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TILEC Discussion Paper

Bank Disclosure and Market Assessment of Financial Fragility:

Evidence from Banks' Equity Prices *

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Abstract

The most recent literature on crises points out that financial fragility in the banking and/or corporate sector are at the root of financial crises. In this paper we explore how Turkish shareholders reacted to changes in their banks' measures of financial fragility during the years prior to the 2000/2001 crisis, and how the quality and timeliness of the disclosure affect market reaction. We find that shareholders reacted negatively to indicators of financial fragility such as increases in maturity mismatches, currency mismatches, and non-performing loans, showing shareholders' concerns about the impact of financial fragility indicators on future profits. We also find that improvements in disclosure requirements, such as the Banks Act in 1999, increase the informativeness of accounting statements, and that audited statements that show larger reporting lags, are not informative, pointing to the need of improving their timeliness. Finally our study also suggests that the finding that securities prices react to financial fragility indicators should not be taken as sufficient evidence of banks' safety and soundness.

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Abstract

The most recent literature on crises points out that financial fragility in the banking and/or corporate sector are at the root of financial crises. In this paper we explore how Turkish shareholders reacted to changes in their banks' measures of financial fragility during the years prior to the 2000/2001 crisis, and how the quality and timeliness of the disclosure affect market reaction. We find that shareholders reacted negatively to indicators of financial fragility such as increases in maturity mismatches, currency mismatches, and non-performing loans, showing shareholders' concerns about the impact of financial fragility indicators on future profits. We also find that improvements in disclosure requirements, such as the Banks Act in 1999, increase the informativeness of accounting statements, and that audited statements that show larger reporting lags, are not informative, pointing to the need of improving their timeliness. Finally our study also suggests that the finding that securities prices react to financial fragility indicators should not be taken as sufficient evidence of banks' safety and soundness.

Keywords: market discipline, event studies, financial fragility, maturity mismatch, bank disclosure.

JEL Codes: G14, G21, G28, H63, M41

1 Introduction

The third generation crisis literature emphasizes financial fragility as an important factor in turning a crisis into a major one (Corsetti et al. 1998a, 1998b, Radelet and Sachs 1998, Kaminsky and Reinhart 1999). In particular this literature points out that balance sheet problems in the banking and/or corporate sector work to increase the prospect of insolvency and can be a trigger for domestic and external investors to reassess their willingness to finance a country. Dornbusch (2001) emphasizes three sources of vulnerability: a substantially misaligned exchange rate, balance sheet problems in the form of nonperforming loans and balance sheet problems in the form of mismatched exposures. The last of these sources includes maturity mismatches as well as currency mismatches. These misalignments or mismatches become explosive when there is a perception that the current exchange rate is not sustainable or that debtors will not be able to meet their liabilities.

In this paper we investigate whether Turkish banks with worsening indicators of financial fragility were subject to market monitoring¹ during the years prior to the crisis. In November 2000 Turkey went through a liquidity squeeze that ended in a currency crisis in February 2001. This was the worst crisis Turkey experienced in its post-war history (Özkan 2005). While a weak external and fiscal position were at the root of the crisis, most analysts point to the fragility of the banking sector, in terms of maturity and currency mismatches, as a factor that increased the magnitude of the crisis. To the best of our knowledge this is the first paper that investigates market's reaction to changes in currency and maturity mismatches in an emerging economy.

¹ We refer to market monitoring in the context of Bliss and Flannery (2002) who emphasize that effective market discipline has two different components. The first one is investors' ability to accurately assess the condition of a firm (market monitoring). The second one is investors' ability to actually affect managerial actions (influencing). Our empirical tests address the first component of market discipline, monitoring.

Specifically, we address the following questions. Did the stock market react to changes in indicators of financial fragility at the time of disclosure of banks' financial statements? And does the quality and timeliness of the disclosure affect market reaction? Finding answers to these questions will help us understand which disclosure practices improve the ability of the market to assess the banks' financial condition. Moreover it will allow us to contribute to a recent policy debate on whether the existence of market monitoring is sufficient to guarantee that the actions of bank managers are influenced by security holders' reactions, contributing in this way to the safety and soundness of the banking system.

The case of Turkey presents several characteristics that make it ideal for our purposes. First, before November 2000, the Turkish banking system presented clear signs of financial fragility. Turkish banks were borrowing heavily in foreign currency, while lending in local currency. In addition to the increased currency risk, banks' combined liquidity-interest rate risk from domestic funding also rose, because the local currency lending was mostly at fixed rates and at relatively longer maturities, which was partly financed in the daily repo market². Second, 16 private Turkish banks were publicly traded in the Istanbul Stock Exchange during our sample period, allowing us to test for market monitoring. They represent almost 40% of the assets of the industry in the year 2000. Finally, disclosure policy was enhanced during the period. In 1995 the Turkish Capital Markets Board required publicly traded firms to disclose additional information with their financial statements that allowed investors to calculate more precise measures of maturity gaps and currency mismatches. Moreover in 1999 problems in the Turkish banking sector led to the enactment of the Banks Act 4389³

² Table 1 and 2 describe the structure of assets and liabilities in the Turkish banking sector before the year 2001.

³ Amended by Act No. 4491

followed by the establishment of an autonomous body, The Banking Regulation and Supervision Agency (BRSA). The new regulation brought considerable changes in the disclosure requirements of banks, including the requirement of disclosing risk management procedures (which was not compulsory before) and improvements in the disclosure of non-performing loans. With the new regulation, if one loan was non-performing, other loans of the same customer had to be classified also as non-performing (Barth, Caprio and Levine, 2001).

Our paper provides evidence that during the years before the crisis stock market participants monitored the banking system. We find significant negative reactions to all indicators of financial fragility. Specifically, the impact of a positive maturity gap, when interest rates were expected to rise, was negative and significant (abnormal returns fell on average 37 basis points with a one-month increase in maturity gap). Stock returns were also sensitive to increases in currency mismatch measured as the change with respect to the previous quarter in the percentage of net foreign exchange liabilities on total assets. An increase of 1% in the mismatch drove abnormal returns down by 25 basis points. Finally, an increase in non-performing loans also significantly reduced abnormal returns.

As expected, and consistent with previous literature on earnings announcements (La Porta et al. (1997), Sivakumar and Waymire (1993)), we find a positive relationship between abnormal returns and changes in earnings. Interestingly, the positive reaction to earnings depended negatively on the magnitude of the maturity mismatch. Overall, our results indicate that while shareholders reacted positively to news about increases in current profits, they were also concerned about the negative impact that the mismatches could have on future profits.

We are also interested in how the quality and timeliness of the disclosure affected market reaction. We find that after the passage of the Banks Act in 1999 that introduced considerable improvements in the way non-performing loans had to be reported, the stock market sensitivity to changes in this ratio increased significantly. In fact, once we allow the coefficient to change with the passage of the law, we find that it is only after 1999 that this financial fragility indicator becomes informative. We are also concerned about the reporting lag (days between the end of the quarter and disclosure date) and how this affects the usefulness of financial statements. In fact, accounting principles such as the ones developed by the Financial Accounting Standards Board (FASB), require that financial statements be both reliable and relevant. In particular we notice that for the second and fourth quarters when the financial statements are audited the lag is larger (on average 47 days as opposed to 31 days). We find that only the statements corresponding to the non-audit quarters (the ones with shorter reporting lag) were informative, showing that there is a tradeoff between accuracy and relevance, and indicating the need of improving the timeliness of audited statements.

