How Important Is Moral Hazard For Distressed Banks?

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ABSTRACT

The moral hazard incentives of the bank safety net predict that distressed banks take on more risk and higher leverage. Since many factors reduce these incentives, including charter value, regulation, and managerial incentives, the net economic effect of these incentives is an empirical question. We provide evidence on this question using two distinct periods that include financial crises and are subject to different regulatory regimes (1985–1994, 2005–2014). We find that distressed banks reduce their leverage and decrease observable measures of riskiness, which is inconsistent with the view that, on average, moral hazard incentives dominate distressed bank leverage and risk-taking policies.

Keywords: Banks, distress, moral hazard, deleveraging, leverage, risk
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1 Introduction

The moral hazard incentives of the bank safety net motivate a vast array of policies and regulations that affect banks. They are also at the core of much of the banking literature and of how banking is taught to students. These incentives arise in part because of deposit insurance. Merton (1977) shows that deposit insurance amounts to a put option whose value increases with greater risk-taking. With this view, a bank can increase its value by taking on more risks. Banks benefit from a safety net that goes beyond the provision of deposit insurance. For instance, they can receive support in crisis periods or even outside crisis periods because of their systemic importance. The safety net, therefore, generally implies that bank shareholders do not bear the full extent of the costs associated with their risk-taking but receive all of the benefits associated with it (e.g., Acharya, Cooley, Richardson, and Walter, 2010; Farhi and Tirole, 2012). With this view, bank shareholders have incentives to take more risks, either by investing in riskier assets or by taking on more leverage, than is socially optimal.

In this paper, we investigate how important moral hazard incentives are. Such an investigation is important because, while the moral hazard incentives are a cornerstone of the banking literature, this literature also focuses on a variety of factors that limit the importance of moral hazard incentives. These include the composition of liabilities, bank charter value, managerial incentives, regulation, and monitoring by prudential agencies. The moral hazard incentives should be strongest for banks that have nothing to lose (Demsetz, Saidenberg, and Strahan, 1996), which we take to be banks in financial distress. If the moral hazard incentives are more important than the mitigating factors for these banks, we would expect these banks to increase leverage and risk. Our results show that distressed banks take actions to reduce their leverage and to reduce their risk, which is contrary to what we would expect if moral hazard incentives dominate the actions of those banks. Our evidence suggests that the mitigating factors that limit the role of moral hazard incentives for banks are powerful in that banks in distress do not behave in a way that is consistent with a dominant role for these incentives.

Our study focuses on two periods. The advantage of our choice is that we can assess how the importance of the moral hazard incentives differs across regulatory regimes and in crises. The first period is 1985–1994, and the second is 2005–2014. These periods have in common that they include a banking crisis: the

Savings and Loan (S&L) crisis and the Global Financial Crisis (GFC), respectively. In periods of economic crisis, reducing the size of a bank's balance sheet is likely to be more costly because many other banks are trying to do the same, so that the ability of banks to deleverage and reduce risk may be weaker during crisis periods (see Shleifer and Vishny, 1992, for the analysis of this mechanism generally). These periods differ in that the banking crises affect different types of banks: the first crisis disproportionately impacted Savings and Loan Associations, while the second crisis impacted the entire banking system. These periods also differ in regulation. For the first period that we consider, banks did not have 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 US. Further, as a result of concerns about moral hazard following the S&L crisis, the US tightened regulations substantially. The FDIC Improvement Act (FDICIA), adopted in 1991, introduced prompt corrective action (PCA), which was designed to resolve banks before they could engage in activities detrimental to the deposit insurance fund (DIF).

The focus of our study is on the role of moral hazard incentives for banks in financial distress because the incentives are believed to be most substantial for such banks. To do this, we need to select banks that are in financial distress. The literature has used various metrics to assess the financial solvency of banks. Two of the most common measures include leverage and some type of bank Z-score, known as "distance-to-default." In this paper, we define banks to be distressed if they have both high leverage and a low bank Z-score. Specifically, for each period, we classify the bank-quarters that are jointly in the bottom decile of the distribution (of the respective sample period) of both metrics as distressed bank-quarters. Overall, 4.1% and 3.1% of bank quarters are considered distressed in the first and second periods, respectively. We show that our approach selects banks that have a much higher probability of failure in subsequent quarters. A bank that is in the lowest decile of the distribution of the equity capital ratio and the lowest decile of the 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]

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

The moral hazard incentives have strong implications for the leverage decisions of distressed banks. Everything else equal, a decrease in the leverage of a distressed bank reduces the value of the deposit insurance for that bank (Merton, 1977) and of the safety net in general as it makes the bank safer. Further, because a decrease in leverage for a distressed firm increases the value of the firm's debt at the expense of equity, some theories predict that highly levered firms will not decrease their leverage (e.g., Admati, Demarzo, Hellwig, and Pfleiderer, 2018). Our first approach is to assess whether distress predicts an increase in leverage, which means a decrease in the equity-to-assets ratio. We find that it does not. On the contrary, the leverage of distressed banks decreases the year following the classification of a bank as distressed. 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 percentage points outside a crisis, but deleverage less during a crisis. 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.

Next, we explore the actions that banks take to deleverage. Banks can deleverage by reducing assets and using the proceeds to pay back debt. Alternatively, they can raise new equity or retain more earnings by cutting dividends. We find that distressed banks use both approaches to deleverage. 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).

If moral hazard incentives dominate, we expect that distressed banks increase their risk. We explore this prediction in two fashions. First, we examine how bank metrics that proxy for risk evolve after a bank is classified as a distressed bank. We find that these metrics indicate that a bank becomes less risky in the year after it is classified as distressed: its Z-score increases, the non-performing loan (NPL) ratio decreases, earnings volatility decreases, and, in the second period, risk-weighted assets decline. Again, banks' behavior is consistent across the periods that we examine. Second, we examine whether banks in distress increase loans to executives. This action could, potentially, reflect an attempt of managers to use their power

and increase the riskiness of their banks if such loans are extended on favorable terms.[2] Our evidence is the opposite: loans to executives decline for banks in distress.

After presenting our main results, we address three important related topics. First, we measure whether the deleveraging of distressed banks changes over time in an attempt to shed some light on banks' response to regulation. As already discussed, FDICIA was adopted during our first period so that we can investigate whether distressed banks behave differently after the adoption of FDICIA. We find that they do. Surprisingly, however, the extent to which firms deleverage in the second period is lower than the extent to which they deleverage immediately after the adoption of FDICIA. The Dodd-Frank Act was adopted during our second period. We find no evidence that the deleveraging behavior of banks is greater after the adoption of the Act compared to the pre-GFC period. We note that the endogeneity of regulation limits inferences from this analysis. Further, other time-varying factors may affect banks' propensity to deleverage.

Second, we compare the deleveraging of distressed banks that are private to the deleveraging of distressed banks that are public. Existing literature argues that moral hazard incentives might be stronger for public banks with diversified shareholders (Laeven and Levine, 2009; Falato and Scharfstein, 2016). In addition to having diversified shareholders, public banks differ from private banks for other reasons that may affect the role of the moral hazard incentives. Public banks are on average much larger than private banks, so that they may benefit from public support that the private banks typically would not benefit from. Also, public banks can raise funds in equity markets, so that they may be in a better position to deleverage. Despite the differences between the characteristics of private and public banks, we find little disparity between the deleveraging and risk policies of public and private distressed banks.

Third, we address concerns about survival bias. Specifically, with the data available, we only observe distressed banks that are alive, hence it is possible that our results are valid for the banks that survive, and

[2] To guard against such outcomes, Regulation O governs banks' credit extensions to its "insiders." Specifically, it requires banks to report any extensions provided to insiders in their quarterly reports and that prohibition any extensions of credit are non-preferential and are not riskier than similar loans to non-insiders.

that the banks that failed behaved differently and did choose to increase leverage and risk. Even if this were true, since most distressed banks do not fail, our results would still be representative of the actions of the typical distressed bank. However, we address the concern in two separate ways. First, our results hold when we examine the behavior of banks over a shorter horizon, where survivorship bias is smaller: one quarter instead of four quarters. The one-quarter results are very similar to the four-quarter ones . Second, we examine the behavior of banks that fail in the quarters before they fail. We find that the banks that fail, on average, are banks that take actions similar to those taken by the banks that do not fail, in that they decrease assets, liabilities, and the number of employees. However, not surprisingly, the leverage of these banks increases sharply. This is because of large earnings losses that are not offset by new equity. While these banks cut dividends to zero, most of them do not raise new equity.

On average, we find that banks in distress do not make leverage and risk choices consistent with the predictions that arise if the moral hazard incentives dominate their behavior. Our evidence implies that the factors that mitigate the role of the moral hazard incentives are of first-order importance in explaining the dynamics of distressed banks and the environment in which they operate. However, our results do not imply that moral hazard incentives do not play any role at all, for three reasons. First, our results hold for the *average* distressed bank, but our evidence does not preclude moral hazard incentives to dominate the behavior of some distressed banks. Second, since we observe the net effect, it is possible that in the absence of these incentives, banks in distress would have reduced leverage and risk even further. Third, we can only focus on actions by banks that are observable; banks can still take actions motivated by their moral hazard incentives that we do not observe. However, we provide evidence suggesting that it is improbable that distressed banks, on average, reduce observable risks while increasing hidden risks.

The study proceeds as follows. Section 2 reviews the literature on the moral hazard incentives and the factors that mitigate them. Section 3 describes the data used in the study, and introduces the variables that measure bank distress. In Section 4, we explore the variables that are best at predicting bank failure, and therefore are best suited to measure bank distress. In Section 5, we test whether distressed banks reduce their leverage. In Section 6, we analyze the balance sheet dynamics of distressed banks. Section 7 analyzes the evidence for whether distressed banks increase risk-taking activities. Section 8 examines how

deleveraging changes across time, how the actions of banks that fail differ from those of other banks, and of how the actions of public banks differ from those of private banks. Section 9 concludes.

2 Moral Hazard Incentives of Banks and Mitigating Factors

Our study investigates whether the moral hazard incentives of banks dominate the policies with respect to risk and leverage of distressed banks. Though the moral hazard incentives could lead to increased leverage and risk, the literature shows that several factors mitigate the impact of these incentives or can even more than offset that impact. In this section, we review the literature on the moral hazard incentives of banks and the mitigating factors of these incentives. The foundation of this literature is the shareholder-debtholder agency conflict of the corporate finance literature. We review that literature first and then move on to the specific situation of banks. The literatures we discuss are extensive. Our review is not exhaustive but is designed to show that whether moral hazard incentives dominate the behavior of distressed banks is an unresolved issue and that by addressing that issue we contribute both to the corporate finance literature on agency conflicts and the banking literature on the moral hazard incentives of the safety net.

2.1 Agency Conflicts

Jensen and Meckling (1976) and Galai and Masulis (1976) provide early models where a firm's shareholders have incentives to increase the firm's risk if the firm has debt outstanding. The argument follows straightforwardly from the use of the option pricing model that applies to the valuation of equity (Black and Scholes, 1973; Merton, 1974). Since the equity is a call option on the assets of the firm, higher volatility of the assets benefits the equity holders at the expense of the debtholders. Myers (1977) started closely-related literature finding that shareholders of highly-levered firms do not have incentives to reduce the risk of the firm by issuing equity and will even choose not to invest in profitable projects that would have to be financed with equity. With this agency literature, deleveraging benefits the debtholders at the expense of the equity holders.

Since these seminal contributions, a large theoretical literature explores the incentives of shareholders to take actions at the expense of debtholders. A fundamental issue with the incentives of shareholders is

that the possibility that they will take advantage of debtholders after having borrowed from them increases their cost of funds. As a result, shareholders would be better off ex ante if they could commit to never take advantage of debtholders. Unfortunately, shareholders cannot commit to never take advantage of debtholders. Admati et al. (2018) argue that, because of this inability of firms to commit to future funding choices, firms have incentives to increase debt but not decrease it after having initially issued debt. They call this the ratchet effect. Nevertheless, shareholders use a number of approaches to reduce the deadweight cost that arises from their agency conflict with debtholders. For instance, they include debt covenants in their debt contracts (Smith and Warner, 1979) and try to build a reputation as good creditors so that they have access to better borrowing opportunities (Diamond, 1991). If the debt is safe because leverage is low, an increase in the risk of the assets has little impact on the value of the debt. Consequently, agency conflicts are more acute when the debt is riskier. The maturity of debt can be used to limit the extent of agency conflicts as the risk of debt increases with its maturity (Hackbarth and Leland, 2019). Firms may also design policies that make it less likely that they would be in a position where the debt is risky if high leverage has a high deadweight cost (Berg and Heider, 2020).

The agency literature also studies the agency conflict between shareholders and managers. If the ownership of shares by managers is limited, the interests of managers differ from those of shareholders. Managers have firm-specific human capital that may lose value if they lose their position. A firm's CEO is likely to lose her position when a firm has to restructure its liabilities or file for bankruptcy, which provides incentives for the CEO to adopt conservative policies to avoid financial distress (Rose-Ackerman, 1991). However, if managers do not have profitable investment projects, they may choose risky projects so that they have some chance of staying in their position. Even when managers have a sizeable stake in the firm they manage, they are unlikely to be well-diversified. As a result, they may choose to be more risk-averse than shareholders would want them to be. John, Litov, and Yeung (2008) find that managers take less risk if they receive more private benefits.

Empirical evidence on the incentives of non-financial firms in distress is mixed. Eisenberg (2005) finds evidence supportive of the incentives of distressed firms to increase risk. In contrast, Gilje (2017) shows, in a setting where he can observe project risk directly, that firms approaching distress choose less risky

projects. 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.

2.2 The Special Circumstances of Banks

Banks are sharply different from non-financial firms for several reasons. First, banks have much higher leverage than manufacturing firms. For instance, in the sample used in Gilje (2016), average book leverage is 52%. In our study, the average book leverage across our two sample periods exceeds 90%. With much higher leverage, moral hazard incentives are potentially much stronger. Second, banks benefit from a safety net that non-financial firms do not benefit from. This safety net guarantees some deposit accounts explicitly against default and other deposit and saving accounts implicitly. At times, other liabilities are also protected by the authorities for some banks. Finally, banks are heavily regulated and monitored by prudential authorities. Therefore, they do not have the same discretion to increase their risk that non-financial firms have. These three important differences between banks and non-financial firms imply that bank risk-taking policies could be quite different when a bank is in distress than when a non-financial firm is in distress.

The existing literature on bank risk-taking predicts that distressed banks behave differently from other banks because risk-taking is more prevalent for banks with low charter value (e.g., Keeley, 1990; Demsetz, Saidenberg, and Strahan, 1996). Suarez (1994) develops a model where the franchise value of a bank is endogenous. When the present value of the future profits of the bank is high because of market power, the bank takes less risk. Low market power is associated with low future profits and greater risk-taking by the bank. In general, a bank in financial distress is a bank that is more likely to have low future profits, so that it is more likely to adopt more risky policies.

Another prediction from the existing literature is that risk-taking at banks differs depending on the governance of banks. Specifically, banks with managers in control are likely to be more conservative than banks with shareholders in control. Acharya, Mehran, and Thakor (2016) model managerial rent-seeking. They show that managerial rent-seeking can partly offset the moral hazard incentives of shareholders. Existing evidence on ownership and risk-taking is supportive of predictions that banks are riskier when shareholders are more in control. In particular, Saunders, Stock, and Travlos (1990) show empirically that

shareholder-controlled banks are riskier in the US. Laeven and Levine (2009) find in a cross-country study that deposit insurance causes banks to take more risk in banks with large controlling equity shareholders. Beltratti and Stulz (2012) show that banks with more shareholder-friendly governance performed worse during the Global Financial Crisis. Falato and Scharfstein (2016) find that the public form of ownership leads banks to take more risks, which they attribute to short-termism.

Laws, regulations, and monitoring by prudential authorities constrain bank managers in their actions. Buser, Chen, and Kane (1981) point out that there is an explicit price for deposit insurance, which is the premiums charged, but also an implicit price, which is the constraints imposed by the FDIC on bank activities. They also emphasize that a disincentive for risk-taking is that the FDIC can take over banks before the value of their charter is exhausted. Dewatripont and Tirole (2012) explicitly consider 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 from the authorities." FDICIA was explicitly motivated by the belief that "gambling for resurrection" was an important factor in the S&L crisis and that therefore regulators had to constrain and seize banks before their incentives for "gambling for resurrection" became too pressing. Minton, Taboada, and Stulz (2019) show that large banks are not typically valued more than smaller banks, which is contrary to the existence of a sizeable too-big-to-fail subsidy and point out that the safety net also includes large regulatory costs for banks.

Constraints imposed by regulations on bank risk-taking differ substantially between our two sample periods. FDICIA was designed to prevent distressed banks from levering up and 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). 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. We explicitly explore differences in the behavior of distressed banks within the country across regulatory regimes. To the extent that FDICIA was successful, we would expect distressed banks to reduce their leverage and risk following its

implementation more aggressively. However, we find that the behavior of distressed banks is, in many ways, more similar than different across the US regulatory regimes.

Several studies examine risk-taking by distressed banks, however, their results are mixed. Koudstaal and van Wijnbergen (2012) examine gambling for resurrection for US public banks from 1993 to 2014 using data from Compustat. Still, they do not directly compare the behavior of distressed banks to other banks like we do and do not investigate the evolution of leverage of distressed banks. They conclude that "Banks whose share price has slumped tend to gamble for resurrection by increasing the riskiness of their asset portfolio." In contrast, Bidder, Krainer, and Shapiro (2017) find that banks that had substantial losses in the oil crisis of 2014 took steps to deleverage their balance sheets. 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 levering up 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 show that the banks that recover are those that cut credit to their riskiest borrowers. Acharya, Gujral, Kulkarni, 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.

3 Data and Variables

3.1 Data Sources

Our analysis is based on the Reports of Condition and Income ("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 US banking system, i.e., the S&L crisis of the late 1980s and early 1990s and the GFC during 2008–2010. Our analysis is based on two

separate unbalanced panels over these two distinct periods.[3] 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 institutions from 1980 to 2015 in Figure 1.[4] The figure shows that during this period there are two waves of 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 institutions failed in the respective periods we consider.[5]

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), multibank holding company affiliation, bank age (chartered within prior 5 years), and an indicator for a metro headquarters location. Our tests further include logged per-capita income and the unemployment rate as well as state indicator variables.[6]

3.2 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. Since the call report data are relatively clean data, we winsorize only the independent variables in our study at 1% and 99%.[7] All variables are defined more precisely in Appendix A.

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[3] As part of our cleaning, we delete a few observations with implausible information: Missing or negative assets, missing or negative deposits, missing equity capital, missing common stock equity, negative preferred stock, observations with an equity-to-assets ratio that is greater than 50%, return on assets less than -50% or greater than 50%, loans to executives to total loans below 0 or greater than 1, employee count zero or less, and employee salaries zero or less.

[4] Failed institutions include both commercial banks and thrifts. The failure distribution for all institutions is similar to that for commercial banks.

[5] These periods witnessed 1,351 and 362 failures respectively.

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

[7] In Section 5, we discuss specifications of the main regressions with winsorized dependent variables as well, for robustness.

Panels A and B show that 0.7%, 1.6%, and 2.3% of bank-quarters fail within 1, 2, and 3 years respectively in the 1985–1994 period and 0.6%, 1.2%, and 1.9% in the 2005–2014 period; thus, unconditional failure probabilities are roughly similar. Because the Basel capital requirements are not in effect during most of our first period, we 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 (which includes both common and preferred shares, as well as retained earnings). 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 10.7 basis points per year (see *Change in equity capital ratio* variable); the corresponding numbers for the 2005–2014 period are 10.1% and 5.1 basis 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 Flannery and Rangan, 2008).

