# THE FINANCIAL EFFICIENCIES OF TURKISH COMMERCIAL BANKS

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### INTRODUCTION

During the first period of industrialization of Turkey, which began after the foundation of the Republic in 1923, the government aimed at building up a state controlled economy. Within this structure, the state banking system was created. Conditions of the state banking sectors were governed by detailed regulations based on the practices developed within the state system and the state sectors. In 1944, a private banking system was encouraged to develop with Yapı Kredi Bankası (1944), Türkiye Garanti Bankası (1946), and Akbank (1948) entering the system. However, the state banks continued to dominate the Turkish Banking Sector. In the late forties, only the state banks and these few private banks existed. By 1983, the banking system of Turkey had expanded to over 50 banks of which 35 were privately-owned and 15 were publicly-owned. Eleven of the private banks were foreign-owned (4,16). Few of the Turkish commercial banks had branch offices outside of Turkey.

The state banks set the fixed interest rates for deposits and loans. The main purpose of the fixed interest rate was to help create new investment and make capital available to investors in an effort to raise the living standart of the Turkish people. Since 1923, except for the period of 1980-1982, the fixed interest rate was one of the major stimulating factors to economic growth in Turkey. Thus, the state enterprises and state banks provided important economic assistance programs to investors, subsidizing these programs with low and fixed interest rates. In 1944 the Turkish Government introduced a new economic policy by which government policies and private sector incentive programs coupled with the liberalization of the Turkish economy encouraged and expanded private bank system in Turkey.

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This period of general prosperity for the private banking sector continued until the late 50's. During the period of 1945 to 1964, many domestic and foreign banks ceased their operations and were liquidated. These banks were Konya Ahali Bankası (1945), Nevşehir Bankası (1948), Ürgüp Zürra ve Tüccar Bankası (1949), Bor Esnaf Bankası (1959), Göynük Sanayi ve Kredi Bankası (1957), Türk Yapı Bankası (1958), Konya İktisadi Milli Bankası (1958), Türkiye Eski Muharipler Bankası, Muha Bank (1959), Türkiye Mualimler, Memurlar ve Subaylar Bankası, Tümsü Bank (1959), Deutsche Drient Bank (1945), Deutsche Bank (1945), Moskova Bank (1951), Şarki Garip Ticaret Bankası (1956), Niğde ve Akşehir Bankası (1960), Doğu Esnaf Kredi Sanayi (1961), Bor Zürra ve Tüccar Bankası (1961), Türkiye Birleşik Tasarruf ve Kredi Bankaları (1961); Türk Ekspress ve Buğday Bankaları (1962), Tütün Bankası (1963), Ankara, İstanbul, İzmir Halk Sandıkları (1963), Lüleburgaz Birlik Ticaret Bankası (1964), Raybank (1964).

The bank liquidation fund (BLF) was established on June 12, 1960 to handle the liquidation of these failed banks. The liquidation fund was under the Ministry of Finance which was authorized to appoint personnal from the remaining banks which were to manage the liquidation process. But only to cover the responsibilities of the failed banks to depositors and general creditors. Thus, the BLF was an expost facts insurance scheme, whereby the failed banks paid nothing towards the deposit insurance while the surviving banks forced to meet the costs of the banks that failed. The BLF provided 100 percent insurance to all depositors in programs operating in other nations. Using the 1960 exchange rate between 1966-1978, the BLF paid out a total of 352 million Turkish Liras (i.e. 40 million U.S. dollars (14)).

Following the recession of the 1960's with a stable economic climate and the remittances of the Turkish workers from western European countries providing substantial amounts of foreign currency to the banks, Turkey became the recipient of significant foreign currency. This proved valuable for both equalizing Turkey's balance of payment and for making capital available for future investments. These economic developments made the earnings of banks very stable as evidenced by the fact that no bank failure cases are reported between 1964 to 1982.

