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ABSTRACT

We explore the actions of financially distressed banks in two distinct periods that include financial crises (1985-1994, 2005-2014) and differ in bank regulations, especially concerning capital requirements and enforcement. In contrast to the widespread belief that distressed banks gamble for resurrection, we document that distressed banks take actions to reduce leverage and risk, such as reducing asset and loan growth, issuing equity, decreasing dividends, and lowering deposit rates. Despite large differences in regulation between periods, the extent of deleveraging is similar, suggesting that economic forces beyond formal regulations incentivize bank managers to deleverage when their banks are in distress.

Keywords: Banks, distress, gamble for resurrection, deleveraging, derisking
JEL Classification: G11, G21, G33

1. Introduction

Many financial economists take the view that distressed banks have strong incentives to gamble for resurrection by taking risks they would not otherwise take and to refrain from deleveraging. For instance, Freixas, Rochet, and Parigi (2004) write that "We take into account two well-acknowledged facts of the banking industry: first, that it is difficult to disentangle liquidity shocks from solvency shocks, second, that moral hazard and gambling for resurrection are typical behaviors of banks experiencing financial distress." With this view, the shareholders gain if the risks pay off and if the risks fail the bill is paid by the bondholders and the taxpayers. A related view is that deleveraging by banks benefits the liability holders and hurts the shareholders, so that shareholders try to avoid it (Admati (2014)). An alternative view is that there are many forces that push shareholders of distressed banks to lower their risk and leverage to reduce distress costs. These forces include, for instance, managerial reputation, managerial risk-aversion, threat of runs, bond covenants, preservation of franchise value, and regulatory interventions.

In this study, we focus on two turbulent periods in the U.S. banking system, the late 1980s and late 2000s, in which hundreds of banks faced financial distress, and explore in a systematic fashion whether the behavior of distressed banks is consistent with gambling for resurrection or deleveraging. Surprisingly, there is little existing evidence on the issues we address despite their importance. The studies that exist do not reach a consensus regarding gambling for resurrection. Our main finding is that despite regulatory differences between the two periods, banks took actions to reduce their asset risk and leverage, rather than gamble for resurrection, in both periods.

Banks do not make the choice to gamble for resurrection or deleverage in the abstract. Regulations limit their room to manoeuver. For the first period we consider, banks did not have

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formal capital requirements of the type we are now familiar with, as the Basel Accord was concluded in 1989 and implemented in the 1990s in the U.S. Further, as a result of concerns about moral hazard following the savings and loans crisis, the U.S. tightened regulations substantially. FDICIA, adopted in 1991, introduced prompt corrective action (PCA) which was designed to resolve banks before they could engage in actions detrimental to the deposit insurance fund (DIF). These substantial differences in regulation arose partly because of the intent to reduce risk taking by banks that could hurt the financial system or the DIF. It is therefore interesting that we find little evidence of changes in the behavior of distressed banks.

Our study has four parts. First, we propose two empirical indicators for bank distress and test their usefulness in forecasting bank failure. These indicators are a low equity capital ratio and a low Z-score. Banks with low equity capital ratio are those in the bottom decile of the equity-to-assets distribution. Banks with low Z-scores are those who are in the bottom decile of a distance-to-default measure (based on banks' earnings). We show that these variables are good predictors of future bank failure, and that their intersection is even a better predictor. A bank that is in the lowest decile of the distribution of equity capital ratio and in the lowest decile of Z-score is about 17.8% and 19.3% more likely to fail within three years during both periods, respectively (relative to an unconditional base rate of 2.0% and 1.7%, respectively).[1] The probability of failure is even stronger when distress happens during a crisis (19.4% and 22.7%, respectively). For the rest of the analysis, we use the joint observation of a low equity capital ratio and a low Z-score as the main indicator for bank distress.

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[1] This is based on estimated likelihood of failure within 3 years for each of the two periods, all else equal. The base rate represents the mean failure rate for each of the two panels.

In the second part, we explore the dynamic behavior of distressed banks. Looking a year out following a quarter when a bank is financially distressed, we document that distressed banks increase their equity capital ratio by about 0.80% and 0.55% during the late 1980s and late 2000s, respectively. This is an economically significant increase in equity capital which amounts to 54% and 30% of the standard deviation of annual equity capital changes in the respective periods. During the GFC, however, the response of distressed banks is weaker by about a half. It is plausible that not being eligible for TARP made it difficult for a bank to raise equity. We examine whether the government's 2008 Troubled Asset Relief Program (TARP) is associated with the distressed banks' recapitalization, and indeed we find that distressed banks that received TARP funds increased their equity capital ratio by an additional 55 basis points.

In the third part, we shift the focus to the financial statements of banks and examine how different balance sheet items change following distress. We show that deleveraging occurs through actions taken across the entire balance sheet. Specifically, we document that banks in financial distress shrink their assets (e.g., reduce the asset base, close branches, cut the employee workforce), reduce their liabilities (e.g., shrink deposits, reduce deposit rates), and increase their equity capital (e.g., add equity capital, cut dividends). Outside the crisis period, the behavior of distressed banks is similar between the two periods that we examine. However, while during the Savings and Loan (S&L) crisis there is no difference in bank deleveraging during and outside the crisis, during the GFC distressed banks deleveraged to a lesser degree than they did in the surrounding years. The primary reason for this is the lower propensity of distressed banks to raise new equity during the crisis period. Dewatripont and Tirole (2012) explicitly discuss how regulation could prevent "banks in trouble from 'gambling for resurrection' by raising interest rates on deposits and attracting funds from depositors who 'count' on implicit or explicit support

Electronic copy available at: https://ssrn.com/abstract=3376882

from the authorities". We find that this behavior is not typical of banks in distress. In fact, none of our results is consistent with a gambling for resurrection strategy, which requires a bank to make risky bets when insolvent or near insolvent. A possible reason for why our data is not supportive of the gambling for resurrection hypothesis could be that regulation plays the role discussed by Dewatripont and Tirole (2012).

In the fourth and final part of the study, we examine how banks' risk indicators evolve following a quarter where they are in financial distress. We find that a variety of risk measures show a decline in risk in the year following distress: banks' distance-to-default increases, the non-performing loan (NPL) ratio decreases, earnings volatility decreases, and risk-weighted assets decline. Again, banks' behavior is consistent across the periods that we examine.

Overall, our findings indicate that, contrary to the widespread belief that distressed banks gamble for resurrection, they actually deleverage on average. Our results are broadly consistent across the two periods (late 1980s and late 2000s). Because the regulatory environments changed dramatically between these periods, it is possible to conclude that economic forces besides regulation incentivize bank managers to deleverage when banks are in distress.

Our paper contributes to several strands of the literature. First, we contribute to the literature on risk-taking and deleveraging by banks in distress. The literature on risk-taking by banks has paid much attention to the relation between charter value and risk-taking (e.g., Keeley, 1990; Demsetz, Saidenberg, and Strahan, 1996) as well as to the relation between various dimensions of governance, including ownership concentration, and risk-taking (e.g., Demsetz, Saidenberg, and Strahan, 1997; Laeven and Levine, 2009). However, there is little evidence on the risk-taking choices of banks in distress and, especially, whether these banks take steps to deleverage. Despite the importance of these issues for understanding the incentives and operations of banks, the

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empirical literature is thin and existing results are mixed. For example, Bidder, Krainer, and Shapiro (2017) find that banks that faced losses in the oil crisis of 2014 took steps to deleverage their balance sheets. In contrast, Koudstaal and van Wijnbergen (2012) find that "Banks whose share price has slumped tend to gamble for resurrection by increasing the riskiness of their asset portfolios." Baldursson and Portes (2013) document that banks in Iceland refinanced loans to their owners and other big borrowers following the financial turmoil of August 2007, consistent with gambling for resurrection behavior. Bonaccorsi di Patti and Kashyap (2017) analyze the fate of Italian banks that exhibit large drops in profitability and find that about one third of the banks recover. They find that the banks that recover are those that do not gamble for resurrection but instead cut credit to their riskiest borrowers. Acharya, Gujral, Kulkani, and Shin (2011) argue that banks redistributed wealth away from creditors to shareholders with dividend payments during the crisis. Lastly, within the financial industry but outside banking, Kirti (2017) investigates risk-taking by insurance companies hit hard by the crisis and finds that they reduce risk.

Second, we contribute to the corporate finance literature on the behavior of firms in distress. The views in this literature are mixed. Many authors present models of firm distress in which firms gamble for resurrection (e.g., White, 1989; Rose-Ackerman, 1991; Adler, 1995; Eberhart and Senbet, 1993; Akerlof and Romer, 1993; Downs and Rocke, 1994; Colonnello, Curatola, and Hoang, 2017). Admati, DeMarzo, Hellwig, and Pfleiderer (2018) develop a model where, with debt in place, shareholders resist leverage decreases and, if forced to deleverage, would rather use asset sales. Their theory follows from the fact that, everything else equal, a decrease in leverage benefits existing debtholders. They conclude that resistance to deleveraging is especially strong for firms in distress. The empirical evidence, however, is inconsistent with the theory, i.e., there is little evidence that corporations indeed gamble for resurrection or voluntarily choose to issue more

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debt when their leverage is already excessive. DeAngelo, Gonçalves, and Stulz (2018) document that following an episode of peak leverage firms deleverage sharply, so that after five or six years their leverage is typically quite low.

Third, we provide evidence on the predictions of the theoretical literature on risk-taking by banks in distress (e.g., Kane, 1989; Corbett and Mitchell, 2000; Holmström and Tirole, 2000; Morrison and White, 2013; Boyd and Hakenes, 2014; Bruche and Llobet, 2014). Rochet (1992) and Hellmann, Murdock, and Stiglitz (2000) propose a theory arguing that more stringent capital requirements reduce banks' tendency to gamble for resurrection.

Fourth, we contribute to the literature on the impact of regulatory changes in affecting banks' risk-taking. The second period we look at is one when FDICIA was fully in effect. FDICIA was adopted in part to prevent banks from gambling for resurrection by introducing early intervention (Benston and Kaufman, 1997). Existing empirical evidence finds that poorly capitalized banks experienced a reduction in risk following FDICIA (Akhigbe and Whyte, 2001). Despite these changes, our paper shows that distressed banks behave similarly under the pre-FDICIA and the post-FDICIA regimes. Furthermore, Laeven and Levine (2009) conduct a cross-country study of bank behavior and regulatory environment and find that the regulatory environment shapes banks' risk taking behavior. In contrast, our study does not find a material difference in the behavior of distressed banks across different regulatory regimes within the U.S.

The study proceeds as follows. Section 2 describes the data used in the study, and introduces the variables that measure bank distress. In Section 3, we explore the variables that are best at predicting bank failure, and therefore are best suited to measure bank distress. In Section 4, we test whether distressed banks reduce their leverage. In Section 5, we analyze the balance sheet

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dynamics of distressed banks. Section 6 analyzes the evidence for whether distressed banks increase risk taking activities. Section 7 concludes.

2. Data and Variables

2.1. Data Sources

Our analysis is based on the Reports of Condition and Income, i.e., Call Reports. The Call Report data comprise an exhaustive set of mandatory filings by banks at a quarterly frequency. We include all the reporting commercial banks in our sample during two distinct periods: 1985-1994 and 2005-2014. These two periods include the two most recent banking crises to impact the U.S. banking system, i.e., the S&L crisis of the late 1980s and early 1990s and the Global Financial Crisis (GFC) during 2008-2010. Our analysis is based on two separate unbalanced panels over these two distinct periods. The 1985-1994 and 2005-2014 panels contain 15,915 and 8,131 unique banks corresponding to over 480,000 and over 260,000 bank-quarter observations, respectively.

As part of the analysis, we contrast bank behavior in normal times and crisis times. To construct an indicator of crisis periods, we plot the number of failed banks from 1980 to 2015 in Figure 1. The figure shows that during this period there are two waves of bank failures. We define our crisis variable as an indicator variable for the years 1988-1990 and 2009-2011. During these years, the largest number of banks failed in the respective periods we consider.[2]

We also use numerous financial and non-financial controls, including proxies for liquidity (core deposit ratio and loan to asset ratio), size (log assets), too-big-to-fail indicator (assets of $50 billion or more in 2010 dollars), multi-bank holding company affiliation, bank age (chartered

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[2] These periods witnessed 1351 and 362 bank failures respectively.

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within prior 5 years), and metro location. Our tests further include logged per-capita income and the unemployment rate as well as state indicator variables.[3]

2.2. Descriptive Statistics

Table 1 presents summary statistics for the variables used in our analyses. Panels A and B depict statistics for the 1985-1994 and 2005-2014 periods, respectively. Panels C and D show correlation tables for the two periods. Panels E and F compare key variables between distressed banks and non-distressed banks for the two periods (further discussed in Section 3). Panel G shows a correlation table for the different measures of bank financial distress. All variables are defined more precisely in Appendix A.

Panels A and B show that 0.5%, 1.3%, and 2.0% of banks fail within 1, 2, and 3 years respectively in the 1985-1994 period and 0.4%, 1.1%, and 1.7% in the 2005-2014 period; thus, unconditional failure probabilities are roughly similar. Because the Basel capital requirements are not in effect during almost all of our first period, we have to use a different measure of capitalization than the commonly used Tier 1 ratio. We use the *Equity capital ratio*, which we define as equity over assets, where equity is the bank's book equity. It is known from the literature that common shareholder equity is a better predictor of a bank's returns during the GFC than the more common risk-weighted measures (Demirguc-Kunt, Detragiache, and Merrouche, 2012). Further, stress tests in 2009 placed considerable emphasis on book equity. The median *Equity capital ratio* in the overall sample is 8.3% during the earlier period and it increases by 0.7 basis points per year; the corresponding numbers for the 2005-2014 period are 10.1% and 5.1 basis

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[3] These indicators are based on the state where the charter is located; the overwhelming majority of banks operate in a single state.

points. Thus the median bank increases capital in both periods but capital is substantially higher in the latter period, which is to be expected (see discussion in Flannery and Rangan, 2008, about banks increasing their equity capital ratios in the 1990s).

Our other key risk measure is the bank *Z-score* (Demsetz and Strahan, 1997).[4] A higher bank *Z-score* means that a bank is safer. This variable is often interpreted as a proxy for distance-to-default and is a commonly used measure to proxy for bank risk.[5] We measure *Z-score* as the mean across four quarters of the return-on-assets (ROA) plus the equity capital ratio divided by the standard deviation of ROA.[6] The idea behind this definition is that this distress proxy measures the depth of a bank's equity capital, i.e., how many standard deviations of ROA losses would it take to exhaust the equity capital. The *Z-score* has a median of 93.2 and 160.5 in the two periods respectively. On average, banks are therefore less at risk of distress in the more recent period we consider.

In terms of asset growth, we observe log assets to grow on average (and median) overall and for loans for both periods, but the median fixed assets decline somewhat. Deposits also tend to grow during both periods, whereas the median non-deposit liabilities decline in the latter period. All of these variables show substantial variation in their distribution; for example the range of log loan growth ranges from the 1st to the 99th percentile is -0.35 to 0.23 for the first period and -0.28 to 0.20 for the second period. Other control variables summarized in Panels A and B also exhibit substantial variation.

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[4] Our Z-scores are estimated using quarterly ROA rather than annualized quarterly ROA; the means and medians are therefore higher as a result. But the two measures are highly correlated (over 98%) and our inferences do not change depending on which version we use.

[5] See Boyd and Runkle (1993), Laeven and Levine (2009), and Berger, El Ghoul, Guedhami, and Roman (2013).

[6] We use four quarters of data in computing the standard deviation of ROA.

Panels C and D document that the bivariate correlations of our explanatory variables are generally low. One exception is the correlation between debt/liabilities and log assets which is -49% in the earlier period and -37% in the later period.

3. Measuring Bank Distress: Which Factors Predict Bank Failure?

A key component of our analysis is identifying banks that are in distress. To do so, we use two (imperfect) commonly-used proxies to categorize the level of financial distress: the *Equity capital ratio* and the *Z-score*. Both measures rely on data that is available for all banks during both periods. The equity capital ratio is a measure of bank solvency used by academics, investors, and regulators. For example, Berger and Bouwman (2013) argue that higher capital buffers help banks survive during financial crises and are even more important for smaller banks that are less able to absorb external shocks. We define distressed banks as those with *Equity capital ratio* in the bottom decile of the distribution for that period (*Low equity capital ratio* indicator).[7] The 10th percentile cutoff for *Equity capital ratio* is 6.06% in the earlier period and 7.66% in the latter period.

Our second measure of distress is the bank *Z-score*, which captures the ability of earnings and capital levels to serve as a buffer. For our analysis, we transform this variable to percentiles within each observation period and define the *Low Z-score* indicator to denote whether the bank is in the bottom decile of the *Z-score* distribution in the observation period. The 10th percentile cutoff for *Z-score* is 18.3 in the earlier period and 31.6 in the latter period.

We also consider a third proxy for distress, which we label *Financial distress*. The banks flagged as in *Financial distress* during a period are the banks that are both in the bottom decile of

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[7] We reach similar conclusions if we use the 5th percentile or the 15th percentile.

the *Equity capital ratio* distribution and the bottom decile of the *Z-score* distribution during that period. The sample of banks that are flagged as in *Financial distress* includes about 3.8% of the bank-quarters in the period 1985-1994 and about 2.7% of the bank-quarters in the period 2005-2014.

Table 1, Panels E and F, compare the *Equity capital ratio* and *Z-score* for banks that are classified as distressed by each of the three indicators that we use, for each of the periods. Naturally, flagging banks as distressed based on whether they are in the 1st decile of the *Equity capital ratio* it creates is a sharp difference in the *Equity capital ratio* between the distressed and non-distressed banks, but the difference in the *Z-score* between the two types of banks is weak. In a similar fashion, flagging the 1st decile of the *Z-score* results in a sharp difference in *Z-score*, and muted difference in the *Equity capital ratio*. The reason is that the correlation between the two variables is relatively low as it is 0.23 for the first period and 0.35 for the second (Panel G). The *Financial distress* variable, which is the interaction between the first two indicators, flags between 3.1% and 4.1% of bank-months observations, and captures the extreme tails of both the *Equity capital ratio* and the *Z-score*.