Our other key risk measure is the bank *Z-score* (Boyd and Runkle, 1993). 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.[8] We measure *Z-score* as the mean across four quarters of the return on assets (ROA) plus the equity capital ratio, all divided by the standard deviation of ROA.[9] 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 92.7 and 159.7 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

[8] See, for instance, Laeven and Levine (2009) and Berger, El Ghoul, Guedhami, and Roman (2013).
[9] We use four quarters of data in computing the standard deviation of ROA. Our Z-scores are measured 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.

substantial variation in their distribution; for example, the range of the log loan growth from the 10th to the 90th percentile is -0.11 to 0.23 for the first period and -0.09 to 0.20 for the second period. Other control variables summarized in Panels A and B also exhibit substantial variation.

Panels C and D document that the bivariate correlations of our explanatory variables are generally low. One exception is the correlation between deposits/liabilities and log assets, which is -49% in the earlier period and -37% in the latter period, indicating that larger banks rely more on non-deposit forms of debt.

4 Measuring Bank Financial Distress

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* e*quity capital ratio* indicator).[10] The 10th percentile cutoff for *Equity capital ratio* is 6.03% in the earlier period and 7.65% 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 17.8 in the earlier period and 31.0 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 the *Equity capital ratio* distribution and the bottom decile of the *Z-score* distribution during that period. The sample of banks that

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

are flagged as in *Financial distress* includes about 4.3% of the bank-quarters in the period 1985–1994 and about 3.1% 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 bottom decile of the *Equity capital ratio* creates 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 bottom 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 0.35 for the first period and 0.23 for the second (Panel G).

We summarize the fraction of distressed banks by year for each of the two periods using all three distress indicators in Figure 2. The figure shows that in each period, the proportion of banks with *Low equity capital ratio* is somewhat higher before the peak crisis periods of 1988–1990 and 2008–2010. Such an outcome may reflect that banks try to boost their capital ahead of the peak of a 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 8.3. 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 liabilities. Depending on the measure of distress, distressed banks are larger or smaller than non-distressed banks. Banks with assets greater than $50bn are more likely to be distressed than other banks in both periods when we use the equity-to-assets measure of distress but are less likely to be distressed when we use the other measures. 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.

To verify that the distress measures indeed reflect financial distress, we correlate them with future failure. 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).[11] Our dataset is at the bank-quarter 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 calendar quarter. Table 2 reports estimates of the following model:

$$I(Failure\ within\ K\ Quarters)_{it} = a + bD_{it} + cX_{it} + Quarter\ FE_t + State\ FE_i + e_{it} \quad (1)$$

where D_{it} is the distress indicator. Bank characteristics (X) 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.

The regression results 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 10.6% and 7.6% more likely to fail in the next three years for the first period and the second period, respectively. A bank with a *Low Z-score* indicator has a higher

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

likelihood of failure within three years of 11.2% and 8.8% for the first and second periods, respectively (Columns (3) and (6) in Panel B).

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 at the intersection of the deciles have a higher likelihood of failure by 21.2% and 22.6% for the two periods, respectively. This is a particularly large magnitude as it is roughly ten times the unconditional mean of bank failure of 2.3% in the first period and 1.9% 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 provide robustness analysis in which we include the *Crisis* interaction. *Crisis* is an indicator of the crisis period of 1988–1990 or 2009–2011, 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 those 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 occurs when using banks in the *Financial distress* sample. There is also economic intuition for why financially-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 asset volatility. 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 except for the local economic condition variables. While a positive relationship between the probability of failure and the state

unemployment rate is not surprising, it is surprising that the probability of failure is positively related to the log of state per capita income.

In conclusion, banks in the bottom deciles of the *Equity capital ratio* distribution or the *Z-score* distribution are more likely to fail. However, the financial distress classification that requires banks to be in the bottom deciles of the distributions of both ratios results in a materially more reliable 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 for some specifications in the Internet Appendix.

5 Do Banks Deleverage?

The moral hazard incentives of distressed banks are that they should increase their leverage, or at least not decrease it. Therefore, if the moral hazard incentives dominate, we would not expect banks to raise equity, decrease payouts, shed assets, or decrease liabilities. In this section, we investigate whether banks deleverage after they have reached a state of financial distress. It is important to note that the average quarterly net income-to-equity ratio of distressed banks is -7.2% in the first period and -7.1% in the second period (Table 4, Panels A and B). Consequently, banks would experience an increase in leverage unless they take active steps to offset the loss of equity due to their net income loss.

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_{it} denotes our distress indicator, $Crisis_t$ is a crisis period indicator, and X_{it} denotes the controls:

$$\Delta Equity\ capital\ ratio\ (q, q+4)_{it} = a + bD_{it} + cD_{it}*Crisis_t + dX_{it} + Quarter\ FE_t + State\ FE_i + e_{it} \quad (2)$$

The estimated regressions are presented in Table 3. In addition to the distress variables, control variables, and fixed effects, we add a crisis-period and financial distress interaction in all regressions. 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 and include a TARP-Distress interaction term in column (6). In some of the specifications, we add a lagged version of the dependent variable to control for autocorrelation in the dependent variable. We use Driscroll-Kray standard errors for results reported in Tables 3 to 6, as in Fahlenbrach, Prilmeier, and Stulz (2018) 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 outside a crisis, but they deleverage less during a crisis. This effect is of large magnitude relative to the average equity capital ratio of distressed banks of 4.3 percentage points in 1985–1994 and 5.7 percentage points in 2005–2014 (see Table 1, Panels E and F). This is a very large increase in the equity capital ratio as it represents about 54% of a standard deviation of the changes in the *Equity capital ratio* in the first period (=0.8/1.49), and 44% of the standard deviation in the second period (=0.8/1.83) (see Table 1, Panels A and B).

Table 3 shows that the increase in the equity capital ratio did not change materially during the S&L crisis, relative to the period outside the crisis, however, it is dampened during the GFC relative to the surrounding years. 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 distressed 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 distressed 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 6).

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. Moreover, since we keep our dependent variables unwinsorized, we offer also specifications in which the dependent variable, change in equity-to-assets, is winsorized at the 1% and 99% levels in Internet Appendix Table A2, Panels F, G, and H. Again, the results remain strong albeit slightly weaker in magnitude. Note that the standard deviation of the dependent variable declines from 1.49% and 1.83% (Table 1, Panels A and B), in the first and second periods respectively, to 1.18% and 1.32% (not reported). Hence, the economic significance of the distress variables remains virtually unchanged, except for a decline in the power of *Low Z-score*.

We explore the determinants of deleveraging by regressing the change in the equity to assets ratio on bank characteristics for the subsample of distressed banks. The results differ between the two periods. In both periods, larger banks deleverage less. However, in the second period, the indicator variable for the largest banks (banks with more than $50 billion in assets) is positive and economically large. Hence, in the second period, there is no evidence that potentially systemic banks deleverage less. In the first period, the banks with more deposits and more loans deleverage less. Banks in a metropolitan location deleverage less in the second period but not the first. Lastly, banks in states with a higher unemployment rate deleverage less in the first period but not the second. The estimated regressions are shown in Internet Appendix Table A2, Panel I.

A noteworthy difference between the periods that we examine is that FDICIA 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 must 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 J. Our inferences are unaffected when we eliminate these banks, so that our results are not driven by banks subjected to prompt corrective action.

6 How Do Banks Deleverage?

In Section 5, we showed that distressed banks deleverage. In this section, we investigate how they deleverage. Since our measure of leverage is equity over assets, banks can deleverage by reducing their assets and by increasing their equity. They can increase equity by raising new equity or by increasing their income and retaining more of it. DeAngelo, Gonçalves, and Stulz (2018) show that an important tool for deleveraging is the retention of earnings. Hence, banks could deleverage by reducing their payouts.

We first examine summary statistics about the evolution of the capital accounts of banks. Table 4, Panels A and B, show how equity changes for distressed banks and other banks during the two periods we consider. In the first period, the increase in equity of distressed banks is large compared to the increase for non-distressed banks. In the second period, distressed banks and non-distressed banks increase equity quarter-by-quarter by the same percentage. However, equity falls for distressed banks because they are making losses, as discussed earlier. In contrast, non-distressed banks are profitable, so that earnings that they do not distribute increase their ratio of equity-to-assets. Not surprisingly, non-distressed banks distribute more than half of their earnings. The average dividend payments of distressed banks are minimal but not zero. Distressed banks issue common stock and preferred stock. However, when a distressed bank is not a stand-alone bank, it will increase its equity through infusions from the parent, and these infusions are the primary source of equity increase for the distressed banks in both periods. Note that the agency theories predict that banks would not attempt to make up the equity loss from their net income loss. However, they do so and increase their equity on net.

Next, we turn to a regression analysis in which we test whether the main items in the assets, liabilities, and equity of banks evolve differently for banks in financial distress. 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_{it} denotes our

distress indicator, $Crisis_t$ is a crisis period indicator, and X_{it} denotes the controls. We also include a lagged dependent variable, to account for potential mean reversion (see further discussion below):

$$\Delta Balance\ Sheet\ Item\ (q, q+4)_{it} = a + bD_{it} + D_{it}*Crisis_t + X_{it} + Quarter\ FE_t + State\ FE_i + e_{it} \quad (3)$$

We present the results of the analysis in Table 4, Panels C to E and F to H, for the periods 1985–1994 and 2005–2014, respectively.

6.1 Distressed Banks' Assets

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 therefore not surprising that employment shrinks as well. The magnitudes of the effects are substantial. In the first period we consider, distressed banks decrease the size of their total assets by 8.3%, their loan portfolio by 8.9%, their fixed assets by 6.7%, the number of their branches by 3.4%, the number of their employees by 7.1%, and total salaries by 8.8% (Panel C). There is no material difference in the asset shrinking *within* the first period, i.e., between the crisis years and outside of it. Looking at the later period (Panel F), the magnitudes of asset declines are similar outside the crisis period. However, the decreases are more substantial during the GFC. During the recent crisis, distressed banks reduce the size of their total assets by 10.2%, their loan portfolio by 9.5%, their fixed assets by 8.1%, the number of their branches by 5.9%, the number of their employees by 7.4%, and total salaries 10.8%.

6.2 Distressed Banks' Liabilities

Turning to the liabilities, Table 4, Panel D, shows that banks deleverage by reducing their liabilities: both deposits and other liabilities decline. We would expect that banks that were intending to lever up to attract more deposits through a higher rate, so that they can take more risks and increase their leverage. Benston and Kaufman (1997) argue that during 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 levering up." In contrast, in the 1985–1994 period, we find that distressed banks, on average, reduced their deposit rates by 0.026% (Panel D, Column (2)) and the quantity of deposits by 9.3% (Panel D, Column (3)). The magnitudes for the later period, 2005–2014, are almost identical. During the GFC, the quantity of deposits declined even further, by an additional 3.4%. This evidence is consistent with Ben-David, Palvia, and Spatt (2017) who find that deposit rates do not materially vary with the 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, Panels D and G, Column (4), show that other liabilities (e.g., non-deposit debt) of distressed banks decline by about 18.5% and 20.6%, per year, respectively in the first and the second periods 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 as we control for such movements through the use of quarter fixed effects. Hence, all our results have to be interpreted as showing how distressed banks differ in their behavior from non-distressed banks within a quarter.

6.3 Distressed Banks' Equity

Lastly, we find that banks increase their equity capital through two channels: equity issuance and retention. If distressed banks intended to lever up, 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, Panels E and H, shows results that are inconsistent with this assertion. Specifically, they show that, on average, common stock increases by 1.9% and by 2.7%, and dividends are cut by 25.5% and 30.5%, 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 the rate of equity reduction is not lower 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.

In the previous section (Section 5), we found that distressed banks deleveraged less during the GFC because they increase less their equity capital ratio during the crisis (see results in Table 3, Columns (3) and (4)). In apparent contrast, Table 4, Panels F, G, and H, show 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. Remember that banks deleverage more as their liabilities fall more in relation to their assets. Distressed banks deleveraged less during the GFC relative to distressed banks outside the crisis because of three 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. Third, some banks during the GFC received TARP funds and others did not. 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 more likely to be closed by regulators.[12]

We also explore the impact on distressed banks of receiving TARP funds. Panels F to H of Table 4 show 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%. The increase in deposit rate does not necessarily mean attracting new deposits in order to invest in new risky projects. It can simply mean that these banks try to retain their current deposits and prevent a run. These banks also raise more equity. We observe no difference in the evolution of dividend payouts for these banks relative to other distressed banks. It should be noted, however, that in both periods regulators could order banks to stop paying dividends if they chose to do so. Across all the robustness tests, the picture is similar to the one

[12] 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.

arising from the main tests in Table 4: banks in distress shrink their assets, reduce their liabilities, and increase their equity.

6.4 Robustness Tests

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 with 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 present the analysis for 2005–2014, excluding the crisis indicator, for the three distress variables. 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. Finally, there is a concern that our results are driven by regression to the mean and not by intentional deleveraging. In all the regressions in Table 4, Panels C to H, we include the lagged dependent variable as a right-hand-side control, which should reduce or eliminate a regression to the mean bias. To provide further assurance that the results are not driven by regression to the mean, we reproduce the main results of Table 4, Panels C to H, with the dependent variable being the deviation of the dependent variable from the 5-year average prior to the current quarter. Because of data availability, we can perform this analysis only for the second period. We present the analysis in Internet Appendix Table A3, Panel L. Doing so leads to even greater deleveraging than we find in Table 4.

Overall, our results show that banks deleverage throughout their balance sheets and take steps that are expected to decrease their costs, so that their losses fall. 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. Also, banks act to increase equity by cutting dividends and raising new equity.

7 Do Distressed Banks Take More Risk?

If the moral hazard incentives of banks dominate, we expect them to increase leverage and increase the risk of assets. We have shown that banks in distress deleverage their balance sheets: reduce assets, reduce liabilities, and increase equity. Now, we turn to the question of whether banks increase asset risk. We first examine the evolution of bank metrics that proxy for risk. We then investigate whether banks in distress grant more loans to executives.

7.1 Risk-Taking

To investigate whether distressed banks increase risk-taking, we consider how various measures of bank asset risk evolve 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. 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. The literature uses measures of earnings or cash flow volatility as proxies for risk (see, e.g., Minton and Schrand, 1999; Koudstaal and van Wijnbergen, 2012). Therefore, we expect the volatility of earnings to increase if banks take greater 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) 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, $Crisis_t$ is a crisis period indicator, and X_{it} denotes the controls:

$$\Delta Risk\ Measure\ (q, q+4)_{it} = a + bD_{it} + cD_{it}{*}Crisis_t + dX_{it} + Quarter\ FE_t + State\ FE_i + e_{it} \quad (4)$$

In Table 5, Panel A, we estimate our regressions with proxies for asset risk on the left-hand side. We find that the *log 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 *log Z-score* is 0.839, reflecting an increase of 131 percent, so that the Z-score more than doubles. Admittedly,

the *Z-score* of the distressed banks is low, as the average of the bottom 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 specifications of 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 *Earnings volatility*. Column (7) uses as a dependent variable the *Change in risk-weighted assets* (scaled by lagged assets). If risk-weights are suitable 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, Panel A, suggest that distressed banks increase their distance-to-default (*Z-score*) and have lower earnings volatility in both sample periods. 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 essential 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) again, 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 perform 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 a one-quarter horizon instead of a 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 weaken materially 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 *ΔRWA/Assets(q)* 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.

7.2 Loans to Executives

Loans to managers or shareholders is one of the potential methods in which banks may increase the risk of assets that the traditional risk metrics of banks do not capture.[13] We examine this possibility in Table 5, Panel B, where we explore the evolution of loans to executives by distressed banks. We measure loans to executives in several ways over four quarters: growth (change in logged outstanding loan amounts), change of fraction of total outstanding loans, and an indicator of whether loans to executives increased. The regressions for both sample periods show unambiguously that loans to executives do not increase and, in fact, decline in all specifications (four of which are statistically significant). Hence, the evidence of executives increasing borrowing is limited to anecdotes only.

8 Extensions and Robustness

In this section, we address three important issues related to the results we have shown so far. First, we investigate whether the deleveraging behavior of banks differs after the adoption of FDICIA and Dodd-

[13] For example, at least in one case of an Icelandic bank in 2008, shareholders who became the largest borrowers of the bank defaulted on their loan, and then submitted the bank's own shares as collateral to prevent foreclosing on other collaterals assets. The bank eventually collapsed. See https://www.theguardian.com/business/2011/feb/14/kaupthing-tchenguiz-collapse.

Frank. Second, we compare the deleveraging behavior of private and public banks since, as discussed in Section 2, there are reasons from the existing literature to think that the moral hazard incentives are more important for public banks. Third, we assess the extent to which our results are affected by the fact that we only observe the banks that survive.

8.1 Did FDICIA and Dodd-Frank Change Distressed Banks' Deleveraging?

As already discussed, FDICIA was explicitly designed to reduce the moral hazard incentives of banks. Dodd-Frank incorporates stress tests, so that banks that fail such tests are constrained and have incentives to deleverage. The regressions we estimated in earlier sections were not designed to allow us to evaluate whether the extent of deleveraging differs in different years, except for the height of the crisis period. We now show results that allow the extent of deleveraging to differ by year. Instead of having a financial distress indicator variable as in Table 3, we re-estimate the regressions in Table 3, interacting the financial distress indicator variable with yearly indicator variables. With this approach, the interaction of *Financial distress* with a year indicator variable shows how the extent of deleveraging in that year differs from the benchmark of other non-distressed banks within the same year (quarter fixed effects are included in the regression). We plot the coefficients in Figure 3.

Figure 3a shows the results for the first period. We find that the interaction coefficients range between 0.6 and 1.0 until 1991, the year of the adoption of FDICIA. After the adoption of FDICIA, distressed banks increased their equity capital ratio compared to non-distressed banks by more than 50% more than they did before the adoption of FDICIA. This evidence is strongly consistent with the view that FDICIA improved the incentives of banks to build up their leverage to avoid situations where they would be seriously constrained by regulators or would lose control to regulators. Another way to put this is that FDICIA increased the costs on banks of having a low equity capital ratio.

Figure 3b shows estimates for the second period. It is important to note first that the results of higher deleveraging after FDICIA do not hold in the second period. It is not clear why distressed banks deleveraged less in the second period than they did immediately after the adoption of FDICIA. An investigation of this issue is left for further research. As already noticed in Section 3, deleveraging was lower during the GFC.

The results in Columns (3) and (4) show that deleveraging was lower from 2008 to 2011. Also, a formal test of the difference of the coefficients presented in Figure 3b shows that the deleveraging in the years 2012 onwards is not statistically significantly higher than the deleveraging in the pre-crisis period (2005–2007). Consequently, there is no evidence that the Dodd-Frank Act impacted the extent of deleveraging of distressed banks.

8.2 Private Banks and Public Banks

So far, we have studied a sample that included both private and public banks. Our objective was to assess the importance of the moral hazard incentives for banks in general. Section 2 discussed research showing that the moral hazard incentives may be more important for banks held by diversified shareholders. Public banks differ from private banks in important ways. Public banks have access to financial markets to raise funds. Information about them is widely available, which should make it easier for them to raise funds compared to more opaque private banks. At the same time, however, public banks have shareholders who are likely to be more diversified than the owners of private banks. As a result, shareholders of public banks may encourage managers to take more risk and may be less willing to take actions that could benefit debtholders.[14] Private banks are also more likely to be controlled by management, so that if management is more conservative than diversified shareholders, these banks may deleverage more aggressively.

