
DEPOSIT INSURANCE, MARKET DISCIPLINE AND MORAL HAZARD PROBLEM: THE CASE OF TURKISH BANKING SYSTEM

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Deposit Insurance System and Distorted Incentive Structure

- The introduction of deposit insurance system may result in the distorted incentive structure in the banking system, since it causes in the informational asymmetries among contracting parties.
- Contracting parties consist of bank, depositors, and supervisors in the environment where deposit insurance system doesn't exist.
- In this case, depositors who benefit from the returns also bear the risk of loosing their deposits in case of the bank's bankruptcy.
- Therefore, they exert market discipline mechanism over the bank by shifting their funds or adjusting their expected rates of return on the basis of the bank's riskiness (Park, 1995; Park and Persistani, 1998; Demirgüç-Kunt and Huizinga, 2000; Baer and Brewer, 1986; Hannan and Hanweck, 1988; Ellis and Flannery, 1992).
- Consequently, the bank's default risk becomes upperbounded by the constraints of market discipline mechanism.

Deposit Insurance System and Moral-Hazard Problem

- With the introduction of deposit insurance system, the number of contracting parties increases and consists of bank, depositors, supervisors, politicians, and taxpayers.
- To put it simply under deposit insurance system *politicians* promise *depositors* that *taxpayers* will pay the bill of their losses if a *bank* will not be able to meet its obligations.
- This type of deposit insurance design can be viewed as multiparty principal-agent problem and generate moral-hazard behavior (Akerlof and Romer, 1993; Scott and Weingast, 1994; Kane, 1995; McKinnon and Pill, 1999; Kane and Demirgüç-Kunt, 2001).
- Moral-hazard behavior implies that distorted incentive structure in the banking system due to the deposit insurance will give an incentive to the banks to go broke for profit at the taxpayers' expense.
- Deposit insurance removes depositors' constraint over the bank and the bank may become involved in the gambling at the taxpayers' expense.

A Model of Excessive Risk-Taking Under Deposit Insurance System

- The bank's main objective is to maximize expected profits. However, profits are conditional on the default risk upperbounded by a predetermined value p^* ; i.e.,
$$\text{Max } E(x) \quad \text{subject to} \quad p(x) \leq p^*$$
- Given the monotonicity of E and p , the optimal value, x^* , to this problem obviously solves $p(x) = p^*$.
- Then a question arises: how will moral hazard problem will affect the predetermined value of p^* ? p^* is initially determined by depositors' control over banks through market discipline mechanism?
- However, since depositors loose their incentives to exert market discipline mechanism under deposit insurance system, p^* increases and becomes solely dependent of regulatory restrictions.
- Therefore, a bank aiming to maximize $E(x)$ are able to take more risks which also increase the likelihood of its bankruptcy under deposit insurance system..

Turkish Banking System and Deposit Insurance

- Turkish banking system has shown considerable growth since 1980.
- However, long-standing economic imbalances, especially, chronically high inflation, huge public sector borrowing requirements and use of generous tax credits and exemptions to enhance the attractiveness of public sector securities over private sector borrowing have severely constrained the growth of banking system.
- These structural imbalances combined with 100 percent deposit insurance system have distorted the incentive structure of Turkish banking system.
- 100 percent deposit insurance was introduced in Turkey during severe domestic economic crisis in 1994.
- After announcement of the bankruptcies of some domestic commercial banks, Turkish authorities fearing contagion effects of these bankruptcies have viewed 100 percent deposit insurance a way to prevent full-scaled bank runs.

Turkish Banking System and Deposit Insurance

- In 1990s years this period, Turkish banks became heavily engaged in investing short-term government papers which offered abnormally high real interest rates and these investments have been primarily financed by deposit growth and foreign borrowing.
- The introduction of full insurance coverage of deposits under 100 percent deposit insurance system made it easier to raise deposits regardless of the bank's riskiness.
- Low quality banks became engaged in practices of charging extra-high deposit rates and lending to over-risky projects in hope to grow out of their liquidity and solvency problems.
- This excessive risk taking increased default risk of the whole banking system.
- In order to maintain confidence in the banking system and prevent systemic risk, from 1997 to July 2002, the ownership of the twenty banks was transferred to the Saving Deposit Insurance Fund (SDIF).
- The direct fiscal burden of these transfers on economy has exceeded total 15 billions USD. Moreover, banking crisis has caused in the loss of confidence to domestic financial markets and economy has faced the devastating effects of economic crisis in 2000-2001 years.
- Recognizing adverse effects of 100 percent deposit insurance system on the performance of banking system, a plan for gradual reduction of full deposit insurance was put into operation in June 2000.

