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Bank Specific and Macroeconomic Determinants of Profitability: Evidence From Participation Banks in Turkey

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Abstract

In this paper I investigate the bank specific and macroeconomic determinants of profitability in participation banks for Turkish banking sector by looking at two different profitability indicators namely return on assets (ROA) and return on equity (ROE). I find that in terms of bank specific determinants of profitability the ratio of non-performing loans to total loans and log of real assets are both highly significant and the former one has a negative effect on profitability whereas the latter one has a positive impact on profitability in participation banks. The ratio of equity to total assets is highly significant for both indicators but it has different effects on ROA and ROE. In terms of macroeconomic determinants of profitability the level of exchange rate and the real interest rate are significant and they are expected to have a positive impact on profitability in participation banks.

1 Introduction

Banking sector plays an important role in the proper functioning of the economies and the stability in the banking sector is necessary for sustainable long-term growth. The stability of the banking sector is closely related to the profitability of the sector which is significant for a sound capital structure. The 2008 global financial crisis has shown that a banking sector having problems with profitability and capital structure may have a devastating effect to the economy as such a banking sector will not be able to generate credit for the economy.

In this paper I investigate the bank specific and macroeconomic determinants of profitability for participation banks in Turkish banking sector. Although the determinants of profitability in commercial banks has been a subject of research in a number of papers there has been no research regarding the profitability of participation banks in the literature. The particular feature of participation banks is that they operate according to Islamic rules in their lending and deposit collection activities. For instance, as opposed to commercial banks they do not promise a fixed interest payment to their savers. Instead, the funds collected from the savers are utilized in trade and industry and the resulting profit or loss is shared by the savers. The name "participation banks" come from as well as savers participate in the profit or loss that results from the activities of the bank. Although the participation banks occupy a small place in the total banking sector their rapid growth rates indicate an important future potential in these banks. Figure 1 shows the growth rates of assets for commercial banks, non-depository institutions which include investment banks and development banks, and participation banks for the recent period. It is seen that the growth rate of asset size has always been higher for participation banks compared to commercial banks and non-depository institutions. Figure 2 shows the share of participation banks in the banking sector in terms of assets, loans, and deposits. Although the participation banks have a small market share in the sector there is an increasing trend in their share for assets, loans and deposits. For instance, in 2005 the total assets of participations banks is only 2.5% of the whole banking sector whereas by the end of 2010 this share has increased to 4.3%. Compared to other countries that have participation banks these numbers are quite low and one can expect this increasing trend to continue in the future.

Determinants of profitability in the banking sector has been a subject

of research for many economists and policymakers. Bourke (1989) examines the internal and external determinants of profitability for the banks of twelve countries from Europe, North America and Australia. He finds that banks with a high degree of market power tend to exhibit risk avoidance behavior. Moulyneux and Thornton (1992) investigate the determinants of profitability in the banking sector for eighteen European countries and finds no evidence of risk avoidance hypothesis. Berger (1995) finds that there is a positive relationship between higher capital and higher earnings for U.S. banks in the 1980s but this structure had turned to negative 1990s. Kunt and Huizinga (1998) investigate the determinants of commercial bank interest margins and profitability for 80 countries during the period 1988-1995. They find that a larger bank asset to GDP ratio and a lower market concentration lead to lower profits. They also show that foreign banks are more profitable in developing countries whereas the reverse is true for developed economies. Heggstad (1977) investigates the interaction between market structure and profitability for the banking industry and find that market structure has a significant impact on banks' profitability. Kaya (2002) investigates the determinants of profitability for Turkish banking sector for the 1997-2000 period. She finds that capital, liquidity, personnel expenditures, loans, non-performing loans and deposits are the bank specific determinants of profitability. In terms of macroeconomic determinants of profitability she finds that inflation and budget deficits are significant. Gelos (2006) investigates the determinants of interest margins for Latin American banks and find that spreads are large due to high interest rates, less efficient banks and higher reserve requirements. Sayilgan and Yildirim (2009) study the profitability of Turkish banking sector for the period 2002-2007. They find that inflation rate and first difference ratio of off-balance sheet transactions to total assets have a negative impact on profitability indicators whereas the ratio of equity to total assets and the first difference of industrial production index affects the profitability positively. Saunders and Schumacher (2000) investigate the determinants of net interest margin for six European countries and U.S. and they find that regulations regarding reserve requirements and capital-asset ratios have a significant influence on banks' net interest margins.

Athanasoglou, Brissimis and Delis (2005) analyze the determinants of profitability for Greek banks for the 1985-2001 period. They find that increased exposure to credit risk has a negative impact on profitability whereas labor productivity growth has a positive effect on bank profits. They also find

that business cycle has a positive but asymmetric effect on profits. Flamini, McDonald and Schumacher (2009) investigate the determinants of commercial bank profitability in Sub-Saharan Africa. They find that larger bank size, activity diversification, and private ownership are associated with higher profitability. In terms of macroeconomic variables low inflation and stable output growth improve profitability indicators.

