



bilimname XLII, 2020/2, 41-61
Arrival Date: 2.19.2020, Accepted Date: 3.20.2020, Publishing Date: 10.31.2020
doi: <http://dx.doi.org/10.28949/bilimname.691439>

DETERMINATION OF FACTORS AFFECTING THE PROFITABILITY VARIABLES BY PANEL DATA ANALYSIS IN THE ISLAMIC BANKS: THE CASE OF TURKEY*

 Raif PARLAKKAYA^a
 Ümran Münire KAHRAMAN^c

 Suna AKTEN ÇÜRÜK^b
 Gülşah ŞEN^d

Abstract

Islamic banks, which operate on the profit and loss sharing basis, have an important role in the financial system in terms of the collected funds bringing into the real economy. Therefore, for a strong economic structure, the market share of Islamic banks in the financial system needs to increase. The profitability level of banks is one of the most important financial performance indicators. Determining the factors that affect profitability indicates which issues are vital.

The aim of this paper is to determine the factors that affect the profitability of participation banks operating in Turkey. In this context, panel data estimation methods were applied by using the data obtained from the financial statements (2006-2019) of three participation banks (Kuveyt Türk, Albaraka ve Türkiye Finans) and various macroeconomic indicators of the country. The most appropriate model was tried to be determined. In this study, the effect of capital adequacy ratio, bank size, credit risk, operational risk, operating effectiveness, inflation and GNP growth rate on return on assets (ROA) and return on equity (ROE) was analyzed. According to the results of the analysis, bank size, credit risk, operating effectiveness and inflation rates has an effect on ROA. Also, the effect of credit risk, operational risk, operating effectiveness and inflation rates on ROE is determined. Independent variables that do not have an impact on the profitability of banks are determined as capital adequacy ratio and growth. Also, according to the results of the analysis, it is possible to express that banks'

* This paper was presented as an oral presentation at the International Congress of Islamic Economy, Finance and Ethics, Dec 7-8, 2019, Istanbul, Turkey.

^a Prof., Necmettin Erbakan University, rpkaya42@hotmail.com

^b Asst. Prof., Necmettin Erbakan University, sunaakten@hotmail.com

^c Asst. Prof., Necmettin Erbakan University, ukahraman@erbakan.edu.tr

^d Ph.D. Student, Necmettin Erbakan University, gulsah.sen@ogr.erbakan.edu.tr

specific variables are more effective on the profitability of participation banks than macroeconomic indicators.

Keywords: Islamic Economy, Banks, Islamic Banking, Profitability, Macroeconomic Indicators, Panel Data Analysis.



İSLAMİ BANKALARDA KÂRLILIK DEĞİŞKENİNİ ETKİLEYEN FAKTÖRLERİN PANEL VERİ ANALİZİ İLE BELİRLENMESİ: TÜRKİYE ÖRNEĞİ

Kâr ve zarara katılma esasına göre çalışan İslami bankalar, topladığı fonları reel ekonomiye kazandırması açısından finansal sistem içerisinde önemli bir role sahiptir. Dolayısıyla güçlü bir ekonomik yapı için, İslami bankaların finansal sistem içerisindeki payının artması gerekmektedir. Bankaların kârlılık düzeyi önemli finansal performans göstergelerinden biridir. Kârlılığı etkileyen değişkenlerin belirlenmesi ise, hangi unsurların hayati öneme sahip olduğunu gösterir.

Bu çalışma, Türkiye’de faaliyet gösteren katılım bankalarının kârlılığı üzerinde etkili olan faktörlerin belirlenmesini amaçlamaktadır. Bu kapsamda, Türkiye’de faaliyet gösteren üç katılım bankasının (Kuveyt Türk, Albaraka ve Türkiye Finans) 2006-2019 yıllarına ait mali tablolarından elde edilen veriler ile ülkenin çeşitli makroekonomik göstergeleri kullanılarak panel veri tahmin yöntemleri uygulanmış ve en uygun model belirlenmeye çalışılmıştır. Çalışmada, sermaye yeterlilik oranı, banka büyüklüğü, kredi riski, operasyonel risk, faaliyet etkinliği, enflasyon ve GSMH büyüme oranının aktif kârlılığı (ROA) ve özkaynak kârlılığı (ROE) üzerine etkisi analiz edilmiştir. Analiz sonuçlarına göre, ROA üzerinde banka büyüklüğü, kredi riski, faaliyet etkinliği ve enflasyon oranlarının etkili olduğu görülmüştür. ROE üzerinde ise kredi riski, operasyonel risk, faaliyet etkinliği ve enflasyon oranlarının etkili olduğu tespit edilmiştir. Bankaların kârlılığı üzerinde etkisi olmayan bağımsız değişkenler sermaye yeterliliği oranı ve büyüme olarak belirlenmiştir. Ayrıca analiz sonuçlarına göre, katılım bankalarının kârlılığı üzerinde bankaların kendine özgü değişkenlerinin, makroekonomik göstergelere göre daha etkili olduğunu ifade etmek mümkündür.

[Türkçe geniş öz çalışmanın sonunda yer almaktadır.]



Introduction

The importance of Islamic Banking, which operate on the profit and loss sharing basis, in the global financial system has increased day by day. The fact that Islamic banks are not only limited to Islamic countries but spread all over the world is an indicator of this today. The global crisis

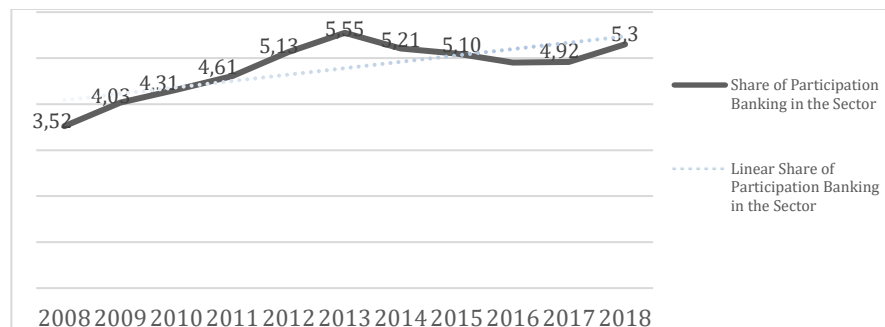
experienced in 2008 was particularly influential in the increase of interest in Islamic banks worldwide. While the trust to conventional banking system was seriously shaken during the global crisis, the Islamic banking system has proved to have a crisis-resistant structure with its financial performance.