Our paper is related to the recent literature on bank disclosure and market discipline. It is argued that increased transparency should reduce the magnitude and frequency of bank problems, as long as enhanced disclosure allows market participants to impose market discipline earlier and more effectively. In fact there is empirical evidence in this direction. Tadesse (2005) finds that banking crises are less likely in countries with regulatory regimes that require extensive bank disclosure and stringent auditing. Also, Nier and Baumann (2006) in a cross-country study find that greater information disclosure and uninsured liabilities induce banks to hold larger capital buffers leading to lower default risk. However, they also find that an extensive government safety net and lower levels of interbank

competition weaken the efficacy of market forces. Other papers also warn about relying only on market forces. Jordan, Peek and Rosengren (2000) provide evidence that market participants find supervisory information important in the pricing of US bank securities, especially for banks that were not fully informing their true condition in their prior disclosures.⁴ In this same spirit Bliss and Flannery (2002) in their study of US banks find it hard to conclude that market forces encourage bank management to adopt safer bank practices. Their methodology does not provide strong evidence that investors regularly influence managerial actions. While Nier and Baumann (2006) stress that the effectiveness of market discipline depends on the regulatory environment, both Jordan, Peek and Rosengren (2000) and Bliss and Flannery (2002) point to the need of supervisors retaining the responsibility for influencing managerial actions. Our paper also points in this direction. Even if we find evidence of the existence of monitoring of Turkish private banks from the stock market, and given the magnitude of the crisis that unfolded afterwards, we have to conclude that this was not enough to correct the problems. For example, three banks in our sample failed in 1999-2000. Two of these banks reported the highest average levels of maturity and currency mismatch respectively during the sample period. In fact, monitoring was not strong enough (there was no market discipline from debt given that deposit insurance was complete), and there were important weaknesses in the supervisory and regulatory framework that exacerbated moral hazard problems. We discuss them in the last section. In summary, our study suggests that the finding of reaction of securities prices to financial fragility indicators should not be taken as sufficient evidence of banks' safety and soundness.

⁴ Specifically, they analyze the information content of adverse supervisory evaluation of banks (also known as formal actions) that reveal to the public that the bank is deeply troubled, and that require the bank to take remedial actions.

The remainder of the paper is organized as follows. In section 2, we describe the data and the methodology. We present the main estimation results in section 3, followed with robustness tests in section 4. Section 5 concludes.

2 Data and Methodology

2.1 Data source and sample selection

Our study uses quarterly accounting information and stock price information for 12 commercial Turkish banks listed on the Istanbul Stock Exchange between 1992 and 2001. From the total of 16 banks publicly listed in Turkey, we exclude two development banks that do not collect deposits, and two commercial banks due to non-availability of data. The 12 banks represent 37% of the assets of the industry in the year 2000. The sample is an unbalanced panel since two banks went public after 1995, and three banks were delisted, two in 1999 and another one in 2000. We exclude disclosure events after the third quarter of 2001 because, starting in December 2001, the Capital Markets Board required financial statements to be reported on an inflation-adjusted basis⁵, preventing comparability with the previous statements.

We obtain quarterly accounting information for the banks, their disclosure dates, the daily bank stock prices, and the market index (ISE National-100), directly from the Istanbul Stock Exchange. Stock prices of banks are daily closing prices, and we adjust returns for dividends and stock splits. We eliminate 26 observations that experience confounding events such as dividend payments and stock splits, and three observations where the date of disclosure is not available. The final sample includes 333 bank-quarter observations for the

⁵ Capital Markets Board Regulation, Serial: XI, No:20, 28/11/2001

sample period 1992-2001. However for three of our main explanatory variables there is only detailed information since 1995⁶. Therefore for most of our main specifications, our sample includes 199 bank-quarter observations. We give detailed information on the data availability for each bank in Table A1, and a list of all disclosure dates for the 12 banks during the sample period in Table A2 in the Appendix.

2.2 Methodology

The methodology applied in this study is based on the market-adjusted-return model. We adjust the rate of return on the bank stock by subtracting the return on the market index from the bank stock return. When computing abnormal returns using the market model instead, we have to estimate pre-event periods, which overlap with the previous events. To have a clean measure, we choose the market-adjusted-return model as our mainline, since this approach does not require an estimation period to obtain parameter estimates. However in section 4, we use the market model and show that our results are robust to the use of this alternative methodology.

As the market portfolio, we use the Istanbul Stock Exchange National-100 index (ISE National-100) that includes 100 companies with the highest market values and the highest daily average trading volumes. Next we compute the Cumulative Abnormal Returns (CAR) over a number of days, $[t_1, t_2]$ for n securities. We first examine the event window $(-1, 0)$. Since the financial statements are disclosed on day 0 in the morning, the new information should be reflected in the stock prices immediately on the event day. However, we cannot eliminate the possibility of leakage of information before the disclosure day. Therefore we also allow for a broader event window that includes 5 trading days before the event day.

⁶ We explain this in detail in Section 2.3

We also need to correct for potential cross-correlation of abnormal returns, given that disclosure dates are the same for some banks for some quarters (see Table A2). Such clustering of announcement dates requires special adjustments both in the univariate tests as well as in cross-sectional regressions. To correct for the clustering problem in the univariate tests we follow the technique summarized in Jaffe (1974), Collins and Dent (1984) and in Campbell, Lo, and MacKinlay (1997). This technique eliminates the clustering problem by first aggregating abnormal returns corresponding to the same calendar time into portfolios. Mean and standard deviation of returns are then calculated across portfolios, which do not face a clustering problem.

To handle the clustering problem in cross-sectional regressions, we follow Petersen (2006). He shows that in the presence of a time effect (correlation across firms), “standard errors clustered by time” produce unbiased standard errors. However, clustering by time is an appropriate method only when there are a sufficient number of clusters. The bias in the clustered standard error estimates declines with the number of clusters, dropping from 27 percent when there are five clusters to one percent when there are 100 clusters.

In our analysis we apply a pooled OLS with White standard errors, which are also robust to within cluster correlation (clustered or Rogers standard errors).⁷ We do this given that it is possible that our abnormal returns corresponding to the same disclosure dates are contemporaneously correlated across banks. The number of clusters in our main regressions ranges from 246 to 107.⁸ Because it is higher than 100 we are confident that underestimation of true standard errors is not a problem in our regressions.

⁷ We cannot use Fama-McBeth because the size of our sample is too small.

⁸ The average number of banks disclosing on the same calendar date is 2.6.

2.3 Variable Definitions

Using US data, Beaver *et al.* (1989), Flannery and James, (1984a and 1984b) and Schrand (1997) find that that the disclosure of financial statements along with supplemental data regarding default risk and interest rate risk explain variation in banks' stock prices. In line with this, our objective is to test whether abnormal returns of Turkish banks at disclosure can be explained by changes in financial fragility variables, controlling for changes in traditional variables such as earnings.⁹ Ideally, we would build measures of unexpected changes in the explanatory variables. However, unfortunately there is no data available that can proxy for the expected values of the explanatory variables, such as analysts quarterly forecasts of profits of Turkish banks, or quarterly forecasts of bank specific measures of maturity or currency mismatches. As a second best, we take quarterly changes in variables (for earnings, yearly changes in quarterly earnings). We take quarterly changes, because Turkish banks disclose financial information quarterly. Specifically, our explanatory variables for financial fragility are the quarterly changes in non-performing loans, and in measures of maturity and currency mismatch. The data for maturity and currency mismatch is hand-collected from the footnotes of financial statements. We also control for changes in profitability and in banks' lending behaviour (e.g. investing in government bonds instead of lending to corporations).