After a good growth performance coupled with reasonable price level stability which lasted for almost a decade, the Turkish economy came under the shocking effect of sharp oil price increase in late 1973. This marked a turning point in the Turkish economy which passed through a very difficult period. The inflation rate reaching 80 % on a year-to-year

basis. During this period, besides this external inflationary forces, internal pressures also developed as a result of the expansionary and supportive economic stance of the state owned enterprises. Deficit financing was undertaken by the fiscal and monetary authorities. Eventhough the level of prices was increasing steadily, the rate of inflation approached the 100 percent mark and interest rates remained low and fixed by the State. This interest rate policy coupled with the high rate of inflation provided enormous profit opportunities to the banks, which had reached to a state of high liquid positions. Banks experienced sizable profits in the safe environment of regulated low and fixed interest rates. However, the high rate of inflation which prevailed during the 1970's caused a multitude of problems which drove the Turkish economy to the edge of bankruptcy. To reverse recession of mid-seventies, starting in February 1978, the Turkish authorities introduced stabilization measures that were supported by successive international Monetary Fund (IMF) stand-by arrangements. However, as these measures proved to be inadequate to turn the situation around, the inflation worsened. The whole economy was grinding to a halt with shortages and black market practices becoming widely spread (15, p. 2.). After two years ,as an extension of the first policy measures, on January 24, 1980, a number of serious new economic policy measures were announced. In the new measures, the government maintained strict control over monetary growth. The monetary program was designed to limit domestic demand, control the growth of money supply, mobilize domestic savings, and improve resource Therefore, the government had measures which included the maintenance of a tight monetary policy, the restraint of public finances, the liberalization of lending and deposit rates, and the introduction of new financial instruments (5, p. 19). Of the new policy measures, the liberalization of lending and deposit rates (i.e., flexible interest rate) have had the strongest impact on the financial system of Turkey. After the introduction of a free interest rate policy, most bankers who had began to offer unusually high interest rates to attract investors to their notes, went out of business due to large amounts of unpaid debts. Banks followed the high interest rate trend in order to preserve their market shares, but couldn't compete as interest rates rose so drastically to levels of more than 100 percent. During this period, many banks experienced substantial losses with declining net earnings declining, and rising loses from loans.

Since the introduction of the flexible interest rate policy, the problems of banks have been very serious, starting at the beginning of 1983, five banks; Hisarbank, İstanbul Bankası, Odibank, İşçi Kredi Bankası, and Bağbank ceased their operations and declared bankrupt. Follo-

wing this severe bank crisis, the Turkish Deposit Insurance Fund (TDIF) replaced the Bank liquidation Fund. It was chartered by the Cabinet in Banking Decree No. 70, issued July 23, 1983, as one of the tools to stabilize the Turkish banking system. TDIF was not empowered with either the legal authority or the technical knowledge to supervise and/or control the soundness of the banks. The TDIF actions in response to the needs of depositors before a bank became insolvent were extremely passive. If the TDIF is empowered to take decisive measures to supervise and inspect banks, then it could have been more effective in promoting confidence in the Turkish Banking system. Some diagnostic work should be undertaken by the TDIF to detect which indicators must be utilized to screen banks in order to have the ability of predicting problems before they lead to bankruptcy. This research will attempt to fill this gap by developing a statistical model which could be useful in diagnosing which indicators must be screened in order to detect developing problems of banks. To achieve the above objectives, this study focuses on comparison of the financial characteristics of failed and operational Turkish commercial banks for the period of 1977-1983.

