs), and market risk sensitivity ratios (3 pcs) as the leading indicators of the analysis. The financial performance of banks in terms of development and investment has been comparatively evaluated using the CAMELS analysis based on a total of 22 financial ratios.

The study's expected contribution to the literature can be summarised as follows: i) The CAMELS analysis has been used for the first time in measuring the financial performance of banks for development and investment from 2020 to 2022. ii) The financial performance measurement in the banking sector for development and investment has revealed the financial situation of the banks. iii) The study provides an opportunity for comparison between the year 2020, when the COVID-19 pandemic was first seen in Türkiye, the year 2021, which was heavily affected by the pandemic, and the year 2022 when the effects of the pandemic diminished. iv) Development and investment banks were classified according to their ownership structure, and an analysis was conducted by comparing their performance scores.

The first section of the study provides fundamental information about the development and investment banking business. The second section will give a literature review summarising the findings of earlier studies on the performance of banks using the CAMELS method. The third section introduces the dataset and provides a detailed explanation of the methodology used in the study. In the fourth section, the CAMELS analysis was conducted to establish the performance scores of development and investment banks. The fifth section, which evaluates the study's results, concludes the paper.

2. Literature Review

Here is a brief international and national literature survey on studies using the CAMELS method that examined the performance of commercial banks and development and investment banks.

Çinko & Avcı (2008) evaluated the applicability of the CAMELS rating method to the Turkish commercial banking system and analysed data covering 1996-2000 for 44 banks. Between 1997 and 2001, 19 banks from the sample were transferred to the SDIF. According to the results, the research using typical CAMELS ratios cannot predict a bank's transfer to the SDIF. In particular, the CAMELS scores of many banks transferred to the SDIF are higher than those still in operation. Arçelik (2010) evaluated the performance of commercial banks operating between 2002 and 2009 using the CAMELS analysis approach. The evaluation of CAMELS components found that liquidity, management quality and asset quality increased the most in the 2002-2009 period, while the sensitivity to market risk component did not significantly change. When the overall CAMELS score is analysed, it is concluded that the CAMELS score of 7 banks increased while six banks decreased. Using the CAMELS approach, Şen & Solak (2011) analysed how the vulnerability of deposit banks changed between 1995 and 2008. The study categorises public, private and foreign capital banks in ownership structure using 24 financial parameters based on six essential components. Before the 2001 financial crisis, state-owned banks performed much worse than other banks, but their performance improved significantly after the crisis. During the global financial crisis, foreign-owned banks underperformed other bank groups regarding liquidity quality, profitability, and capital adequacy. Private capital banks outperformed the sector average in every period. Kandemir & Arıcı (2013) compared the operating results of

Turkish deposit banks between 2001 and 2010 by classifying them according to ownership arrangements. Using the CAMELS analysis method, it is determined that deposit banks have strong liquidity ratios and capital adequacy; foreign-capitalised deposit banks perform better than other bank groups regarding management quality and asset quality and have more market risk sensitivity than other groups. Ege et al. (2015) used the CAMELS method to analyse the performance of state-owned, commercial, and foreign-owned deposit banks using data from 2002 to 2010. In the study, 25 reference indicators were selected and compared on a group basis. The results indicate that state-owned deposit banks performed better than other banks regarding market risk sensitivity, capital adequacy, and management efficiency. Private-owned deposit banks performed better in profitability, while foreign-owned deposit banks performed better in liquidity and asset quality components. Emir & Akyüz (2018) conducted a study using the CAMELS analysis, in which they created performance indices for the deposit banks operating in Türkiye using data from 22 deposit banks from 2003:Q3 to 2016:Q2. The banks were subjected to the CAMELS analysis at the overall and group levels. It was determined that state-owned deposit banks exhibited the highest performance in management capability and profitability components, privately-owned deposit banks in the market sensitivity component, and foreign-owned deposit banks in the liquidity components, asset quality and capital adequacy. Uslu (2019) evaluated the performance of 12 foreign capital banks in Türkiye using the CAMELS analysis established for auditing and supervision between 2010 and 2016. According to the results, the top three banks with the most improved performance were Deutsche Bank, Citibank, and Turkland Bank, while it was determined that Deutsche Bank's performance score was more fragile than other banks. Additionally, it was found that 50% of the banks experienced a decline in performance in 2016 compared to 2010. Kaygusuz et al. (2020) evaluated the financial performance of the top 10 banks in terms of total assets from 2008 to 2017. They used the Technique for Order of Preference by Similarity to the Ideal Solution (TOPSIS) approach to analyse the financial performance of banks using financial ratios obtained from the CAMELS evaluation components. The study was conducted in two stages, and as a result, the financial performance outcomes of the banks were ranked. Denizbank A.Ş. ranked first in overall total financial performance between 2008 and 2017, while Türkiye Halk Bankası A.Ş. ranked last. Yazıcıoğlu & Uygurtürk (2023) evaluated deposit banks' financial performance and participation in banks operating in Türkiye from 2017 to 2021 using the CAMELS analysis method. According to the findings, it was determined that Ziraat Bank from state-owned banks, İş Bankası from privately-owned banks, Garanti Bankası from foreign-owned banks, and Vakıf Katılım from participation banks demonstrated the highest performance.

