

Dynamics of bank profitability: Evidence from Turkey^{*1}

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Abstract

This study examines whether the capital adequacy ratio, which is calculated with risk-weighted assets, explains the bank profitability in Turkey, and whether profitability dynamics vary for different bank sizes. This paper also aims to examine the effects of international trade between the EU-28 and Turkey on bank profitability. Our bank profitability measures are; return on assets, return on equity, and net interest margin. Our results show evidence of a positive relationship between capital adequacy ratio and bank profitability. In addition, we observe that profitability dynamics differ for different bank sizes. We also document that openness to trade between EU-28 and Turkey has a positive and significant effect on bank profitability in Turkey.

Key words: Capital adequacy ratio; bank profitability; openness to trade; Turkish banking sector

Jel classification: G21, M20

1. Introduction

Banks play an important role in the real economy of a country and the welfare of the citizens through its function of conveyance of savings to capital investments. The easy accessibility and security provided by banks tempt households to deposit

* Submitted/Geliş: 09.03.2020, Accepted/Kabul: 02.03.2021

¹ This paper is a part of Yusuf Halit Saniç's MBA Thesis at the Department of Business Administration in Middle East Technical University.

their money, rather than keep a cushion of capital. Banks also help the execution of monetary policies that are issued by the central bank by following the regulations and requirements.

The importance of the banks in the real economy led many researchers to investigate the determinants of profitability of the banking sector in different geographies (Lee and Hsieh, 2013; Owoputi et al., 2014; Samad, 2015). Many of those studies tried either one or more bank-specific, industry-specific, and geography-specific variables to explain bank profitability.

In Turkey, the banking sector has a considerable size. There are 52 banks with 11,741 branches operating in Turkey as of 2016. 34 deposit banks constitute 90% of the asset size in the Turkish banking sector, while the remaining 10% almost comes from 13 investment and development banks. The banking sector in Turkey has the 13th rank among the banking sectors in EU countries according to its assets per Gross Domestic Product (GDP) in 2015, while it has 11th rank both in deposits per GDP and loan per GDP among EU countries, leaving the rank of equity per GDP to 8th (The Banks Association of Turkey, 2018). The considerable size of the Turkish banking industry-led researchers to study the dynamics of bank profitability.

Stemming from the idea of a well-managed bank is likely to be more profitable compared to its peers (Dietrich and Wanzenried, 2011; Samad, 2015), many studies tried to explain bank profitability with capital-related bank-specific indicators like liquidity ratio, asset quality, asset size, and capital adequacy.

Capital adequacy means having sufficient capital against losses that may occur in banks due to risks that they are exposed to. In terms of capital adequacy, the most important function of the bank's capital is to compensate for possible or very high unexpected losses that may arise from the risks undertaken. Capital can also be important in terms of solvency and liquidity adequacy. The credibility of banks is directly proportional to their capital strength. Banks with strong capital can get high ratings from credit rating agencies and borrow cheaper from national and international markets. Ensuring that the entire banking sector in a country operates with sufficient capital, not just for a bank, can reduce systemic risk (Aydın İnan, et al., 2013).

In literature, one of the most commonly used bank-specific variables to explain bank profitability is the capital adequacy ratio that is calculated as total equity divided by total assets (CAR2) (Akbaş, 2012; Alper and Anbar, 2011; Athanasoglou et al., 2006; Dietrich and Wanzenried, 2011; Goddard et al., 2004; Mirzaei and Mirzaei, 2011; Topak and Talu, 2017). CAR2 was insignificant in terms of explaining the bank profitability in Turkey between 2005 and 2010 according to Akbaş (2012). Topak and Talu (2017) suggest that stockholders' equity to total assets ratio affects the bank profitability negatively in Turkey, between 2005 and 2015. According to Ben Khediri and Ben Khediri (2011) capital is an important

measure for the explanation of bank profitability. The capital adequacy ratio is also found significant in Aymen (2013) and it has a negative relationship with profitability.