# DATA AND METHODOLOGY

The purpose of this study is to identify the financial characteristics unique between the failed and operational (nonfailed) banks for the period of 1977-1983. In the study a total of available 24 Turkish commercial banks were analyzed. Because of structural differences, the government run banks and foreign banks were not included. In the sample, there were five failed banks and nineteen non bankrupt commercial banks. Pairing was purposely avoided for several reasons. First, the pairing criteria used in various studies are adhoc in nature. Usually, pairing is done on the basis of assets, sales, number of years of operations, amount of debt, etc. If the pairing is done on the basis of similar characteristics then why do some fail and others not when they have the same characteristics? Also, in multivariate models, it is not necessary for the sample to be of equal size. Since 1966 at least twenty studies have used financial ratios to demonstrate the different financial characteristic of failed and non failed firms. So far, none of them demonstrated empirically that pairing increases the significance of the analysis (7, p. 586-587).

#### Raito selection:

The causes of corporate failure have been attributed to internal and external factors. Internal factors are identified as poor management.

manifested through lack of responsiveness to change, inadequate communications, over expansion, mishandling of major projects and fraud. External factors include labor problems, governmental requlation and natural causes such as wheather disasters. Although researchers have used financial accounting to account for these factors, the process used in selecting ratios is very diverse. With the exception of the Boot (4), and Gentry, New Bold and Witford's (6) studies, most of the studies undertaken to determine a unique set of financial ratios to classify failed and nonfailed firms, did not have a theory of financial failure on which to have the theoritical basis for selection of specific ratios. A question that emerges when attempting to select financial ratios for empirical research is which ratios, among the literally hundreds to choose from, should be used? The theoretical models provide little foundation as a guide in the choice.

Table one presents the ratios employed by several researchers in their empirical studies of bankruptcy. The diverse selection of financial ratios used in predicting bankruptcy is apparent from the table. Such diversity is not suprising given the limited theoretical basis for choosing the ratios. Ratios are usually selected on the basis of their popularity in the literature to gather with a few ones initiated by the researcher (1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13). Rather than try to investigate theoretical basis to select sample ratios for this study, a list of seven popular and potentially helpful ratios were compiled for analyses as used in one of Sinkey's similar studies (9). The ratios (variables) were classified into three categories; capital adequacy, liquidity, and profitability. The data variables come from year-end figures (December 31) and was collected from Bankalarımızın 1977-1983 Bilanço, Kar ve Zarar Hesapları, Teşkilat, Meyduat ve Krediler Hakkında Bilgiler (16), published yearly by the Turkish Banking Association. In order to achieve the stated objectives of this research with the seven selected variables, the ANOVA statistical technique focusing on the difference between failed and nonfailed banks was carried out. The Anova statistical technique yields a test statistic called the F-ratio, which can be used to decide whether differences among the means of groups may be attributed to real change (9, p. 10).

#### ANOVA RESULTS

To analyze the differences in the means of numerous financial accounting ratios for the two groups of banks. Anova results are provided for selected seven ratios. The measures of these ratios are considered here are as follows:

Table 1 Financial Ratios Used as Predictor of Business Failure

Ratios	Deakin	Taffler	El-Hennawy & Morris	Blum	Beaver	Altman	Edminster	Sinkey
Cash/Current Liabilities	**					. m	×*	
Cash Flow/Current Liabilitie	5		×*				×	
Cash Flow/Total Assets	X4.							
Cash Flow/Total Debt	×*			×*	×*			
Cash /Net Sales	×*							
Cash/Total Assets	×.*							
Current Assets/Current								
Liabilities	×				×			
Current Assets/Net Sales	>:*							
Current Assets/Total Assets	×*		**				x*	
Current Liabilities/Equity							x <sup>†</sup>	
Equity/Net Sales							**	
Inventory/Net Sales							×*	
Long Torm Debt/Net Capital			×*				*	
Market Value of Equity/Book								
Value of Debt						×		
Net Income/Total Assets	28				×*	*		
Net Income/Total Assets	× 4			*	*			
Net Quick Assets/Inventory				*		**		
Not Sales/Total Assets				×*		36		
Net Worth/Total Liabilities						**		
Operating Income/Total Assets		N.				•		
Quick Assets/Cur. Liabilities			×*					
Duick Assets/Net Sales	X.				-			
Quick Assets/Total Assets	N.F	*	x*					
R. of Return to S. Equity				**				
Retained Earnings/Total Asset	s			The State of the S		×		
Return on Stock		N.						
Total Debt/Total Assets '	×				×			
Total Liabilities/Net								
Capital Employed		N.K			N. The			
Horking Capital/Net Sales	-X				SEALS IN			
Working Capital/Net Worth		N.º						
Working Capital/Total Assets	2.							
Capital/Total Assets					×*	2		*
Capital/Risk Assets								X
Ex. Capital Fund/Risk Assets								24
_oans/Capital								Dr.
J.S.Treas.Securities/Assets								75
oans/Assets								X.
Commercial & Ind. Loans/Loans								Çe.
int.& Fees on Loans / Oper In	Come							.*
Jperational Expense/Operation	al Incom	100						メススなんだってなが
Wet Income/Capital		Section of the second						^

