Foreign Banks and Banking Crisis: Empirical Evidence From Turkey

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Yabancı Bankalar ve Bankacılık Krizi: Türkiye'den Ampirik Kanıt

Özet

Yükselen piyasa ekonomilerinde yabancı bankaların mevcudiyetinin artmasıyla birlikte, literatürde yabancı bankaların ev sahibi ülke ekonomisi üzerindeki etkileri konusunda da tartışmalar başlamıştır. Çalışmamız yabancı bankaların etkileri konusundaki literatüre Türkiye'den ampirik kanıt sunarak katkıda bulunmaktadır. Çalışmamız Türkiye'deki yabancı ve ulusal bankaların finansal kriz dönemlerinde davranışlarını incelemektedir. Türkiye'deki bankaların verileri kullanılarak, yabancı bankaların kriz dönemlerinde kredi istikrarına katkıda bulunup bulunmadığı ve yabancı banka sahipliği ile bir bankanın batma olasılığı arasında bir korelasyon olup olmadığı araştırılmıştır. Ampirik araştırmamız yabancı bankaların kriz dönemlerinde kredi istikrarına daha fazla katkıda bulunduğuna ve Türk bankacılık sektöründeki yabancı sahipliğinin bankaların batma olasılığını azalttığına işaret etmektedir.

Anahtar Kelimeler: Finansal Krizler, Bankalar, Sermaye ve Ortaklık Yapısı, Kredi İstikrarı, Yükselen Piyasa Ekonomileri, Panel Çalışması.

Foreign Banks and Banking Crisis: Empirical Evidence From Turkey

Abstract

As the role of foreign banks in emerging markets increased, a debate which focuses on the impact of foreign banks on the host country has developed. Our paper contributes to this literature by presenting empirical evidence from Turkey. Our paper investigates the behavior of foreign and domestic banks in Turkey during financial crisis period. Using bank level data for Turkey, we investigate whether foreign banks contribute to the stability of credit during the periods of crisis and whether there is a correlation between foreign ownership and a bank's likelihood of failure. Our empirical investigation indicates that foreign banks contribute to the greater stability of credit during the periods of crisis and foreign ownership in the banking sector reduces the probability of bank failure in Turkey.

Keywords: *Financial Crises, Banks, Capital and Ownership Structure, Credit Stability, Emerging markets, Panel Study.*

1. Introduction

Foreign bank acquisition and ownership in emerging markets have increased dramatically in the last decade. This pattern has been more dramatic for Eastern Europe and Latin America than other regions. Share of foreign banks Foreign-owned banks on average account for 80 percent of total banking assets in sixteen transition economies from Central and Eastern Europe and 60 percent of total banking assets in most countries in Latin America.

As the role of foreign banks in emerging markets increased, a debate which focuses on the impact of foreign banks on the host country has developed. Our paper contribute to this literature by presenting empirical evidence from Turkey. Our paper investigates the behavior of foreign and domestic banks in Turkey during financial crisis period. Using bank level data for Turkey, we investigate whether foreign banks contribute to the greater stability of credit during the periods of crisis and whether there is a correlation between foreign ownership and a bank's likelihood of failure. Our empirical investigation indicates that foreign banks contribute to the greater stability of credit during the periods of crisis and foreign ownership in the banking sector reduce the probability of bank failure in Turkey.

The paper is organized as follows. In the next two sections, we analyze banks and bank failures in Turkey. We provide empirical investigation for the relationship between foreign ownership and credit stability during the crisis in section 4 and for the relationship foreign ownership and bank failure in section 5. Finally, we conclude in section 6.

2. Banks in Turkey

The Central Bank, commercial banks and investment and development banks are the forms of conventional banks in Turkey. In regard to ownership, banks can be grouped as state owned, privately owned and foreign owned. Commercial banks are permitted to render universal banking services including providing depository and lending services. Investment and development banks are not allowed to collect deposits from residents or non-residents. Other than depository services, they can provide other services that commercial banks render.

The number of banks operating in the system was stable during the 1970-1980 period due to entry restrictions. The number of banks increased quickly from 43 in 1980 to 66 in 1990 and to 79 in 2000 due to the relaxation of entry restrictions in line with economic and financial reforms. However, the number of banks operating in Turkey decreased considerably after the 2001 financial crisis from 79 in 2000 to 45 in 2008 due to bank failures and financial restructuring program. As of December 2008, there were 45 banks operating in the Turkish banking system: 32 commercial banks and 13 investment and development banks. Out of the total number of 32

commercial banks, 3 were state owned, 11 were privately owned, 1 bank was owned by Saving Deposits Insurance Fund, and 17 were foreign owned bank (whose 51 percent of more owned by non-residents). Out of 17 commercial foreign banks in Turkey, 11 of them were foreign banks founded in Turkey and 6 were branch of foreign banks. Out of 13 investment and development banks, 3 were state-owned banks, 6 were private banks and 4 were foreign owned banks (See Table 1).

