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Performance Assessment In Banking Sector Through Analitical Hierarchy Process: The Case Of Public Banks, Private Commercial Banks And Participation Banks

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Abstract

In banking sector, where there is a severe competition, stakeholders of the banks (investors, customers, employees, partners, regulatory institutions etc.) pay great attention to performance of the bank when they choose to put their money. Accordingly, it is important to assess performance of the banks and to determine the criteria that may improve the performance of these institutions.

In this study, performance analysis has been made with reference to financial statements of the years between 2009/12-2013/12 belonging to the public, private commercial (first four private commercial banks according size of assets ranking) and participation banks operating in Turkey; as well as some financial ratios from those statements. With the aim of assessing performance of the banks, Analytical Hierarchy Process approach has been used. Multivariate discriminant analysis model and discriminant function created by Altman have also been used for performance assessment. According to the results of the study, it has been concluded that that Vakiflar Bankasi among the public banks; Akbank among the pri-

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vate commercial banks; and Kuveyt Türk among the participation banks have the highest performance compared to their competitors.

Keywords: Analytical hierarchy process, performance assessment, public banks, participation banks; commercial banks

I. Introduction

Banking sector, which acts as a mediator by transferring surplus funds to the ones in need of funds, is an integral part of Turkey's economy as well as financial bodies. Considering the previous financial crises, it has been seen that crisis originating from or impacting this sector were deeply felt, yet it was easier to overcome the crisis through the period when banking sector is strong. This situation is an evidence for the significance of banking sector for Turkey's economy. Savers, who entrust their surplus funds to the banks; partners of the banks as the other stakeholders of the banks; stock market investors; customers receiving loans from banks; national or foreign credit institutions; and regulatory institutions such as BDDK, and Central Bank want to be informed about financial performance analysis of the banks to see their financial structure.

For a reliable performance assessment of a decision making-unit containing multiple input-outputs such as banking system, all the criteria must be analyzed at once and within the same system. Yet, all the criteria are not transformed into a common unit. Therefore, in this phase, while there is the possibility to disintegrate the problem and to analyze it in the form of sub-systems; AHP method, which is a multiple purpose and multiple criterion decision making method, is capable of putting different emphasis on different criterion on the subject and allowing to use financial criteria, and is also capable of showing interactions between various factors, should be devised (B1t1rak, 2010).

Considering the studies focused on the performance analysis of the banking sector, it has been seen that different methods are devised; and many studies were conducted on the application of AHP to the banking sector. Using AHP method (Saaty, 1994; Millet and Saaty, 2000; Hafeez et al, 2002), an Analytical Hierarchy Performance Model for assessing the performance of the banks has been developed. Bitirak and Çetin made a profitability analysis through AHP method for the financial performance assessment of the banks (2010), using the financial ratio of private commercial banks and participation banks between 2005 and 2007.

Albayrak and Erkut suggested a bank performance analysis model (2005) by AHP method by using financial and nonfinancial (service quality and customer satisfaction) instruments together. Secme et al. (2009) have evaluated the performance of five different banks in Turkish banking sector based on financial and nonfinancial data (data from 2007) used AHP and TOPSIS methods together. Dincer and Görener (2011) have grouped the public, private and foreign-invested banks in Turkey, and analyzed their financial performance between the years 2002-2008 by using AHP and VIKOR method. Dincer and Hacıoğlu (2013) assessed customer satisfaction performance of the banks, which have shares in Turkish stock market, with reference to various criteria by using AHP and VIKOR methods. Ustasüleyman (2009) has assessed the service performance of the banks by using AHP and TOPSIS methods and by defining the factors determining the service quality in commercial banks. Ta and Har (2000) have conducted a study about the satisfaction of the bank customers based on non-financial data in order to show that AHP can be applied when making a decision about the selection of the bank. İç and Yurdakul (2000) have created a scoring model by using AHP method for assessing qualitative and quantitative factors all together including subjective creditworthiness of the companies, state of the sector they operate in and their credit collaterals.