In Figure 2 we summarize the fraction of distressed banks by year for each of the two time periods using all three distress indicators. The results suggest in each period that the proportion of banks with *Low equity capital ratio* is somewhat higher prior to the peak crisis period (1988-1990) and (2008-2010). Such an outcome may reflect that banks try to boost their capital during the crisis, perhaps because the market demands it, but part of the explanation may also be that banks whose capital falls sharply during the crisis do not stay in the sample. We discuss this sample selection issue in Section 4. The fraction of banks with *Low Z-score* falls throughout most of the first period but has an inverted U-shape in the second period, peaking in the first quarter of 2010.

The fraction of banks that have both a *Low Z-score* and *Low equity capital ratio* evolves similarly to the fraction of banks with *Low equity capital ratio* in the first period and to the fraction of banks with a *Low Z-score* in the second period.

As we would expect if our proxies for financial distress are useful for capturing banks in financial distress, the banks in our distressed bank samples differ substantially from the healthier banks. Panels E and F of Table 1 show how our key variables of interest differ between distressed and non-distressed banks. We find that distressed banks have lower growth of assets as well as of liabilities. Depending on the measure of distress, distressed banks are larger or smaller than non-distressed banks. Banks with assets greater than $50bn are equally likely to be distressed in 1985-1994 but more likely to be distressed in 2005-2014. The ratio of loans to assets is generally higher for distressed banks across distress measures. Distressed banks are more likely to be headquartered in metro areas and to be relatively young in age.

We would expect financially distressed banks to be more likely to fail than non-distressed banks if our measures distinguish between distressed banks and other banks. We test whether the banks we consider to be financially distressed are more likely to fail. We adopt the FDIC definition of bank failure, which is a situation where a bank is unable to meet its obligations and is either taken over by the FDIC or acquired by another bank (according to the FDIC failed bank list).[8] Our dataset for this analysis is at the quarterly level; thus, each observation represents a bank in a specific quarter. The dependent variable is an indicator variable for whether the bank fails in future quarters (4, 8, 12 future quarters). The explanatory variables include *Low equity capital ratio*, *Low Z-score*, or *Financial distress*, bank characteristics, and fixed effects for state headquarters and

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[8] https://www.fdic.gov/bank/individual/failed/banklist.html.

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calendar quarter. Bank characteristics (X_1) include logged assets, assets greater than $50 Billion, an indicator whether the bank is part of a multibank holding company, the ratio of deposits-to-liabilities, the ratio of loans-to-assets, the ratio of core deposits-to-total deposits, an indicator whether the bank is headquartered in a metro area, an indicator whether the bank is less than 5 years old, and state-year level variables: logged per-capital income and the unemployment rate. Table 2 reports estimates of the following model:

$$\textit{Failure within K Quarters} = f_1(D, X_1, \textit{Quarter FE, State FE}) \qquad (1)$$

where D is the distress indicator, X_1 represents the vector of controls, and FE denotes fixed effects.

The regressions show that banks with *Low equity capital ratio* (Panel A) and banks with *Low Z-score* (Panel B) are more likely to fail. Focusing on the three-year horizon (Columns (3) and (6) in Panel A), banks with *Low equity capital ratio* are 8.7% and 6.3% more likely to default in the next 3 years for the first period and the second period, respectively. A bank with a *Low Z-score* indicator has a higher likelihood of failure within three years of 9.4% and 7.6% for the first and second period, respectively.

Next, we examine the predictive power of *Financial distress*, which is the interaction of *Low equity capital ratio* and *Low Z-score*. We repeat the regressions with this variable; the results are presented in Panel C of Table 2. Banks that are in the intersection of the deciles have a higher likelihood of failure by 17.8% and 19.3% for the two periods, respectively. This is a particularly large magnitude as it is roughly ten times the unconditional mean of bank failure of 2.0% in the first period and 1.7% in the second period. We also note a material increase in the R^2 of the regressions in Panel C, relative to those in Panels A and B. In Internet Appendix Table A1, we

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provide robustness analysis in which we include the *Crisis* interaction. *Crisis* is an indicator of the crisis period of 1988-1990 or 2008-2010 depending on the sample period. The results show that our three proxies for financial distress perform even better during a crisis period.

Among our three proxies for financial distress, the proxy that classifies as distressed banks that are both in the lowest decile of the *Equity capital ratio* and of the *Z-score* distributions is the best predictor of bank failure. This is consistent with Panels E and F of Table 1, discussed earlier, which compare the means of key variables for distressed banks and non-distressed banks. The statistics in these panels show that the greatest difference in characteristics and behavior occur when using banks in the *Financial distress* sample. There is also economic intuition for why financial distressed banks that are both in the lowest decile of the *Equity capital ratio* and the lowest decile of the *Z-score* are more likely to fail than banks that satisfy only one of the criteria. While the *Equity capital ratio* measures the leverage of the bank, banks differ in their asset composition and specifically in their volatility. A higher leverage would correspond to a higher probability of distress for a bank with volatile assets compared to a bank with more stable assets. *Z-score* measures the bank's earnings scaled by the volatility of earnings, and thus controls for the volatility of earnings, which is related to the riskiness of assets. In terms of the controls, we note expected signs for some key coefficients. Banks with higher loan growth and lower core deposits are more likely to fail. There is no consistent link between the other controls across periods and failure with the exception of the local economic condition variables. These variables suggest higher unemployment and lower per-capita income are generally associated with higher risk of failure.

In conclusion, banks in the bottom deciles of the *Equity capital ratio* distribution or the *Z-score* distribution are more likely to fail, but the financial distress classification that requires banks to be in the bottom deciles of the distributions of both ratios results in a materially stronger predictor of

failure and thus a better proxy for bank distress than each of the variables alone. For the rest of the analysis, we consider a bank to be in financial distress if both its *Equity capital ratio* and its *Z-score* are in the bottom deciles of their respective distributions. In the main body of the study we present analyses solely using the *Financial distress* indicator, and the corresponding analyses using *Low Equity capital ratio* and *Low Z-score* are provided in the Internet Appendix.

4. Do Banks Deleverage?

In this section, we assess whether banks deleverage after they have reached a state of financial distress. Everything else equal, deleveraging is inconsistent with the gambling for resurrection hypothesis. To test whether distressed banks deleverage, we measure the change in the *Equity capital ratio* four quarters ahead and regress it on the *Financial distress* indicator and controls. Our analysis is based on the following model where *D* denotes our distress indicator, *Crisis* is a crisis period indicator, and X_2 denotes the controls:

$$\Delta Equity\ capital\ ratio\ (q,\ q+4) = f_2(D,\ D*Crisis,\ X_2,\ Quarter\ FE,\ State\ FE) \tag{2}$$

The estimated regressions are presented in Table 3. In addition to the distress variables, control variables, and fixed effects, we add a crisis-period interaction in all regressions (*Crisis*). Further, in Columns (5) and (6) we also add a *TARP* indicator variable for the 2005-2014 period for whether a bank received a TARP infusion within the prior year. In some of the specifications, we add a lagged version of the dependent variable to control for autocorrelation in the dependent variable. Also, we use Driscroll-Kray standard errors for results reported in Tables 3 to 5 as in Fahlenbrach, Prilmeier, and Stulz (2017) to deal with potential biases resulting from overlapping data.

The results in Table 3 show that, on average, distressed banks increase their equity capital ratio significantly by about 0.8 percentage points (relative to an average of 8.9 percentage points in 1985-1994 and 10.8 percentage points in 2005-2014). This is a very large increase in the equity capital ratio as it represents about 55% of a standard deviation of the changes in the *Equity capital ratio* in the first period (=0.8/1.46), and 44% of the standard deviation in the second period (=0.8/1.83).

Table 3 shows that the increase in the equity capital ratio is dampened during the GFC but not during the S&L crisis. During the GFC, the increase in the capital ratio is reduced by roughly half as it is lower by 0.5 percentage points. The slower increase in the capital ratio during the GFC is surprising, since at least some of the distressed banks received TARP infusions. Using the *TARP* indicator, we find that the TARP infusions offset the dampening of the increase in the equity capital ratio due to the GFC. In other words, TARP-supported distressed banks increased their equity capital ratio by 0.8 percentage points during the recent crisis, relative to non-TARP banks which increased their capital ratio only by about 0.3 percentage points. The results are robust to the inclusion of the lagged dependent variable (Columns (2), (4), and (6)); the positive association of lagged capital changes with current capital changes suggests, as we would expect, that banks gradually build up capital. Further research is required to understand better why the equity capital ratio did not increase for non-TARP banks. It could well be that TARP banks were viewed as banks that the official sector wanted to keep alive, so that banks that did not receive TARP found it more difficult to raise equity (see further discussion in Section 5).

We conduct several robustness tests for these results. In Internet Appendix Table A2, we replace the *Financial distress* indicator with its components (*Low equity capital ratio* in Panel A, and *Low Z-score* in Panel B). The statistical significance is high when using the *Low equity capital*

ratio, and weaker when the *Low Z-score* is used. We also present a set of results excluding the *Crisis* interaction (Panels C, D, and E). Again, the results remain statistically and economically significant.

Banks can fail during the year following the quarter when they are recorded as distressed banks. A concern is that bank failure could mechanically generate the deleveraging result, since the banks that survive necessarily perform better than the ones that fail. DeAngelo, Goncalves, and Stulz (2018) conduct an analysis of deleveraging for public non-financial firms and find that a substantial fraction of firms are delisted at or shortly after reaching peak leverage. These firms obviously cannot have had time to deleverage. If the same patterns were to hold for our sample, the deleveraging behavior we observe would be the behavior of the banks that survived and not that of the average distressed bank. To test whether attrition accounts for the results we have over a four-quarter horizon, we shorten the horizon to one quarter and rerun the analysis (presented in Internet Appendix Table A2, Panels F, G, and H). The results are noisier but the magnitude of deleveraging is consistent with what we find for four quarters (the one-quarter results need to be multiplied by four). Hence, we conclude that the impact of the survival bias on our results is extremely limited.

As discussed, regulations differ in the second period from the first period. An important difference is that FDCIA applies throughout our second period. With FDICIA, banks that have low capital ratios are constrained in the actions they can take. For instance, banks that are undercapitalized cannot have brokered deposits and cannot pay dividends. They have to have in place a capital restoration plan. Hence, it could be that our results are driven by the banks for which prompt corrective action applies, i.e., the banks for which these restrictions apply. To examine this possibility, we re-estimate Table 3 eliminating the banks that are constrained by FDCIA and

present the results in Internet Appendix Table A2, Panel I. Our inferences are unaffected when we eliminate these banks, so that our results are not driven by banks subjected to prompt corrective action.

5. How Do Banks Deleverage?

In this section, we investigate how banks deleverage. In particular, we wish to understand whether banks deleverage by taking different actions: by selling assets and using proceeds to reduce liabilities, by raising new equity directly, or through retention that is accelerated by dividend reductions. More specifically, a bank could sell assets, whether financial or physical, and use the proceeds to pay back debt, so that its leverage would fall. DeAngelo, Gonçalves, and Stulz (2018) show that an important tool for deleveraging is retention of earnings, so that banks could deleverage by reducing their payouts. Further, banks could attempt to increase earnings by taking steps to reduce expenses. In practice, we consider how assets, loans, and fixed-assets change for distressed banks. We also investigate how liabilities evolve, because holding everything else constant, decreases in liabilities correspond to a decrease in leverage. We consider the changes in deposit and non-deposit liabilities. We consider how the number of employees evolves for distressed banks as well as how their cost of deposits evolves. Finally, we investigate changes in equity and changes in dividends.

For our regression analysis, we estimate regressions that are the same as the ones estimated in Table 3, except the dependent variables are outcome variables for banks that we consider to be helpful in assessing how banks deleverage. In the following regression, D denotes our distress indicator, $Crisis$ is a crisis period indicator, and X_3 denotes the controls:

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$$\Delta Balance\ Sheet\ Item\ (q,\ q+4) = f_3(D,\ D*Crisis,\ X_3,\ Quarter\ FE,\ State\ FE) \qquad (3)$$

We present the results of the analysis in Table 4 Panels A and B for periods 1985-1994 and 2005-2014, respectively. We find that distressed banks reduce both financial and physical assets. They reduce total assets, loans, and fixed assets. They also reduce the number of branches. It is then not surprising that employment shrinks as well. The magnitudes of the effects are large. In the first period we consider, distressed banks decrease the size of their total assets by 8.2%, their loan portfolio by 8.7%, their fixed assets by 6.6%, the number of their branches by 3.5%, and the number of their employees by 7.0%. The magnitudes are similar in the later period. The decreases are even larger during the GFC. During the recent crisis, distressed banks reduce the size of their total assets by 11.2%, their loan portfolio by 9.3%, their fixed assets by 8.0%, the number of their branches by 5.8%, and the number of their employees by 7.3%.

Turning to the liabilities, Table 4, Panel A, Columns (6) to (9) show that banks deleverage by reducing their liabilities: both deposits and other liabilities decline. We would expect banks gambling for resurrection to attract more deposits through a higher rate, so that they can take more risks and increase their leverage. As Benston and Kaufman (1997) discuss for the pre-FDICIA period, "zombie" S&Ls "were making profitability difficult for solvent institutions by paying higher-than-market interest rates to attract deposits and charging lower-than-market rates on their loans, in a strategy of gambling the company." Instead, in the period of 1985-1994 distressed banks reduce their deposit rates by 0.026% (Panel A, Column (7)) and the quantity of deposits by 9.2% (Panel A, Column (8)). The magnitudes for the later period, 2005-2014, are almost identical, with the exception that the decline in the quantity of deposits during the crisis is steeper by an additional 3.4%. This evidence is consistent with Ben-David, Palvia, and Spatt (2017) who find that deposit

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rates do not materially vary with equity capital ratio. Instead, they document that banks use deposits as a tool to fund loan growth: they increase offered deposit rates to attract new deposits when the demand for loans is high. Thus, when distressed banks do not seek to make new loans, they also do not act to attract new deposits. Table 4, Column (8) show that other liabilities (e.g., long term debt) of distressed banks decline by about 19.2% and 20.9%, per year, in the two respective periods that we study. It is important to note that the decrease in interest rates on deposits is not due to economy-wide movements in interest rates. We control for such movements through the use of quarter fixed effects, so that all our results have to interpreted as showing how distressed banks differ in their behavior from non-distressed banks within a quarter.

Lastly, we find that banks increase their equity capital through two channels: equity issuance and retention. If banks intended to gamble for resurrection, then banks would want to pay out funds to existing shareholders, which would make them riskier and increase shareholder wealth in case of bank failure. Table 4, Panel A, Columns (10) and (11) show results that are inconsistent with this assertion. Specifically, they show that, on average, common stock increases by 1.7% and by 2.7%, and dividends are cut by 26.1% and 30.2%, in the two periods, respectively. These results are consistent with the findings of Dinger and Vallascas (2016), who document that, among publicly-traded banks, the likelihood of equity issuance is higher when the bank is poorly capitalized. However, while equity does not increase less during the S&L crisis, it does increase less during the GFC. Acharya, Gujral, Kulkani, and Shin (2011) argue that banks by paying large amounts in dividends during the crisis redistributed wealth away from creditors to shareholders. The distressed banks in our sample reduced dividend payments during the GFC.

Analyzing the deleveraging of distressed banks during the GFC reveals that banks deleveraged less because they issued less equity during the crisis. Table 3 shows that banks *increased* their

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Equity capital ratio following distress quarters, however, did *less* so during GFC. In an apparent contrast, Table 4, Panel B, shows that both assets and liabilities of *distressed* banks shrank more during the GFC than outside of it. In fact, the two results are consistent with each other. Distressed banks deleveraged less during the GFC relative to distress banks outside the crisis because of two reasons. First, distressed banks during the GFC reduced their liabilities by a smaller amount relative to the extent that they reduced their assets. To see this, compare the coefficients on the *Crisis* interaction in Column (1) to that in Column (6). Second, while distressed banks outside crisis periods deleverage themselves through equity issuance (Column (10)), distressed banks during the GFC did not issue equity. In fact, the coefficient on the *Crisis* interaction in Column (10) nullifies the coefficient on the *Financial distress* indicator.

A plausible explanation for the lower equity raising during the crisis is that banks eligible for TARP funds were banks that the government wanted to survive, so that distressed banks that did not receive TARP funds were considered likely to be ceased by regulators.[9] We also explore the impact on distressed banks of receiving TARP funds. Panel C of Table 4 shows that these banks do not behave materially differently with respect to the management of assets except that they decrease fixed assets less than non-TARP banks. Surprisingly, TARP banks offer higher deposit rates by 0.072%, but at the same time shrink their deposits even further, by an additional 3.0%. These banks also raise more equity. We observe no difference in the evolution of dividend payouts for these banks relative to other distressed banks.

We conduct several robustness tests for these results, presented in Internet Appendix Table A3. In Panels A and B, we rerun the analysis for 1985-1994, but replace the main distress variable

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[9] Internet Appendix Table A3, Panel K, shows that once we exclude bank-months that were impacted by regulatory action (PCA), distressed banks during the GFC issue equity as much as distressed banks outside the GFC.