Wanke et al. (2016) evaluated the efficiency of the dual banking system in Malaysia, analysing the development of potential input savings and output growth between 2009 and 2013 using the Dynamic Slack-Based Model (DSBM). In the second stage of the study, the CAMEL rating system and the Generalized Linear Mixed Models (GLMM) were combined with the Monte Carlo Markov Chain (MCMC) method and DSBM results to evaluate the relative efficiency of Islamic and conventional banks in Malaysia. This was done to create a

model with effective predictive capabilities for assessing banking performance. As a result, it is reported that Islamic banks are less efficient compared to conventional banks. Additionally, international banks' lower efficiency levels than their domestic counterparts are considered legal and cultural barriers. Barboza & Vasconcelos (2019) evaluated the impact of the Brazilian Development Bank on the total investments and whether market failures could be resolved using a Bayesian Vector Autoregressive (VAR) model between 2002 and 2016. The findings determined that the Development Bank loans positively and statistically significantly affected Brazil's gross fixed capital formation. Additionally, it was found that a 1% increase in development bank loans led to a 0.46% increase in investments. Shaddady & Moore (2019) conducted a study utilising Data Envelopment Analysis (DEA) and CAMELS analysis. The dataset covered the years 2000-2016 and included 2210 European banks. The main empirical findings indicate that the capital regulation index factors positively influence stability. The findings also reiterate the need for sufficient capital for bank stability. Additionally, the study highlights the detrimental effects of activity constraints on stability and demonstrates how restrictions on non-traditional financial activities lead to a lack of diversity, endangering bank stability. Other regulatory and supervisory factors emerge as a source of fluctuation. Banks in high stability categories are more responsive to regulatory and supervisory shocks. Gaul & Jones (2021) examined CAMELS evaluations, information content, and influencing factors from 1984 to 2020. They determined that individual management component ratings and composite CAMELS risk ratings have a significant predictive value for future bank performance and risk criteria that are important for banking regulators and supervisors. The results indicate that as the proportion of high-risk composite CAMELS scores increases in the banking sector, overall bank lending decreases significantly, and the country's unemployment rate rises.

Koç et al. (2016) examined the performance of banks for development and investment in Türkiye from 2002 to 2012 using Johansen Cointegration Analysis. It was found that state-owned banks exhibited performance based solely on asset profitability, while private and foreign-owned banks exhibited performance based solely on equity profitability in the long run. Additionally, it was determined that Basel criteria positively impacted the banks' capital adequacy. Karataş & Akhisar (2017) analysed the performance of development and investment banks in Türkiye from 2011 to 2015 using the Analytic Network Process (ANP) method. The performance of 6 banks for development and investment was ranked based on 13 evaluation criteria. According to the findings, state-owned banks ranked high due to their high capital adequacy ratios, while the rankings of privately owned banks varied over the years. Karahanoğlu (2017) aimed to determine the factors affecting the asset profitability of 10 banks for development and investment in Türkiye from June 2005 to October 2016 using panel data analysis. The study found that the non-performing loan ratio, unemployment, capital adequacy ratio, and increase in foreign exchange were negatively related to banks' profitability for development and investment. Additionally, it was found that profitability had a positive relationship with loans received, loans extended, other expenses per interest expense, other expenses per employee, and the industrial production index. Şenel & Şekeroğlu (2019) studied the efficiency of development

and investment banks in Türkiye using Data Envelopment Analysis (DEA) between 2013 and 2017. According to the results, most banks for development and investment were efficient during 2013-2015, while the inefficient ones showed an increasing trend in efficiency starting from 2016. Işık (2020) assessed the performance of the public capital banks for development and investment in Türkiye using the SD-based MABAC and WASPAS methods from 2013 to 2018. During the analysis period, it was determined that Turkish Eximbank A.Ş., İller Bankası A.Ş., and Türkiye Yatırım ve Kalkınma Bankası A.Ş. demonstrated the highest performance, respectively. Mustafayeva (2020) evaluated the performance of 13 banks for development and investment in Türkiye over 2013-2018 using the CAMELS analysis method. The performance of banks for investment and development was compared with commercial banks, and the findings indicated that the performance of banks for development and investment was higher than that of commercial banks. Gardi (2020) used the ARDL boundary test to examine the influence of capital adequacy on the profitability of Turkish development and investment banks from 1961 to 2016. The results indicated a long-term negative relationship between bank profitability and capital adequacy. Additionally, it was concluded that the growth of the Turkish economy would lead to a decline in bank performance due to improvements in total bank assets. Özgür (2021) evaluated the financial performance of 9 banks for development and investment in Türkiye, comprising three state-owned and six privately owned banks, from 2009 to 2019. This evaluation was conducted using the CAMELS analysis, which involved 21 financial ratios determined across six components. The indicator values for CAMELS were used to determine the negative and positive values of the development and investment banks and their trends over time. Karadağ Ak et al. (2022) analysed the financial performance of public, private, and foreign-owned banks for development and investment in Türkiye between 2010 and 2019 using the Entropy-based ARAS approach. According to the findings of the study, Diler Investment Bank and Merrill Lynch Investment Bank ranked at the top, while Türkiye Sınai Kalkınma Bankası and Aktif Investment Bank were at the bottom. Akkaynak (2022) examined the causal relationship between the financial performance of 12 banks for development and investment in Türkiye and securities issued by the public and private sectors using the Dumitrescu and Hurlin panel causality tests from 2014 to 2022. The study's findings support the idea of a causal relationship between financial performance and specific types of securities, such as government domestic debt securities, precious metal deposit accounts, stock issuance, private sector debt instrument issuance, asset-backed securities, warrants, and certificates. Yavuz et al. (2023) compared and evaluated the performance of 11 banks for development and investment during 2010-2020, taking into account ownership structure. Their performance efficiency was analysed using the MULTIMOORA method with 17 ratios under seven components. The analysis findings demonstrate that the performance of banks for development and investment operating in Türkiye did not follow a stable trend. However, during the periods examined, Pasha Investment Bank Inc. and Nurol Investment Bank Inc. were among the bottom three, while Turk Eximbank and Bank of America Investment Bank Inc. were among the top three. Çetinbakış & Bektaş (2023) measured the efficiency levels of 8 banks for development and investment from 2010 to 2021 using the Data Envelopment Analysis (DEA) method. The findings indicate that based