In this study, based on Analytical Hierarchy Performance model, performance analysis has been made with reference to financial statements of the years between 2009/12-2013/12 belonging to the public, private commercial (first four private commercial banks according to the size of assets ranking), and participation banks operating in Turkey; and with reference to some financial ratios from those statements. The aim of this study is to analyze criteria to find out which criteria is decisive in financial performance of the banks and to define the banks with highest performance within three banking categories.

II. Methodology

In this study, considering three banking categories (public banks, private commercial banks and participation banks), performance of the banks from three categories in four years period between 2009-2013 were compared by using AHP method. First of all, public banks, participation banks and the first four private commercial banks according to the size of their assets ranking (between the years 2009 and 2013) operating in Turkey were defined. These banks made subject to the performance assessment in this study are as follows; public banks are Halk Bank, Vakıflar Bank, and Ziraat Bank; participation banks so called katılım bankaları are Albaraka Türk, Bank Asya, Kuveyt Türk and Türkiye Finans Katılım Bank; and private commercial banks are Akbank, Garanti Bankası, İş Bankası and Yapı ve Kredi Bank, respectively.

Financial data and financial ratio obtained from these financial data are usually used to assess the performance of the banks. In the present study, year-end financial data of the banks between the years 2009-2013 were used (Annex 1,2,3) and the related data were obtained from websites of Turkish Association of Banks (TBB) and Turkish Association of Participation Banks (TKBB) and banks. For each bank, cumulative average of financial data belonging to four years between 2009 and 2013 was estimated and used. Financial ratio levels were defined and performance assessment has been made by using Multivariate discriminant analysis model and discriminant function created by Altman with the aim of assessing performance of the banks based on Analytical Hierarchy Process (AHP).

Financial ratios (performance criteria) used in the performance assessment of the banks and minor rates (sub criteria) are shown on Table 1.

| Performance Criteria | Ratios (sub criteria) | | | |
|--------------------------------------|--|--|--|--|
| | S1: Equity / (credit + market + Operation Risk Amount) | | | |
| Capital Adequacy (SY) | S2: Equity / Total Assets | | | |
| | S3: (Equity - Fixed Assets) / Total Assets | | | |
| | S4: Equity / Total Deposits | | | |
| | A1: Total Loans / Total Assets | | | |
| Asset Quality (AK) | A2: (Total Loans – Non-Performing Loans Net) / Total Loans | | | |
| | A3: Special Provisions / Non-Performing Loans | | | |
| | A4: (Total Assets-Fixed Assets) / Total Assets | | | |
| I :: diter (I) | L1: Liquid Assets / Total Assets | | | |
| Liquidity (L) | L2: Liquid Assets / Short-Term Liabilities | | | |
| $D_{\mu\nu}f_{\mu\nu}(V)$ | K1: Net Profit / Total Assets | | | |
| Profitability (K) | K2: Net Profit / Shareholders' Equity | | | |
| | G1: Net Interest Income / Total Assets | | | |
| Income-Expenditure Structure (GG) | G2: Net Interest Income / Total Loans | | | |
| | G3: Non-Interest Income / Total Operating Income | | | |

Table 1: Performance Criteria and Sub Criteria

Note: For participation banks, profit sharing income – income other than profit sharing was used instead of interest- non-interest income.

2.1. Analytical Hierarchy (AHP) Approach

A very qualified analytical decision making technique Analytical Hierarchy Process was invented by T. Saaty in 1980s; and objective and subjective decision criteria can be compared with this method and a ranking is obtained as result of a weighting based on different decision making criteria. AHP offers a technique which can be easily applied particularly to problems involving subjective decision elements (Timor, 2011). AHP is a method which shows relations between main target, criteria, minor criteria, and alternatives and allows modelling of those elements in a hierarchical structure. In this method, considering the priorities of the group or individuals, qualitative and quantitative variables can be assessed all together. In case of the decision problems involving multiple assessment criteria, criteria weights are estimated and decision is made using those weights in order to define the contribution of criteria to the purpose.