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to be the *Low equity capital ratio* and the *Low Z-score*, respectively. In Panels C and D, we repeat these tests for the period of 2005-2014. In Panels E, F, and G, we rerun the analysis for 1985-1994, but excluding the crisis indicator, for the three distress variables. In Panels H, I, and J, we presents the analysis for 2005-2014, excluding the crisis indicator, for the three distress variables. Finally, in Panel K, we examine whether the decrease in dividends in the second period is due to FDCIA. We find that the decrease in dividends is similar when we exclude the banks constrained by FDICIA. It should be noted, however, that in both periods regulators can order banks to stop paying dividends if they so choose. Across all the robustness tests, the picture is similar to the one arising from the main tests in Table 4: banks in distress shrink their assets, reduce their liabilities, and increase their equity.

Overall, our results show that banks deleverage throughout their balance sheets. Contrary to the widespread narrative from the S&L crisis that distressed banks increase their deposit rates in order to attract deposits and invest them in risky assets, we find that deposits of distressed banks shrink and that the interest rate they pay falls. As banks reduce their assets, their demand for deposits falls and they offer lower rates. In addition, banks act to increase equity through cutting dividends and raising new equity.

6. Bank Distress and Risk Taking

Despite the results that, on average, distressed banks deleverage, it is still possible that they increase their asset risk which would be supportive of the gambling for resurrection hypothesis. To investigate whether this is the case, we test whether indicators of risk taking change for

distressed banks. Since we include both private and public banks in our sample, we can only use indicators that are available in call reports.

To investigate whether distressed banks increase risk taking, we consider how various measures of bank asset risk evolve for distressed banks. We consider four measures. The first is the logged *Z-score* which is a measure of distress risk. If banks take on riskier loans to gamble for resurrection, we expect loan performance to worsen and the ratio of performing loans to total loans, which we call the performing loans ratio, to fall. Similarly, we expect the volatility of earnings to increase if banks take more risk. Lastly, for the 2005-2014 period, banks have capital requirements that required them to weight assets differently depending on their risk. As a result, the change in risk-weighted assets (RWAs) (scaled by lagged assets) is a measure of the change in the risk of the assets. The lower this ratio, the safer the assets according to the regulatory risk-weights. In the following regression, *D* denotes our distress indicator, *Crisis* is a crisis period indicator, and X_4 denotes the controls:

$$\Delta \text{Risk Measure } (q, q+4) = f_4(D, D*Crisis, X_4, \text{Quarter FE, State FE}) \quad (4)$$

In Table 5, we estimate our regressions with proxies for asset risk on the left-hand side. We find that the *Z-score* increases for banks in distress, which means that these banks become less risky. Columns (1) to (3) provide regression estimates for the first period. In Column (1), the increase in the *Z-score* is 83.9 percent, which is almost a doubling of the *Z-score*. Admittedly, the *Z-score* of the distressed banks is low, as the average of the 1st decile of the *Z-score* for the first period is 7.35 (Table 1, Panel E). The ratio of performing loans to total loans increases substantially as well. Finally, Column (3) shows that there is a drop in earnings volatility of 0.329 for distressed

banks. For all regressions, we have a *Crisis* interaction. The *Crisis* interaction is insignificant for all three regressions. Columns (4) to (6) are the regressions in Columns (1) to (3), estimated for the second period. The results for the coefficients on *Financial distress* are similar, except that the coefficient for the regression for the *Performing loans ratio* is insignificant. However, the *Crisis* interaction is significantly negative for the *Z-score* and for *Earnings volatility*. Column (7) uses as dependent variable the *Change in risk-weighted assets* (scaled by lagged assets). If risk-weights are good adjustments for risk, we would expect this ratio to fall when banks decrease their asset risk. We see that the coefficient on *Financial distress* is negative and the interaction with the *Crisis* is negative as well.

The results in Table 5 suggest that distressed banks increase their distance-to-default (*Z-score*) and have lower earnings volatility in both sample periods (1985-1994) and (2005-2014). In the latter period, distressed banks reduce their risk-weighted assets ratio, suggesting reduced holdings of risky assets. The performing loans ratio increases for distressed banks for the first period but not for the second one.

For the GFC, it is important to assess whether derisking is different for the banks that receive TARP injections as there is evidence in the literature that these banks take on more risk (Black and Hazelwood, 2013). We estimate the regressions in Columns (4) to (7) adding an interaction with TARP, which is an indicator variable for the banks that receive TARP funding. The estimates in Columns (8) to (11) show that the distressed banks that received TARP injections increase their Z-score more than other distressed banks and reduce their earnings volatility more than other

banks. However, these banks experience a decrease in their performing loans ratio compared to other banks.

We offer several robustness analyses. First, we present the results for the *Low equity capital ratio* and *Low Z-score* distress indicators with *Crisis* indicator interactions (Internet Appendix Table A4, Panels A and B), and for all three distress metrics without the interactions (Internet Appendix Table A4, Panels C, D, and E). The results broadly remain consistent across specifications. Then, to alleviate the concern that the results are driven by survival bias, we explore one-quarter horizon instead of four-quarter horizon for the three distress variables, in Internet Appendix Table A4, Panels F, G, and H. Again, the results broadly remain consistent. The only variable that appears to materially weaken is the *Performing loans ratio* in the 1985-1994 period (Panel H, Column (2)). In Internet Appendix Table A4, Panels I, J, and K, we also investigate how the risk metrics change in the five to nine quarters after a bank is considered distressed (the twelve months following the twelve months that we consider in most of our analyses). We see that banks derisk for both periods for all measures except for the *RWA/Assets(t-1)* measure. However, in that case, we find that banks that received TARP funds do not derisk. As earlier, we explore whether our results are explained by PCA banks in the post-FDICIA period in Internet Appendix Table A4, Panel L. We find that this is not the case. Our results hold if we drop all the banks constrained by PCA.

7. Conclusion

The view that distressed banks either "gamble for resurrection," or at the least, have strong incentives to do so, has been held widely in both regulatory and academic circles since the onset of the S&L crisis. Our analysis systematically examines whether distressed banks take on more

risk or whether they deleverage during two periods that include crises. The first period is 1985-1994 with the S&L crisis and the second period is 2005-2014 with the GFC. The periods are separated by the implementation of important changes in regulation. In particular, prompt corrective action was introduced with FDICIA and revised capital requirements based on the Basel II Accord were implemented in the United States. Despite these dramatic changes in regulation that were aimed at protecting the insurance fund from actions by distressed banks and improving micro-prudential bank regulation more generally, we find more similarities than differences in how banks respond to financial distress over the two periods. Our evidence shows that distressed banks on average deleverage and derisk. During the GFC, there is some evidence that distressed banks appear to deleverage less and derisk less, primarily because of lower equity issuance. Surprisingly in light of the introduction of prompt corrective action, the fact that distressed banks deleverage less and derisk less during a crisis is especially prominent during the most recent crisis.

Our results are inconsistent with the "gambling for resurrection" view. Our results apply on average to distressed banks, so that it is certainly possible, even likely, that some banks did gamble for resurrection during the periods we examined. However, our evidence shows that this view is not helpful to understand the behavior of the average distressed bank. Many factors can drive banks to deleverage and derisk and we show that these factors seem more important than incentives to gamble for resurrection. Banks in distress find it harder to operate normally, so that gambling for resurrection would make it even harder for banks to operate. Banks gambling for resurrection might find it difficult to attract and keep customers and counterparties would be reluctant to deal with them. Irrespective of the regulatory regime, they would be under pressure from regulators. Managerial reputations would be endangered. As a result, commercial and market incentives as

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well as incentives on the part of managers may make it optimal for the typical distressed bank to deleverage rather than gamble for resurrection.

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Appendix A. Variable Definitions

Variable name	Definition	Source	Variables calculation
Variables of interest			
Equity capital ratio	Equity/Assets	FDIC	EQ/ASSET
Z-score	[Mean(ROA) + Mean(Equity capital ratio)] / Std. deviation of return on assets (ROA) (4 qtr)	FDIC	ROA=NETINC(qtr)/ASSET, Equity capital ratio=EQ/ASSET
Low equity capital ratio (1st decile)	Indicator variable to whether Equity capital ratio is in the 1st decile of bank-quarters		
Low Z-score (1st decile)	Indicator variable to whether Z-score is in the 1st decile of bank-quarters		
Financial distress	1st decile equity capital * 1st decile Z-score		
Crisis	An indicator variable for the years 1988-1990 and 2009-2011		
TARP	An indicator variable to whether the bank received TARP funds in the prior year		
Dependent variables			
Failure within k quarters	Indicator to whether bank was categorized as Failed (in qtrs q+1 to q+k)	FDIC	Failure as defined by FDIC
Change in equity capital ratio (q, q+k)	Equity capital ratio (q+k) - Equity capital ratio (q)		
Change in log assets (q, q+k)	log(Assets) (q+k) - log(Assets) (q)	FDIC	Change in log(ASSET)
Change in log loans (q, q+k)	log(Loans and leases) (q+k) - log(Loans and leases) (q)	FDIC	Change in log(LNLS)
Change in log fixed assets (q, q+k)	log(Fixed assets) (q+k) - log(Fixed assets) (q)	FDIC	Change in log(BKPREM)
Change in log #branches (q, q+k)	log(#branches) (q+k) - log(#branches) (q)	FDIC	Change in log(OFFSOD)
Change in log #employees (q, q+k)	log(#employees) (q+k) - log(#employees) (q)	FDIC	Change in log(NUMEMP)
Change in log liabilities (q, q+k)	log(Liabilities) (q+k) - log(Liabilities) (q)	FDIC	Change in log(LIAB)
Change in log deposit rate (q, q+k)	log(Interest expense/Avg deposits) (q+k) - log(Interest expense/Avg deposits) (q)	FDIC	Change in log(Annualized quarterly EINTEXP/Avg DEP)
Change in log deposits (q, q+k)	log(Deposits) (q+k) - log(Deposits) (q)	FDIC	Change in log(DEP)
Change in log other liabilities (q, q+k)	log(Other liabilities) (q+k) - log(Other liabilities) (q)	FDIC	Change in log(LIAB-DEP)
Change in log common stock (q, q+k)	log(Common stock) (q+k) - log(Common stock) (q)	FDIC	Change in log(EQCS)
Change in log dividends (q, q+k)	log(Dividends) (q+k) - log(Dividends) (q)	FDIC	Change in log(Annualized Quarelty EQCDIV)
Change in ROA (q, q+k)	Net income (qtr)/Total assets (q+k) - Net income (qtr)/Total assets (q)		
Change in Z-score (q, q+k)	Z-score (q+k) - Z-score (q)		NETINC/ASSET
Change in performing loan ratio (q, q+k)	log(Performing loans/Assets) (q+k) - log(Performing loans/Assets) (q)	FDIC	Change in (NCLNLS/ASSET)
Change in earnings volatility (q, q+k)	(4-qtr volatility of (Earnings/Assets)) (q+k) - (4-qtr volatility of (Earnings/Assets)) (q)	FDIC	Change in (Std Dev of ROA)
Change in RWA(q, q+k)/Assets (q)	(Risk weighted-assets (q+k) - Risk weighted-assets (q))/Assets (q)	FDIC	(Change in RWA)/Assets (q)
Control variables			
Log assets	Log(Assets)		Log(ASSET)
Assets > $50bn	Assets greater than $50bn in 2010/Q4 qtr dollars	FDIC	ASSET for consolidated bank or BHC parent > $50bn
Part of MHC	Indicator to whether parent is multibank holding company (MHC)	FDIC	HCTMULT
Deposits/Liabilities	Ratio of Deposits to Liabilities	FDIC	DEP/LIAB
Loans/Assets	Ratio of Loans to Assets	FDIC	LNLS/ASSET
Core deposit ratio	Ratio of Core deposits to Total deposits	FDIC	COREDEP/DEP
Metro location	Bank headquartered in a metropolitan statistical area (MSA)	FDIC	METRO
De novo bank	Indicator to whether the bank has a new charter from the last 5 years	FDIC	BNKAGE<=5
Charge-off rate	Charge-Offs divided by Loan and Leases	FDIC	DRLNLS/LNLS
Log state per-capita income	log(Per-capita income, state level) (q-1)	BLS	Seasonally Adj Per Cap Income
State unemployment rate	State unemployment rate (q-1)	BLS	Seasonally Adj Unemp Rate

Table 1. Summary Statistics

The table presents summary statistics for the samples used in the study. The data is a panel at the bank-quarter level. Panels A and B present descriptive statistics for the sample of bank-quarters of 1985-1994 and 2005-2014, respectively. Panels C and D present correlation tables for the sample of bank-quarters of 1985-1994 and 2005-2014, respectively. Panel E shows summary statistics of distress variables for bank-quarters defined as distressed and non-distressed by the different indicators. Panel F is a correlation table between variables measuring bank distress.

Panel A: Summary Statistics for 1985-1994 Sample

Variable	N	Mean	St Dev	p1	p10	p50	p90	p99
Equity capital ratio (%)	487553	8.940	3.212	3.263	6.058	8.311	12.580	19.979
Z-score	487146	149.3	202.8	2.9	18.3	93.2	329.5	889.5
Financial distress indicator	487553	0.041	0.198	0.000	0.000	0.000	0.000	1.000
Crisis (1988-1990)	487553	0.303	0.460	0.000	0.000	0.000	1.000	1.000
Failure within 4 quarters	487553	0.005	0.069	0.000	0.000	0.000	0.000	0.000
Failure within 8 quarters	487553	0.013	0.114	0.000	0.000	0.000	0.000	1.000
Failure within 12 quarters	487553	0.020	0.142	0.000	0.000	0.000	0.000	1.000
Change in equity capital ratio (%) (q, q+4)	469782	-0.008	1.485	-4.766	-1.221	0.107	1.084	3.253
Change in log assets (q, q+4)	471216	0.065	0.173	-0.230	-0.046	0.048	0.181	0.605
Change in log loans (q, q+4)	471123	0.069	0.220	-0.351	-0.106	0.060	0.234	0.691
Change in fixed assets (q, q+4)	469773	0.054	0.343	-0.511	-0.157	-0.025	0.355	1.430
Change in log #branches (q, q+4)	471135	0.037	0.185	-0.223	0.000	0.000	0.043	0.693
Change in log #employees (q, q+4)	471065	0.025	0.186	-0.336	-0.116	0.000	0.163	0.592
Change in log liabilities (q, q+4)	471208	0.065	0.191	-0.227	-0.052	0.047	0.188	0.630
Change in log deposit rate (q, q+4)	469719	-0.062	0.214	-0.517	-0.296	-0.065	0.167	0.411
Change in log deposits (q, q+4)	471148	0.064	0.195	-0.229	-0.052	0.046	0.187	0.640
Change in log other liabilities (q, q+4)	470750	0.058	0.671	-1.799	-0.566	0.016	0.750	2.239
Change in log common stock (q, q+4)	471076	0.020	0.240	-0.007	0.000	0.000	0.000	0.811
Change in log dividends (q, q+4)	467450	0.065	1.995	-6.217	-0.780	0.000	1.230	6.356
Change in log Z-score (q, q+4)	469035	0.050	1.078	-2.839	-1.260	0.067	1.342	2.711
Change in performing-loan ratio (%) (q, q+4)	471216	0.032	1.286	-4.138	-0.936	0.029	1.060	3.574
Change in earnings volatility (q, q+4)	471199	-0.001	0.430	-1.071	-0.200	-0.004	0.175	1.215
Log assets	487553	6.243	1.246	3.977	4.882	6.099	7.705	10.594
Assets > $50bn	487553	0.014	0.117	0.000	0.000	0.000	0.000	1.000
Part of MHC	487542	0.305	0.461	0.000	0.000	0.000	1.000	1.000
Deposits/Liabilities (%)	487553	96.71	6.49	72.03	92.84	98.54	99.39	99.73
Loans/Assets (%)	487459	53.88	15.12	15.80	33.34	55.26	71.89	85.07
Core deposit ratio (%)	487553	88.59	10.37	51.21	76.57	91.29	97.72	100.00
Metro location	487553	0.539	0.499	0.000	0.000	1.000	1.000	1.000
De novo bank	487542	0.067	0.249	0.000	0.000	0.000	0.000	1.000
Charge-off rate (%)	487532	0.664	18.041	0.000	0.000	0.204	1.515	5.922
Log state per-capita income	486923	9.755	0.184	9.347	9.525	9.759	9.988	10.142
State unemployment rate (%)	486923	6.322	1.697	2.700	4.300	6.200	8.500	11.500

Table 1. Summary Statistics (Cont.)

