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Comparative Analysis Of Return On Equity Ratios With Dupont Method To The Banking Sector Groups in Turkiye

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Abstract

In this study, the return on equity of the banking groups that constitute the banking sector in Turkiye was examined with Dupont analysis. Although banks in Turkiye have high equity profitability, it is expected that the differences in the working principles of each bank group will be reflected in their comparative advantages. Dupont analysis is a method that allows the separation of the components of profitability, as it shows the return on equity by also separating operational efficiency, asset efficiency, and leverage ratios. For this reason, this study includes a detailed analysis of the return on equity of deposit banks, participation banks, and development and investment banks that constitute the sector in the last five years. The results show that the differences in working principles are also reflected in the comparative advantages in the components that constitute profitability.

Keywords: *Return on Equity, Dupont Analysis, Deposit Banks, Participation Banks, Development and Investment Banks*

1. Introduction

This study investigates the return on equity components of the group-based banking sector in Turkiye with Dupont analysis. Equity return is a ratio that measures the net profit that banks earn per capital they invest. While banks in Turkiye have high equity returns, the expectation is that the differences in the working principles of bank groups will also be reflected in equity components. Dupont analysis is a useful method that also shows the profit components that constitute equity return.

Dupont analysis; in its most basic form, separates return on equity as asset return and equity multiplier (leverage). The equity multiplier is the amount of assets per equity, and a high amount of assets is positively reflected in profitability ratios. On the other hand, it is possible to separate the asset return component, which determines net profit per asset, as operational efficiency and asset productivity. As a result, with this method, dividing the variables that determine asset profit also gives extra information to researchers. While operational efficiency examines the period net profit corresponding to revenues, it is also a measure of expense management. On the other hand, asset productivity measures income per asset. This dual separation also allows the components of asset profitability to be seen. Thus, it is possible to separate the determinants of equity profitability in Dupont analysis as operational efficiency, asset efficiency, and leverage.

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There are many domestic and international studies in the literature where the profitability of banks is comparatively examined by Dupont analysis. However, there is no study in which the entire sector is comparatively examined by different groups of banks in Turkiye. However, in almost all studies they are the components that constitute Dupont explaining the comparative advantage of banks.

In the banking sector of Turkiye, according to the realizations of June 2024, the majority of the total asset size, approximately 86 percent, consists of deposit banks, 8.1 percent of participation banks, and 6 percent of development and investment banks. The differentiation in the working principles of these three bank groups is also reflected in the profitability rates. When the realizations up to the last 5 years, participation banks and development and investment banks have equity profitability above the sector average; while deposit banks have equity profitability close to the sector values. For this reason, this study investigates the basic differences that determine profitability dynamics.

The differences in working principles can be summarized as follows. Deposit banks determine the credit interest rates over the deposit interest rates and provide the income-expense balance. On the other hand, in participation banks, deposit pricing is not determined in advance, and the profit-sharing ratio is offered to the customer according to the credit income obtained as a result of the evaluation of the deposit by the bank. Here, profit/loss sharing is also involved. For this reason, in participation banks, credit income comes before deposit expenses in the income-expense balance. On the other hand, development and investment banks differ from these two bank groups according to Banking Law No. 5411 and cannot collect deposits and participation funds. They are banks established to provide credit or to fulfill the responsibilities assigned to them by special laws. For this reason, the differences in working methods are also decisive in the change in profit/loss in these three bank groups.

In summary, this study examines the basic differences that determine the return on equity ratios of different bank groups working in Turkiye in the sector with Dupont analysis. The results show that the main variables that constitute profitability are also shaped according to the differences in the working principles of the banks.

2. Literature Review

In the literature, the Dupont method is one of the most used ways to compare profitability analyses for different countries and bank groups. This section includes analyses and findings on country examples.

Ajmera (2012) examined the return on equity ratio analysis of the banking sector in India between 2006-2011 using the Dupont method and ANOVA tests. The study investigates the comparative advantages of banks in the country through Dupont ratios. The profitability ratio performances of banks were reflected through asset efficiency, operational efficiency, and asset profitability.

AlAli (2019) analyzed the profitability performances of Kuwaiti banks in the 2012-2017 period using the Dupont method. The results of the comparative analysis of banks show that

Kuwait National Bank was the best in active profitability, while Ali United Bank performed better in equity profitability.