Summary of Testable Predictions

This table details the economic characteristics I examine for changes after introduction of 100 percent deposit insurance system. I also present and define the empirical proxies employed in the analyses. The index symbols *POST* and *PRE* in the predicted relationship column stand for post 100 percent deposit insurance system and pre 100 percent deposit insurance system, respectively.

Variable	Proxies	Predicted Relationships
Capital Adequacy	<i>Standard Capital Ratio (SCR)</i> = Capital Base / (Risk-weighted Assets, Non-cash Credits and Liabilities)	$SCR_{post} < SCR_{pre}$
Credit Risk	Non Performing Loans / Total Loans (<i>NCR</i>)	$NCR_{post} > NCR_{pre}$
Foreign Exchange Position Risk	(Foreign Ex. Liabilities – Foreign Exch. Assets) / Shareholders' Equity (<i>FXP</i>)	$FXP_{post} > FXP_{pre}$
Liquidity Risk	Liquid Assets/(Deposits + Non-deposit Funds) (<i>LIQ</i>)	$LIQ_{post} > LIQ_{pre}$
Profitability	Income Before Tax / Average Total Assets (<i>INC</i>)	$INC_{post} > INC_{pre}$
Interest Cost	Interest Expenses/Average Non-Profitable Assets (<i>INT</i>)	$IEA_{post} > IEA_{pre}$
Agency Cost	(Salaries and Employee Benefits + Reserve for Retirement) / Total Assets (<i>SAL</i>)	$SAL_{post} > SAL_{pre}$
	Operational Expenses/Total Assets (<i>OPX</i>)	$OPX_{post} > OPX_{pre}$

Research Methodology

- The measurement of the role of moral-hazard behavior on the financial performance changes of banks is a complex task, since it is obviously impossible to trace all of the financial performance changes after introduction of 100 percent deposit insurance system to the moral hazard problem. Many other factors may affect financial performance changes as well.
- Therefore, I adopt two-staged experimental design approach and compare the post-1994 financial performance data of banks with the pre-1994 benchmark using raw and industry-adjusted variable values.
- I use 1994 year as the turning point since 100 percent deposit insurance was introduced in this year.
- The establishment of correct performance benchmark requires the identification of banks vulnerable to the 100 percent deposit insurance system. *State banks* are always under the shield of the 100 percent deposit insurance due to their nature. Therefore, the introduction of 100 percent deposit insurance is not expected to affect their financial performances significantly. *Foreign-owned banks* are not subject to the deposit insurance regulations as well and therefore, moral-hazard behavior is not expected from these banks. Since deposit insurance is related with the deposits, *development and investment banks* are not also expected to show moral-hazard behavior. Consequently, it is *domestic private commercial banks* that are vulnerable to moral-hazard behavior.
- Considering this vulnerability, I analyze the financial performance data of domestic private commercial banks in both of the analysis stages.

Performance Benchmark

- In the first stage, I compare the post-1994 financial performance data of domestic private commercial banks with the pre-1994 benchmark to measure the change in the performance. Some of the adverse changes in the financial performance of post-1994 period can be attributed to the moral-hazard behavior; however, economy- and industry-wide factors also have much effect on these changes. Therefore, the financial performance changes in this analysis will reflect aggregate effects of the moral-hazard behavior, economy- and industry-wide factors.
- In order to eliminate the effects of economy- and industry-wide factors on the financial performance changes and get purified effects of moral-hazard behavior on performance changes, I go to the second stage and use *industry-adjusted* performance measures of all domestic private commercial banks. Industry-adjusted performance of domestic private commercial banks is calculated by subtracting the median of state commercial banks from the sample bank value for each year and bank. Industry-adjusted values will eliminate the effects of economy- and industry-wide factors on the financial performance changes and reflect the effects of moral-hazard behavior on the banks' performance.

