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WHY BANK MARKET VALUE TO BOOK VALUE RATIOS SO DIFFERENT: EVIDENCE FROM TURKISH BANKING SECTOR

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ABSTRACT: *In this paper we examine the market value to book value ratios for publicly traded banks in Turkish banking sector and investigate whether the bank fundamentals could explain the observed differences among the banks. We find that bank fundamentals play a significant role in explaining the differences in market value to book value ratios. The results reveal that banks with higher profitability and a higher ratio of non-interest revenue to total interest revenue tend to have higher market value to book value ratios. Banks with higher net loans to total assets ratio, a larger asset size, and a higher equity to total assets ratio are expected to have lower market value to book value ratios. We also find that public banks and foreign banks tend to have higher market value to book value ratio whereas participation banks and investment banks tend to have lower valuations.*

Keywords: *Market Value to Book Value, Turkish Banking.*
JEL Classification: G20, G21

1. INTRODUCTION

The unstable macroeconomic environment in Turkish economy characterized by high inflation and large budget deficits did not allow the banking system to perform its fundamental business, providing credit to the economy. Due to the very high public sector borrowing requirement the main business of the banking sector was to finance these deficits and a large portion of the total assets was composed of government securities. After the 2001 economic crisis the sector was subject to a large scale consolidation. Many insolvent banks were either liquidated or acquired by other banks. The changing macroeconomic environment caused banks to focus more on loans and

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the share of loans in total assets has steadily increased from 24% to more than 50%. Currently we can describe the Turkish banking sector with three important points. The first one is Turkish banks are highly profitable measured either by return on assets or return on equity. Figure 1 shows that the average return on equity in the sector after 2005 was around 17.7%. Secondly, Turkish banks are well capitalized and as can be seen in Figure 2 the average risk based capital ratio over the last five years is around 20.6%. Lastly, de- spite the increasing loan size Turkish banking sector has a well-managed loan portfolio characterized by low non-performing loans (NPLs) ratio. Figure 3 shows that over the last five years the NPLs ratio has been around 4% and mostly below 4%.