Al-Khoury, Haddad, et al. (2022) examined the profitability of Jordanian banks in the 2000-2021 period with Dupont analysis. The result shows that banks' return on equity ratios were resilient during the crisis period, and the strong equity multiplier positively affected profitability over the years.

Almazari (2016) compared the profitability of two banks from Arabia and Jordan in the 2010-2015 period with Dupont analysis. Almazari found that the higher profit margin of the Jordanian Arab Bank supported its better performance in equity return. In addition, it was found that Samba Bank had higher active profitability and equity multiplier.

Arslan and Bora (2021a) analyzed the profitability of deposit banks in the Turkish banking sector between 2015 and 2019 via the Dupont method. The comparison of the average values shows why private banks remained below the sector average values. This was due to the low asset profitability and equity multiplier. In their study, Arslan and Bora (2022b) examined the profitability performance of Turkish development and investment banks in the 2015-2020 period by the same method. The results show that development and investment banks operated with asset profitability above the sector average values and lower equity multipliers during this period.

Balaj (2015) analyzed the profitability performance of local and foreign banks operating in Kosovo from 2001-2007 via the Dupont method. The study reveals that the determinants of better asset and equity profitability performance of foreign banks are high return margins, good cost management, and financial leverage.

Faruk and Alam (2014) examined the profitability of commercial banks in Bangladesh in 2005-2008 with the Dupont method. These banks also conduct Islamic banking. In the analysis comparing different banks, although the equity multiplier fluctuated over the years, it was still high. However, the low return on assets due to the insufficient use of assets negatively affects the return on equity.

Georgios et al. (2013) conducted a DuPont analysis of the world's 24 systemically important banks. The results showed that if a bank wants to increase its return on equity, it should use its resources more effectively by giving importance to operational profit. The effective use of assets, reducing the cost of deposits, and reducing the cost of borrowing are among the results of effective management.

Padake and Soni (2015) examined the profitability of 12 Indian banks with DuPont analysis. The analysis found that high profitability does not always mean resources are used effectively. In addition, the result shows the use of assets is not sufficient, and some assets do not perform well enough.

Rafi et al. (2020) examined the equity return analysis of banks in Bangladesh in the 2013-2018 period with the Dupont model. It was concluded that assets should be transferred to productive areas and capital should be restructured in selected banks. It was also suggested that operational expenses should be reduced.

Rooplata (2016) examined the profitability performance of 19 national banks in India with the Dupont analysis. To the results, a bank's performance cannot be measured only by profit or certain ratios, and high profitability does not always bring high efficiency. Although it is possible to reach high profitability with high capital, this situation does not mean the efficient use of all resources.

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Vidhya and Ravichandran (2018) compared the profitability of Citibank and Standard Chartered Bank in the 2002-2017 period with the Dupont analysis. Due to the results, Citibank's financial efficiency was better, and the same bank's performance was higher in all three components of the Dupont analysis.

Zulfiqar et al. (2016) examined the equity return analysis of Dubai Islamic Banks operating in the United Arab Emirates, Pakistan, and Jordan using the Dupont method. The findings show that the highest value in equity multiplier is in Pakistan, the profit margin is in the United Arab Emirates and the highest leverage ratio is in Pakistan. It has been found that the differences in ratios between countries are also reflected in the bank's equity return components.

In a nutshell, the studies in the literature include different countries and bank groups and show that the profitability components obtained with the Dupont analysis provide a better determination of the source of equity return. The results show that high capital does not always mean high profitability and increases in profitability do not always reflect the efficient use of assets. For this reason, differences in profitability components better reflect the performance criterion.

