INTERNAL DETERMINANTS OF PROFITABILITY
IN TURKISH BANKING SECTOR

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Abstract
The aim of this study is to identify the internal determinants of profitability of Turkish banks in the period of 2002-2009. The importance of the study derives from the fact that finding out the mentioned determinants is a necessity for both the managers of Turkish banks who successfully operates -even in times of financial crisis-, and existing (and potential) national and international investors. Findings of the study indicate that capital efficiency and size affect profitability positively, while liquidity and operating costs negatively.

I. Introduction
November 2000 (also known as interest crisis) and February 2001 (referred as exchange rate crisis) crises have affected Turkish Banking Sector very negatively and large sums of losses have been observed in banks’ financial statements. Eventually, in May 2001 a “program for transition to strong economy” (“Program”) was announced in order to -in brief- restructure the banking sector.

Main components of the Program can be summarized as (1) strengthening of the financial structure of the financial sector, mainly the state-owned banks; (2) figuring out the problems related with the banks under the Deposit Insurance Fund; (3) re-financing (mostly, self-financing) privately-owned banks and (4) realizing the basic structural regulations that will ensure efficiency, flexibility and transparency in all economic units (Bumin, 2009).

Turkish economy has experienced a rapid deceleration in 2008, following the stable and high-growth performance recorded since 2002. Gross domestic product

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in real terms -which had continued to grow starting from the last quarter of 2001-, has contracted abruptly in the last quarter of 2008. Other important developments in economy in 2008 may be summarized as fluctuation in inflation and interest rates; high savings deficit stemming from both public and private sectors; expansion in budget deficit; decline in net capital inflows; short-term maturity of domestic savings; depreciation of Turkish Lira in the last quarter; deterioration of expectations and the increase in risks, notably in loans (Banks in Turkey, 2008).

The underlying reason of this slowdown in economic activities can be associated with the phenomenon that instability and the downward move that started in the money and capital markets of the United States of America (USA) towards the end of 2007 assumed a global character in 2008 by having contagion effects on the world economy, and having particularly negative effects on countries with close economic relations with the USA, as well as on European Union, and other developed and developing countries.

Even in 2009, the global economy has remained under severe stress, as the crisis has broadened in both developed and developing economies. Moreover, this protracted period of the deep and destructive impacts on all economies of the countries has been considered as a “global crisis” by many economists (Banks in Turkey, 2009). As a matter of fact, during this period, the world output and trade volume has declined at the highest rate ever seen since the last 40 years, also with high rate of decline in wealth. Eventually, the financial sector had not been able to perform its intermediary functions and the markets had become inefficient in many countries.

Global crisis has also affected the financial sector substantially in Turkey. However, besides sound balance sheets, successful risk diversification and risk management by banks, due to measures taken by relevant authorities and the effective public supervision, the Turkish Banking Sector has stayed safe and sound in 2009, without creating any burden on the public. It has continued to support the financing of economic activities. So to say, told repeatedly both domestically and abroad in 2009, the banking sector has been “the best story of Turkey”. Total market value of financial institutions has risen by 133% to $96 billion as of December 2009, as compared the end of 2008. Also, the return on equity fact of financial institutions has risen by 2.8% points to %18.3; while net profit margin of the same period has increased by 52% and reached to $19.5 billion (Banks in Turkey, 2009).

The aim of this study is to identify the internal determinants of profitability of state-owned and privately-owned banks -among the deposit banks- operating in Turkey for the period of 2002-2009. The identification of such determinants is vital for the bank managers operating successfully -even in times of crises-, and existing (and potential) national & international investors. After the Introduction of this totally five-parted study, Literature Review is presented. Data set, sample and model are given in the Methodology. After the 4th part about Empirical Findings, in the 5th -that is, the last- part of the study, a brief Conclusion is made according to the empirical findings.

1 The concept of “internal determinant” is explained in “Literature Review” of the study.
II. Literature Review

The related literature about the determinants of bank profitability consists of one group of studies (for example, Berger et. al., 1987; Berger, 1995; Neely and Wheelock, 1997; Barajas et. al., 1999; Guru et. al., 2000; Atanasieff et. al., 2002; Mamatzakis and Remoundos, 2003; Kosmidou et. al., 2005; Kosmidou, 2008) focusing on understanding of bank profitability in a particular country; and another group of studies (for example, Haslem, 1968; Short, 1979; Bourke, 1989; Molyneux and Thorton, 1992; Demirgüç-Kunt and Huizingha, 1999; Demirgüç-Kunt and Huizingha, 2000; Abreu and Mendes, 2001; Bikker and Hu, 2002; Bashir, 2003; Staikouras and Wood, 2003; Goddard, 2004) concentrating their analyses on a panel of countries. Nonetheless, common point of these studies is that bank profitability is undertaken by financial ratios such as return on assets (ROA) and/or return on equity (ROE) (Sufian and Chong, 2008).