In Table 6, we split the sample between public and private banks. We classify a bank as a public bank if it is owned by a bank holding company whose stock is publicly traded. We do not reproduce the estimates on the coefficients on the control variables that are the same for all regressions, but show those estimates in the Internet Appendix, Table A5. In Panel A of Table 6, we re-estimate the regressions of Table 3 for each type of bank. In the first period, distressed public banks deleverage somewhat less than private banks. In the second period, there is no difference between the groups. Note that the coefficients on the crisis interactions are statistically insignificant for public banks in both periods. In the first period, they are

[14] Koudstaal and van Wijnbergen (2012) found results that are inconsistent with this channel. They examine the determinants of market-to-book ratio of US public banks and show that it is negatively related to the volatility of ROA in general but unrelated to the volatility of ROA during the GFC.

essentially zero, while in the second period, their magnitude is similar to their magnitude for private banks. It follows that our conclusions about the deleveraging of banks hold for both public and private banks. In Panels B to E of Table 6, we re-estimate Panels A and B of Table 5, for the two respective sample periods. There is no evidence suggesting that there are fundamental differences in the risk-taking of banks that depend on whether a bank is public or private.

With public banks, we can compute an additional indicator of distress. Since we can compute the market value of equity for such banks, we can compute the ratio of the market value of equity to the value of the bank's assets. In other words, we can replace book value of equity with market value of equity. The difficulty with this approach is that, if we designate a bank to be distressed if its ratio of market value of equity to assets is in the bottom decile of the sample for a period, it turns out that a large fraction of banks are distressed during the crisis. We estimate the regressions of Table 3 with this new distress indicator. The results are shown in Internet Appendix Table A2, Panel K. We find that the coefficients on *Low market equity capital ratio* are positive and insignificant. The coefficients on the crisis interactions are negative and insignificant.

8.3 Failed Banks and Potential Survivorship Bias

We only observe the evolution of leverage for banks that survive. For instance, in Table 3, a bank is in the sample that we use provided that it survives for one year after having been designated a distressed bank. Our empirical results might be contaminated by survival bias. Specifically, 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 is 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.

A first approach to investigate the relevance of this potential survivorship bias is to shorten the period over which we observe deleveraging. The reasoning is that if we shorten the period over which we observe deleveraging to one quarter from one year, the fraction of firms that fail during the observation period falls, and hence attrition becomes less critical. Therefore, we re-estimate our regressions shortening the period of observation after a firm has been designated to be a distressed firm to one quarter. We report the results in Internet Appendix Table A2, Panels L, M, and N). The results are noisier, but the magnitude of deleveraging is consistent with what we find for an observation period of four quarters (the one-quarter results need to be multiplied by four). This evidence suggests that the impact of the survival bias on our results is extremely limited. As discussed earlier, there are similar specifications for Table 5 in Internet Appendix Table 4, Panels F, G, and H.

Another approach to better understand the relation between bank failure and deleveraging is to investigate whether banks that fail behave differently during the quarters that they are in the sample. To do so, we estimate the regressions of Table 4 using quarterly data with interactions for banks that fail in future quarters. The interactions are constructed as follows. Consider a bank that is distressed at t. We add to the regression an indicator variable that takes value one for the quarter in which the bank fails if it fails for quarters +2 to +16. These interactions estimate the extent to which the deleveraging of a distressed bank differs if it subsequently fails. We show the results in Internet Appendix Table A3, Panels M and N. The results are straightforward for the second period (Panel N). Banks that fail in the two years after their classification as distressed deleverage more than the banks that do not fail. The only variable for which it is not the case is the change in equity where the fact that a bank fails subsequently makes no difference. For the first period (Panel M), the results are similar except for two variables. First, banks that subsequently fail have higher deposit rates than distressed banks that do not fail. Second, banks that fail in the first two quarters subsequently to the quarter of observation decrease equity. Otherwise, banks that fail deleverage more than banks that do not fail in the first period as well.

9 Conclusion

In this paper, we assess the importance of the moral hazard incentives of banks. If those incentives dominate the policies of distressed banks with respect to leverage and asset risk, we would expect distressed banks to increase leverage or at least not decrease it and to increase their asset risk. We conduct this investigation for two periods, each surrounding a financial crisis. The first period is 1985–1994 with the S&L crisis, and the second period is 2005–2014 with the GFC. Having a financial crisis during a period allows us to evaluate whether moral hazard incentives play a different role during a crisis. The periods are separated by the implementation of important changes in regulation. First, in 1991, FDICIA was adopted. It was designed to make it less likely that distressed banks would choose to increase their risk and would avoid taking actions to deleverage. Second, in 2010, the Dodd-Frank Act was adopted and the Basel Accords were modified starting in 2009 to require banks to hold more capital. Despite these important changes in regulations that were aimed at protecting the insurance fund from actions by distressed banks, we find more similarities than differences in how banks respond to financial distress over the two periods.

Our evidence is inconsistent with the predictions that result from the view that the moral hazard incentives dominate banks' leverage and risk decisions. We find that distressed banks, on average, deleverage and reduce their risk. During the GFC, there is some evidence that distressed banks appear to deleverage less and reduce their risk less, primarily because of lower equity issuance. Though we show that after the adoption of FDICIA in the first period, distressed banks deleverage more aggressively, we find that this benefit of FDICIA does not carry over to the second period and show that there is no evidence that the post-crisis changes in regulations, including the adoption of Dodd-Frank, had an impact on the actions of banks in financial distress.

Our study does not show that moral hazard incentives do not affect bank decisions with respect to leverage and asset risk. It only shows that the forces that mitigate these incentives, such as the fact that liabilities are runnable, that banks have franchise value, that managers are exposed to bank-specific risk, and that laws, regulations, and monitoring by prudential authorities, are significant enough that banks do not act as if these incentives are dominant. Though our results are robust, it is essential to note that we can only observe the leverage and the risk we can measure. This caveat applies to most research in banking. It

is possible that distressed banks can increase their risk while decreasing observable risk metrics. However, banks would have to increase their risk in a way that is not picked up by our multiple risk metrics. Importantly, these risk increases would also be invisible to bank counterparties who otherwise might choose not to enter into business transactions with the bank.

Our results apply on average to distressed banks, so that it is certainly possible, even likely, that some distressed banks take more risk rather than take actions to deleverage. However, our evidence shows that this view is not helpful in understanding the behavior of the average distressed bank. Many factors can drive banks to deleverage and reduce their risk. Distressed banks that take actions to increase their leverage even further 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 well as incentives on the part of managers, may make it optimal for the typical distressed bank to deleverage rather than keep pushing its leverage up.

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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		
Low market equity capital (1st decile)	Indicator variable to whether (Market Value of Equity/ Market value of Assets) is in the 1st decile of bank-quarters	FDIC/CRSP	(prc*shrout)/(BHC_liab+(prc*shrout))
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 preferred stock (q, q+k)	log (Preferred stock)(q+k)-log (Preferred Stock)(q)	FDIC	Change in log (EQPP)
I (Change in common stock (q,q+k)>0)	Common stock(q+k) > Common Stock (q)	FDIC	
I (Change in preferred loans (q,q+k)>0)	Preferred stock(q+k) > Preferred Stock (q)	FDIC	
Change in common stock (q, q+k)/equity (q)	[Common stock(q+k) - Common Stock (q)]/equity (q)	FDIC	
Change in preferred stock (q, q+k)/equity (q)	[Preferred stock(q+k) - Preferred Stock (q)]/equity (q)	FDIC	
Change in log dividends (q, q+k)	log(Dividends) (q+k) - log(Dividends) (q)	FDIC	Change in log(Annualized Quaretly 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)
Change in log salaries (q, q+k)	log (Salaries & Benefits)(q+k) - log(Salaries & Benefits)(q)	FDIC	Change in log (ESAL)
Change in salaries/employee (q, q+k)	Salaries/Employess (q+k) - Salaries/Employees (q)	FDIC	
Change in log executive loans (q, q+k)	Log Loans to Executives,Directors,Principal Shareholders (q,q+k)-Log Loans to Executives,Directors,Principal Shareholders (q)	FDIC	Change in (LNEXAMT)
Change in executive loans/total loans (q, q+k)	Loans to Execs,Directors,Principal Shareholders/All Loans (q,q+k)- Loans to Execs,Directors,Principal Shareholders/All Loans (q)	FDIC	
I (Change in executive loans (q,q+k)>0)	Loans to Execs, Directors, Principal Shareholders (q,q+4) > Loans to Execs, Directors, Principal Shareholders (q)	FDIC	
Control/Other 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
Public Bank	Denotes whether the bank has publicly traded equity	BLS	PUBLIC=PERMCO_RSSD Match exists in FRBNY Dataset matchfile

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. Panels E and F show summary statistics of distress variables for bank-quarters defined as distressed and non-distressed by the different indicators. Panel G is a correlation table between variables measuring bank distress. Variable definitions are provided in Appendix A. *, **, *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: Summary Statistics for 1985–1994 Sample

Variable	N	Mean	St Dev	p1	p10	p50	p90	p99
Equity capital ratio (%)	493598	8.906	2.952	3.953	6.028	8.297	12.571	20.013
Z-score	493161	145.9	168.7	3.9	17.8	92.7	328.7	888.2
Financial distress indicator	493161	0.043	0.203	0.000	0.000	0.000	0.000	1.000
Market equity capital ratio (%)	63638	6.567	9.487	-21.248	0.027	7.802	13.620	18.034
Public Bank	493664	0.138	0.345	0.000	0.000	0.000	1.000	1.000
Crisis (1988-1990)	493664	0.303	0.460	0.000	0.000	0.000	1.000	1.000
Failure within 4 quarters	493664	0.007	0.084	0.000	0.000	0.000	0.000	0.000
Failure within 8 quarters	493664	0.016	0.124	0.000	0.000	0.000	0.000	1.000
Failure within 12 quarters	493664	0.023	0.149	0.000	0.000	0.000	0.000	1.000
Change in equity capital ratio (%) (q, q+4)	469904	-0.008	1.490	-4.769	-1.221	0.107	1.084	3.270
Change in log assets (q, q+4)	471548	0.065	0.174	-0.232	-0.047	0.048	0.181	0.607
Change in log loans (q, q+4)	471438	0.069	0.223	-0.353	-0.107	0.060	0.234	0.693
Change in log fixed assets (q, q+4)	470076	0.054	0.344	-0.511	-0.157	-0.025	0.355	1.431
Change in log #branches (q, q+4)	471464	0.037	0.185	-0.223	0.000	0.000	0.043	0.693
Change in log #employees (q, q+4)	471385	0.025	0.187	-0.336	-0.116	0.000	0.163	0.593
Change in log liabilities (q, q+4)	471538	0.065	0.196	-0.230	-0.052	0.047	0.188	0.631
Change in log deposit rate (q, q+4)	470008	-0.062	0.214	-0.518	-0.296	-0.065	0.167	0.412
Change in log deposits (q, q+4)	471467	0.064	0.198	-0.231	-0.052	0.045	0.187	0.642
Change in log other liabilities (q, q+4)	471068	0.058	0.672	-1.801	-0.567	0.016	0.751	2.241
Change in log dividends (q, q+4)	467781	0.065	1.995	-6.217	-0.778	0.000	1.228	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)	471548	0.032	1.292	-4.160	-0.937	0.029	1.061	3.587
Change in earnings volatility (q, q+4)	471529	0.000	0.436	-1.073	-0.201	-0.004	0.176	1.230
Change in log salaries (q, q+4)	471349	0.066	0.202	-0.338	-0.074	0.056	0.204	0.642
Change in salaries/#employees (q,q+4)	471279	0.715	5.250	-7.033	-1.374	0.530	3.036	9.000
Change in log exec loans (q,q+4)	471541	0.184	1.699	-5.136	-1.008	0.000	1.731	6.271
Change in exec loans/Total loans (q,q+4)	471418	0.100	1.824	-4.405	-0.840	0.000	1.169	5.846
I(Change in exec Loans (q,q+4) > 0)	493521	0.450	0.497	0.000	0.000	0.000	1.000	1.000
Change in log common stock (q,q+4)	471408	0.020	0.241	-0.007	0.000	0.000	0.000	0.811
Change in log preferred stock (q,q+4)	9145	0.034	0.516	-1.207	0.000	0.000	0.000	1.769
I(Change in common stock (q,q+4)>0)	471548	0.079	0.270	0.000	0.000	0.000	0.000	1.000
I(Change in preferred stock (q,q+4)>0)	471548	0.005	0.068	0.000	0.000	0.000	0.000	0.000
Change in common stock (q,q+4)/Equity (q)	471547	0.012	0.417	-0.001	0.000	0.000	0.000	0.267
Change in preferred stock (q,q+4)/Equity (q)	471547	0.002	0.163	0.000	0.000	0.000	0.000	0.000
Log assets	493664	10.849	1.248	8.576	9.485	10.704	12.314	15.195
Assets > $50bn	493664	0.022	0.146	0.000	0.000	0.000	0.000	1.000
Part of MHC	493664	0.309	0.462	0.000	0.000	0.000	1.000	1.000
Deposits/Liabilities (%)	493664	96.89	4.76	71.90	92.82	98.54	99.39	99.73
Loans/Assets (%)	493564	53.95	14.92	17.20	33.32	55.29	71.95	85.21
Core deposit ratio (%)	493664	88.73	9.48	51.00	76.50	91.29	97.72	100.00
Metro location	493664	0.540	0.498	0.000	0.000	1.000	1.000	1.000
De novo bank	493653	0.067	0.250	0.000	0.000	0.000	0.000	1.000
Charge-off rate (%)	488421	0.681	18.209	0.000	0.000	0.205	1.530	6.110
Log state per-capita income	493028	9.755	0.184	9.347	9.525	9.759	9.988	10.142
State unemployment rate (%)	493028	6.324	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 (%)	263385	10.768	3.262	4.604	7.646	10.047	14.981	22.380
Z-score	263080	232.1	235.0	4.5	31.0	159.7	520.5	1202.8
Financial distress indicator	260640	0.031	0.173	0.000	0.000	0.000	0.000	1.000
Market equity capital ratio (%)	23079	11.675	9.970	-18.941	2.664	12.060	20.650	36.788
Public Bank	263435	0.089	0.285	0.000	0.000	0.000	0.000	1.000
Crisis (2009-2011)	263080	0.032	0.176	0.000	0.000	0.000	0.000	1.000
TARP	260640	0.012	0.110	0.000	0.000	0.000	0.000	1.000
Failure within 4 quarters	263435	0.006	0.077	0.000	0.000	0.000	0.000	0.000
Failure within 8 quarters	263435	0.012	0.110	0.000	0.000	0.000	0.000	1.000
Failure within 12 quarters	263435	0.019	0.135	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)	252830	0.059	0.151	-0.212	-0.050	0.042	0.178	0.562
Change in log loans (q, q+4)	252789	0.054	0.186	-0.282	-0.091	0.040	0.201	0.623
Change in log fixed assets (q, q+4)	251959	0.042	0.305	-0.481	-0.125	-0.024	0.284	1.262
Change in log #branches (q, q+4)	252743	0.028	0.159	-0.288	0.000	0.000	0.095	0.693
Change in log #employees (q, q+4)	252721	0.021	0.160	-0.288	-0.095	0.000	0.141	0.544
Change in log liabilities (q, q+4)	252827	0.059	0.162	-0.220	-0.057	0.041	0.185	0.596
Change in log deposit rate (q, q+4)	251842	-0.160	0.319	-0.817	-0.472	-0.211	0.279	0.574
Change in log deposits (q, q+4)	252814	0.063	0.185	-0.219	-0.054	0.043	0.190	0.613
Change in log other liabilities (q, q+4)	252793	0.015	0.799	-2.517	-0.668	-0.005	0.724	2.767
Change in log dividends (q, q+4)	251796	-0.001	2.344	-7.468	-1.060	0.000	1.041	7.481
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
Change in log salaries (q, q+4)	252567	0.050	0.202	-0.332	-0.071	0.037	0.177	0.636
Change in salaries/#employees (q,q+4)	252564	1.196	15.357	-15.988	-2.803	0.833	5.589	19.694
Change in log exec loans (q,q+4)	252830	0.009	1.179	-4.710	-0.592	0.000	0.657	4.710
Change in exec loans/Total loans (q,q+4)	252767	-0.051	1.390	-4.157	-1.037	-0.010	0.910	3.887
I(Change in exec Loans (q,q+4) > 0)	263435	0.452	0.498	0.000	0.000	0.000	1.000	1.000
Change in log common stock (q,q+4)	250579	0.006	0.257	-0.005	0.000	0.000	0.000	0.405
Change in log preferred stock (q,q+4)	5401	0.018	0.439	-1.382	0.000	0.000	0.017	1.850
I(Change in common stock (q,q+4)>0)	252830	0.065	0.247	0.000	0.000	0.000	0.000	1.000
I(Change in preferred stock (q,q+4)>0)	252830	0.008	0.091	0.000	0.000	0.000	0.000	0.000
Change in common stock (q,q+4)/Equity (q)	252830	0.006	0.226	0.000	0.000	0.000	0.000	0.142
Change in preferred stock (q,q+4)/Equity (q)	252830	0.001	0.028	0.000	0.000	0.000	0.000	0.000
Log assets	263435	11.996	1.335	9.530	10.518	11.847	13.549	16.452
Assets > $50bn	263435	0.009	0.094	0.000	0.000	0.000	0.000	0.000
Part of MHC	263435	0.190	0.392	0.000	0.000	0.000	1.000	1.000
Deposits/Liabilities (%)	263435	93.63	6.90	66.26	84.36	95.88	99.63	99.84
Loans/Assets (%)	263419	63.65	15.67	19.25	41.68	65.93	82.21	89.56
Core deposit ratio (%)	263435	85.92	10.93	48.86	71.10	88.15	97.79	100.00
Metro location	263435	0.535	0.499	0.000	0.000	1.000	1.000	1.000
De novo bank	263417	0.053	0.224	0.000	0.000	0.000	0.000	1.000
Charge-off rate (%)	260822	0.461	49.174	0.000	0.000	0.096	0.892	3.956
Log state per-capita income	260130	0.008	0.015	-0.037	-0.012	0.009	0.025	0.045
State unemployment rate (%)	260130	0.010	0.428	-0.700	-0.400	-0.100	0.500	1.600

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)
Log assets	1.00												
Assets > $50bn	0.21	1.00											
Part of MHC	0.32	0.09	1.00										
Deposits/Liabilities	-0.49	-0.22	-0.24	1.00									
Loans/Assets	0.21	0.03	0.14	-0.12	1.00								
Core deposit ratio	-0.17	-0.10	-0.04	0.17	-0.15	1.00							
Metro location	0.30	0.06	0.12	-0.17	0.21	-0.18	1.00						
De novo bank	-0.10	0.00	-0.03	0.00	0.13	-0.29	0.16	1.00					
Charge-off rate	-0.06	0.01	-0.02	-0.01	0.05	-0.11	-0.01	0.02	1.00				
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			
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		
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	
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 MHC	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 equity 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:	48,756	438,797		48,715	438,431		20,193	466,953	
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, 2005–2014

Classification variable:	Low equity 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:	26,064	234,576		26,034	234,306		8,049	252,291	
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