Panel B: Summary Statistics for 2005-2014 Sample

Variable	N	Mean	StDev	p1	p10	p50	p90	p99
Equity capital ratio (%)	260640	10.846	3.643	4.909	7.666	10.050	14.967	24.205
Z-score	260340	242.4	306.8	5.0	31.6	160.5	521.8	1379.7
Financial distress indicator	260640	0.031	0.173	0.000	0.000	0.000	0.000	1.000
Crisis (2009-2011)	260640	0.299	0.458	0.000	0.000	0.000	1.000	1.000
TARP	260640	0.012	0.110	0.000	0.000	0.000	0.000	1.000
Failure within 4 quarters	260640	0.004	0.067	0.000	0.000	0.000	0.000	0.000
Failure within 8 quarters	260640	0.011	0.104	0.000	0.000	0.000	0.000	1.000
Failure within 12 quarters	260640	0.017	0.130	0.000	0.000	0.000	0.000	1.000
Change in equity capital ratio (%) (q, q+4)	252508	-0.051	1.828	-5.976	-1.406	0.051	1.209	4.465
Change in log assets (q, q+4)	252737	0.059	0.149	-0.211	-0.050	0.042	0.178	0.559
Change in log loans (q, q+4)	252702	0.054	0.182	-0.281	-0.091	0.040	0.201	0.620
Change in fixed assets (q, q+4)	251875	0.042	0.305	-0.480	-0.125	-0.024	0.283	1.259
Change in log #branches (q, q+4)	252650	0.028	0.159	-0.288	0.000	0.000	0.095	0.693
Change in log #employees (q, q+4)	252633	0.021	0.159	-0.288	-0.095	0.000	0.141	0.542
Change in log liabilities (q, q+4)	252734	0.059	0.159	-0.219	-0.057	0.041	0.185	0.593
Change in log deposit rate (q, q+4)	251768	-0.160	0.318	-0.816	-0.472	-0.211	0.279	0.573
Change in log deposits (q, q+4)	252723	0.063	0.181	-0.218	-0.054	0.043	0.190	0.610
Change in log other liabilities (q, q+4)	252701	0.015	0.798	-2.515	-0.668	-0.005	0.723	2.767
Change in log common stock (q, q+4)	250490	0.006	0.256	-0.005	0.000	0.000	0.000	0.405
Change in log dividends (q, q+4)	251706	-0.001	2.344	-7.468	-1.061	0.000	1.041	7.473
Change in log Z-score (q, q+4)	252160	-0.024	1.117	-3.064	-1.373	0.002	1.283	2.812
Change in performing-loan ratio (%) (q, q+4)	252737	-0.112	1.424	-5.167	-1.178	0.000	0.907	3.344
Change in earnings volatility (q, q+4)	252729	0.011	0.380	-0.936	-0.139	0.000	0.157	1.147
Change in RWA (q, q+4)/Assets (%) (q)	249808	5.224	24.718	-17.258	-5.241	2.820	15.416	57.557
Log assets	260640	7.390	1.333	4.929	5.913	7.241	8.941	11.845
Assets > $50bn	260640	0.009	0.092	0.000	0.000	0.000	0.000	0.000
Part of MHC	260622	0.185	0.389	0.000	0.000	0.000	1.000	1.000
Deposits/Liabilities (%)	260640	93.45	8.14	66.39	84.38	95.88	99.63	99.90
Loans/Assets (%)	260625	63.66	15.89	19.37	41.70	65.93	82.20	91.63
Core deposit ratio (%)	260640	85.68	12.04	45.20	71.12	88.15	97.78	100.00
Metro location	260640	0.533	0.499	0.000	0.000	1.000	1.000	1.000
De novo bank	260622	0.053	0.224	0.000	0.000	0.000	0.000	1.000
Charge-off rate (%)	260630	0.456	49.188	0.000	0.000	0.096	0.890	3.919
Log state per-capita income	260073	10.572	0.136	10.272	10.403	10.568	10.747	10.927
State unemployment rate (%)	260073	6.370	2.162	3.000	4.000	5.800	9.600	11.800

Table 1. Summary Statistics (Cont.)

Panel C: Correlation Table for 1985-1994 Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Log assets	1.00												
(2) Assets > $50bn	0.21	1.00											
(3) Part of multibank holding company	0.32	0.09	1.00										
(4) Deposits/liabilities	-0.49	-0.22	-0.24	1.00									
(5) Loans/assets	0.21	0.03	0.14	-0.12	1.00								
(6) Core deposit ratio	-0.17	-0.10	-0.04	0.17	-0.15	1.00							
(7) Metro location	0.30	0.06	0.12	-0.17	0.21	-0.18	1.00						
(8) De novo bank	-0.10	0.00	-0.03	0.00	0.13	-0.29	0.16	1.00					
(9) Charge-off rate	-0.06	0.01	-0.02	-0.01	0.05	-0.11	-0.01	0.02	1.00				
(10) Log state per-capita income	-0.05	-0.01	-0.02	-0.02	-0.03	0.06	-0.14	-0.05	0.00	1.00			
(11) State unemployment rate	0.07	-0.01	0.01	0.04	-0.03	-0.20	0.09	0.05	0.14	-0.07	1.00		
(12) Change in log state per-capita income	0.00	0.00	-0.01	-0.01	0.01	0.01	-0.03	-0.01	-0.02	0.21	-0.06	1.00	
(13) Change in state unemployment rate	0.01	0.01	0.01	0.00	0.06	-0.08	0.02	0.03	-0.02	-0.01	-0.13	0.04	1.00

Panel D: Correlation Table for 2005-2014 Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Log assets	1.00												
(2) Assets > $50bn	0.24	1.00											
(3) Part of multibank holding company	0.12	0.16	1.00										
(4) Deposits/liabilities	-0.37	-0.15	-0.13	1.00									
(5) Loans/assets	0.19	-0.01	0.02	-0.16	1.00								
(6) Core deposit ratio	-0.13	-0.08	-0.03	0.21	-0.23	1.00							
(7) Metro location	0.31	0.08	0.02	-0.11	0.16	-0.12	1.00						
(8) De novo bank	-0.05	0.00	-0.03	0.01	0.10	-0.17	0.17	1.00					
(9) Charge-off rate	0.12	0.08	0.02	-0.05	0.07	-0.04	0.10	0.00	1.00				
(10) Log state per-capita income	-0.05	0.01	-0.01	-0.04	-0.02	0.05	-0.14	-0.05	-0.03	1.00			
(11) State unemployment rate	0.16	0.02	-0.06	0.05	0.02	0.08	0.12	0.08	0.26	-0.18	1.00		
(12) Change in log state per-capita income	-0.02	0.01	0.00	-0.01	0.00	0.02	-0.03	-0.01	-0.01	0.18	-0.06	1.00	
(13) Change in state unemployment rate	0.00	0.00	0.03	-0.12	0.10	-0.27	0.02	0.07	0.01	-0.01	-0.08	-0.04	1.00

Table 1. Summary Statistics (Cont.)

Panel E: Summary Statistics for Distressed and Non-Distressed Banks, 1985-1994

Classification variable:	Low quity capital ratio (1st decile) (q)			Low Z-score (1st decile) (q)			Financial distress (q)		
	Distressed	Non-distressed	t-test	Distressed	Non-distressed	t-test	Distressed	Non-distressed	t-test
Observations:	48756	438797		48715	438431		20193	466953	
Equity capital ratio	4.970	9.381	***	6.729	9.182	***	4.287	9.138	***
Z-score	76.049	157.459	***	9.868	164.836	***	7.354	155.479	***
Log assets	6.826	6.179	***	5.872	6.285	***	6.167	6.247	***
Assets > $50bn	0.035	0.012	***	0.013	0.014	**	0.015	0.014	
Part of MHC	0.431	0.291	***	0.241	0.313	***	0.281	0.307	***
Deposits/Liabilities	94.905	96.911	***	96.999	96.684	***	96.816	96.711	**
Loans/Assets	58.663	53.349	***	56.820	53.554	***	59.286	53.647	***
Core deposit ratio	84.574	89.035	***	86.051	88.878	***	84.520	88.772	***
Metro location	0.739	0.516	***	0.577	0.534	***	0.665	0.533	***
De novo bank	0.085	0.065	***	0.108	0.062	***	0.111	0.064	***

Panel F: Summary Statistics for Distressed and Non-Distressed Banks, 2004-2015

Classification variable:	Low quity capital ratio (1st decile) (q)			Low Z-score (1st decile) (q)			Financial distress (q)		
	Distressed	Non-distressed	t-test	Distressed	Non-distressed	t-test	Distressed	Non-distressed	t-test
Observations:	26064	234576		26034	234306		8049	252291	
Equity capital ratio	6.577	11.320	***	9.169	11.010	***	5.656	10.991	***
Z-score	147.764	252.889	***	16.996	267.412	***	12.256	249.712	***
Log assets	7.627	7.364	***	7.431	7.387	***	7.571	7.386	***
Assets > $50bn	0.011	0.008	***	0.010	0.008	*	0.006	0.009	***
Part of MHC	0.220	0.182	***	0.161	0.188	***	0.128	0.187	***
Deposits/Liabilities	91.391	93.674	***	93.186	93.480	***	92.844	93.470	***
Loans/Assets	63.649	63.665		66.668	63.331	***	67.240	63.551	***
Core deposit ratio	84.261	85.840	***	85.014	85.773	***	85.890	85.691	
Metro location	0.640	0.521	***	0.681	0.516	***	0.746	0.525	***
De novo bank	0.033	0.055	***	0.081	0.049	***	0.054	0.052	

Panel G: Correlations between Bank Distress Indicators

	1985-1994			2005-2014		
	(1)	(2)	(3)	(1)	(2)	(3)
(1) Low equity capital ratio (1st decile)	1.00			1.00		
(2) Low Z-score (1st decile)	0.35	1.00		0.23	1.00	
(3) Financial distress	0.62	0.62	1.00	0.54	0.54	1.00

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Table 2. Bank Distress Indicators and Future Failure

The table explores the ability of our indicators of bank financial distress to predict bank failure. Bank failure is defined using the FDIC failed bank list. The data is a panel at the bank-quarter level. In Panel A, bank distress is proxied by *Low equity capital ratio*, an indicator for whether the bank's *Equity capital ratio* is in the bottom decile of the distribution of the *Equity capital ratio*. In Panel B, bank distressed is proxied by *Low Z-score*, an indicator for whether the bank's *Z-score* is in the bottom decile of the distribution of the *Z-score*. In Panel C, *Financial distress* is an indicator for whether the bank's *Equity capital ratio* is in the bottom decile of the distribution of the *Equity capital ratio* and *Z-score* is at the bottom decile of the distribution of *Z-score*. Standard errors are clustered by bank and adjusted using the Driscoll-Kraay (1998) procedure for overlapping data. *t*-statistics are presented in parentheses. Variable definitions are provided in Appendix A. *, **, *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Distress Measured by *Low Equity Capital Ratio*

Sample period:	1985-1994			2005-2014		
Dependent variable:	Failure within…			Failure within…		
	4 quarters	8 quarters	12 quarters	4 quarters	8 quarters	12 quarters
	(1)	(2)	(3)	(4)	(5)	(6)
Low equity capital ratio (1st decile) (q-1)	0.034***	0.074***	0.087***	0.034***	0.056***	0.063***
	(26.36)	(27.55)	(25.63)	(18.29)	(16.84)	(15.34)
Log assets (q-1)	-0.002***	-0.005***	-0.006***	0.000	0.001*	0.002**
	(-12.70)	(-11.85)	(-10.07)	(1.09)	(1.68)	(2.03)
Assets > $50bn (q-1)	-0.003***	-0.006***	-0.008***	0.009*	0.012	0.015
	(-3.96)	(-3.38)	(-3.04)	(1.86)	(1.25)	(1.04)
Part of MHC (q-1)	-0.002***	-0.005***	-0.007***	-0.002***	-0.006***	-0.009***
	(-5.21)	(-6.15)	(-5.32)	(-3.94)	(-4.43)	(-4.87)
Deposits/Liabilities (%) (q-1)	0.000***	0.000***	0.000***	0.000	-0.000	-0.000
	(2.87)	(5.57)	(6.08)	(0.42)	(-0.81)	(-1.08)
Loans/Assets (%) (q-1)	0.000***	0.001***	0.001***	0.000***	0.000***	0.000***
	(13.57)	(18.62)	(20.83)	(5.37)	(7.62)	(8.21)
Core deposit ratio (%) (q-1)	-0.000***	-0.001***	-0.001***	-0.000***	-0.000***	-0.001***
	(-7.51)	(-10.87)	(-12.20)	(-3.15)	(-3.48)	(-4.94)
Metro location (q-1)	0.000	0.002**	0.003***	0.001***	0.004***	0.006***
	(0.85)	(2.11)	(2.82)	(3.21)	(3.70)	(4.03)
De novo bank (q-1)	-0.000	0.006**	0.014***	-0.001	0.002	0.005
	(-0.20)	(2.49)	(3.72)	(-0.59)	(0.45)	(1.04)
Log state per-capita income (q-1)	0.015*	0.125***	0.372***	-0.002	0.026**	0.090***
	(1.65)	(5.80)	(12.13)	(-0.24)	(1.98)	(4.85)
State unemployment rate (q-1)	0.003***	0.009***	0.013***	0.003***	0.004***	0.002**
	(13.39)	(16.32)	(17.27)	(7.15)	(5.34)	(2.18)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	486829	486829	486829	260058	260058	260058
R²	0.033	0.077	0.105	0.038	0.058	0.068

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Table 2. Bank Distress Variables and Future Failure (Cont.)

Panel B: Distress Measured by *Low Z-score*

Sample period:	1985-1994			2005-2014		
Dependent variable:	Failure within…			Failure within…		
	4 quarters	8 quarters	12 quarters	4 quarters	8 quarters	12 quarters
	(1)	(2)	(3)	(4)	(5)	(6)
Low Z-score (1st decile) (q-1)	0.035***	0.078***	0.094***	0.036***	0.065***	0.076***
	(27.90)	(29.68)	(28.41)	(19.46)	(18.72)	(17.54)
Log assets (q-1)	-0.000***	-0.001**	-0.001**	0.001***	0.002***	0.003***
	(-2.68)	(-2.32)	(-2.32)	(3.57)	(3.67)	(3.55)
Assets > $50bn (q-1)	-0.003***	-0.007***	-0.009***	0.006	0.007	0.009
	(-5.61)	(-4.70)	(-4.04)	(1.23)	(0.71)	(0.62)
Part of MHC (q-1)	-0.001	-0.002***	-0.004***	-0.001***	-0.004***	-0.008***
	(-1.47)	(-2.82)	(-2.70)	(-2.83)	(-3.62)	(-4.27)
Deposits/Liabilities (%) (q-1)	0.000**	0.000***	0.000***	-0.000	-0.000*	-0.000*
	(2.21)	(4.92)	(5.53)	(-1.00)	(-1.78)	(-1.82)
Loans/Assets (%) (q-1)	0.000***	0.001***	0.001***	0.000**	0.000***	0.000***
	(12.55)	(17.78)	(20.14)	(2.03)	(5.09)	(6.32)
Core deposit ratio (%) (q-1)	-0.000***	-0.001***	-0.001***	-0.000***	-0.000***	-0.000***
	(-7.71)	(-11.08)	(-12.38)	(-2.79)	(-3.20)	(-4.73)
Metro location (q-1)	0.001**	0.003***	0.004***	0.001**	0.003***	0.005***
	(2.35)	(3.47)	(3.87)	(2.17)	(2.67)	(3.22)
De novo bank (q-1)	-0.001	0.005**	0.012***	-0.002	-0.001	0.003
	(-0.80)	(2.02)	(3.39)	(-1.63)	(-0.23)	(0.59)
Log state per-capita income (q-1)	-0.010	0.072***	0.310***	0.009	0.046***	0.113***
	(-1.09)	(3.38)	(10.24)	(1.42)	(3.55)	(6.13)
State unemployment rate (q-1)	0.002***	0.006***	0.010***	0.002***	0.002***	0.000
	(8.41)	(11.68)	(13.15)	(4.97)	(3.18)	(0.24)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	486426	486426	486426	259758	259758	259758
R^2	0.034	0.082	0.111	0.039	0.065	0.076

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Table 2. Bank Distress Variables and Future Failure (Cont.)

Panel C: Distress Measured by *Financial Distress*

Sample period:	1985-1994			2005-2014		
Dependent variable:	Failure within…			Failure within…		
	4 quarters	8 quarters	12 quarters	4 quarters	8 quarters	12 quarters
	(1)	(2)	(3)	(4)	(5)	(6)
Financial distress (q-1)	0.073***	0.154***	0.178***	0.108***	0.174***	0.193***
	(26.61)	(28.60)	(27.60)	(18.95)	(18.21)	(17.44)
Log assets (q-1)	-0.001***	-0.002***	-0.003***	0.001***	0.002***	0.003***
	(-6.66)	(-6.20)	(-5.51)	(3.16)	(3.23)	(3.16)
Assets > $50bn (q-1)	-0.002***	-0.004**	-0.005**	0.008	0.010	0.012
	(-3.12)	(-2.53)	(-2.25)	(1.64)	(1.05)	(0.89)
Part of MHC (q-1)	-0.001*	-0.003***	-0.004***	-0.001	-0.003***	-0.007***
	(-1.74)	(-3.17)	(-3.02)	(-1.56)	(-2.89)	(-3.80)
Deposits/Liabilities (%) (q-1)	0.000	0.000***	0.000***	-0.000	-0.000	-0.000*
	(1.31)	(4.05)	(4.78)	(-0.57)	(-1.55)	(-1.67)
Loans/Assets (%) (q-1)	0.000***	0.001***	0.001***	0.000*	0.000***	0.000***
	(11.00)	(16.90)	(19.73)	(1.83)	(5.30)	(6.58)
Core deposit ratio (%) (q-1)	-0.000***	-0.001***	-0.001***	-0.000***	-0.000***	-0.001***
	(-7.97)	(-11.46)	(-12.74)	(-3.42)	(-3.73)	(-5.18)
Metro location (q-1)	0.000	0.002***	0.004***	0.000	0.002**	0.004***
	(1.32)	(2.69)	(3.32)	(0.68)	(2.06)	(2.94)
De novo bank (q-1)	-0.000	0.005**	0.013***	0.000	0.003	0.007
	(-0.47)	(2.32)	(3.62)	(0.18)	(0.96)	(1.44)
Log state per-capita income (q-1)	0.004	0.101***	0.343***	0.018***	0.057***	0.125***
	(0.42)	(4.83)	(11.49)	(2.80)	(4.56)	(6.87)
State unemployment rate (q-1)	0.002***	0.007***	0.010***	0.001***	0.002***	-0.000
	(9.21)	(12.72)	(14.23)	(3.92)	(2.68)	(-0.14)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	486426	486426	486426	259758	259758	259758
R^2	0.055	0.112	0.134	0.090	0.113	0.110

Table 3. Do Distressed Banks Deleverage?

