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Multi-criteria evaluation of domestic and foreign banks in Turkey by using financial ratios

Abstract

In the literature, it has been claimed that foreign banks outperform domestic ones. This can be attributed either to more global knowledge or more professional tactics in banking transactions. On the other hand, to be familiar with its society's culture can be an opportunity for domestic banks. In this study, Turkish banks have been evaluated using financial ratios taking into consideration domestic and foreign ownership. The banks have also been ranked according to performance. To achieve this, the principal components analysis and discriminant analysis have been applied.

Keywords: Turkish banking system, financial ratios, principal components analysis and logistic regression.
JEL Classification: G21.

Introduction

Over the past two decades, emerging markets have opened up to foreign direct participation through the ownership of domestic financial institutions which mainly dominated banking systems. There is an argument about negative and positive effects of foreign participation on banking system and economy.

Some researchers assert that foreign participation in the banking system increases the selection and quality of banking services and economic stability and brings new technology, capital, experience and credit evaluation techniques. Claessens et al. (2001) studied the extent and effect of foreign presence in domestic banking markets. They used 7.900 bank observations from 80 countries over the period of 1988-1995. They have specifically investigated how net interest margins, overhead costs, taxes paid, and profitability differ between foreign and domestic banks. They report that foreign banks have higher profits than domestic ones in developing countries, but the opposite is the case for developed countries. They also claim that an increased presence of foreign banks is associated with a reduction in profitability and margins for domestic banks.

Lensink et al. (2004) analyzed the short-term effects of foreign bank entry on the behavior of the domestic banking sector stemming from Claessens et al. (2001). They used two different variables to measure the total effect. First, they took the ratio of number of foreign banks over number of all banks in the host country to measure at the sheer presence of foreign banks. Second, they used the share of foreign banks' assets on total assets in the host country's banking sector. This indicator measures the size of foreign banks as compared to their domestic counterparts. Then the authors constructed variables reflecting domestic banks' behavior. They chose variables measuring income, profit and costs of domestic banks. The researchers reported that at lower levels of economic development the foreign bank entry is generally associated with higher costs and margins. At higher levels of economic development the effects appear to be less clear. Foreign bank entry is either associated with a fall of costs, profits and margins of domestic banks, or is not associated with changes in these domestic bank variables.

Sturm and Williams (2003) investigated the impact of foreign bank entry on banking efficiency in Australia during the post-deregulation period of 1988-2001. The researchers applied Data Envelopment Analysis, Malmquist Indices and stochastic frontier analysis and reported foreign banks more efficient than domestic ones, which, however, did not result in superior profits.

Dages et al. (2000) sought to contribute to the debate on financial sector openness in emerging markets by reviewing experience of Mexico and Argentina with regard to local lending of foreign banks. In both countries, they reported that foreign banks exhibited stronger loan growth than all domestically owned banks and had lower associated volatility, contributing to greater stability in overall financial system credit. Additionally, in both countries, foreign banks showed a substantial credit growth over the periods of economic crises and thereafter. They claim that bank health, and not ownership per se, has been the critical element in the growth, volatility, and cyclicality of bank credit. They also assert diversity in ownership contributed to greater stability of credit and financial system weakness.

Haselmann (2006) investigated foreign banks effect on transition countries and reported that the high market share of foreign banks in transition economies had a positive effect. The researcher also reports that foreign banks play a stabilizing role in the credit markets and hold onto their credit base during periods

of financial instability. Thus, there is no evidence for financial fragility caused by foreign banks.

Kraft et al. (2006) investigated privatization, foreign bank entry and bank efficiency in Croatia for 1994 to 2000. To achieve this, they estimated the Fourier-flexible frontier cost function. They report that new private and privatized banks, contrary to some expectations, are not the most efficient banks through most of the period. Privatization also has not an immediate effect on improved efficiency. Foreign banks have substantially better efficiency scores than all categories of domestic banks.