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 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 (q-1)	0.054***	0.094***	0.106***	0.048***	0.069***	0.076***
	(29.65)	(30.08)	(28.26)	(19.29)	(18.06)	(16.73)
Log assets (q-1)	-0.004***	-0.006***	-0.007***	0.000	0.001*	0.002**
	(-14.41)	(-12.92)	(-11.12)	(1.29)	(1.85)	(2.14)
Assets > $50bn (q-1)	0.006***	0.001	-0.003	0.008	0.012	0.016
	(2.59)	(0.43)	(-0.89)	(1.51)	(1.19)	(1.09)
Part of MHC (q-1)	-0.004***	-0.008***	-0.009***	-0.003***	-0.006***	-0.010***
	(-8.70)	(-7.85)	(-6.58)	(-4.10)	(-4.59)	(-4.87)
Deposits/Liabilities (%) (q-1)	0.000**	0.000***	0.000***	0.000*	0.000	-0.000
	(2.53)	(3.60)	(3.38)	(1.93)	(0.08)	(-0.48)
Loans/Assets (%) (q-1)	0.000***	0.001***	0.001***	0.000***	0.000***	0.000***
	(15.56)	(19.29)	(21.27)	(5.74)	(7.56)	(8.10)
Core deposit ratio (%) (q-1)	-0.000***	-0.001***	-0.001***	-0.000***	-0.000***	-0.001***
	(-7.08)	(-10.88)	(-12.48)	(-3.05)	(-3.53)	(-5.23)
Metro location (q-1)	0.000	0.002*	0.003**	0.002***	0.004***	0.007***
	(0.71)	(1.73)	(2.39)	(3.23)	(3.65)	(3.97)
De novo bank (q-1)	0.000	0.006**	0.013***	-0.001	0.001	0.005
	(0.02)	(2.24)	(3.35)	(-0.66)	(0.33)	(0.94)
Log state per-capita income (q-1)	0.015	0.122***	0.366***	-0.005	0.022	0.085***
	(1.26)	(5.16)	(11.45)	(-0.58)	(1.53)	(4.37)
State unemployment rate (q-1)	0.005***	0.011***	0.014***	0.004***	0.005***	0.003***
	(13.54)	(16.31)	(17.44)	(7.69)	(6.09)	(3.07)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	492865	492865	492865	262795	262795	262795
R^2	0.052	0.096	0.121	0.053	0.070	0.077

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 (q-1)	0.053***	0.096***	0.112***	0.049***	0.077***	0.088***
	(31.10)	(31.94)	(30.69)	(20.16)	(19.50)	(18.46)
Log assets (q-1)	-0.001***	-0.002***	-0.002***	0.001***	0.002***	0.003***
	(-4.75)	(-3.68)	(-3.45)	(4.03)	(4.06)	(3.85)
Assets > $50bn (q-1)	0.008***	0.004	-0.000	0.004	0.006	0.009
	(3.38)	(1.42)	(-0.01)	(0.70)	(0.57)	(0.61)
Part of MHC (q-1)	-0.002***	-0.004***	-0.005***	-0.002***	-0.005***	-0.008***
	(-4.74)	(-4.43)	(-3.88)	(-3.08)	(-3.82)	(-4.28)
Deposits/Liabilities (%) (q-1)	0.000	0.000**	0.000**	-0.000	-0.000	-0.000
	(0.92)	(2.19)	(2.24)	(-0.18)	(-1.36)	(-1.55)
Loans/Assets (%) (q-1)	0.000***	0.001***	0.001***	0.000**	0.000***	0.000***
	(14.39)	(18.31)	(20.44)	(2.22)	(4.84)	(6.03)
Core deposit ratio (%) (q-1)	-0.000***	-0.001***	-0.001***	-0.000**	-0.000***	-0.001***
	(-7.49)	(-11.24)	(-12.80)	(-2.57)	(-3.15)	(-4.95)
Metro location (q-1)	0.001**	0.003***	0.004***	0.001**	0.003***	0.005***
	(2.37)	(3.18)	(3.51)	(2.22)	(2.63)	(3.15)
De novo bank (q-1)	-0.001	0.004*	0.011***	-0.003*	-0.001	0.002
	(-0.78)	(1.65)	(2.92)	(-1.76)	(-0.41)	(0.44)
Log state per-capita income (q-1)	-0.022*	0.056**	0.291***	0.009	0.045***	0.111***
	(-1.88)	(2.40)	(9.25)	(1.06)	(3.14)	(5.72)
State unemployment rate (q-1)	0.003***	0.007***	0.010***	0.002***	0.003***	0.001
	(7.94)	(11.22)	(12.89)	(5.43)	(3.77)	(0.93)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	492432	492432	492432	262490	262490	262490
R^2	0.052	0.100	0.127	0.052	0.077	0.084

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)	0.112***	0.191***	0.212***	0.146***	0.208***	0.226***
	(30.66)	(31.85)	(30.87)	(20.36)	(19.77)	(19.11)
Log assets (q-1)	-0.002***	-0.003***	-0.004***	0.001***	0.002***	0.003***
	(-8.45)	(-7.38)	(-6.57)	(3.62)	(3.61)	(3.45)
Assets > $50bn (q-1)	0.009***	0.005*	0.001	0.006	0.010	0.014
	(3.47)	(1.67)	(0.32)	(1.31)	(1.04)	(0.97)
Part of MHC (q-1)	-0.002***	-0.004***	-0.006***	-0.001	-0.004***	-0.007***
	(-4.89)	(-4.72)	(-4.14)	(-1.46)	(-2.84)	(-3.63)
Deposits/Liabilities (%) (q-1)	0.000	0.000	0.000*	0.000	-0.000	-0.000
	(0.36)	(1.57)	(1.66)	(0.55)	(-0.99)	(-1.31)
Loans/Assets (%) (q-1)	0.000***	0.001***	0.001***	0.000*	0.000***	0.000***
	(12.32)	(17.13)	(19.84)	(1.90)	(4.97)	(6.26)
Core deposit ratio (%) (q-1)	-0.000***	-0.001***	-0.001***	-0.000***	-0.000***	-0.001***
	(-7.71)	(-11.62)	(-13.18)	(-3.27)	(-3.77)	(-5.49)
Metro location (q-1)	0.000	0.002**	0.003***	0.000	0.002*	0.004***
	(1.10)	(2.24)	(2.85)	(0.56)	(1.87)	(2.77)
De novo bank (q-1)	-0.000	0.005**	0.012***	0.000	0.003	0.007
	(-0.35)	(2.03)	(3.23)	(0.14)	(0.89)	(1.39)
Log state per-capita income (q-1)	-0.001	0.093***	0.332***	0.021***	0.060***	0.126***
	(-0.09)	(4.11)	(10.78)	(2.63)	(4.37)	(6.68)
State unemployment rate (q-1)	0.003***	0.007***	0.011***	0.002***	0.002***	0.000
	(8.66)	(12.28)	(14.01)	(4.20)	(3.06)	(0.32)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	492432	492432	492432	262490	262490	262490
R^2	0.089	0.143	0.159	0.126	0.141	0.132

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 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

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. Panels A and B show the quarter-on-quarter changes in equity components for distressed banks and non-distressed banks for the 1985–1994 and 2005–2014 periods, respectively. Panels C, D, and E present regressions for the period of 1985–1994. Panel F, G, and H present regressions for the period of 2005–2014. The dependent variables in Panels C to H 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 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: Quarterly Changes in Equity Accounts: 1985–1994

	Distressed banks (N = 18752)					Non-distressed banks (N = 452503)				
Variable	Mean	St Dev	p10	p50	p90	Mean	St Dev	p10	p50	p90
Change in equity (q,q+1)/Equity (q)	0.162	3.288	-0.247	0.012	0.226	0.021	0.434	-0.029	0.020	0.050
Net income (q+1)/Equity (q)	-0.072	0.832	-0.318	0.000	0.095	0.024	0.061	-0.002	0.030	0.054
Dividends (q+1)/Equity (q)	0.003	0.050	0.000	0.000	0.000	0.013	0.040	0.000	0.000	0.036
Change in common & pref stock (q,q+1)/Equity (q)	0.040	1.256	0.000	0.000	0.000	0.002	0.120	0.000	0.000	0.000
Other changes in equity (q,q+1)/Equity (q)	0.197	3.351	-0.002	0.000	0.151	0.008	0.348	-0.005	0.000	0.003

Panel B: Quarterly Changes in Equity Accounts: 2005–2014

	Distressed banks (N = 7478)					Non-distressed banks (N = 250822)				
Variable	Mean	St Dev	p10	p50	p90	Mean	St Dev	p10	p50	p90
Change in equity (q,q+1)/Equity (q)	0.019	0.657	-0.229	-0.011	0.137	0.019	0.206	-0.030	0.014	0.052
Net income (q+1)/Equity (q)	-0.071	0.201	-0.261	-0.025	0.045	0.019	0.042	-0.003	0.022	0.047
Dividends (q+1)/Equity (q)	0.002	0.016	0.000	0.000	0.000	0.013	0.027	0.000	0.001	0.035
Accounting corrections (q+1)/Equity (q)	0.000	0.031	0.000	0.000	0.000	0.000	0.009	0.000	0.000	0.000
Other comprehansive income (q+1)/Equity (q)	0.004	0.068	-0.031	0.000	0.038	0.000	0.023	-0.018	0.000	0.020
BHC transactions (q+1)/Equity (q)	0.045	0.359	0.000	0.000	0.059	0.004	0.049	0.000	0.000	0.000
Net stock change (q+1)/Equity (q)	0.030	0.341	0.000	0.000	0.001	0.003	0.109	0.000	0.000	0.000
Treasury transactions (q+1)/Equity (q)	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000
Change due to mergers (q+1)/Equity (q)	0.008	0.355	0.000	0.000	0.000	0.005	0.153	0.000	0.000	0.000

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

Panel C: Banks' Assets 1985–1994

Dependent variable:	Assets						
	Change in… (q, q+4)						
	Log assets	Log loans	Log fixed assets	Log #branches	Log #employees	Log total salaries	Salary per employee
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Financial distress (q-1)	-0.083***	-0.089***	-0.067***	-0.034***	-0.071***	-0.088***	-0.152
	(-15.64)	(-14.52)	(-8.48)	(-7.73)	(-19.36)	(-18.05)	(-1.64)
× Crisis (q-1)	-0.000	-0.008	-0.002	-0.000	0.004	0.014**	0.067
	(-0.02)	(-0.66)	(-0.20)	(-0.03)	(0.62)	(-2.57)	(-0.65)
Lagged dependent variable (q-4,q)	0.125***	0.153***	0.031***	0.002	0.001	-0.047**	-0.395***
	(18.21)	(17.41)	(7.24)	(0.68)	(0.15)	(-2.16)	(-13.98)
Log assets (q-1)	-0.007***	-0.005***	-0.000	0.004***	-0.003***	0.000	0.094**
	(-9.00)	(-4.31)	(-0.29)	(8.04)	(-4.34)	(-0.20)	(-2.68)
Assets > $50bn (q-1)	-0.007	-0.015	-0.030***	-0.025***	-0.030***	-0.028***	0.252
	(-0.94)	(-1.44)	(-6.75)	(-3.44)	(-4.66)	(-4.48)	(-0.96)
Part of MHC (q-1)	0.015***	0.020***	0.006***	0.015***	-0.003	-0.002	-0.043
	(11.05)	(10.28)	(3.25)	(6.61)	(-1.06)	(-0.52)	(-1.27)
Deposits/Liabilities (%) (q-1)	0.000	-0.000	-0.000	-0.001***	-0.000	0.000	-0.009*
	(0.44)	(-0.04)	(-0.08)	(-3.37)	(-1.44)	(-0.53)	(-1.83)
Loans/Assets (%) (q-1)	0.001***	-0.001***	0.000***	0.000***	0.000***	0.000***	0.001
	(4.73)	(-20.94)	(4.22)	(4.26)	(4.07)	(-2.81)	(-0.84)
Core deposit ratio (%) (q-1)	0.000***	0.000	-0.000***	-0.001**	-0.000***	-0.000***	-0.002
	(3.26)	(0.51)	(-3.52)	(-2.74)	(-2.87)	(-3.26)	(-1.24)
Metro location (q-1)	0.016***	0.019***	0.012***	0.010***	0.009***	0.010***	0.035*
	(8.63)	(5.76)	(4.49)	(12.01)	(7.77)	(-11.23)	(-1.83)
De novo bank (q-1)	0.052***	0.056***	0.027***	0.034***	0.076***	0.074***	0.009
	(15.61)	(13.44)	(3.67)	(7.65)	(29.81)	(-12.62)	(-0.10)
Charge-off rate (q+4)	-0.001***	-0.002***					
	(-7.51)	(-3.60)					
Log state per-capita income (q-1)	-0.352***	-0.504***	-0.385***	-0.243***	-0.428***	-0.380***	2.835***
	(-3.36)	(-3.35)	(-4.20)	(-3.83)	(-3.63)	(-3.03)	(-4.28)
State unemployment rate (q-1)	-0.014***	-0.028***	-0.018***	-0.005***	-0.012***	-0.016***	-0.009
	(-9.41)	(-10.01)	(-7.80)	(-4.62)	(-8.42)	(-8.70)	(-0.51)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	470313	470250	468671	470162	470219	470176	470088
R^2	0.078	0.105	0.012	0.018	0.028	0.03	0.082

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

Panel D: Banks' Liabilities 1985–1994

Dependent variable:	Liabilities			
	Change in… (q, q+4)			
	Log liabilities	Log deposit rate	Log deposits	Log other liabilities
	(1)	(2)	(3)	(4)
Financial distress (q-1)	-0.095***	-0.026***	-0.093***	-0.185***
	(-13.43)	(-6.79)	(-13.09)	(-6.54)
× Crisis (q-1)	0.008	-0.006	0.007	0.025
	(0.83)	(-0.63)	(0.65)	(0.73)
Lagged dependent variable (q-4,q)	0.121***	-0.169***	0.105***	-0.209***
	(18.91)	(-9.11)	(10.29)	(-14.19)
Log assets (q-1)	-0.007***	-0.002	-0.011***	0.051***
	(-7.46)	(-1.20)	(-8.57)	(11.06)
Assets > $50bn (q-1)	-0.011	0.001	-0.024***	0.067**
	(-1.43)	(0.10)	(-3.02)	(2.30)
Part of MHC (q-1)	0.012***	0.007***	0.010***	0.059***
	(8.08)	(3.85)	(6.82)	(8.99)
Deposits/Liabilities (%) (q-1)	0.000	-0.000	-0.002***	0.027***
	(1.06)	(-0.04)	(-6.70)	(21.38)
Loans/Assets (%) (q-1)	0.001***	0.000***	0.001***	-0.000
	(5.93)	(3.47)	(6.31)	(-0.22)
Core deposit ratio (%) (q-1)	0.000***	-0.000	0.001***	-0.002***
	(2.93)	(-1.13)	(5.32)	(-8.80)
Metro location (q-1)	0.015***	-0.000	0.016***	0.030***
	(7.94)	(-0.07)	(8.95)	(5.83)
De novo bank (q-1)	0.059***	-0.010**	0.061***	0.196***
	(16.50)	(-2.41)	(13.51)	(21.56)
Log deposit rate (q-1)			0.016**	
			(2.28)	
Log state per-capita income (q-1)	-0.338***	-0.069	-0.333***	-0.820***
	(-3.27)	(-0.74)	(-3.15)	(-4.67)
State unemployment rate (q-1)	-0.014***	-0.006***	-0.013***	-0.034***
	(-8.63)	(-2.89)	(-9.89)	(-6.21)
Quarter fixed effects	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes
N	470403	454422	469590	468652
R^2	0.060	0.589	0.060	0.113

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

Panel E: Banks' Equity 1985–1994

Dependent variable:	Equity						
	Change in… (q, q+4)						
	Log #common shares	Log #preferred shares	#Common shares (dummy)	#Preferred shares (dummy)	Common stock / total equity (q)	Preferred stock / total equity (q)	Log dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Financial distress (q-1)	0.019*	0.045	0.088***	0.033***	0.090***	0.045***	-0.255***
	(-1.96)	(-1.40)	(-7.04)	(-5.95)	(-4.95)	(-4.54)	(-14.20)
× Crisis (q-1)	-0.012	-0.115	-0.020	-0.016**	0.000	-0.035***	-0.081*
	(-1.12)	(-1.04)	(-1.30)	(-2.52)	(-0.00)	(-3.67)	(-1.82)
Lagged dependent variable (q-4,q)	-0.045***	-0.165	0.259***	0.192***	0.014	0.015**	-0.374***
	(-6.45)	(-1.49)	(-32.80)	(-11.26)	(-0.70)	(-2.13)	(-75.50)
Log assets (q-1)	0.002	0.013**	0.004***	0.000	-0.004***	-0.001**	0.024
	(-1.47)	(-2.11)	(-5.90)	(-0.14)	(-6.28)	(-2.22)	(1.12)
Assets > $50bn (q-1)	0.007	-0.188**	-0.039***	-0.005***	0.008	-0.002***	0.135
	(-0.65)	(-2.25)	(-6.13)	(-4.82)	(-1.13)	(-2.82)	(1.01)
Part of MHC (q-1)	0.008***	-0.031*	-0.020***	-0.002***	0.003*	-0.001**	-0.014
	(-3.08)	(-1.96)	(-7.13)	(-8.25)	(-1.81)	(-2.28)	(-0.50)
Deposits/Liabilities (%) (q-1)	-0.000*	-0.002	-0.001***	-0.000**	0.000	0.000	0.002**
	(-1.80)	(-1.40)	(-4.38)	(-2.59)	(-0.46)	(-1.59)	(2.22)
Loans/Assets (%) (q-1)	0.000	-0.001	0.001***	0.000	0.000	0.000	-0.003***
	(-0.68)	(-1.11)	(-8.97)	(-1.43)	(-0.94)	(-0.65)	(-4.17)
Core deposit ratio (%) (q-1)	0.000	-0.002	-0.000***	-0.000***	0.000	-0.000**	0.005***
	(-0.65)	(-1.05)	(-3.20)	(-3.79)	(-0.21)	(-2.42)	(4.44)
Metro location (q-1)	0.002	-0.014	0.013***	0.002***	0.009***	0.001*	-0.008
	(-1.65)	(-0.71)	(-12.11)	(-10.67)	(-5.77)	(-1.78)	(-0.67)
De novo bank (q-1)	-0.002	0.080*	0.044***	0.000	0.005	-0.001	0.240***
	(-0.50)	(-1.84)	(-8.14)	(-0.13)	(-1.07)	(-0.90)	(9.85)
Log deposit rate (q-1)							
Log state per-capita income (q-1)	0.043	0.632	-0.115**	-0.010**	0.044*	-0.009	-1.909***
	(-0.91)	(-1.39)	(-2.46)	(-2.47)	(-1.73)	(-1.17)	(-3.15)
State unemployment rate (q-1)	-0.004***	-0.012	-0.006***	0.000	-0.003	0.000	-0.050**
	(-4.17)	(-0.98)	(-5.31)	(-0.32)	(-1.56)	(-0.30)	(-2.37)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	470234	7684	470414	470414	470308	470308	464557
R^2	0.012	0.063	0.144	0.050	0.003	0.002	0.136