While the number of foreign banks in the banking system jumped to 23 in 1990 from 4 in 1980, their number decreased to 18 due to mergers or suspensions in the 1990-2000 period and remained about the same in the subsequent period of 2001-2008. Although the number of foreign banks increased considerably in the banking system, their share in terms of assets, loans and deposits remained low in the sector. As of the end of 2008, foreign banks accounted for on average 15 percent of total assets, 18 percent of total loans, and 13 percent of total deposits in the commercial banking system.

Table 1: The Number of Banks Operating in Turkey

	1970	1980	1990	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Commercial banks	44	40	46	62	61	46	40	36	35	34	33	33	32
State-owned	12	12	8	4	4	3	3	3	3	3	3	3	3
Privately-owned	27	24	25	31	28	22	20	18	18	17	14	11	11
SDIF-owned				8	11	6	2	2	1	1	1	1	1
Foreign-owned	5	4	23	19	18	15	15	13	13	13	15	18	17
Inv. and Dev. Banks	2	3	10	19	18	15	14	14	13	13	13	13	13
Total	46	43	66	81	79	61	54	50	48	47	46	46	45

Source: The Banks Association of Turkey, Banks in Turkey, various years.

By comparing foreign banks with domestic banks in terms of net interest margin, overhead expenses and return on assets, Denizer (2000) concludes that entry of foreign banks into the Turkish banking system boosted up the development of the domestic financial sector by improving the quality of financial products and services, human capital and technology in the sector. With the entry of foreign banks, the Turkish banks computerized their banking systems, and aimed to improve employees' skills through training activities and by hiring high quality

staffs. Credit evaluation, marketing, financial and operational planning of the sector were enhanced with the entry of foreign banks. Thus, the efficiency of the Turkish banking system was enhanced by the presence of the foreign banks.

3. Bank Failures in Turkey

Prior to financial liberalization in 1980, the financial sector was dominated by large state-owned and private banks owned by industrial groups. Entries into the financial system were promoted by financial liberalization in 1980 through relaxation of entry regulations. The liberalization measures led to an increase in the number of new banks and brokerage houses. As a result of new entries into the system, competition in the sector increased. New entrants offered higher interest rates to attract deposits. However, small banks and brokerage houses experienced liquidity crisis in 1982 because of a rising cost of funds. Six banks failed by 1984. After the 1982 financial crisis, prudential regulation and supervision were strengthened by Banking Law No. 3182 in 1985. The Savings Deposit Insurance Fund (SDIF) was founded in 1983 to compensate depositors if a bank is liquidated. The treasury was authorized to liquidate or rehabilitate unhealthy banks. The head of the SDIF was the Governor of the Central bank, and all administrative decisions must be approved by the Central Bank. The membership was mandatory for all domestic and foreign banks.

In January 1994, international rating agencies lowered Turkey's credit rating by taking into account the deteriorating public finance policies of the country, causing devaluation expectations among all economic agents in the economy. This led banks maintaining foreign currency short positions to rush to buy foreign currency with their TL. The shift of all economic units from TL to foreign currency put the exchange rate under heavy pressure, and the TL depreciated by 170 percent on average against the USD in the first quarter of 1994. The crisis and the depreciation of the TL severely hit the banking system due to the foreign currency short positions and heavy investment in government securities. Operations of three banks were stopped by the Turkish treasury.

The Asian crisis and subsequent Russian debt crisis in 1998 led to capital outflows and financial distress in the Turkish economy. Macroeconomic instability negatively affected the Turkish banking system, which had been carrying out portfolios with high interest rate risk and exchange rate risk, in the form of non-performing loans, the increase in the cost of borrowing, and the decrease in profitability ratios. Finally, the liquidity crisis in November 2000 and February 2001 together with steep devaluation led to banking crisis. An unexpected devaluation of TL caused significant foreign exchange losses, and high overnight interest rates considerably reduced the value of marketable securities. Hence, there was a sharp increase in

the number of bank failures in Turkey between 1999 and 2003. Eight banks were transferred to the SDIF in 2001 (See Table 2).

Table 2: Number of Banks Failed Between 1980-2008

Year	Number of Banks Failed
1982-84	5
1988-1993	0
1994	3
1995-1996	0
1997	1
1998	1
1999	6
2000	3
2001	8
2002	1
2003	2
2004-2008	0

Source: The Banks Association of Turkey, Banks in Turkey, various years.