Tennant and Kirton (2007) estimated the impact of foreign direct investment and financial crises by interviews with Jamaican managers. They provide some evidence that foreign owned financial institutions may be less effective than indigenous institutions in allocation of resources. They also claim that indigenous financial institutions tended to support this channel of growth more than foreign-owned institutions. The foreign-owned institutions reflected a tendency to blame their poor performance in resource allocation on factors outside their control, compared with indigenous institutions that were more likely to implement measures to correct the situation.

Berger (2007) reviewed the findings of over 100 studies that provide comparisons of efficiency of domestic and foreign banks. He divided the studies into three categories: (1) comparisons of bank efficiencies in different nations using a common frontier, (2) comparisons of bank efficiencies in different nations using nation-specific frontiers, and (3) comparisons of efficiencies of foreign-owned versus domestically owned banks within the same nation using the same nation specific frontier. Berger states that advantages and disadvantages are significant and differ substantially depending on whether the host nation is a developed or developing country. The research in the third category generally suggests that the efficiency disadvantages of foreign-owned banks relative to domestically owned banks tend to outweigh the efficiency advantages on average in developed nations[1].

The foreign bank effect on small and medium enterprises and retail markets was investigated by Haas and Naaboork (2006). They used interviews with managers of foreign parent banks and their affiliates in Central Europe and the Baltic States to analyze the small-business lending and internal capital markets of multinational financial institutions. They report that the acquisition of local banks by foreign banks has not led to a persistent bias in these banks' credit supply toward large multinational corporations. Instead, increased competition and the improvement of subsidiaries' lending technologies have led foreign banks to gradually expand into the small and medium enterprises and retail markets. Second, it is demonstrated that local bank affiliates are strongly influenced by the capital allocation and credit steering mechanisms of the parent bank.

1. Some Turkish studies on domestic and foreign banks

Güngör (2007) analyzed the factors affecting bank's profitability. He applied panel data analysis using data of 29 banks located in Turkey over 1990-2005. According to this study, both micro and macro factors have significant impacts on bank profitability and all factors, except for operating expenses variable, have similar effects on domestic and foreign bank profitability.

Turkish public and private banks and foreign banks showed different achievements in financial ratios. It was confirmed by Ünsal and Duman (2005). They investigated 32 public, private and foreign banks from Turkey using Factor Analysis. They report that public banks perform in financial ratios better than other banks. The only exception was equity ratios in the first half of 2003 while private banks seized in second half.

Ünsal and Güler used the alternative methods of banks' classification on data from the period of 1997-2003. They point out that the classification and foresight logistic regression outperform discriminant analysis.

Işık and Hassan (2002) examined the effect of bank size, corporate output, and governance, as well as ownership, on the cost and alternative profit efficiencies of Turkish banks employing stochastic frontier approach. They found that the average profit efficiency is 84% for Turkish banks and the degree of linkage between cost and profit efficiency was significantly low.

2. Data and methodology

In this study, 17 domestic and 8 foreign depository banks located in Turkey are analyzed. We apply Principal Component Analysis (PCA) on 2006 data. Subsequently, we use Logistic Regression Method to investigate whether the banks are correctly classified. Data matrix includes various indicators such as balance sheet ratios, assets quality, liquidity, profitability, income-expenditure structure, share of banking sector, share of group, share of branch and activity ratios. Description of the ratios used and list of banks included in the data set are provided in an-

[1] Berger Allan N., International Comparisons of Banking Efficiency, Financial Markets, Institutions & Instruments, August 2007, Vol. 16, No. 3, pp. 119-144.

nexes. The data were derived from the Turkish Central Bank's database.

PCA procedure simultaneously quantifies variables while reducing the dimensionality of the data. The goal of PCA is to reduce an original set of variables into a smaller set of uncorrelated components that represent most of the information found in the original variables. The technique is most useful when a large number of variables prohibit effective interpretation of the relationships between objects (subjects and units). By reducing the dimensionality, one can interpret a few components rather than a large number of variables[1].