Non-performing loans changes (NPL) is defined as the as the change with respect to the previous quarter in the percentage of non-performing loans on total loans. We expect *NPL* to have a negative effect on abnormal returns.

⁹ La Porta *et al.* (1997), Sivakumar and Waymire (1993) among others, show that surprises in earnings announcements have a significant impact on abnormal returns.

Maturity mismatch changes (Maturity) is measured as quarterly changes in maturity gaps. We follow Saunders and Cornett (2003, p177) to compute the gaps. Letting M_A be the weighted average maturity of a bank's assets and M_L the weighted average maturity of a bank's liabilities, the maturity gap is calculated as the difference between M_A and M_L .

Such that:

$$M_i = w_{i1}M_{i1} + w_{i2}M_{i2} + \dots + w_{in}M_{in}$$

where

M_i = the weighted average maturity of a bank's assets (liabilities), $i=A$ or L ,

w_{ij} = the importance of each asset (liability) in the asset (liability) portfolio as measured by the book value of that asset (liability) position relative to the book value of all assets (liabilities),

M_{ij} = the maturity of the j th asset (liability), $j=1, \dots, n$.

This measure of interest rate risk accounts both for an income effect and a market value effect on assets and liabilities of interest rate changes.¹⁰ We obtain the data for *Maturity* from the footnotes of the financial statements, available after 1995. The data is classified as assets and liabilities with maturities shorter than three months, three months to one year, and longer than one year.

The sign of the impact of maturity mismatch on abnormal returns depends on whether interest rates are expected to increase or decrease. To capture this, we interact *Maturity* with two dummy variables: *DI_mat* equal to 1 if interest rates are expected to increase, 0 otherwise; and *DD_mat* equal to 1 if interest rates are expected to decrease, 0 otherwise.

¹⁰ A duration gap, by also accounting for the timing of the arrival of cash flows of assets and liabilities, would be a more precise measure. However it is not possible to construct it with the data from the financial statements.

Unfortunately we do not have data on the yield curve at each disclosure date. As a proxy for the sign of the expected change in interest rates, we take the sign of the ex-post three-month change in the deposit interest rate (we subtract the interest rate of the disclosure date from the interest rate three months later). We choose the three-month ex-post change because the median maturity of liabilities in our sample is 3 months, indicating that on average liabilities were repriced in the next 3 months following disclosure. However we also explore the 4 months, and 6 months change. Interest rate information, defined as average monthly deposit rates of the banking industry, is provided by the Central Bank of Turkey. We expect *Maturity* to negatively affect abnormal returns when interest rates are expected to increase, while affecting them positively when interest rates are expected to fall.

We measure *currency mismatch changes* (*Currency*) as the change with respect to the previous quarter in the percentage of net foreign exchange liabilities (foreign exchange liabilities minus foreign exchange assets) on total assets. Before the second quarter of 2000 there are reporting differences across banks.¹¹ While some banks provide additional information on forward agreements when reporting their assets and liabilities in foreign currency, others only report on-balance sheet information. Considering that including forward agreements gives a more realistic picture about banks' foreign currency risk, for the analysis of currency mismatch we run our regressions with only 8 banks that were consistent in reporting both on balance sheet and off balance sheet information during the whole period.

The sign of the impact of currency mismatch on abnormal returns depends on whether the lira is expected to depreciate or appreciate against the dollar. To capture this, we interact

¹¹ Starting in the second quarter of 2000, all banks had to include both on-and off-balance sheet information when reporting their assets and liabilities in foreign currency.

Currency with two dummy variables: *DI_curr* equal to 1 if the Turkish lira is expected to depreciate against the dollar, 0 otherwise; and *DD_curr* equal to 1 if Turkish lira is expected to appreciate, 0 otherwise. We follow the same procedure as for interest rates and, as a proxy for the sign of the expected change in the value of the lira, we take the sign of the ex-post three-month change in the exchange rate (we subtract the exchange rate of the disclosure date from the exchange rate three months later). We should note however that the lira shows a trend of depreciation in nominal terms during our entire sample period (for only two quarters *DI_curr* is equal to 0). Therefore we expect *Currency* to have a negative effect on abnormal equity returns when the lira is expected to depreciate, and not to have any effect when the lira is expected to appreciate.

Government securities changes (GS) is the change with respect to the previous quarter, in the percentage of government security holdings on total assets. Government security holdings are reported under the items “Securities” and “Affiliated Securities” on the balance sheet. We construct *GS* with the help of the information obtained from the footnotes on these items. The impact of *GS* on abnormal returns may be positive or negative. We expect the sign of the variable to be positive if an increase in government securities creates an expectation of regulatory forbearance¹². On the other hand, increases in government securities could be perceived as related to maturity and currency mismatch. Therefore, if the variable is capturing a part of the effect of maturity and currency mismatch, we expect a negative impact on abnormal returns.

¹² The Treasury was empowered to inspect banks financial standing. Özkan (2005) argues that given the Treasury’s need to finance the public sector, the Treasury had less incentive to be strict in regulating banks that held large amounts of government securities.

Earnings changes (Earnings) is the change with respect to the same quarter of the previous year, in the percentage of quarterly earnings (before extraordinary items) over market value of equity. Following the accounting literature and for seasonality reasons, we employ yearly changes rather than quarterly changes. We recognize that a better variable would be one calculated using analysts forecasts of bank profits as a measure of expected earnings, and subtracting each quarter earnings forecast from the current quarter earnings. However that information is not available.

Table 3 presents the descriptive statistics for all variables including *CARs* for the event window (-1, 0).

3 Results

3.1 Univariate tests

Table 4 reports average *CARs* for different groups of variables. Specifically, we report the *CAR* mean values for each explanatory variable for two groups, good news and bad news. In the case of non-performing loans, for example, the good news group corresponds to events when the bank discloses a decrease in the ratio, and the bad news group corresponds to events when the bank discloses an increase in the ratio. We then test whether the difference in the means of abnormal returns between the good news group and bad news group is significantly positive (one-tail test). As explained in section 2.2, to correct for the clustering problem, we first aggregate abnormal returns corresponding to the same calendar day into a portfolio. Mean and standard deviation of returns are then calculated across portfolios, which do not face a clustering problem.

We find that good news such as decreases in non-performing loans, decreases in currency mismatch (when the lira is expected to depreciate), and decreases in maturity mismatch (when interest rates are expected to increase) are all associated with larger mean abnormal returns than the respective bad news group. However the difference of means test is significant only for *NPL*. *Earnings* also behaves as expected with increases in earnings being associated with larger abnormal returns than decreases in earnings.

Because abnormal returns in the event day are the result of *all* the information disclosed in the balance sheet that may include both good and bad news, we are not surprised about the lack of significance of the difference-of-means tests. Therefore we now turn to a cross-sectional analysis that will allow us to test the sensitivity of stock prices to each of the financial indicators.