On the other hand, there are a limited number of studies in which the capital adequacy ratio that is calculated with risk-weighted assets (CAR) is used to explain bank profitability. CAR is a metric that shows how much capital a bank owns as a percentage of its total assets, weighted with its risk levels. For example; it treats a loan that is secured by a letter of credit as a riskier asset than a mortgage loan that is secured with collateral. Thus, when compared to CAR2, which assumes all the assets have the same risk level, CAR is a more precise metric. The studies that use CAR indicate that CAR has a positive and significant effect on bank profitability, especially in developing countries (Alshatti, 2016; Owoputi et al., 2014).

Since most of the studies in the literature focused on CAR2 to explain bank profitability although CAR is suggested to be a more precise metric compared to CAR2 in recent literature, the first objective of our study is to broadly investigate whether CAR, in the final form that was introduced by the Banking Regulation and Supervision Agency (2012), is significant in terms of explaining the bank profitability in the 26 Turkish banks. We also aim to test whether CAR is a better determinant of bank profitability compared to CAR2.

While trying to determine the relationship between capital adequacy metrics and bank profitability, some studies claim that the relationship can vary depending on the bank size. There are studies that examine the banks varying according to their sizes. According to Berger and Bouwman (2013), higher capital helps small banks to improve their odds of survival at all times (during banking crises, market crises, and normal times). In addition, higher capital helps medium and large banks improve the probability of surviving banking crises (significant for large banks) and, there is a positive relationship between profitability and survival.

On the other hand, some studies use the size of the bank as a profitability determinant. Alper and Anbar (2011), Goddard et al. (2004), Petria et al. (2015), and Topak and Talu (2017) find a significant and positive relationship between size and bank profitability. However, in some other studies, size seems to have a significant but negative relationship with bank profitability (Athanasoglou et al., 2008; Dietrich and Wanzenried, 2011). Those studies suggest that increase in size can generate externalities and harm profitability, on the flip side, an increase in size can cause economies of scale and thus increase profitability.

Our second objective is to investigate whether profitability dynamics vary for different bank sizes. Small banks and large banks in Turkey might have different profitability dynamics. Besides, while small banks focus on a type of lending that is more relationship-dependent, for which customer switching costs soften the degree

of competition, larger banks' business is more transactional and faces a higher degree of competition (Kashyap et al., 2010).

The third objective of our paper is to examine the relationship of bank profitability in Turkey with the trade between Turkey and the EU-28. Banks play an essential and direct role in the international trade of a country via trade finance products and by diminishing the trade-related risks in exports (Niepmann and Schmidt-Eisenlohr, 2013). To the best of our knowledge, this is the first study that tries to explain the bank profitability in Turkey with international trade. When the international trade of Turkey is examined, EU-28 countries play an important role and constitute a considerable chunk in the total imports and exports of Turkey. In the last 10 years' average (until 2016), 46% of the exports of Turkey are to EU countries, and 38.2% of the imports of Turkey are from EU-28 countries. Lane and Milesi-Ferretti (2003) investigate the connection of trade in goods and services with trade-in assets and state that goods trade may matter for several reasons. First; trade in goods directly entails corresponding financial transactions such as trade credit, transportation costs, and export insurance. Second; as in the theoretical model of Obstfeld and Rogoff (2000), financial asset trade is the mirror image of goods trade. In their model, there is a close connection between the gains to international financial diversification and the extent of goods trade. Third; goods trade and financial positions are jointly determined. Finally; openness in goods markets may increase the willingness to conduct cross-border financial transactions. International trade is expected not only to support economic growth but also to increase the total deposits and the credits of banks, consequently affect the operations and profitability of banks due to their direct role (Zegerra, 2013). Duran and Duran (2017) also suggest that the credit to deposit ratio increases as the trade increases and the imports in Turkey are mostly financed by bank loans. Therefore, it is expected to see a relationship between bank profitability and international trade in Turkey.

This paper is organized as follows: Section 2 presents the hypotheses. Details of data are provided in Section 3. In Section 4 methodology is introduced and findings are discussed in Section 5. We conclude the paper in Section 6.

2. Hypotheses

We surmise that the capital adequacy ratio that is calculated with risk-weighted assets, namely CAR, is significant in terms of explaining the bank profitability. In addition, we surmise that the profitability dynamics may differ depending on the size of the banks. Furthermore, we hypothesize that there is a relationship between bank profitability in Turkey and the trade between Turkey and EU-28. Given these points of departure, we conjecture that:

Hypothesis 1: The capital adequacy ratio that is calculated with risk-weighted assets, CAR, is significant in terms of explaining the bank profitability in Turkey.