In the line with the IMF stand-by agreement, the amended Turkish Banks Act was passed by the Parliament in December 10, 1999, which also introduced the Banking Regulation and Supervision Board (BRSB) as a new regulatory and supervisory body with a strong emphasis on remedial measures for banks in financial difficulty. The act intended to create a safer environment for existing banks in Turkey and to implement operational policies similar to those envisaged under the Basle Accord. Accordingly, responsibility for managing the Savings Deposit Insurance Fund (SDIF) was transferred to the Banking Regulation and Supervision Board (BRSB) in August 31, 2001.

The basic bank failure story in most of the developing and developed countries, for example in Latin American countries, Asian countries and Nordic countries, is the following: The rapid growth of liquidity as a result of capital inflows due to financial liberalization in the banking system puts pressure for bank credit to grow rapidly,

which results in consumption and import booms together with booms in the stock and real estate markets. A rapid growth in bank lend¬ing to real sector make the banking sector increasingly exposed to destabilizing shocks, and thus increases the probability of bank failure. On the contrary, Turkish banks reduced their ratios of total loans to total assets during financial liberalization period. They excessively invested in government bonds and treasury bills with attractive returns. Banks in Turkey financed government debt by taking maturity and currency mismatched portfolios, i.e. financing long term Turkish Lira denominated government securities with short term foreign exchange denominated deposits and foreign currency denominated international borrowing. However, this strategy embodies serious exchange rate and interest rate risk. In the times of unanticipated changes in exchange rate and external conditions, banks experienced very high capital losses.

4. Foreign Banks and Stability of Credit During the Periods of Crisis in Turkey

The impact of foreign bank presence on credit stability during banking crisis is ambiguous. On the one hand, foreign banks may jeopardise financial stability during periods of local stress. Foreign banks may be more sensitive to difficulties in the host country than their domestic counterparts since they can substitute assets in the host economy with alternative foreign business opportunities outside the host country. When the economic conditions of the host country worsen, foreign banks can reduce their exposure and reallocate the funds outside the host country to seek out external investment opportunities. On the other hand, foreign banks can be a source of stability credit during periods of crisis in the host country. Foreign banks may be more stable lenders than domestic banks during negative shocks to the host country economy since they have better access to external funding sources and capital markets.

In this part of the study, we empirically investigate whether foreign banks contribute to greater stability of credit during the periods of crisis in Turkey by using annual data over the period 1990-2006 for 28 privately owned domestic and foreign commercial banks.

Our sample includes 28 privately owned domestic and foreign commercial banks: 13 domestic banks, 7 branches of foreign banks and 8 foreign owned banks founded in Turkey (joint venture banks with more than 50% of foreign ownership).

In order to compare the performance of domestic and foreign banks in Turkey, seven models that relate banking variables (profitability, net margin, non-interest earnings, overhead expenses, loans, loan loss provisions, loan loss reserves) and dummy variables such as crisis dummy (period before and after the financial crisis) variable and combination of ownership and crisis dummy variable (foreign banks

after the crisis) are estimated. Definitions and sources of variables are given in Table 3.

Table 3: Definitions and sources of variables

Variable	Definitions	Source
Net margin/ta	The ratio of net interest income (interest income and dividend-interest expenses) to total assets.	Turkish Banking Association, Banks in Turkey.
Non-int income/ta	The ratio of non-interest income to total assets.	Turkish Banking Association, Banks in Turkey.
Before tax profits/ta	The ratio of gross profit (profit before income tax and extraordinary items) to total assets.	Turkish Banking Association, Banks in Turkey.
After tax profits/ta	The ratio of net profit (profit after income tax and extraordinary items) to total assets.	Turkish Banking Association, Banks in Turkey.
Overhead/ta	The ratio of operating expenses (salaries and employee benefits and other non-interest expenses) to total assets	Turkish Banking Association, Banks in Turkey.
Loan loss prov/ta	The ratio of loan loss provisions to total assets.	Turkish Banking Association, Banks in Turkey.
Loan loss reserve/ta	The ratio of loan loss reserves to total assets.	Turkish Banking Association, Banks in Turkey.
Loan/ta	The ratio of net loans (loans-loan loss reserves) to total assets.	Turkish Banking Association, Banks in Turkey.
Crisis	Crisis dummy variable. It takes the value of 1 in 2001 and takes the value of 0 in other years.	2001 banking crisis
ForeignCrisis	Combination of foreign ownership and crisis dummy variable. Foreign variable is the foreign ownership variable which takes the value of 1 if the bank is owned by foreigners otherwise takes the value of 0.	Categorization of banks as foreign or domestic is taken from Turkish Banking Association, Banks in Turkey.