Figure 1: *Return on Equity Between 2002 and 2010*

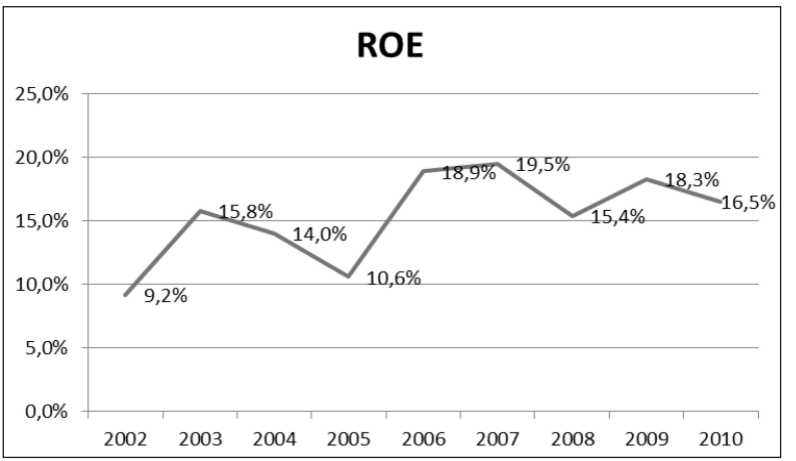


Figure 2: *Risk Based Capital Ratio*

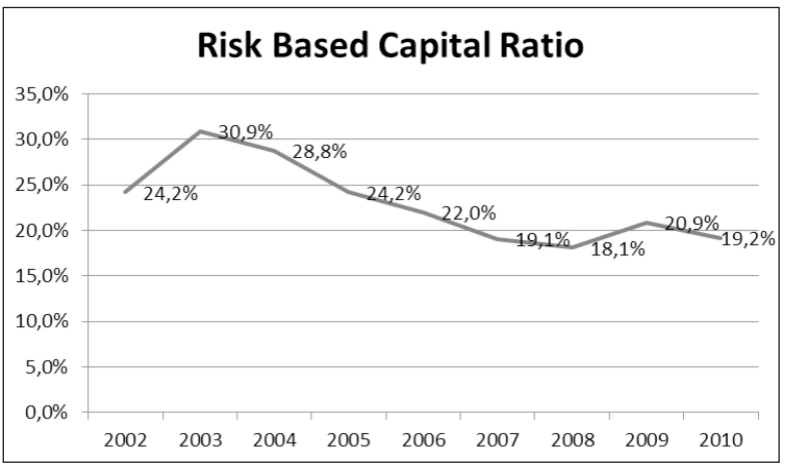
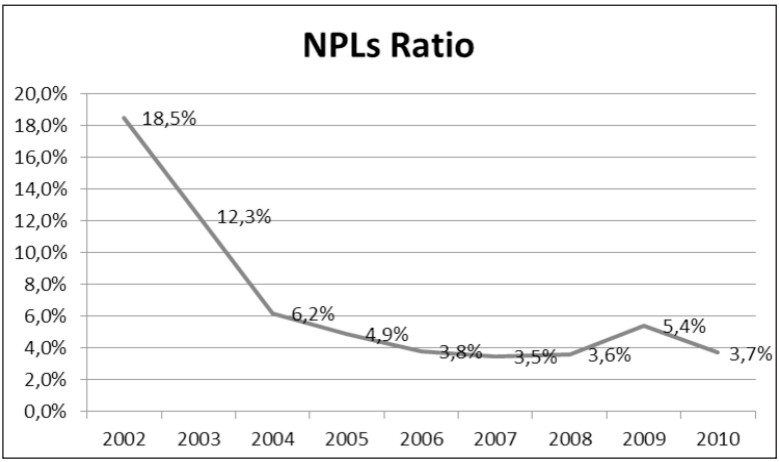


Figure 3: *Non-Performing Loans Ratio*



The developments in the Turkish banking sector after the 2001 economic crisis has attracted many foreign investors; for many banks about 90% of publicly traded shares are owned by foreign investors. However, there is an important amount of difference in the market value of publicly traded banks. In this paper we investigate whether bank fundamentals play a role in different valuations of publicly traded banks in Turkish banking sector. For this purpose we look at the market value to book value ratios for publicly traded banks over the period from 2007 to 2010 and analyze whether various bank fundamentals can explain the observed differences in the valuation of banks that are open to public. The results reveal that banks with higher profitability measured either by return on assets or return on equity and banks with higher non-interest revenue to total interest revenue ratio tend to have higher market value to book value ratios. On the other hand, banks with higher net loans to total assets ratio and equity to total assets ratio tend to have lower market value to book value ratios. We also find that public banks and foreign banks are likely to have higher market value to book value ratios whereas participation banks[3] and development banks tend to have lower market value to book value ratios compared to commercial banks.

The research related with Turkish banking sector generally focused on issues such as concentration, competition, and profitability. Abbasoglu, Aysan and Gunes (2007) and Macit (2011) investigated the concentration and com- petition in Turkish banking sector after 2001. Kaya (2002), Sayilgan and Yildirim (2009) and Macit (2012) analyzed the bank specific and macroe-conomic determinants of profitability in Turkish banking

[3] Participation banks in Turkey are a special type of banking which corresponds to interest-free banking at the international level. They provide mostly trade finance on the principle of credit sale or deferred payment sale. Participation name points out the depos- itors are indeed participates the profit and loss of the bank. There are four participation banks in Turkey, however only two of them are traded in the stock market, therefore only those two enters into our data set.

sector. Although there has been no research regarding the valuation of banks for Turkish banking sector there has been numerous research investigating the market value to book value ratios for banking sector and other sectors in different countries. Harris and Marston (1994) find that there is a positive relationship between the beta of a stock and its market value to book value ratio. They also find that growth plays a more important role than beta in explaining the market value to book value ratios. Variaya et al. (1987) analyze 400 industrial firms from 1978 to 1983 and find that profitability and growth has a significant impact on shareholder value. Most recently, Jordan et al. (2011) examine whether taking funds from US Treasury through the Troubled Asset Relief Program (TARP) play a role in market value to book value ratios along with other bank fundamentals by looking at 6604 bank stock from December 2006 to June 2009. They find that banks that take TARP funds tend to have lower market value to book value ratios. Yao and Liang (2005) investigate 32 publicly traded commercial banks in Taiwan and link their market value to book value ratios to their net interest margin, non-performing loans, bank efficiency ratios and other bank fundamentals. Further, Sorescu (2000) investigates whether the issuance stock options have any effect on the market value of the relevant stock for the period from 1973 to 1995 and finds that after 1981 the introduction of stock options has a negative impact on the underlying stock prices. Besides bank fundamentals policy changes also affect the market value to book value ratios of financial institutions. Park (2002) finds that Financial Institutions Reform, Recovery and Enforcement Act of 1989 led to about 20% decline in the market value of savings and loan associations.

The rest of the paper is organized as follows: Section 2 gives a brief description of the data. Section 3 gives the model and hypothesis and Section 4 presents the estimation results. Section 5 concludes.