Hypothesis 2: Profitability dynamics of large banks differ from profitability dynamics of small banks in Turkey.

Hypothesis 3: Turkey's openness to trade toward EU-28 (OTT) has a positive and significant effect on bank profitability in Turkey.

3. Data

For this study, 26 commercial banks in Turkey are examined². These 26 banks constitute 91% of the asset size in the Turkish banking industry as of 31 December 2016. Our data period is December 2007 - December 2016 for all banks. 26 banks in our sample are classified as large banks and small banks. Large banks include 7 banks, which are listed as large banks by The Banks Association of Turkey and small banks are the remaining 19 banks out of 26 commercial banks. Required data for each bank is gathered from the yearly statistical reports (only bank) prepared by The Banks Association of Turkey. For each balance sheet item, the end-year values are used, and for each income statement item, yearly values are used.

3.1. Dependent variables

We use three dependent variables representing the profitability of the banks in Turkey. Following Damodaran (2011), who suggest that the simplest and most useful gauge of profitability is relative to the capital employed to get a rate of return on investment, the first profitability measure is the return on assets (ROA), and the second profitability measure is the return on equity (ROE). These two profitability ratios are the most commonly used profitability measures in literature. The third one is net interest margin (NIM) since interest is the main source of income for the banks.

3.2. Explanatory variables

Capital adequacy ratio that is calculated with risk-weighted assets (CAR), capital adequacy ratio that is total equity divided by total assets (CAR2), and Turkey's openness to trade toward EU-28 (OTT) are our three main explanatory variables.

² Rest of the Turkish commercial banks are not included in our sample for the sake of having a balanced panel dataset.

CAR

To explain CAR more clearly, it is better to understand the mathematics behind it. Capital types of assets are explained by Basel I as: Tier 1 Capital and Tier 2 Capital. Tier 1 Capital is also known as core capital, and it consists of stockholder's equity and disclosed reserves, whereas Tier 2 Capital contains undisclosed reserves along with subordinated debt (Patrick, 2005). CAR at the latest form is regulated and started to be used in 2012 (Banking Regulation and Supervision Agency, 2012). However, The Banks Association of Turkey calculates the ratio backwardly for earlier years until 2007. CAR is calculated by dividing the sum of Tier 1 and Tier 2 capital by risk-weighted assets of a bank. To weigh the risk of the assets, 4 categories are determined (Balin, 2008). Assets having 0% risk (cash, government bonds, etc.) as riskless, assets having 20% risk (loans to Organization for Economic Cooperation and Development (OECD) banks, etc.) as low risk, assets having 50% risk (mortgage loans, etc.) as medium risk, and assets having 100% risk (loans to non-banks, etc.) as high risk.

Risk-Weighted Assets (RWA) are calculated with the following formula (Patrick, 2005).

$$RWA = 0 \times (\text{riskless category}) + 0.2 \times (\text{low risk category}) + 0.5 \times (\text{medium risk category}) + 1.0 \times (\text{high risk category}) \quad (1)$$

Based on the risk and return hypothesis, as the equity per risk rises, the return is expected to decline (Alshatti, 2016). Thus, a negative relationship between CAR and bank profitability can be expected. Moreover, according to the cost of bankruptcy hypothesis, the rise in the equity level increases the cost of funding. Therefore, the increase in CAR may result in higher profits for banks. In brief, both a positive or negative relationship between this variable and profitability can be expected. Although there is no certain expectation about the direction of the relationship between CAR and bank profitability, it is expected that CAR has a more significant impact on profitability compared to CAR2, since it is a more precise risk measure as suggested by related literature discussed above.

CAR2

We may expect a positive relationship between CAR2 and bank profitability. As the ratio increases, the portion of assets that is funded by the shareholders rises, and when the need for external funding, which is debt, is low, both the cost of debt and cost of equity gets low. Therefore, profitability becomes higher (Alper and Anbar, 2011). Besides, the lower the ratio, the higher the risk that banks face, since

the cost of debt increases. Furthermore, banks with high capital may have the opportunity to increase their profitability by setting high credit standards (Islam and Nishiyama, 2016). In addition, bank capital plays a vital role in reducing the level of risk that arises in the process of converting deposits into loans (Sinha and Sharma, 2016).