The table explores whether distressed banks deleverage. The dependent variable is the change in *Equity capital ratio* over the four quarters following the distress quarter. The data is a panel at the bank-quarter level. *Financial distress* denotes a bank that is both in the bottom decile of the distribution of the *Equity capital ratio* and in the bottom decile of the *Z-score* distribution. Standard errors are clustered by bank and adjusted using the Driscoll-Kraay (1998) procedure for overlapping data. *t*-statistics are presented in parentheses. Variable definitions are provided in Appendix A. *, **, *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Dependent variable:	Change in equity capital ratio (%) (q, q+4)					
Sample period:	1985-1994		2005-2014		2005-2014	
	(1)	(2)	(3)	(4)	(5)	(6)
Financial distress (q-1)	0.818***	0.870***	0.798***	0.819***	0.798***	0.819***
	(6.70)	(7.37)	(13.98)	(16.40)	(13.99)	(16.41)
× Crisis (q-1)	-0.185	-0.190	-0.507***	-0.494***	-0.525***	-0.512***
	(-1.16)	(-1.23)	(-4.47)	(-4.15)	(-4.74)	(-4.45)
× TARP (q-1)					0.518***	0.546***
					(3.87)	(3.97)
Change in equity capital ratio (%) (q-4, q)		0.046***		0.026		0.026
		(4.27)		(1.51)		(1.51)
Log assets (q-1)	0.101***	0.094***	0.075***	0.066***	0.075***	0.066***
	(9.30)	(9.37)	(4.27)	(4.46)	(4.27)	(4.43)
Assets > $50bn (q-1)	-0.028	-0.030	-0.171	-0.159	-0.173*	-0.161
	(-0.25)	(-0.27)	(-1.69)	(-1.59)	(-1.72)	(-1.61)
Part of MHC (q-1)	-0.063***	-0.060***	0.027	0.027	0.027	0.027
	(-3.28)	(-3.13)	(1.06)	(1.09)	(1.06)	(1.09)
Deposits/Liabilities (%) (q-1)	-0.007*	-0.007*	-0.005*	-0.005*	-0.004*	-0.005*
	(-2.00)	(-2.02)	(-1.77)	(-1.93)	(-1.77)	(-1.93)
Loans/Assets (%) (q-1)	-0.008***	-0.009***	-0.001	-0.002	-0.001	-0.002
	(-4.65)	(-4.82)	(-0.54)	(-0.70)	(-0.53)	(-0.69)
Core deposit ratio (%) (q-1)	0.006***	0.005***	0.002**	0.002	0.002**	0.002
	(4.99)	(4.13)	(2.31)	(1.60)	(2.32)	(1.60)
Metro location (q-1)	-0.069***	-0.062***	-0.048	-0.041	-0.048	-0.041
	(-6.07)	(-5.63)	(-1.38)	(-1.22)	(-1.37)	(-1.22)
De novo bank (q-1)	-0.910***	-0.774***	-1.354***	-1.113***	-1.354***	-1.113***
	(-27.37)	(-27.84)	(-5.17)	(-5.50)	(-5.17)	(-5.51)
TARP (q-1)					-0.006	-0.031
					(-0.18)	(-0.90)
Log state per-capita income (q-1)	-1.528**	-1.461**	0.834	0.877	0.832	0.879
	(-2.29)	(-2.25)	(1.18)	(1.28)	(1.18)	(1.28)
State unemployment rate (q-1)	-0.068***	-0.068***	-0.002	-0.004	-0.002	-0.003
	(-4.55)	(-4.73)	(-0.05)	(-0.09)	(-0.05)	(-0.09)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	468728	468395	251668	251275	251668	251275
R^2	0.081	0.083	0.064	0.058	0.064	0.059

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Table 4. How Do Distressed Banks Deleverage?

The table explores how balance sheet items evolved for distressed banks in the four quarters following distress quarters. The data is a panel at the bank-quarter level. Panel A presents regressions for the period of 1985-1994. Panel B presents regressions for the period of 2005-2014. The dependent variables are different balance sheet items. *Financial distress* denotes a bank that is both in the bottom decile of the distribution of the *Equity capital ratio* and in the bottom decile of the *Z-score* distribution. Standard errors are clustered by bank and adjusted using the Driscoll-Kraay (1998) procedure for overlapping data. *t*-statistics are presented in parentheses. Variable definitions are provided in Appendix A. *, **, *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: 1985-1994

Dependent variable:	Assets					Liabilities				Equity	
	Change in… (q, q+4)					Change in… (q, q+4)				Change in… (q, q+4)	
	Log assets	Log loans	Log fixed assets	Log #branches	Log #employees	Log liabilities	Log deposit rate	Log deposits	Log other liabilities	Log common stock	Log dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Financial distress (q-1)	-0.082***	-0.087***	-0.066***	-0.035***	-0.070***	-0.094***	-0.026***	-0.092***	-0.192***	0.017*	-0.261***
	(-15.98)	(-14.56)	(-8.95)	(-8.00)	(-20.19)	(-13.76)	(-6.86)	(-13.19)	(-7.15)	(1.81)	(-14.20)
× Crisis (q-1)	0.001	-0.008	-0.002	0.000	0.005	0.007	-0.006	0.007	0.026	-0.009	-0.069
	(0.09)	(-0.62)	(-0.19)	(0.09)	(0.73)	(0.77)	(-0.67)	(0.75)	(0.78)	(-0.96)	(-1.47)
Lagged dependent variable (q-4,q)	0.124***	0.156***	0.032***	0.002	0.000	0.119***	-0.166***	0.107***	-0.228***	-0.045***	-0.374***
	(17.75)	(18.17)	(7.45)	(0.64)	(0.05)	(18.96)	(-9.05)	(10.91)	(-14.56)	(-6.35)	(-75.48)
Log assets (q-1)	-0.007***	-0.005***	-0.000	0.005***	-0.004***	-0.006***	-0.001	-0.011***	0.031***	0.001	0.021
	(-10.75)	(-5.25)	(-0.18)	(9.23)	(-4.65)	(-8.30)	(-0.64)	(-7.73)	(5.82)	(1.31)	(0.95)
Assets > $50bn (q-1)	-0.001	-0.001	-0.026***	-0.017*	-0.023**	-0.007	0.009	-0.029***	0.070	0.018	0.131
	(-0.11)	(-0.13)	(-3.54)	(-1.97)	(-2.41)	(-0.70)	(0.35)	(-3.05)	(1.54)	(1.18)	(0.59)
Part of MHC (q-1)	0.015***	0.019***	0.006***	0.015***	-0.004	0.013***	0.007***	0.010***	0.051***	0.008***	-0.014
	(11.09)	(9.63)	(3.22)	(6.51)	(-1.19)	(8.38)	(3.97)	(7.07)	(7.57)	(3.03)	(-0.49)
Deposits/Liabilities (%) (q-1)	0.000	0.000	0.000	0.000	-0.000	0.001	0.001	-0.002***	0.015***	-0.000	0.000
	(0.83)	(0.01)	(0.72)	(0.09)	(-1.34)	(1.54)	(0.72)	(-5.33)	(14.23)	(-1.64)	(0.21)
Loans/Assets (%) (q-1)	0.001***	-0.001***	0.000***	0.000***	0.000***	0.001***	0.000***	0.001***	-0.000	0.000	-0.003***
	(4.82)	(-21.74)	(4.12)	(4.44)	(4.14)	(5.96)	(3.05)	(6.62)	(-0.08)	(0.70)	(-4.16)
Core deposit ratio (%) (q-1)	0.000***	0.000	-0.000**	-0.000**	-0.000**	0.000***	-0.001*	0.001***	-0.002***	0.000	0.004***
	(2.94)	(1.03)	(-2.60)	(-2.24)	(-2.68)	(2.86)	(-1.89)	(6.12)	(-9.34)	(0.85)	(4.18)
Metro location (q-1)	0.016***	0.019***	0.012***	0.010***	0.009***	0.015***	-0.000	0.016***	0.028***	0.003	-0.010
	(8.93)	(7.91)	(4.70)	(11.87)	(7.91)	(8.51)	(-0.00)	(9.92)	(5.44)	(1.70)	(-0.82)
De novo bank (q-1)	0.053***	0.057***	0.028***	0.035***	0.077***	0.061***	-0.010**	0.063***	0.197***	-0.001	0.232***
	(16.71)	(14.03)	(3.79)	(7.62)	(30.78)	(18.72)	(-2.40)	(14.65)	(20.79)	(-0.43)	(9.68)
Log deposit rate (q-1)								0.007			
								(1.19)			
Charge-off rate (q+4)	-0.001***	-0.002***									
	(-7.59)	(-3.60)									
Log state per-capita income (q-1)	-0.352***	-0.499***	-0.384***	-0.240***	-0.428***	-0.335***	-0.076	-0.319***	-0.815***	0.043	-1.940***
	(-3.35)	(-3.35)	(-4.17)	(-3.80)	(-3.59)	(-3.22)	(-0.83)	(-3.02)	(-4.78)	(0.92)	(-3.15)
State unemployment rate (q-1)	-0.014***	-0.028***	-0.018***	-0.005***	-0.012***	-0.014***	-0.006***	-0.013***	-0.033***	-0.004***	-0.050**
	(-9.46)	(-9.96)	(-7.86)	(-4.70)	(-8.16)	(-8.68)	(-2.94)	(-9.91)	(-5.98)	(-4.22)	(-2.42)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	470055	469992	468419	469893	469956	470133	454183	469335	468385	469962	464286
R²	0.078	0.107	0.012	0.017	0.028	0.063	0.591	0.064	0.104	0.012	0.136

Table 4. How Do Distressed Banks Deleverage? (Cont.)

Panel B: 2005-2014

Dependent variable:	Assets					Liabilities				Equity	
	Change in… (q, q+4)					Change in… (q, q+4)				Change in… (q, q+4)	
	Log assets	Log loans	Log fixed assets	Log #branches	Log #employees	Log liabilities	Log deposit rate	Log deposits	Log other liabilities	Log common stock	Log dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Financial distress (q-1)	-0.077***	-0.078***	-0.073***	-0.050***	-0.056***	-0.095***	-0.027***	-0.093***	-0.209***	0.027*	-0.302***
	(-15.31)	(-12.04)	(-5.44)	(-8.44)	(-19.89)	(-17.35)	(-2.88)	(-19.09)	(-12.96)	(1.82)	(-4.55)
× Crisis (q-1)	-0.035***	-0.016**	-0.006	-0.008	-0.018***	-0.033***	-0.007	-0.034***	-0.030	-0.031**	-0.130
	(-4.50)	(-2.60)	(-0.49)	(-1.41)	(-4.10)	(-4.15)	(-0.57)	(-4.81)	(-1.44)	(-2.09)	(-1.28)
Lagged dependent variable (q-4,q)	0.178***	0.200***	0.068***	0.013***	0.031***	0.173***	0.054*	0.139***	-0.194***	-0.037***	-0.364***
	(23.08)	(13.64)	(8.90)	(3.08)	(3.44)	(23.78)	(1.81)	(9.49)	(-16.38)	(-3.77)	(-28.59)
Log assets (q-1)	-0.002	0.003*	0.001	0.003***	0.003***	-0.002	-0.005**	-0.007***	0.026***	-0.001	-0.001
	(-1.40)	(1.88)	(0.33)	(4.18)	(3.27)	(-1.42)	(-2.22)	(-3.06)	(3.77)	(-0.92)	(-0.01)
Assets > $50bn (q-1)	0.007	-0.012	-0.005	-0.045***	-0.025**	0.007	-0.095**	0.054	0.015	-0.008	-0.112
	(0.45)	(-0.78)	(-0.22)	(-3.54)	(-2.12)	(0.47)	(-2.28)	(1.58)	(0.26)	(-0.57)	(-0.35)
Part of MHC (q-1)	0.018***	0.017***	0.024***	0.022***	0.015***	0.016***	-0.006	0.014***	0.012	0.009***	-0.014
	(10.94)	(7.28)	(11.96)	(11.45)	(13.81)	(9.19)	(-0.94)	(7.53)	(1.46)	(2.81)	(-0.44)
Deposits/Liabilities (%) (q-1)	0.000	0.000	-0.000**	-0.000	-0.000	0.000*	0.003***	-0.003***	0.014***	0.000	0.002**
	(1.08)	(0.85)	(-2.27)	(-1.41)	(-1.15)	(1.83)	(4.03)	(-5.91)	(12.84)	(1.08)	(2.34)
Loans/Assets (%) (q-1)	0.001***	-0.001***	0.000***	0.000***	0.000***	0.001***	0.001**	0.001***	0.000	0.000**	0.001
	(4.79)	(-3.90)	(3.08)	(3.45)	(3.67)	(4.72)	(2.67)	(3.33)	(0.23)	(2.71)	(0.56)
Core deposit ratio (%) (q-1)	-0.000	-0.000***	-0.001***	-0.000***	-0.000***	-0.000	-0.000	0.000	-0.002***	0.000	-0.002
	(-0.95)	(-3.57)	(-2.75)	(-4.01)	(-3.39)	(-0.04)	(-1.12)	(0.14)	(-6.17)	(0.35)	(-1.30)
Metro location (q-1)	0.002	0.007***	0.003	0.002	0.002*	0.001	-0.000	-0.001	0.017	-0.001	-0.017
	(1.04)	(2.96)	(1.08)	(1.35)	(1.85)	(0.56)	(-0.04)	(-0.47)	(1.54)	(-0.94)	(-1.06)
De novo bank (q-1)	0.080***	0.087***	0.040***	0.073***	0.086***	0.087***	-0.009	0.095***	0.429***	0.015***	0.344***
	(9.51)	(7.97)	(3.84)	(7.84)	(7.82)	(8.75)	(-0.86)	(11.85)	(7.27)	(3.00)	(3.34)
Log deposit rate (q-1)								0.009			
								(0.87)			
Charge-off rate (q+4)	-0.011***	-0.024***									
	(-2.86)	(-4.58)									
Log state per-capita income (q-1)	-0.034	0.042	0.089***	-0.001	-0.007	-0.044	0.112**	-0.054	0.439***	-0.031	-1.122*
	(-0.94)	(1.19)	(2.92)	(-0.09)	(-0.23)	(-1.27)	(2.18)	(-1.19)	(2.89)	(-0.70)	(-1.85)
State unemployment rate (q-1)	-0.007***	-0.006***	-0.010***	-0.007***	-0.003*	-0.008***	-0.008***	-0.006***	-0.038***	-0.002***	-0.058***
	(-4.32)	(-4.83)	(-9.07)	(-6.72)	(-1.73)	(-5.12)	(-2.76)	(-3.24)	(-5.67)	(-3.08)	(-3.99)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	251854	251829	250951	251548	251782	251885	250166	251486	251833	249568	250402
R^2	0.149	0.197	0.026	0.036	0.041	0.127	0.603	0.105	0.108	0.004	0.140

Table 4. How Do Distressed Banks Deleverage? (Cont.)

Panel C: 2005-2014, with TARP Interaction

Dependent variable:	Assets					Liabilities				Equity	
	Change in… (q, q+4)					Change in… (q, q+4)				Change in… (q, q+4)	
	Log Assets	Log Loans	Log Fixed Assets	Log #Branches	Log #Employees	Log liabilities	Log Deposit Rate	Log Deposits	Log Other Liab	Log Common Shares	Log Dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Financial distress (q-1)	-0.077***	-0.078***	-0.073***	-0.050***	-0.056***	-0.095***	-0.027***	-0.093***	-0.209***	0.027*	-0.302***
	(-15.33)	(-12.04)	(-5.44)	(-8.44)	(-19.85)	(-17.35)	(-2.89)	(-19.10)	(-12.99)	(1.81)	(-4.54)
× Crisis	-0.035***	-0.017**	-0.007	-0.008	-0.017***	-0.033***	-0.009	-0.034***	-0.039**	-0.032**	-0.139
	(-4.51)	(-2.60)	(-0.57)	(-1.43)	(-4.07)	(-4.17)	(-0.75)	(-4.82)	(-2.10)	(-2.17)	(-1.38)
× TARP	-0.002	0.006	0.027*	0.001	-0.010	-0.009	0.072***	-0.030**	0.226***	0.023**	0.160
	(-0.17)	(0.34)	(1.82)	(0.25)	(-1.26)	(-0.63)	(3.22)	(-2.18)	(7.56)	(2.43)	(0.64)
Lagged dependent variable (q-4,q)	0.178***	0.200***	0.068***	0.013***	0.031***	0.173***	0.054*	0.139***	-0.194***	-0.037***	-0.364***
	(23.05)	(13.64)	(8.90)	(3.08)	(3.44)	(23.77)	(1.80)	(9.52)	(-16.45)	(-3.78)	(-28.66)
Log assets (q-1)	-0.002	0.003*	0.001	0.003***	0.003***	-0.002	-0.005**	-0.007***	0.026***	-0.001	0.001
	(-1.33)	(1.94)	(0.34)	(4.14)	(3.14)	(-1.37)	(-2.14)	(-3.06)	(3.79)	(-0.90)	(0.02)
Assets > $50bn (q-1)	0.007	-0.012	-0.005	-0.045***	-0.025**	0.008	-0.095**	0.055	0.015	-0.008	-0.106
	(0.48)	(-0.77)	(-0.22)	(-3.55)	(-2.15)	(0.50)	(-2.27)	(1.58)	(0.27)	(-0.58)	(-0.33)
Part of MHC (q-1)	0.018***	0.017***	0.024***	0.022***	0.015***	0.016***	-0.006	0.014***	0.012	0.009***	-0.013
	(11.03)	(7.37)	(12.00)	(11.49)	(13.91)	(9.38)	(-0.92)	(7.52)	(1.50)	(2.82)	(-0.38)
Deposits/Liabilities (%) (q-1)	0.000	0.000	-0.000**	-0.000	-0.000	0.000*	0.003***	-0.003***	0.014***	0.000	0.002**
	(1.07)	(0.85)	(-2.27)	(-1.41)	(-1.15)	(1.83)	(4.01)	(-5.91)	(12.81)	(1.08)	(2.33)
Loans/Assets (%) (q-1)	0.001***	-0.001***	0.000***	0.000***	0.000***	0.001***	0.001**	0.001***	0.000	0.000**	0.001
	(4.81)	(-3.90)	(3.08)	(3.45)	(3.65)	(4.74)	(2.69)	(3.34)	(0.24)	(2.72)	(0.58)
Core deposit ratio (%) (q-1)	-0.000	-0.000***	-0.001***	-0.000***	-0.000***	-0.000	-0.000	0.000	-0.002***	0.000	-0.002
	(-0.95)	(-3.58)	(-2.75)	(-4.01)	(-3.38)	(-0.05)	(-1.12)	(0.14)	(-6.20)	(0.35)	(-1.31)
Metro location (q-1)	0.002	0.007***	0.003	0.002	0.002*	0.001	-0.000	-0.001	0.017	-0.001	-0.016
	(1.08)	(2.99)	(1.08)	(1.34)	(1.83)	(0.60)	(-0.01)	(-0.45)	(1.57)	(-0.92)	(-1.00)
De novo bank (q-1)	0.080***	0.087***	0.040***	0.073***	0.086***	0.087***	-0.009	0.095***	0.429***	0.015***	0.344***
	(9.49)	(7.97)	(3.84)	(7.84)	(7.83)	(8.74)	(-0.86)	(11.84)	(7.26)	(3.00)	(3.35)
TARP (q-1)	-0.017***	-0.009*	-0.003	0.000	0.008***	-0.017***	-0.022**	-0.012*	-0.063***	-0.003	-0.234**
	(-4.02)	(-2.03)	(-0.73)	(0.32)	(3.42)	(-4.45)	(-2.61)	(-1.93)	(-4.63)	(-0.61)	(-2.13)
Log deposit rate (q-1)								0.010			
								(0.87)			
Charge-off rate (q+4)	-0.011***	-0.024***									
	(-2.86)	(-4.58)									
Log state per-capita income (q-1)	-0.032	0.043	0.089***	-0.001	-0.008	-0.042	0.114**	-0.053	0.444***	-0.031	-1.098*
	(-0.90)	(1.22)	(2.92)	(-0.09)	(-0.26)	(-1.22)	(2.21)	(-1.16)	(2.90)	(-0.70)	(-1.82)
State unemployment rate (q-1)	-0.007***	-0.006***	-0.010***	-0.007***	-0.003*	-0.008***	-0.008***	-0.006***	-0.037***	-0.002***	-0.056***
	(-4.19)	(-4.78)	(-9.03)	(-6.75)	(-1.78)	(-4.97)	(-2.74)	(-3.21)	(-5.59)	(-2.98)	(-4.01)
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	251854	251829	250951	251548	251782	251885	250166	251486	251833	249568	250402
R^2	0.149	0.197	0.027	0.037	0.042	0.127	0.603	0.105	0.108	0.005	0.141