The system, called as “Islamic Banking” and “Interest-Free Banking” in the world, began his journey in 1985 as in Turkey with “Private Financial Institutions”. Their name changed as the “Participation Bank”, still the same, by the Banking Law enacted in 2005. (Hazıroğlu, 2017).

When the size of Islamic finance and banking within the global financial system are examined, it is seen that its share in the system is gradually increasing. Islamic financial sector assets rose to US\$ 2.44 trillion in 2017. This figure is expected to increase to US\$ 3.8 trillion by 2023. In addition, out of 1,389 institutions operating in the international interest-free finance system in 2017, 505 are Islamic banks providing services on the basis of interest-free banking. The total assets of the said Islamic banks reached US\$ 1.72 trillion in 2017. (ICD-Thomson Reuters 2018)

The sector share of the participation banks whose numbers have increased to 6 (Albaraka Türk, Kuveyt Türk, Türkiye Finans, Ziraat Participation and Vakıf Participation and Emlak Participation Bank, which started operations in Turkey in 2019) has been increased day by day, although not yet at the desired level. At the post-crisis period, the share of participation banks in the sector increased to 4.03% in 2009, to 4.31% in 2010, to 4.61% in 2011 and to 5.13% in 2012. By 2013, the share of participation banking in the sector reached its highest level with 5.55%. This rate was realized 5.21% in 2014, 5.10% in 2015, 4.9% in 2016 and 4.92% in 2017. The share of participation banking in the sector was realized as 5.3% in 2018.

Figure 1: Market Share in The Sector Participation Banking in Turkey (2008-2018)



Source: Participation Banks Association of Turkey (TKBB), Access Date: December 13, 2019, www.tkbb.org.tr

It is extremely significant that the share receives from the banking sector is increased. Because participation banks have an important role for growth, which is one of the main macroeconomic targets of the country's economy, as it funds the real sector with the funds. Therefore, the profitability level of banks is one of the important financial performance indicators. In this context, determining the variables that affect the profitability of banks is important in terms of showing which factors are vital.

The aim of this study is to determine the factors that influence the profitability of the participation banks operating in Turkey and to contribute to the existing literature by making differences in terms of analysis period, variables, and sample.

A. Literature Review

In the literature, there are relatively few studies examining factors affecting the profitability of participation banks compared to conventional banks. Some of the studies examining the factors that influence the profitability of participation banks in the world and in Turkey will be presented in this part of the paper.

Akhtar et al. (2011) conducted an analysis with the ordinary least squares method in order to investigate the bank-specific factors affecting the profitability performance of Islamic banks operating in Pakistan for the period 2006-2009 in their studies. In the study, return on assets (ROA) and return on equity (ROE) were used as dependent variables. In the analysis, two models have been established in which the ROA and ROE variables are one by one dependent variables. Bank size, the ratio of equity to debts, the ratio of non-performing loans, asset management, operational efficiency and capital adequacy were used as explanatory variables in both models. According to the results of the analysis, the ratio of equity to debts and capital adequacy ratio have a statistically significant and positive effect on ROA and ROE. In addition, while there is a statistically significant and negative relationship between non-performing loans and ROA, there is a statistically significant and positive relationship between asset management and ROA. There is a statistically significant and negative relationship between operational efficiency with ROA and ROE. There was no statistically significant relationship between bank size with ROA and ROE.

Idris et al. (2011) analysed with the Generalized Least Square (GLS) panel data method in order to investigate the factors affecting the profitability of 9 foreign and local Islamic banks operating in Malaysia for the period 2007-2009 in their studies. In the study, return on assets (ROA) was

determined as dependent variable as an indicator of profitability. Capital adequacy, credit risk, liquidity, bank size and expenses management are determined as independent internal factors. According to the results of the analysis, it was concluded that only bank size is an important factor in determining profitability from the internals.

Hidayat and Abduh (2012) applied panel data analysis using internal and macroeconomic indicators to analyze the impact of the global financial crisis on the financial performance of 8 Islamic banks with regular financial data in Bahrain for the period 2005-2010 in their studies. In the study, return on assets (ROA) and return on equity (ROE) were determined as dependent variables as an indicator of profitability. According to the results of the analysis, it is seen that the total assets, equity and overhead expenses, which are among the bank-specific variables, are the factors affecting the performance of Islamic banks. The financial crisis has an impact especially on Islamic banking performance in Bahrain, but this effect had occurred after the crisis period.

Eljelly (2013) applied panel data analysis using internal and macroeconomic indicators to investigate the profitability determinants of 16 Islamic banks operating in Sudan for the period 2000-2010 in his study. According to the results of the analysis, the cost, liquidity and size of the bank have positive effects on profitability, however, it has been determined that the selected external macroeconomic factors have no effect on profitability.

Asadullah (2017) applied panel data analysis using internal and macroeconomic indicators to investigate the profitability determinants of 5 Islamic banks in Pakistan for the period 2006-2015. In the study, return on assets (ROA) was determined as dependent variable as an indicator of profitability. While bank size and liquidity are determined as independent internal variables, inflation and gross domestic product (GDP) are determined as independent macroeconomic variables. According to the results of the analysis, while liquidity has a positive effect and bank size has a negative effect on the profitability of Islamic banks. In addition, it has been concluded that macroeconomic variables such as gross domestic product (GDP) and inflation have no effect on the profitability of Islamic banks.