OTT

Turkey's openness to trade toward EU-28, namely OTT, is used as another explanatory variable. Other than international trade, the financial sector is naturally affected by the state of the economy. The addition of total imports from the EU and total exports to the EU to GDP ratio; in other words, the openness to the trade of Turkey toward EU-28, is expected to have a positive relationship with bank profitability. Since most of the international trade passes through the banks; an increase in OTT would result in a rise in the profitability of banks. The higher the trade, the higher the credit to deposits ratio of banks (Duran and Duran, 2017). When the assets grow faster than the liabilities, a rise in profits can be expected.

3.3. Control variables

DNATIONALITY

One of the aims of this study is to examine whether OTT affects banks' profitability or not. Since trade is affected by the nationality (foreign versus domestic) of banks, especially in the emerging countries (Claessens et al., 2017), the DNATIONALITY dummy variable is included in the study as a control variable. Foreign banks can be more profitable compared to domestic banks because domestic banks are more exposed to the macroeconomic conditions in the region, they are operating in (Azam and Siddiqui, 2012). Foreign banks are not affected by the macroeconomic factors as much as the domestic banks (Awdeh, 2005). In addition, according to Demirgüç-Kunt and Huizinga (1999), foreign-owned banks are less profitable in developed countries. Dietrich and Wanzenried (2011) state that domestic banks would be more familiar with the country's context and conditions, and they can gain more profits compared to the foreign banks. Therefore an effect of bank nationality on bank profitability would be expected.

EU IR, TR IR, FX

Both EU's and Turkey's inflation rates (EU IR and TR IR) are included along with the change in EUR/TRY exchange rate (FX) in the dataset as macroeconomic control variables. The effect of inflation on bank profitability depends not only on

the economy but on the reaction of the banks to the expected change in inflation. If the economy is developed enough to predict inflation correctly, then the banks can change their interest rates and operation costs accordingly so that they keep their profits high (Athanasoglou et al., 2008). However, if the economy is unstable and the inflation is unpredictable, then the banks cannot be fast enough to make the necessary changes, and their revenues cannot increase as fast as their costs (Alper and Anbar, 2011). Turkey is an emerging country, and the inflation rate is volatile. Hence, it is hard to anticipate the inflation rate accurately. Thus, in this study, it is expected that the inflation rate of Turkey affects bank profitability negatively.

The increase in the EU inflation rate may lead to not only an increase in exports but also a higher decrease in imports. Since Turkey is an exporting country when the EU is considered, banks are expected to be affected positively in terms of profitability.

Banks' assets and liabilities are denominated in different currencies. The change in parity may result in losses or gains (Topak and Talu, 2017). The EU trade can also be affected by the change in exchange rates, thinking that bank profitability is affected by trade with the EU. Thus, the change in FX is expected to affect bank profitability, although the direction is not certain.

Detailed descriptions of the variables and the data sources are presented in Table 1.

Descriptive statistics of the variables for large banks and small banks are presented in Table 2 and Table 3. The median value of CAR for the small banks is 300bps higher than the median value of CAR for large banks, similarly, the median value of CAR2 for the small banks is 160bps higher than the median value of CAR2 for large banks. Those statistics are in line with Dreca (2013), who claims that bank size significantly affects capital adequacy ratio negatively.