on the annual average technical efficiency results, the banks were inefficient during the mentioned period. Diler Yatırım Bankası has been identified as the most technically efficient bank among the relevant institutions throughout all the years. Öksüzkaya & Atan (2023) ranked the financial performance of banks' development and investment in Türkiye from 2016 to 2021. In the study, which used six evaluation criteria, three of which were cost-oriented and three of which were benefit-oriented, the criteria were weighted using the CRITIC method. Performance rankings were made using the MABAC method. According to the findings, during the evaluation period, it was determined that Türkiye Kalkınma ve Yatırım Bankası demonstrated the highest performance, while İller Bankası demonstrated the lowest performance.

3. Data and Methodology

This section includes explanations of the dataset used in the study and the methodology.

3.1. Data

This study evaluated the financial performances of 12 development and investment banks operating in Türkiye, including foreign-owned, privately owned and state-owned institutions, using the CAMELS method, covering a three-year period from 2020 to 2022. Table 1 shows the foreign-owned, privately-owned, and state-owned banks for development and investment included in the study.

Table: 1
Banks Involved in the Study

Order	Bank	Capital Status
1	"Iller Bank Inc."	Public Capital
2	"Turk Eximbank Inc."	Public Capital
3	"Turkish Development and Investment Bank Inc."	Public Capital
4	"Aktif Investment Bank Inc."	Privately Owned
5	"Diler Investment Bank Inc."	Privately Owned
6	"Golden Global Investment Bank Inc."	Privately Owned
7	"GSD Investment Bank Inc."	Privately Owned
8	"Istanbul Settlement and Custody Bank Inc."	Privately Owned
9	"Nurol Investment Bank Inc."	Privately Owned
10	"Industrial Development Bank of Türkiye Inc."	Privately Owned
11	"BankPozitif Credit and Development Bank Inc."	Foreign-Owned
12	"Pasha Investment Bank Inc."	Foreign-Owned

The study's research relied on data from three state-owned, seven privately owned, and two foreign-owned development and investment banks in Türkiye. The financial statistics for the banks included in the study were collected from the Banks Association of Türkiye's website (Banks Association of Türkiye, 2023). Microsoft Office Excel 2016 was utilised to apply the CAMELS approach to evaluate the financial performance of banks for development and investment.

3.2. CAMELS Method

The CAMELS analysis is a rating technique that combines ratio analysis and mathematical calculations. The internationally renowned CAMELS Rating System is used as an audit framework by many regulatory agencies and governments to examine the financial stability of banks. The Federal Financial Institutions Examination Council (FFIEC) began using the CAMELS analysis in the United States in 1979, and it quickly became a widespread audit tool for assessing the financial soundness of financial institutions. Banking Regulation and Supervision Agency uses the CAMELS analysis to rate banks, but the findings are not disclosed to the public (Altemur et al., 2018: 60). The CAMELS rating model, which has a broad application area on a country-by-country basis, has gained widespread acceptance in both domestic and foreign academic circles (Özkan, 2019: 910).

When the CAMELS system was first established, it had five components. However, after 1997, sensitivity to market risks was added, making the system comprised of six components. The components in question are as follows (Öztük et al., 2017: 50-51);

- Capital adequacy (C) ensures that banks are protected in unforeseen circumstances. In this context, bank capital is crucial for ensuring the safety of depositors, meeting necessary fixed capital investments, and sustaining bank operations in the face of risks.
- One of the key components is asset quality (A), which is considered in terms of the nature of loans. In this case, an increase in non-performing loans is the most critical risk factor.
- Management competence (M) refers to the ability and capacity of the management. This component questions the effectiveness of recognising potential risks.
- Earnings (E) is one of the conditions necessary for banks to perform their functions systematically. This component assesses how profitable banks are.
- Liquidity (L) indicates banks' ability to meet unforeseen cash outflows and short-term debt obligations. The key factor influencing the liquidity level is how banks manage their funds.
- Sensitivity to market risk (S) is a method for examining economic factors such as interest rates, stock prices, commodity prices, and exchange rates that can significantly affect banks.

The CAMELS analysis examines the banking system, income statements, and balance sheets. As a result of the CAMELS analysis, banks identified as unfavourable are not classified as failed. Market participants focus on these banks and try to assess their financial stability using the results of the CAMELS analysis as an early warning system. The findings reveal both banks with a strong financial structure, and those with an inadequate financial structure (Abdullayev, 2013: 98). The assessment criteria for the CAMELS components during the bank audit are shown in Table 2.