Table 5. Risk Taking by Distressed Banks

The table explores how banks' risk profiles change following distress quarters. The data is a panel at the bank-quarter level. The dependent variables are measures of risk: logged *Z-score*, performing loans ratio, earnings volatility, and risk-weighted-assets ratio. *Financial distress* denotes a bank that is both in the bottom decile of the distribution of the *Equity capital ratio* and in the bottom decile of the *Z-score* distribution. Standard errors are clustered by bank and adjusted using the Driscoll-Kraay (1998) procedure for overlapping data. *t*-statistics are presented in parentheses. Variable definitions are provided in Appendix A. *, **, *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Sample period:	1985-1994			2005-2014				2005-2014			
Dependent variable:	Change in… (q, q+4)			Change in… (q, q+4)				Change in… (q, q+4)			
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/ Assets (q) (%)	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/ Assets (q) (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Financial distress (q-1)	0.839***	0.504***	-0.329***	0.841***	0.242	-0.236***	-7.061***	0.841***	0.242	-0.236***	-7.065***
	(15.93)	(6.45)	(-38.80)	(13.75)	(0.92)	(-10.90)	(-8.87)	(13.74)	(0.92)	(-10.88)	(-8.87)
× Crisis (q-1)	0.086	-0.045	-0.013	-0.349***	-0.298	-0.090***	-2.624***	-0.359***	-0.281	-0.076***	-2.718***
	(1.16)	(-0.71)	(-0.75)	(-4.62)	(-0.90)	(-3.44)	(-3.67)	(-4.67)	(-0.86)	(-2.91)	(-3.82)
× TARP (q-1)								0.363**	-0.557*	-0.449***	1.667
								(2.44)	(-1.98)	(-5.58)	(1.28)
Log assets (q-1)	-0.016**	-0.008	0.006***	-0.002	-0.030	0.002	0.048	-0.003	-0.029	0.003	0.067
	(-2.30)	(-1.38)	(3.71)	(-0.14)	(-1.21)	(0.84)	(0.18)	(-0.20)	(-1.15)	(1.03)	(0.26)
Assets > $50bn (q-1)	0.112***	0.153***	-0.029**	0.109	0.281*	-0.015	-2.162	0.103	0.288*	-0.011	-2.081
	(2.88)	(3.90)	(-2.47)	(1.10)	(1.97)	(-0.34)	(-1.15)	(1.08)	(2.00)	(-0.27)	(-1.08)
Part of MHC (q-1)	0.008	0.017	-0.008*	0.013	0.010	-0.002	2.796***	0.012	0.011	-0.002	2.816***
	(0.99)	(0.83)	(-1.76)	(1.33)	(1.06)	(-0.48)	(18.85)	(1.18)	(1.23)	(-0.38)	(18.49)
Deposits/Liabilities (%) (q-1)	0.001	-0.001**	-0.000	0.003**	0.002***	-0.001*	-0.016	0.003**	0.002***	-0.001*	-0.017
	(1.31)	(-2.51)	(-0.93)	(2.65)	(2.95)	(-1.81)	(-0.98)	(2.69)	(2.90)	(-1.86)	(-1.02)
Loans/Assets (%) (q-1)	-0.005***	-0.005***	0.002***	-0.002	-0.005*	0.001**	0.044*	-0.002*	-0.005*	0.001**	0.044*
	(-4.91)	(-4.31)	(5.18)	(-1.93)	(-2.04)	(2.35)	(1.95)	(-1.93)	(-2.03)	(2.34)	(1.98)
Core deposit ratio (%) (q-1)	0.006***	0.011***	-0.002***	0.001*	0.005***	-0.000	-0.053***	0.001*	0.005***	-0.000	-0.053***
	(4.92)	(4.62)	(-2.76)	(2.13)	(7.40)	(-1.59)	(-3.50)	(2.16)	(7.39)	(-1.61)	(-3.53)
Metro location (q-1)	-0.019	-0.022	0.005	-0.023*	-0.031	0.009	0.632**	-0.024*	-0.030	0.009	0.642**
	(-1.57)	(-0.90)	(1.25)	(-1.93)	(-0.82)	(1.69)	(2.27)	(-1.94)	(-0.81)	(1.69)	(2.34)
De novo bank (q-1)	-0.035**	-0.183***	0.010	0.054	-0.216***	-0.017	14.288***	0.054	-0.216***	-0.017	14.284***
	(-2.51)	(-9.11)	(1.42)	(0.97)	(-3.72)	(-1.62)	(11.06)	(0.98)	(-3.69)	(-1.61)	(11.04)
TARP (q-1)								0.151***	-0.163*	-0.058***	-2.981***
								(3.20)	(-1.97)	(-2.83)	(-5.94)
Log state per-capita income (q-1)	-1.644***	-4.226***	0.465***	-0.338	-2.720***	0.124	6.976*	-0.355	-2.701***	0.132	7.266**
	(-3.12)	(-3.51)	(3.24)	(-0.70)	(-3.05)	(1.03)	(1.98)	(-0.74)	(-3.03)	(1.09)	(2.05)
State unemployment rate (q-1)	-0.029***	-0.025	0.012***	0.004	-0.008	0.000	-0.984***	0.003	-0.007	0.001	-0.963***
	(-2.81)	(-0.98)	(3.67)	(0.21)	(-0.27)	(0.09)	(-6.44)	(0.15)	(-0.23)	(0.17)	(-6.03)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	468337	470142	470127	251607	251889	251881	248988	251607	252181	252173	249274
R²	0.039	0.040	0.031	0.056	0.081	0.033	0.045	0.056	0.081	0.034	0.045

Figure 1. Bank Failures over Time and Crisis Periods

The chart presents the number of bank failures over time (all bars). The yellow bars (with dark frame) represent the years we define as crisis years.
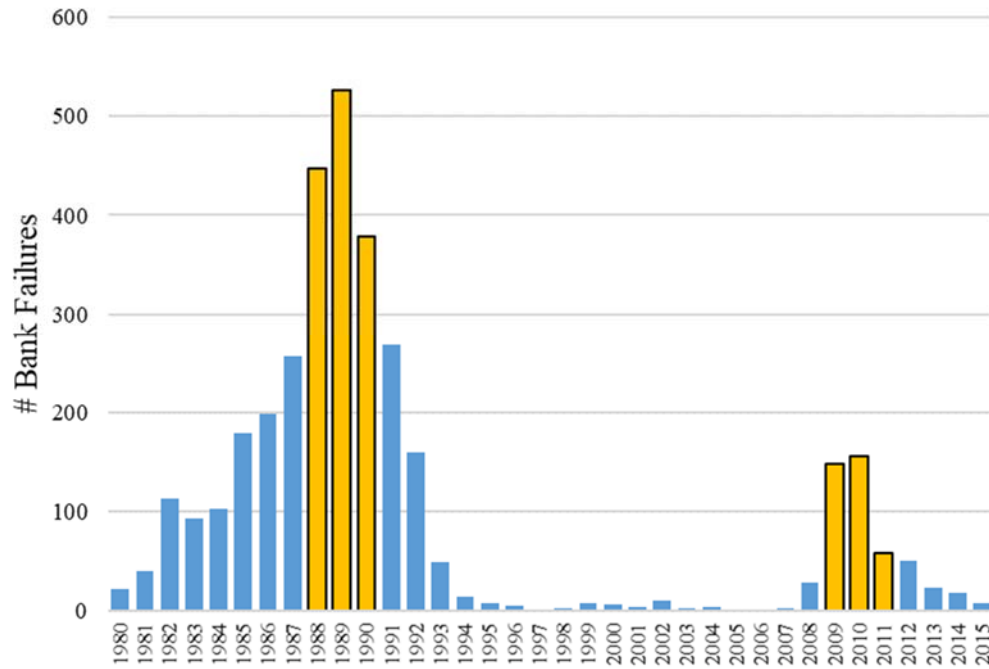
Figure 2. Distressed Banks over Time

The chart presents the fraction of distressed banks over time. Our indicators of financial distress are banks in the bottom decile of the *Equity capital ratio*, in the bottom decile of the *Z-score*, and banks that are in the bottom decile of both the *Equity capital ratio* and the *Z-score* (*Financial distress* indicator).

Figure 2a. Fraction of Distressed Banks, by Distress Measure (1985-1994)
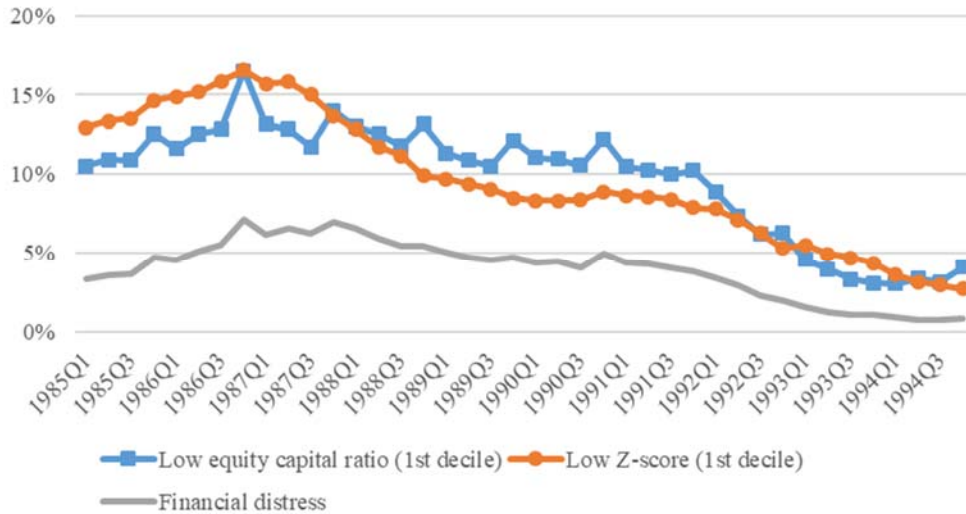
Figure 2b. Fraction of Distressed Banks, by Distress Measure (2005-2014)
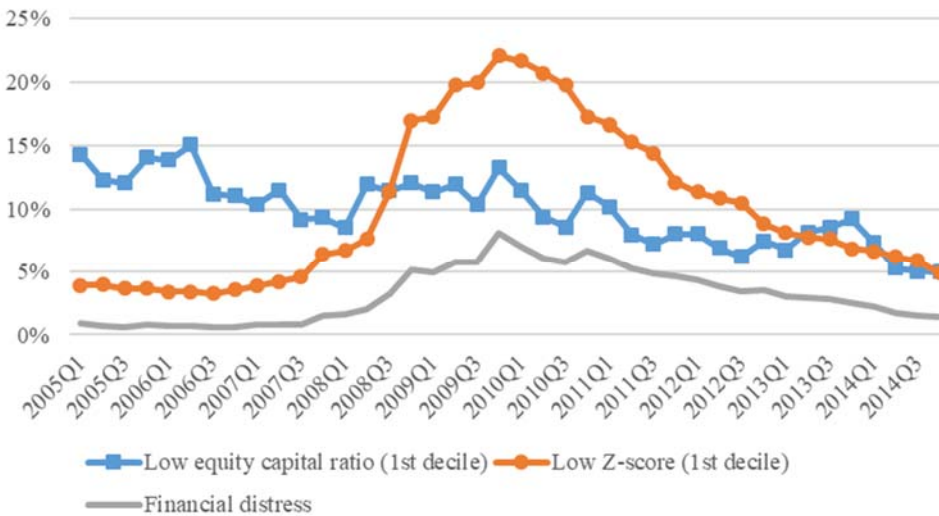
Do Distressed Banks Really Gamble for Resurrection?

Itzhak Ben-David, Ajay A. Palvia, and René M. Stulz[*]

Internet Appendix

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Internet Appendix Table A1. Additional Specifications of Table 2

The table presents additional variations to the main analysis presented in Table 2: exploring the ability of measures of bank distress to predict bank failure. Bank failure is defined using the FDIC failed bank list. Standard errors are clustered by bank and adjusted using the Driscoll-Kraay (1998) procedure for overlapping data. *t*-statistics are presented in parentheses. Variable definitions are provided in Appendix A. *, **, *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Main Distress Variable: *Low Equity Capital Ratio*, with a *Crisis* Interaction

Sample period:	1985-1994			2005-2014		
Dependent variable:	Failure within…			Failure within…		
	4 quarters	8 quarters	12 quarters	4 quarters	8 quarters	12 quarters
	(1)	(2)	(3)	(4)	(5)	(6)
Low equity capital ratio (1st decile) (q-1)	0.032***	0.068***	0.081***	0.017***	0.029***	0.032***
	(20.79)	(23.04)	(22.45)	(11.25)	(10.88)	(9.29)
× Crisis (q-1)	0.007***	0.018***	0.017***	0.057***	0.091***	0.102***
	(2.86)	(3.87)	(3.03)	(11.64)	(11.60)	(11.58)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	486829	486829	486829	260058	260058	260058
R^2	0.033	0.078	0.105	0.052	0.072	0.079

Panel B: Main Distress Variable: Low *Z-score*, with a *Crisis* Interaction

Sample period:	1985-1994			2005-2014		
Dependent variable:	Failure within…			Failure within…		
	4 quarters	8 quarters	12 quarters	4 quarters	8 quarters	12 quarters
	(1)	(2)	(3)	(4)	(5)	(6)
Low Z-score (1st decile) (q-1)	0.031***	0.068***	0.085***	0.028***	0.057***	0.068***
	(21.87)	(24.20)	(24.77)	(12.26)	(13.85)	(13.52)
× Crisis (q-1)	0.011***	0.032***	0.028***	0.015***	0.016***	0.017***
	(4.11)	(5.74)	(4.46)	(4.17)	(2.84)	(2.69)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	486426	486426	486426	259758	259758	259758
R^2	0.034	0.083	0.112	0.040	0.066	0.076

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Internet Appendix Table A1. Additional Specifications of Table 2 (Cont.)