The results reveal that in terms of bank specific determinants of profitability in participation banks the ratio of non-performing loans to total loans and log of real assets play a significant role. I find that a higher non-performing loan ratio is expected to deteriorate profitability indicators whereas big banks in terms of asset size are expected to be more profitable. The ratio of equity to total assets is also significant but has different effects on ROA and ROE. A higher equity to total assets ratio is expected to increase the ROA whereas it leads to a decline in ROE. In terms of macroeconomic determinants of profitability I find that the level of foreign exchange rate and real interest rate are statistically significant. A higher exchange rate implying a depreciation in domestic currency and an increase in real interest rate are expected to generate a higher ROA and ROE.

The rest of the paper is organized as follows: Section 2 gives a brief description of the data. Section 3 presents the estimation results and Section 4 concludes.

2 Data

The data is gathered from the quarterly unconsolidated balance sheets of participation banks that operated between 2005Q1 and 2010Q4. The balance sheets are obtained from Participation Banks Association of Turkey database. The number of participation banks in the banking sector is four and remained steady during this period. Of these four banks two of them are open to public and are daily traded in stock market. Three of the these four banks are foreign and only one bank is domestic.

In terms of bank specific determinants of profitability I look at four different variables namely the ratio of equity to total assets, the ratio of net loans to total assets, log of real assets, and the ratio of non-performing loans to total loans. To check for macroeconomic determinants of profitability I use GDP growth, level of foreign exchange rate, consumer inflation, and real interest rate. I expect to have a positive sign for GDP growth as during boom

periods credit quality improves and this has a favorable impact on profits. The effect of inflation rate on bank profitability depends upon whether the inflation is anticipated or unanticipated. In the case of an anticipated inflation bank profits may improve as the banks may adjust the price of lending according to the inflation rate. However, an unanticipated inflation may have negative effects. Bourke (1989) and Molyneux and Thornton (1992) find that a higher inflation rate is associated with better profitability indicators. The real interest rate used is the real interest rate on government bonds and the level of foreign exchange rate is the USD/TRY rate and an increase in exchange rate implies a depreciation in Turkish Lira.

3 Estimation Results

In order to see the bank specific and macroeconomic determinants of profitability the following reduced form equation is estimated using pooled feasible generalized least squares method:

$$ROA_{it} = \alpha + \beta'_1 * BSF_{it} + \beta'_2 * MAC_{it} + \beta'_3 d_i + u_t \quad (1)$$

where BSF_{it} is a vector of bank specific variables which includes the ratio of equity to total assets (ETA), the ratio of net loans to total assets (NLTA), log of real assets (LRA), and the ratio of non-performing loans to total assets (NPL) for bank i and at time t . The vector MAC_{it} includes the macroeconomic variables which are given as GDP growth rate (GDP), inflation rate (INF), the log of foreign exchange rate (FX), and the real interest rate (RINT). The vector d_i includes the seasonal dummies which includes three dummy variables for the first, second, and third quarters. The same model is also estimated using ROE as the dependent variable.

Table I shows the estimation results. The second column shows the results when ROA is taken as the dependent variable and the third column shows the results when ROE is the dependent variable. In terms of bank specific determinants of profitability the ratio of equity to total assets is highly significant for both indicators while it has different effects on ROA and ROE. A higher equity to total assets ratio is expected to improve the ROA whereas it leads to a deterioration in ROE. The ratio of non-performing loans to total loans and log of real assets are significant for both indicators. An increase in non-performing loan ratio implying a deterioration in loan quality is expected to worsen the profitability indicators. The positive sign for log of real assets

for both profitability indicators means that bigger banks are expected to be more profitable and there is evidence of economies of scale in the sector.

In terms of macroeconomic determinants of profitability the results reveal that GDP growth has a positive impact on profitability but surprisingly it is statistically not significant. The log of foreign exchange rate measured as USD/TRY rate is highly significant for both indicators and has a positive impact on profitability of participation banks. This means that a depreciation in Turkish Lira improves the profitability indicators of banks. One can take this as an evidence that participation banks do not have a short position in foreign exchange. Table II shows the year end foreign exchange positions of the Turkish participation banks.¹ It can be clearly seen that except for a very limited number of periods participation banks generally have long positions in foreign exchange and this causes them to increase their profits in case of a depreciation in domestic currency. The real interest rate on government bonds also has a positive impact on profitability and is highly significant both for ROA and ROE.

4 Conclusion

In this paper I investigate the bank specific and macroeconomic determinants of profitability for participation banks in Turkish banking sector. In terms of bank specific variables I include the ratio of equity to total assets, the ratio of net loans to total assets, log of real assets, and the non-performing loan ratio. GDP growth rate, log of foreign exchange rate, consumer inflation, and the real interest rate are the macroeconomic variables that are included in the model. I find that in terms of bank specific determinants of profitability equity to total assets ratio, log of real assets, and non-performing loan ratio are significant variables. Equity to total assets ratio has a positive impact on ROA while it has a negative impact on ROE. Big banks are expected to be more profitable and a higher non-performing loan ratio leads to a worsening in profitability indicators. Among the macroeconomic determinants of profitability log of foreign exchange rate and the real interest rate are highly significant and they both have a positive impact on bank performance.