Table: 2
Factors to Consider in CAMELS Analysis

C - (Capital)	Assessment of the financial situation considering the sizes of the banks
	Evaluation of the risks posed by off-balance sheet transactions
	Disaggregation of the asset structure of the balance sheet to include various risks
	Banking plans concerning growth
	Size of undistributed profits
	The state of funding resources in cases where additional capital is needed
	Profitability situation
	The status of risky assets, provision adequacy for these risks, and revaluation terms
	Conditions for accessing capital markets and other capital sources
A - (Asset)	The current state of loan provisions, as well as the allocation of provisions for prospective losses
	The terms of the loan disbursement process, administrative evaluation criteria, whether a necessary risk assessment is conducted during loan disbursement, and securing collateral accordingly
	Examination of the loan and investment portfolio
	Identification, monitoring, and successful collection of non-performing assets
	Success in the collection of non-performing assets
	Assessment of derivative transactions, collateral provided in off-balance sheet activities, credit limits, and credit risk levels
	Asset concentration analysis
	The state of management and internal audit information systems
M - (Management)	The desire of bank management to consider the evaluations and warnings of auditors and contribute to the establishment of a compliant banking system
	Risk profile and overall performance of banks
	The structure, scale, and adequacy of banks' risk, management, and information systems according to their areas of operation
	The level of establishment of appropriate policies in their areas of operation and the adequacy of internal control systems
	Compliance with regulations
	Distribution of authority in senior management and the board of directors and the quality of governance
	The management's and board of directors' strategies, adaptability to industry developments, adoption of new products and services, success in controlling operational risks, and their capacity for leadership
	Conditions for supporting bank decisions by the board of directors
	Success and depth of management
E - (Earnings)	Whether sufficient capital for the bank is provided through undistributed profits
	The source and quality of earnings
	Earnings sensitivity to market risk
	Assessment of the status of earnings in terms of trend dependency and stability
	Examination of asset concentration
	The status of revaluation and provision systems
	Assessment of management information system and budgeting system
L - (Liquidity)	The situation of diversification of funding sources
	Level of dependence on short-term volatile funds
	Assessment of current and future liquidity sources and meeting the liquidity needs
	Assessment of liquidity, including management information systems and liquidity strategies
	Development and stability of deposits
	Conditions for accessing money and similar fund markets
	The condition of assets to be converted into securities and the conditions for their sale
S - (Sensitivity to Market Risk)	The situation of market risk arising from foreign exchange and trading operations
	Sensitivity of capital value and earnings to adverse market changes
	The structure of interest rate risk exposure in non-trading operations
	The management's success in identifying and controlling the market risk exposure

Source: Kaya, 2001: 2-4; Sakarya, 2010; 15-16; Ege et al., 2015: 112-113.

Various calculation processes determine banks' performance and CAMELS rating. In this context, the CAMELS rating is calculated after determining the reference value, index value, deviation value, overall factor-weighted value, and CAMELS composite score. Table 3 provides comprehensive explanations and steps for calculating the CAMELS rating.

Table: 3
Application Steps for CAMELS Analysis

Step	Explanation	Application
Step 1:	Determination of Financial Ratios of General Factor Components	Financial ratios of general factors are determined by considering the literature.
Step 2:	Determining the Direction of the Effect of Ratios	It is evaluated if a change in the financial ratio positively or negatively impacts the overall factor.
Step 3:	Determination of General Factor Importance Weighting	The importance and weight of each factor in the total application are determined.
Step 4:	Determination of Financial Ratio Importance Weights	The importance of the weight of the financial ratio in the related factor is determined.
Step 5:	Determination of Reference Values	The sector average of banks for development and investment for 2020-2022 has been taken.
Step 6:	Calculation of Index Value	The financial ratio is divided by the reference value, and the result is multiplied by 100.
Step 7:	Calculation of Deviation Value	If the direction of effect is positive, it is calculated as (index value-100); if it is negative, it is calculated as (100-index value).
Step 8:	Calculation of Weighted Values	It is determined by multiplying the deviation value by the weight value of the corresponding financial ratio.
Step 9:	Calculation of General Factor Weight Value	It is calculated by multiplying the weighted values calculated for each financial ratio by the general factor impact ratio.
Step 10:	Calculation of CAMELS Indicator Value	It is calculated by summing the weighted values of each general factor.
Step 11:	CAMELS Score	The CAMELS indicator value calculated for each bank is scored on a scale of 1-5, and its performance is determined relative to that of other banks.

Source: Kandemir & Arıcı: 2013, 73; Akyüz et al., 2020:153; Özgür, 2021: 3214.

The CAMELS analysis gives ratings on a scale of 1 to 5. An increase in the rating indicates a worsening situation, with '1' representing the best-performing bank (Ahmedov & Mehmedov, 2017: 100-101). The points shown in Table 4 are determined according to the ranges;

Table: 4
CAMELS Score and Rating

CAMELS Score	CAMELS Rating
-∞ - -30]	5
(-30 - -10]	4
(-10 - 10]	3
(10 - 30]	2
(30 - ∞	1

Source: Daver, 2015.

"1" Banks that are strong in every aspect (Each component should be rated as 1 or 2 for the bank),
"2" Generally strong banks (Each component value should not be less than 3),
"3" Underperforming banks,
"4" Banks with severe management and financial issues and the overall decline in financial health,
"5" They are referred to as banks with severe managerial/financial problems.

4. Findings

The financial ratios to be primarily used in the study have been determined. Based on the literature review, financial ratios commonly used in CAMELS analysis have been preferred to determine the financial ratios. These financial ratios consist of 22 ratios in six different groups. The information regarding these financial ratios is presented in Table 5. Table 5 includes the code of the financial ratios used in the study, the direction of impact,

the importance weight awarded to the ratios, and the weight awarded to the component. Importance weight ratings can vary from person to person. Researchers can determine the importance of weight values differently. The direction of impact of financial ratios indicates the positive or negative relationship between the components. If there is a positive relationship, it affects the component positively; otherwise, it affects it negatively.