Subsample Analysis

- The degree of vulnerability of domestic private commercial banks to moral-hazard behavior may differ according their size. Larger commercial banks are often unwilling to engage in moral-hazard practices and are more concerned with the long-term viability of their banks, whereas smaller banks are more inclined to take excessive risks to make higher profits. Therefore, *smaller domestic private commercial banks* (SDPCB) can be considered as a special subsample that is more inclined to show moral-hazard behavior. This hypothesis is partially supported by the recent evidence from the Turkish banking system: Sixteen banks out of total twenty banks transferred to SDIF pertained to SDPCB subsample.
- In the subsample analysis, I consider the heterogeneity of domestic private commercial banks in terms of their vulnerability to moral-hazard behavior and measure industry-adjusted performance changes of SDPCB subsample. The study of industry-adjusted financial performance changes of SDPCB subsample will make it possible to see the extent of moral-hazard behavior. Industry-adjusted performance of small-scaled domestic private commercial banks is calculated by subtracting the median of larger private commercial banks median from the sample bank value for each year and bank.

Research Methodology

- To test the research predictions, I first compute empirical proxies for every bank for a twelve-year period: six years before (1988-1993) through six years after (1995-2000) introduction of 100 percent deposit insurance system. I then calculate the median of each variable for each bank over 1988-1993 and 1995-2000 windows. 1994 year is excluded from the analysis since the variable values for this year bear crossing effects of the existence and non-existence of 100 percent deposit insurance system.
- Having computed pre- and post-1994 medians, I use the nonparametric Wilcoxon signed-rank test as my principal method of testing for significant changes in the variables. Since financial ratios do not follow normal distribution, the interpretation of the findings of parametric analysis becomes difficult. The small sample sizes also lead to the selection of nonparametric tests as a suitable method of testing financial performance changes.

Sample and Data

Bank Specification	Number of Cases
Development and Investment Banks	18
Commercial Banks, <i>of which</i>	61
Foreign-owned Banks	18
Domestic-owned Banks, <i>of which</i>	43
State Banks	4
Private Banks, <i>of which</i>	39
Larger Banks, <i>of which</i>	12
Transferred to SDIF*	2
Smaller Banks, <i>of which</i>	27
Transferred to SDIF*	14
<i>Source: Banking Association of Turkey (31.12.2000)</i>	

Unadjusted Values: Domestic and Foreign-Owned Private Commercial Banks

<i>Variables</i>	<i>N</i>	<i>Pre-1994 Mean (Median)</i>	<i>Pre-1994 Standard Deviation</i>	<i>Post-1994 Mean (Median)</i>	<i>Post-1994 Standard Deviation</i>	<i>Mean Change (Median)</i>	<i>Z-Statistics for Difference in Medians (Pre- and post- 1994)</i>	<i>Percentage of Firms that Changed as Predicted</i>	<i>Z-Statistics for Significance of Proportion Change</i>
<i>Capital Adequacy</i>									
Standard Capital Ratio (<i>SCP</i>)	29	0.16 (0.10)	0.16	0.16 (0.14)	0.07	0.00 (0.04)	- 1.35	0.28	- 2.08
Capital/Total Assets (<i>CAP</i>)	50	0.15 (0.12)	0.11	0.14 (0.12)	0.09	- 0.01 (0.00)	- 0.21	0.38	- 1.56
<i>Asset Quality</i>									
Credit Risk (<i>NCR</i>)	49	0.04 (0.01)	0.07	0.09 (0.02)	0.28	0.05 (0.01)	1.07	0.43	- 0.86
Foreign Exchange Position Risk(<i>FXP</i>)	51	0.94 (0.90)	0.19	0.79 (0.83)	0.19	- 0.15 (-0.07)	4.65***	0.84	5.04***
<i>Management Efficiency</i>									
(Salaries and Employee Benefits + Reserve for Retirement) / Total Assets (<i>SAL</i>)	50	0.03 (0.03)	0.02	0.03 (0.02)	0.02	0.00 (- 0.01)	- 2.07	0.28	- 2.97
Operational Expenses/Total Assets (<i>OPX</i>)	50	0.03 (0.03)	0.02	0.03 (0.03)	0.02	0.00 (0.00)	- 1.70	0.32	- 2.40
<i>Earnings</i>									
Net Income / Average Total Assets (<i>INC</i>)	50	0.05 (0.05)	0.03	0.06 (0.06)	0.04	0.01 (0.01)	1.56*	0.60	1.56*
<i>Liquidity</i>									
Liquid Assets / Total Assets (<i>LIQ</i>)	50	0.48 (0.47)	0.14	0.50 (0.49)	0.17	0.02 (0.02)	0.85	0.50	0.14

*, **, *** indicates significance at 10, 5, and 1% significance levels respectively using one-tailed test.