Dodi et al. (2018) used generalized method of moments (GMM) in their studies to identify factors affecting the profitability of Islamic banks in Indonesia for the period 2008-2017. In the study, return on assets (ROA) and return on equity (ROE) were determined as dependent variables. While capital adequacy, credit risk, liquidity risk and bank size are determined as

bank-specific independent variables, gross domestic product (GDP) and inflation are determined as macroeconomic independent variables. According to the results of the analysis, while bank size has a positive effect on return on assets (ROA) and return on equity (ROE), it has been determined that capital adequacy, credit risk and liquidity have a negative effect. It is determined that only inflation that one of the macroeconomic variables has a positive effect on profitability and GDP has no significant effect on profitability.

Kusumastuti and Alam (2019) used multiple linear regression analysis method in order to determine the factors affecting the profitability of Islamic banks in Indonesia for the 2015-2017 period. In the study, while return on assets (ROA) is determined as dependent variable, capital adequacy ratio, operating effectiveness ratio and non-performing loans are determined as independent variables. According to the results of the analysis, while the operating effectiveness has a significant effect on the return on assets of the banks, the capital adequacy ratio and non-performing loans have no significant effect on the return on assets of the banks.

Görüş and Özgür (2016), used ordinary least squares (OLS) method in their studies to analyze the impact on bank profitability of bank-specific factors of the five participation banks (Albaraka Türk Participation Bank, Bank Asya, Kuveyt Türk Participation Bank, Türkiye Finans Participation Bank, Ziraat Participation Bank) in Turkey for the 2006-2016 period. In the study, as the dependent variable on return on assets (ROA), the ratio of equity to total assets, loan quality, ratio of loans to total assets, net interest margin, ratio of operating expenses to total assets, market share and the ratio of non-interest income to total assets were determined as independent variables. According to the results of the analysis, the ratio of equity to assets, net interest margin and market share have a positive effect on return on assets. Among these variables, net interest margin with 0.432 coefficient was determined as the strongest in-bank factor affecting bank profitability.

Karakuş and Yılmaz Küçük (2016) performed panel regression analysis using internal factors and macroeconomic indicators in order to determine the factors determining the profitability of the 4 participation banks operating in Turkey for the period 2010-2014. According to the results obtained, it was determined that there is a negative relationship between the US Dollar effective exchange rate, consumer price index, gross domestic product, fixed assets to total assets ratio and return on assets and return on equity, which is used as an indicator of profitability. In addition, it

has been determined that there is a positive relationship between the number of employees and both profitability variables. Furthermore, industrial production index, the banking sector credit volume, weighted average interest rate of loans applied by banks, unemployment rate and total funds collected to total assets ratio were found to have positive effects on return on assets. Real sector confidence index, unemployment rate and credit used to total assets ratio have a negative effect on return on equity. In addition, hourly earnings index, other operating expenses to total assets ratio, off-balance sheet liabilities to total assets ratio and ratio of short-term loans to total loans have a positive effect on return on equity.

Yüksel (2016), conducted an analysis with the MARS method in order to determine the factors affecting the profitability of 4 participation banks (Türkiye Finans, Bank Asya, Kuveyt Türk ve Albaraka Türk) for the period 2005-2015. While return on assets (ROA) is used as the dependent variable in the study, capital to total assets ratio, total credit to total assets ratio, total deposits to total assets ratio, non-performing loans to total loans ratio, non-interest income to total income ratio, unemployment rate, inflation rate, interest rate, growth rate, exchange rate were used as independent variables. According to the results of the analysis, it has been determined that there is a positive relationship between total assets used as bank size indicator and bank profitability.

Aktaş and Avcı (2017) conducted data envelopment analysis (DEA) and panel data analysis to determine the financial ratios that affect the performance of Islamic banks using data from 7 countries (Malaysia, Saudi Arabia, Qatar, Kuwait, Iran, United Arab Emirates and Turkey) for the period 2011-2015. Within the scope of the study, for the Data Envelopment Analysis, collected funds, fixed assets, equity and personnel expenses are input variables and funds provided and other active assets were used as output variables. The effectiveness scores obtained as a result of data envelopment analysis were used as the dependent variable, and asset profitability ratio, equity profitability ratio, loan deposit ratio and debt ratio were used as independent variables. According to the results of the analysis, while the asset profitability and debt ratio of banks has an positive effect; the return on equity and loan deposit ratio has a negative effect on the performance of Islamic banks.

Aka (2019) applied panel data analysis to determine the factors affecting the profitability of 3 participation banks for the period 2010-2018 in his study. In order to measure profitability, return on assets (ROA) and

return on equity (ROE) are used as dependent variables, while asset size, logarithm of operational efficiency, loan deposit ratio, ratio of non-performing loans, leverage ratio and logarithm of the bank market density are determined as independent variables. According to the results of the analysis, a significant relationship was determined between asset size, leverage ratio, the ratio of non-performing loans, loan deposit rate, operational efficiency and bank market density and bank profitability.

B. Data Set and Methods

In this study, factors affecting the profitability of participation banks operating in Turkey will be analysed. In this context, the financial indicators between 2006Q1 and 2019Q2 of Kuveyt Türk, Albaraka ve Türkiye Finans participation banks operating in Turkey constitute the data of the study.

In the study, there is a panel data model consisting of compiling the data of these 3 participation banks according to both units and time. The number of horizontal section units of panel data is $n = 3$, and the number of time units obtained for each horizontal section unit is $t = 54$. The data set consists of a total of 162 observations.

Considering the variables used in the studies in the literature, 9 variables were used to determine the factors affecting the profitability of participation banks. In the study, return on assets (ROA) and return on equity (ROE) were determined as dependent variables as indicators of bank profitability. As independent internal variables, capital adequacy ratio, bank size, credit risk, operational risk, operating effectiveness; inflation and GNP growth rate were taken as independent external variables.