Table: 5
CAMELS Components, Determined Financial Ratios, and Importance Weights

Components and Ratios	Codes of the Ratios	Direction of Relationship	Weight Assigned to Ratios
C			**20**
Capital Adequacy Ratio	C1	Positive	25
Equity/Total Assets	C2	Positive	25
(Equity-Fixed Assets)/Total Assets	C3	Positive	25
Net Balance Sheet Position/Equity	C4	Positive	25
A			**20**
Financial Assets (Net) / Total Assets	A1	Negative	25
Total Loans / Total Assets	A2	Positive	25
Non-performing Loans / Total Loans	A3	Negative	25
Fixed Assets/Total Assets	A4	Negative	25
M			**15**
Net Interest Income After Specific Provisions / Total Assets	M1	Positive	25
Non-Interest Income (Net) / Total Assets	M2	Positive	25
Interest Income / Total Revenues	M3	Positive	25
Interest Expenses / Total Expenses	M4	Negative	25
E			**15**
Return on Average Assets	E1	Positive	25
Return on Average Equity	E2	Positive	25
Pre-Tax Income / Total Assets	E3	Positive	25
Net Income (Loss) / Paid-in Capital	E4	Positive	25
L			**15**
Liquid Assets / Total Assets	L1	Positive	35
Liquid Assets / Short-term Liabilities	L2	Positive	35
TL Liquid Assets / Total Assets	L3	Positive	30
S			**15**
TL Assets / Total Assets	S1	Negative	35
FE Assets / FE Liabilities	S3	Negative	35
FE Liabilities / Total Liabilities	S2	Negative	30

The sector average value of financial ratios for banks for development and investment has been taken as the benchmark, and the reference values for 2020-2022 are shown in Table 6.

Table: 6
Reference Values for 2020-2022

Components and Ratios	2020	2021	2022
C			
Capital Adequacy Ratio	25,8	22,6	23,0
Equity/Total Assets	13,7	10,4	11,6
(Equity-Fixed Assets)/Total Assets	12,3	9,2	10,3
Net Balance Sheet Position/Equity	-6,9	-5,1	-16,3
A			
Financial Assets (Net) / Total Assets	19,8	22,1	28,7
Total Loans / Total Assets	73,6	72,6	64,0
Non-performing Loans / Total Loans	1,1	1,0	0,9
Fixed Assets/Total Assets	1,4	1,2	1,3
M			
Net Interest Income After Specific Provisions / Total Assets	1,8	1,7	2,6
Non-Interest Income (Net) / Total Assets	0,8	0,8	1,3
Interest Income / Total Revenues	84,7	84,0	82,9
Interest Expenses / Total Expenses	85,2	85,1	88,2

E			
Return on Average Assets	1,8	2,0	3,0
Return on Average Equity	12,5	16,9	27,2
Pre-Tax Income / Total Assets	1,9	2,0	3,2
Net Income (Loss) / Paid-in Capital	16,7	23,5	41,6
L			
Liquid Assets / Total Assets	15,9	17,5	22,7
Liquid Assets / Short-term Liabilities	112,2	101,7	97,5
TL Liquid Assets / Total Assets	10,5	10,8	15,6
S			
TL Assets / Total Assets	31,3	25,7	44,5
FE Assets / FE Liabilities	70,8	75,2	57,8
FE Liabilities / Total Liabilities	97,1	98,7	96,1

Table 7 shows the next step after determining the reference values: the steps followed for calculating CAMELS component values. The calculations provided in Table 7 are related to the 2022 CAMELS composite value of Iller Bankasi A.S. These calculations were performed separately for 12 participating banks each year. The steps outlined earlier were used to calculate the CAMELS results.

Table: 7
Calculation of CAMELS Score for Iller Bankasi A.S. for the Year 2022

Components and Ratios	Direction of Impact	Weight Assigned to Ratios	Bank Value	Reference Value	Index Value	Deviation Value	Total Weight Value of Ratios	Weight Value of the Group	CAMELS Value
C		**20**					**149,96**		
C1	+	25	34,7	23,0	150,92	50,92	12,73	**29,99**	
C2	+	25	38,2	11,6	327,62	227,62	56,90		
C3	+	25	33,2	10,3	321,71	221,71	55,43		
C4	+	25	-0,1	-16,3	0,42	99,58	24,89		
A		**20**					**-61,79**		
A1	-	25	43,0	28,7	150,01	-50,01	-12,50	**-12,36**	
A2	+	25	49,2	64,0	76,96	-23,04	-5,76		
A3	-	25	0,0	0,9	0,00	100,00	25,00		
A4	-	25	4,9	1,3	374,13	-274,13	-68,53		
M		**15**					**40,81**		
M1	+	25	5,6	2,6	212,08	112,08	28,02	**6,12**	
M2	+	25	1,5	1,3	120,19	20,19	5,05		
M3	+	25	82,7	82,9	99,76	-0,24	-0,06		
M4	-	25	60,7	88,2	68,78	31,22	7,81		
E		**15**					**-10,66**		
E1	+	25	4,3	3,0	142,57	42,57	10,64	**-1,60**	
E2	+	25	10,5	27,2	38,72	-61,28	-15,32		
E3	+	25	4,8	3,2	147,77	47,77	11,94		
E4	+	25	11,8	41,6	28,29	-71,71	-17,93		
L		**15**					**104,23**		
L1	+	35	43,0	22,7	189,12	89,12	31,19	**15,63**	
L2	+	35	165,1	97,5	169,26	69,26	24,24		
L3	+	30	40,9	15,6	262,64	162,64	48,79		
S		**15**					**-6,92**		
S1	-	35	83,6	44,5	188,09	-88,09	-30,83	**-1,04**	
S3	-	35	16,4	57,8	28,38	71,62	25,07		
S2	-	30	99,8	96,1	103,84	-3,84	-1,15		

Tables 8-19 display the calculated CAMELS scores banks for development and investment for 2020-2022.