Industry-adjusted Values: Domestic and Foreign-Owned Private Commercial Banks

<i>Variables</i>	<i>N</i>	<i>Pre-1994 Mean (Median)</i>	<i>Pre-1994 Standard Deviation</i>	<i>Post-1994 Mean (Median)</i>	<i>Post-1994 Standard Deviation</i>	<i>Mean Change (Median)</i>	<i>Z-Statistics for Difference in Medians (Pre- and post- 1994)</i>	<i>Percentage of Firms that Changed as Predicted</i>	<i>Z-Statistics for Significance of Proportion Change</i>
<i>Capital Adequacy</i>									
Standard Capital Ratio (<i>SCP</i>)	29	0.07 (0.02)	0.16	0.02 (0.01)	0.07	- 0.05 (-0.01)	2.69***	0.72	2.60***
Capital/Total Assets (<i>CAP</i>)	50	0.06 (0.02)	0.11	0.03 (0.01)	0.09	- 0.03 (0.01)	0.81	0.50	0.14
<i>Asset Quality</i>									
Credit Risk (<i>NCR</i>)	49	0.02 (0.00)	0.07	0.08 (- 0.01)	0.30	0.06 (0.01)	0.18	0.50	0.15
Foreign Exchange Position Risk(<i>FXP</i>)	51	-0.02 (- 0.07)	0.18	- 0.15 (- 0.14)	0.19	- 0.13 (- 0.07)	4.37***	0.80	4.48***
<i>Management Efficiency</i>									
(Salaries and Employee Benefits + Reserve for Retirement) / Total Assets (<i>SAL</i>)	50	0.008 (0.005)	0.015	0.008 (0.004)	0.020	0.000 (- 0.001)	- 1.57	0.38	- 1.56
Operational Expenses/Total Assets (<i>OPX</i>)	50	0.005 (0.001)	0.018	0.005 (0.000)	0.02	0.000 (- 0.001)	- 1.23	0.40	- 1.27
<i>Earnings</i>									
Net Income / Average Total Assets (<i>INC</i>)	50	0.03 (0.03)	0.16	0.02 (0.02)	0.07	- 0.01 (- 0.01)	- 1.61	0.46	- 0.42
<i>Liquidity</i>									
Liquid Assets / Total Assets (<i>LIQ</i>)	50	0.24 (0.23)	0.11	0.23 (0.22)	0.09	- 0.01 (- 0.01)	- 0.46	0.48	- 0.14

*, **, *** indicates significance at 10, 5, and 1% significance levels respectively using one-tailed test.