3. Dupont Analysis and Results

Dupont analysis; is a method that allows a detailed examination of the banks' return on equity ratios. While the return on equity ratio is used in calculating the profits obtained by banks in return for their capital, it is measured by dividing net profit to the equity (Model 1). However, in this calculation, it is unclear if the profitability is due to operational efficiency, asset efficiency, or leverage. In Dupont analysis, return on equity is examined in its simplest form by multiplying the return on assets ratio and equity multiplier (Model 2). Return on assets ratio (ROA); is the ratio of the period's net profit to total assets, and the equity multiplier (EM) shows the assets per equity. The return on assets ratio can also be separated in a way that measures operational efficiency and asset efficiency. Thus, the basic components determining the Dupont analysis separation are operational efficiency (OE), asset efficiency (AE), and leverage (LV) (Model 3).

$$ROE = \frac{\text{Total Net Profit}}{\text{Total Equity}} \quad (1)$$

$$ROE = ROA \times EM(LV) \quad (2)$$

$$ROE = \frac{\text{Total Net Profit}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Total Equity}}$$

$$ROE = \text{OE} \times AE \times LV \quad (3)$$

$$\frac{\text{Total Net Profit}}{\text{Total Equity}} = \frac{\text{Total Net Profit}}{\text{Revenues}} \times \frac{\text{Revenues}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Total Equity}}$$

Two components stand out in the examination of the return on equity ratios of banks. Here, the criterion of whether the assets are used in profitable areas or whether there are more or less assets than equity is decisive. Figure 6 provides DuPont analysis according to bank groups. According to June 2024 data, the return on equity ratio is below the sector average (32.1%) in deposit banks (30.8%), while it is well above the sector average (41.5%) in participation banks. This difference is due to the high asset per equity. Participation banks operate with higher leverage compared to the sector. On the other hand, the ratio of net profit to revenues in participation banks is also higher. In other words, better operational efficiency also supports equity profitability.

$$ROA = OE \times AE \quad (4)$$

$$\frac{\text{Total Net Profit}}{\text{Total Assets}} = \frac{\text{Total Net Profit}}{\text{Revenues}} \times \frac{\text{Revenues}}{\text{Total Assets}}$$

However, as seen in equation 4; while the operational efficiency of participation banks is higher, the asset efficiency is lower. The lower asset efficiency indicates that profitability is supported by relatively lower expense items. This situation causes the return on assets of participation banks to be lower compared to the sector and deposit banks.

The return on equity of deposit banks' examination shows that the better performance of private deposit banks in terms of operational and asset efficiency supports profitability. On the other hand, foreign deposit banks have high operational efficiency. This situation supported the private deposit banks with higher asset and return on equity ratios.

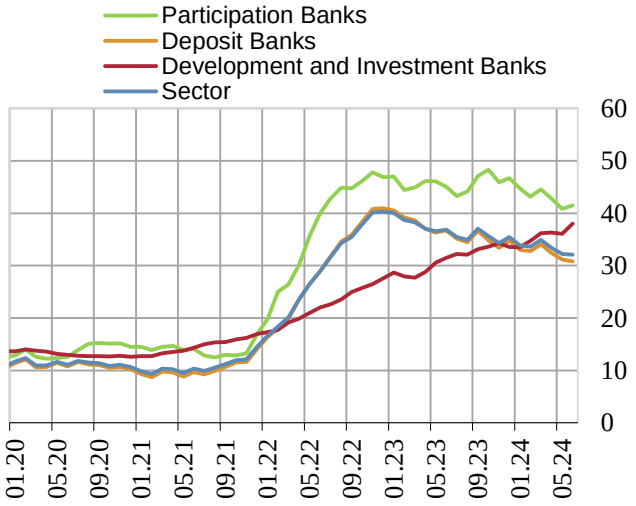
While the operational efficiency of development and investment banks is higher than participation banks, the high asset efficiency and leverage of participation banks ensured that the equity and return on assets were relatively better.

Figure 7 and Figure 8 show the calculation results of 1-year and 5-year average values. Although there are changes in the figures, the general appearance and comparative differences have not differentiated in terms of bank groups.

In continuation of the study, graphs reflect the changes in profitability ratios and Dupont components over the years. In this way, the course of the proportional differences of the bank groups was observed.

Figure 1 shows the changes in return on equity ratios over the years based on bank groups. While participation banks have the highest return on equity ratio, the profitability performance of development and investment banks has increased over the years and reached a profitability ratio above the sector average in 2024.