Panel C: Main Distress Variable: *Financial Distress*, with a *Crisis* Interaction

	1985-1994			2005-2014		
Sample period:						
Dependent variable:	Failure within…			Failure within…		
	4 quarters	8 quarters	12 quarters	4 quarters	8 quarters	12 quarters
	(1)	(2)	(3)	(4)	(5)	(6)
Financial distress (q-1)	0.070***	0.143***	0.169***	0.084***	0.136***	0.149***
	(20.63)	(23.33)	(23.68)	(11.72)	(12.15)	(11.71)
× Crisis (q-1)	0.009	0.031***	0.025**	0.042***	0.066***	0.078***
	(1.63)	(3.20)	(2.33)	(4.15)	(4.41)	(4.83)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	486426	486426	486426	259758	259758	259758
R^2	0.055	0.112	0.135	0.093	0.116	0.113

Internet Appendix Table A2. Additional Specifications of Table 3

The table presents additional variations to the main analysis presented in Table 3: exploring whether distressed banks deleverage. Standard errors are clustered by bank and adjusted using the Driscoll-Kraay (1998) procedure for overlapping data. *t*-statistics are presented in parentheses. Variable definitions are provided in Appendix A. *, **, *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Main Distress Variable: *Low Equity Capital Ratio*, with *Crisis* Interaction

Dependent variable:	Change in equity capital ratio (%) (q, q+4)					
Sample period:	1985-1994		2005-2014		2005-2014	
	(1)	(2)	(3)	(4)	(5)	(6)
Low equity capital ratio (1st decile) (q-1)	0.651***	0.676***	0.618***	0.615***	0.618***	0.615***
	(11.28)	(12.50)	(8.53)	(8.21)	(8.53)	(8.22)
× Crisis (q-1)	-0.068	-0.079	-0.157	-0.141	-0.173*	-0.159*
	(-0.84)	(-1.01)	(-1.51)	(-1.48)	(-1.73)	(-1.75)
× TARP (q-1)					0.477***	0.494***
					(4.78)	(5.14)
Change in equity capital ratio (%) (q-4, q)		0.043***		0.025		0.025
		(4.00)		(1.40)		(1.40)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	469080	468554	251954	251320	251668	251275
R^2	0.085	0.087	0.075	0.064	0.075	0.064

Panel B: Main Distress Variable: Low *Z-score*, with *Crisis* Interaction

Dependent variable:	Change in equity capital ratio (%) (q, q+4)					
Sample period:	1985-1994		2005-2014		2005-2014	
	(1)	(2)	(3)	(4)	(5)	(6)
Low Z-score (1st decile) (q-1)	0.233**	0.254***	0.154	0.160*	0.155	0.160*
	(2.68)	(3.07)	(1.59)	(1.71)	(1.59)	(1.71)
× Crisis (q-1)	0.048	0.052	-0.005	-0.013	0.008	-0.002
	(0.43)	(0.48)	(-0.04)	(-0.11)	(0.07)	(-0.02)
× TARP (q-1)					-0.215*	-0.179
					(-1.82)	(-1.59)
Change in equity capital ratio (%) (q-4, q)		0.040***		0.023		0.023
		(3.81)		(1.36)		(1.36)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	468728	468395	251668	251275	251668	251275
R^2	0.075	0.076	0.062	0.056	0.062	0.056

Internet Appendix Table A2. Additional Specifications of Table 3 (Cont.)

Panel C: Main Distress Variable: *Low Equity Capital Ratio*, without *Crisis* Interaction

Dependent variable:	Change in equity capital ratio (%) (q, q+4)			
Sample period:	1985-1994		2005-2014	
	(1)	(2)	(3)	(4)
Low equity capital ratio (1st decile) (q-1)	0.627***	0.648***	0.572***	0.574***
	(22.18)	(24.18)	(9.19)	(8.78)
Change in equity capital ratio (%) (q-4, q)		0.043***		0.025
		(3.99)		(1.43)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes
N	469080	468554	251954	251320
R^2	0.085	0.087	0.075	0.064

Panel D: Main Distress Variable: *Low Z-score*, without *Crisis* Interaction

Dependent variable:	Change in equity capital ratio (%) (q, q+4)			
Sample period:	1985-1994		2005-2014	
	(1)	(2)	(3)	(4)
Low Z-score (1st decile) (q-1)	0.247***	0.269***	0.152***	0.153***
	(4.35)	(4.99)	(3.27)	(3.57)
Change in equity capital ratio (%) (q-4, q)		0.040***		0.023
		(3.81)		(1.37)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes
N	468728	468395	251668	251275
R^2	0.075	0.076	0.062	0.056

Panel E: Main Distress Variable: *Financial Distress*, without *Crisis* Interaction

Dependent variable:	Change in equity capital ratio (%) (q, q+4)			
Sample period:	1985-1994		2005-2014	
	(1)	(2)	(3)	(4)
Financial distress (q-1)	0.751***	0.801***	0.519***	0.548***
	(11.65)	(12.42)	(4.90)	(5.48)
Change in equity capital ratio (%) (q-4, q)		0.046***		0.027
		(4.27)		(1.56)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes
N	468728	468395	251668	251275
R^2	0.081	0.083	0.063	0.058

Panel F: Main Distress Variable: *Low Equity Capital Ratio*; 1-Quarter Horizon

Dependent variable:	Change in equity capital ratio (%) (q, q+1)					
Sample period:	1985-1994		2005-2014		2005-2014	
	(1)	(2)	(3)	(4)	(5)	(6)
Low equity capital ratio (1st decile) (q-1)	0.190***	0.166***	0.191***	0.186***	0.191***	0.186***
	(10.52)	(8.59)	(14.84)	(12.82)	(14.84)	(12.82)
× Crisis (q-1)	-0.030	-0.024	-0.102***	-0.108***	-0.112***	-0.118***
	(-1.13)	(-0.89)	(-5.19)	(-4.89)	(-6.66)	(-6.30)
× TARP (q-1)					0.274***	0.268***
					(4.51)	(4.12)
Change in equity capital ratio (%) (q-4, q)		-0.081***		-0.027		-0.027
		(-13.39)		(-1.34)		(-1.34)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	486829	486829	260058	260058	260058	260058
R^2	0.061	0.067	0.046	0.047	0.047	0.047

Internet Appendix Table A2. Additional Specifications of Table 3 (Cont.)

Panel G: Main Distress Variable: *Low Z-score*; 1-Quarter Horizon

Dependent variable:	Change in equity capital ratio (%) (q, q+1)					
Sample period:	1985-1994		2005-2014		2005-2014	
	(1)	(2)	(3)	(4)	(5)	(6)
Low Z-score (1st decile) (q-1)	0.043**	0.030	0.063**	0.062**	0.063**	0.062**
	(2.17)	(1.26)	(2.46)	(2.13)	(2.46)	(2.13)
× Crisis (q-1)	-0.011	-0.013	-0.071*	-0.077*	-0.069*	-0.075*
	(-0.39)	(-0.40)	(-2.04)	(-1.97)	(-2.01)	(-1.94)
× TARP (q-1)					-0.036	-0.045*
					(-1.63)	(-1.90)
Change in equity capital ratio (%) (q-4, q)		-0.092***		-0.054***		-0.054***
		(-15.81)		(-3.33)		(-3.33)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	486426	486426	259758	259758	259758	259758
R^2	0.058	0.066	0.042	0.045	0.042	0.045

Panel H: Main Distress Variable: *Financial Distress*; 1-Quarter Horizon

Dependent variable:	Change in equity capital ratio (%) (q, q+1)					
Sample period:	1985-1994		2005-2014		2005-2014	
	(1)	(2)	(3)	(4)	(5)	(6)
Financial distress (q-1)	0.179***	0.136***	0.192***	0.172***	0.192***	0.172***
	(4.88)	(3.52)	(5.05)	(4.57)	(5.04)	(4.56)
× Crisis (q-1)	-0.062	-0.052	-0.220***	-0.233***	-0.230***	-0.242***
	(-1.33)	(-1.05)	(-5.20)	(-4.99)	(-5.26)	(-5.10)
× TARP (q-1)					0.274***	0.254***
					(3.38)	(2.89)
Change in equity capital ratio (%) (q-4, q)		-0.090***		-0.053***		-0.053***
		(-15.39)		(-3.32)		(-3.31)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	486426	486426	259758	259758	259758	259758
R^2	0.059	0.067	0.042	0.045	0.042	0.045

Internet Appendix Table A2. Additional Specifications of Table 3 (Cont.)

Panel I: Main Distress Variable: *Financial Distress*; PCA Banks Excluded

Dependent variable:	Change in equity capital ratio (%) (q, q+1)					
Sample period:	2005-2014					
Distress indicator:	Equity capital ratio (1st decile) (q-1)		Z-score (1st decile) (q-1)		Financial distress (q-1)	
	(1)	(2)	(3)	(4)	(5)	(6)
Distress indicator (q-1)	0.181***	0.177***	0.046*	0.049	0.209***	0.196***
	(12.08)	(10.72)	(1.79)	(1.67)	(6.25)	(6.03)
× Crisis (q-1)	0.025	0.024	-0.005	-0.005	-0.063	-0.065
	(0.92)	(0.84)	(-0.15)	(-0.14)	(-1.50)	(-1.47)
× TARP (q-1)	0.240***	0.233***	-0.063***	-0.077***	0.256***	0.234**
	(4.45)	(4.09)	(-3.01)	(-3.44)	(3.15)	(2.73)
Change in equity capital ratio (%) (q-4, q)		-0.029		-0.056***		-0.055***
		(-1.40)		(-3.42)		(-3.38)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	253921	253921	253627	253627	253627	253627
R^2	0.050	0.051	0.045	0.048	0.046	0.049

Internet Appendix Table A3. Additional Specifications of Table 4

The table presents additional variations to the main analysis presented in Table 4: exploring how the balance sheet items of banks in distress change over time. Standard errors are clustered by bank and adjusted using the Driscoll-Kraay (1998) procedure for overlapping data. *t*-statistics are presented in parentheses. Variable definitions are provided in Appendix A. *, **, *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Main Distress Variable: *Low Equity Capital Ratio*, with *Crisis* Interaction; 1985-1994

Dependent variable:	Assets					Liabilities				Equity	
	Change in… (q, q+4)					Change in… (q, q+4)				Change in… (q, q+4)	
	Log assets	Log loans	Log fixed assets	Log #branches	Log #employees	Log liabilities	Log deposit rate	Log deposits	Log other liabilities	Log common stock	Log dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Low equity capital ratio (1st decile) (q-1)	-0.033***	-0.022***	St Dev	-0.019***	-0.024***	-0.043***	-0.010*	-0.041***	-0.059***	0.016***	-0.247***
	(-12.31)	(-4.38)	(-5.42)	(-13.26)	(-5.07)	(-19.65)	(-1.93)	(-21.39)	(-5.80)	(2.85)	(-7.86)
× Crisis (q-1)	-0.016**	-0.024**	-0.022***	-0.008***	-0.009	-0.011*	-0.011	-0.010	-0.042**	-0.005	-0.054
	(-2.57)	(-2.35)	(-4.08)	(-3.12)	(-1.09)	(-1.79)	(-1.00)	(-1.67)	(-2.16)	(-0.92)	(-0.88)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	470419	470337	468768	470261	470316	470501	454498	469679	468744	470326	464651
R^2	0.075	0.102	0.011	0.017	0.026	0.059	0.590	0.061	0.102	0.012	0.136

Panel B: Main Distress Variable: *Low Z-score*, with *Crisis* Interaction; 1985-1994

Dependent variable:	Assets					Liabilities				Equity	
	Change in… (q, q+4)					Change in… (q, q+4)				Change in… (q, q+4)	
	Log assets	Log loans	Log fixed assets	Log #branches	Log #employees	Log liabilities	Log deposit rate	Log deposits	Log other liabilities	Log common stock	Log dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Low Z-score (1st decile) (q-1)	-0.054***	-0.066***	-0.052***	-0.022***	-0.045***	-0.059***	-0.019***	-0.060***	-0.108***	0.004	-0.141***
	(-19.15)	(-14.99)	(-12.52)	(-10.10)	(-25.44)	(-12.87)	(-7.27)	(-16.73)	(-6.17)	(1.12)	(-7.45)
× Crisis (q-1)	-0.008	-0.012	-0.004	-0.007**	-0.009	-0.007	-0.008	-0.000	-0.009	-0.003	-0.079*
	(-1.61)	(-1.57)	(-0.45)	(-2.71)	(-1.64)	(-1.10)	(-1.24)	(-0.08)	(-0.35)	(-0.53)	(-1.93)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	470055	469992	468419	469893	469956	470133	454183	469335	468385	469962	464286
R^2	0.079	0.110	0.013	0.017	0.029	0.063	0.591	0.064	0.103	0.011	0.135

Internet Appendix Table A3. Additional Specifications of Table 4 (Cont.)

Panel C: Main Distress Variable: *Low Equity Capital Ratio*, with *Crisis* Interaction; 2005-2014

Dependent variable:	Assets					Liabilities				Equity	
	Change in… (q, q+4)					Change in… (q, q+4)				Change in… (q, q+4)	
	Log assets	Log loans	Log fixed assets	Log #branches	Log #employees	Log liabilities	Log deposit rate	Log deposits	Log other liabilities	Log common stock	Log dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Low equity capital ratio (1st decile) (q-1)	-0.024***	-0.014*	-0.018**	-0.013***	-0.009**	-0.032***	-0.012***	-0.032***	-0.055**	0.008*	-0.187***
	(-3.68)	(-2.03)	(-2.13)	(-2.75)	(-2.27)	(-3.97)	(-4.74)	(-4.35)	(-2.50)	(1.85)	(-8.08)
× Crisis (q-1)	-0.047***	-0.038***	-0.023**	-0.020***	-0.031***	-0.051***	-0.015***	-0.046***	-0.073**	-0.002	-0.136**
	(-6.24)	(-4.90)	(-2.45)	(-3.42)	(-6.18)	(-5.69)	(-4.53)	(-5.93)	(-2.44)	(-0.19)	(-2.44)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	252146	252102	251234	251835	252071	252177	250387	251772	252125	249850	250691
R^2	0.149	0.194	0.025	0.035	0.039	0.130	0.602	0.106	0.106	0.005	0.140

Panel D: Main Distress Variable: *Low Z-score*, with *Crisis* Interaction; 2005-2014

Dependent variable:	Assets					Liabilities				Equity	
	Change in… (q, q+4)					Change in… (q, q+4)				Change in… (q, q+4)	
	Log assets	Log loans	Log fixed assets	Log #branches	Log #employees	Log liabilities	Log deposit rate	Log deposits	Log other liabilities	Log common stock	Log dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Low Z-score (1st decile) (q-1)	-0.035***	-0.036***	-0.040***	-0.028***	-0.035***	-0.044***	-0.008*	-0.045***	-0.101***	0.007	-0.241**
	(-6.68)	(-7.30)	(-6.39)	(-8.33)	(-5.58)	(-7.62)	(-1.71)	(-9.54)	(-4.23)	(1.66)	(-2.70)
× Crisis (q-1)	-0.034***	-0.025***	-0.006	-0.007	-0.006	-0.035***	-0.019***	-0.037***	-0.078***	-0.012**	-0.101
	(-4.50)	(-3.72)	(-0.87)	(-1.31)	(-0.74)	(-4.12)	(-3.05)	(-4.87)	(-2.78)	(-2.07)	(-0.90)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	251854	251829	250951	251548	251782	251885	250166	251486	251833	249568	250402
R^2	0.149	0.197	0.026	0.036	0.041	0.127	0.603	0.106	0.108	0.004	0.141

Internet Appendix Table A3. Additional Specifications of Table 4 (Cont.)

Panel E: Main Distress Variable: *Low Equity Capital Ratio*, without *Crisis* Interaction; 1985-1994

Dependent variable:	Assets					Liabilities				Equity	
	Change in… (q, q+4)					Change in… (q, q+4)				Change in… (q, q+4)	
	Log assets	Log loans	Log fixed assets	Log #branches	Log #employees	Log liabilities	Log deposit rate	Log deposits	Log other liabilities	Log common stock	Log dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Low equity capital ratio (1st decile) (q-1)	-0.039***	-0.031***	-0.025***	-0.021***	-0.027***	-0.047***	-0.014***	-0.044***	-0.074***	0.014***	-0.266***
	(-14.46)	(-7.97)	(-11.00)	(-11.95)	(-9.10)	(-18.05)	(-4.52)	(-14.92)	(-7.57)	(3.53)	(-14.73)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	470419	470337	468768	470261	470316	470501	454498	469679	468744	470326	464651
R^2	0.074	0.102	0.011	0.017	0.026	0.059	0.590	0.061	0.102	0.012	0.136

Panel F: Main Distress Variable: *Low Z-score*, without *Crisis* Interaction; 1985-1994

Dependent variable:	Assets					Liabilities				Equity	
	Change in… (q, q+4)					Change in… (q, q+4)				Change in… (q, q+4)	
	Log assets	Log loans	Log fixed assets	Log #branches	Log #employees	Log liabilities	Log deposit rate	Log deposits	Log other liabilities	Log common stock	Log dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Low Z-score (1st decile) (q-1)	-0.082***	-0.090***	-0.067***	-0.035***	-0.068***	-0.061***	-0.028***	-0.089***	-0.182***	0.014*	-0.286***
	(-19.66)	(-12.42)	(-11.05)	(-11.75)	(-23.39)	(-14.87)	(-10.26)	(-15.64)	(-8.35)	(2.04)	(-15.87)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	470055	469992	468419	469893	469956	470133	454183	469335	468385	469962	464286
R^2	0.079	0.110	0.013	0.017	0.029	0.063	0.591	0.064	0.103	0.011	0.135

Internet Appendix Table A3. Additional Specifications of Table 4 (Cont.)

Panel G: Main Distress Variable: *Financial Distress*, without *Crisis* Interaction; 1985-1994

Dependent variable:	Assets					Liabilities				Equity	
	Change in… (q, q+4)					Change in… (q, q+4)				Change in… (q, q+4)	
	Log assets	Log loans	Log fixed assets	Log #branches	Log #employees	Log liabilities	Log deposit rate	Log deposits	Log other liabilities	Log common stock	Log dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Financial Distress	-0.056***	-0.069***	-0.053***	-0.024***	-0.048***	-0.091***	-0.022***	-0.060***	-0.111***	0.003	-0.164***
	(-18.27)	(-13.55)	(-15.94)	(-10.48)	(-16.18)	(-17.08)	(-10.28)	(-18.34)	(-6.83)	(1.16)	(-8.74)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	470055	469992	468419	469893	469956	470133	454183	469335	468385	469962	464286
R^2	0.078	0.107	0.012	0.017	0.028	0.063	0.591	0.064	0.104	0.012	0.136

Panel H: Main Distress Variable: *Low Equity Capital Ratio*, without *Crisis* Interaction; 2005-2014

Dependent variable:	Assets					Liabilities				Equity	
	Change in… (q, q+4)					Change in… (q, q+4)				Change in… (q, q+4)	
	Log assets	Log loans	Log fixed assets	Log #branches	Log #employees	Log liabilities	Log deposit rate	Log deposits	Log other liabilities	Log common stock	Log dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Low equity capital ratio (1st decile) (q-1	-0.038***	-0.025***	-0.025***	-0.019***	-0.018***	-0.047***	-0.016***	-0.046***	-0.076***	0.007*	-0.226***
	(-4.25)	(-3.11)	(-3.22)	(-3.68)	(-3.04)	(-4.52)	(-5.71)	(-4.60)	(-3.40)	(1.74)	(-7.95)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	252146	252102	251234	251835	252071	252177	250387	251772	252125	249850	250691
R^2	0.147	0.193	0.025	0.035	0.038	0.128	0.602	0.105	0.106	0.005	0.140

Internet Appendix Table A3. Additional Specifications of Table 4 (Cont.)