In AHP technique, first all factors decisive in decision making process are defined; and considering those factors, a hierarchical structure containing purpose, criteria, and minor criteria is formed. Upon forming hierarchical structure, paired comparison of the criteria is made by using paired comparison scale, which was developed by Saaty (Saaty, 1994), and is given in the table below (Table 2) to obtain the paired comparison matrix.

| Severity | Definition | description | | |
|------------|-------------------------|--|--|--|
| 1 | Equally important, | Both activities contribute to the aim equally. | | |
| 3 | Moderately important | As a result of experience and evaluation one activity slightly is more preferred than the other. | | |
| 5 | Strongly important | As a result of experience and evaluation one activity is much more preferred than the other. | | |
| 7 | Very strongly important | One activity is strongly preferred to the other. | | |
| 9 | Extremely important | One activity is extremely preferred to the other. | | |
| 2, 4, 6, 8 | Intermediate values | If irresolute to make an assessment, a value between the two values is given | | |

Table 2: Bilateral Comparison Scaleq

After obtaining paired comparison matrix, normalized matrix value is obtained by dividing elements belonging to each column by the total value of column. Priority vector is obtained by taking average of the values specified on each line of the matrix normalized in a way that sum of columns is equal to "1" (Timor, 2011). This vector shows the significance level of criteria. In AHP approach, Consistency Rate (CR) needs to be estimated in order to be able to define whether comparisons made related with criteria are consistent or not. As a matter of fact that CR value estimated to be less than 0.10 shows that the comparison is consistent. On the other hand, as a matter of fact that CR value estimated to be

higher than 0.10 indicates that either paired comparison is inconsistent or there is an estimation mistake. In this case, comparisons should be revised (Saaty, 2001). CR value is obtained by dividing Consistency Index (CI) by Random Index (RI) value. Random index value based on the number of criteria are shown in Table 3 (Saaty,1994).

CR = CI / RI

 $CI = (\lambda \max - n)/(n-1)$

Table 3: Random Index Values

| n | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|----|------|------|------|------|------|------|------|------|------|------|
| RI | 0.00 | 0.00 | 0.58 | 0.90 | 1.12 | 1.24 | 1.32 | 1.41 | 1.45 | 1.49 |

In order to estimate λ max; priority vector should be multiplied by first comparison matrix, and All Priorities Matrix is estimated. Obtained matrix elements are divided by priorities vector elements. Average of obtained values is λ max (Timor, 2011).

Instead of making separate ratio comparisons by using financial ratio of the banks, analyzing ratio in a multivariate framework has a greater statistical and practical significance (Altman, 1968). In performance assessment performed by using financial ratio, discriminant analysis as a multivariate statistical technique can be used in order to compare establishments grouped according to numerous financial ratio and to define which financial ratio differentiates the groups (Cinser, 2008). Multivariate discriminant analysis technique is usually used in problems involving qualitative expression of dependent variable (Altman, 1968). In the approach of analytical hierarchical process, discriminant function created by Altman using multivariate discriminant analysis model is applied.

 $(Z = V1X1 + V2X2 + \ldots + VnXn)$

In the formula, "V1, V2,...Vn" means discriminant coefficients, and "X1, X2,...Xn" means independent variables. In discriminant function created by Altman, there are five independent and one dependent variant (Altman, 1968). In our analysis, dependent variable represents performance score and independent variables represent ratio groups obtained from financial statements of the companies.