The Principal Component Analysis investigates 25 banks using p unit financial ratios. To calculate banks financial ratio's principal components which are in X data matrix, eigenvalues and eigenvectors of correlation or covariance matrixes are used. The principal components are calculated as ranking eigenvalues by the size. The transpose of principal components weights matrix formed by eigenvectors of correlation matrix is multiplied by standardized data matrix. In this case the result of principal component analysis provides ranking the banks in terms of chosen financial ratios. So, the banks can be ranked as their financial ratios[2]. In this study, it is accepted that the higher ratio represents the higher success and efficiency of the banks. Consequently, it can be said that first ranked banks are more successful and efficient than others.

Logistic Regression is a method used to determine cause and effect relations with explanatory variables where the response variable is observed in binary, triple and multiple categories. This model, according to explanatory variables (banks' financial ratios and ratios of the domestic and foreign banks groups), is a regression model from which the expected values of the response variable were obtained as a probability[3]. The main idea behind the Logit Model is the logistic distribution function shown below:

$$P_i = Pr(Y = 1 | X_i) = \frac{1}{1 + e^{-(\beta_1 + \beta_2 X_i)}}. \quad (1)$$

Here, β_1, β_2 indicate coefficients of regression. Logistic regression has many calculation characteristics. One of these characteristics is regarding being searched if units which their groups are determined by probability rules are rightly grouped. In this study, in terms of financial ratios it is assumed that foreign banks have similar ratios. So it has been searched if they are in the same group. If the foreign banks are in the same group (foreign banks group), it can be assumed that their efficiency and performances are similar. This is also the same for domestic banks. In this case, foreign banks should be broken up into the group of foreign banks whereas domestic banks should be in the group of domestic banks. Consequently, it can be alleged that banks classification is correct. If it is accepted that literature is right about foreign banks performances and efficiency are better than domestic ones, foreign banks group represents successful and efficient group whereas domestic banks group is less successful and efficient one.

So, the hypothesis was defined as below considering the fact that foreign banks outperform domestic ones. This is in accordance with conventional wisdom usually claimed in the literature.

$$C_i = \begin{cases} 0, & \textit{domestic banks group,} \\ 1, & \textit{foreign banks group.} \end{cases} \quad (2)$$

3. Findings

As the first step, we defined the domestic and foreign banks groups and tested whether the banks are classified in their groups. Table 1 shows this classification situation of the banks. As it can be seen from Table 1, some foreign banks have not situated in the foreign banks group. This is also current for domestic banks too.

Table 1. Classification of the banks

Banks	Ratio groups											
	Domestic: 0 Foreign: 1	Equity ratios	Balance sheet structure ratios	Assets quality ratios	Liquidity ratios	Profitability	Income-expenditure	Share in sector	Share in group	Branch ratios	Activity ratios	Total
Ziraat Bank	0			X								1
Halk Bank	0											
Vakıfbank	0											

[1] SPSS 10.0 Help.
[2] Sharma Subhash, Applied Multivariate Techniques, John Wiley and Sons Inc., New York: 1996, pp. 67-71.
[3] Özdamar, Kazım, Paket Programlar ile İstatistiksel Veri Analizi-1, Kaan Kitabevi Eskişehir, Turkey, p. 623.

Table 1 (cont.). Classification of the banks

Adabank	0									X		1
Akbank	0			X								1
Alternatif Bank	0											
Anadolubank	0											
Oyak Bank	0							X	X			2
Şekerbank	0											
Tekfenbank	0											
Tekstil Bank	0	X										1
Turkish Bank	0											
Turkland Bank	0	X										1
Türk Ekonomi Bank	0		X							X		2
Garanti Bank	0			X						X		2
İş Bank	0											
Yapı ve Kredi Bank	0											
Arap Türk Bank	1					X		X	X			3
Citibank	1	X		X	X			X	X			5
Denizbank	1		X	X	X	X		X	X	X		7
Deutsche Bank	1			X				X	X			3
Finansbank	1	X	X	X	X	X						5
Fortis Bank	1		X		X	X		X	X	X		6
HSBC Bank	1				X							1
Millennium Bank	1				X			X	X			3