Panel I: Main Distress Variable: *Low Z-score*, without *Crisis* Interaction; 2005-2014

Dependent variable:	Assets					Liabilities				Equity	
	Change in… (q, q+4)					Change in… (q, q+4)				Change in… (q, q+4)	
	Log assets	Log loans	Log fixed assets	Log #branches	Log #employees	Log liabilities	Log deposit rate	Log deposits	Log other liabilities	Log common stock	Log dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Low Z-score (1st decile) (q-1)	-0.052***	-0.049***	-0.043***	-0.032***	-0.038***	-0.061***	-0.018***	-0.064***	-0.140***	0.001	-0.292***
	(-10.06)	(-13.09)	(-12.81)	(-12.74)	(-14.81)	(-10.35)	(-5.32)	(-8.48)	(-9.67)	(0.33)	(-8.32)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	251854	251829	250951	251548	251782	251885	250166	251486	251833	249568	250402
R^2	0.147	0.197	0.026	0.036	0.041	0.126	0.603	0.105	0.108	0.004	0.141

Panel J: Main Distress Variable: *Financial Distress*, without *Crisis* Interaction; 2005-2014

Dependent variable:	Assets					Liabilities				Equity	
	Change in… (q, q+4)					Change in… (q, q+4)				Change in… (q, q+4)	
	Log assets	Log loans	Log fixed assets	Log #branches	Log #employees	Log liabilities	Log deposit rate	Log deposits	Log other liabilities	Log common stock	Log dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Financial Distress	-0.096***	-0.087***	-0.076***	-0.055***	-0.066***	-0.113***	-0.031***	-0.112***	-0.226***	0.010	-0.373***
	(-17.30)	(-16.86)	(-8.72)	(-12.74)	(-14.65)	(-19.11)	(-6.41)	(-15.13)	(-15.48)	(0.90)	(-11.51)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	251854	251829	250951	251548	251782	251885	250166	251486	251833	249568	250402
R^2	0.148	0.197	0.026	0.036	0.041	0.127	0.603	0.105	0.108	0.004	0.140

Internet Appendix Table A3. Additional Specifications of Table 4 (Cont.)

Panel K: Main Distress Variable: *Financial Distress*, PCA Banks Excluded; 2005-2014

Dependent variable:	Assets					Liabilities				Equity	
	Change in… (q, q+4)					Change in… (q, q+4)				Change in… (q, q+4)	
	Log assets	Log loans	Log fixed assets	Log #branches	Log #employees	Log liabilities	Log deposit rate	Log deposits	Log other liabilities	Log common stock	Log dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Financial distress (q-1)	-0.063***	-0.057***	-0.058***	-0.035***	-0.039***	-0.076***	-0.074***	-0.032***	-0.160***	0.019	-0.363***
	(-10.65)	(-9.05)	(-5.18)	(-5.00)	(-7.71)	(-11.71)	(-13.33)	(-3.48)	(-7.18)	(1.66)	(-3.76)
× Crisis	-0.025***	-0.009	0.003	-0.002	-0.006	-0.024***	-0.014	-0.009	-0.002	-0.006	-0.159
	(-3.13)	(-1.27)	(0.22)	(-0.31)	(-1.03)	(-2.76)	(-1.48)	(-1.02)	(-0.10)	(-0.47)	(-1.31)
× TARP	-0.012	-0.008	0.040**	-0.026***	-0.026*	-0.020	-0.058***	0.071***	0.174***	-0.010	0.375
	(-0.82)	(-0.46)	(2.46)	(-3.44)	(-1.80)	(-1.36)	(-2.92)	(3.88)	(5.29)	(-0.69)	(1.21)
Bank-quarter and state-quarter contro	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	246944	246919	246041	246640	246872	245300	246588	245300	246922	244715	245506
R^2	0.136	0.185	0.025	0.034	0.039	0.605	0.098	0.605	0.107	0.005	0.141

Internet Appendix Table A4. Additional Specifications of Table 5

The table presents additional variations to the main analysis presented in Table 5: exploring whether distress banks increase their risk-taking activities. Standard errors are clustered by bank and adjusted using the Driscoll-Kraay (1998) procedure for overlapping data. *t*-statistics are presented in parentheses. Variable definitions are provided in Appendix A. *, **, *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Main Distress Variable: *Low Equity Capital Ratio*; with *Crisis* Interaction

Sample period:	1985-1994			2005-2014				2005-2014			
Dependent variable:	Change in… (q, q+4)			Change in… (q, q+4)				Change in… (q, q+4)			
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/ Assets (q) (%)	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/ Assets (q) (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Low equity capital ratio (1st decile) (q-1)	0.230***	0.236***	-0.103***	0.042	0.075	-0.019*	-1.910***	0.042	0.074	-0.020*	-1.919***
	(9.88)	(6.96)	(-9.88)	(1.40)	(1.35)	(-1.72)	(-3.16)	(1.41)	(1.34)	(-1.74)	(-3.18)
× Crisis (q-1)	0.029	-0.040	-0.002	0.118***	-0.127	-0.124***	-3.326***	0.114**	-0.122	-0.117***	-3.432***
	(0.60)	(-0.90)	(-0.25)	(2.77)	(-0.87)	(-6.93)	(-4.93)	(2.56)	(-0.83)	(-6.16)	(-5.05)
× TARP (q-1)								0.177*	-0.212	-0.217***	1.940
								(1.98)	(-1.01)	(-10.17)	(1.20)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	468337	470510	470493	251607	251889	252173	249274	251607	252181	252173	249274
R²	0.021	0.037	0.014	0.047	0.081	0.022	0.043	0.048	0.081	0.023	0.044

Panel B: Main Distress Variable: *Low Z-score*; with *Crisis* Interaction

Sample period:	1985-1994			2005-2014				2005-2014			
Dependent variable:	Change in… (q, q+4)			Change in… (q, q+4)				Change in… (q, q+4)			
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/ Assets (q) (%)	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/ Assets (q) (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Low Z-score (1st decile) (q-1)	1.014***	0.362***	-0.409***	1.247***	0.150	-0.358***	-3.399***	1.247***	0.150	-0.358***	-3.399***
	(17.43)	(7.95)	(-34.16)	(18.74)	(0.86)	(-18.75)	(-5.92)	(18.74)	(0.86)	(-18.77)	(-5.91)
× Crisis (q-1)	0.086	0.032	-0.011	-0.265***	0.062	-0.024	-3.492***	-0.288***	0.082	-0.006	-3.522***
	(1.19)	(0.62)	(-0.65)	(-3.13)	(0.27)	(-0.95)	(-4.03)	(-3.22)	(0.36)	(-0.22)	(-4.05)
× TARP (q-1)								0.358***	-0.266	-0.294***	1.374***
								(6.17)	(-1.63)	(-5.37)	(3.97)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	468337	470510	470493	251607	251889	251881	248988	251607	251889	251881	248988
R²	0.021	0.037	0.014	0.126	0.082	0.094	0.046	0.126	0.082	0.096	0.046

Internet Appendix Table A4. Additional Specifications of Table 5 (Cont.)

Panel C: Main Distress Variable: *Low Equity Capital Ratio*; without *Crisis* Interaction

Sample period:	1985-1994			2005-2014			
Dependent variable:	Change in… (q, q+4)			Change in… (q, q+4)			
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Log Z-score	Performing-loan ratio	Earnings volatility	RWA/ Assets (q) (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Low equity capital ratio (1st decile) (q-1)	0.240***	0.222***	-0.104***	0.077**	0.036	-0.056**	-2.885***
	(14.81)	(6.35)	(-10.08)	(2.55)	(0.59)	(-2.50)	(-4.11)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	468337	470510	470493	251607	252181	252173	249274
R^2	0.021	0.037	0.014	0.047	0.081	0.021	0.043

Panel D: Main Distress Variable: *Low Z-score*; without *Crisis* Interaction

Sample period:	1985-1994			2005-2014			
Dependent variable:	Change in… (q, q+4)			Change in… (q, q+4)			
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/ Assets (q) (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Low Z-score (1st decile) (q-1)	1.039***	0.371***	-0.413***	1.111***	0.183*	-0.370***	-5.153***
	(24.40)	(10.53)	(-48.53)	(19.98)	(1.72)	(-43.14)	(-8.91)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	468337	470142	470127	251607	251889	251881	248988
R^2	0.090	0.042	0.087	0.124	0.082	0.094	0.046

Internet Appendix Table A4. Additional Specifications of Table 5 (Cont.)

Panel E: Main Distress Variable: *Financial Distress*, without *Crisis* Interaction

Sample period:	1985-1994			2005-2014			
Dependent variable:	Change in… (q, q+4)			Change in… (q, q+4)			
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/Assets (q)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Financial distress (q-1)	0.870***	0.488***	-0.334***	0.649***	0.078	-0.286***	-8.506***
	(25.97)	(7.30)	(-32.67)	(8.72)	(0.42)	(-12.65)	(-15.38)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	468337	470142	470127	251607	251889	251881	248988
R^2	0.038	0.040	0.031	0.055	0.080	0.032	0.044

Panel F: Main Distress Variable: *Low Equity Capital Ratio*; 1-Quarter Horizon

Sample period:	1985-1994			2005-2014			
Dependent variable:	Change in… (q, q+1)			Change in… (q, q+1)			
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Assets (q) (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Low equity capital ratio (1st decile) (q-1)	0.077***	0.006	-0.064***	0.147***	-0.060	-0.048***	-2.260***
	(3.61)	(0.15)	(-9.83)	(5.52)	(-0.48)	(-3.98)	(-10.58)
× Crisis (q-1)	0.046	0.038	-0.027**	-0.146***	-0.151	-0.009	-0.782**
	(1.55)	(0.79)	(-2.57)	(-3.72)	(-1.03)	(-0.56)	(-2.73)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	486197	486426	486425	259740	259758	259758	257085
R^2	0.007	0.015	0.008	0.015	0.022	0.011	0.011

Internet Appendix Table A4. Additional Specifications of Table 5 (Cont.)

Panel G: Main Distress Variable: *Low Z-score*; 1-Quarter Horizon

Sample period:	1985-1994			2005-2014			
Dependent variable:	Change in… (q, q+1)			Change in… (q, q+1)			
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/ Assets (q) (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Low Z-score (1st decile) (q-1)	-0.008	0.012	-0.019***	-0.007	-0.003	-0.004	-0.678***
	(-0.96)	(0.77)	(-4.75)	(-0.85)	(-0.15)	(-1.28)	(-3.67)
× Crisis (q-1)	0.015	0.014	-0.010*	-0.024	-0.121**	-0.020**	-1.043***
	(1.02)	(0.62)	(-1.96)	(-1.42)	(-2.23)	(-2.56)	(-4.72)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	486197	486829	486827	259740	260058	260058	257381
R^2	0.006	0.015	0.004	0.015	0.022	0.009	0.011

Panel H: Main Distress Variable: *Financial Distress*; 1-Quarter Horizon

Sample period:	1985-1994			2005-2014			
Dependent variable:	Change in… (q, q+1)			Change in… (q, q+1)			
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/ Assets (q)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Financial distress (q-1)	0.217***	0.040	-0.103***	0.293***	-0.024	-0.084***	-1.183***
	(9.66)	(1.63)	(-14.57)	(8.73)	(-0.33)	(-5.42)	(-7.29)
× Crisis (q-1)	0.013	0.015	-0.014	-0.073	-0.023	-0.011	-0.819***
	(0.42)	(0.43)	(-1.37)	(-1.62)	(-0.27)	(-0.62)	(-3.45)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	486197	486426	486425	259740	259758	259758	257085
R^2	0.018	0.016	0.027	0.029	0.021	0.027	0.011

Internet Appendix Table A4. Additional Specifications of Table 5 (Cont.)

Panel I: Main Distress Variable: *Low Equity Capital Ratio*; 8-Quarters Horizon

Sample period:	1985-1994			2005-2014				2005-2014			
Dependent variable:	Change in… (q, q+8)			Change in… (q, q+8)				Change in… (q, q+8)			
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Assets (q) (%)	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Assets (q) (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(4)	(5)	(6)	(7)
Low equity capital ratio (1st decile) (q-1)	0.483***	0.592***	-0.157***	0.126***	0.214**	-0.032***	-3.037***	0.127***	0.214**	-0.032***	-3.050***
	(10.76)	(9.46)	(-7.77)	(3.82)	(2.48)	(-3.19)	(-3.27)	(3.86)	(2.48)	(-3.21)	(-3.29)
× Crisis (q-1)	0.031	-0.143**	-0.011	0.252***	0.186	-0.144***	-4.951***	0.258***	0.212	-0.140***	-5.143***
	(0.42)	(-2.68)	(-0.95)	(3.27)	(0.97)	(-5.58)	(-3.93)	(3.34)	(1.13)	(-5.19)	(-4.30)
× TARP (q-1)								-0.069	-0.734***	-0.125***	4.210
								(-1.00)	(-3.52)	(-4.17)	(1.64)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	444902	447357	447336	241048	241673	241662	228739	241048	241673	241662	228739
R^2	0.045	0.063	0.026	0.113	0.145	0.049	0.056	0.114	0.145	0.050	0.056

Panel J: Main Distress Variable: *Low Z-score*; 8-Quarters Horizon

Sample period:	1985-1994			2005-2014				2005-2014			
Dependent variable:	Change in… (q, q+8)			Change in… (q, q+8)				Change in… (q, q+8)			
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/ Assets (q) (%)	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/ Assets (q) (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(4)	(5)	(6)	(7)
Low Z-score (1st decile) (q-1)	1.397***	0.949***	-0.541***	1.479***	0.562***	-0.420***	-2.766**	1.479***	0.562***	-0.420***	-2.766**
	(25.50)	(16.55)	(-59.13)	(32.09)	(3.00)	(-40.17)	(-2.22)	(32.16)	(3.00)	(-40.23)	(-2.22)
× Crisis (q-1)	0.172**	0.001	-0.032***	-0.173**	0.301	-0.067***	-6.912***	-0.190**	0.344	-0.055***	-6.901***
	(2.15)	(0.02)	(-3.48)	(-2.39)	(1.11)	(-4.59)	(-4.00)	(-2.41)	(1.29)	(-3.46)	(-3.97)
× TARP (q-1)								0.173*	-0.632**	-0.178***	1.035
								(1.83)	(-2.68)	(-3.73)	(1.14)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	444902	447018	446999	241048	241402	241391	228476	241048	241402	241391	228476
R^2	0.143	0.084	0.141	0.201	0.155	0.140	0.057	0.201	0.155	0.141	0.057

Panel K: Main Distress Variable: *Financial Distress*; 8-Quarters Horizon

Sample period:	1985-1994			2005-2014				2005-2014			
Dependent variable:	Change in… (q, q+8)			Change in… (q, q+8)				Change in… (q, q+8)			
	Log Z-score	Performing-loan ratio	Earnings volatility	Log Z-score	Performing-loan ratio	Earnings volatility	RWA/Assets (q)	Log Z-score	Performing-loan ratio	Earnings volatility	RWA/Assets (q)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(4)	(5)	(6)	(7)
Financial distress (q-1)	1.407***	1.400***	-0.491***	1.161***	0.928***	-0.297***	-8.078**	1.162***	0.928***	-0.297***	-8.085**
	(38.36)	(9.71)	(-18.10)	(12.08)	(3.39)	(-8.20)	(-2.65)	(12.08)	(3.40)	(-8.19)	(-2.65)
× Crisis (q-1)	0.120*	-0.215**	-0.021	-0.184*	-0.013	-0.142***	-7.034**	-0.185*	0.034	-0.131***	-7.167**
	(1.81)	(-2.11)	(-1.01)	(-1.87)	(-0.03)	(-4.03)	(-2.51)	(-1.87)	(0.09)	(-3.55)	(-2.59)
× TARP (q-1)								0.131	-1.299***	-0.327***	2.689
								(0.87)	(-4.66)	(-5.19)	(1.17)
Bank-quarter and state-quarter control	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	444902	447018	446999	241048	241402	241391	228476	241048	241402	241391	228476
R²	0.076	0.077	0.058	0.126	0.149	0.064	0.057	0.127	0.149	0.065	0.057

Panel L: Main Distress Variable: *Financial Distress*; PCA Banks Excluded; 2005-2014

Sample period:	2005-2014			
Dependent variable:	Change in… (q, q+4)			
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/Assets (q)
	(1)	(2)	(3)	(4)
Financial distress (q-1)	0.949***	0.140	-0.231***	-4.941***
	(16.12)	(0.80)	(-11.77)	(-5.36)
× Crisis (q-1)	-0.317***	-0.221	St Dev	-2.042**
	(-4.06)	(-0.96)	(-0.95)	(-2.18)
× TARP (q-1)	0.235	-0.457	-0.449***	0.515
	(1.01)	(-1.52)	(-4.03)	(0.32)
Bank-quarter and state-quarter controls	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes
N	246781	246978	246970	244414
R²	0.054	0.083	0.028	0.042