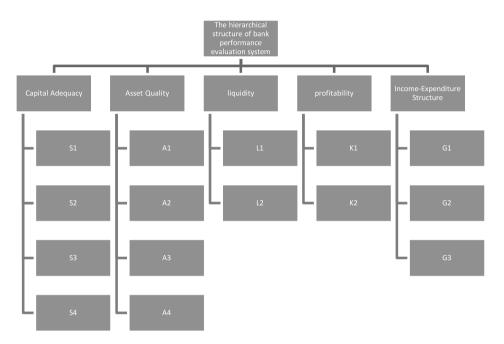
Z = V1SY + V2AK + V3K + V4L + V5GG

In the function used in our studies; dependent variable Z shows performance score of the banks. Independent Variables: SY represents Capital Adequacy Rates, AK represents Asset Quality Rates, L represents Liquidity Rates, K represents Profitability Rates and GG represents Income and Expense Rates, respectively. When defining coefficients of the independent variables included in the model, Analytical Hierarchy Process has been used. In addition, relative priorities of the financial ratios were also estimated by using the same methodology (Bitirak, 2010).

2.2. Forming Hierarchical Structure

Hierarchical structure is an organized and hierarchical description of decision problem. This structure including purpose, criteria, sub criteria and options, forms the basis of AHP method. Hierarchical structure for the present problem has been formed using performance criteria and minor criteria presented in Table 1, and it is shown on Figure 1.

Aim and the first level of the hierarchy is the assessment and comparison of the performance of banks which realize fund transfer from segments with fund surplus to segments with funding gap (Albayrak, 2005). In the second level of the hierarchy, there is performance criteria of capital adequacy, assets quality, liquidity, profitability, and income-and expense structure. In the third level, there are minor criteria standing for those performance criteria. In the fourth level of the hierarchy, there are bank groups to be assessed based on those criteria. Figure 1. The hierarchical structure of bank performance evaluation system



2.3. Defining Weights and Priority Rankings of the Criteria

The aim of solving problem with AHP approach is forming a comparison matrix as a first step after forming hierarchical structure indicating criteria and minor criteria and obtaining priority vector using that matrix created. Decimal form of matrix obtained by paired comparison of performance criteria (capital adequacy, assets quality, liquidity, profitability and income-expense level) rates is given in Table 4.

Comparisons made for the elements in the above mentioned comparison matrix can be explained as follows (Timor, 2011):

- Paired comparisons are performed for the elements on each line and column.
- First of all, considering the e lement on the line, result obtained from comparison of that element with each of the column elements are recorded as intracellular value.

- Result of each element's comparison with itself is equal to 1. Therefore, all the elements on the diagonal are equal to 1.
- Elements falling below the diagonal is estimated through dividing elements above the diagonal by 1.

When making paired comparisons, assessments have been made by using paired comparison scale (Table- 2) recommended for AHP. When making assessments, how much a criteria can contribute to bank performance, relative to the criteria which it is compared to, is considered as the main target.

Normalized matrix values are obtained through dividing elements from each column on comparison matrix by total value of the column; and priority vector is obtained by taking average of the values on each line of normalized matrix.

| | SY | AK | L | К | GG | Priority Vector |
|----|------|------|------|------|------|-----------------|
| SY | 1.00 | 3.00 | 5.00 | 6.00 | 7.00 | 0.50 |
| AK | 0.33 | 1.00 | 3.00 | 4.00 | 5.00 | 0.25 |
| L | 0.20 | 0.33 | 1.00 | 2.00 | 3.00 | 0.12 |
| K | 0.17 | 0.25 | 0.50 | 1.00 | 2.00 | 0.08 |
| GG | 0.14 | 0.20 | 0.33 | 0.50 | 1.00 | 0.05 |

Table 4: Bilateral Comparison Matrix for Performance Criteria

Considering the data given in Table 4, it is clear that criteria with the most weight among 5 performance criteria is capital adequacy criteria (0.50). Capital adequacy criteria is followed by assets quality (0.25), liquidity (0.2), profitability (0.08) and income-expense structure (0.05), respectively.

Consistency Ratio (CR) has been estimated in order to define whether paired comparisons given in Table 4 and the obtained priority vector are consistent with each other.