3.2 Cross-sectional analysis

Table 5 reports the estimation results for different specifications for the event window (-1, 0). All regressions are pooled OLS, with standard errors that are robust to heteroskedasticity and within cluster correlation.¹³

Specification 1 covers the whole sample period but includes only Government Securities (*GS*) and *Earnings* since the data for other variables is not available before 1995. *Earnings* has a positive and statistically significant effect, implying that a 1% increase in the *Earnings* ratio is expected to cause an abnormal stock return of 10.4 basis points, ceteris paribus. *GS* does not have an impact on abnormal returns. These results are robust to the inclusion of our

¹³ We explain this in detail in Section 2.2

financial fragility variables. This is what we do next, we focus on the sensitivity of abnormal returns to *NPL*, *Maturity* and *Currency*.

In specification 2 we add *NPL* and *Maturity* to the variables of specification 1. We first exclude *Currency* because the introduction of this variable reduces the number of observations given that we can only calculate it for eight banks as explained in Section 2.3. However, we do include the three financial fragility variables in specification 5. In specification 3 we add to specification 2 an interaction term of *NPL* with a dummy variable (*Banks Act*) equal to 1 after the year 1999, 0 otherwise. In 1999 the problems in the Turkish banking sector led to the enactment of the Banks Act 4389¹⁴ followed by the establishment of an autonomous body, The Banking Regulation and Supervision Agency (BRSA). The new regulation brought considerable changes in the disclosure requirements of banks, and it also improved the transparency of the reporting of non-performing loans. Specifically, with the new regulation, if one loan was non-performing, other loans of the same customer had to be classified also as non-performing (Barth, Caprio and Levine, 2001). We expect this interaction term to be negative if the measure of non-performing loans becomes more informative after 1999.

The results related to *NPL* are as expected. The variable is significantly negative in specification 2. Moreover the interaction term in specification 3 is negatively related to *CARs*, and the total effect of *NPL* when the dummy for Banks Act equals to 1 is even stronger, with a value of -1.24 and significant at the 5 percent level.

The interaction term of *Maturity* with the first categorical variable *DI_mat* (dummy equal to 1 when interest rates are expected to increase, 0 otherwise) is negative in all

¹⁴ Amended by Act No. 4491

specifications as expected. The variable is significant in specification 2, and the p -value is very close to 10 percent in specification 3. A one-month increase in *Maturity*, leads to negative abnormal returns ranging from 35 to 43 basis points. *Maturity* interacted with *DD_mat* (dummy equal to 1 when interest rates are expected to decrease, 0 otherwise) is not significant in any specification.¹⁵

In specification 4, we introduce two new interaction terms of *Earnings* with the *Maturity* variables. The purpose is to test whether the sensitivity of abnormal returns to earnings depends on the magnitudes of the financial fragility variables. Our results point in this direction. The positive and significant effect of *Earnings* on abnormal returns and the negative and significant interaction term of *Earnings* and *Maturity* (when interest rates are expected to increase), suggest that shareholders' positive reaction to increases in earnings is attenuated by large values of the maturity mismatch.

Finally in specification 5, we add the currency variable to the other financial fragility variables. We interact *Currency* with two dummy variables: *DI_curr* equal to 1 if the Turkish lira is expected to depreciate against the dollar, 0 otherwise; and *DD_curr* equal to 1 if Turkish lira is expected to appreciate, 0 otherwise. We note here that for all quarters except for two, *DI_curr* is equal to 1. Our results show that *Currency* interacted with *DI_curr* is negatively significant at 10 percent level. An increase of 1% in the mismatch drove abnormal returns down by 25 basis points when the Turkish lira was expected to depreciate, supporting the hypothesis that shareholders reacted negatively to increases in currency mismatch.

¹⁵We also explore the 4 months and 6 months change in constructing the dummies for changes in interest rate expectations. The coefficient for *Maturity* interacted with *DI_mat* is still negative but insignificant.

All in all these results suggest that stock market participants monitored the banking system and that they reacted negatively to adverse changes in financial fragility variables, showing concerns about the impact of these variables on future profits.

Next, and in order to see how the quality of the disclosure affects stock prices, we split the sample into two groups according to whether the financial statements are audited or not, and re-estimate the model (see Table 6-Panel A). We do not include the specification with *Currency* due to the very low number of observations when the sample is split. For the second and fourth quarters when the financial statements are audited, only the coefficient for *NPL* is significant. However estimations with non-audit quarters result in larger effects of *Earnings*, *Maturity* interacted with *DI_mat*, and *NPL* compared to the findings with the entire sample. Not only do the coefficients reflect higher sensitivities in non-audit quarters, but they are also more significant. Moreover the explanatory power of the regressions of audit quarters is zero, while it ranges from 9% to 30% for non-audit quarters. In order to try to explain this puzzling result we calculate reporting lags (number of days between disclosure date and end of quarter) for audit versus non-audit quarters. The lag for audit quarters is on average 47 days while it is only 31 days for non-audit quarters. The longer the lag the less informative the financial statements are for the market. Therefore we re-estimate the model by splitting the sample according to the length of reporting lags (higher values than the medium reporting lag which is 40 days versus lower values than 40). The results are presented in Table 6-Panel B, which are extremely similar to the findings in Panel A in terms of explanatory power. This result indicates that the timeliness of disclosure is extremely important. Moreover it suggests a potential trade-off between accuracy and timeliness.

Finally, we also allow for a broader event window that includes 5 trading days before the event day. However we do not find any evidence of information leakage leading to an earlier market reaction.

4 Robustness checks

In this section we first compute abnormal returns using the market model instead of the market-adjusted-return model. The estimation method using the market model is as follows.

The rate of return on the share price of the bank i on day t is expressed as:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

where

R_{it} = the return on security i on day t ,

R_{mt} = the return on a market portfolio of stocks on day t

As the market portfolio, we use the Istanbul Stock Exchange National-100 index (ISE National-100). To estimate the market model parameters, we take an estimation period of 250 days before each event. Additionally, we control for non-synchronous trading by including one lead and one lag of market returns:

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \gamma R_{m,t-1} + \delta R_{m,t+1} + \varepsilon_{i,t}$$

We derive the estimates of daily Abnormal Returns (AR) using the following equation where we adjust the rate of return on the stock by subtracting the expected return from the actual return:

$$AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i R_{m,t} + \hat{\gamma} R_{m,t-1} + \hat{\delta} R_{m,t+1})$$

After computing the Cumulative Abnormal Returns (CAR) with the estimates of daily ARs over two days for the event window $(-1, 0)$, we re-estimate our main specifications. The

estimation results are presented in Table 7 and are mainly unchanged compared to the results with *CARs* computed with the market-adjusted-return approach (Table 5). The results are even statistically stronger for *Maturity* when interest rates are expected to increase, which is now significant for all specifications. On the other hand, the coefficient for *Currency* interacted with *DI_curr* (equal to 1 when the Turkish lira is expected to depreciate) is statistically insignificant but still negative.

We also estimate the market model without controlling for the lead and lagged values of market return. The estimation results using those *CARs* are similar to the results in Table 7.

Our final robustness check consists of running the same regressions excluding crisis quarters. Because some of the quarters in our sample correspond to crises periods, results could be mainly driven by these quarters.¹⁶ If this were the case, our evidence would simply show that investors reacted too late. The results remain very similar implying that the market did not react too late, and was in fact monitoring the banks. We choose not to report these regressions but results are available upon request.