We estimate the following fixed effect model:

$$y_{it} = \beta_{0i} + X_{it}'\beta + u_{it}$$

where: y_{it} is dependent variable for bank *i* and it differs for each model. X_{it} represents the matrix of independent variables. Number and variety of

independent variables contained in models differ from one to another. The subscript *it* stands for the *i*-th bank's observation value at time *t* for the particular variable. β_{0i} is bank-specific intercept term and u_{it} is a random error term. The results of the econometric study are provided in Table 4.

Table 4: Fixed Effects Estimation Results

	Dependent Variables (Models)						
Variables	**Net margin/ta**	**Non-int income/ta**	**Before tax profits/ta**	**After tax profits/ta**	**Overhead/ta**	**Loan loss prov/ta**	**Loan/ta**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**
Non-int income/ta	**-0.657**		**0.204**	**0.163**	**0.156**	**-0.007**	**0.154**
	0.049		*0.055*	*0.040*	*0.031*	*0.011*	*0.117*
	[0.000]		[0.0003]	[0.0001]	[0.000]	[0.520]	[0.189]
Loan loss reserve/ta	**-0.677**	**0.123**	**-1.505**	**-1.305**	**0.375**	**0.531**	**0.793**
	0.207	*0.216*	*0.234*	*0.169*	*0.136*	*0.046*	*0.491*
	[0.001]	[0.569]	[0.000]	[0.000]	[0.006]	[0.000]	[0.107]
Overhead/ta	**0.955**	**0.385**	**0.067**	**-0.216**		**0.006**	**-0.363**
	0.077	*0.078*	*0.087*	*0.063*		*0.017*	*0.183*
	[0.000]	[0.000]	[0.441]	[0.0007]		[0.699]	[0.048]
Loan/ta	**-0.039**	**0.029**	**-0.015**	**-0.014**	**-0.028**	**-0.009**	
	0.021	*0.022*	*0.024*	*0.017*	*0.0144*	*0.004*	
	[0.067]	[0.189]	[0.539]	[0.414]	[0.048]	[0.056]	
Crisis	**-2.798**	**-9.770**	**0.051**	**-6.997**	**2.468**	**0.913**	**-15.233**
	1.579	*1.570*	*1.786*	*1.289*	*1.042*	*0.356*	*3.667*
	[0.0771]	[0.000]	[0.977]	[0.000]	[0.0184]	[0.010]	[0.000]
ForeignCrisis	**13.362**	**17.124**	**22.120**	**-1.021**	**-2.023**	**-0.061**	**10.120**
	2.555	*2.518*	*2.890*	*2.086*	*1.696*	*0.577*	*6.048*
	[0.000]	[0.000]	[0.000]	[0.624]	[0.233]	[0.915]	[0.095]
Number of observs.	407	407	407	407	407	407	407
R-squared	0.586	0.488	0.471	0.453	0.442	0.454	0.403

Note: Coefficient estimations are in bold-faces; standard deviations are in italic forms; p-values are in brackets.

The results of the econometric study in regard to banking variables reveal the following. Non-interest income is significantly and positively related to bank profitability (before and after tax profits) while loan loss reserve is negatively related to bank profitability. Coefficient of overhead/ta variable is significantly negative for equation 4 and 7 while it is significantly positive for equation 1 and 2 indicating that increase in overhead expenses is associated with higher net interest margin and non-interest income and lower after tax profits and loans. Loan loss provisioning expenses of all banks significantly decreased when banks provided more loans. Increase increase in loans significantly reduced net margin which is due to increased competition between foreign and domestic banks in Turkish Banking System during the period under study.

Coefficient of crisis dummy variable is significantly negative for equation 1 and 2, indicating that net margin and non-interest income of all banks decreased during the crisis period. In regard to profitability, after-tax profits of all banks decreased during the crisis period. Overhead expenses and loan loss provisions of all banks have increased during the crisis period.

Coefficients of combination of crisis and ownership variable (ForeignCrisis) signal the behavior of foreign banks during the crisis year. It also indicates difference in the behavior of foreign and domestic banks. Coefficient of combination of crisis and ownership variable (foreign banks during the crisis year) for equations 1-2 are significantly positive indicating that the gap in net margin and non-interest income of foreign and domestic banks increased during the crisis year. On the other hand, the gap in before-tax profits of foreign and domestic banks increased during the crisis year indicated by the significantly positive coefficient on ForeignCrisis variable for equation 3.