In the study, data on participation banks were obtained from the Participation Banks Association of Turkey (www.tkbb.org.tr) database. Data on macroeconomic indicators used in the study, Central Bank of the Republic of Turkey (www.tcmb.gov.tr) and Turkey Statistical Institute (www.tuik.gov.tr) were obtained from the database of.

Table 1: Dependent and Independent Variables Used in the Study

	Return on Assets (ROA)	Net Profit/Total Assets
Profitability	Return on Equity (ROE)	Net Profit / Equity Total
	Bank Size (BS)	(log (Total Assets))
Endogenous Variables	Capital Adequacy Ratio (CAR)	(Equity/Risk-Weighted Assets)
	Credit Risk (CR)	Provision for Doubtful Account/ Loans and Receivables

	Operational Risk (OR)	Total Operating Expenses / Net Profit Share Income
	Operating Effectiveness (OE)	Operating Income / Total Assets
Macroeconomic Variables	Inflation (Inf)	CPI Based Inflation Rate
	Gross National Product (GNP)	% Change in Gross National Product

In the study, panel data regression method was applied to determine the variables that are thought to affect the return on assets and return on equity of participation banks. Necessary tests have been done on which model to apply and it has been checked whether the assumptions of the model are provided. Stata package program was used in data analysis.

To determine the independent variables that affects the profitability of banks;

H₁: Explanatory variables have an impact on return on assets.

H₂: Explanatory variables have an impact on return on equity.

alternative hypotheses have been created. Panel data regression equations created to test H₁ and H₂ hypotheses are given in equations (1) and (2).

$$ROA_{it} = \beta_0 + \beta_1 \cdot CAR_{it} + \beta_2 \cdot BS_{it} + \beta_3 \cdot CR_{it} + \beta_4 \cdot OR_{it} + \beta_5 \cdot OE_{it} + \beta_6 \cdot Inf_t + \beta_7 \cdot GNP_t + \varepsilon_{it} \quad (1)$$

$$ROE_{it} = \beta_0 + \beta_1 \cdot CAR_{it} + \beta_2 \cdot BS_{it} + \beta_3 \cdot CR_{it} + \beta_4 \cdot OR_{it} + \beta_5 \cdot OE_{it} + \beta_6 \cdot Inf_t + \beta_7 \cdot GNP_t + \varepsilon_{it} \quad (2)$$

$$i = 1, \dots, n, t = 1, \dots, T$$

C. Findings

In Table 2, descriptive statistics for variables are calculated separately for general, horizontal section units and time period.

Table 2: Descriptive Statistics of Variables

Variables	Mean	Standard Deviation	Minimum	Maximum	No of Observations	
ROA	General	0.0096	0.0062	0.0006	0.0339	N = 162
	Within group		0.0005	0.0092	0.0102	n = 3

	Between group		0.0062	0.0009	0.0333	T = 54
ROE	General	0.0945	0.0544	0.0083	0.3221	N = 162
	Within group		0.0016	0.0932	0.0962	n = 3
	Between group		0.0544	0.0088	0.3234	T = 54
CAR	General	0.1519	0.0211	0.1164	0.2312	N = 162
	Within group		0.0021	0.1503	0.1543	n = 3
	Between group		0.0211	0.118	0.2321	T = 54
BS	General	7.1655	0.4225	6.3136	7.9394	N = 162
	Within group		0.0783	7.0752	7.213	n = 3
	Between group		0.4176	6.3302	7.892	T = 54
CR	General	0.0228	0.0071	0.0103	0.0409	N = 162
	Within group		0.0015	0.0211	0.0237	n = 3
	Between group		0.007	0.0094	0.04	T = 54
OR	General	1.1916	0.7249	0.7016	6.7031	N = 162
	Within group		0.1822	1.0767	1.4017	n = 3
	Between group		0.7094	0.608	6.7983	T = 54
OE	General	0.0402	0.0198	0.0111	0.1014	N = 162
	Within group		0.0016	0.0386	0.0418	n = 3
	Between group		0.0197	0.0097	0.1005	T = 54
Inf	General	0.0946	0.0347	0.0435	0.2239	N = 162
	Within group		0	0.0946	0.0946	n = 3
	Between group		0.0347	0.0435	0.2239	T = 54
GNP	General	0.0485	0.051	-0.146	0.126	N = 162
	Within group		0	0.0485	0.0485	n = 3
	Between group		0.051	-0.146	0.126	T = 54

Table 3: Correlation Coefficients for Independent Variables

	CAR	BS	CR	OR	OE	Inf	GNP
CAR	1	0.0927	0.122	-0.2156	0.2512	0.2268	-0.1532
BS		1	0.2494	-0.3278	-0.1278	0.3618	0.0142
CR			1	0.2246	0.0706	0.3561	-0.0449
OR				1	0.0783	0.2562	-0.0993
OE					1	0.3355	-0.2893
Inf						1	-0.2979
GNP							1

When the correlations between the independent variables in Table 3 are examined, it is observed that there is no significant correlation. To investigate the multicollinearity problem, tolerance and VIF values were obtained (Table 4). For VIF values being above 10 and tolerance values below 0.10 indicate multicollinearity. Multicollinearity was not detected in the data.

Table 4: Tolerance and VIF Values for Independent Variables

Variables	Tolerance	VIF
CAR	0.512	1.95
BS	0.565	1.77
CR	0.6	1.67
OR	0.752	1.33
OE	0.79	1.27
Inf	0.81	1.23
GNP	0.859	1.16

In line with the hypothesis, classical model, fixed effect model and random effect model will be examined in order to determine which model is suitable for panel data. The F test and the Augmented Lagrange Multiplier (ALM) test were used to test the suitability of the classical model, where the parameter estimation was made by the pooled ordinary least squares (OLS) method. To test whether the data differs by units with the F test, constrained and unconstrained model is used. The unconstrained model states that coefficients vary depending on units (Yerdelen Tatoglu, 2013). The test statistic proposed by Bera et al. (2001) for the ALM test is the corrected version of the Breusch-Pagan (1980) test in the case of serial correlation.