If Table 1 is considered as a matrix, it can be read as columns and rows. If it is read as a column, every X indicates that banks should not be situated in that group in terms of that financial ratio. For example, in terms of equity ratios Tekstil Bank and Turkland Bank should not be situated into domestic banks group as domestic banks and Citibank and Finansbank should not be in foreign banks group as foreign banks. If it is read as a row, every X indicates the bank is situated in a different group or not situated in its own group in terms of financial ratios. For example, Finansbank should not be in foreign banks group as a foreign bank in terms of five financial ratios such as equity ratios, balance sheet structure ratios, assets quality ratios, liquidity ratios and profitability ratios. For this result, it can be said about wrong classifications.

Considering equity ratios, 84% of banks were classified correctly. Whereas the rate of correct classification is 75% for foreign banks, domestic banks recorded 88.2% of correct classification. Citibank and Finansbank are not classified correctly and both should be in the domestic group since they report domestic banks' group characteristics. On the other hand, Tekstil and Turkland Bank should rather be among foreign banks.

If banks' balance sheets structure ratios are taken into account, 84% of banks are classified correctly. Foreign banks were correctly classified in 62.5% cases, while domestic banks in 94.1%. In more details, Denizbank, Finansbank and Fortisbank did not perform as other foreign banks and, therefore, shall be ranked among domestic banks instead. Türk Ekonomi Bank, on the other hand, was the only domestic bank with wrong classification.

As far as liquidity ratios are considered, 76.2% of banks got correct classification. It means that all domestic banks are classified correctly but only Arap Türk Bank and Deutsche Bank are so in the group of foreign banks.

The rate of correct classification is 84% for profitability ratios. Regarding this category of indicators, domestic banks report absolutely correct classification while foreign banks are correctly classified in 50% of cases. The logistic regression revealed that Arap Türk Bank, Denizbank, Finansbank and Fortis Bank shall rather be considered as members of the domestic banks group.

The income-expenditure ratios lead to absolutely correct classification as no bank was found to be in a wrong group. Therefore, it can be claimed that income-expenditure ratios play an important role in the classification of Turkish banks.

The banks are in 72% correctly classified when share of sector and share of group ratios are considered. Foreign banks obtained a lower rate of correct classification (25%) than domestic banks (94.1%). In foreign banks group, only Finansbank and HSBC Bank share the assumed characteristics

of the foreign bank group. As for domestic banks, only Oyakbank was not classified correctly.

From the perspective of banks branch ratios, 84% of banks were classified in accordance with their presence in particular group. One can see the rate of correct classification of 74% in the group of foreign banks and 88.2% among domestic banks. The wrongly classified banks were Denizbank and Fortis Bank in the foreign banks group and Garanti Bank and Türk Ekonomi Bank in the domestic banks group.

There is no wrong classification when activity ratios are applied.

After investigating banks classification using various categories of ratios, we analyzed their performance applying Principal Component Analysis. Here, total variance explains variability of the ratio groups. In theory, if principal component explains 67% of total variance, it means the result is valid in ranking the banks. The results are shown in Table 2.

If equity ratios are taken into consideration, two principal components with the eigenvalue statistics higher than 1 were identified. These principal components explain 83.39% of the total variance while the first principal component explains 57.01% of total variance.

Taking into account banks balance sheets structure ratios as a performance indicator, three principal components with sufficiently high eigenvalue were found. They explain 92.4% of total variance while the first principal component explains 48.7% of variance.

Two significant principal components were revealed if banks assets quality ratios are analyzed. They explain 75.4% of total variance and the first principal component explains 55.8% of variance. Because of lack of data two assets quality ratios were eliminated from the calculation.

In liquidity ratios two principal components were identified. They explain 87% of total variance and the first principal component explains 65% of variance.