Unadjusted Values: Domestic Private Commercial Banks

<i>Variables</i>	<i>N</i>	<i>Pre-1994 Mean (Median)</i>	<i>Pre-1994 Standard Deviation</i>	<i>Post-1994 Mean (Median)</i>	<i>Post-1994 Standard Deviation</i>	<i>Mean Change (Median)</i>	<i>Z-Statistics for Difference in Medians (Pre- and post- 1994)</i>	<i>Percentage of Firms that Changed as Predicted</i>	<i>Z-Statistics for Significance of Proportion Change</i>
<i>Capital Adequacy</i>									
Standard Capital Ratio (<i>SCP</i>)	20	0.11 (0.09)	0.07	0.14 (0.13)	0.07	0.03 (0.04)	- 2.13	0.20	- 2.46
Capital/Total Assets (<i>CAP</i>)	36	0.15 (0.12)	0.11	0.13 (0.11)	0.07	- 0.02 (-0.01)	0.66	0.33	- 1.83
<i>Asset Quality</i>									
Credit Risk (<i>NCR</i>)	36	0.04 (0.01)	0.07	0.11 (0.02)	0.33	0.07 (0.01)	1.54*	0.53	0.50
Foreign Exchange Position Risk(<i>FXP</i>)	36	0.91 (0.88)	0.15	0.79 (0.83)	0.16	- 0.12 (-0.05)	3.54***	1.00	6.17***
<i>Management Efficiency</i>									
(Salaries and Employee Benefits + Reserve for Retirement) / Total Assets (<i>SAL</i>)	36	0.03 (0.02)	0.01	0.03 (0.02)	0.01	0.00 (0.00)	- 1.90	0.28	- 2.50
Operational Expenses/Total Assets (<i>OPX</i>)	36	0.03 (0.03)	0.02	0.03 (0.03)	0.02	0.00 (0.00)	- 1.51	0.31	- 2.17
<i>Earnings</i>									
Net Income / Average Total Assets (<i>INC</i>)	36	0.05 (0.05)	0.03	0.06 (0.05)	0.04	0.01 (0.00)	1.23	0.58	1.17
<i>Liquidity</i>									
Liquid Assets / Total Assets (<i>LIQ</i>)	36	0.46 (0.45)	0.13	0.44 (0.42)	0.14	- 0.02 (-0.03)	- 0.13	0.42	- 0.83

*, **, *** indicates significance at 10, 5, and 1% significance levels respectively using one-tailed test.

Industry-adjusted Values: Domestic Private Commercial Banks

<i>Variables</i>	<i>N</i>	<i>Pre-1994 Mean (Median)</i>	<i>Pre-1994 Standard Deviation</i>	<i>Post-1994 Mean (Median)</i>	<i>Post-1994 Standard Deviation</i>	<i>Mean Change (Median)</i>	<i>Z-Statistics for Difference in Medians (Pre- and post- 1994)</i>	<i>Percentage of Firms that Changed as Predicted</i>	<i>Z-Statistics for Significance of Proportion Change</i>
<i>Capital Adequacy</i>									
Standard Capital Ratio (<i>SCP</i>)	20	0.03 (0.01)	0.07	0.00 (-0.01)	0.07	- 0.03 (- 0.02)	2.43***	0.70	2.01**
Capital/Total Assets (<i>CAP</i>)	36	0.05 (0.02)	0.11	0.03 (0.01)	0.07	- 0.02 (-0.01)	0.17	0.47	- 0.17
<i>Asset Quality</i>									
Credit Risk (<i>NCR</i>)	36	0.01 (-0.01)	0.07	0.09 (-0.01)	0.34	0.08 (0.00)	0.67	0.55	0.70
Foreign Exchange Position Risk(<i>FXP</i>)	36	-0.06 (-0.08)	0.14	-0.16 (-0.13)	0.16	-0.10 (-0.05)	3.17***	0.78	3.50***
<i>Management Efficiency</i>									
(Salaries and Employee Benefits + Reserve for Retirement) / Total Assets (<i>SAL</i>)	36	0.006 (0.004)	0.014	0.006 (0.003)	0.014	0.000 (- 0.001)	- 1.34	0.39	- 1.17
Operational Expenses/Total Assets (<i>OPX</i>)	36	0.003 (0.000)	0.016	0.003 (0.000)	0.019	0.000 (0.000)	- 0.93	0.42	- 0.83
<i>Earnings</i>									
Net Income / Average Total Assets (<i>INC</i>)	36	0.03 (0.03)	0.03	0.01 (0.01)	0.04	- 0.02 (-0.02)	-1.59	0.44	-0.50
<i>Liquidity</i>									
Liquid Assets / Total Assets (<i>LIQ</i>)	36	0.22 (0.20)	0.13	0.18 (0.16)	0.15	- 0.04 (-0.04)	-1.05	0.39	- 1.17

*, **, *** indicates significance at 10, 5, and 1% significance levels respectively using one-tailed test.