When table 5 is examined, the F test for the ROA variable gave the

result that the coefficients did not differ between the units. ALM test cannot reject the H_0 hypothesis, which claims to have no unit and time effects. For ROE variable, F test and ALM test express that there is no difference between units. It is appropriate to apply pooled OLS method to the data.

Table 5: Testing unit and time effects

Dependent Variable	H_0	Test	Test Statistics	p value	Decision
ROA	There is no unit effect.	F	2.840	0.062	H_0 acceptance
	Variances of unit effects are zero.	ALM	0.070	0.796	H_0 acceptance
ROE	There is no unit effect.	F	0.410	0.667	H_0 acceptance
	Variances of unit effects are zero.	ALM	2.020	0.979	H_0 acceptance

It is assumed that the error terms of the model obtained by the pooled OLS method do not contain autocorrelation and have constant variance. By Breusch-Pagan (1979) / Cook-Weisberg (1983) test squares of error terms obtained from OLS regression are taken as dependent variable and a regression model is established with independent variables. NR^2 value obtained from the model is compared with $\chi^2_{(p)}$ value. Here N is the number of observation and p is the number of independent variable. Wooldridge test is a robust method that can be applied in the absence of unit effects in the data to examine whether the error terms are autocorrelated (Drukker, 2003).

$$\Delta Y_{it} = \Delta X_{it}\beta + \Delta \varepsilon_{it} \quad (3)$$

In the model (3), the regression of error terms with lagged values is calculated. The validity of the regression is examined with the F test.

Table 6: Pooled OLS Assumptions in Panel Data

Dependent Variable	H_0	Test	Test Statistics	p value	Decision
ROA	No autocorrelation	Wooldridge	13.13	0.068	H_0 acceptance
	Constant variance	Breusch-Pagan / Cook-Weisberg Test	110.09	0.000	H_0 rejection
ROE	No autocorrelation	Wooldridge	19.47	0.047	H_0 rejection
	Constant variance	Breusch-Pagan / Cook-Weisberg Test	89.02	0.000	H_0 rejection

According to table 6, there is a disruption in the assumption of constant variance for both variables. No a major autocorrelation problem was observed in the ROA series. H_0 hypothesis, which states that there is no autocorrelation for ROE, could not be rejected. For this reason, PCSE (Panel Corrected Standard Errors) estimator, which produces robust standard errors, is used in the variance estimation of the parameters. In case of constant variance disruption in the series, corrected standard error panel regression estimates suggested by Beck-Katz (1995) can be used (Çınar, 2011). In the series, Prais-Winsten corrected standard error estimator, which corrects both heteroscedastic and autocorrelation problems, is used (Hurd, 1972).

Table 7: Consistent Standard Error Pooled OLS Coefficients

		Coefficient	Std. D.	z	p of z	R ²	Wald Chi ²	p of Chi ²
ROA	CAR	0.017	0.011	1.55	0.122	0.83	497.13	0.000*
	BS	-0.004*	0.001	-5.91	0.000			
	CR	-0.205*	0.036	-5.66	0.000			
	OR	-0.0001	0.0003	-0.31	0.753			
	OE	0.246*	0.014	17.08	0.000			
	Inf	-0.038*	0.01	-3.9	0.000			
	GNP	0.007	0.005	1.28	0.202			
	Constant	0.035*	0.005	6.7	0.000			
ROE	CAR	-0.055	0.144	-0.38	0.701	0.81	436.25	0.000*
	BS	-0.012	0.01	-1.23	0.220			
	CR	-1.932*	0.49	-3.94	0.000			
	OR	0.007**	0.004	1.820	0.069			
	OE	2.359*	0.119	19.75	0.000			
	Inf	-0.316*	0.115	-2.74	0.006			
	GNP	0.095	0.065	1.47	0.141			
	Constant	0.156*	0.071	2.20	0.028			

*: Significant at 5% level

**: Significant at 10% level

When the analysis results in Table 7 are examined, p of Chi² value with “0.000” indicates that the model is generally meaningful. Also, when R² values are examined, it shows that the independent variables of capital adequacy ratio, bank size, credit risk, operational risk, operating effectiveness, inflation and GNP growth rate explain 83% of return on assets

and 81% of return on equity which are dependent variables.

Capital adequacy ratio does not have a statistically significant effect on return on assets and return on equity. In other words, the capital adequacy ratio does not have any effect on the profitability of the participation banks involved in the study.

Bank size has a statistically significant effect on the return on assets of participation banks. However, the direction of this effect is negative, meaning that the size of the participation banks decreased the return on assets. Bank size does not have a statistically significant effect on the return on equity of participation banks.

Credit risk has a statistically significant effect on the return on assets and return on equity of participation banks. The direction of the mentioned effect is negative and it is concluded that as the credit risk increases, banks' return on assets and return on equity decreased.

Operational risk does not have a statistically significant effect on the return on assets of participation banks. Operational risk has a statistically significant and positive effect on return on equity.

Operating effectiveness has a statistically significant effect on the return on assets and return on equity of participation banks. The direction of the mentioned effect is positive, as the operating effectiveness increases, both the return on assets and return on equity of participation banks increase.

When the effect of selected macroeconomic variables of the country on profitability is examined, it is determined that inflation has a statistically significant effect on the return on assets and return on equity of participation banks. The direction of the mentioned effect is negative and as inflation increases, banks' return on assets and return on equity decrease. The growth rate of GNP, which is one of the macroeconomic indicators, does not have a statistically significant effect on both the return on assets and return on equity of participation banks.

Conclusion

Profitability is one of the most important issues for all businesses operating in the market. Because the existence of a business is closely related to the profit obtained as a result of its activities. Although the profit to be obtained by the enterprises is important, it is also very important that the said profitability is sustainable. Therefore, profitability is also an important financial performance indicator for banks, which are a commercial and

financial institution. In this context, it is important to determine which factors affecting the profitability of banks.