With reference to the commitment to domestic economy, coefficient of crisis dummy variable is significantly negative; indicating that all banks reduced their credit exposure during the crisis period. However, coefficient of combination of crisis and ownership variable (foreign banks during the crisis year) for equation 7 significantly positive indicating that foreign banks increased their credit exposure during the hard times as opposed to domestic banks. As a result, domestic banks were reluctant to provide loans to the customers during bad times as opposed to foreign banks. Domestic banks responded more strongly than foreign banks to crisis.

In summary, our empirical investigation indicates that foreign banks contribute to greater stability of credit during the periods of crisis in Turkey.

5. Foreign Ownership and Bank Failure in Turkey

The relationship between foreign ownership and the probability of bank failure is ambigous. On the one hand, foreign ownership in the banking sector may reduce the probability of bank failure in developing countries by having access to additional liquidity, foreign exchange and capital from their parents abroad in case of financial crises or difficulty, making banking systems more robust to adverse domestic or external shocks, improving prudential supervision and regulation of the domestic financial system, and enhancing the transparency in the banking sector and efficiency of the macroeconomic policies.

1) The presence of foreign banks can reduce the vulnerability of the banking systems of host countries to domestic or external shocks. International foreign banks are less affected by country-specific negative shocks to the host country economy since their asset portfolio is composed by not only domestic but also international assets. Thus, they are exposed to less risk than domestic banks. Also, the branches and subsidiaries of large international banks usually have the backing of their head offices abroad. They can receive additional liquidity and capital from their parents in times of financial crises in the host country. Moreover, they can transfer liquidity at lower rates than domestic banks into the host country in times of economic stress. Reynoso (2002) reports that subsidiaries of foreign banks had a better access to international financial markets and funds denominated in foreign exchange than domestic banks in Mexico during the financial crisis between 1997 and 1999.

2) Foreign bank entry can result in transfer of internationally accepted disclosure, accounting, and auditing standards, improved risk management practices, and internal control systems to domestic banks. Because activities of the branches and subsidiaries of international banks are supervised by supervisory authorities of the host country and the parent bank, the presence of branches and subsidiaries of healthy international banks belonging to well-regulated financial systems can lead to improvements in prudential supervision and regulation of the host country. Thus, the soundness of banking systems and the stability of financial system in the host country will improve.

Crystal et al. (2002) show that foreign banks in seven Latin American countries over the 1995-2000 period on average sustained higher average risk-based capital ratios, had higher standards in auditing, accounting and disclosure, higher recovery rates for loans, and followed tighter credit review policies and practices.

3) A strong presence of foreign banks can enhance solvency and transparency of the banking sector and efficiency of the macroeconomic policies. Banking markets of emerging market economies and transition economies are characterized by government and family ownership. Those banks are under strong government

pressure to lend directly or indirectly to the government. In return, they demand to be bailed out in hard times. In general, this demand coincides with the period of financial crisis. Governments often finance these bail-outs through higher taxes and inflation and thus have to abondon their stabilization policy.

Foreign bank entry may encourage more prudent behavior by banking institutions. Governments are less likely to bail out foreign banks with solvency problems since it is hard for the government to convince the public to bail out foreign banks. A lower likelihood of bailouts makes banks to be more cautious in their loan policy and credit risk underwriting. Thus, the likelihood of banking crisis will decline. The governments in Czech Republic and Hungary have reduced their control over state-owned banks by privaitizating their state-owned banks. Foreign ownership of formerly government-owned banks brought a change in lending policy, risk management, and competition (Tschoegl, 2003).

On the other hand, foreign ownership of banks may increase the probability of bank failure in developing countries through stimulating capital flight and importing shocks from their home countries or from other countries where they operate.

1) Foreign banks may be more sensitive to adverse conditions in the host country. When host country conditions worsen, they may facilitate capital flight and financial instability. In the extreme case, they may abandon the host country during the crisis. Galindo et al. (2005) and Tschoegl (2003) report that Scotia Bank of Canada, Credit Agricole of France, and Intesa of Italy refused to provide more capital and abondon their subsidiaries during Argentine crisis in 2001.

2) Foreign banks may also import shocks from their home countries or from other countries where they operate. In the extreme situation, foreign banks may retreat from the host country in response to financial difficulties at home country. Operations of foreign banks' subsidiaries are influenced by the health of the parent bank. While the parent holding company with unhealthy financial condition may reduce activities of their subsidiaries, financially healthy parent banks may expand their activities abroad in the case of economic stress in home country.

Foreign banks in emerging Europe mostly from Austria, Belgium, Italy, and Sweden cut their lending in host markets when parent banks experienced financial stress and faced tight interbank liquidity conditions whereas foreign banks in Latin America mostly from Spain, the United Kingdom, and the US increased their lending in host markets during the global credit crunch in mid-2007 (Canales-Kriljenko, Coulibaly and Kamil, 2010).