Table 1

Variable Descriptions

Variable	Description	Formula	Data Source
Return on Assets (ROA)	Contribution of an asset to the net income. Measure of profitability	$\frac{\text{Net Income}}{\text{Total Assets}}$	The Banks Association of Turkey
Return on Equity (ROE)	Contribution of an equity to the net income. Measure of profitability	$\frac{\text{Net Income}}{\text{Total Equity}}$	The Banks Association of Turkey
Net Interest Margin (NIM)	Average net interest revenue earned from an invested asset (an asset with an expected interest revenue). Measure of profitability	$\frac{\text{Interest Received} - \text{Interest Paid}}{\text{Invested Assets}}$	The Banks Association of Turkey
Capital Adequacy Ratio that is calculated with risk-weighted assets (CAR)	The amount of capital that a bank holds as a reserve for the amount of risk that the bank takes	$\frac{\text{Capital (Tier 1 Capital + Tier 2 Capital)}}{\text{Risk Weighted Assets}}$	The Banks Association of Turkey
Capital Adequacy Ratio (CAR2)	Average equity amount that the bank has for every asset	$\frac{\text{Total Equity}}{\text{Total Assets}}$	The Banks Association of Turkey
EU IR	Annual inflation rate of EU28		OECD
TR IR	Annual inflation rate of Turkey		Turkish Statistical Institute
FX	The annual change in EUR-TRY foreign exchange rate		Central Bank of Turkey
DNATIONALITY	Dummy for bank's nationality	= 1, if bank is foreign = 0 otherwise	Bank websites
Openness to Trade (OTT)	Trade openness of a country	$\frac{\text{Imports from EU28} + \text{Exports to EU28}}{\text{GDP of Turkey}}$	Turkish Statistical Institute

Table 2

Descriptive Statistics for Large Banks

	ROA	ROE	NIM	CAR	CAR2	EU IR	TR IR	FX	DNATION.	OTT
Mean	0.018	0.168	0.042	0.163	0.110	0.032	0.080	0.066	0.043	0.103
Median	0.017	0.152	0.042	0.155	0.110	0.032	0.080	0.080	0.000	0.099
Maximum	0.034	0.339	0.060	0.254	0.155	0.050	0.100	0.167	1.000	0.191
Minimum	0.008	0.081	0.019	0.131	0.071	0.020	0.060	-0.075	0.000	0.056
Std. Dev.	0.006	0.057	0.008	0.026	0.018	0.009	0.014	0.076	0.204	0.038
Obs.	70	70	70	70	70	70	70	70	70	70

Table 3

Descriptive Statistics for Small Banks

	ROA	ROE	NIM	CAR	CAR2	EU IR	TR IR	FX	DNATION.	OTT
Mean	0.015	0.083	0.062	0.392	0.210	0.032	0.080	0.066	0.617	0.103
Median	0.014	0.096	0.048	0.185	0.126	0.032	0.080	0.080	1.000	0.099
Maximum	0.080	0.372	0.900	2.129	0.851	0.050	0.100	0.167	1.000	0.191
Minimum	-0.128	-0.728	-0.054	0.102	0.039	0.020	0.060	-0.075	0.000	0.056
Std. Dev.	0.020	0.132	0.076	0.437	0.205	0.009	0.014	0.076	0.487	0.038
Obs.	190	190	190	190	190	190	190	90	190	190

Table 4 and Table 5 present correlation matrices for large banks and small banks. Correlation matrices show that there was no multicollinearity problem for the variables that will be used in the same model. Furthermore, to be sure that there is no multicollinearity, the variance inflation factors of the variables in the final models are checked. Since none of the values are greater than 5 (Wooldridge, 2013), multicollinearity suspicion has been eliminated.³

³ Results are available upon request.

4. Methodology

We analyze our data set in detail to implement the appropriate methodology.⁴ According to the result of the Likelihood Ratio Test, there is an individual effect in the dataset, which leads to either Fixed Effect or Random Effect Model depending on the results of the Hausman test (Akbaş, 2012; Kosmidou et al., 2012; Owoputi et al., 2014). Although the result of the Hausman test is inconclusive, the fixed effects estimator is used in this study because the fixed effects estimator gives consistent estimations regardless of the true model (Gujarati and Porter, 2009).