5 Conclusion and discussion

In November 2000, Turkey experienced a liquidity squeeze followed by a currency crisis in February 2001. Many studies argue that the fragility of the Turkish banking system deepened the magnitude of the crisis. In this paper, we examine the monitoring ability of the market by exploring how shareholders reacted to changes in their banks' measures of financial fragility. Consistent with previous literature on earnings, we find that shareholders

¹⁶ We exclude 1993-Q4 and 1994-Q1 referring to 1994 exchange rate crisis, and all quarters between 2000-Q3 and 2001-Q3.

reacted positively to increases in earnings. More importantly, we find evidence of negative reactions to indicators of financial fragility such as increases in maturity mismatches, currency mismatches, and in non-performing loans, showing shareholders concerns about their impact on future profits. We are also interested in how the quality and timeliness of the disclosure affected market reaction. We find that improvements in disclosure requirements, such as the Banks Act in 1999, increased the informativeness of accounting statements. Moreover we find that audited statements with larger reporting lags are not informative, pointing to the need of improving their timeliness.

Recent papers stress that the effectiveness of market discipline depends on the regulatory environment and point to the need of supervisors retaining the responsibility for influencing managerial actions. Our paper also points in this direction. Even if we find evidence of the existence of monitoring of Turkish private banks from the stock market, and given the crisis that unfolded afterwards, we have to conclude that this was not enough to guarantee their soundness. For example, two banks in our sample that reported the highest average levels of maturity and currency mismatch failed in 1999-2000. In fact important weaknesses in the Turkish institutional framework exacerbated moral hazard problems. Özkan (2005) gives a detailed account. The Treasury, the Central Bank and the Capital Markets Board were all involved in supervising agents in the financial sector creating large conflicts of interest.¹⁷ The existence of full deposit insurance eliminated the incentives of depositors to monitor banks' actions. Moreover state banks, that represented approximately 40% of the system, were used to channel preferential credits to certain groups. This practice together with the fact that private banks were holders of large amounts of government securities, created great

¹⁷ Before the formation of the Banking Regulation and Supervision Agency (BRSA) in June 1999, the Treasury and the Central Bank conducted regulatory and supervisory actions on the banking sector.

expectations of regulatory forbearance, exacerbating moral hazard incentives. The results of our paper highlight the fact that a sound institutional framework is a necessary condition for any banking system to work properly and that only within such a framework can market monitoring (together with regulatory supervision) play a key role in disciplining bank management.

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Table 1: Foreign Exchange Position of Commercial Banks

The table displays the ratio of Foreign Exchange Position to Shareholders' Equity for commercial banks in the Turkish banking sector, including 43 Turkish banks and 18 foreign banks. Fx Position is defined as Foreign Exchange Liabilities minus Foreign Exchange Assets.

	Fx Position / Shareholders' Equity
	(%)
1988	-41.00
1989	-17.40
1990	43.20
1991	48.00
1992	85.70
1993	106.10
1994	22.40
1995	76.80
1996	55.30
1997	91.90
1998	138.80
1999	476.60
2000	259.50

Data Source: The Banks Association of Turkey

Table 2: Ratios in Turkish Banking Sector

(%)	1995	1996	1997	1998	1999	2000
Nonperforming Loans						
Nonperforming Loans / Total Loans	2.8	2.2	2.4	7.2	10.7	11.6
Currency Mismatch						
FX Liabilities- FX Assets (billion \$)						
excluding off-the-balance sheet	3.0	2.5	5.0	8.4	13.2	17.4
including off-the-balance sheet	0.6	1.2	1.9	2.9	2.9	5.5
Maturity Mismatch						
Liquid Assets / (Deposits + Non-deposit funds)	46.7	44.0	41.1	39.9	42.6	37.9
Assets / Liabilities (with 3 months or shorter maturities)	n/a	n/a	45.8	45.7	46.3	39.9
Share of Deposits with 6 months or greater maturity in total deposits	26.1	26.6	24.7	22.9	28.2	15.1
Repos / (Liabilities + repos)	5.1	8.1	12.8	10.4	9.6	11.3

Data Source: Central Bank and the Banks Association of Turkey (Özatay and Sak, 2002)

Table 3: Descriptive Statistics for changes

The sample covers the time period between 1992/I and 2001/III for 12 Turkish commercial banks. The data is quarterly. *CAR* denotes the Cumulative Abnormal Returns for the event window (-1, 0). *NPL* is defined as quarterly changes in Non-performing Loans/Total Loans, *Maturity* as quarterly changes in gaps in months, *Currency* as quarterly changes in mismatch defined as FX Liabilities minus FX Assets to Total Assets and *GS* as quarterly changes in Government Securities/Total Assets. *Earnings* is defined as yearly (same quarter of the preceding year) changes in Net Income before Extraordinary Items / Market Value of Equity.

		mean	median	sd	min	max
<i>CAR</i> (-1, 0)	%	0.47	-0.07	6.00	-27.71	20.83
<i>NPL</i>	%	0.08	0.00	1.02	-7.05	3.69
<i>Maturity</i>	months	0.23	0.11	2.78	-11.72	12.41
<i>Currency</i>	%	0.07	-0.08	3.54	-17.72	20.13
<i>GS</i>	%	0.39	0.31	6.10	-24.84	28.20
<i>Earnings</i>	%	-0.45	-0.65	9.62	-57.15	38.81

Table 4: Mean difference tests for CARs Associated with Changes in Variables

The sample covers the time period between 1992/I and 2001/III for 12 Turkish commercial banks. The data is quarterly. *CAR* denotes the Cumulative Abnormal Returns for the event window (-1, 0). *NPL* is defined as quarterly changes in Non-performing Loans/Total Loans, *Maturity* as quarterly changes in gaps in months, *Currency* as quarterly changes in mismatch defined as FX Liabilities minus FX Assets to Total Assets and *GS* as quarterly changes in Government Securities/Total Assets. *Earnings* is defined as yearly (same quarter of the preceding year) changes in Net Income before Extraordinary Items / Market Value of Equity. The sample is split into 2 groups where the changes in variables are good news and bad news respectively. The sample for *Maturity* and *Currency* changes is split further into two other groups. For *Maturity*, where interest rates are expected to increase ($DI_{mat}=1$) and to decrease ($DI_{mat}=0$). For *Currency*, when the Turkish lira is expected to depreciate ($DI_{curr}=1$) and to appreciate ($DI_{curr}=0$). To calculate the sign of the interest rate (exchange rate) expectations, we take the sign of the ex-post three-month change in the average deposit interest rates (exchange rates). The analysis with currency position covers only 8 banks that were consistent in their reporting. The last two columns presents the t-test for the mean differences of *CARs* (-1,0) between two groups and the p-values for alternative hypothesis.