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

Panel F: Banks' Assets 2005–2014

Dependent variable:	Change in… (q, q+4)						
	Log assets	Log loans	Log fixed assets	Log #branches	Log #employees	Log total salaries	Salary per employee
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Financial distress (q-1)	-0.077***	-0.079***	-0.075***	-0.051***	-0.056***	-0.074***	-0.265
	(-14.69)	(-11.48)	(-5.62)	(-8.52)	(-19.17)	(-37.01)	(-1.25)
× Crisis	-0.035***	-0.016**	-0.006	-0.008	-0.018***	-0.034***	-0.751**
	(-4.49)	(-2.57)	(-0.52)	(-1.45)	(-4.55)	(-6.12)	(-2.68)
× TARP	-0.019	-0.003	0.025**	0.001	-0.002	0.033**	1.512***
	(-1.19)	(-0.19)	(2.06)	(0.27)	(-0.33)	(-2.17)	(-3.12)
Lagged dependent variable (q-4,q)	0.178***	0.200***	0.068***	0.013***	0.031***	-0.090***	-0.418**
	(22.63)	(13.46)	(9.18)	(3.03)	(3.32)	(-4.69)	(-2.22)
Log assets (q-1)	-0.001	0.003**	0.000	0.002***	0.003***	0.007***	0.281***
	(-1.21)	(2.05)	(0.27)	(3.85)	(3.36)	(-5.79)	(-2.79)
Assets > $50bn (q-1)	0.007	-0.010	-0.002	-0.043***	-0.021*	-0.036*	-0.785
	(0.47)	(-0.59)	(-0.09)	(-3.35)	(-1.83)	(-1.95)	(-0.70)
Part of MHC (q-1)	0.018***	0.017***	0.024***	0.022***	0.015***	0.022***	0.208**
	(10.46)	(7.32)	(12.09)	(11.22)	(14.31)	(-13.75)	(-2.43)
Deposits/Liabilities (%) (q-1)	0.000**	0.000***	-0.000**	-0.000***	-0.000	0.000	-0.006
	(2.09)	(2.83)	(-2.61)	(-3.99)	(-1.17)	(-0.04)	(-0.52)
Loans/Assets (%) (q-1)	0.001***	-0.001***	0.000***	0.000***	0.000***	0.001**	-0.001
	(4.77)	(-3.87)	(2.99)	(3.34)	(3.46)	(-2.49)	(-0.14)
Core deposit ratio (%) (q-1)	-0.000	-0.000***	-0.001***	-0.001***	-0.001***	-0.001***	-0.016
	(-0.73)	(-3.71)	(-2.89)	(-4.19)	(-3.79)	(-4.49)	(-1.52)
Metro location (q-1)	0.002	0.007***	0.003	0.002	0.002*	0.002	0.156***
	(1.11)	(3.00)	(1.24)	(1.45)	(2.01)	(-1.23)	(-3.59)
De novo bank (q-1)	0.080***	0.086***	0.040***	0.073***	0.086***	0.093***	-0.158
	(9.70)	(8.02)	(3.80)	(7.93)	(7.86)	(-6.34)	(-0.43)
TARP (q-1)						-0.003	-0.818***
						(-0.75)	(-4.44)
Charge-off rate (q+4)	-0.011***	-0.024***					
	(-2.86)	(-4.61)					
Log state per-capita income (q-1)	-0.033	0.040	0.087***	-0.002	-0.009	-0.001	1.379
	(-0.93)	(1.14)	(2.88)	(-0.13)	(-0.27)	(-0.03)	(-0.82)
State unemployment rate (q-1)	-0.007***	-0.006***	-0.010***	-0.007***	-0.003*	-0.006**	-0.167***
	(-4.36)	(-4.71)	(-9.21)	(-6.74)	(-1.74)	(-2.57)	(-4.31)
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	251898	251873	250996	251596	251828	251647	251644
R^2	0.148	0.194	0.027	0.037	0.041	0.041	0.105

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

Panel G: Banks' Liabilities 2005–2014

Dependent variable:	Change in… (q, q+4)			
	Log liabilities	Log deposit rate	Log deposits	Log other liabilities
	(1)	(2)	(3)	(4)
Financial distress (q-1)	-0.096***	-0.028***	-0.095***	-0.206***
	(-17.01)	(-3.05)	(-18.40)	(-12.12)
× Crisis	-0.033***	-0.008	-0.034***	-0.039*
	(-4.14)	(-0.66)	(-4.53)	(-2.02)
× TARP	-0.027*	0.042*	-0.039**	0.160***
	(-1.72)	(1.88)	(-2.21)	(5.69)
Lagged dependent variable (q-4,q)	0.174***	0.049	0.138***	-0.188***
	(23.53)	(1.64)	(9.49)	(-15.68)
Log assets (q-1)	-0.002	-0.008***	-0.005***	0.036***
	(-1.42)	(-3.31)	(-2.75)	(4.69)
Assets > $50bn (q-1)	0.005	-0.117**	0.072*	-0.063
	(0.32)	(-2.53)	(2.00)	(-1.32)
Part of MHC (q-1)	0.015***	-0.007	0.015***	0.013
	(9.10)	(-1.05)	(6.59)	(1.56)
Deposits/Liabilities (%) (q-1)	0.001**	0.001	-0.002***	0.019***
	(2.33)	(1.67)	(-4.82)	(10.71)
Loans/Assets (%) (q-1)	0.001***	0.001**	0.001***	0.000
	(4.68)	(2.70)	(2.81)	(0.30)
Core deposit ratio (%) (q-1)	-0.000	-0.001	0.000	-0.002***
	(-0.17)	(-1.29)	(0.88)	(-4.27)
Metro location (q-1)	0.001	-0.001	-0.000	0.016
	(0.53)	(-0.24)	(-0.05)	(1.55)
De novo bank (q-1)	0.086***	-0.011	0.095***	0.422***
	(8.80)	(-0.98)	(12.22)	(7.45)
TARP (q-1)			0.023	
			(1.57)	
Log deposit rate (q-1)	-0.043	0.117**	-0.055	0.444***
	(-1.23)	(2.35)	(-1.23)	(2.92)
Log state per-capita income (q-1)	-0.008***	-0.008**	-0.007***	-0.037***
	(-5.18)	(-2.68)	(-3.30)	(-5.65)
State unemployment rate (q-1)	-0.008***	-0.008***	-0.006***	-0.037***
	(-4.97)	(-2.74)	(-3.21)	(-5.59)
Quarter FE	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes
N	251933	250209	251532	251880
R^2	0.124	0.600	0.097	0.112

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

Panel H: Banks' Equity 2005–2014

Dependent variable:	Change in… (q, q+4)						
	Log #common shares	Log #preferred shares	#Common shares (dummy)	#Preferred shares (dummy)	Common stock / total equity (q)	Preferred stock / total equity (q)	Log dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Financial distress (q-1)	0.027*	-0.001	0.040***	0.006	0.045**	0.002	-0.305***
	(1.81)	(-0.02)	(-8.77)	(-1.50)	(-2.24)	(-0.55)	(-4.41)
× Crisis	-0.032**	-0.081*	-0.023***	-0.001	-0.012	0.000	-0.117
	(-2.17)	(-1.76)	(-3.10)	(-0.42)	(-0.47)	(-0.11)	(-1.17)
× TARP	0.023**	0.087***	0.009	0.009	0.018	0.012***	-0.050
	(2.43)	(-3.35)	(-1.12)	(-0.53)	(-1.21)	(-3.02)	(-0.23)
Lagged dependent variable (q-4,q)	-0.037***	-0.067	0.408***	0.439***	-0.007	-0.051*	-0.364***
	(-3.78)	(-1.24)	(-49.92)	(-8.89)	(-1.42)	(-1.98)	(-28.63)
Log assets (q-1)	-0.001	-0.017**	-0.004***	-0.002***	-0.003***	-0.000**	0.004
	(-0.90)	(-2.54)	(-3.80)	(-3.11)	(-6.14)	(-2.07)	(0.07)
Assets > $50bn (q-1)	-0.008	-0.083*	-0.027***	0.012	-0.003	0.004	-0.114
	(-0.58)	(-1.89)	(-3.08)	(-1.00)	(-0.65)	(-0.99)	(-0.36)
Part of MHC (q-1)	0.009***	0.033*	0.002	-0.001**	0.006	0.000	-0.011
	(2.82)	(-1.87)	(-1.61)	(-2.30)	(-1.52)	(-0.16)	(-0.35)
Deposits/Liabilities (%) (q-1)	0.000	-0.001	0.000	-0.000***	0.000	0.000	0.004***
	(1.08)	(-0.70)	(-1.17)	(-3.11)	(-0.41)	(-1.57)	(2.98)
Loans/Assets (%) (q-1)	0.000**	-0.001*	0.000***	0.000**	0.000	0.000	0.001
	(2.72)	(-1.99)	(-6.22)	(-2.42)	(-0.88)	(-1.44)	(0.55)
Core deposit ratio (%) (q-1)	0.000	-0.001**	-0.000*	0.000	0.000	0.000	-0.003
	(0.35)	(-2.39)	(-1.98)	(-1.16)	(-0.36)	(-0.74)	(-1.56)
Metro location (q-1)	-0.001	0.004	0.013***	0.002***	0.001	0.000	-0.018
	(-0.92)	(-0.27)	(-11.07)	(-3.34)	(-0.76)	(-0.07)	(-1.14)
De novo bank (q-1)	0.015***	0.017	0.105***	0.022***	0.020***	0.006***	0.343***
	(3.00)	(-1.06)	(-12.48)	(-2.77)	(-3.29)	(-2.93)	(3.31)
TARP (q-1)	-0.003	-0.074***	-0.010***	0.023***	-0.004*	0.001	
	(-0.61)	(-3.40)	(-2.79)	(-3.51)	(-2.02)	(-1.34)	
Log state per-capita income (q-1)	-0.031	0.908***	-0.048***	-0.005	0.003	0.000	-1.124*
	(-0.70)	(-3.66)	(-3.44)	(-0.26)	(-0.32)	(-0.01)	(-1.86)
State unemployment rate (q-1)	-0.002***	0.007	-0.002	0.002*	0.001	0.000	-0.058***
	(-2.98)	(-0.96)	(-1.47)	(-1.86)	(-1.00)	(-1.15)	(-3.98)
Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	249568	4414	251937	251937	251930	251930	250449
R^2	0.005	0.080	0.285	0.223	0.005	0.011	0.141

Table 5. Distressed Banks and Moral Hazard

The table examines aspects of moral hazard by distressed banks. Panel A 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: *log 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. Panel B explores the changes in loans to executives for distressed banks. Standard errors are 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: Proxies of Risk-Taking

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
R^2	0.039	0.040	0.031	0.056	0.081	0.033	0.045	0.056	0.081	0.034	0.045

Table 5. Distressed Banks and Moral Hazard (Cont.)

Panel B: Loans to Executives

Sample period:	1985-1994			2005-2014		
Dependent variable:	Change in… (q, q+4)			Change in… (q, q+4)		
	Log loans to executives	Loans to execs/ total loans (q)	Loans to execs (dummy)	Log loans to executives	Loans to execs/ total loans (q)	Loans to execs (dummy)
	(1)	(2)	(3)	(4)	(5)	(6)
Financial distress (q-1)	-0.199***	-0.045	-0.076***	-0.363***	-0.069	-0.131***
	(-5.46)	(-1.11)	(-17.79)	(-4.26)	(-1.63)	(-6.87)
× Crisis (q-1)	-0.054	-0.028	0.010	0.021	-0.006	-0.003
	(-1.02)	(-0.60)	(1.21)	(-0.25)	(-0.13)	(-0.14)
× TARP				-0.054	0.101	0.035***
				(-0.51)	(-1.67)	(3.73)
Lagged dependent variable (q-4,q)	-0.239***	-0.218***	0.009**	-0.214***	-0.116***	-0.003
	(-12.03)	(-18.67)	(2.38)	(-27.94)	(-9.01)	(-0.77)
Log assets (q-1)	0.064*	0.036**	0.037***	-0.001	0.000	0.021***
	(-1.88)	(-2.63)	(8.07)	(-0.23)	(-0.01)	(6.76)
Assets > $50bn (q-1)	0.099	-0.017	-0.088***	-0.127	0.019	-0.112***
	(-0.65)	(-0.48)	(-6.35)	(-1.32)	(-0.71)	(-5.73)
Part of MHC (q-1)	0.027	0.049	-0.070***	0.012	0.015	-0.021***
	(-0.36)	(-1.11)	(-5.63)	(-1.45)	(-1.09)	(-5.46)
Deposits/Liabilities (%) (q-1)	0.000	-0.001	0.002***	0.000	0.000	0.000
	(-0.13)	(-1.01)	(4.12)	(-0.43)	(-0.45)	(0.91)
Loans/Assets (%) (q-1)	-0.001***	-0.001***	0.003***	0.000	-0.001**	0.002***
	(-3.14)	(-3.20)	(14.84)	(-0.37)	(-2.67)	(14.97)
Core deposit ratio (%) (q-1)	0.004**	0.003***	0.001	-0.001*	0.000	-0.000
	(-2.15)	(-4.15)	(1.70)	(-1.88)	(-0.77)	(-0.64)
Metro location (q-1)	-0.006	-0.037***	-0.036***	-0.008	-0.023**	-0.027***
	(-0.54)	(-5.03)	(-14.05)	(-1.05)	(-2.57)	(-6.35)
De novo bank (q-1)	0.201**	-0.121	0.007	0.159***	-0.599***	0.081***
	(-2.15)	(-1.17)	(0.76)	(-3.35)	(-15.65)	(10.99)
TARP (q-1)				-0.088***	-0.009	-0.007
				(-9.23)	(-0.69)	(-0.76)
Log state per-capita income (q-1)	0.248	1.098***	-0.055	0.242*	0.052	0.107**
	(-1.25)	(-3.95)	(-0.86)	(-1.77)	(-0.54)	(2.40)
State unemployment rate (q-1)	0.025	0.035**	-0.007***	-0.009	0.002	-0.008***
	(-0.92)	(-2.27)	(-2.84)	(-1.38)	(-0.37)	(-3.67)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	470277	470097	431017	251937	251850	260188
R^2	0.125	0.107	0.053	0.05	0.025	0.022

Table 6. Deleveraging and Risk-Taking by Private versus Public Banks

The table explores whether distressed banks deleverage, by whether the bank is held privately or publicly. Panel A presents the results for deleveraging (comparable to Table 3). Panels B, C, D, and E show proxies for risk-taking proxies for the two sample periods (comparable to Table 5, Panels A and B). 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 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: Deleveraging by Public versus Private Banks

Dependent variable:	Change in equity capital ratio (%) (q, q+4)											
Sample period:	1985-1994				2005-2014							
Bank type:	Private Banks		Public Banks		Private Banks				Public Banks			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Financial distress (q-1)	0.718***	0.814***	0.581***	0.586***	0.580***	0.628***	0.579***	0.628***	0.650***	0.628***	0.650***	0.627***
	(6.61)	(7.82)	(7.51)	(7.49)	(11.92)	(15.40)	(11.91)	(15.40)	(2.96)	(3.01)	(2.96)	(3.00)
× Crisis (q-1)	-0.170	-0.176	0.013	0.011	-0.541***	-0.507***	-0.550***	-0.517***	-0.524*	-0.542*	-0.601**	-0.620**
	(-1.18)	(-1.29)	(0.11)	(0.10)	(-5.09)	(-4.70)	(-5.21)	(-4.85)	(-1.94)	(-1.83)	(-2.21)	(-2.09)
× TARP (q-1)							0.423***	0.474***			0.637*	0.643*
							(5.03)	(5.53)			(1.92)	(1.95)
Change in equity capital ratio (%) (q-4, q)		0.076***		0.005		0.054***		0.054***		-0.015		-0.015
		(8.15)		(0.49)		(3.35)		(3.34)		(-0.76)		(-0.79)
Bank-quarter and state-quarter controls	Yes	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	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	408894	408592	59952	59921	230799	230435	230799	230435	20900	20871	20900	20871
R^2	0.117	0.122	0.065	0.065	0.089	0.086	0.089	0.087	0.086	0.083	0.088	0.084

Panel B: Proxies of Risk-Taking, Private Banks 1985–1994

Dependent variable:	Change in… (q, q+4)					
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Log loans to executives	Loans to execs/ total loans (q)	Loans to execs (dummy)
	(1)	(2)	(3)	(4)	(5)	(6)
Financial distress (q-1)	0.810***	0.483***	-0.323***	-0.165***	-0.022	-0.064***
	(16.88)	(7.16)	(-41.25)	(-4.31)	(-0.61)	(-8.47)
× Crisis (q-1)	0.041	-0.002	-0.001	-0.045	-0.071	-0.008
	(0.59)	(-0.04)	(-0.08)	(-0.93)	(-1.55)	(-0.68)
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	408447	410240	410227	410239	410180	410239
R^2	0.037	0.040	0.032	0.049	0.045	0.037

Table 6. Deleveraging and Risk-Taking by Private versus Public Banks (Cont.)

Panel C: Proxies of Risk-Taking, Public Banks 1985–1994

Dependent variable:	Change in… (q, q+4)					
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Log loans to executives	Loans to execs/ total loans (q)	Loans to execs (dummy)
	(1)	(2)	(3)	(4)	(5)	(6)
Financial distress (q-1)	1.132***	0.687***	-0.332***	0.008	-0.065	-0.046**
	(14.16)	(4.79)	(-11.55)	(0.13)	(-0.76)	(-2.22)
× Crisis (q-1)	0.263*	-0.364**	-0.083	-0.247**	0.128	0.013
	(1.77)	(-2.70)	(-1.31)	(-2.49)	(1.25)	(0.37)
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	59890	60174	60170	60170	60115	60170
R^2	0.061	0.074	0.028	0.206	0.138	0.131

Panel D: Proxies of Risk-Taking, Private Banks 2005–2014

Dependent variable:	Change in… (q, q+4)						
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/ Assets (q) (%)	Log loans to executives	Loans to execs/ total loans (q)	Loans to execs (dummy)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Financial distress (q-1)	0.817***	0.264	-0.223***	-7.355***	-0.320***	-0.071*	-0.120***
	(13.54)	(1.00)	(-9.42)	(-9.42)	(-4.15)	(-1.73)	(-6.71)
× Crisis (q-1)	-0.331***	-0.316	-0.080**	-2.998***	0.019	-0.003	-0.017
	(-4.41)	(-0.98)	(-2.67)	(-3.78)	(0.25)	(-0.08)	(-0.90)
× TARP (q-1)	0.203***	-0.915***	-0.340***	1.608**	-0.198**	0.113	0.067***
	(2.86)	(-3.87)	(-11.19)	(2.56)	(-2.12)	(1.15)	(3.41)
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	230726	231005	230998	230961	231005	230956	231005
R^2	0.050	0.072	0.031	0.047	0.004	0.008	0.017

Panel E: Proxies of Risk-Taking, Public Banks 2005–2014

Dependent variable:	Change in… (q, q+4)						
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/ Assets (q) (%)	Log loans to executives	Loans to execs/ total loans (q)	Loans to execs (dummy)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Financial distress (q-1)	1.218***	-0.191	-0.430***	-7.727***	-0.349**	0.022	-0.128**
	(11.90)	(-0.47)	(-3.74)	(-8.83)	(-2.55)	(0.33)	(-2.65)
× Crisis (q-1)	-0.740***	0.405	-0.064	-5.346***	0.075	-0.075	-0.016
	(-5.12)	(0.81)	(-0.66)	(-4.45)	(0.50)	(-0.79)	(-0.34)
× TARP (q-1)	0.625***	-0.207	-0.457***	7.546***	0.131*	0.116**	0.114***
	(2.88)	(-0.94)	(-3.83)	(3.50)	(1.75)	(2.17)	(5.58)
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	20881	20932	20931	20897	20932	20921	20932
R^2	0.122	0.202	0.070	0.059	0.018	0.012	0.039

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.