The formula below has been used in estimation of consistency ratio. CR = CI / RI $CI = (\lambda \max - n)/(n - 1)$ Random index value (RI) is given in Table 3. λ max needs to be estimated in order to find out consistency index (CI).

Biggest value between the eigenvalues of a square matrix is shown as $\lambda \max$ (Timor, 2011). In order to estimate $\lambda \max$; overall priorities matrix is estimated through multiplying priorities vector by first comparison matrix; and the matrix elements obtained are divided by priorities vector elements (Table 5). Then, λ max is estimated by taking average of values found. As a result, the average value of the least significant column "T.Ö.M./Ö.V." in table 5, has been found as 5.14 ($\lambda \max$).

| | SY | AK | L | K | GG | Overall Priorities Matrix | T.Ö.M./ Ö.V. |
|----|------|------|------|------|------|---------------------------------|-----------------|
| SY | 0.50 | 0.76 | 0.59 | 0.45 | 0.34 | 2.66 | 5.29 |
| AK | 0.17 | 0.25 | 0.36 | 0.30 | 0.25 | 1.33 | 5.23 |
| L | 0.10 | 0.08 | 0.12 | 0.15 | 0.15 | 0.60 | 5.07 |
| K | 0.08 | 0.06 | 0.06 | 0.08 | 0.10 | 0.38 | 5.03 |
| GG | 0.07 | 0.05 | 0.04 | 0.04 | 0.05 | 0.25 | 5.07 |

 Table 5: Calculation of Consistency Rate

As Consistency Index is (CI) = $(\lambda max - n) / (n - 1)$ it is found as CI: 0.034.

Random index value for five dimensional matrix is 1.12 according to the Table 3;

Consistency Ratio is found as (CR) = CI / RI = 0.034/1.12 = 0.03. Since this value is below 10%, paired comparison matrix is considered as consistent in itself.

2.4. Defining Weights, and Order of Importance of Minor Criteria

After defining weights and order of importance regarding major criteria, also the weights and order of importance of minor criteria need to be defined. As an example, below a comparison matrix has been created by making paired comparisons for four minor criteria (S1, S2, S3 and S4) under Capital adequacy major criteria (SY), and then priority vector has been found after related matrix is normalized. The minor criteria that has priority in terms of capital adequacy criteria with the most weight in bank performance comparison is shown in Table 6.

| SY | S1 | S2 | S3 | S4 | Priority Vector |
|----|------|------|------|------|-----------------|
| S1 | 1.00 | 5.00 | 3.00 | 6.00 | 0.56 |
| S2 | 0.20 | 1.00 | 0.33 | 2.00 | 0.11 |
| S3 | 0.33 | 3.00 | 1.00 | 4.00 | 0.26 |
| S4 | 0.17 | 0.50 | 0.25 | 1.00 | 0.07 |

Table 6: Binary Comparison Matrix for Capital Adequacy Criteria

In terms of SY, S1 "Equities / (credit + market + amount subject to op. risk)" criteria with 0.56 value is the factor with the most priority as a performance indicator when compared to other criteria in SY group. For the other four criteria (assets quality, liquidity, profitability and incomeexpense structure), same processes were repeated according to the method formed by Saaty and prioritization of minor criteria is enabled.

In terms of AK major criteria, A2 minor criteria with the value of 0.54; in terms of L criteria, L2 criteria with the value of 0.83; in terms of K criteria, K2 criteria with the value of 0.75; and in terms of GG criteria, GG3 criteria with the value of 0.63 are found to be criteria with priority.