Group	Obs	Mean	Group	Obs	Mean	mean difference <i>t</i> -value	Ha: diff > 0 Pr($T > t$)
Good News			Bad News				
<i>NPL</i> decreases	91	0.58	<i>NPL</i> increases	85	-0.52	1.45	0.07
DI_{mat}=1			DI_{mat}=1				
<i>Maturity</i> decreases	23	1.79	<i>Maturity</i> increases	18	0.51	0.95	0.18
DI_{mat}=0			DI_{mat}=0				
<i>Maturity</i> increases	55	-0.35	<i>Maturity</i> decreases	53	-0.22	0.13	0.55
DI_{curr}=1			DI_{curr}=1				
<i>Currency</i> decreases	59	0.52	<i>Currency</i> increases	55	-0.15	0.66	0.26
DI_{curr}=0			DI_{curr}=0				
<i>Currency</i> increases	5	2.35	<i>Currency</i> decreases	2	-1.25	-0.64	0.28
<i>GS</i> decreases	128	0.50	<i>GS</i> increases	133	0.40	0.14	0.45
<i>Earnings</i> increases	111	0.79	<i>Earnings</i> decreases	135	-0.08	-1.20	0.12

Table 5: Estimation Results

The table displays the results of alternative specifications for the event window (-1, 0). The dependent variable is the Cumulative Abnormal Returns (CAR). The data is quarterly. *NPL* is defined as quarterly changes in Non-performing Loans/Total Loans, *Maturity* as quarterly changes in gaps in months, *Currency* as quarterly changes in mismatch defined as FX Liabilities minus FX Assets to Total Assets and *GS* as quarterly changes in Government Securities/Total Assets. *Earnings* is defined as yearly (same quarter of the preceding year) changes in Net Income before Extraordinary Items / Market Value of Equity. *DI_mat* denotes the dummy variable, equal to 1, if interest rates are expected to increase, and *DD_mat* if they are expected to decrease. *DI_curr* denotes the dummy variable, equal to 1, when the Turkish lira is expected to depreciate and *DD_curr* if the Turkish lira is expected to appreciate. To calculate the sign of the interest rate (exchange rate) expectations, we take the sign of the ex-post three-month change in the average deposit interest rates (exchange rates). *Banks Act* denotes the dummy equal to 1 after the introduction of new Banks Act. Specification 1 covers the full sample for 12 banks and the time period 1992/II-2001/III. *NPL*, and *Maturity* and *Currency* are included in the next specifications due to non-availability of data before 1995. The last specification including *Currency* covers only 8 banks that were consistent in their reporting. Regressions are pooled OLS with standard errors robust to heteroskedasticity and within cluster correlation. *p*- values are in parentheses. Asteriks indicate significance at the 10% (*), 5% (**) and 1% (***)).

	(1)	(2)	(3)	(4)	(5)
<i>NPL</i>		-0.800 *	0.099	-0.808 *	-1.295 **
		[0.076]	[0.888]	[0.080]	[0.023]
<i>NPL * Banks Act</i>			-1.344		
			[0.120]		
<i>Maturity * DI_mat</i>		-0.367 *	-0.353	-0.425 **	-0.359
		[0.094]	[0.104]	[0.025]	[0.102]
<i>Maturity * DD_mat</i>		-0.017	0.02	-0.032	0.145
		[0.918]	[0.900]	[0.856]	[0.457]
<i>Earnings * Maturity * DI_mat</i>				-0.022 *	
				[0.071]	
<i>Earnings * Maturity * DD_mat</i>				-0.014	
				[0.428]	
<i>Currency * DI_curr</i>					-0.252 *
					[0.079]
<i>Currency * DD_curr</i>					1.219
					[0.441]
<i>GS</i>	0.039	0.056	0.037	0.041	0.071
	[0.506]	[0.362]	[0.525]	[0.496]	[0.328]
<i>Earnings</i>	0.104 ***	0.098 *	0.088 *	0.100 **	0.114 **
	[0.005]	[0.053]	[0.078]	[0.043]	[0.046]
Constant	0.433	0.36	0.345	0.368	0.476
	[0.181]	[0.335]	[0.352]	[0.320]	[0.299]
<i>Total Impact NPL</i>			-1.245 **		
			[0.020]		
Observations	333	199	199	199	138
Adjusted R-squared	0.026	0.032	0.039	0.039	0.064

Table 6.A: The Impact of Audit

The table displays the results for the event window (-1, 0). The dependent variable is the Cumulative Abnormal Returns (CAR). "Audit" covers the second and fourth quarters where financial statements are audited. "No Audit" covers the first and third quarters. *NPL* is defined as quarterly changes in Non-performing Loans/Total Loans, *Maturity* as quarterly changes in gaps in months, and *GS* as quarterly changes in Government Securities/Total Assets. *Earnings* is defined as yearly (same quarter of the preceding year) changes in Net Income before Extraordinary Items / Market Value of Equity. *DI_mat* denotes the dummy variable, equal to 1, if interest rates are expected to increase, and *DD_mat* if they are expected to decrease. To calculate the sign of the interest rate expectations, we take the sign of the ex-post three-month change in the average deposit interest rates. *Banks Act* denotes the dummy equal to 1 after the introduction of new Banks Act. Specification 1 covers the full sample for 12 banks and the time period 1992/II-2001/III. *NPL* and *Maturity* are included in the next specifications due to non-availability of data before 1995. Regressions are pooled OLS with standard errors robust to heteroskedasticity and within cluster correlation. *p*- values are in parentheses. Asteriks indicate significance at the 10% (*), 5% (**) and 1% (***)

	AUDIT				NO AUDIT			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
<i>NPL</i>		-1.165 ** [0.035]	-1.007 [0.305]	-1.143 ** [0.035]		-0.426 [0.534]	0.894 [0.211]	-0.428 [0.553]
<i>NPL * Banks Act</i>			-0.210 [0.863]				-2.355 ** [0.024]	
<i>Maturity * DI_mat</i>		-0.169 [0.311]	-0.168 [0.310]	-0.133 [0.441]		-0.827 ** [0.013]	-0.768 ** [0.023]	-0.855 *** [0.003]
<i>Maturity * DD_mat</i>		0.128 [0.635]	0.132 [0.625]	0.066 [0.836]		-0.399 * [0.093]	-0.348 [0.148]	-0.343 [0.152]
<i>Earnings * Maturity * DI_mat</i>				0.008 [0.453]				-0.031 ** [0.037]
<i>Earnings * Maturity * DD_mat</i>				-0.022 [0.261]				0.018 [0.535]
<i>GS</i>	0.076 [0.268]	0.054 [0.431]	0.052 [0.451]	0.050 [0.473]	-0.047 [0.607]	0.086 [0.376]	0.042 [0.605]	0.072 [0.474]
<i>Earnings</i>	0.044 [0.303]	0.022 [0.726]	0.020 [0.753]	0.017 [0.795]	0.225 *** [0.001]	0.257 *** [0.000]	0.244 *** [0.000]	0.208 *** [0.007]
Constant	0.048 [0.918]	0.095 [0.865]	0.092 [0.870]	-0.012 [0.983]	0.820* [0.060]	0.582 [0.228]	0.576 [0.225]	0.540 [0.286]
<i>Total Impact NPL</i>			-1.217 * [0.076]				-1.461 * [0.070]	
Observations	166	101	101	101	167	98	98	98
Adjusted R-squared	0	-0.01	-0.02	-0.014	0.09	0.158	0.185	0.161

Table 6.B: The Impact of Reporting Lags

The table displays the results for the event window (-1, 0). The dependent variable is the Cumulative Abnormal Returns (CAR). The sample is split according to the length of the reporting lags of financial statements. *NPL* is defined as quarterly changes in Non-performing Loans/Total Loans, *Maturity* as quarterly changes in gaps in months, and *GS* as quarterly changes in Government Securities/Total Assets. *Earnings* is defined as yearly (same quarter of the preceding year) changes in Net Income before Extraordinary Items / Market Value of Equity. *DI_mat* denotes the dummy variable, equal to 1, if interest rates are expected to increase, and *DD_mat* if they are expected to decrease. To calculate the sign of the interest rate expectations, we take the sign of the ex-post three-month change in the average deposit interest rates. *Banks Act* denotes the dummy equal to 1 after the introduction of new Banks Act. Specification 1 covers the full sample for 12 banks and the time period 1992/II-2001/III. *NPL* and *Maturity* are included in the next specifications due to non-availability of data before 1995. Regressions are pooled OLS with standard errors robust to heteroskedasticity and within cluster correlation. *p*- values are in parentheses. Asterisks indicate significance at the 10% (*), 5% (**) and 1% (***).