In this part of the study, we empirically investigate whether there is a correlation between foreign ownership and a bank's likelihood of failure in Turkey by using

annual data over the period 1988-2001 for 44 privately owned domestic and foreign commercial banks.

Our sample includes 44 privately owned domestic and foreign commercial banks founded in Turkey: 39 domestic banks and 5 foreign owned banks founded in Turkey (joint venture banks with more than 50% of foreign ownership). We excluded state-owned commercial banks and branches of foreign banks from the sample. The period under study is between 1988 and 2006. The data is annual.

In order to identify the determinants of bank failure in Turkey, the probability of banking failure is estimated as a function of a set of explanatory variables identified by the empirical literature as useful indicators of a bank's failure (macroeconomic factors, bank specific factors, external factors, and institutional factors) by using a logit model in an unbalanced panel data context. We estimate the following fixed effect logit model specifications:

$$\Pr ob\left(y_{it}=1\right)=\frac{\exp\left(x_{it}'\beta+\alpha_i\right)}{1+\exp\left(x_{it}'\beta+\alpha_i\right)}\equiv\Lambda\left(x_{it}'\beta+\alpha_i\right)$$

where with its the largest presentation:

$$x_{it}'=\beta_1+\beta_2\mathrm{LIQUIDITY}_{it}+\beta_3\mathrm{TOTLOANSASSETS}_{it}+\beta_4\mathrm{NONPERFLOANS}_{it}+\beta_5\mathrm{SHETA}_{it}+\beta_6\mathrm{LSIZE}_{it}+\beta_7\mathrm{GROWTH}_{it}+\beta_8\mathrm{INTEREST}_{it}+\beta_9\mathrm{INFLATION}_{it}+\beta_{10}\mathrm{DEPRECIATION}_{it}+\beta_{11}\mathrm{CINOUTFL}_{it}+\beta_{12}\mathrm{FOREIGN}_{it}$$

$y_{it}=1$ when a bank failure takes place in i-th bank at time t, otherwise $y_{it}=0$. α_i represents bank specific effect. Definitions and sources of variables are given in Table 5.

Our dependent variable, the bank failure dummy, takes the value 0 if a bank does not fail and takes the value 1 if a bank fails. The dependent variable starts taking the value 1 from the previous year when the bank is transferred to the Saving Deposit Insurance Fund (SDIF) and keeps taking the value 1 as long as the bank is owned by the SDIF, i.e., until financial conditions of the failed bank improves. During the estimation period 18 banks failed, one of which was foreign owned.

Table 5: Description of the variables

Variable name	Definition	Source
LIQUIDITY	Liquid Assets / (Deposits + Non-Deposit Funds)	Turkish Banking Association, Banks in Turkey
TOTLOANSASSETS	Total Loans/ Total Assets	Turkish Banking Association, Banks in Turkey
NONPERFLOANS	Non-performing Loans in Million USD	Turkish Banking Association, Banks in Turkey
SHETA	Shareholder's Equity/ Total Assets	Turkish Banking Association, Banks in Turkey
LSIZE	The Logarithm of Total Assets	Turkish Banking Association, Banks in Turkey
GROWTH	the Rate of Growth of Real GDP.	IMF, Financial Statistics
INTEREST	Real Interest Rate= Nominal Interest Rate minus the Contemporaneous Rate of Inflation	IMF, Financial Statistics
INFLATION	the Rate of Change of the GNP Deflator	IMF, Financial Statistics
DEPRECIATION	the Rate of Depreciation of Local Currency Against the US Dollar.	IMF, Financial Statistics
CINOUTFL	Capital Account/ GNP	IMF, Financial Statistics
FOREIGN	Foreign ownership / foreign owned banks founded in Turkey (joint venture banks with more than 50% of foreign ownership)	Turkish Banking Association, Banks in Turkey

5.1. Bank Specific Factors

LIQUIDITY: A stock of liquid assets enables a bank to meet unexpected deposit withdrawals or to respond quickly to a sudden drop in international credit. Hence, a bank with higher level of liquidity might have a lower probability of failure from illiquidity. Thus, a negative relationship between liquidity and failure is expected to find.

TOTLOANSASSETS : In general, the coefficient on the TOTLOANSASSETS is expected to be negative because loans are generally the most risky assets that banks hold. Banks with relatively higher ratio of total loans to total assets are perceived more risky than others. Moreover, the loan portfolio of small banks in Turkey is not well diversified since they mainly finance their holding companies. Thus, it is expected that the higher is a bank's loan-to-asset ratio, the more likely it fails.