If we consider bank profitability, only one principal component with eigenvalue higher than one was found. This principal component can explain 80% of the total variance. For income and expenditure ratios we calculated three principal components that explain 87.1% of total variance. The first component explains 53.5% of total variance.

If ratios describing banks groups' and sector shares are considered, only one principal component was found explaining 95.7% of total variance. Only one principal component was revealed also if we take into account banks branch ratios. The explanatory power of this component is 77.3% of total variance. Three principal components have been calculated for banks activity ratios. They explain 82.6% of total variance and the first component explains 37.2% of total variance by itself.

Conclusion

In the literature, there is evidence that foreign banks outperform their domestic counterparts. For example, Claessens et al. (2001) reported that foreign banks have higher profits than domestic banks in developing countries. Our study gives controversial evidence about it. According to results of Principal Component Analysis that ranks banks using the scores, there are five foreign banks among the first ten banks if profitability ratios are considered.

Our results support Ünsal and Duman (2005) that public banks which are T.C. Ziraat Bank, Halk Bank and Vakıflar Bank, achieve relatively better results defined by financial ratios than foreign and Turkish private banks. Even the period is different in this study's period, the only exception is equity ratios in first half of the 2003 while private banks seized in second half.

We can point out that foreign depository banks do not outperform Turkish depository banks. The main reason can be that foreign depository banks do not have enough physical branches in Turkey. There is a high competition in the banking system; banks' profit usually comes from credit cards and commissions. Having fewer branches prevents banks from attracting more customers. Consequently, they do not generate sufficient incomes.