Table: 8
Iller Bank Inc. CAMELS Scores for 2020-2022

	2020	2021	2022
Iller Bank Inc.	**60,47**	**56,39**	**36,75**
C (Capital)	36,57	41,70	29,99
A (Asset)	-11,29	-20,10	-12,36
M (Management)	12,65	12,72	6,12
E (Earnings)	11,90	9,14	-1,60
L (Liquidity)	16,09	20,77	15,63
S (Sensitivity to Market Risk)	-5,45	-7,84	-1,04

Table 8 displays the CAMELS score for Iller Bank Inc. for 2020-2022. Over the three years, the CAMELS score has generally shown a decreasing trend, with positive values in all years. In 2020 and 2021, the capital adequacy, management quality, profitability level, and liquidity level contributed positively to the CAMELS score, while asset quality and susceptibility to market risk had a negative impact. In 2022, the capital adequacy, management quality, and liquidity level contributed positively to the CAMELS score, while profitability level, asset quality and market risk sensitivity contributed negatively.

Table: 9
Turk Eximbank Inc. CAMELS Scores for 2020-2022

	2020	2021	2022
Turk Eximbank Inc.	**7,69**	**-0,17**	**5,78**
C (Capital)	4,38	-3,84	0,79
A (Asset)	13,00	13,44	14,46
M (Management)	-4,63	-4,42	-3,85
E (Earnings)	-3,72	-1,01	-2,06
L (Liquidity)	-3,23	-6,78	-3,83
S (Sensitivity to Market Risk)	1,89	2,44	0,27

Table 9 displays the CAMELS score for Turk Eximbank Inc. for 2020-2022. The CAMELS score was positive in 2020 and 2022 and negative in 2021. In 2020 and 2022, market risk sensitivity, asset quality, and capital adequacy contributed positively to the CAMELS score, while management quality, profitability level, and liquidity level contributed negatively. In 2021, market risk sensitivity and asset quality contributed positively to the CAMELS score, while capital adequacy, management quality, profitability level, and liquidity level contributed negatively.

Table: 10
Development and Investment Bank of Türkiye Inc. CAMELS Scores for 2020-2022

	2020	2021	2022
Development and Investment Bank of Türkiye Inc.	**37,45**	**14,22**	**-14,03**
C (Capital)	4,15	12,74	-14,39
A (Asset)	3,30	-0,90	1,43
M (Management)	-0,09	-0,67	-2,70
E (Earnings)	5,92	4,03	1,14
L (Liquidity)	22,83	-2,30	0,28
S (Sensitivity to Market Risk)	1,33	1,33	0,22

Table 10 displays the CAMELS score for the Development and Investment Bank of Türkiye Inc. for 2020-2022. Over the three years, the CAMELS score has generally decreased, being positive in 2020 and 2021 and negative in 2022. In 2020, asset quality,

capital adequacy, profitability, market risk sensitivity and liquidity contributed positively to the CAMELS score, while management quality contributed positively. In 2021, market risk sensitivity, profitability and capital adequacy contributed positively to the CAMELS score, while liquidity level, management quality and asset quality contributed negatively. In 2022, market risk sensitivity, liquidity, profitability and asset quality contributed positively to the CAMELS score, while capital adequacy and management quality contributed negatively.

Table: 11
Active Investment Bank Inc. CAMELS Scores for 2020-2022

	2020	2021	2022
Active Investment Bank Inc.	**-53,21**	**-4,11**	**-9,40**
C (Capital)	-37,38	10,00	-12,41
A (Asset)	-21,80	-22,79	-16,44
M (Management)	7,06	5,87	7,99
E (Earnings)	10,11	10,07	17,76
L (Liquidity)	-8,52	-4,60	-6,19
S (Sensitivity to Market Risk)	-2,67	-2,67	-0,11

Table 11 displays the CAMELS score for Active Investment Bank Inc. for 2020-2022. The CAMELS scores were negative over the three years. In 2020 and 2022, management quality and profitability contributed positively to the CAMELS score, while market risk sensitivity, liquidity, management, asset quality and capital adequacy contributed negatively. In 2021, profitability, management quality, and capital adequacy contributed positively to the CAMELS score, while market risk sensitivity, liquidity and asset quality contributed negatively.

Table: 12
Diler Investment Bank Inc. CAMELS Scores for 2020-2022

	2020	2021	2022
Diler Investment Bank Inc.	**114,36**	**207,83**	**71,30**
C (Capital)	69,95	107,43	57,16
A (Asset)	-14,21	-7,57	-2,18
M (Management)	21,94	66,22	20,81
E (Earnings)	7,46	47,68	-1,28
L (Liquidity)	34,89	6,40	-2,23
S (Sensitivity to Market Risk)	-5,68	-12,32	-0,98

Table 12 displays the CAMELS score for Investment Bank Inc. for 2020-2022. The CAMELS scores were positive over the three years. In 2020 and 2021, capital adequacy, management quality, profitability, and liquidity contributed positively to the CAMELS score, while market risk sensitivity and asset quality contributed negatively. In 2022, capital adequacy and management quality contributed positively to the CAMELS score, while market risk, liquidity, profitability and sensitivity asset quality contributed negatively.