\* Denotes statistically significient predictor of business failure as found in the authors study.

Sources: Gentry J.A; P. Newbold and D.T.Whitfost (1987) Funds Flow component, Financial Ratios, and Bankcuptcy: Jornal of Business Finance and Accounting (Winter 1987) P.578. Sinkey, J.F.Jr., D.A.Walker. Problem Banks: Identification and Characteristics; Federal Deposit Insurance Coperation Working Paper Ne 24-2.

## A. Capital Adequacy Measures:

- Total capital/total assets.
- 2. Total capital/risk assets.
- Total commercial loans/total capital.
- 4. Total commercial loans/total assets. Where

Total capital = paid in capital plus retained earnings (if any minus losses)

Risk Assets = Total assets - (cash + government securities)

## B. Liquidity Ratio:

1. Liquidity ratio = Free central bank account + legal reserve + bank accounts + securities/total assets.

## C. Profitability Ratios:

- 1. Return on Assets (ROA) = Net income/total assets
- 2. Return on Equity (ROE) = Net income/total capital

Consider now each of these ratios and note than five failed banks were nonfailed-operational banks before 1982 and banks from both groups presumably were nonproblems. To analyze the differences in the means of numerous operating ratios for the two groups of banks, Anova results are provided for selected seven ratios on Table 2 and 3.

Total capital/total assets: The ratio of the total capital to total assets is a traditional measure of capital adequacy (9, p. 12). In 1979, 1981 to 1983 the group means for this ratio were not significantly different. However, in 1977 and 1980, The failed-bank group had unexpectedly a significantly higher average capital-asset ratio than the nonfailed bank group.

Capital/Risk Assets: On a univariate basis, the ratio of total capital to risk assets has a higher F-statistic than the capital-total asset ratio; otherwise, these measures exhibit the same pattern. Total commercial Loans/Total capital: The ratio of the volume of commercial loans to the level of total capital is used by the United State comptroller of the currency as a first test of capital adequacy. The same ratio perform the "best" in terms of statistical significance in Sinkey's (9) study. The F-Statistic for this variable indicated that the group means of the ratio of

TABLE 2
SELECTED CAPITAL ADEQUACY MESURES AND ANALYSIS-OF-VAIANCE TEST FOR
THE PERIOD OF 1977 TO 1983 GROUP MEANS (PERCENT) AND F-STATISTICS