2.5. Estimation of Performance Scores

In the study, some financial data obtained from financial statements of the public banks (Annex 1), private commercial banks (Annex 2) and participation banks (Annex 3) between the years 2009-2013 have been used. Financial rates obtained based on that financial data are given in Table 7.

| | Public Banks | | | Private Commercial Banks | | | | Participation Banks | | | |
|----|-------------------|-----------------|---------------------|--------------------------|--------------------|------------|-------|---------------------|-----------|-------------|-------------------|
| | Ziraat Bankası | Halk Bankası | Vakıflar Bankası | Akbank | Garanti Bankası | İş Bankası | YKB | Albaraka | Bank Asya | Kuveyt Türk | Türkiye Finans |
| S1 | 0168 | 0.151 | 0.144 | 0.178 | 0.173 | 0.156 | 0.158 | 0.136 | 0.136 | 0.153 | 0.147 |
| S2 | 0.091 | 0.103 | 0.105 | 0.134 | 0.150 | 0.120 | 0.121 | 0.094 | 0.111 | 0.096 | 0.114 |
| S3 | 0.076 | 0.075 | 0.080 | 0.121 | 0.117 | 0.065 | 0.071 | 0.067 | 0.065 | 0.065 | 0.098 |
| S4 | 0.124 | 0.141 | 0.165 | 0.234 | 0.222 | 0.197 | 0.208 | 0.125 | 0.155 | 0.142 | 0.172 |
| A1 | 0.456 | 0.609 | 0.638 | 0.548 | 0.689 | 0.586 | 0.630 | 0.714 | 0.752 | 0.661 | 0.725 |
| A2 | 0.993 | 0.995 | 0.997 | 0.999 | 0.996 | 0.998 | 0.989 | 0.997 | 0.978 | 0.996 | 0.992 |
| A3 | 0.656 | 0.825 | 0.939 | 0.948 | 0.813 | 0.900 | 0.672 | 0.894 | 0.540 | 0.838 | 0.708 |
| A4 | 0.985 | 0.971 | 0.975 | 0.987 | 0.968 | 0.946 | 0.950 | 0.973 | 0.954 | 0.969 | 0.983 |
| L1 | 0.360 | 0.213 | 0.282 | 0.385 | 0.421 | 0.280 | 0.230 | 0.214 | 0.183 | 0.284 | 0.231 |
| L2 | 0.522 | 0.360 | 0.512 | 0.717 | 0.626 | 0.484 | 0.431 | 0.424 | 0.354 | 0.713 | 0.403 |
| K1 | 0.017 | 0.023 | 0.013 | 0.019 | 0.024 | 0.018 | 0.019 | 0.015 | 0.010 | 0.013 | 0.016 |
| K2 | 0.190 | 0.221 | 0.128 | 0.142 | 0.158 | 0.149 | 0.161 | 0.159 | 0.095 | 0.135 | 0.137 |
| G1 | 0.037 | 0.039 | 0.036 | 0.034 | 0.041 | 0.032 | 0.034 | 0.037 | 0.038 | 0.035 | 0.041 |
| G2 | 0.081 | 0.064 | 0.056 | 0.061 | 0.060 | 0.055 | 0.054 | 0.052 | 0.051 | 0.054 | 0.056 |
| G3 | 0.188 | 0.296 | 0.295 | 0.337 | 0.366 | 0.399 | 0.398 | 0.309 | 0.381 | 0.326 | 0.275 |

Table 7: Financial Ratios of Public Banks, Private Commercial Banks and Participation Banks

In the estimation of second level criteria, same procedures followed for the first level are used. For instance, after finding V1, V2, V3 and V4, which are the discriminant coefficients of independent variables S1, S2, S3, S4; Capital Adequacy (SY) has been found by putting in the formula SY = V1S1 + V2S2 + V3S3+ V4S4 (B1t1rak, 2010). In this formula, ratio belonging to banks shown in Table 7 were also used for S1, S2, S3 and S4 data. Same operation has been repeated separately for AK, L, K and GG major criteria groups.