	LONGER REPORTING LAGS				SHORTER REPORTING LAGS			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
<i>NPL</i>		-0.772 [0.161]	-0.145 [0.884]	-0.845 [0.140]		-0.421 [0.484]	1.060 [0.412]	-0.368 [0.554]
<i>NPL * Banks Act</i>			-0.986 [0.397]				-2.156 [0.149]	
<i>Maturity * DI_mat</i>		-0.065 [0.688]	-0.052 [0.750]	-0.049 [0.769]		-1.292 *** [0.000]	-1.313 *** [0.000]	-1.213 ** [0.026]
<i>Maturity * DD_mat</i>		-0.254 [0.120]	-0.215 [0.180]	-0.367 * [0.068]		0.348 [0.240]	0.348 [0.241]	0.371 [0.216]
<i>Earnings * Maturity * DI_mat</i>				0.003 [0.747]				-0.008 [0.803]
<i>Earnings * Maturity * DD_mat</i>				-0.034 [0.167]				-0.013 [0.496]
<i>GS</i>	-0.016 [0.837]	0.123 * [0.090]	0.117 * [0.084]	0.116 [0.159]	0.110 [0.207]	0.099 [0.406]	0.053 [0.645]	0.097 [0.424]
<i>Earnings</i>	0.055 [0.179]	0 [0.996]	-0.009 [0.891]	0.007 [0.917]	0.159 ** [0.015]	0.163 ** [0.016]	0.147 ** [0.026]	0.166 ** [0.014]
Constant	-0.062 [0.898]	-0.474 [0.330]	-0.489 [0.319]	-0.454 [0.360]	1.034 ** [0.039]	0.953 * [0.088]	0.900 * [0.099]	0.912 [0.104]
<i>Total Impact NPL</i>			-1.131 * [0.053]				-1.096 [0.122]	
Observations	176	121	121	121	157	78	78	78
Adjusted R-squared	-0.002	-0.005	-0.006	-0.009	0.063	0.166	0.181	0.149

Table 7: Robustness / Using the Market Model

The table displays the results for the event window (-1, 0). The dependent variable is the Cumulative Abnormal Returns (CAR). The Abnormal Returns are computed using the market model. The data is quarterly. *NPL* is defined as quarterly changes in Non-performing Loans/Total Loans, *Maturity* as quarterly changes in gaps in months, *Currency* as quarterly changes in mismatch defined as FX Liabilities minus FX Assets to Total Assets and *GS* as quarterly changes in Government Securities/Total Assets. *Earnings* is defined as yearly (same quarter of the preceding year) changes in Net Income before Extraordinary Items / Market Value of Equity. *DI_mat* denotes the dummy variable, equal to 1, if interest rates are expected to increase, and *DD_mat* if they are expected to decrease. *DI_curr* denotes the dummy variable, equal to 1, when the Turkish lira is expected to depreciate and *DD_curr* if the Turkish lira is expected to appreciate. To calculate the sign of the interest rate (exchange rate) expectations, we take the sign of the ex-post three-month change in the average deposit interest rates (exchange rates). *Banks Act* denotes the dummy equal to 1 after the introduction of new Banks Act. Specification 1 covers the full sample for 12 banks and the time period 1992/II-2001/III. *NPL*, and *Maturity* and *Currency* are included in the next specifications due to non-availability of data before 1995. The last specification including *Currency* covers only 8 banks that were consistent in their reporting. Regressions are pooled OLS with standard errors robust to heteroskedasticity and within cluster correlation. *p*- values are in parentheses. Asteriks indicate significance at the 10% (*), 5% (**) and 1% (***)

	(1)	(2)	(3)	(4)	(5)
<i>NPL</i>		-0.67	0.385	-0.682	-1.373 **
		[0.153]	[0.576]	[0.159]	[0.025]
<i>NPL * Banks Act</i>			-1.585 *		
			[0.075]		
<i>Maturity * DI_mat</i>		-0.392 *	-0.372 *	-0.452 **	-0.367 *
		[0.060]	[0.072]	[0.012]	[0.087]
<i>Maturity * DD_mat</i>		0.001	0.054	-0.034	0.176
		[0.995]	[0.753]	[0.853]	[0.413]
<i>Earnings*Maturity * DI_mat</i>				-0.022 **	
				[0.036]	
<i>Earnings*Maturity * DD_mat</i>				-0.022	
				[0.302]	
<i>Currency*DI_curr</i>					-0.202
					[0.197]
<i>Currency*DD_curr</i>					1.269
					[0.374]
<i>GS</i>	0.071	0.070	0.043	0.056	0.092
	[0.273]	[0.293]	[0.503]	[0.387]	[0.298]
<i>Earnings</i>	0.107 ***	0.099 *	0.087 *	0.103 **	0.112 *
	[0.005]	[0.062]	[0.099]	[0.037]	[0.060]
Constant	0.273	0.252	0.229	0.258	0.492
	[0.395]	[0.501]	[0.537]	[0.488]	[0.298]
<i>Total Impact NPL</i>			-1.200 **		
			[0.040]		
Observations	331	198	198	198	137
Adjusted R-squared	0.031	0.030	0.041	0.043	0.059

Appendix

Table A1: Data Availability for the Banks

The table displays listing periods of the banks on the Istanbul Stock Exchange. The listing periods are highlighted. A delisting of a bank indicates for its bankruptcy. Banks selected for the sample are marked in bold in the table

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Akbank										
Alternatifbank				<i>1995/II</i>						
Demirbank									<i>2000/III</i>	
Disbank										
Esbank								<i>1999/III</i>		
Finansbank										
Garanti Bank										
Isbank										
Sekerbank						<i>1997/II</i>				
Tekstilbank									<i>2000/I</i>	
Yasarbank								<i>1999/III</i>		
Yapi ve Kredi Bankasi										

Data Source: Istanbul Stock Exchange

Table A2: Event Dates for each Bank

The table contains detailed information of banks' financial statement disclosure dates. Instead of bank names (Akbank, Alternatifbank, Demirbank, Disbank, Esbank, Finansbank, Garanti Bankasi, Is Bankasi, Sekerbank, Tekstilbank, Yasarbank and Yapi ve Kredi Bankasi respectively) tickers in the Istanbul Stock Exchange are used in the table. For the quarters 1992/III and 1996/IV, there is no information available about the event date, and it is denoted by N/A. Tekstilbank and Yapi ve Kredi Bankasi have two additional missing event dates for 1996/II and 1997/II respectively. Blank cells explain that for Demirbank, Esbank and Yasarbank there is no data after their delisting. Alternatifbank and Sekerbank went public after 1995 and 1997 respectively. Confounding events of dividend payouts and equity issues which fall in the event window of [-5, +5] are marked in bold.