Variab		1977			1978			1979			1980	
les	Failed	non-failed	F-Ratio	Failed	non-failed	F-Ratio	Failed	non-Failed	F-Ratio	Failed	non-Failed	F-Ratio
							7					
x1	13.51	5.16*	5.69*	12.18	4.01	5.74#	6.65	4.57	0.63	9.47	3.58	5.17€
x2	21.56	7.49*	7.39±	28.04	5.52	8.45#	11.94	6.82	1,44	19.04	5.67	6.37#
x3	479.57	1160*	2:95*	775.73	1297.3	.32	448.68	1363 .	4.37€€	845.8	1788	0.97
x4	40.47	44.72	0.28	43.97	42.68	50.0	38,92	38.92	0.73	63.32	39.28	2.58++
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			ermini harapatani kali inggani ng	d hejiya ne selata basa	e mar men son del trafficio persona son sua sua sua	****		,				
Variab	-	1981			1982			1983				
les	Failed	non-failed	F-Ratio	Failed	no'n-failed	F-Ratio	Failed	non-Failed	F-Ratio			
x1	8.48	7,46	0.051	6.62	8.97	.151	B.43	9.27	0.01			
х2	18.53	11.98	1.14	9.65	12.46	.185	8.98	13,51	0.22			
хЗ	500	1241	2.70**	558.34	804.72	.489	448	678	0.14			

0.001

21.69 42.55 20.26\* 31.32 39.70 1.36 37.85 38.24

Ratio figures are rounded

<sup>\*</sup> Indicates significance level at the three percent level

<sup>\*\*</sup> Indicates significance level at the ten percent level

x1 = Total Capital/Total Assets

x2 = Total capital/Risk Assets

x3 = Total commercial leans/Total capital

x4 = Total commercial loans/Total Assets

loans to capital were significantly different over time. However, the ratio of total commercial loans to total capital didn't yield different results from the first two capital adequacy measures. In this study, the group means for this ratio were only significantly different in 1977, 1979 and 1981. However, this ratio has a quite lower F-statistic than the previous two measures of capital adequacy. Contrary what was expected, the failed bank group has a significantly lower total commercial loans to total capital ratio than the operational bank group. In other words, the failed-bank group had a lower risk (measured by the ratio of total commercial loans to total capital) than the non-failed bank group for the period of 1977-1983. Therefore, this ratio should not also be used as indicator to differentiate the failed-bank group from nonfailed-bank group.

Total commercial loans/total Assets: This is the last capital adequacy ratio used in the study. In 1980 and 1981 the group means for this ratio were significantly different. However, in 1980 the failed-bank group had only significantly higher average total commercial loans-total assets ratio.

To summarize, all four of the alternative measures of capital adequacy did not really indicate that there were statistically significant differences between the capital adequacy of failed and non-failed banks for the period 1977-1983. Although Anova tests for a numbers of years (1977, 1978, 1980) show that the average capital asset and capital —risk assets were significantly different, the failed— bank group had a significantly higher average capital-asset and capital-risk assets ratios than the nonfailed banks. The higher mean value of these ratios for failed bank-group was unexpected.

Besides a capital-adequacy analysis, there are a number of other operating characteristics that might identify failed-bank group from operational bank group. These ratios, presented in Table three, cover the two basic areas of banking activity: liquidity and rates of return. Again the data are for the years 1977-1983, and for each variable its group mean and the corresponding F-statistic are provided on Table three.

Liquidity: The most widely used measure of liquidity is the cash plus government securities divided by total assets. This ratio is shown to be significantly different between the groups in 1977, 1978 and 1979. The mean value of this ratio for the failed-bank group. However, this ratio for the failed bank group declined steadily from 42.28 percent in 1978 to 26.6 percent in 1982 and 6.35 percent in 1983. In contrast, the average nonfailed-bank group maintained this ratio around 30 percent (see table 3).

Rates of return: To measure the profitability of a bank's operations, the ratios of net income to assets and net income to capital are employed.