2. DATA

The data we use is a quarterly data that covers the period from 2007Q1 to 2010Q4. The reason for starting from the first quarter of 2007 is to include all the banks in the system that are publicly traded. The bank fundamentals are calculated using unconsolidated financial statements which is obtained from Banks Association of Turkey database. The quarterly observations for the market value to book value ratios for the banks are calculated by taking the weekly averages of observed ratios for the relevant quarter. Table I shows the average market value to book value ratios for the publicly traded banks for the period between 2007 to 2010. The numbers reveal that there is a significant amount of difference in the valuation of the banks. One can see market value to book value ratios as high as 3.17 and at the same time see numbers as low as 1.03. This difference in the valuation of publicly traded banks ignites the question whether bank fundamentals play a role in determining bank valuations.

Table I: *The Average Market Value to Book Value Ratios For the Period Between 2007 to 2010*

Bank Name	MV/BV
Akbank	1.97
Albaraka	1.94
Alternatif Bank	1.28
Bank Asya	2.12
Finansbank	2.72
Denizbank	2.64
Garanti Bank	2.11
Halkbank	2.24
Isbank	1.93
Sekerbank	1.33
TEB	3.17
Tekstil	1.08
TSKB	1.03
Vakifbank	1.29
Yapi Kredi	2.10
Mean	1.93
Standard Deviation	0.61

There are 48 banks operating in Turkey, however only 16 of them are publicly traded. The table presents the average market value to book value ratios for these 16 publicly traded banks from 2007 to 2010.

Table II shows the composition of publicly traded banks in terms of their type and ownership structure. The table reveals that there are in total 16 banks that are open to public and a majority of these banks are commercial banks. There are also participation banks which are operating according to

Table II: *Composition of Publicly Traded Banks In Terms of Their and Type and Ownership*

	Private	Foreign	State-owned	Total
Commercial Banks	8	2	2	12
Participation Banks	1	1	0	2
Investment Banks	1	0	1	2
Total	10	3	3	16

There are three types of banks in Turkey, commercial, participation and investment banks. Participation is a special name given to interest-free banking in Turkey.

Islamic rules and there are two investment banks that are publicly traded. In terms of ownership structure there are ten private banks, three public banks and three foreign banks.

3. MODEL

In order to investigate whether bank fundamentals could explain different valuations of publicly traded banks measured by their market value to book value ratios, the following equation is estimated using feasible generalized least squares estimation:

$$MVBVit = \beta_0 + \beta_1^0 * BF_{it} + \beta_2 * PD_{it} + \beta_3 * FD_{it} + \beta_4 * KD_{it} + \beta_5 * IB_{it} + \varepsilon_{it} \quad (1)$$

$$MVBVit = \beta_0 + \beta_1^0 * BF_{it} + \beta_2 * PD_{it} + \beta_3 * FD_{it} + \beta_4 * KD_{it} + \varepsilon_{it} \quad (2)$$

where $MVBV_{it}$ represents the market value to book value ratio for bank i at time t. PD_{it}, FD_{it}, KD_{it}, and IB_{it} are dummy variables representing public banks, foreign banks, participation banks, and investment banks respectively.

BF_{it} is a vector of bank fundamentals that includes the ratio of non- performing loans to total loans (NPL), the ratio of net loans to total assets (NLTA), the ratio of equity to total assets (ETA), return on assets (ROA) as a proxy for profitability[4], the ratio of non-interest revenue to total interest revenue (NIR), and log of real assets (LRA). In the second model the ratio of net loans to total deposits (LTD) is also included as an additional explanatory variable. However, this caused us to drop the dummy variable for investment banks as these banks are not eligible to collect deposits.

Before getting into the estimation results following Jordan et al. (2011) we develop the following hypotheses that are going to be tested in the esti- mation results:

H1: There is a negative relationship between a bank's market value to book value ratio and its net loans to total assets ratio.
H2: There is a negative relationship between a bank's market value to book value ratio and its non-performing loans ratio.
H3: There is a negative relationship between a bank's market value to book value ratio and its equity to total assets ratio.
H4: There is a positive relationship between a bank's market value to book value ratio and its return on assets.
H5: There is a negative relationship between a bank's market value to book value ratio and its asset size.
H6: There is a positive relationship between a bank's market value to book value ratio and its ratio of non-interest revenue to total interest revenue.
H7: There is a positive relationship between a bank's market value to book value ratio and its ratio of net loans to total deposits.

[4] We also use return on equity (ROE) as an alternative indicator of profitability.