Table: 13
Golden Global Investment Bank Inc. CAMELS Scores for 2020-2022

	2020	2021	2022
Golden Global Investment Bank Inc.	**144,90**	**59,69**	**90,26**
C (Capital)	75,78	14,31	15,43
A (Asset)	-42,73	-14,11	-10,05
M (Management)	61,72	43,75	38,41
E (Earnings)	18,68	2,13	32,16
L (Liquidity)	35,66	13,72	13,58
S (Sensitivity to Market Risk)	-4,21	-0,11	0,73

Table 13 displays the CAMELS score for Golden Global Investment Bank Inc. for 2020-2022. The CAMELS scores were positive over the three years. In 2020 and 2021, capital adequacy, management quality, profitability, and liquidity contributed positively to the CAMELS score, while market risk sensitivity and asset quality contributed negatively. In 2022, market risk sensitivity, liquidity, profitability, management quality, and capital adequacy contributed positively to the CAMELS score, while asset quality contributed negatively.

Table: 14
GSD Investment Bank Inc. CAMELS Scores for 2020-2022

	2020	2021	2022
GSD Investment Bank Inc.	**119,22**	**123,18**	**134,14**
C (Capital)	39,00	43,93	44,79
A (Asset)	8,37	11,59	13,11
M (Management)	46,01	44,86	49,17
E (Earnings)	39,65	41,27	42,13
L (Liquidity)	-10,26	-14,80	-14,44
S (Sensitivity to Market Risk)	-3,55	-3,68	-0,63

Table 14 displays the CAMELS score for GSD Investment Bank Inc. for 2020-2022. Over the three years, the CAMELS scores have taken positive values and followed an increasing trend. From 2020 to 2022, management quality, asset quality, capital adequacy, and profitability contributed positively to the CAMELS score, while market risk sensitivity and liquidity contributed negatively.

Table: 15
Istanbul Settlement and Custody Bank Inc CAMELS Scores for 2020-2022

	2020	2021	2022
Istanbul Settlement and Custody Bank Inc.	**60,89**	**59,48**	**46,07**
C (Capital)	2,64	2,11	-1,75
A (Asset)	-14,58	-11,02	-7,25
M (Management)	4,97	4,30	0,41
E (Earnings)	22,58	25,31	23,48
L (Liquidity)	49,59	45,49	31,99
S (Sensitivity to Market Risk)	-4,30	-6,70	-0,81

Table 15 displays the CAMELS score for Istanbul Settlement and Custody Bank Inc. for 2020-2022. Over the three years, the CAMELS scores were positive, yet they followed a decreasing trend. In 2020 and 2021, capital adequacy, management quality, profitability, and liquidity contributed positively to the CAMELS score, while market risk sensitivity and asset quality contributed negatively. In 2022, management quality, profitability, and

liquidity contributed positively to the CAMELS score, while market risk sensitivity, asset quality and capital adequacy contributed negatively.

Table: 16
Nurol Investment Bank Inc. CAMELS Scores for 2020-2022

	2020	2021	2022
Nurol Investment Bank Inc.	**-89,02**	**54,74**	**29,05**
C (Capital)	-64,19	70,58	-14,92
A (Asset)	-30,24	-33,50	-10,75
M (Management)	6,98	7,47	16,90
E (Earnings)	9,76	10,32	41,46
L (Liquidity)	-8,95	1,52	-3,34
S (Sensitivity to Market Risk)	-2,39	-1,65	-0,30

Table 16 displays the CAMELS score for Nurol Investment Bank Inc. for 2020-2022. The CAMELS score was positive in 2021 and 2022, while it was negative in 2020. In 2020 and 2022, management quality and profitability contributed positively to the CAMELS score, while market risk sensitivity, liquidity, asset quality and capital adequacy contributed negatively. In 2021, liquidity, profitability, management quality, and capital adequacy contributed positively to the CAMELS score, while market risk sensitivity and asset quality contributed negatively.

Table: 17
Industrial Development Bank of Türkiye Inc. CAMELS Scores for 2020-2022

	2020	2021	2022
Industrial Development Bank of Türkiye Inc.	**-60,19**	**-72,22**	**-26,70**
C (Capital)	-33,70	-59,39	-17,20
A (Asset)	-19,46	-15,24	-17,09
M (Management)	-2,41	-1,81	-0,35
E (Earnings)	1,54	1,28	13,88
L (Liquidity)	-6,46	2,31	-6,11
S (Sensitivity to Market Risk)	0,29	0,63	0,17

Table 17 shows the CAMELS score for Industrial Development Bank of Türkiye Inc. for 2020-2022. The CAMELS score was negative over the three years. In 2020 and 2022, market risk sensitivity and profitability contributed positively to the CAMELS score, while liquidity, management quality, asset quality and capital adequacy contributed negatively. In 2021, profitability, market risk sensitivity and liquidity contributed positively to the CAMELS score, while management quality, asset quality and capital adequacy contributed negatively.

Table: 18
Bankpozitif Credit and Development Bank Inc. CAMELS Scores for 2020-2022

	2020	2021	2022
Bankpozitif Credit and Development Bank Inc.	**-152,95**	**-110,97**	**-85,85**
C (Capital)	18,13	16,28	33,72
A (Asset)	-138,59	-124,04	-162,04
M (Management)	2,10	11,33	37,42
E (Earnings)	-26,79	-7,37	4,43
L (Liquidity)	-7,60	-6,59	0,16
S (Sensitivity to Market Risk)	-0,20	-0,59	0,45

Table 18 displays Bankpozitif Credit and Development Bank Inc.'s CAMELS scores from 2020 to 2022. Over the three years, the CAMELS scores have been negative but show an increasing trend. In 2020 and 2021, capital adequacy and management quality contributed positively to the CAMELS score, while asset quality, profitability, liquidity, and market risk sensitivity contributed negatively. In 2022, market risk sensitivity, liquidity, profitability, management quality, and capital adequacy contributed positively to the CAMELS score, while asset quality contributed negatively.