In this study, to determine the factors has an impact on the profitability of the participation banks operating in Turkey, panel data analysis was carried out using quarterly data obtained from the financial statements of the three participation banks (Kuveyt Türk, Albaraka ve Türkiye Finans) for 2006-2019 years and various macroeconomic indicators of the country.

In the study, the effect of capital adequacy ratio, bank size, credit risk, operational risk, operating effectiveness, inflation and GNP growth rate on return on assets (ROA) and return on equity (ROE), which are determined as indicators of profitability, were analyzed.

According to the results of the analysis, it is observed that bank size, credit risk, operating effectiveness and inflation rates is effective on ROA. One unit increase in bank size, credit risk and inflation rate cause respectively 0.004, 0.205 and 0.038 unit decrease in ROA, while one unit increase in operating effectiveness causes 0.246 unit increase in ROA.

Credit risk, operational risk, operating effectiveness and inflation rates is determined as that effects to ROE. One unit increase in credit risk and inflation rate cause respectively 1,932 and 0.316 unit decrease in ROE, while one unit increase in operational risk and operating effectiveness cause respectively 0.007 and 2,359 unit increase in ROE.

In addition, according to the results of the analysis, capital adequacy ratio and growth have no effect on the return on assets and return on equity.

As a result, it is possible to express that banks' specific variables are more effective on the profitability of participation banks than on macroeconomic indicators. Therefore, participation banks reaching size of assets at a level not to decrease their profitability, decreasing the ratio of loans that have become doubtful among given loans, increasing the operating income among the total assets, reduction of operating expenses will play an important role in determining the profitability of the sector.



BIBLIOGRAPHY

Aka, K. (2019). Banka Kârlılığının Belirleyicileri: Türk Bankacılık Sektöründeki Katılım Bankaları Üzerine Ampirik Bir Uygulama, *Social Sciences Research Journal*, 8(3), 21-39.

- Akhtar, M. F., Ali, K. and Sadaqat S. (2011). Factors Influencing the Profitability of Islamic Banks of Pakistan, *International Research Journal of Finance and Economics*, 66, 125-132.
- Aktaş, M. and Avcı, T. (2017). Katılım Bankacılığının Performansı Üzerinde Etkili Olan Finansal Oranlar, *İşletme Araştırmaları Dergisi*, 9(4), 882-901. doi: 10.20491/isarder.2017.363
- Asadullah, M. (2017). Determinants of Profitability of Islamic Banks of Pakistan – A Case Study on Pakistan’s Islamic Banking Sector, *1st International Conference on Advances in Business, Management & Law (2017)*, 1, 61-72. doi: <https://doi.org/10.30585/icabml-cp.v1i1.13>
- Beck, N. and Katz, J. N. (1995). What to do (and not to do) with Time-Series Cross-Section Data, *The American Political Science Review*, 89(3), 634-647. doi: <http://dx.doi.org/10.2307/2082979>
- Bera, A. K., Sosa-Escudero, W. and Yoon, M. (2001). Tests for The Error Component Model in The Presence of Local Misspecification, *Journal of Econometrics*, 101, 1-23. doi: [https://doi.org/10.1016/S0304-4076\(00\)00071-3](https://doi.org/10.1016/S0304-4076(00)00071-3)
- Breusch, T. S. and Pagan, A. R. (1979). A Simple Test for Heteroscedasticity and Random Coefficient Variation, *Econometrica*, 47(5), 1287-1294. doi: 10.2307/1911963
- Breusch, T. S. and Pagan, A. R. (1980). The Lagrange Multiplier Test and its Applications to Model Specification in Econometrics, *The Review of Economic Studies, Econometrics Issue*, 47(1), 239-253. doi: 10.2307/2297111
- Cook, R. D. and Weisberg, S. (1983). Diagnostics for Heteroscedasticity in Regression, *Biometrika*, 70(1), 1-10. doi: <https://doi.org/10.1093/biomet/70.1.1>
- Çınar, M. (2011). Hisse Senedi Fiyatları ve Fiyat/Kazanç Oranı İlişkisi: Panel Verilerle Sektörel Bir Analiz, *Business and Economics Research Journal*, 2(2), 165-184.
- Dodi, D., Supiyadi D. and Arief, M. (2018). Islamic Bank Profitability: A Study of Islamic Bank in Indonesia, *The International Journal of Business Review (The Jobs Review)*, 1(1), 55-65.
- Drukker, D. M. (2003). Testing for Serial Correlation in Linear Panel-Data Models, *The Stata Journal*, 3(2), 168-177. doi: <https://doi.org/10.1177/1536867X0300300206>
- Eljelly, Abuzar M. A. (2013). Internal and External Determinants of
-

Profitability of Islamic Banks in Sudan: Evidence from Panel Data, *Afro-Asian Journal of Finance and Accounting*, 3(3), 222-240. doi: 10.1504/AAJFA.2013.054424