Z = V1SY + V2AK + V3K + V4L + V5GG For instance for Ziraat Bank; SY criteria; (0.56*0.168)+(0.11*0.091)+(0.26*0.076)+(0.07*0.124)= 0.13 AK criteria; (0.07*0.456)+(0.54*0.993)+ (0.24*0.656)+ (0.15*0.985) = 0.87

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L criteria; (0.17^* \ 0.360) + (0.83^* \ 0.522) = 0.49
K criteria; (0.25^* \ 0.017) + (0.75^* \ 0.190) = 0.15
GG criteria; (0.11^* \ 0.037) + (0.26^* \ 0.081) + (0.63^* \ 0.188) = 0.14
Thereof, the performance score is found as : (0.50^* \ 0.13) + (0.25^* \ 0.87) + (0.12^* \ 0.49) + (0.08^* \ 0.15) + (0.05^* \ 0.14) = 0.37
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Operations performed for Ziraat Bank have been repeated for other banks and performance scores of the banks were found (Table 8).

| | Row | Bank | Performance Score |
|---------------------|-----|------------------|-------------------|
| | 1 | Vakıflar Bankası | 0.38 |
| Public Banks | 2 | Ziraat Bankası | 0.37 |
| | 3 | Halk Bankası | 0.36 |
| | 1 | Akbank | 0.42 |
| Private Commercial | 2 | Garanti Bankası | 0.40 |
| Banks | 3 | İş Bankası | 0.38 |
| | 4 | YKB | 0.36 |
| | 1 | Kuveyt Türk | 0.39 |
| Denticiantian Denta | 2 | Albaraka | 0.36 |
| Participation Banks | 3 | Türkiye Finans | 0.36 |
| | 4 | Bank Asya | 0.33 |

Table 8: Performance Score

According to AHP approach used with the aim of comparing performance of the banks between 2010-2013, the highest performance scores were found to be in Vakıflar Bankası among public banks; Akbank among private commercial banks and Kuveyt Türk among participation banks, respectively.

Conclusion

Considering the results of the study, it is evident that the criterion of capital adequacy comes first and it is the most significant one among all performance criteria. We argue that for a healthy functioning of banking sector in the midst of a global crisis, injecting capital to some banks and taking various measures by countries and monetary authorities, particularly BASEL regulations, regarding capital adequacy of the banks are consistent with the conclusion of the study; and these results indicate the significance of capital adequacy for banking sector. Among the minor criteria of capital adequacy criteria, (S1) Equities / (Credit+ Market + Amount Subject to Op. Risk) criterion is found to be most significant criterion in terms of banking performance compared to other criteria. Considering the performance scores obtained as a result of the analysis made in order to define the banks among the bank categories with the highest performance during a four years period between 2009-2013, banks with the highest performance scores are found to be Vakıflar Bankası among public banks (0.38); Akbank among private commercial banks (0.42); and Kuveyt Türk among participation banks (0.39), respectively.

Annexes

| | Ziraat Bankası | Halk Bank | Vakıflar Bankası |
|--------------------------------|-------------------|--------------|---------------------|
| Equities | 15,542,377 | 10,638,351 | 10,597,846 |
| Capital Adequacy Standard Rate | 16.76 | 15.08 | 14.39 |
| Total Assets | 170,559,640 | 103,072,797 | 100,805,615 |
| Fixed Assets | 2,568,523 | 2,945,353 | 2,551,626 |
| Total Loan | 77,836,970 | 62,813,755 | 64,263,877 |
| Non-Performing Loan | 1,548,276 | 1,907,818 | 2,669,746 |
| Special Provisions | -1,015,891 | -1,573,308 | -2,506,088 |
| Non-Performing Loan (Net) | 532,385 | 334,510 | 163,659 |
| Liquid Assets | 61,447,919 | 21,905,300 | 28,424,507 |
| Short term liabilities | 117,773,483 | 60,871,047 | 55,500,917 |
| General Deposit | 124,891,151 | 75,439,762 | 64,353,899 |
| Net Profit for the Period | 2,948,445 | 2,350,395 | 1,357,386 |
| Net Interest Income | 6,309,236 | 3,992,333 | 3,624,483 |
| Total Operating Revenue | 7,767,529 | 5,674,221 | 5,142,162 |
| Non-Interest Incomes | 1,458,293 | 1,681,888 | 1,517,680 |