TABLE 3

# SELECTED PERFORMANCE RATIO AND ANALYSIS-OF-VALANCE TEST FOR THE PERIOD 1977 TO 1983 GROUP MEANS (PERCENT) AND F-STATISTICS

Variab-	. :	977		1	1978		1	979			1980	
les	Failed				non-fäiled					= 150	non-Failed	F-Ratio
x5	1.75	0.37	1,33	0.37	-0.13	0.393	-1.95		0.06	-1.30		5 11/1
	22.88	50.27	0.23	4.97	13.97	0.37	26.11	47.11	2,98**	+3.30	116.65	0.61
x7	34,52	29.00	2.44**	42.28	29.21	5.85*	36.87	28.23	3.03**	31.57	32.68	0.04
Variab	N M M A A A A A A A A A A A A A A A A A	1781		1782		1983						
les	Failed	non-failed	F-Ratio	Falled	non-failed	F-Ratio	Failed	non-Failed	F-Ratio			
x5	-0,59	1.03	3.309**	0.48	0,71	0.05	-0.01	1.27	0.15			
×6	-2.90	43.21	1.80	6.27	8.23	0.018	-0.09	20.95	0.38			

2.24

17 31,88 36.09 0.51 25.6 32,92 0.95 5.35 30.75

Ratio figures are rounded

x5 = Net Income/Total Assets

x6 = Net Income/Total Capital

x7 = Liquid Assets/Total Assets

<sup>\*</sup> Indicates significance level at the three percent level

<sup>\*\*</sup> Indicates significance Tevel at the ten percent level

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The latter measures profitability from the point of view of the stock holder while the former measures rate of return from the point of view of management. Except in 1979, 1980 and 1981, neither of these two ratios indicated any significant difference between the gorups. However, the mean value of these ratios (variables X5 and X6) for the failed bank declined steadily from 11.75 and 22.86 percent in 1977 to 0.48 and 6.27 percent in 1982 and minus 0.01 and 0.09 percent in 1983. Since 1978 the mean value of these ratios was steadily decreased for the failed bank group. This steady decreases in the rates of return ratios suggest that the five failed banks suffered sizeable losses and deteriorated their earning powers towards failure until ceasing operations.

To summarize, except for the years 1979, 1980, 1981, no noticeable significant differences existed between the average failed bank and the nonfailed bank group in terms of profitability. This may be considered as an early indication of Turkish banking crisis in general.

#### CONCLUSION

This study has described and analyzed the identification procedures and certain (univariate) operating characteristics of failed and nonfailed (operational) banks in the Turkish commercial banking sector.

Statistical tests have been applied to various performance ratios for groups of failed and nonfailed (operational) banks for the years 1977-1983. The failed banks used in the statistical analysis are five, four of which failed in 1982 and the other failed in 1983. These failed banks are not matched with operational nonfailed banks. In fact, any arbitrary pairing was avoided.

The group means and corresponding F-Statistics for the seven selected ratios of the study are presented for the period of 1977-1983 in tables two and three. Results presented did not indicate statistically strong significant differences between the two groups. Moderate differences were found for total capital to total assets and for total capital to risk assets ratios in 1977, 1978 and 1980. In other words, the Anova tests for these years showed that total capital to total assets and total capital to risk assets ratios were statistically significant between the two groups. However, in 1977, 1978, and 1980 the mean value of these ratios unexpectedly higher for the failed bank group than the operational bank group indicating that failed bank group had adequate capital compared to the operational banks. The total commercial loans to total assets and the net income to total assets ratios were statistically different between the groups for only 1981.

Both the net income to total capital and the liquid assets to total assets ratios were statistically significant at a more than 5 percent level for 1979. The liquidity ratio was also significant at a 2 percent level for 1978. The total commercial loans to total capital ratio were statistically significant in 1977, 1979 and 1982. This ratio has a very low F-Statistic relative to others. Some of the capital adequacy measures were statistically significant for a couple of years. However, when contradictory mean value of these ratios were taken into consideration, overall findings of capital adequacy ratios were not good enough to indicate statistically significant differences between the groups. In contrast, for 1978 Net Income/Assets, for 1979, 1980 Net Income/Capital ratios indicated statistically significant differences between groups. Although the statistically significant differences in profitability ratios for a couple years exist, the finding concerning the profitability is not strong enough to conclude that the profitability ratios are important variables for the screening of future problems in Turkish commercial banks. To have a precise conclusion, a further study is needed.

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