4. ESTIMATION RESULTS

Market value to book value ratio known as price-to-book ratio or market- to-book ratio is more important for banking industry compared to other industries as most assets and liabilities of banks are constantly valued at market levels. We have three regressions representing two models to measure the changes in the market-to-book ratio. The results of the regressions are listed in Table III . The first two regressions only differ in terms of their choice of profitability measure. We have used return on assets in the first one and return on equity in the second one and both of them proved to be significant indicators of market-to-book ratio. When return on assets increase by one percent, market-to-book ratio goes up by 11 percentage points. According to our results return on assets is the leading indicator to generate the highest rise in the market-to-book ratio.

Table III: *Regression Results*

Variables	Reg1	Reg2	Reg3
Bank Fundamentals			
NPL	-3.165	-3.156	-1.922
	(2.223)	(2.234)	(2.276)
NLTA	-5.054***	-5.022***	-7.140***
	(0.771)	(0.768)	(0.999)
ETA	-6.373***	-5.505***	-7.988***
	(1.686)	(1.657)	(1.782)
ROA	11.760**	-	12.280**
	(5.065)	-	(5.329)
ROE	-	1.442**	-
	-	(0.622)	-
LRA	-0.377***	-0.368***	-0.440***
	(0.075)	(0.074)	(0.078)
NIR	8.804***	8.794***	9.061***
	(0.971)	(0.976)	(0.999)
LTD	-	-	0.872**
	0.374***	-	(0.366)
Dummy Variables			
PD	(0.144)	0.355**	0.461***
	1.007***	(0.143)	(0.146)
FD	(0.093)	1.013***	1.033***
	-0.460***	(0.093)	(0.092)
KD	(0.144)	-0.440***	-0.211
	-0.361*	(0.145)	(0.185)
IB	(0.189)	-0.329**	omitted
		(0.187)	-
#observations	240	240	224

This table presents the regression results. 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 the parenthesis are the respective standard errors.

Notations: The ratio of non-performing loans to total loans N P L, the ratio of net loans to total assets N LT A, the ratio of equity to total assets ET A, return on assets ROA, the return on equity ROE, the ratio of non-interest revenue to total interest revenue N I R, log of real assets LRA and loans to total deposits LT D. P D, F D, K D, and I B are dummy variables representing public banks, foreign banks, participation banks, and investment banks respectively.

Significantly positive as well, one percent increase in return on equity brings forth 1.4 percentage point increase in market-to-book value. Asset profitability of a bank is central for a higher market valuation. Market considers a management which can generate higher return on assets to generate a higher value than the accounting value of a bank. Therefore we H4 is supported. This result is consistent with the findings of Variaya et al. (1987) as they have stressed the importance of profitability on shareholder value.

As expected in H2 non-performing loan ratio has a negative impact on market-to-book value, however its coefficient is not significant in our analysis in contrast with Yao and Liang (2005). In their research on Taiwan, they have identified non-performing loans to be linked to market to book ratio.

When we test H1, we have observed net loans to total assets ratio signif- icantly deteriorate the market-to-book value. When net loans receives one percent more share in total assets, the market-to-book ratio goes down by 5 percentage points. So H1 is supported. On the other hand equity to total asset ratio in H3 measuring the capital adequacy of a bank has also signifi- cant negative relationship with market-to-book ratio. One percent increase in it depreciates market-to-book ratio by 6 percentage points. The negative relationship of these two indicators might be seen conflicting. However if you consider market's valuation, it is reasonable to have both as a negative indicator. Market always requires the assets to be utilized in the most secure and efficient way. If the share of equity in the total assets increases, since loans are the means for a bank to make profit it means the bank is wasting its resources by not generating a profit on them. Yet if the bank increases the share of loans in the assets, it is accumulating a higher risk as loans always have the risk of default. Therefore the market considers both of them as a threat to a higher valuation.

The structure of Turkish banking sector has entered into our model through bank types. Public and private banks present the first level of bank ownership distinction in the market. Second level of ownership distinction is valid for the private banks. They are decomposed as locally and foreign owned banks. Apart from the ownership, in the Turkish banking system there is a distinction based on the services provided by the banks. Different from the conventional ways of doing banking, Turkish banking system offers interest-free banking services through participation banks.