Table 2. The results of Principal Component Analysis for banks performance

Component	*Equity ratios*			*Balance sheet structure ratios*			*Assets quality ratios*			*Liquidity ratios*			*Profitability ratios*		
	Initial eigenvalues			Initial eigenvalues			Initial eigenvalues			Initial eigenvalues			Initial eigenvalues		
	Total	% of Variance	Cumula-tive %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.99	57.0	57.0	4.38	048	048	3.35	55.8	55.8	3.23	0.65	0.64	3.19	0.80	0.80
2	1.85	26.4	83.39	2.61	029	0.77	1.18	19.6	75.4	1.15	0.23	0.87			
3				1.32	0.14	0.92									
Ranks	*Banks*		*Scores*	*Banks*		*Scores*	*Banks*		*Scores*	*Banks*		*Scores*	*Banks*		*Scores*
1	Yapı ve Kredi Ba		1.0035	Arap Türk Bankas		3.99132	Adabank A.Ş.		7.87696	Adabank A.Ş.		7.41612	Deutsche Bank A.		3.67876
2	Türk Ekonomi Ban		0.8809	Turkish Bank A.Ş		2.11409	Deutsche Bank A.		1.16838	Deutsche Bank A.		2.93742	Finans Bank A.Ş.		2.72677
3	Millennium Bank		0.8683	Türkiye Garanti		2.03519	Arap Türk Bankas		1.08576	Turkish Bank A.Ş		1.26025	Türkiye Cumhuriy		2.08548
4	Alternatif Bank		0.8424	Denizbank A.Ş.		1.93891	Turkish Bank A.Ş		0.93732	Citibank A.Ş.		0.90287	HSBC Bank A.Ş.		1.52706
5	Denizbank A.Ş.		0.8233	Tekstil Bankası		1.48306	Türkiye Is Banka		0.53459	Türkiye Cumhuriy		0.29264	Akbank T.A.Ş.		1.34633
6	Oyak Bank A.Ş.		0.7676	Yapı ve Kredi Ba		1.34092	Türkiye Halk Ban		0.46466	Türkiye Is Banka		0.09077	Türkiye Halk Ban		1.18658
7	Türkiye Garanti		0.6239	Akbank T.A.Ş.		1.15605	Citibank A.Ş.		0.39646	Türkiye Vakıflar		-0.03877	Denizbank A.Ş.		1.1025
8	Anadolubank A.Ş.		0.5481	Alternatif Bank		1.06644	Türkiye Cumhuriy		0.28559	Akbank T.A.Ş.		-0.07393	Türkiye Garanti		0.71281
9	Tekstil Bankası		0.5221	Türk Ekonomi Ban		0.93123	Şekerbank T.A.Ş.		0.16999	Tekfenbank A.Ş.		-0.21871	Türk Ekonomi Ban		0.60881
10	Şekerbank T.A.Ş.		0.5094	Anadolubank A.Ş.		0.73749	Yapı ve Kredi Ba		0.15193	Şekerbank T.A.Ş.		-0.32126	Citibank A.Ş.		0.43207
11	Tekfenbank A.Ş.		0.5074	Fortis Bank A.Ş.		0.51144	Tekfenbank A.Ş.		-0.15348	Türk Ekonomi Ban		-0.49756	Türkiye Vakıflar		0.3415
12	Fortis Bank A.Ş.		0.4260	Türkiye Is Banka		0.37567	Türkiye Vakıflar		-0.28743	Turkland Bank A.		-0.51792	Adabank A.Ş.		0.18918
13	HSBC Bank A.Ş.		0.4148	HSBC Bank A.Ş.		0.30586	Turkland Bank A.		-0.4447	Oyak Bank A.Ş.		-0.53433	Anadolubank A.Ş.		-0.0077
14	Finans Bank A.Ş.		0.3513	Finans Bank A.Ş.		0.29626	Anadolubank A.Ş.		-0.59743	Fortis Bank A.Ş.		-0.6011	Alternatif Bank		-0.21926
15	Citibank A.Ş.		0.3138	Türkiye Vakıflar		0.25754	Akbank T.A.Ş.		-0.61424	Türkiye Halk Ban		-0.65742	Türkiye Is Banka		-0.2198
16	Türkiye Vakıflar		0.3023	Millennium Bank		-0.21986	Türk Ekonomi Ban		-0.73002	Finans Bank A.Ş.		-0.65784	Şekerbank T.A.Ş.		-0.34997
17	Turkland Bank A.		0.2705	Tekfenbank A.Ş.		-0.23098	Türkiye Garanti		-0.77371	Tekstil Bankası		-0.71428	Yapı ve Kredi Ba		-0.62582
18	Türkiye Is Banka		0.2652	Turkland Bank A.		-0.3118	Fortis Bank A.Ş.		-0.84791	Arap Türk Bankas		-0.71493	Tekfenbank A.Ş.		-0.77318
19	Türkiye Halk Ban		0.2481	Citibank A.Ş.		-0.43484	Denizbank A.Ş.		-0.93262	Millennium Bank		-0.75601	Arap Türk Bankas		-0.90419
20	Akbank T.A.Ş.		0.2430	Oyak Bank A.Ş.		-0.52834	Tekstil Bankası		-1.06315	Türkiye Garanti		-0.75871	Oyak Bank A.Ş.		-0.92246
21	Türkiye Cumhuriy		0.2311	Şekerbank T.A.Ş.		-1.79906	Finans Bank A.Ş.		-1.11782	Denizbank A.Ş.		-0.78639	Fortis Bank A.Ş.		-1.05625
22	Turkish Bank A.Ş		-0.234	Deutsche Bank A.		-2.23958	Alternatif Bank		-1.12284	Alternatif Bank		-1.08533	Turkish Bank A.Ş		-1.25259
23	Arap Türk Bankas		-0.381	Türkiye Halk Ban		-3.15058	Oyak Bank A.Ş.		-1.15573	Anadolubank A.Ş.		-1.13337	Tekstil Bankası		-1.55071
24	Deutsche Bank A.		-0.987	Türkiye Cumhuriy		-3.57269	Millennium Bank		-1.33513	HSBC Bank A.Ş.		-1.2171	Turkland Bank A.		-2.84343
25	Adabank A.Ş.		-9.361	Adabank A.Ş.		-6.05374	HSBC Bank A.Ş.		-1.89542	Yapı ve Kredi Ba		-1.6151	Millennium Bank		-5.2125