Panel data models have some underlying assumptions: there is no multicollinearity, error terms are homoscedastic, and there is no serial correlation (Baltagi, 2005; Tatoğlu, 2012). Therefore, homoscedasticity and autocorrelation assumptions are also checked. Durbin-Watson test is used to check autocorrelation, and the Breusch-Pagan test is used to test heteroscedasticity. The results show that there is a low level of serial correlation, however, there is a heteroscedasticity problem. Topak and Talu (2017) suggest that although they are the assumptions for panel data models, since their lacking causes nothing but the loss of efficiency in the data, the estimation results can be used. Furthermore, according to Berry and Feldman (1985), when there are heteroscedasticity and autocorrelation problems, the estimator is still unbiased, and the resulting estimations are accurate regardless of autocorrelation and heteroscedasticity. All model specification and panel stationarity tests are applied for the sake of healthy analyses.⁵ In the light of the aforementioned tests, the regression equation and the details regarding the models are created as follows:

$$Y_{it} = \beta_{i0} + \beta_1 X1_{it} + \beta_2 X2_{it} + \beta_3 X3_{it} + \beta_4 X4_{it} + \beta_5 X5_{it} + \beta_6 X6_{it} + \varepsilon_{it} \quad (2)$$

where Y_{it} represents ROA, ROE, and NIM interchangeably, β_{i0} is the constant term for each bank i , $X1_{it}$ represents CAR and CAR2 interchangeably, $X2_{it}$, $X3_{it}$, $X4_{it}$ and $X5_{it}$ represent TR IR, EU IR, FX, OTT respectively, and $X6_{it}$ is the dummy variable DNATIONALITY. In all the models, the fixed effect is time.

5. Findings

Banks in our sample are divided into two groups considering their sizes. We use panel data analyses with a fixed-effect model covering the data between 2007 and 2016. Our findings are presented in Table 6 with models 1-6 for large banks and models 7-12 for small banks respectively.

⁴ All the analyses are implemented on the EViews software.

⁵ All test results are available upon request.

Our results show that CAR is a better explanatory variable compared to CAR2 for the variance in ROA especially in large banks, and the effect of CAR on ROA is positive. When the effect of CAR is analyzed considering the size of the banks, it is seen that CAR is more significant in terms of explaining the profitability of large banks compared to the profitability of small banks. On the other hand, it is seen that CAR2 is better in terms of explaining the change in ROE and NIM in small banks. While CAR2 and NIM have a positive relationship, CAR2 and ROE have a negative relationship.

Only NIM of large banks could be explained by the change in EUR/TRY parity (models 5 and 6), with a positive relationship. However, small banks are not significantly affected by FX.

Our results indicate that OTT is statistically significant in all models for large banks with a 0.01 significance level, and there is a positive relationship between the profitability of large banks and OTT. Small banks' profitability is also positively affected by OTT in models 7, 8, 9, and 10; however, the significance of OTT is rather small on ROE.

Results related to TR IR are examined, and it is seen that 5 out of six models for large banks suggest that the profitability of large banks are affected negatively by inflation (except for model 3 where ROE is used as a dependent variable and CAR is the independent variable as for capital adequacy ratio). On the other hand, inflation in Turkey was found to be insignificant in terms of explaining small bank profitability except for model 10 where ROE is tested with CAR2.

EU IR is found to be negatively significant only in model 2 with 0.05 significance. Thus, it would be difficult to claim a significant relationship between EU IR and bank profitability in Turkey.

In almost all the models, DNATIONALITY is found to be insignificant. Therefore, it could be safely assumed that the nationality of banks does not affect profitability.

5.1. Robustness

There are two major crises during our sample period, namely; the global financial crisis (2008–2009) and the European sovereign debt crisis (2010–2012). We have constructed a model with a dummy variable for crisis periods (DCRISIS) as robustness. DCRISIS equals to 1 for the years of crises, and 0 otherwise. Our results are presented in Appendix Table A1. According to the results, OTT is still statistically significant when DCRISIS dummy variable is included. This finding supports the findings of our previous models, however, it is seen that in the models including DCRISIS, TR IR loses its significance and DCRISIS becomes a statistically significant variable instead.

6. Conclusion

This study aims to examine three main issues. The first objective of the paper is to broadly investigate whether CAR is significant in terms of explaining bank profitability for the Turkish banks and to test whether CAR is a better determinant of bank profitability compared to CAR2. The second objective is to find out whether profitability dynamics vary for different bank sizes. The third objective of our paper is to examine the relationship of bank profitability in Turkey with the trade between Turkey and the EU-28.