- Görüş, M. Ş. and Özgür, Ö. (2016). Determinants of Islamic Bank Profitability in Turkey: Bank Specific Factor Analysis, *Sakarya İktisat Dergisi*, 5(2), 1-13.
- Hazıroğlu, T. (2017). *Katılım Ekonomisi Yeni Zihin, Yeni İktisat*, İstanbul: İz Yayıncılık.
- Hidayat, S. E. and Abduh, M. (2012). Does Financial Crisis Give Impacts on Bahrain Islamic Banking Performance? A Panel Regression Analysis, *International Journal of Economics and Finance*, 4(7), 79-87. doi:10.5539/ijef.v4n7p79
- Hurd, M. D. (1972). Small Sample Estimation of a Structural Equation with Autocorrelated Errors, *Journal of the American Statistical Association*, 67(339), 567-573. doi: 10.2307/2284439
- ICD-Thomson Reuters. (2018). *Islamic Finance Development Report 2018*, Erişim tarihi: 13 Aralık 2019, <https://www.icd-ps.org/>.
- Idris, A. R. Asari, F. F. A. H., Taufik, N. A. A., Salim, N. J., Mustafa, R., and Jusoff, K. (2011). Determinant of Islamic Banking Institutions' Profitability in Malaysia, *World Applied Sciences Journal*, 12, 1-7.
- Karakuş, R. and Küçük, Ş. Y. (2016). Katılım Bankalarında Kârlılığın Belirleyicileri: Türkiye Örneği İçin Bir Panel Veri Analizi, *Ömer Halisdemir Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi*, 9(2), 119-133.
- Kusumastuti, W. I. and Alam, A. (2019). Analysis of Impact of CAR, NPF, BOPO on Profitability of Islamic Banks (Year 2015-2017), *Journal of Islamic Economic Laws*, 2(1), 30-59. doi:10.23917/jisel.v2i1.6370
- Türkiye Cumhuriyet Merkez Bankası (TCMB). Access Date: 8 Ekim 2019, <https://www.tcmb.gov.tr/>
- Türkiye İstatistik Kurumu (TÜİK). Access Date: 8 Ekim 2019, <http://www.tuik.gov.tr/Start.do>
- Türkiye Katılım Bankaları Birliği (TKBB) (2018). *Katılım bankaları 2018*, İstanbul: TKBB Yayınları.
- Türkiye Katılım Bankaları Birliği (TKBB). Access Date: 10 Eylül 2019, <https://www.tkbb.org.tr/>
- Yerdelen Tatoğlu, F. (2013). *Panel Veri Ekonometrisi Stata Uygulamalı*,

İstanbul: Beta Yayınevi.

Yüksel, S. (2016). Katılım Bankalarında Kârlılığı Belirleyen Faktörlerin MARS Yöntemiyle İncelenmesi, Konferans Sunumu, *International Joint Conference on Islamic Economics and Finance (IJCIEF)*, 1-3 Eylül, İstanbul: Türkiye



İSLAMİ BANKALARDA KÂRLILIK DEĞİŞKENİNİ ETKİLEYEN FAKTÖRLERİN PANEL VERİ ANALİZİ İLE BELİRLENMESİ: TÜRKİYE ÖRNEĞİ*

 Raif PARLAKKAYA^a
 Ümran Münire KAHRAMAN^c

 Suna AYTEN ÇÜRÜK^b
 Gülşah ŞEN^d

Geniş Öz

Piyasada faaliyet gösteren tüm işletmeler için kârlılık önemli meselelerin başında gelmektedir. Çünkü, bir işletmenin varlığını devam ettirebilmesi işletmenin faaliyetleri sonucu elde ettiği kâr ile yakın ilişkilidir. İşletmelerin elde edeceği kâr önemli olmakla birlikte aynı zamanda söz konusu kârlılığın sürdürülebilir olması da son derece önemlidir. Dolayısıyla ticari ve finansal bir kuruluş olan bankalar için de kârlılık önemli finansal performans göstergelerinden biridir.

Kâr ve zarara katılma esasına göre çalışan İslami bankacılığın, küresel finans sistemi içerisinde önemi gün geçtikçe artmaktadır. Günümüzde İslami bankaların sadece İslam ülkeleri ile sınırlı kalmayıp, dünya geneline yayılması bunun bir göstergesidir. Dünya genelinde, İslami bankalara olan ilginin artmasında özellikle 2008 yılında yaşanan küresel kriz etkili olmuştur. Konvansiyonel bankacılık sistemi küresel kriz döneminde ciddi şekilde sarsılırken, İslami bankacılık sistemi gösterdiği finansal performans ile krizlere dayanıklı bir yapıya sahip olduğunu kanıtlamıştır.

Küresel finans sistemi içerisinde, İslami finans ve bankacılığın boyutları incelendiğinde sistem içerisinde payının giderek arttığı görülmektedir. İslami finans sektörü varlıkları 2017 yılında 2,44 trilyon ABD dolarına

* Bu çalışma, 7-8 Aralık 2019 tarihleri arasında İstanbul'da düzenlenen İslami Ekonomi, Finans ve Etik Kongresinde sözlü olarak sunulmuştur.

^a Prof. Dr., Necmettin Erbakan Üniversitesi, rpkaya42@hotmail.com

^b Dr. Öğr. Üyesi, Necmettin Erbakan Üniversitesi, sunaakten@hotmail.com

^c Asst. Prof., Necmettin Erbakan University, ukahraman@erbakan.edu.tr

^d Ph.D. Student, Necmettin Erbakan University, gulsah.sen@ogr.erbakan.edu.tr

yükselmiştir. Bu rakamın 2023 yılına kadar 3,8 trilyon ABD dolarına yükselmesi öngörülmektedir. Ayrıca, 2017 yılında uluslararası faizsiz finans sisteminde faaliyet gösteren 1,389 adet kuruluştan 505'i faizsiz bankacılık esasında hizmet sunan İslami bankalardan oluşmaktadır. Söz konusu, 505 adet İslami bankanın toplam varlıkları 2017 yılında 1,72 trilyon ABD dolarına ulaşmıştır. (ICD-Thomson Reuters, 2018)

Dünyada “İslami Bankacılık” ve “Faizsiz Bankacılık” olarak adlandırılan faizsiz finans kuruluşları, Türkiye’de 1985 yılında “Özel Finans Kurumları” olarak başladığı yolculuğuna 2005 yılında çıkarılan Bankacılık Kanunu ile “Katılım Bankası” adıyla devam etmektedir (Hazıroğlu, 2017). Türkiye’de 2019 yılında faaliyete geçen Emlak Katılım bankası ile Albaraka Türk, Kuveyt Türk, Türkiye Finans, Ziraat Katılım ve Vakıf Katılım olmak üzere sayıları 6’ya yükselen, katılım bankalarının sektör içindeki payı henüz istenilen düzeyde olmasa da zaman içerisinde sektörden aldığı payın arttığı görülmektedir.