Figure 1: Distribution of Return on Equity by Bank Groups (01.2020-06.2024)



Source: Banking Regulation and Supervision Agency, BSRA in Turkiye, 06.2024

Figure 2 shows the changes in return on assets ratios by bank groups. Here, unlike the return on equity, return on assets ratios are closer to each other in all three bank groups, especially in the last

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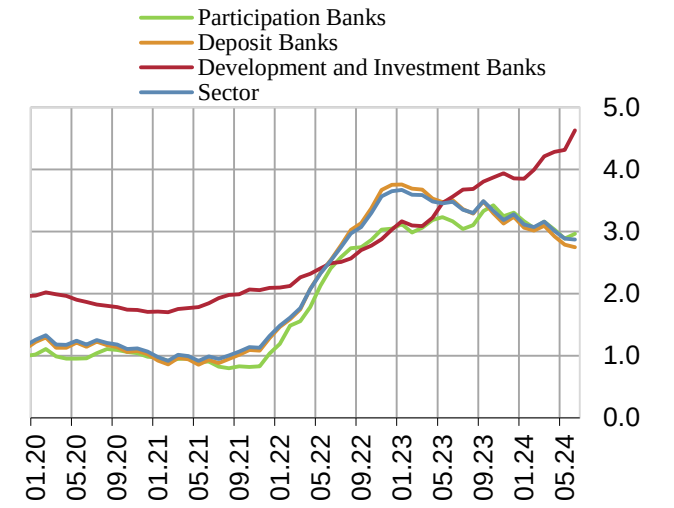
year, and the highest profitability is in development and investment banks. Despite this, the highest return on equity is not in development and investment banks but at the participation banks. This situation shows that the equity multiplier of participation banks is also higher.

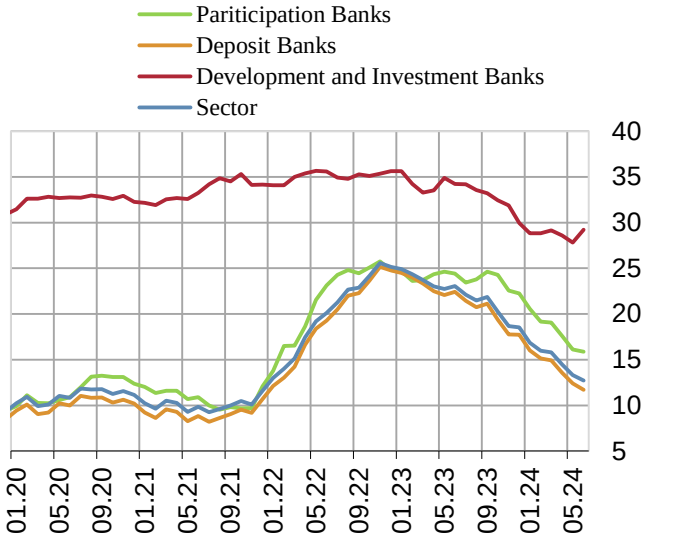
Figure 2: Distribution of Return on Asset by Bank Groups
(01.2020-06.2024)



Source: Banking Regulation and Supervision Agency, BSRA in Turkiye, 06.2024

Figure 3 examines the operational efficiency of banking groups by year. Comparative group basis shows that the highest operational efficiency is in development and investment banks, while the operational efficiency of participation banks remains above the sector average. This situation explains one component of these two banking groups' high return on equity ratios.

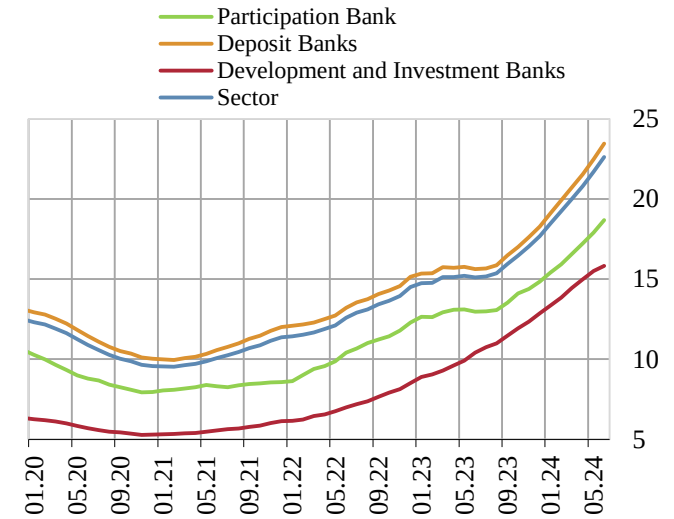
Figure 3: Distribution of Operational Efficiency by Groups
(01.2020-06.2024)