Research Findings

- The introduction of full deposit insurance system resulted in
 - increasing foreign exchange position risk
 - increasing credit risk

THE EFFICIENCY OF MARKET DISCIPLINE MECHANISM

- In this part, I will study the efficiency of market discipline mechanism by examining the returns on bank equities which are transferred to SDIF to determine if these returns are sensitive to the potential of transfer.
- If the market rates of returns are sensitive to the increased transfer threat, it will be possible to claim that market is able to exert market discipline mechanism by selling the shares of the overrisky banks.
- Considering close links of stock market attendants and depositors, it will be also possible to suggest that if 100 percent deposit insurance system hasn't weakened market discipline mechanism, then depositors would be able to exert similar market discipline mechanism by withdrawing their deposits from banks or asking for higher rates of returns.
- For the analysis purposes, I collect a sample of banks transferred to SDIF over the period 1995-2001.
- The primary database consists of 20 failed banks. From this database, I select the banks whose shares was actively traded in Istanbul Stock Exchange (ISE).
- This selection criterion reduces my initial sample to 4 banks.
- These banks are Esbank, Yasarbank, Demirbank, and Toprakbank.
- The source of the market data used in this study is Istanbul Stock Exchange.

Research Methodology

- The information content of any event is measured as the abnormal common stock return relative to the aggregate market return.
- To measure the sensitivity of the stock returns to increased potential of transfer to SDIF, I use the methodology of Fama, Fisher, Jensen, and Roll (1969) modified by Pettway (1980) to remove any industry effect.
- My estimates on the market reaction to the potential of transfer of bank to SDIF are based on the market model prediction errors.
- Since calculation of the expected returns using failed bank's market estimates do not reflect changes in the risk perceptions and industry effects, I calculate expected returns using returns on benchmark portfolio of nonfailed banks.
- This method will differentiate the pattern of share prices of failed banks from the pattern of share prices of nonfailed banks.

Research Methodology

1. Equally-weighted benchmark portfolio is constructed from the stocks of nonfailed banks using six commercial banks whose shares are actively traded in Istanbul Stock Exchange and have continuous data over estimation period.
2. Weekly returns on the portfolio are calculated on the Thursday's closing price. I calculate market parameters using market model as in

$$\tilde{R}_{p,t} = \hat{\alpha}_p + \hat{\beta}_p \tilde{R}_{m,t} + \tilde{u}_{p,t}$$

3. There are two specific dates related with the transfer of the bank to the SDIF. The market estimates are calculated relative these dates.
 - ❑ The beginning date of the examination which led to the classification on the problem bank list
 - ❑ The date of the transfer of the bank to the SDIF.

4. Expected return of the nonfailed bank portfolio can be calculated using following equation:

$$\hat{R}_{p,t} = \hat{\alpha}_p + \hat{\beta}_p R_{m,t}$$

Research Methodology

Table 6: The Market Model Estimates

Banks	Yasarbank	Esbank	Demirbank	Toprakbank
<i>The Month of the beginning of the examination which led to transfer to SDIF</i>	02/1995	08/1995	11/ 2000	12/2000
<i>Estimating Period</i>	04/02/93 – 01/02/96	05/08/93 – 25/07/96	12/11/98 - 30/11/00	26/11/98 – 29/01/01
$\hat{\alpha}_p$	0.01	0.01	0.01	0.01
$\hat{\beta}_p$	0.74	0.74	0.68	0.70
R^2	0.65	0.66	0.72	0.75
<i>Date of the announcement of transfer to SDIF</i>	22/12/1999	22/12/1999	06/12/2000	30/11/2001
<i>Estimating Period</i>	28/11/96 – 16/12/99	28/11/96 – 16/12/99	06/11/97 - 30/11/00	26/11/98 – 29/11/01
$\hat{\alpha}_p$	0.01	0.01	0.01	0.01
$\hat{\beta}_p$	0.71	0.71	0.74	0.70
R^2	0.79	0.79	0.81	0.75