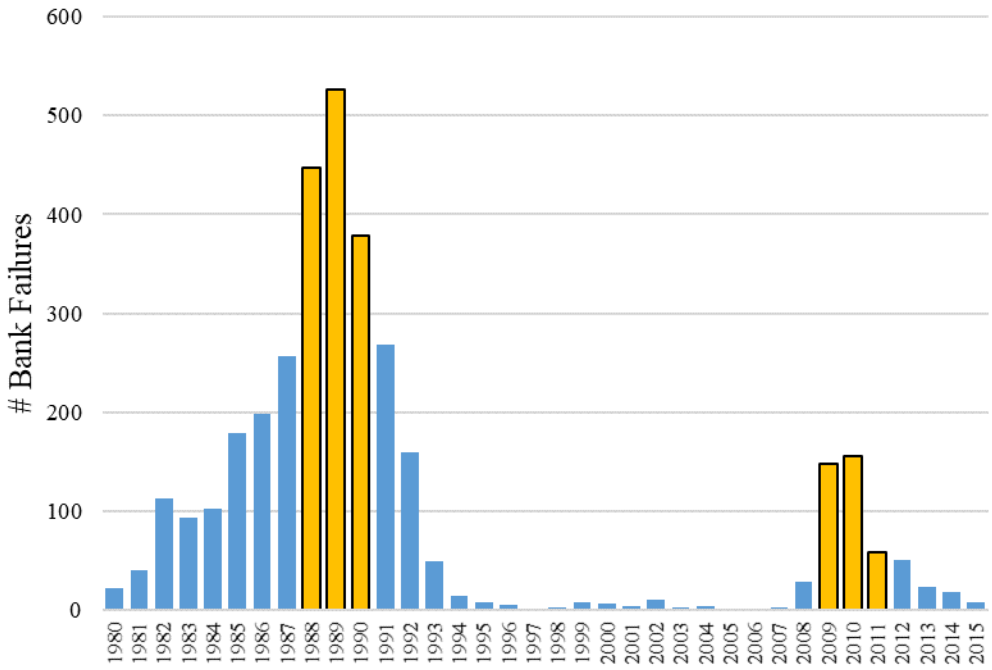


Figure 2. Distressed Banks over Time

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)

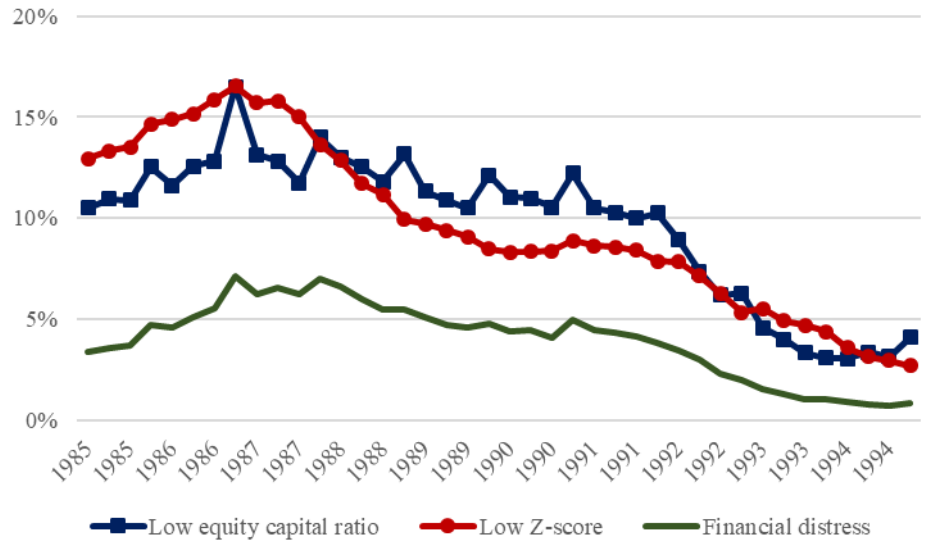


Figure 2b. Fraction of Distressed Banks, by Distress Measure (2005–2014)

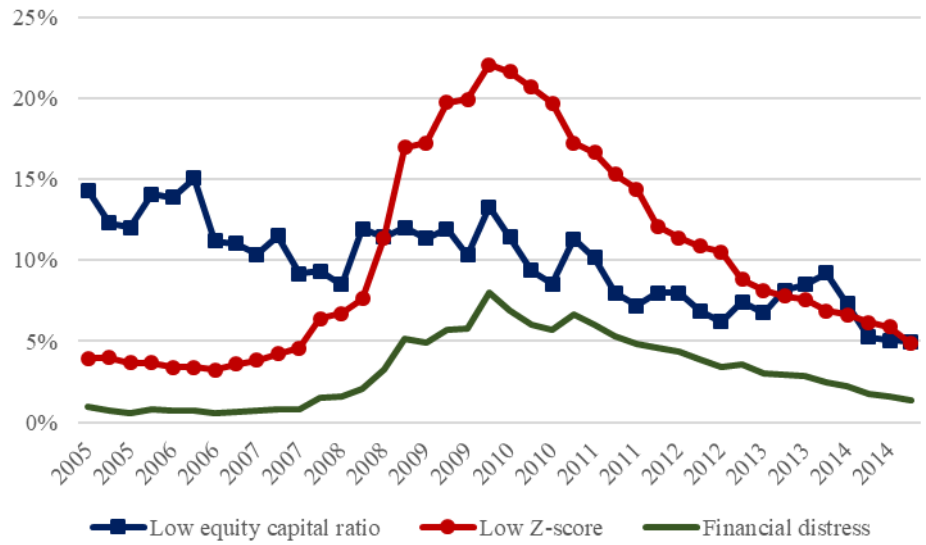


Figure 3. Deleveraging by Distressed Banks over Time

The chart presents the coefficients b_t from the regression:

$$\Delta Equity\ capital\ ratio\ (q, q+4)_{it} = a + b_t\, D_{it} * I(Year)_t + cX_{it} + Quarter\ FE_t + State\ FE_i + e_{it}$$

where D_{it} is a distress indicator (defined as bank-quarter in the bottom decile of equity capital ratio and in the bottom decile of Z-Score), and $I(Year)_t$ represents year dummies. X_{it} represents bank-quarter and state-quarter controls, including lagged $\Delta Equity\ capital\ ratio\ (q, q+4)_{it}$. In addition, there are quarter and state fixed effects. Standard errors are adjusted using the Driscoll-Kraay (1998) procedure for overlapping data. The dashed red line represents the passage of FDICIA (December 1991) in Figure 3a and Dodd-Frank Act (July 2010) in Figure 3b.

Figure 3a. Change of Equity/Assets of Distressed Banks, by Year (1985–1994)

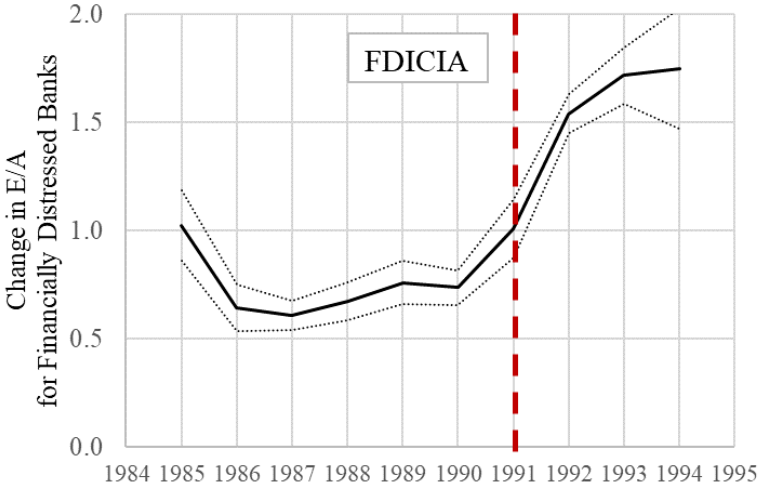
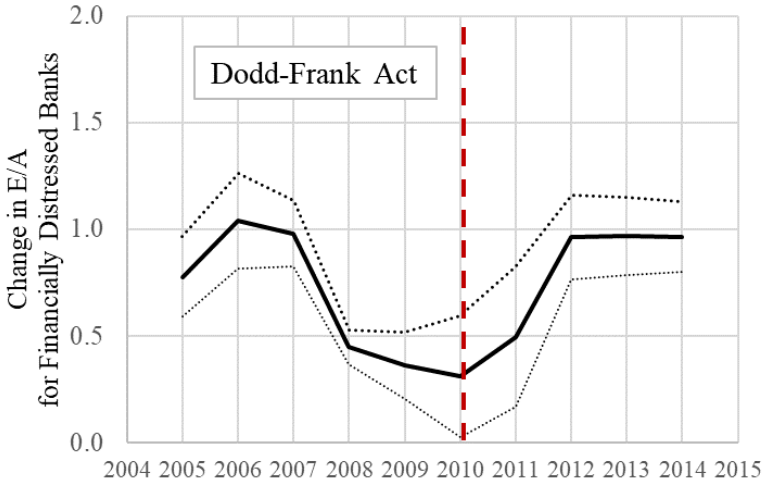


Figure 3b. Change of Equity/Assets of Distressed Banks, by Year (2005–2014)



Distressed Banks, Debt Overhang, and Regulation

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

Internet Appendix

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 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 as *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: Distress Measured as 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

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

Panel C: Distress Measured as *Financial Distress*, 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)
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 contro	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 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 as *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 (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: Distress Measured as 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 (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: Distress Measured as *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 (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: Distress Measured as *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 (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

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

Panel E: Distress Measured as *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: Distress Measured as *Low Equity Capital Ratio*; Dependent Variable is Winsorized

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 (q-1)	0.597***	0.643***	0.535***	0.554***	0.536***	0.554***
	(11.18)	(12.90)	(10.15)	(9.76)	(10.15)	(9.76)
× Crisis (q-1)	-0.056	-0.067	-0.224**	-0.191**	-0.239***	-0.207**
	(-0.75)	(-0.95)	(-2.50)	(-2.27)	(-2.84)	(-2.65)
× TARP (q-1)					0.469***	0.498***
					(3.80)	(4.19)
Change in equity capital ratio (%) (q-4, q)		0.071***		0.054***		0.054***
		(7.93)		(3.30)		(3.30)
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	469202	468675	251986	251351	251986	251351
R^2	0.115	0.119	0.098	0.092	0.098	0.092

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

Panel G: Distress Measured as *Low Z-score*; Dependent Variable is Winsorized

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 (q-1)	0.172**	0.209***	0.078	0.088	0.078	0.088
	(2.31)	(2.89)	(0.91)	(1.09)	(0.91)	(1.09)
× Crisis (q-1)	0.062	0.069	-0.022	-0.010	-0.015	-0.005
	(0.64)	(0.75)	(-0.22)	(-0.10)	(-0.15)	(-0.05)
× TARP (q-1)					-0.127*	-0.090
					(-1.74)	(-1.29)
Change in equity capital ratio (%) (q-4, q)		0.060***		0.044***		0.044***
		(6.23)		(2.75)		(2.75)
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	468846	468513	251699	251306	251699	251306
R^2	0.099	0.102	0.084	0.080	0.084	0.080

Panel H: Distress Measured as *Financial Distress*; Dependent Variable is Winsorized

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)	0.688***	0.775***	0.580***	0.623***	0.580***	0.623***
	(6.42)	(7.53)	(10.70)	(14.30)	(10.70)	(14.30)
× Crisis (q-1)	-0.149	-0.157	-0.529***	-0.496***	-0.547***	-0.516***
	(-1.06)	(-1.18)	(-5.05)	(-4.54)	(-5.42)	(-4.93)
× TARP (q-1)					0.543***	0.585***
					(3.62)	(3.89)
Change in equity capital ratio (%) (q-4, q)		0.071***		0.047***		0.047***
		(7.55)		(2.91)		(2.91)
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	468846	468513	251699	251306	251699	251306
R^2	0.107	0.111	0.086	0.082	0.086	0.082

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

Panel I: Change in Equity Capital Ratio and Bank Characteristics; Sample is Restricted to banks in Financial Distress

Dependent variable:	Change in equity capital ratio (t, t+4)					
Sample period:	1985-1994			2005-2014		
Distressed banks defined by:	Low equity capital ratio	Low Z-score	Financial distress	Low equity capital ratio	Low Z-score	Financial distress
	(1)	(2)	(3)	(4)	(5)	(6)
Log assets (q-1)	-0.130***	0.097***	-0.124***	-0.082**	0.034	-0.151*
	(-12.40)	(5.02)	(-5.48)	(-2.74)	(1.58)	(-1.87)
Assets > $50bn (q-1)	0.022	0.358	-0.061	0.492*	0.453	1.083*
	(0.16)	(1.41)	(-0.21)	(1.77)	(0.97)	(1.85)
Part of MHC (q-1)	-0.039	-0.035	-0.004	0.123	0.209*	0.473*
	(-0.91)	(-0.57)	(-0.05)	(1.08)	(1.76)	(1.87)
Deposits/Liabilities (q-1)	-0.010***	-0.022*	-0.025***	-0.005	-0.002	-0.003
	(-3.74)	(-1.94)	(-2.94)	(-1.41)	(-0.31)	(-0.34)
Loans/Assets (q-1)	-0.013***	-0.015***	-0.023***	-0.005	-0.005	-0.014
	(-6.43)	(-4.90)	(-10.30)	(-1.27)	(-1.11)	(-1.49)
Core deposit ratio (q-1)	0.002	0.011***	0.005*	0.003	0.005	0.004
	(0.90)	(4.59)	(1.91)	(1.59)	(1.34)	(0.76)
Metro location (q-1)	0.058	-0.035	0.126	0.027	-0.160**	-0.105*
	(1.42)	(-0.94)	(1.56)	(0.52)	(-2.08)	(-1.84)
De novo bank (q-1)	0.038	-0.506***	0.022	0.466***	-0.418*	0.783***
	(0.63)	(-8.58)	(0.17)	(3.10)	(-1.92)	(2.90)
TARP (q-1)				0.414***	-0.085	0.255
				(3.87)	(-0.98)	(1.57)
Real estate loan share (q-1)	-0.005***	0.002	-0.005	0.001	0.001	-0.000
	(-3.47)	(1.02)	(-1.70)	(0.33)	(0.20)	(-0.10)
Commercial/industrial loan share (q-1)	-0.003*	-0.004***	-0.003	0.005*	-0.002	0.004
	(-1.99)	(-3.07)	(-1.14)	(1.97)	(-0.65)	(0.57)
Unused commitments/assets (q-1)	0.001	-0.002**	0.000	-0.000	0.000	-0.001
	(1.23)	(-2.48)	(0.16)	(-0.16)	(1.38)	(-1.20)
Trading assets/assets (q-1)	-0.005	-0.011	0.009	-0.009	0.049*	0.030
	(-0.36)	(-0.93)	(0.52)	(-0.98)	(1.77)	(0.55)
Log state per-capita income (q-1)	-0.710	-0.917	0.223	-1.691	-2.238	-0.894
	(-0.69)	(-0.62)	(0.13)	(-1.18)	(-1.09)	(-0.30)
State unemployment rate (q-1)	-0.106***	-0.168***	-0.200***	-0.151***	-0.025	-0.119
	(-5.73)	(-5.35)	(-7.69)	(-3.74)	(-0.40)	(-1.49)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	43151	43567	16511	23881	23630	6623
R^2	0.094	0.079	0.136	0.042	0.044	0.088

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

Panel J: Distress Measured as *Financial Distress*; PCA Banks Excluded

Dependent variable:	Change in equity capital ratio (%) (q, q+1)					
Sample period:	2005-2014					
Distress indicator:	Low equity capital ratio (q-1)		Low Z-score (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 A2. Additional Specifications of Table 3 (Cont.)

Panel K: Distress Measured as *Low Market Equity Capital Ratio*

Dependent variable:	Change in equity capital ratio (%) (q, q+4)					
Sample period:	1985-1994		2005-2014			
	(1)	(2)	(3)	(4)	(5)	(6)
Low market equity capital ratio (1st decile) (q-1)	0.027	0.027	0.067	0.054	0.066	0.053
	(0.83)	(0.82)	(0.82)	(0.67)	(0.79)	(0.64)
× Crisis (q-1)	-0.105	-0.109	-0.386**	-0.407**	-0.355*	-0.383*
	(-1.09)	(-1.13)	(-2.28)	(-2.32)	(-1.86)	(-1.90)
× TARP (q-1)					-0.057	-0.028
					(-0.27)	(-0.13)
Change in equity capital ratio (%) (q-4, q)		-0.017*		-0.023		-0.023
		(-1.75)		(-1.27)		(-1.30)
Log assets (q-1)	0.056***	0.054***	0.060***	0.057***	0.059***	0.055***
	(4.06)	(3.86)	(3.61)	(3.41)	(3.46)	(3.26)
Assets > $50bn (q-1)	0.045	0.048	-0.121	-0.098	-0.124	-0.101
	(0.84)	(0.89)	(-1.21)	(-0.92)	(-1.26)	(-0.96)
Part of MHC (q-1)	0.021	0.024	0.091	0.089	0.090	0.089
	(0.83)	(0.90)	(1.11)	(1.09)	(1.11)	(1.09)
Deposits/Liabilities (%) (q-1)	-0.005*	-0.005*	-0.014***	-0.014***	-0.014***	-0.014***
	(-1.72)	(-1.85)	(-3.40)	(-3.24)	(-3.41)	(-3.24)
Loans/Assets (%) (q-1)	-0.002	-0.002*	-0.000	-0.000	-0.000	-0.000
	(-1.68)	(-1.74)	(-0.16)	(-0.21)	(-0.17)	(-0.22)
Core deposit ratio (%) (q-1)	0.006***	0.006***	0.004***	0.004***	0.004***	0.004***
	(3.79)	(3.65)	(3.16)	(3.24)	(3.19)	(3.29)
Metro location (q-1)	-0.095***	-0.093***	-0.078*	-0.072*	-0.078*	-0.073*
	(-3.96)	(-3.80)	(-1.82)	(-1.75)	(-1.81)	(-1.74)
De novo bank (q-1)	-0.294***	-0.306***	-1.018***	-0.950***	-1.011***	-0.944***
	(-5.05)	(-5.68)	(-4.12)	(-4.14)	(-4.04)	(-4.06)
TARP (q-1)					0.236***	0.231***
					(3.38)	(3.13)
Log state per-capita income (q-1)	-0.363	-0.371	0.253	0.191	0.170	0.107
	(-0.52)	(-0.55)	(0.16)	(0.12)	(0.11)	(0.07)
State unemployment rate (q-1)	-0.017	-0.016	-0.073*	-0.077*	-0.077*	-0.081*
	(-0.84)	(-0.81)	(-1.80)	(-1.92)	(-1.87)	(-1.98)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	55570	55504	20596	20548	20596	20548
R^2	0.055	0.055	0.091	0.086	0.091	0.086

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

Panel L: Distress Measured as *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

Panel M: Distress Measured as *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

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

Panel N: Distress Measured as *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 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 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 as *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: Distress Measured as *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: Distress Measured as *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: Distress Measured as *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

Panel E: Distress Measured as *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

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

Panel F: Distress Measured as *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

Panel G: Distress Measured as *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: Distress Measured as *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: Distress Measured as *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: Distress Measured as *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

Panel K: Distress Measured as *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 A3. Additional Specifications of Table 4 (Cont.)