Source: Banking Regulation and Supervision Agency, BSRA in Turkiye, 06.2024

Figure 4 examines bank groups according to their asset efficiency. The group-based comparison in asset efficiency has not changed over the years. Deposit banks have an asset efficiency above the sector average. This situation shows that deposit banks' income per asset ratio is higher. Figure 6 shows that while public banks have values close to the sector average in deposit banks, the upward effect of private banks is greater in higher asset efficiency.

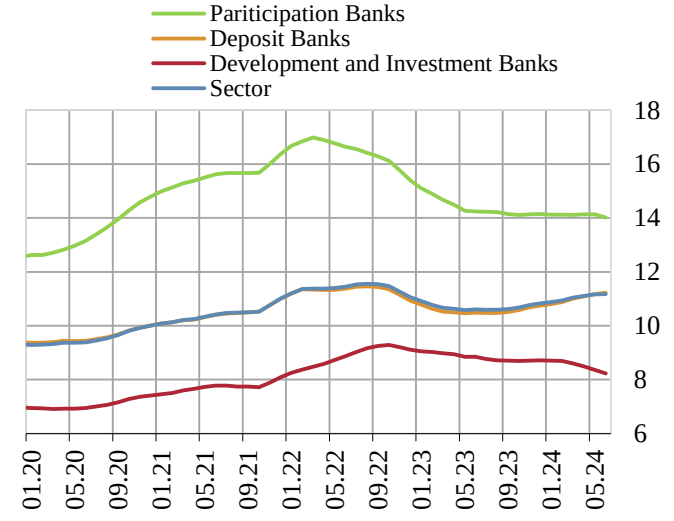
Figure 4: Distribution of Asset Efficiency by Groups
(01.2020-06.2024)



Source: Banking Regulation and Supervision Agency, BSRA in Turkiye, 06.2024

According to the leverage distribution of bank groups in Figure 5, the highest amount of assets per equity is in the participation banks. The fact that this situation has not changed over the years also explains one component of participation banks' high return on equity ratios.

Figure 5: Distribution of Leverage by Bank Groups
(01.2020-06.2024)



Source: Banking Regulation and Supervision Agency, BSRA in Turkiye, 06.2024

The analysis results reflects that the monthly and annual average variables on the basis of bank groups, as well as the annual change data, give the same results. While the highest bank group in terms of return on equity ratio is participation banks, this is followed by development and investment banks, and then deposit banks. However, the comparative advantages of bank groups differ. While the profitability of participation banks is supported by high

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leverage ratio and operational efficiency, the asset efficiency of deposit banks and the operational efficiency of development and investment banks are high.

Figure 6 : Bank Groups Dupont Analysis with June 2024 Data

	Net Income/ Revenues	Revenues/ Avg. Assets	Avg. Assets/ Avg. Equity	Net Income/ Avg. Assets (ROA)	Avg. Assets/ Avg. Equity	ROE1 &ROE2
	1	2	3	4=1*2	5	1*2*3 / 4*5
Sector	12.7	22.6	11.2	2.9	11.2	32.1
Participation Banks	15.9	18.7	14.0	3.0	14.0	41.5
Deposit Banks	11.7	23.5	11.2	2.7	11.2	30.8
Public	7.4	22.4	14.2	1.7	14.2	23.6
Other	14.7	24.3	9.7	3.6	9.7	34.6
- Private	13.3	24.0	9.7	3.2	9.7	30.7
- Foreign	16.7	24.8	9.7	4.1	9.7	40.0
Development and Investment Banks	29.2	15.8	8.2	4.6	8.2	38.1