Table: 19
Pasha Investment Bank Inc. CAMELS Scores for 2020-2022

	2020	**2021**	**2022**
Pasha Investment Bank Inc.	**-38,37**	**-33,83**	**0,01**
C (Capital)	13,68	5,62	9,06
A (Asset)	-42,61	-27,58	-11,19
M (Management)	1,03	0,46	3,11
E (Earnings)	-4,68	-5,14	2,81
L (Liquidity)	-5,47	-6,76	-4,35
S (Sensitivity to Market Risk)	-0,32	-0,42	0,57

Table 19 presents the CAMELS scores of Pasha Investment Bank Inc. for 2020 to 2022. While the CAMELS scores were negative in 2020 and 2021, they became positive in 2022, following an upward trend from 2020 to 2022. In 2020 and 2021, capital adequacy and management quality contributed positively to the CAMELS score, while asset quality, profitability, liquidity, and market risk sensitivity contributed negatively. In 2022, capital adequacy, management quality, profitability, and market risk sensitivity contributed positively to the CAMELS score, while asset quality and liquidity contributed negatively.

The analysis reveals that not all CAMELS findings fall within the range of 1 to 5. In this respect, it can be interpreted that investment and development banks with a positive CAMELS value exhibited a higher financial performance compared to the sector, whereas those with a negative CAMELS value demonstrated a poorer financial performance compared to the sector.

5. Conclusion

This study compares the financial performance of 12 development and investment banks operating in Türkiye between 2020 and 2022. The banks comprise three state-owned, seven privately owned, and two foreign-owned banks. The analysis method used for this comparison was the CAMELS analysis, which is based on 22 financial ratios. The fundamental indicators of the study were the capital adequacy ratios, asset quality ratios, management quality ratios, profitability ratios, liquidity ratios, and market risk sensitivity ratios identified through a comprehensive literature review. Over three years, the research has provided insight into the financial evolution of twelve development and investment banks.

When comparing the financial performance of development and investment banks based on the CAMELS score from 2020 to 2022, Golden Global Investment Bank Inc.

performed best in 2020, Diler Investment Bank Inc. in 2021, and GSD Investment Bank Inc. in 2022. On the other hand, BankPozitif Credit and Development Bank Inc. exhibited the worst financial performance in all three years. When evaluated as a whole over the three years, it has been determined that Diler Investment Bank Inc. (207.83) has the highest CAMELS score, while BankPozitif Credit and Development Bank Inc. (-152.85) has the lowest CAMELS score. It has been concluded that the development and investment banks with the highest performance are privately owned. Furthermore, CAMELS scores of foreign-owned development and investment banks are lower than those of publicly and privately-owned development and investment banks.

When analysing the banks with the best financial performance components regarding capital adequacy, Golden Global Investment Bank in 2020 and Diler Investment Bank in 2021 and 2022 showed the highest performance. In terms of asset quality, Turkish Eximbank, in all years, in terms of management quality, Golden Global Investment Bank in 2020, Diler Investment Bank in 2021, and GSD Investment Bank in 2022, exhibited the best performance. Regarding profitability, GSD Investment Bank showed the best performance in 2020 and 2022, and Diler Investment Bank in 2021. Regarding liquidity, Istanbul Clearing and Settlement Bank exhibited the highest performance of all the years. Regarding market risk sensitivity, Turk Eximbank demonstrated the highest performance in 2020 and 2021, while Golden Global Investment Bank exhibited the highest performance in 2022. When the banks with the lowest performance based on financial performance components are evaluated, Nurol Investment Bank in 2020 and Industrial Development Bank of Türkiye in 2021 and 2022 showed the lowest performance in capital adequacy. BankPozitif Credit and Development Bank showed the lowest performance in all years regarding asset quality, and Turk Eximbank showed the lowest performance in all years regarding management quality. Regarding profitability, BankPozitif Credit and Development Bank in 2020 and 2021 and Turk Eximbank in 2022 showed the lowest performance. Regarding liquidity, GSD Investment Bank performed the worst in all years, while in terms of sensitivity to market risk, Diler Investment Bank performed the worst in 2020 and 2021, and İller Bank performed the worst in 2022.

The CAMELS ratings of state-owned development and investment banks declined in 2021, the year most hit by the COVID-19 epidemic, with Türk Eximbank even receiving a negative score. It has been determined that in 2021, the CAMELS scores of 4 privately owned development and investment banks decreased while the scores of 3 banks scaled up. Although the CAMELS scores of foreign-owned development and investment banks were generally negative during the examined period, it was observed that there was an increasing trend during the Covid-19 period.

CAMELS findings show that specific development and investment banks received positive values in all years, some received negative values in all years, and some received positive values in some years and others. Development and investment banks with negative CAMELS values should examine the financial indicators that negatively affect their CAMELS scores and take necessary actions accordingly. In this context, the management

of banks for development and investment is provided with the opportunity to evaluate these results while making financial decisions.

The results of this study have an original structure that includes the analysis of the CAMELS method, using secondary data obtained from the financial statements of 12 banks for development and investment operating in Türkiye. Therefore, it is important not to generalise or interpret the obtained results for other banks or bank types and related companies. The conclusions reached only provide information for the period from 2020 to 2022; therefore, it is impossible to predict the upcoming periods based on these results.

The CAMELS analysis in the study can be applied to banks operating in other countries for investment and development, allowing for international comparisons. Additionally, the financial performance of banks for development and investment, which hold significant positions nationally and internationally, can be analysed using different methods by diversifying the financial ratios used in future studies.

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