Annex 1: Financial data used in the study of public banks for the period 2009-2013 (thousand TL)

| | Akbank | Garanti Bankası | İş Bankası | YKB |
|--------------------------------|-------------|-----------------|-------------|-------------|
| Equities | 19,592,813 | 19,486,393 | 20,308,333 | 14,047,219 |
| Capital Adequacy Standard Rate | 17.79 | 17.26 | 15.58 | 15.78 |
| Total Assets | 146,581,327 | 156,923,643 | 169,852,371 | 115,985,161 |
| Fixed Assets | 1,866,454 | 4,210,847 | 9,213,644 | 5,757,274 |
| Total Loan | 80,383,385 | 89,784,126 | 99,568,873 | 73,050,754 |
| Non-Performing Loan | 1,333,524 | 2,030,925 | 2,163,617 | 2,506,021 |
| Special Provisions | -1,263,886 | -1,651,732 | -1,947,609 | -1,685,158 |
| Non-Performing Loan (Net) | 69,638 | 379,193 | 216,008 | 820,863 |
| Liquid Assets | 56,468,788 | 54,899,897 | 47,602,788 | 26,652,142 |
| Short term liabilities | 78,714,462 | 87,717,129 | 98,437,856 | 61,892,550 |
| General Deposit | 83,840,628 | 87,789,300 | 103,232,873 | 67,648,371 |
| Net Profit for the Period | 2,785,740 | 3,072,923 | 3,030,842 | 2,258,556 |
| Net Interest Income | 4,910,974 | 5,379,563 | 5,431,756 | 3,916,488 |
| Total Operating Revenue | 7,401,780 | 8,486,751 | 9,038,828 | 6,504,835 |
| Non-Interest Incomes | 2,490,806 | 3,107,188 | 3,607,073 | 2,588,348 |

Annex 2: Financial data used in the study of private commercial banks for the period 2009-2013 (Thousand TL)

Annex 3: Financial Data Used in the Study of Participation Banks for the period 2009-2013 (Thousand TL)

| | Albaraka | Bank Asya | Kuveyt Türk | Türkiye Finans |
|--------------------------------|------------|------------|-------------|----------------|
| Equities | 1,143,122 | 2,234,828 | 1,670,187 | 1,916,825 |
| Capital Adequacy Standard Rate | 13.63 | 13.63 | 15.32 | 14.72 |
| Total Assets | 12,102,848 | 20,219,622 | 17,348,050 | 16,740,837 |
| Fixed Assets | 330,566 | 928,238 | 543,771 | 276,600 |
| Total Loan | 8,645,422 | 15,209,775 | 11,462,639 | 12,133,306 |
| Non-Performing Loan | 216,251 | 717,498 | 277,696 | 322,168 |
| Special Provisions | -193,375 | -387,758 | -232,775 | -228,221 |
| Non-Performing Loan (Net) | 22,876 | 329,740 | 44,922 | 93,947 |
| Liquid Assets | 2,586,008 | 3,709,951 | 4,919,814 | 3,869,182 |
| Short term liabilities | 6,092,165 | 10,473,318 | 6,902,944 | 9,596,320 |
| General Deposit | 9,169,392 | 14,454,262 | 11,771,386 | 11,119,579 |
| Net Profit for the Period | 181,861 | 211,762 | 226,297 | 262,492 |
| Net Interest Income | 453,220 | 770,586 | 615,815 | 678,409 |
| Total Operating Revenue | 656,326 | 1,244,587 | 913,956 | 935,881 |
| Non-Interest Incomes | 203,106 | 474,001 | 298,141 | 257,472 |

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