However, it may be more appropriate to classify the related literature according to internal and external determinants of bank profitability used in the studies rather than according to studies applied on a particular country or on a panel of countries. Internal determinants that originate from banks’ financial statements can be considered as micro or bank-specific determinants of bank profitability. The external determinants are variables that are not related to bank management but reflect the economic and legal environment that affects the operation and performance of financial institutions (Athanasoglou et. al., 2008). As the aim of the study is -as expressed in Introduction- to determine the internal determinants of bank profitability, the Literature Review consists of studies related with only the internal determinants.

The internal determinants that are directly affected from bank management’s decisions are mostly determined by using financial information gathered from banks’ balance sheets and/or income statements. A bank’s balance sheet is a reflection of its management policies and decisions. So, ratios derived from balance sheet can be considered as determinants of earning power and cost structure of a bank. Ratios derived from banks’ income statements are used to evaluate operating performance and also are indicators of bank’s management efficiency. Seen from this aspect, it is possible to mention that studies regarding with internal determinants of bank profitability are mostly related with balance sheet (for example, Bourke, 1989; Sinkey, 1992; Berger, 1995; Anghazo, 1997; Abreu and Mendes, 2001; Bashir and Hassan, 2003; Staikouras and Wood, 2003) and income statement (for example, Bourke, 1989; Molyneux and Thorton, 1992; Guru et. al., 2000; Gischer and Juttner, 2001; Ben Naceur, 2003; Jiang et. al., 2003) items. In summary, these determinants are related with size (bank size), risk management, liquidity, management efficiency (cost management) and capital adequacy (capital structure) and etc.

Size, generally expressed in terms of total assets, shareholders’ equity or total deposits, is introduced to account for existing economies or diseconomies of scale in the market (Athanasoglou et. al., 2008). In one of the pioneering studies made
by Short (1979), size is considered as an important factor for the capital adequacy of a bank, as relatively large banks tend to raise less expensive capital and, hence, seem to be more profitable. In several studies of Smirlock (1985), Boyd and Runkle (1993), Akhavein et al. (1997), Bikker and Hu (2002), and Molyneux and Wilson (2004), a significant positive relationship between size and profitability has been observed. However, some other researchers suggest that little cost savings can be achieved by increasing the size of a banking firm (Berger et al., 1987), which suggests that eventually large banks could face scale inefficiencies.

Risk management is another important field of study in the banking sector. Poor asset quality and low levels of liquidity are the two main causes of bank failures. Especially during periods of increased uncertainty, financial institutions may decide to diversify their portfolios and/or increase their liquid holdings to reduce risk. So, it is possible to divide risk as credit risk and liquidity risk. Empirical findings of studies dealing with the relationship between the level of liquidity and profitability in banks are mixed. While Molyneux and Thornton (1992) find a negative and significant relationship between the level of liquidity and profitability, Bourke (1989)’s and Eichengreen and Gibson (2001)’s findings are contrary. According to Eichengreen and Gibson (2001), decrease in invested funds on liquid assets increases profitability. Another related finding is that the effect of credit risk on profitability is negative (Duca and McLaughlin, 1990; Miller and Noulas, 1997). This finding may be due to the fact that the more financial institutions are exposed to high-risk loans, the higher is the accumulation of unpaid loans, implying that these loan losses have produced lower returns to many commercial banks.

In respect of management efficiency, another important determinant of bank profitability is expenses. The argument that lowering expenses in financial institutions increases firstly efficiency, then -depending on this- profitability is supported by empirical findings of many studies such as Bourke (1990)’s. However, the finding of Molyneux and Thornton (1992) is contrary to Bourke (1990)’s. High profitable banks invest relatively more on human capital. In this scope, according to them, it is possible to mention that high-cost, but qualified staff is about to accord advantages for such banks.

Though capital structure (adequacy) is an important determinant of performance in financial institutions, its effect on bank profitability is ambiguous. It is possible to mention that leverage should have negative effects on profitability, as relatively low capital ratios will cause riskiness to increase (Berger, 1995). However, profitability may also be increased by reducing cost of capital via increasing the amount of shareholders’ equity (Molyneux, 1993). Also, increase in amount of equity may also reduce costs related to financial distress and eventually increase expected returns (Berger, 1995).
III. Methodology
In Methodology, firstly information regarding with data set, sample selection, dependent and independent variables is given. Then, the model of the study with the mentioned variables is presented.

3.1. Data and Sample Selection
In accordance with the above-mentioned aim of the study, a sample of state-owned and privately-owned banks -among the deposit banks- operating in Turkey for the period of 2002-2009 is analyzed. Financial data is gathered from Banks in Turkey almanacs published by The Banks Association of Turkey.