Table 2 (cont.). The results of Principal Component Analysis for banks performance

Component	Income-expenditure ratios			Share in sector			Share in group			Branch ratios			Activity ratios		
	Initial eigenvalues			Initial eigenvalues			Initial eigenvalues			Initial eigenvalues			Initial eigenvalues		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.95	0.535	0.535	2.87	0.957	0.957	2.87	0.957	0.957	5.41	0.773	0.773	2.603	0.372	0.372
2	2.48	0.191	0.726										1.888	0.270	0.642
3	1.89	0.145	0.871										1.293	0.185	0.826
Ranks	Banks		Scores	Banks		Scores	Banks		Scores	Banks		Scores	Banks		Scores
1	Deutsche Bank		11.2929	Adabank		1.36667	Adabank		1.36672	Turkish Bank		1.5286	Adabank		4.87309
2	Finans Bank		0.9299	Arap Türk Bank		1.3488	Arap Türk Bank		1.3494	Sekerbank		1.4864	Sekerbank		2.89479
3	Sekerbank		0.6219	Turkish Bank		1.334	Turkish Bank		1.33369	Oyak Bank		1.1431	Arap Türk Bank		2.87241
4	Is Bank		0.5698	Turkland Bank		1.32525	Turkland Bank		1.32527	Tekfenbank		1.1094	HSBC Bank		1.7
5	Turkland Bank		0.5033	Deutsche Bank		1.32296	Deutsche Bank		1.32273	Fortis Bank		1.1001	Fortis Bank		0.89711
6	Tekfenbank		0.3271	Tekfenbank		1.28179	Tekfenbank		1.2806	Anadolubank		0.9062	Turkland Bank		0.70102
7	Halk Bank		0.1828	Millennium Bank		1.27605	Millennium Bank		1.27616	Denizbank		0.8404	Finans Bank		0.40873
8	Akbank		0.0985	Alternatif Bank		1.20214	Alternatif Bank		1.20249	Adabank		0.7158	Deutsche Bank		0.09726
9	Garanti Bank		0.0891	Anadolubank		1.1623	Anadolubank		1.16216	Türk Ekonomi Bank		0.7096	Anadolubank		0.04198
10	Arap Türk Bank		0.0833	Tekstil Bank		1.15975	Tekstil Bank		1.16047	Tekstil Bank		0.5999	Denizbank		-0.06575
11	Anadolubank		-0.0664	Sekerbank		1.04952	Sekerbank		1.04956	Ziraat Bank		0.5745	Citibank		-0.13875
12	Yapı ve Kredi Bank		-0.089	Citibank		0.92948	Citibank		0.92947	Halk Bank		0.5534	Alternatif Bank		-0.35645
13	Vakıfbank		-0.2364	Fortis Bank		0.71446	Fortis Bank		0.71375	Millennium Bank		0.5128	Tekfenbank		-0.37081
14	Denizbank		-0.491	Türk Ekonomi Bank		0.69153	Türk Ekonomi Bank		0.69201	Turkland Bank		0.5068	Halk Bank		-0.46072
15	Türk Ekonomi Bank		-0.511	HSBC Bank		0.47722	HSBC Bank		0.47767	HSBC Bank		0.4515	Türk Ekonomi Bank		-0.71529
16	Turkish Bank		-0.5155	Denizbank		0.44205	Denizbank		0.44167	Finans Bank		0.3164	Ziraat Bank		-0.72492
17	Tekstil Bank		-0.5828	Oyak Bank		0.38095	Oyak Bank		0.38095	Alternatif Bank		0.1698	Yapı ve Kredi Bank		-0.72572
18	Ziraat Bank		-0.5906	Finans Bank		-0.11145	Finans Bank		-0.11209	Is Bank		0.1629	Tekstil Bank		-0.87547
19	Citibank		-0.7605	Halk Bankk		-1.09094	Halk Bankk		-1.09015	Yapı ve Kredi Bank		0.0948	Oyak Bank		-1.05976
20	Oyak Bank		-0.9086	Vakıfbank		-1.44165	Vakıfbank		-1.44238	Akbank		0.0921	Millennium Bank		-1.09226
21	HSBC Bank		-0.9115	Yapı ve Kredi Bank		-2.20761	Yapı ve Kredi Bank		-2.20745	Arap Türk Bank		-0.232	Garanti Bank		-1.4188
22	Alternatif Bank		-1.1893	Garanti Bank		-2.48612	Garanti Bank		-2.48652	Garanti Bank		-0.5061	Is Bank		-1.43944
23	Millennium Bank		-1.2221	Akbank		-2.8551	Akbank		-2.85567	Vakıfbank		-0.982	Akbank		-1.62453
24	Fortis Bank		-1.2262	Ziraat Bank		-3.4679	Ziraat Bank		-3.46616	Citibank		-1.1482	Turkish Bank		-1.64556
25	Adabank		-5.3977	Is Bank		-3.80415	Is Bank		-3.80433	Deutsche Bank		-10.706	Vakıfbank		-1.77218