Kâr ve zarara katılma esasına göre çalışan İslami bankalar, topladığı fonları reel ekonomiye kazandırması açısından finansal sistem içerisinde önemli bir role sahiptir. Dolayısıyla güçlü bir ekonomik yapı için, İslami bankaların finansal sistem içerisindeki payının artması gerekmektedir. Bankaların kârlılık düzeyi önemli finansal performans göstergelerinden biridir. Kârlılığı etkileyen değişkenlerin belirlenmesi ise, hangi unsurların hayati öneme sahip olduğunu gösterir. Bu çalışma, Türkiye’de faaliyet gösteren katılım bankalarının kârlılığı üzerinde etkili olan faktörlerin belirlenmesini amaçlamaktadır. Bu kapsamda, Türkiye’de faaliyet gösteren üç katılım bankasının (Kuveyt Türk, Albaraka ve Türkiye Finans) 2006-2019 yıllarına ait mali tablolarından elde edilen veriler ile ülkenin çeşitli makroekonomik göstergeleri kullanılarak panel veri tahmin yöntemleri uygulanmış ve en uygun model belirlenmeye çalışılmıştır. Panel verinin yatay kesit birim sayısı $n = 3$, her bir yatay kesit birimi için elde edilen zaman birimi sayısı ise $t = 54$ ’tür. Veri seti toplam 162 gözlemden oluşmaktadır.

Literatürde yer alan çalışmalarda kullanılan değişkenler dikkate alınarak katılım bankalarının kârlılığı üzerinde etkili olan faktörleri belirlemek amacıyla 9 değişken kullanılmıştır. Çalışmada, sermaye yeterlilik oranı, banka büyüklüğü, kredi riski, operasyonel risk, faaliyet etkinliği, enflasyon ve GSMH büyüme oranının aktif kârlılığı (ROA) ve özkaynak kârlılığı (ROE) üzerine etkisi analiz edilmiştir. Çalışmada, katılım bankalarına ilişkin veriler Türkiye Katılım Bankaları Birliği’ne (www.tkbb.org.tr), çalışmada kullanılan makroekonomik göstergelere ait veriler ise T.C. Merkez Bankası (www.tcmb.gov.tr) ve Türkiye İstatistik Kurumu’na (www.tuik.gov.tr) ait veri tabanlarından elde edilmiştir.

Çalışmada katılım bankalarının aktif kârlılığını ve özkaynak kârlılığını etkilediği düşünülen değişkenleri belirlemek için panel veri regresyon yöntemi uygulanmıştır. Hangi modelin uygulanacağına ilişkin gerekli testler yapılmış ve modelin varsayımlarının sağlanıp sağlanmadığı kontrol edilmiştir. Veri çözümlemesinde Stata paket programından faydalanılmıştır.

Bankaların kârlılığını etkileyen bağımsız değişkenleri belirlemek için;

H₁: Açıklayıcı değişkenlerin aktif kârlılığı üzerinde etkisi vardır.

H₂: Açıklayıcı değişkenlerin özkaynak kârlılığı üzerinde etkisi vardır.

alternatif hipotezleri oluşturulmuştur. H₁ ve H₂ hipotezlerini sınamak için oluşturulan panel veri regresyon denklemleri (1) ve (2) eşitliklerinde verilmiştir.

$$ROA_{it} = \beta_0 + \beta_1.CAR_{it} + \beta_2.BS_{it} + \beta_3.CR_{it} + \beta_4.OR_{it} + \beta_5.OE_{it} + \beta_6.Inf_t + \beta_7.GNR_t + \varepsilon_{it} \quad (1)$$

$$ROE_{it} = \beta_0 + \beta_1.CAR_{it} + \beta_2.BS_{it} + \beta_3.CR_{it} + \beta_4.OR_{it} + \beta_5.OE_{it} + \beta_6.Inf_t + \beta_7.GNR_t + \varepsilon_{it} \quad (2)$$

$$i = 1, \dots, n, \quad t = 1, \dots, T$$

Analiz sonuçlarına göre, ROA üzerinde banka büyüklüğü, kredi riski, faaliyet etkinliği ve enflasyon oranlarının etkili olduğu görülmüştür. Banka büyüklüğündeki, kredi riskindeki ve enflasyon oranındaki bir birim artış, ROA'da sırasıyla 0.004, 0.205 ve 0.038 birim azalışa neden olurken, faaliyet etkinliğindeki bir birim artış, ROA'da 0.246 birim artışa neden olmaktadır.

ROE üzerinde ise kredi riski, operasyonel risk, faaliyet etkinliği ve enflasyon oranlarının etkili olduğu tespit edilmiştir. Kredi riskindeki ve enflasyon oranındaki bir birim artış, ROE'de sırasıyla 1.932 ve 0.316 birim azalışa neden olurken, operasyonel risk ve faaliyet etkinliğindeki bir birim artış, ROE'de sırasıyla 0.007 ve 2.359 birim artışa neden olmaktadır.

Bankaların kârlılığı üzerinde etkisi olmayan bağımsız değişkenler sermaye yeterliliği oranı ve büyüme olarak belirlenmiştir. Ayrıca analiz sonuçlarına göre, katılım bankalarının kârlılığı üzerinde bankaların kendine özgü değişkenlerinin, makroekonomik göstergelere göre daha etkili olduğunu ifade etmek mümkündür. Dolayısıyla, katılım bankalarının aktif kârlılığını azaltmayacak düzeyde aktif büyüklüğüne erişmesi, verilen krediler içerisinde şüpheli hala gelen kredi oranının azaltılması, toplam aktifler içerisinde faaliyet gelirlerinin artırılması, faaliyet giderlerinin azaltılması sektörün kârlılığını belirlemede önemli rol oynayacaktır.

Anahtar Kelimeler: İslami Ekonomi, Katılım Bankaları, Kârlılık, Makroekonomik Göstergeler, Panel Veri Analizi.