3.2. Variables
One dependent and five independent variables of the model are given below.

3.2.1. Dependent Variable
The dependent variable of the model is return on assets (ROA) similar as used in the studies of Abbasoğlu et. al. (2007), Ben Naceur and Goaied (2008), and Kosmidou (2008). ROA is the basic indicator of a bank manager’s capability to make profit form bank’s financial and real assets (Golin, 2001; Hassan and Bashir, 2003). According to Rivard and Thomas (1997), ROA is the most robust variable implying bank profitability, as it is not influenced from high equity multipliers and evaluates the return-generating capacity of entire assets of a bank. In the model, return on assets is denoted as ROA and calculated as below:

\[
ROA = \frac{\text{Net Profit (Loss)}}{\text{Total Assets}}
\]  

(1)

3.2.2. Independent Variables
Similar to the variables discussed in Literature Review, the independent variables included in the model are related with size (bank size), (credit) risk management, liquidity, (cost) management efficiency and capital structure (adequacy).

Bank size variable (denoted as SIZE) is calculated by taking the natural logarithm of total assets:

\[
\text{SIZE} = \ln(\text{Total Assets})
\]  

(2)

Credit risk management variable (denoted as RISK) is calculated as:

\[
\text{RISK} = \frac{\text{Total Loans and Receivables}}{\text{Total Assets}}
\]  

(3)

Liquidity variable (denoted as LIQ) is calculated as:

\[
\text{LIQ} = \frac{\text{Liquid Assets}}{\text{Total Assets}}
\]  

(4)

Cost management efficiency variable (denoted as EFF) is calculated as:

\[
\text{EFF} = \frac{\text{Operating Expenses}}{\text{Total Assets}}
\]  

(5)

Finally, capital adequacy variable (denoted as CAP) is calculated as:

\[
\text{CAP} = \frac{\text{Shareholders’ Equity}}{\text{Total Assets}}
\]  

(6)
3.3. The Model

The model including the dependent and independent variables mentioned above is given below:

\[
ROA_i = \alpha_i + \beta_{i1}(SIZE)_i + \beta_{i2}(RISK)_i + \beta_{i3}(LIQ)_i + \beta_{i4}(EFF)_i + \beta_{i5}(CAP)_i + \varepsilon_i \quad (7)
\]

Where;

- \( ROA_i \) = Ratio of Net Profit (Loss) to Total Assets for Bank i,
- \( SIZE_i \) = Natural Logarithm of Total Assets for Bank i,
- \( RISK_i \) = Ratio of Total Loans and Receivables to Total Assets for Bank i,
- \( LIQ_i \) = Ratio of Liquid Assets to Total Assets for Bank i,
- \( EFF_i \) = Ratio of Operating Expenses to Total Assets for Bank i,
- \( CAP_i \) = Ratio of Shareholders’ Equity to Total Assets for Bank i,
- \( \alpha_i \) = Constant,
- \( \beta_{i1:5} \) = Coefficients of Variables 1 thru 6, and
- \( \varepsilon_i \) = Residual Term.

IV. Empirical Findings

Descriptive statistics are presented in Table 1. As seen, the observation number is 112 and for the period of 2002-2009, average return on assets for banks included in the sample is 1.950%.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>1.950</td>
<td>0.921</td>
<td>112</td>
</tr>
<tr>
<td>CAP</td>
<td>16.922</td>
<td>9.012</td>
<td>112</td>
</tr>
<tr>
<td>RISK</td>
<td>46.892</td>
<td>18.782</td>
<td>112</td>
</tr>
<tr>
<td>LIQ</td>
<td>37.783</td>
<td>21.670</td>
<td>112</td>
</tr>
<tr>
<td>EFF</td>
<td>3.557</td>
<td>1.694</td>
<td>112</td>
</tr>
<tr>
<td>SIZE</td>
<td>12.770</td>
<td>3.957</td>
<td>112</td>
</tr>
</tbody>
</table>

Some empirical results are given in Table 2 and Table 3, respectively.

Table 2: Empirical Results of the ROA Model

<table>
<thead>
<tr>
<th>Model</th>
<th>( R^2 )</th>
<th>Adjusted ( R^2 )</th>
<th>Standard Error of Estimation</th>
<th>( F )</th>
<th>Sig.</th>
<th>Durbin-Watson Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>0.386</td>
<td>0.357</td>
<td>0.738</td>
<td>13.300</td>
<td>0.000a</td>
<td>2.213</td>
</tr>
</tbody>
</table>

a – Explanatory Variables: (constant), SIZE, RISK, LIQ, EFF, CAP
b – Dependent Variable: ROA
In a mathematical equation, the result of the multiple regression model is as below:

\[
\text{ROA}_i = \alpha_i + (0.291)(\text{SIZE})_i + (-0.159)(\text{RISK})_i + (-0.655)(\text{LIQ})_i + (-0.708)(\text{EFF})_i + (1.368)(\text{CAP})_i + \varepsilon_i
\]

(8)

Empirical findings indicate that CAP, LIQ, EFF and SIZE have statistically significant effects of the dependent variable, ROA. However, between ROA and the other independent variable regarding credit risk management (RISK), there does not exist a statistically significant relationship.