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Appendix A

Table 1. Financial ratios

Ratios %	
Capital ratios	Net profit (losses) / Total shareholders' equity
Shareholders' equity / (Amount subject to credit risk X market risk X operational risk)	Income before taxes / Total assets
Shareholders' equity / Total assets	Net profit (losses) / Paid-in capital
(Shareholders' equity-permanent assets)/Total assets	*Income-expenditure structure*
Shareholders' equity/(Deposits X non-deposit funds)	Net interest income after specific provisions / Total assets
On balance-sheet FC position / Shareholders' equity	Net interest income after specific provisions / Total operating income
Net on balance-sheet position / Total shareholders' equity	Non-interest income (net) / Total assets
Net (on X off) balance-sheet position / Total shareholders' equity	Non-interest income (net) / Other operating expenses
Balance sheet ratios	Other operating expenses / Total operating income
TC Assets / Total assets	Provision for loan or other receivables losses / Total assets
FC Assets / Total assets	Interest income / Interest expense
TC Liabilities / Total liabilities	Non-interest income / Non-interest expense
FC Liabilities / Total liabilities	Total income / Total expense
FC Assets / FC Liabilities	Interest income / Total assets
FC Assets / FC Liabilities	Interest expense / Total assets
TC Deposits / Total deposits	Interest income / Total expenses
TC Loans / Total loans	Interest expense / Total expenses
Funds borrowed / Total assets	*Share in sector*

Table 1 (cont.). Financial ratios

Assets quality	Total assets
Total loans / Total assets	Total loans
Total loans / Total deposits	Total deposits
Loans under follow-up (gross) / Total loans	*Share in group*
Loans under follow-up (net) / Total loans	Total assets
Permanent assets / Total assets	Total loans
Consumer loans / Total loans	Total deposits
Liquidity	*Branch ratios, Million TRY*
Liquid assets / Total assets	Total assets / No. of branches
Liquid assets / Short-term liabilities	Total deposits / No. of branches
TC Liquid assets / Total assets	TRY Deposits / No. of branches
Liquid assets / (Deposits X non-deposit funds)	FX Deposits / No. of branches
FC Liquid assets / FC Liabilities	Total loans / No. of branches
Profitability	Total employees / No. of branches (person)
Net Profit (Losses) / Total assets	Net income / No. of branches

Table 2. List of banks

Domestic banks (unsuccessful)	
Ziraat Bank	Türk Ekonomi Bank
Halk Bank	Garanti Bank
Vakıfbank	Is Bank
Adabank	Yapı ve Kredi Bank
Akbank	*Foreign banks (successful)*
Alternatif Bank	Arap Türk Bank
Anadolubank	Citibank
Oyak Bank	Denizbank
Sekerbank	Deutsche Bank
Tekfenbank	Finansbank
Tekstil Bank	Fortis Bank
Turkish Bank	HSBC Bank
Turkland Bank	Millennium Bank