Panel L: Dependent Variable is Deviation from Past 5-Year Average; 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)	-0.214***	-0.266***	-0.176***	-0.112***	-0.141***	-0.212***	-0.202***	-0.034***	-0.416***	0.004	-0.848***
	(-3.62)	(-4.32)	(-4.02)	(-4.21)	(-5.38)	(-3.61)	(-3.58)	(-3.71)	(-6.33)	(0.18)	(-9.28)
× Crisis	-0.010	0.022	0.025	0.027	-0.025	0.001	0.000	0.030**	0.037	-0.017	-0.527***
	(-0.16)	(0.36)	(0.52)	(0.92)	(-0.97)	(0.02)	(0.01)	(2.69)	(0.45)	(-0.67)	(-3.24)
× TARP	0.067*	0.117***	0.063**	0.054**	0.077***	0.058*	0.038	0.013	0.186***	0.029	0.174
	(1.92)	(3.02)	(2.22)	(2.37)	(4.09)	(1.74)	(1.00)	(0.63)	(2.94)	(1.40)	(0.48)
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	239203	238994	238015	237919	239123	239231	238805	231880	239082	236842	229737
R^2	0.174	0.226	0.068	0.094	0.118	0.150	0.138	0.792	0.144	0.020	0.056

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

Panel M: Distress Measured as *Financial Distress*, with *Future Failure* Controls; 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 Liab	Log Common Shares	Log Dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Financial distress (q-1)	-0.030***	-0.027***	-0.014***	-0.008***	-0.021***	-0.033***	-0.032***	-0.012***	-0.053***	0.005*	-0.169***
	(-16.18)	(-14.02)	(-11.26)	(-8.98)	(-18.60)	(-16.68)	(-13.73)	(-10.92)	(-7.38)	(1.72)	(-5.45)
Failed in 2 quarters	-0.050***	-0.039***	-0.017**	-0.007***	-0.028***	-0.034***	-0.035***	0.007	-0.050*	-0.032***	-0.113
	(-20.11)	(-9.95)	(-2.30)	(-4.32)	(-8.35)	(-16.37)	(-15.38)	(1.65)	(-2.00)	(-3.32)	(-1.46)
Failed in 3 quarters	0.012***	0.017***	-0.002	0.006	0.010**	0.007**	0.007**	0.004	0.039	0.029***	0.007
	(5.31)	(5.02)	(-0.23)	(1.32)	(2.17)	(2.62)	(2.18)	(1.04)	(1.27)	(2.98)	(0.08)
Failed in 4 quarters	0.011***	0.008**	0.012*	0.002	0.004	0.008**	0.009***	-0.004	-0.015	-0.007	0.016
	(3.96)	(2.32)	(1.88)	(0.85)	(0.90)	(2.65)	(2.89)	(-1.41)	(-0.72)	(-1.42)	(0.29)
Failed in 5 quarters	0.000	-0.002	-0.003	-0.005*	-0.003	0.000	0.001	-0.005*	0.020	0.005	-0.031
	(0.09)	(-0.56)	(-0.39)	(-1.83)	(-0.86)	(0.04)	(0.23)	(-1.91)	(0.98)	(1.07)	(-0.70)
Failed in 6 quarters	0.007***	0.010***	0.008	0.002	0.017***	0.005*	0.006*	0.007*	-0.000	0.003	-0.053
	(2.80)	(2.86)	(0.93)	(0.66)	(4.98)	(2.02)	(1.85)	(1.94)	(-0.01)	(0.49)	(-0.84)
Failed in 7 quarters	0.004	0.004	-0.003	-0.000	-0.011**	0.002	0.004	0.007*	-0.014	-0.006	-0.010
	(0.96)	(0.84)	(-0.32)	(-0.08)	(-2.08)	(0.59)	(1.02)	(1.91)	(-0.77)	(-1.19)	(-0.17)
Failed in 8 quarters	0.003	-0.001	-0.005	-0.003	-0.001	0.002	0.001	-0.016***	-0.024	0.003	0.011
	(0.64)	(-0.31)	(-0.46)	(-0.77)	(-0.48)	(0.48)	(0.26)	(-3.22)	(-0.84)	(0.50)	(0.16)
Failed in 9 quarters	-0.000	0.007*	0.013	0.000	0.008**	-0.001	-0.002	0.006*	0.055**	0.009	0.118
	(-0.06)	(1.95)	(1.62)	(0.15)	(2.05)	(-0.20)	(-0.35)	(1.87)	(2.43)	(1.53)	(1.24)
Failed in 10 quarters	0.008**	0.002	-0.022**	0.003	-0.002	0.008**	0.008***	-0.004	-0.027	-0.012**	-0.073
	(2.59)	(0.29)	(-2.65)	(1.12)	(-0.31)	(2.49)	(2.99)	(-0.92)	(-1.36)	(-2.35)	(-0.64)
Failed in 11 quarters	0.004	0.007	0.017	0.005	0.002	0.004	0.004	0.007	0.011	0.013	0.018
	(0.64)	(0.90)	(1.42)	(0.62)	(0.53)	(0.61)	(0.68)	(1.06)	(0.46)	(0.93)	(0.35)
Failed in 12 quarters	-0.005	-0.006	0.004	-0.005	0.003	-0.005	-0.005	-0.004	0.011	-0.006	0.176**
	(-0.92)	(-0.72)	(0.39)	(-0.69)	(0.42)	(-0.89)	(-0.95)	(-0.67)	(0.43)	(-0.43)	(2.15)
Failed in 13 quarters	-0.010**	-0.001	-0.002	-0.008	-0.013***	-0.012***	-0.014***	0.001	0.028	0.017	-0.048
	(-2.69)	(-0.13)	(-0.21)	(-1.55)	(-3.15)	(-2.99)	(-2.75)	(0.24)	(0.90)	(1.35)	(-0.53)
Failed in 14 quarters	0.011	0.010	0.021**	0.010	0.013*	0.012	0.015	0.000	-0.052**	-0.026	-0.185**
	(1.27)	(1.22)	(2.74)	(1.49)	(1.90)	(1.29)	(1.50)	(0.04)	(-2.10)	(-1.56)	(-2.53)
Failed in 15 quarters	-0.000	0.002	-0.032***	-0.005	0.005	-0.003	-0.005	-0.005	0.030	0.016	0.279***
	(-0.06)	(0.36)	(-5.15)	(-1.27)	(1.16)	(-0.40)	(-0.61)	(-1.19)	(0.72)	(1.16)	(3.64)
Failed in 16 quarters	0.006**	-0.010**	0.014***	0.004	-0.001	0.008**	0.007***	-0.001	0.005	-0.004	-0.116
	(2.07)	(-2.37)	(4.19)	(1.48)	(-0.21)	(2.39)	(2.81)	(-0.17)	(0.13)	(-0.66)	(-1.61)
Lagged dependent variable (q-4,q)	-0.048***	0.142***	0.174***	-0.006	-0.156***	-0.057***	-0.067***	-0.428***	-0.343***	-0.210***	-0.643***
	(-6.05)	(10.93)	(12.87)	(-0.72)	(-15.66)	(-6.62)	(-8.79)	(-10.52)	(-52.52)	(-5.28)	(-69.62)
Log assets (q-1)	-0.001***	-0.000	0.000	0.001***	-0.000	-0.001***	-0.003***	-0.004***	0.029***	0.000	0.008
	(-5.02)	(-0.24)	(0.43)	(7.71)	(-0.70)	(-3.91)	(-7.93)	(-7.53)	(13.30)	(1.62)	(1.10)
Assets > $50bn (q-1)	-0.000	-0.005*	-0.004**	-0.003	-0.007***	-0.001	-0.007***	-0.000	0.047***	0.002	0.035
	(-0.04)	(-1.85)	(-2.64)	(-1.67)	(-3.35)	(-0.24)	(-2.77)	(-0.03)	(4.38)	(0.52)	(0.49)
Part of MHC (q-1)	0.003***	0.005***	0.002***	0.003***	-0.003***	0.002***	0.001***	0.003***	0.024***	0.002**	-0.011
	(7.00)	(8.84)	(3.29)	(5.34)	(-3.52)	(4.55)	(2.88)	(5.54)	(9.10)	(2.20)	(-0.44)
Deposits/Liabilities (%) (q-1)	0.000**	0.000***	0.000	-0.000***	-0.000	0.000**	-0.001***	-0.001***	0.016***	-0.000	0.002
	(2.37)	(3.13)	(0.40)	(-3.23)	(-0.97)	(2.67)	(-5.96)	(-3.30)	(24.62)	(-1.10)	(1.50)
Loans/Assets (%) (q-1)	0.000***	-0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	-0.000*	0.000	-0.000
	(10.84)	(-15.43)	(3.15)	(4.65)	(7.46)	(11.86)	(14.49)	(4.99)	(-1.93)	(0.75)	(-0.15)
Core deposit ratio (%) (q-1)	-0.000	-0.000**	-0.000***	-0.000**	-0.000***	-0.000	0.000*	-0.000	-0.002***	-0.000	0.001**
	(-1.05)	(-2.31)	(-4.20)	(-2.68)	(-4.01)	(-1.29)	(1.82)	(-1.53)	(-12.38)	(-0.47)	(2.08)
Metro location (q-1)	0.004***	0.005***	0.003***	0.002***	0.002***	0.004***	0.004***	-0.000	0.011***	0.001	-0.005
	(6.78)	(6.12)	(4.10)	(8.48)	(6.30)	(5.64)	(6.52)	(-0.35)	(3.89)	(1.24)	(-0.57)
De novo bank (q-1)	0.022***	0.025***	0.009***	0.008***	0.024***	0.026***	0.025***	-0.006***	0.061***	0.001	0.085***
	(18.09)	(19.79)	(4.87)	(6.89)	(28.40)	(18.91)	(14.00)	(-3.52)	(15.45)	(0.87)	(3.06)
Log deposit rate (q-1)							0.007**				
							(2.59)				
Charge-off rate (q+4)	-0.000***	-0.001***									
	(-3.39)	(-4.77)									
Log state per-capita income (q-1)	-0.101***	-0.088**	-0.082***	-0.064***	-0.107***	-0.103***	-0.105***	-0.037	-0.152	0.012	-0.557
	(-3.20)	(-2.29)	(-3.72)	(-4.25)	(-4.07)	(-2.98)	(-3.14)	(-1.12)	(-1.38)	(0.94)	(-1.53)
State unemployment rate (q-1)	-0.005***	-0.007***	-0.004***	-0.001***	-0.004***	-0.005***	-0.005***	-0.002**	-0.010***	-0.001***	-0.020
	(-8.35)	(-9.21)	(-5.65)	(-4.04)	(-6.58)	(-8.29)	(-8.37)	(-2.12)	(-3.88)	(-4.15)	(-1.61)
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	487215	487215	485859	487238	487139	487255	486438	485372	486515	487118	480824
R^2	0.046	0.059	0.015	0.005	0.020	0.032	0.033	0.201	0.143	0.003	0.437

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

Panel N: Distress Measured as *Financial Distress*, with *Future Failure* Controls; 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 Liab	Log Common Shares	Log Dividends
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Financial distress (q-1)	-0.029***	-0.016***	-0.018***	-0.014***	-0.022***	-0.037***	-0.035***	-0.006***	-0.072***	0.001	-0.175***
	(-9.47)	(-4.19)	(-8.93)	(-9.87)	(-10.86)	(-15.95)	(-17.29)	(-2.94)	(-8.37)	(0.24)	(-4.62)
Failed in 2 quarters	-0.022***	-0.005	-0.024***	-0.005	-0.031***	-0.012***	-0.014***	0.009*	-0.067***	-0.022	-0.035
	(-4.33)	(-0.96)	(-4.20)	(-0.94)	(-4.37)	(-3.84)	(-6.90)	(2.01)	(-2.75)	(-1.49)	(-0.37)
Failed in 3 quarters	0.003	-0.010	0.018***	-0.005	0.006	0.000	0.005	-0.002	0.041	0.017	-0.175*
	(0.54)	(-1.65)	(3.14)	(-0.94)	(0.94)	(0.09)	(1.02)	(-0.31)	(1.19)	(1.06)	(-2.01)
Failed in 4 quarters	0.004	0.002	-0.016**	0.003	-0.006	0.002	0.002	-0.004	-0.010	-0.000	-0.031
	(1.08)	(0.45)	(-2.06)	(0.63)	(-1.00)	(0.35)	(0.46)	(-0.89)	(-0.50)	(-0.07)	(-0.37)
Failed in 5 quarters	0.004	0.002	0.012	0.003	0.009	0.004	-0.000	0.010***	0.012	-0.006	-0.121**
	(1.06)	(0.55)	(1.56)	(0.50)	(1.67)	(0.95)	(-0.04)	(2.94)	(0.50)	(-0.82)	(-2.54)
Failed in 6 quarters	0.006	0.006	0.001	-0.001	0.005	0.004	0.002	0.002	0.011	0.017	-0.049
	(0.98)	(1.12)	(0.18)	(-0.16)	(0.74)	(0.65)	(0.52)	(0.53)	(0.44)	(1.17)	(-0.61)
Failed in 7 quarters	-0.002	0.000	0.001	0.001	0.001	-0.003	-0.007	-0.002	0.024	-0.012	0.306*
	(-0.34)	(0.09)	(0.13)	(0.12)	(0.08)	(-0.51)	(-1.42)	(-0.41)	(0.68)	(-1.49)	(1.96)
Failed in 8 quarters	0.011	0.019	0.024	0.001	0.020**	0.011	0.016*	-0.008*	0.035	0.005	0.245**
	(1.58)	(1.37)	(1.41)	(0.18)	(2.10)	(1.47)	(1.97)	(-2.01)	(0.91)	(1.01)	(2.13)
Failed in 9 quarters	-0.006*	-0.017*	-0.012	0.000	-0.016	-0.008**	-0.010	0.006	-0.042	-0.002	-0.249*
	(-1.93)	(-1.73)	(-0.75)	(0.04)	(-1.56)	(-2.35)	(-1.45)	(0.65)	(-1.13)	(-0.35)	(-2.05)
Failed in 10 quarters	0.001	0.009**	-0.015*	-0.011*	0.012*	-0.000	-0.001	-0.006	0.008	-0.018	-0.261**
	(0.33)	(2.34)	(-1.72)	(-1.89)	(1.91)	(-0.03)	(-0.30)	(-1.14)	(0.27)	(-0.98)	(-2.25)
Failed in 11 quarters	0.012	0.001	0.033	0.022***	0.013	0.011	0.008	0.006	0.017	0.020	0.409*
	(1.39)	(0.19)	(1.64)	(2.94)	(1.56)	(1.27)	(0.98)	(0.83)	(0.83)	(0.99)	(2.01)
Failed in 12 quarters	-0.005	-0.003	-0.027	-0.004	-0.011	-0.008	-0.000	-0.008*	-0.025	0.004	0.061
	(-0.62)	(-0.42)	(-1.49)	(-0.62)	(-1.27)	(-0.80)	(-0.07)	(-1.91)	(-0.80)	(0.21)	(0.72)
Failed in 13 quarters	0.004	0.001	0.017**	-0.004	-0.001	0.007	0.008	-0.001	0.013	-0.011	-0.114
	(0.97)	(0.12)	(2.25)	(-0.58)	(-0.22)	(1.24)	(1.34)	(-0.39)	(0.50)	(-0.77)	(-0.74)
Failed in 14 quarters	0.000	0.001	-0.004	-0.003	0.008*	-0.000	-0.001	-0.005	0.013	0.006	0.096
	(0.08)	(0.22)	(-0.47)	(-0.72)	(1.98)	(-0.02)	(-0.10)	(-0.78)	(0.46)	(0.39)	(0.84)
Failed in 15 quarters	0.012	0.008	0.017	0.010	0.008	0.012	0.013*	0.017	0.043	0.019	-0.061
	(1.68)	(1.55)	(1.59)	(1.24)	(1.10)	(1.66)	(1.75)	(1.43)	(1.11)	(1.13)	(-0.63)
Failed in 16 quarters	-0.010**	-0.003	-0.015	-0.000	-0.009	-0.011**	-0.008*	-0.010	-0.061*	-0.015	-0.007
	(-2.70)	(-0.79)	(-1.62)	(-0.02)	(-1.60)	(-2.60)	(-1.87)	(-1.31)	(-1.91)	(-1.51)	(-0.07)
Lagged dependent variable (q-4,q)	0.006	0.167***	0.231***	0.003	-0.088***	0.000	-0.025	-0.021	-0.323***	-0.262***	-0.586***
	(0.39)	(8.39)	(23.75)	(0.72)	(-12.17)	(0.02)	(-1.42)	(-0.82)	(-21.66)	(-3.02)	(-46.29)
Log assets (q-1)	0.000	0.002***	-0.000	0.001***	0.001***	-0.000	-0.002***	-0.004***	0.017***	-0.000	0.003
	(0.05)	(7.67)	(-0.34)	(4.29)	(6.85)	(-0.97)	(-3.38)	(-4.69)	(5.89)	(-0.24)	(0.18)
Assets > $50bn (q-1)	0.000	-0.007	0.000	-0.011**	-0.009**	-0.000	0.014	-0.028**	-0.010	-0.003	-0.036
	(0.10)	(-1.30)	(0.04)	(-2.42)	(-2.14)	(-0.03)	(1.43)	(-2.28)	(-0.47)	(-0.72)	(-0.27)
Part of MHC (q-1)	0.005***	0.004***	0.006***	0.005***	0.003***	0.004***	0.003***	0.003	0.006	0.002***	-0.008
	(10.32)	(5.76)	(7.42)	(7.77)	(7.35)	(6.69)	(5.38)	(1.46)	(1.55)	(3.47)	(-0.51)
Deposits/Liabilities (%) (q-1)	0.000	0.000***	-0.000***	-0.000***	-0.000	0.000	-0.001***	-0.000	0.009***	0.000	0.001*
	(1.45)	(6.10)	(-2.78)	(-4.66)	(-1.22)	(1.46)	(-6.48)	(-1.49)	(11.79)	(0.82)	(1.73)
Loans/Assets (%) (q-1)	0.000***	-0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	0.000***	-0.000	0.000*	0.001
	(6.17)	(-3.88)	(3.17)	(3.82)	(4.14)	(6.34)	(4.73)	(3.12)	(-0.14)	(1.96)	(0.80)
Core deposit ratio (%) (q-1)	-0.000**	-0.000***	-0.000***	-0.000***	-0.000***	-0.000**	-0.000	-0.000*	-0.001***	0.000	-0.001
	(-2.64)	(-8.81)	(-2.97)	(-5.39)	(-5.11)	(-2.09)	(-0.13)	(-1.90)	(-5.52)	(1.25)	(-0.82)
Metro location (q-1)	0.001	0.002***	0.001	0.000	0.001	0.000	-0.000	-0.000	0.006	-0.000	-0.001
	(0.85)	(3.83)	(1.27)	(0.70)	(1.65)	(0.32)	(-0.31)	(-0.12)	(1.47)	(-0.19)	(-0.15)
De novo bank (q-1)	0.036***	0.038***	0.012***	0.019***	0.028***	0.042***	0.043***	-0.003	0.122***	0.004***	0.107**
	(11.87)	(12.18)	(5.48)	(8.19)	(7.71)	(11.11)	(11.67)	(-0.98)	(6.02)	(3.60)	(2.63)
TARP (q-1)	-0.003*	-0.001	-0.003***	-0.002**	-0.001	-0.005***	0.000	-0.013***	-0.021*	-0.005**	-0.058
	(-2.00)	(-0.49)	(-3.31)	(-2.63)	(-1.29)	(-3.20)	(0.01)	(-4.79)	(-1.80)	(-2.61)	(-0.85)
Log deposit rate (q-1)							0.004				
							(0.88)				
Charge-off rate (q+4)	-0.005**	-0.014***									
	(-2.46)	(-6.66)									
Log state per-capita income (q-1)	0.010	0.006	0.019**	-0.004	-0.006	0.012	0.013	0.010	0.025	-0.017	-0.448*
	(0.83)	(0.45)	(2.58)	(-0.94)	(-0.86)	(0.86)	(0.82)	(0.77)	(0.21)	(-1.48)	(-1.73)
State unemployment rate (q-1)	-0.002**	-0.001***	-0.002***	-0.002***	-0.002***	-0.002***	-0.002*	-0.003**	-0.011***	-0.000	-0.025***
	(-2.72)	(-3.48)	(-6.33)	(-6.78)	(-3.81)	(-2.97)	(-1.98)	(-2.36)	(-2.88)	(-1.23)	(-2.84)
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	259889	259889	259090	259885	259810	259904	259432	258447	259870	257676	258290
R^2	0.057	0.112	0.029	0.011	0.020	0.041	0.039	0.302	0.111	0.001	0.340