Our results suggest that being a public bank has a positive implication in the market. The coefficient on public bank dummy is significantly positive. Public banks, considering their relationship with the state, considered to be more secure in the market. On the other hand this result can also signal the market does not associate any clumsiness to the public banks which have always been a prejudice against public banks in Turkey. The same significant positive relationship exists for foreign banks as well. Being a foreign bank by itself increases the market-to-book value of the bank compared to its peers. Since foreign banks are usually the subsidiaries of top international banks, they provide a security for the market evaluation. The case for participation banks and investment banks are the opposite in our analysis. Investment banks dummy loses its significance

compared to other dummy variables however its sign is negative. Both participation and investment banks are considered less valuable by the market, therefore their market-to-book ratio is lower.

As a measure of the size of the bank, we have used log of real assets for the bank as an indicator of market-to-book value. The coefficient of this indicator is significantly negative, proving the market considers smaller banks to be more valuable. As the size of the bank gets bigger, it loses its edge to generate more value. The market expects smaller banks to create more value with the given set of assets or in other words more than its accounting value. Therefore H5 is supported.

Another indicator that has significant and positive impact is the ratio of non-interest revenue to total interest revenue. Especially during the period of lower interest rates, non-interest revenue has gained a higher importance. We are using this indicator to test H6. Our results suggest that if the ratio of non interest revenue goes up by one percent the market-to-book ratio goes up by 8 percentage points. Besides supporting H6, this result also shows after return on assets as a measure of profitability, non-interest revenue brings forth the highest increase in market-to-book value for a bank.

Our third regression adds one more indicator to the model in order to test H7, which is loans to total deposits ratio. Loans to total deposits ratio is indeed a ratio to evaluate the liquidity of the bank. If the loans have a higher share in the deposits, the bank might not have enough liquidity in case of a withdrawal. On the other hand, if the share of loans is lower, than it means the bank might not be earning as much as it could do. Our results from the third regression suggest that the market considers a higher loans to deposit ratio as a constructive indicator. Loans to deposits ratio has a significant positive effect on market-to-book ratio. That means the market rewards higher earning potential. Therefore H7 is supported as well.

In the view of the regression results provided, all of the seven hypotheses we have constructed have been supported.

5. CONCLUSION

This study explores the indicators behind the difference between market valuation and accounting valuation of a bank. The value of the bank in its financial statements represent the accounting value of its assets and liabilities. However if the bank is traded in the stock market, mostly we observe the share price of the bank differentiates from the book value per share, or if we put it differently, market capitalization differs from the book value. That is the case for all companies traded in the stock market, however this differentiation is especially critical for banks, as banks are different from other companies. They are mostly holding financial assets which are already val- ued at the market prices. Therefore we can consider the difference between market and book value of a bank as market's perception of the management team to generate a higher value from the assets

otherwise equal to a defined accounting value. In the times of financial distress as we have observed during last couple years, the market might even value a bank at a price lower than its book value. What we understand from this situation is that the market considers the financial assets, bills and notes, to even worth less than what is stated in the book. Therefore the determination of the forces behind the market valuation of a bank has been more important than ever.

Our foremost contribution in this study is to research on the most recent data of Turkish market. After the new regulations introduced in 2001 and a more stable decade following that, in 2012 Turkey is one of the interesting subjects of the economic research.

To measure the distinction between market valuation and accounting val- uation, we have used a traditional tool, market value to book value ratio. There are two ways to calculate this ratio, either you can divide market capitalization of a company by its book value, or you can divide the stock price of the company by its book value per share. Both calculations provide the same ratio. It is named as market-to-book ratio or price-to-book ratio.

First of all, in terms of the type of the banks, our study shows that, being a public bank or a foreign bank is considered positive by the market, however participation banks and investment banks tend to be valued negatively, thus they have lower market-to-book ratios.

Second, the size of the bank measured by its real assets, is a negative indicator with respect to market valuation of the bank. As the size of the bank increases the market-to-book ratio goes down.

Third, profitability of the bank measured by the return on assets is the most significant and the most effective positive indicator with the highest numerical impact on the market-to-book ratio. Return on equity has positive significant impact as well. Therefore profitability is the management's first tool to affect market valuation of a bank.

Fourth, capital adequacy is a significant positive indicator for the market. However the market also rewards a bank that utilizes more earning potential. Even if the bank needs to be adequately capitalized, it is expected to be loaned up with respect to total assets and total deposits as well. It is fair to say, liquidity constraints are secondary for the market preferences.

Fifth, the market punishes an increase in the non-performing loans ratio.

Sixth, the market rewards non-interest income generation. Interestingly, it is the second highest impact indicator in our study of Turkish banks. This might be due to the decline in the interest rates through the period we have extracted our data set, during which interest rate margin has been contracted.

These results have proved our expectations and provided a road-map for the bank managers who are aiming to increase market value, and for the equity investors who are searching for high potential bank stocks in Turkish market.

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