Figure 7 : Bank Groups Dupont Analysis with 1-Year Average Values

	Net Income/ Revenues	Revenues/ Avg. Assets	Avg. Assets/ Avg. Equity	Net Income/ Avg. Assets (ROA)	Avg. Assets/ Avg. Equity	ROE1 &ROE2
	1	2	3	4=1*2	5	1*2*3 / 4*5
Sector	1*2*3 / 4*5	18.4	10.9	3.2	10.9	34.4
Participation Banks	20.8	15.4	14.1	3.1	14.1	44.4
Deposit Banks	16.8	19.0	10.8	3.1	10.8	33.6
Public	9.1	17.9	13.7	1.6	13.7	22.2
Other	22.2	19.8	9.3	4.3	9.3	39.7
- Private	21.8	19.8	9.0	4.2	9.0	37.5
- Foreign	22.8	19.9	9.7	4.4	9.7	42.9
Development and Investment Banks	30.6	13.2	8.6	4.0	8.6	34.5

Figure 8: Bank Groups Dupont Analysis with 5-Year Average Values

	Net Income/ Revenues	Revenues/ Avg. Assets	Avg. Assets/ Avg. Equity	Net Income/ Avg. Assets (ROA)	Avg. Assets/ Avg. Equity	ROE1 &ROE2
	1	2	3	4=1*2	5	1*2*3 / 4*5
Sector	15.0	13.2	10.4	2.1	10.4	22.1
Participation Banks	16.2	11.0	14.6	1.9	14.6	27.6
Deposit Banks	14.2	13.8	10.4	2.0	10.4	21.8
Public	8.1	13.2	13.1	1.1	13.1	14.6
- Private	18.5	14.3	9.0	2.8	9.0	25.2
- Foreign	18.2	14.2	9.3	2.7	9.3	25.9
Development and Investment Banks	32.9	7.9	8.1	2.6	8.1	21.3

Source: Banking Regulation and Supervision Agency , 06.2024

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4. Conclusion

This study examines the return on equity ratios of banking sector groups in Turkiye via Dupont analysis. Although there is a high return on equity ratios in the sector and sub-groups, the components of the profitability obtained per invested capital may be different. Dupont analysis separates the components of return on equity ratios and provides a clearer view of the strengths and weaknesses behind profitability.

In Dupont analysis, equity return can be separated as return on assets ratio and equity multiplier (leverage). While the first part indicates asset efficiency and operational efficiency, the second part shows the amount of assets the bank has in the bank per capital. Banks with higher assets per unit capital may also have higher equity returns. Many findings in the literature reflect that a high asset amount does not always mean high profitability or asset efficiency. For this reason, operational efficiency and asset efficiency become as important as the amount of assets per equity, i.e. leverage.

The study shows return on equity and its components based on monthly data, annual and 5-year average values. In addition, the graphs monitor the general course to see the changes and differences between groups over the years. Group-based differences and equity components revealed that the comparative view has not changed significantly in these different data sets.

While equity profitability is below the sector average in deposit banks, it is above the sector average in participation banks. Development and investment banks also generally have equity profitability above deposit banks. Comparative results of these three groups show that deposit banks have a better return on asset ratio in the last 5-year average while participation banks have performed better in the last 1-year and 1-month realization. However, development and investment banks' return on asset ratios have generally been high. The fact that deposit banks have higher asset efficiency in contrast to other groups, is also their comparative advantage. Although their profitability is low, their asset efficiency is high. However, they lag behind other groups in operational efficiency and leverage. When deposit banks are separated within themselves, private banks have relatively higher performance in terms of income per asset.

The comparative evaluation reflects that participation banks' working with high leverage ratios and operational efficiency increases their profitability. Although the income per asset, in other words, asset efficiency, is relatively lower; better operational efficiency with the effect of expense management has ensured that the return on asset ratio of participation banks has been relatively better, especially in the last year. On the other hand, the fact that participation banks work with high leverage also supports their profitability. Because participation banks work with the profit/loss sharing principle, according to credit revenue while pricing deposits based on this revenue, supports the result. On the other hand, deposit banks determine credit interest rates based on deposit pricing. For this reason, the income per asset is not seen as higher.

Operational efficiency is quite high in development and investment banks. One observation is a significant increase in asset efficiency in the last two years. For this reason, when compared, these two performance indicators reflect positively on their profitability.

In summary, this study analyses the components that constitute the return on equity ratios of the sector and bank groups with Dupont analysis. While the return on equity ratios of participation, development, and investment banks is above the sector average, it is close to the sector values of deposit banks. The results show that the differences in the working principles of the bank groups are also reflected in their comparative advantages.

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