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 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 as *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 (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
R^2	0.021	0.037	0.014	0.047	0.081	0.022	0.043	0.048	0.081	0.023	0.044

Panel B: Distress Measured as *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 (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
R^2	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: Distress Measured as *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 (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: Distress Measured as *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 (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: Distress Measured as *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: Distress Measured as *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	RWA/ Assets (q) (%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Low equity capital ratio (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: Distress Measured as *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 (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: Distress Measured as *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: Distress Measured as *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	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 equity capital ratio (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: Distress Measured as *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 (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

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

Panel K: Distress Measured as *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 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	0.076	0.077	0.058	0.126	0.149	0.064	0.057	0.127	0.149	0.065	0.057

Panel L: Distress Measured as *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	-0.032	-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
R^2	0.054	0.083	0.028	0.042

Internet Appendix Table A5. Full Specifications of Table 6

Panel A: Deleveraging by Public versus Private Banks

Dependent variable:	Change in equity capital ratio (%) (q, q+4)											
Sample period:	1985-1994				2005-2014							
Bank type:	Private Banks		Public Banks		Private Banks				Public Banks			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Financial distress (q-1)	0.718***	0.814***	0.581***	0.586***	0.580***	0.628***	0.579***	0.628***	0.650***	0.628***	0.650***	0.627***
	(6.61)	(7.82)	(7.51)	(7.49)	(11.92)	(15.40)	(11.91)	(15.40)	(2.96)	(3.01)	(2.96)	(3.00)
× Crisis (q-1)	-0.170	-0.176	0.013	0.011	-0.541***	-0.507***	-0.550***	-0.517***	-0.524*	-0.542*	-0.601**	-0.620**
	(-1.18)	(-1.29)	(0.11)	(0.10)	(-5.09)	(-4.70)	(-5.21)	(-4.85)	(-1.94)	(-1.83)	(-2.21)	(-2.09)
× TARP (q-1)							0.423***	0.474***			0.637*	0.643*
							(5.03)	(5.53)			(1.92)	(1.95)
Change in equity capital ratio (%) (q-4, q)		0.076***		0.005		0.054***		0.054***		-0.015		-0.015
		(8.15)		(0.49)		(3.35)		(3.34)		(-0.76)		(-0.79)
Log assets (q-1)	0.124***	0.114***	0.055***	0.053***	0.083***	0.076***	0.083***	0.076***	0.062***	0.061***	0.060***	0.059***
	(12.80)	(12.65)	(3.65)	(3.53)	(5.15)	(5.38)	(5.13)	(5.34)	(3.71)	(3.57)	(3.61)	(3.45)
Assets > $50bn (q-1)	-0.351**	-0.369**	0.040	0.040	-0.361**	-0.345**	-0.363**	-0.347**	-0.128	-0.119	-0.134	-0.125
	(-2.27)	(-2.56)	(0.75)	(0.77)	(-2.44)	(-2.34)	(-2.44)	(-2.35)	(-1.43)	(-1.26)	(-1.54)	(-1.37)
Part of MHC (q-1)	-0.053***	-0.049***	0.045	0.046	0.048***	0.046***	0.048***	0.047***	0.107	0.107	0.105	0.105
	(-3.13)	(-2.89)	(1.09)	(1.12)	(2.99)	(2.89)	(2.97)	(2.86)	(1.32)	(1.31)	(1.30)	(1.29)
Deposits/Liabilities (%) (q-1)	-0.004**	-0.004**	-0.004	-0.004	-0.005*	-0.005*	-0.005*	-0.005*	-0.013***	-0.013***	-0.013***	-0.013***
	(-2.25)	(-2.59)	(-1.57)	(-1.67)	(-1.88)	(-1.96)	(-1.88)	(-1.96)	(-3.38)	(-3.29)	(-3.38)	(-3.30)
Loans/Assets (%) (q-1)	-0.009***	-0.009***	-0.002	-0.002*	-0.002	-0.002	-0.002	-0.002	-0.000	-0.000	-0.000	-0.000
	(-5.51)	(-5.71)	(-1.58)	(-1.74)	(-0.82)	(-1.00)	(-0.82)	(-1.00)	(-0.02)	(-0.05)	(-0.02)	(-0.05)
Core deposit ratio (%) (q-1)	0.007***	0.006***	0.007***	0.007***	0.001	0.001	0.001	0.001	0.004***	0.004***	0.004***	0.004***
	(4.99)	(3.90)	(4.70)	(4.47)	(1.35)	(0.77)	(1.34)	(0.74)	(3.21)	(3.30)	(3.21)	(3.31)
Metro location (q-1)	-0.060***	-0.053***	-0.095***	-0.093***	-0.048*	-0.043*	-0.048*	-0.043*	-0.074*	-0.073*	-0.074*	-0.073*
	(-7.25)	(-6.70)	(-4.30)	(-4.27)	(-1.83)	(-1.74)	(-1.82)	(-1.73)	(-1.95)	(-1.95)	(-1.92)	(-1.91)
De novo bank (q-1)	-0.824***	-0.663***	-0.379***	-0.367***	-1.106***	-0.895***	-1.106***	-0.894***	-0.998***	-0.950***	-0.988***	-0.940***
	(-27.95)	(-24.05)	(-4.80)	(-5.24)	(-6.49)	(-6.81)	(-6.49)	(-6.80)	(-4.46)	(-4.47)	(-4.34)	(-4.35)
TARP (q-1)							-0.077*	-0.118**			0.220***	0.221***
							(-1.89)	(-2.67)			(2.90)	(2.83)
Log state per-capita income (q-1)	-1.297**	-1.253**	-0.731	-0.718	0.653	0.705	0.656	0.710	0.206	0.175	0.107	0.075
	(-2.21)	(-2.19)	(-1.16)	(-1.18)	(1.22)	(1.37)	(1.23)	(1.39)	(0.13)	(0.11)	(0.07)	(0.05)
State unemployment rate (q-1)	-0.072***	-0.071***	-0.024	-0.023	-0.007	-0.006	-0.007	-0.006	-0.083*	-0.086*	-0.086*	-0.089*
	(-5.09)	(-5.27)	(-1.25)	(-1.24)	(-0.21)	(-0.20)	(-0.21)	(-0.18)	(-1.91)	(-2.00)	(-1.94)	(-2.02)
Quarter fixed effects	Yes	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	Yes
N	408894	408592	59952	59921	230799	230435	230799	230435	20900	20871	20900	20871
R^2	0.117	0.122	0.065	0.065	0.089	0.086	0.089	0.087	0.086	0.083	0.088	0.084

Internet Appendix Table A5. Full Specifications of Table 6 (Cont.)

Panel B: Proxies of Risk-Taking, Private Banks 1985–1994

Dependent variable:	Change in… (q, q+4)					
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Log loans to executives	Loans to execs/ total loans (q)	Loans to execs (dummy)
	(1)	(2)	(3)	(4)	(5)	(6)
Financial distress (q-1)	0.810***	0.483***	-0.323***	-0.165***	-0.022	-0.064***
	(16.88)	(7.16)	(-41.25)	(-4.31)	(-0.61)	(-8.47)
× Crisis (q-1)	0.041	-0.002	-0.001	-0.045	-0.071	-0.008
	(0.59)	(-0.04)	(-0.08)	(-0.93)	(-1.55)	(-0.68)
Log assets (q-1)	-0.014***	-0.007	0.006***	0.035*	0.027**	0.032***
	(-2.98)	(-1.22)	(4.88)	(1.72)	(2.11)	(7.44)
Assets > $50bn (q-1)	0.258	0.355*	-0.148***	0.085	0.081	-0.033
	(1.18)	(1.82)	(-3.74)	(0.14)	(0.77)	(-0.40)
Part of MHC (q-1)	0.011	0.020	-0.009	0.022	0.024	-0.039***
	(0.97)	(0.89)	(-1.63)	(0.49)	(0.76)	(-3.76)
Deposits/Liabilities (%) (q-1)	0.003***	0.001	-0.001	0.002	-0.000	0.003***
	(2.88)	(0.76)	(-1.53)	(1.05)	(-0.28)	(8.82)
Loans/Assets (%) (q-1)	-0.005***	-0.005***	0.002***	-0.002***	-0.001*	0.001***
	(-4.72)	(-4.16)	(4.76)	(-5.70)	(-1.89)	(9.84)
Core deposit ratio (%) (q-1)	0.006***	0.013***	-0.002***	0.002**	0.002***	0.001***
	(6.14)	(5.13)	(-3.79)	(2.26)	(2.99)	(3.31)
Metro location (q-1)	-0.019	-0.018	0.005	-0.007	-0.037***	-0.030***
	(-1.51)	(-0.78)	(1.36)	(-0.67)	(-4.15)	(-10.81)
De novo bank (q-1)	-0.048***	-0.197***	0.012	0.117	-0.068	0.009
	(-3.65)	(-8.25)	(1.57)	(1.41)	(-0.66)	(0.85)
Log state per-capita income (q-1)	-1.647***	-4.234***	0.484***	0.125	1.002***	-0.188***
	(-3.18)	(-3.66)	(3.46)	(0.93)	(3.25)	(-3.39)
State unemployment rate (q-1)	-0.031***	-0.035	0.012***	0.015	0.032	-0.008***
	(-3.25)	(-1.47)	(3.17)	(0.72)	(1.68)	(-3.07)
	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	408447	410240	410227	410239	410180	410239
R^2	0.037	0.040	0.032	0.049	0.045	0.037

Internet Appendix Table A5. Full Specifications of Table 6 (Cont.)

Panel C: Proxies of Risk-Taking, Public Banks 1985–1994

Dependent variable:	Change in… (q, q+4)					
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	Log loans to executives	Loans to execs/ total loans (q)	Loans to execs (dummy)
	(1)	(2)	(3)	(4)	(5)	(6)
Financial distress (q-1)	0.810***	0.483***	-0.323***	-0.165***	-0.022	-0.064***
	(16.88)	(7.16)	(-41.25)	(-4.31)	(-0.61)	(-8.47)
× Crisis (q-1)	0.041	-0.002	-0.001	-0.045	-0.071	-0.008
	(0.59)	(-0.04)	(-0.08)	(-0.93)	(-1.55)	(-0.68)
Log assets (q-1)	-0.002	0.010	0.007	0.062	0.016*	0.042***
	(-0.12)	(0.71)	(0.89)	(1.46)	(1.85)	(13.11)
Assets > $50bn (q-1)	0.055	0.098***	-0.008	-0.059	-0.055	-0.076***
	(1.35)	(2.79)	(-0.62)	(-0.75)	(-1.68)	(-5.64)
Part of MHC (q-1)	-0.050***	-0.046	0.014	0.064	0.055**	-0.043*
	(-3.06)	(-1.44)	(1.22)	(0.58)	(2.43)	(-1.86)
Deposits/Liabilities (%) (q-1)	0.005***	0.003*	-0.000	-0.003	-0.003	0.002***
	(4.73)	(1.96)	(-0.22)	(-1.56)	(-1.50)	(3.12)
Loans/Assets (%) (q-1)	-0.004***	-0.004***	0.001***	0.000	-0.002	0.002***
	(-4.51)	(-3.03)	(3.46)	(0.23)	(-1.05)	(7.13)
Core deposit ratio (%) (q-1)	0.007***	0.010***	-0.001*	0.004	0.001	0.002***
	(3.82)	(4.08)	(-1.82)	(1.26)	(1.34)	(3.57)
Metro location (q-1)	-0.011	-0.041	-0.003	0.027	0.037	-0.036***
	(-0.46)	(-1.43)	(-0.42)	(0.63)	(1.12)	(-6.71)
De novo bank (q-1)	0.107**	-0.012	-0.001	0.244***	-0.032	0.008
	(2.59)	(-0.36)	(-0.08)	(4.33)	(-0.71)	(0.58)
Log state per-capita income (q-1)	-2.145**	-3.904***	0.266	-0.869	-0.350	-0.011
	(-2.13)	(-2.96)	(1.10)	(-0.86)	(-0.44)	(-0.05)
State unemployment rate (q-1)	-0.009	0.039	0.015**	-0.031	-0.047**	-0.012***
	(-0.65)	(1.09)	(2.67)	(-1.64)	(-2.09)	(-3.07)
	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	408447	410240	410227	410239	410180	410239
R^2	0.037	0.040	0.032	0.049	0.045	0.037

Internet Appendix Table A5. Full Specifications of Table 6 (Cont.)

Panel D: Proxies of Risk-Taking, Private Banks 2005–2014

Dependent variable:	Change in… (q, q+4)						
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/ Assets (q) (%)	Log loans to executives	Loans to execs/ total loans (q)	Loans to execs (dummy)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Financial distress (q-1)	0.817***	0.264	-0.223***	-7.355***	-0.320***	-0.071*	-0.120***
	(13.54)	(1.00)	(-9.42)	(-9.42)	(-4.15)	(-1.73)	(-6.71)
× Crisis (q-1)	-0.331***	-0.316	-0.080**	-2.998***	0.019	-0.003	-0.017
	(-4.41)	(-0.98)	(-2.67)	(-3.78)	(0.25)	(-0.08)	(-0.90)
× TARP (q-1)	0.203***	-0.915***	-0.340***	1.608**	-0.198**	0.113	0.067***
	(2.86)	(-3.87)	(-11.19)	(2.56)	(-2.12)	(1.15)	(3.41)
Log assets (q-1)	-0.001	-0.034	0.002	0.051	0.000	0.001	0.021***
	(-0.08)	(-1.50)	(1.46)	(0.20)	(0.04)	(0.24)	(7.44)
Assets > $50bn (q-1)	0.043	0.260	-0.015	-3.220	-0.299	0.015	-0.040
	(0.37)	(1.66)	(-0.50)	(-1.44)	(-1.58)	(0.43)	(-0.95)
Part of MHC (q-1)	0.019*	0.020**	-0.003	2.300***	0.017*	0.021*	-0.016***
	(1.83)	(2.21)	(-1.11)	(11.86)	(1.77)	(1.79)	(-4.24)
Deposits/Liabilities (%) (q-1)	0.004**	0.003**	-0.001	0.014	-0.000	-0.000	0.001***
	(2.39)	(2.53)	(-1.68)	(0.92)	(-0.12)	(-0.26)	(3.84)
Loans/Assets (%) (q-1)	-0.002*	-0.004*	0.000**	0.043*	-0.000	-0.001**	0.001***
	(-1.85)	(-1.97)	(2.41)	(1.94)	(-1.02)	(-2.39)	(7.80)
Core deposit ratio (%) (q-1)	0.002**	0.007***	-0.000	-0.057***	-0.001	0.000	-0.000
	(2.17)	(6.86)	(-1.50)	(-3.63)	(-1.38)	(0.64)	(-0.90)
Metro location (q-1)	-0.020	-0.023	0.008	0.562*	-0.007	-0.022**	-0.027***
	(-1.65)	(-0.63)	(1.47)	(1.85)	(-0.83)	(-2.38)	(-6.51)
De novo bank (q-1)	0.050	-0.232***	-0.017	14.558***	0.091**	-0.506***	0.071***
	(0.95)	(-3.61)	(-1.60)	(10.72)	(2.34)	(-13.06)	(6.01)
TARP (q-1)	-0.012	-0.248***	0.025***	-3.136***	-0.086***	-0.001	-0.033***
	(-0.39)	(-4.17)	(3.04)	(-6.17)	(-8.20)	(-0.10)	(-4.30)
Log state per-capita income (q-1)	-0.323	-2.616***	0.122	8.196**	0.205	0.083	0.071
	(-0.78)	(-3.38)	(1.21)	(2.34)	(1.53)	(0.75)	(1.35)
State unemployment rate (q-1)	-0.001	-0.013	0.002	-0.915***	-0.007	0.001	-0.008***
	(-0.06)	(-0.46)	(0.52)	(-5.84)	(-0.95)	(0.22)	(-3.12)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	230726	231005	230998	230961	231005	230956	231005
R^2	0.050	0.072	0.031	0.047	0.004	0.008	0.017

Internet Appendix Table A5. Full Specifications of Table 6 (Cont.)

Panel E: Proxies of Risk-Taking, Public Banks 2005–2014

Dependent variable:	Change in… (q, q+4)						
	Log Z-score	Performing-loan ratio (%)	Earnings volatility	RWA/ Assets (q) (%)	Log loans to executives	Loans to execs/ total loans (q)	Loans to execs (dummy)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Financial distress (q-1)	0.817***	0.264	-0.223***	-7.355***	-0.320***	-0.071*	-0.120***
	(13.54)	(1.00)	(-9.42)	(-9.42)	(-4.15)	(-1.73)	(-6.71)
× Crisis (q-1)	-0.331***	-0.316	-0.080**	-2.998***	0.019	-0.003	-0.017
	(-4.41)	(-0.98)	(-2.67)	(-3.78)	(0.25)	(-0.08)	(-0.90)
× TARP (q-1)	0.203***	-0.915***	-0.340***	1.608**	-0.198**	0.113	0.067***
	(2.86)	(-3.87)	(-11.19)	(2.56)	(-2.12)	(1.15)	(3.41)
Log assets (q-1)	0.006	-0.013	0.001	-0.151	-0.001	0.018**	0.007
	(0.19)	(-0.44)	(0.09)	(-0.53)	(-0.12)	(2.28)	(1.41)
Assets > $50bn (q-1)	0.078	0.232*	-0.007	-3.105	-0.026	-0.017	-0.078***
	(0.88)	(1.95)	(-0.16)	(-1.28)	(-0.33)	(-1.04)	(-3.50)
Part of MHC (q-1)	0.075***	0.041	-0.014	2.698***	0.009	-0.007	0.029**
	(3.80)	(0.69)	(-1.31)	(3.37)	(0.43)	(-0.16)	(2.39)
Deposits/Liabilities (%) (q-1)	0.004**	-0.004	-0.000	-0.016	-0.001	-0.001	0.001
	(2.15)	(-1.20)	(-0.16)	(-0.49)	(-0.73)	(-0.66)	(1.31)
Loans/Assets (%) (q-1)	-0.002*	-0.005*	-0.000	0.064***	-0.000	0.001	0.000
	(-1.81)	(-1.74)	(-0.21)	(2.79)	(-0.04)	(1.34)	(0.94)
Core deposit ratio (%) (q-1)	0.004***	0.012***	-0.001*	-0.068***	-0.001	-0.001	0.001
	(3.61)	(4.63)	(-1.95)	(-2.90)	(-0.54)	(-0.64)	(1.45)
Metro location (q-1)	-0.050***	-0.122**	0.020**	0.105	-0.025	-0.021	0.013
	(-3.05)	(-2.11)	(2.30)	(0.14)	(-1.25)	(-0.63)	(0.80)
De novo bank (q-1)	0.029	-0.047	0.001	10.074***	0.160**	-0.276***	-0.020
	(0.32)	(-0.81)	(0.03)	(5.84)	(2.45)	(-2.90)	(-0.76)
TARP (q-1)	0.409***	0.173	-0.195***	-3.189**	0.008	0.020	-0.045***
	(7.37)	(1.36)	(-3.71)	(-2.23)	(0.56)	(0.65)	(-4.03)
Log state per-capita income (q-1)	-1.180	-3.820	0.662	-15.583	1.736**	-0.313	0.296
	(-0.84)	(-1.66)	(1.32)	(-1.22)	(2.11)	(-0.83)	(0.87)
State unemployment rate (q-1)	-0.033	-0.028	0.014	-1.193**	0.020	-0.007	-0.010
	(-0.82)	(-0.70)	(0.76)	(-2.50)	(1.07)	(-0.87)	(-1.21)
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	230726	231005	230998	230961	231005	230956	231005
R^2	0.050	0.072	0.031	0.047	0.004	0.008	0.017