	AKBNK	ALNTF	DEMIR	DISBA	ESBNK	FINBN	GARAN	ISCTR	SKBNK	TEKST	YABNK	YKBNK
1992:1	24.04.1992		15.04.1992	29.04.1992	24.04.1992	21.04.1992	04.05.1992	30.04.1992		21.04.1992	04.05.1992	30.04.1992
1992:2	17.07.1992		08.07.1992	22.07.1992	22.07.1992	07.07.1992	24.07.1992	10.08.1992		24.07.1992	07.08.1992	06.08.1992
1992:3	N/A		N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A
1992:4	15.03.1993		16.02.1993	19.02.1993	23.01.1993	09.02.1993	02.02.1993	12.03.1993		11.02.1993	09.02.1993	11.03.1993
1993:1	26.04.1993		21.04.1993	26.04.1993	26.04.1993	26.04.1993	28.04.1993	30.04.1993		27.04.1993	29.04.1993	30.04.1993
1993:2	20.07.1993		20.07.1993	20.07.1993	28.07.1993	20.07.1993	22.07.1993	05.08.1993		20.07.1993	03.08.1993	05.08.1993
1993:3	19.10.1993		07.10.1993	11.10.1993	20.10.1993	18.10.1993	25.10.1993	28.10.1993		15.10.1993	25.10.1993	27.10.1993
1993:4	28.03.1994		18.01.1994	24.01.1994	24.01.1994	23.03.1994	10.02.1994	21.02.1994		17.01.1994	25.02.1994	04.02.1994
1994:1	25.04.1994		11.04.1994	12.04.1994	20.04.1994	08.04.1994	27.04.1994	25.04.1994		25.04.1994	26.04.1994	29.04.1994
1994:2	11.08.1994		22.08.1994	29.08.1994	22.08.1994	22.08.1994	22.08.1994	06.09.1994		22.08.1994	23.08.1994	22.08.1994
1994:3	24.10.1994		20.10.1994	25.10.1994	25.10.1994	17.10.1994	24.10.1994	26.10.1994		18.10.1994	01.11.1994	27.10.1994
1994:4	15.03.1995		14.03.1995	08.03.1995	07.03.1995	14.02.1995	23.02.1995	14.03.1995		23.01.1995	17.02.1995	15.03.1995
1995:1	15.05.1995		02.05.1995	18.05.1995	05.05.1995	01.05.1995	01.05.1995	09.05.1995		19.04.1995	04.05.1995	18.05.1995
1995:2	01.08.1995	14.08.1995	01.08.1995	21.07.1995	31.08.1995	02.08.1995	04.08.1995	23.08.1995		08.08.1995	17.08.1995	25.08.1995
1995:3	19.10.1995	09.11.1995	20.10.1995	16.10.1995	10.11.1995	03.11.1995	30.10.1995	30.10.1995		20.10.1995	08.11.1995	06.11.1995
1995:4	12.02.1996	16.02.1996	19.01.1996	15.02.1996	21.03.1996	05.03.1996	01.03.1996	08.03.1996		18.01.1996	16.02.1996	07.03.1996
1996:1	10.05.1996	10.05.1996	19.04.1996	12.04.1996	09.05.1996	10.05.1996	09.05.1996	10.05.1996		08.05.1996	10.05.1996	10.05.1996
1996:2	12.08.1996	16.08.1996	23.07.1996	16.08.1996	13.08.1996	16.08.1996	16.08.1996	23.08.1996		N/A	21.08.1996	22.08.1996
1996:3	31.10.1996	08.11.1996	06.11.1996	08.11.1996	11.11.1996	11.11.1996	06.11.1996	11.11.1996		07.11.1996	11.11.1996	08.11.1996
1996:4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		N/A	N/A	N/A
1997:1	13.05.1997	14.05.1997	13.05.1997	12.05.1997	13.05.1997	13.05.1997	07.05.1997	12.05.1997	12.05.1997	13.05.1997	13.05.1997	12.05.1997
1997:2	14.08.1997	27.08.1997	14.08.1997	28.08.1997	19.08.1997	22.08.1997	14.08.1997	14.08.1997	29.08.1997	05.09.1997	19.08.1997	N/A
1997:3	04.11.1997	10.11.1997	07.11.1997	12.11.1997	10.11.1997	06.11.1997	04.11.1997	10.11.1997	10.11.1997	01.11.1997	06.11.1997	10.11.1997
1997:4	16.03.1998	11.02.1998	27.02.1998	16.02.1998	28.01.1998	03.03.1998	17.02.1998	02.03.1998	13.03.1998	20.01.1998	13.03.1998	13.03.1998
1998:1	29.04.1998	11.05.1998	06.05.1998	02.05.1998	11.05.1998	24.04.1998	13.05.1998	13.05.1998	13.05.1998	13.05.1998	11.05.1998	13.05.1998
1998:2	01.10.1998	29.09.1998	06.10.1998	01.10.1998	05.10.1998	05.10.1998	05.10.1998	01.10.1998	02.10.1998	07.10.1998	01.10.1998	05.10.1998
1998:3	26.10.1998	04.11.1998	26.10.1998	14.10.1998	12.11.1998	02.11.1998	22.10.1998	13.11.1998	12.11.1998	16.10.1998	10.11.1998	09.11.1998
1998:4	17.02.1999	09.02.1999	17.02.1999	12.01.1999	04.02.1999	15.02.1999	11.02.1999	26.02.1999	12.03.1999	11.01.1999	09.03.1999	05.03.1999

Table A2 continued:

	AKBNK	ALNTF	DEMIR	DISBA	ESBNK	FINBN	GARAN	ISCTR	SKBNK	TEKST	YABNK	YKBNK
1999:1	27.04.1999	03.05.1999	15.04.1999	14.05.1999	13.05.1999	10.05.1999	26.04.1999	10.05.1999	13.05.1999	29.04.1999	14.05.1999	07.05.1999
1999:2	09.08.1999	18.08.1999	11.08.1999	20.07.1999	27.08.1999	05.08.1999	29.07.1999	13.08.1999	26.08.1999	27.07.1999	27.08.1999	13.08.1999
1999:3	21.10.1999	10.11.1999	03.11.1999	11.10.1999	12.11.1999	09.11.1999	20.10.1999	28.10.1999	12.11.1999	20.10.1999	03.11.1999	27.10.1999
1999:4	15.02.2000	18.01.2000	03.02.2000	12.01.2000		21.02.2000	28.01.2000	15.02.2000	03.03.2000	12.01.2000	31.03.2000	25.02.2000
2000:1	02.05.2000	28.04.2000	18.04.2000	10.04.2000		10.05.2000	21.04.2000	05.05.2000	11.05.2000	19.04.2000		02.05.2000
2000:2	24.08.2000	18.08.2000	14.08.2000	07.08.2000		18.08.2000	17.08.2000	15.08.2000	25.08.2000	18.08.2000		23.08.2000
2000:3	31.10.2000	09.11.2000	01.11.2000	01.11.2000		08.11.2000	02.11.2000	13.11.2000	13.11.2000	09.11.2000		10.11.2000
2000:4	13.02.2001	28.02.2001		22.01.2001		22.02.2001	05.02.2001	15.02.2001	02.03.2001	20.02.2001		19.02.2001
2001:1	19.04.2001	11.05.2001		01.05.2001		30.04.2001	11.05.2001	11.05.2001	11.05.2001	11.05.2001		11.05.2001
2001:2	07.08.2001	24.08.2001		14.08.2001		24.08.2001	24.08.2001	15.08.2001	24.08.2001	24.08.2001		24.08.2001
2001:3	30.10.2001	09.11.2001		15.10.2001		09.11.2001	09.11.2001	09.11.2001	09.11.2001	09.11.2001		09.11.2001

Data Source: Istanbul Stock Exchange