Our results show that CAR is a better explanatory variable compared to CAR2 for the variance in ROA, and the effect of CAR on ROA is positive. When this effect is analyzed considering the size of the banks, it is observed that CAR is more significant in terms of explaining the profitability of large banks compared to the profitability of small banks, while CAR2 is better in terms of explaining the change in ROE and NIM in small banks. While CAR2 and NIM have a positive relationship, CAR2 and ROE have a negative relationship. As a policy implication; it may be suggested to focus on the improvement of CAR rather than CAR2 especially for large banks in Turkey.

Banks seek the optimal levels of both CAR and CAR2 as risk measurements to achieve higher profits. Although nearly all of the banks had capital adequacy ratios that were well above the minimum requirement for each period that is examined in the study, an increase in CAR results in an increase in bank profitability when CAR is significant. Based on the finding that CAR has a positive relationship with the bank profitability of large banks, a suggestion would be to increase their capital adequacy ratios and carry less risky assets on their balance sheets such as government bonds and loans to OECD banks. As a policy move, the Banking Regulation and Supervision Agency may increase the minimum requirement to increase bank profitability, especially for large banks. However, in that case, an increase in the minimum requirement of capital adequacy ratio may restrict the maneuver capabilities of the banks which may be detrimental especially in economic downturns. The median values of CAR and CAR2 for the small banks are higher than those for large banks. This is in line with Dreca (2013), which claims that bank size significantly affects capital adequacy ratio negatively. Therefore, a basic intuition tells that the optimum CAR for large banks should be less than the optimal level for small banks. Although this study paves the way for rough statements regarding the optimal level of capital adequacy ratio, which might have maximized the profitability, further study is suggested to pinpoint the optimal levels depending on bank size, since it is not in the scope of this paper.

Our results indicate that OTT has a positive and significant effect on the profitability of large banks in all models. Small banks' profitability is also positively

affected by OTT; however, the significance of this effect is rather small on ROE. The profitability of small banks is less connected to trade. This finding is intuitive considering the literature that documents a strong positive relationship between the probability of having trade finance claims and bank size (see Niepmann and Schmidt-Eisenlohr, 2013). Our findings are robust in the existence of DCRISIS.

Emerging markets may experience instability in their economies and their rates of inflation may be unpredictable. Our results related to TR IR suggest that the profitability of large banks is affected negatively by inflation, while inflation is found to be insignificant in terms of explaining small bank profitability, which can be attributed to their ability to take more rapid action. In the robustness, where DCRISIS is included as a control variable, TR IR loses its significance and DCRISIS becomes a statistically significant variable instead. On the other hand, it is not possible to claim a significant relationship between EU IR and bank profitability in Turkey.

Only NIM of large banks is explained by the FX, with a positive relationship. This finding may imply efficient management of currency risk in large banks. Small banks, whose shares in international trade are rather low compared to large banks, are not significantly affected by FX.

DNATIONALITY is found to be insignificant. Still, the nationality of banks may be explored in detail in further studies. Different effects of OTT on the profitability of foreign banks versus that of domestic banks would be appealing to investigate in future research.

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Özet

Banka karlılığının dinamikleri: Türkiye örneği

Bu çalışma, risk ağırlıklı varlıklarla hesaplanan sermaye yeterlilik oranının Türkiye'deki banka karlılığını açıklama konusunda anlamlı olup olmadığını ve banka karlılığı dinamiklerinin banka büyüklüğüne göre değişip değişmediğini incelemektedir. Bu çalışma ayrıca AB-28 ülkeleriyle yapılan uluslararası ticaretin Türkiye'deki banka karlılığına olan etkilerini de incelemeyi amaçlamaktadır. Banka karlılığı; aktif getiri oranı, özsermaye getiri oranı ve net faiz marjı ile ölçülmektedir. Sonuçlarımız sermaye yeterlilik oranı ile karlılık arasında pozitif bir ilişkinin varlığını göstermektedir. Ayrıca, büyük bankalar ile küçük bankaların karlılık dinamiklerinin farklılaştığı gözlenmiştir. Sonuçlarımız AB-28 ülkeleri ile Türkiye arasındaki ticari dışa açıklığın Türkiye'deki banka karlılığını pozitif yönde etkilediğini göstermektedir.

Anahtar kelimeler: Sermaye yeterlilik oranı; banka karlılığı; ticari dışa açıklık; Türk bankacılık sektörü

Jel kodları: G21, M20