On the other hand, as the experience of the Turkish banking system shows, banks may stay away from extending loans to real sector and may invest in government bonds. The ratio of loans to total assets continuously decreased in the Turkish banking system after 1990. The policy of limiting loans to the real sector and financing government deficit may not protect banks from failing. The role of total loans/ total assets in bank failure is captured by TOTLOANSASSETS.

NONPERFLOANS : Credit risk is associated with nonperforming loans. The credit risk could shorten the expected life of a failing bank because large amount of non-performing loans reduce net income and, ultimately, capital. Thus, a high level of nonperforming loans would be positively related to the likelihood of failure.

SHETA: Capital serves as a cushion between adverse shocks and bankruptcy. For a given adverse shock such as cyclical downturns, terms of trade deteriorations, and declines in asset prices such as equity and real estate, the less capital a bank has, the more likely it is to default. Hence, it is expected that a high level of shareholder equity is negatively related to the likelihood of failure.

LSIZE: Ceteris Paribus, we expect larger banks to be more likely to survive. First, they are better able to diversify their asset portfolio and credit risk. Second, in the case of an unexpected liquidity problem, they have easier access to short-term financing due to greater name recognition. Finally, they may be considered as "too large to fail" by politicians.

5.2. Macro Economic Variables

GROWTH: Negative macroeconomic shocks deteriorate the balance sheets of banks and banks' borrowers. The effects of adverse macroeconomic shocks on banking crises are captured by the rate of growth of real GDP.

INTEREST: Since one of the main functions of banks is maturity transformation, i.e. financing long term investments with short term borrowing, banks are subject to interest rate risk. One of the external macro economic conditions that have played a role in the banking crises especially in emerging markets is a sudden and sharp increase in world interest rates. A sharp rise in industrial country interest rates can curtail the flow of foreign funds to emerging markets and raise the cost of the foreign funds for domestic banks and firms. Thus, a large increase in short-term interest rates is likely to be a major source of systemic banking sector problems.

INFLATION: High inflation is associated with high net interest margins and profitability in the banking sector due to increase in the volume of banking transactions and banking activity as a result of high inflation. Hence, banking sectors of countries with a history of high inflation may face with problems after a successful stabilization program. On the other hand, a successful stabilization program also provides financial stability. Thus, in our model the expected sign for

the coefficient on the rate of growth of inflation rate (the GNP deflator) is ambiguous.

DEPRECIATION: The rate of depreciation of the local currency is used in the model in order to test the hypothesis that bank failure may be driven by foreign exchange risk. Exchange rate shifts and foreign currency loans have been a source of banking problems in almost all financial crises in emerging markets. Unexpected exchange rate depreciations can negatively affect the banking sector directly when banks have sizeable un-hedged foreign liabilities and/or there is a maturity mismatch between bank assets and liabilities. Exchange rate depreciations can also indirectly affect the banking sector when large depreciation creates deterioration in the balance sheets of bank borrowers.

5.3. External Factor

CINOUTFL: In order to test whether banking failures are related to external factors or contagion, we use the ratio of the capital account to GNP. Capital inflows take the form of a surplus in the capital account of the balance of payments. Similarly, capital outflows take the form of a deficit in the capital account of the balance of payments. As a result of Mexican Peso crises in 1994 and the Russian debt default in 1998, highly leveraged financial institutions and hedge funds suffered large losses. In order to meet margin calls, these institutional investors sell off their emerging market securities. This created a contagion from Mexico and Russia to other emerging markets. The capital account surplus was $ 1.9 billion in 1987 (2.2 percent of GNP in 1987) and jumped to $ 8.9 billion in 1993 (5 percent of GNP in 1993) before 1994 crises in Turkey. In the crises year of 1994, the capital account deficit was $ 4 billion (-3.3 percent of GNP in 1994). The similar phenomenon was experienced in 1997 and 1998. Depositors and foreign creditors may rush to demand foreign currency, turning the capital account surplus into a deficit. Thus, a negative relationship between the ratio of capital account to GNP and likelihood of bank failure is expected.

5.4. Institutional Factor

FOREIGN: It is a dummy variable, it takes the value of 1 if the bank is foreign owned. The relationship between foreign ownership and the probability of bank failure is ambiguous. On the one hand, foreign ownership in the banking sector may reduce the probability of bank failure in Turkey by having access to additional liquidity, foreign exchange and capital from their parents abroad in case of financial crises or difficulty, making banking systems more robust to adverse domestic or external shocks, improving prudential supervision and regulation of the domestic financial system, and enhancing the transparency in the banking sector and efficiency of the

macroeconomic policies. On the other hand, foreign ownership in the banking sector may increase the probability of bank failure in Turkey through stimulating capital flight and importing shocks from their home countries or from other countries where they operate.