Research Methodology

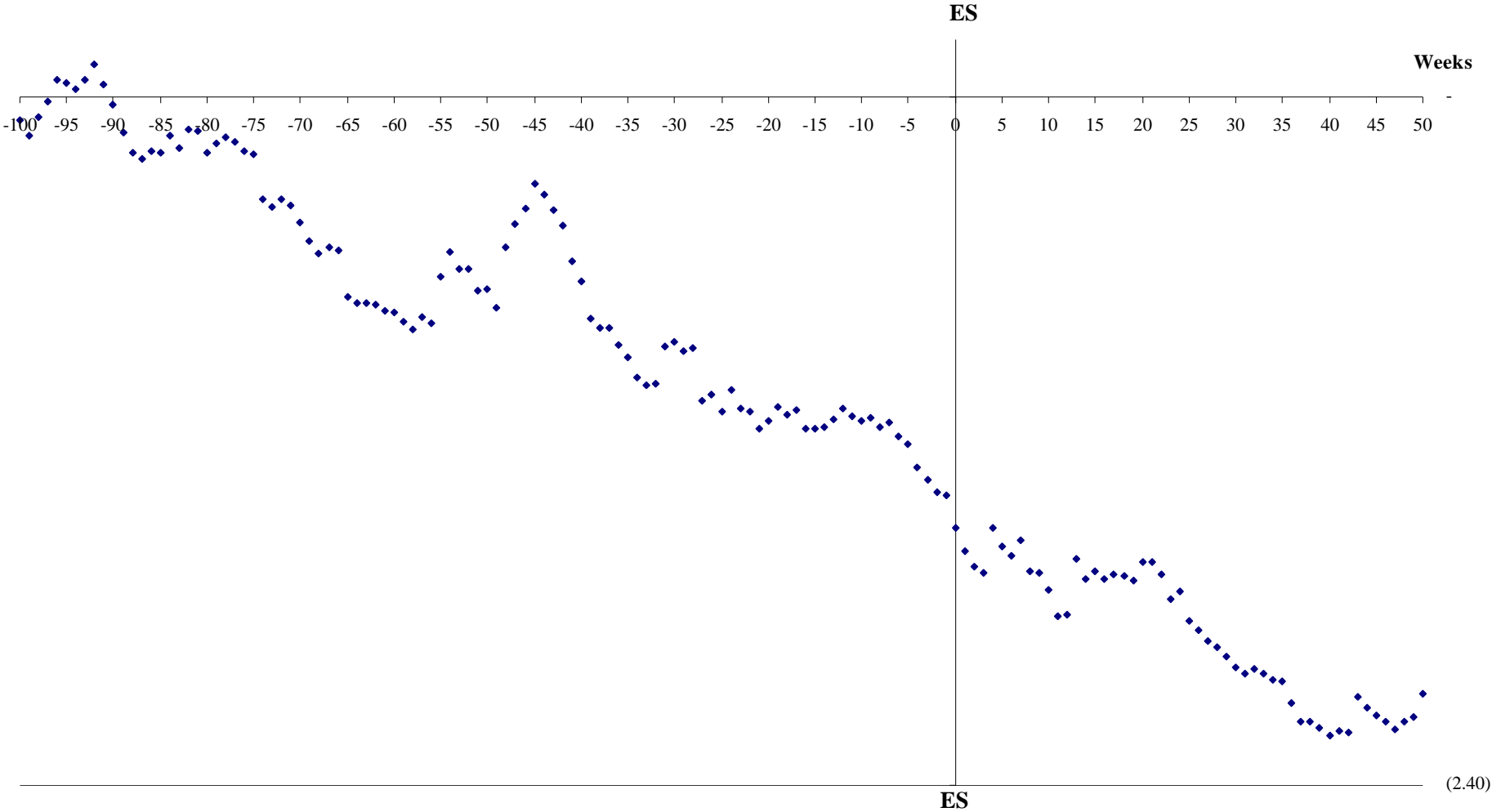
- Under the assumption of multivariate normality, the abnormal returns (market model prediction errors) to bank i on week t can be written as