¹A negative number means the bank has a short position in foreign exchange whereas a positive number implies it has a long position.

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Table I: Estimation Results For the Determinants of Profitability

Coefficients	ROA	ROE
ETA	0.036*	-0.722***
	(0.019)	(0.192)
NLTA	-0.007	-0.109
	(0.010)	(0.102)
NPL	-0.041*	-0.491**
	(0.022)	(0.208)
LRA	0.004**	0.039**
	(0.002)	(0.017)
GDP	0.000	0.000
	(0.000)	(0.001)
INF	0.000	-0.001
	(0.000)	(0.003)
FX	0.015**	0.149**
	(0.006)	(0.061)
RINT	0.002***	0.015***
	(0.000)	(0.003)
d1	-0.016***	-0.140***
	(0.001)	(0.010)
d2	-0.011***	-0.088***
	(0.001)	(0.010)
d3	-0.005***	-0.037***
	(0.001)	(0.010)
const.	-0.036**	-0.154
	(0.017)	(0.170)
#obs.	96	96

Notes: In terms of the statistical significance of the coefficient estimates * denotes the significance at 10% level, ** denotes significance at the 5% level, and *** denotes significance at the 1% level. The numbers in paranthesis are the respective standard errors.

Table II: Year-End Positions in Foreign Exchange (Thousand TL)

	2006	2007	2008	2009	2010
<i>BankAsya</i>	-40595	258071	413258	696489	304143
<i>Albaraka</i>	-483	3820	114337	18172	19922
<i>Turkiye Finans</i>	-18108	28130	450128	439186	719171
<i>Kuveytturk</i>	-51109	320470	582626	657342	440788

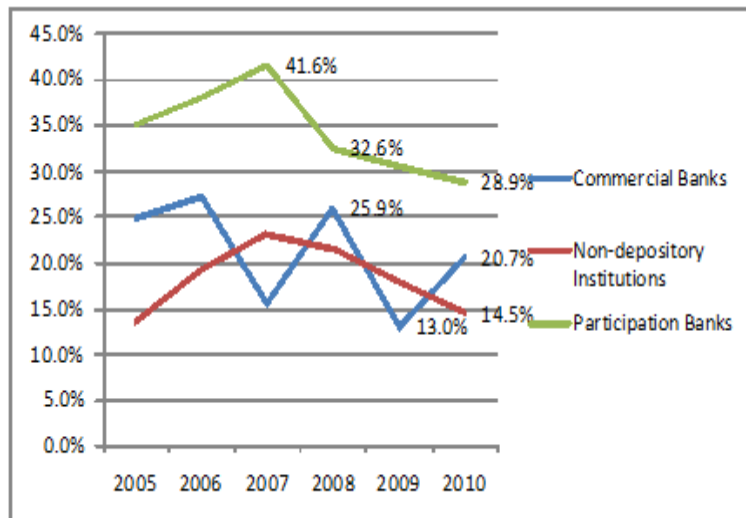


Figure 1: Annual Growth Rates of Asset Size for Commercial Banks, Non-depository Institutions, and Participation Banks

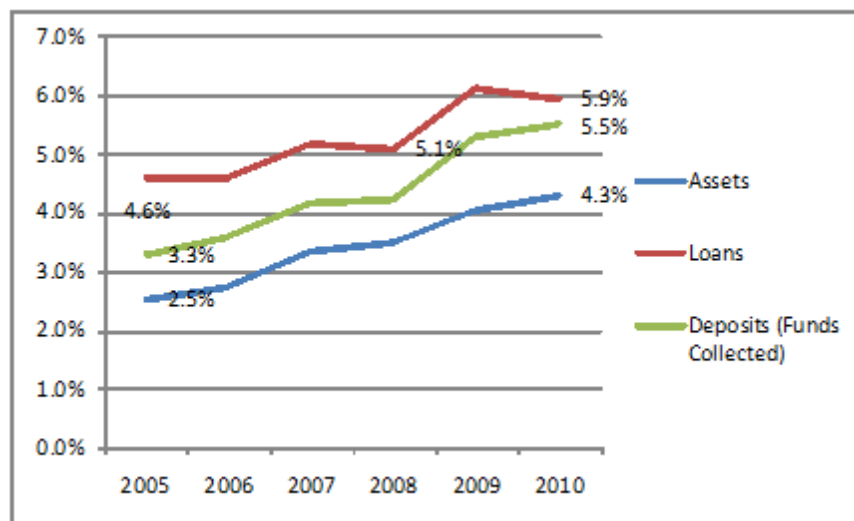


Figure 2: Share of Participation Banks in Banking Sector in terms of Assets, Loans, and Funds Collected