The results of the econometric study are provided in Table 6.

Table 6. Determinants of Bank Failures in Turkey

	(1)	(2)	(3)	(4)	(5)	(6)
Bank Specific Variables						
LIQUIDITY	**-0.0156**	**-0.0158**	**-0.0151**	**-0.0188**	**-0.0119**	**-0.0127**
	0.0114	*0.0078*	*0.0104*	*0.0143*	*0.0098*	*0.0091*
	[0.1742]	[0.0454]	[0.1456]	[0.1882]	[0.2273]	[0.1610]
TOTLOANSASSETS	**-0.0665**					
	0.0176					
	[0.0002]					
NONPERFLOANS	**0.0039**	**0.0080**	**0.0078**	**0.0089**	**0.0074**	**0.0078**
	0.0029	*0.0025*	*0.0032*	*0.0041*	*0.0033*	*0.0029*
	[0.1810]	[0.0017]	[0.0158]	[0.0300]	[0.0255]	[0.0080]
SHETA	**-0.0340**	**-0.0376**	**-0.0349**	**-0.0356**	**-0.0395**	**-0.0343**
	0.0109	*0.0110*	*0.0171*	*0.0188*	*0.0213*	*0.0127*
	[0.0019]	[0.0007]	[0.0415]	[0.0587]	[0.0634]	[0.0072]
LSIZE	**0.0785**					
	0.2783					
	[0.7778]					
Institutional Variable						
FOREIGN		**-2.0227**	**1.7724**	**-2.4390**	**-2.1703**	**-1.3231**
		0.6621	*0.8445*	*0.9511*	*0.8704*	*0.7686*
		[0.0023]	[0.0358]	[0.0103]	[0.0127]	[0.0852]
Macroeconomic Variables						
INFLATION			**-1.0134**	**-0.2449**	**-0.8899**	

			2.6554	*2.2571*	*2.1541*	
			[0.7027]	[0.9136]	[0.6795]	
DEPRECIATION						**-0.0095**
						0.0092
						[0.3043]
REALINTRATE			**-0.0144**	**-0.0134**		**-0.0031**
			0.0209	*0.0191*		*0.0174*
			[0.4904]	[0.4824]		[0.8581]
REALGDPGROWTH					**-0.0585**	
					0.0501	
					[0.2431]	
External Variable						
CINOUTFL				**0.1964**		
				0.1790		
				[0.2726]		
Log Likelihood	-61.176	-72.658	-70.943	-69.249	-70.678	-70.927
AIC	66.1	76.6	76.9	77.2	76.6	76.9

Note: Coefficient estimations are in bold-faces; standard deviations are in italic forms; p-values are in brackets

In regard to bank-specific variables, our findings indicate that banks with lower loans to total assets ratio, lower liquidity, lower capital, and higher non-performing loans are more likely to fail in Turkey. As expected, the coefficient on the ratio of shareholders' equity to total assets is negative and significant in all specifications, indicating that the lower a bank's shareholders' equity to total assets ratio, the more likely it is to fail in Turkey. We have found a negative and significant coefficient on LIQIUDITY in one model. The coefficient on the non-performing loans have the anticipated and significant signs in all models except the model 1. The coefficient on LSIZE is not statistically significant.

Empirical findings of cross-country and country-specific studies suggest that the higher is a bank's loan-to-asset ratio, the more likely it is to fail since loans are generally the most risky assets that banks hold. Contrary to other studies, our study indicates that banks with relatively low ratios of total loans to total assets appear to have been riskier than others. We have found a negative and statistically

significant coefficient on TOTLOANSASSETS , indicating that moving away from extending credit to the real sector and financing high yield government bonds does not protect banks from failing in Turkey.

In regard to macro economic and external variables, the coefficients on macro economic and external variables are not statistically significant in all models including these variables. Thus, Our empirical investigation implies that macro economic variables and capital inflows and outflows do not play significant roles in the probability of bank failure in Turkey.

The coefficient on the FOREIGN dummy variable has always a negative sign and significant in all equations, suggesting that foreign ownership in the banking sector reduce the probability of bank failure in Turkey.

6. Conclusion

Using bank level data for Turkey, we test the following two hypothesis regarding foreign banks: foreign banks contribute to the greater stability of credit during the periods of crisis and there is a correlation between foreign ownership and a bank's likelihood of failure. Our empirical investigation indicates that foreign banks contribute to the greater stability of credit during the periods of crisis in Turkey and foreign ownership in the banking sector reduce the probability of bank failure in Turkey.

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