While the relationships between CAP and ROA ($\beta=1.368$; sig.$=0.000$); and SIZE and ROA ($\beta=0.291$; sig.$=0.001$) are statistically positive; the relationships between EFF and ROA ($\beta=-0.708$; sig.$=0.000$); and LIQ and ROA ($\beta=-0.655$; sig.$=0.000$) are statistically negative. That is, while the weighting of shareholders’ equity in total sources of a bank increases; and while the total assets of a bank increase, its profitability increases, too. If to be expressed more clearly, any increase in bank’s capital adequacy and size cause its profitability to increase. However, in cases where a bank has excessive liquid assets, and where its operating expenses increase; its profitability decreases.

To test first-order autocorrelation among the error terms, Durbin-Watson statistics is used. Durbin-Watson value of 2.213 indicates that error terms are serially independent. Multicollinearity is tested by Variance Inflation Factor (VIF). VIF values for CAP, RISK, LIQ, EFF and SIZE are 6.498; 4.471; 4.470; 3.445 and 1.296, respectively. These figures indicate low levels of multicollinearity among the independent variables, as the acceptable limit of VIF is 10 (See, Hair et. al., 1998).
V. Conclusion
The existence of a healthy and financially solid banking system is one of the fundamentals of sustainable economic growth. Today, it is possible to mention that Turkish Banking Sector shows a successful performance in spite of the global financial crisis affecting the worldwide economies and also banking systems since 2008. So, it has become a necessity to identify the determinants of profitability of Turkish banks in order to minimize the negative effects of the crisis and to ensure sustainability of financial stability. This necessity also shapes the aim of the study. In this scope, the determinants of bank profitability has been identified in a multiple regression model by using a sample consisting of state-owned and privately-owned banks -among the deposit banks- operating in Turkey in the period of 2002-2009.

One empirical finding is that capital adequacy affects the profitability of Turkish banks positively. As the variable regarding capital adequacy in the model is “the ratio of shareholders’ equity to total assets”, it can be concluded that banks financed by relatively high amounts of equity, that is, banks with relatively low leverage ratios tend to be more profitable. In inefficient markets, as banks with solid financial structures may finance their assets with lower levels of debt, it is not surprising that the funding costs of these banks are relatively low due to decrease in expected bankruptcy costs.

Another variable affecting the profitability of Turkish banks positively is size. This finding may be explained in two different ways. Firstly, banks having relatively large amounts of assets mostly dominate a larger portion of the market and so they seem more reliable. This reliability enables such banks to raise less expensive capital and causes their profitability to increase. Other explanation is related with economies of scale (See, Hauner, 2005; Pasiouras and Kosmidou, 2007; Staikouras et. al., 2008). According to this, as the unit costs of large scale banks tend to be relatively low, their profitability ratios are expected to be higher.

“Increase in operating expenses causes decrease in profitability of Turkish banks” is another empirical finding of the study. From this point of view, it may be assumed that Turkish banks are not able to manage and/or control their expenses efficiently. The underlying reason may be associated with the fact that Turkish financial system has not matured yet.

Another variable negatively affecting profitability is liquidity. Increase in liquidity, that is, increase in the amount of liquid assets reduces bank’s liquidity risk. Banks reduce credit interest margins, and so profitability decreases. Another point about liquidity is that liquidity-profitability relationship of banks may be seasonal. Though, it is possible to make a comment that banks’ will to invest in liquid assets is a rationale behavior in times of uncertainty, to invest in such assets in times of certainty cannot be considered as rationale (Kaya, 2002).

Another independent variable in the model regarding with credit risk is referred as $RISK$ and is calculated by dividing total loans and receivables to total assets. However, there does not exist any statistically significant relationship between this
variable and profitability.

Consequently, in order to increase their profitability, Turkish banks should attempt to strengthen their capital structures and grow. As these attempts will increase trust between banks and current (and also potential) investors, banks will have opportunity to raise less expensive capital. Empirical findings also indicate that other ways to increase profitability are to decrease operating expenses and lessen investments in liquid assets. However, it should never be forgotten that these conclusions may be considered to be valid only through the empirical findings of this study.
Kaynakça


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