$$AR_{i,t} = \tilde{R}_{i,t} - \hat{R}_{p,t}$$

$$AAR_t = \sum_{i=1}^n AR_{i,t} / n$$

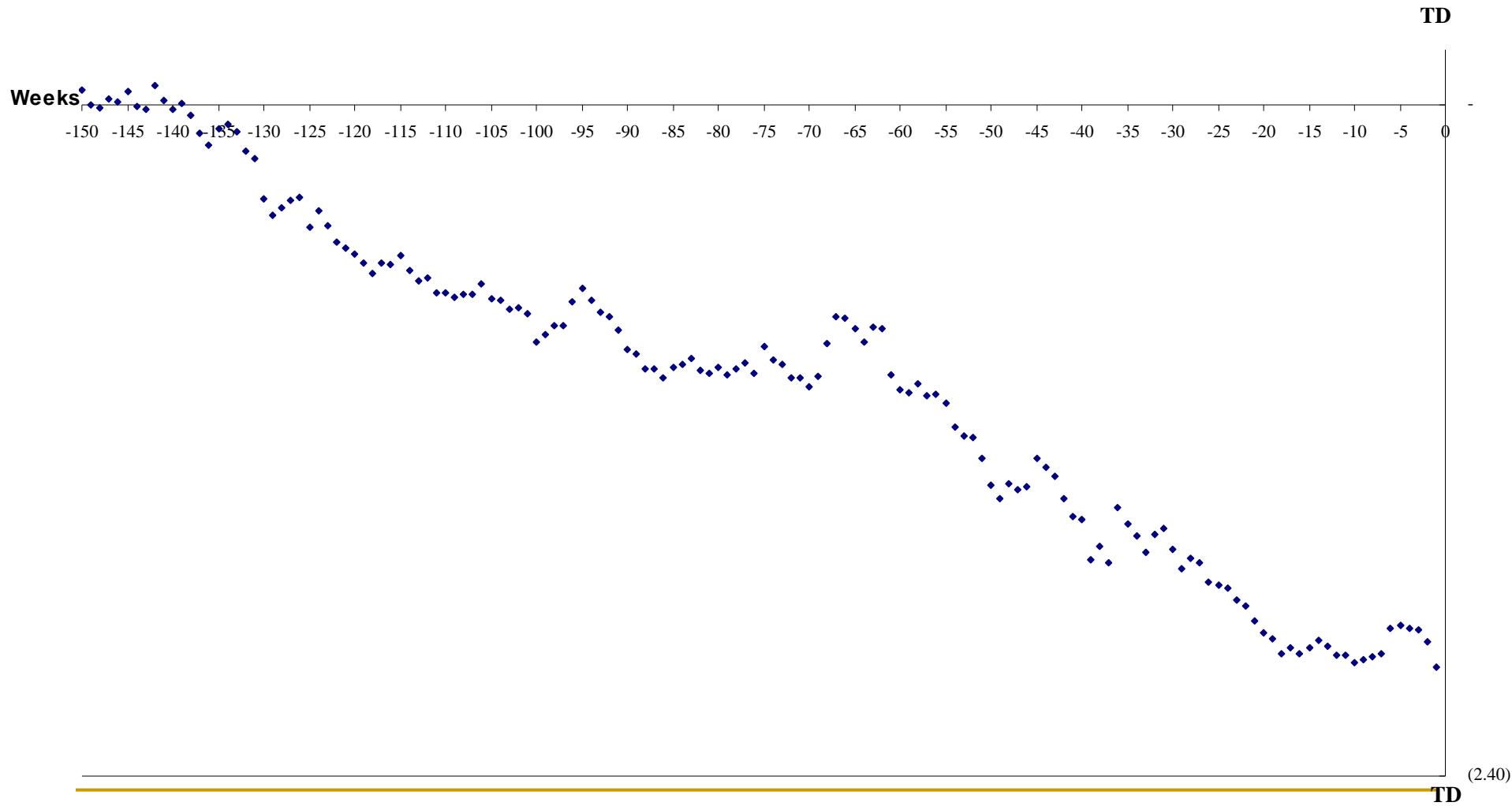
$$CAR_T = \sum_{t=1}^T AAR_t$$

FIGURE 1
Cumulative abnormal returns for the period around the date of starting of the examination which led to the transfer of the bank to SDIF.



(2.40)

FIGURE 2
Cumulative abnormal returns for the period around the date of transfer of the bank to SDIF.



Design of Optimal Deposit Insurance System

- The research findings should be interpreted carefully. Though, it stresses that the market discipline mechanism is essential for the proper-functioning banking, it doesn't claim for the fully abolishment of deposit insurance system. Since deposit insurance system hampers contagion effects of the individual bank runs, the optimal solution for this problem should be based on three pillars:
 - Not much distorting the functioning of market discipline mechanism
 - Preventing contagion effects of the individual bank-runs
 - Conducting stronger supervision to compensate for distorted market discipline mechanism.