Depositor Discipline and Bank Failures in Local Markets During the Financial Crisis

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Abstract

This paper investigates the impact of bank failures on the disciplining behavior of depositors during the recent financial crisis. Exploiting the regional dimension of the financial crisis in the United States and the failure of over 400 (mainly local) banks, I document increased discipline by depositors in local banking markets despite the existence of possible distortions such as deposit insurance schemes and bailouts. I find that the sensitivity of depositors to bank risk is stronger in markets that have witnessed failures, and this increase is long-lasting.

JEL classification: G21; G28; G01; D03; D83; D84.

Keywords: Depositor behavior; Market discipline; Wake-up call; Local market.

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1 Introduction

Bank regulators have emphasized the role of market discipline in Pillar 3 of the Basel II and III accords. Contrary to monitoring by the regulator, market discipline relies on stakeholders such as depositors to monitor and, if necessary, prevent excessive risk-taking by banks. However, following the crisis the question is whether market discipline can still be used as a tool in bank supervision (see e.g. Acharya et al., 2014). The events that transpired during the crisis have given depositors mixed signals regarding the status and safety of banks, as well as the need to monitor their riskiness.

On the one hand, increases in the deposit insurance limit and government interventions such as bailouts have weakened incentives for depositors to monitor banks. In order to prevent bank runs, the U.S. government temporarily increased the level of deposit insurance from $100,000 to $250,000 in 2008, an increase made permanent in the Dodd-Frank act. However, even uninsured depositors have been compensated recently, with the FDIC assuming all deposits for most bank failures since the IndyMac Bank failure.[1] Moreover, regulators have shown that they are also willing to intervene in the shadow banking market with the bailout of money market funds. Given these interventions, depositors have little incentives ex-ante to engage in active monitoring of their depository institutions, as they are likely to be bailed out no matter how risky their banks are.

On the other hand, there have been over 400 commercial bank failures in the United States since the beginning of the crisis. Previous studies have documented that experiencing events such as bank failures can lead to a wake-up call among depositors (see e.g. Martinez Peria and Schmukler, 2001; Karas et al., 2010, 2013; Iyer and Puri, 2012). This finding is motivated by increased risk aversion of depositors, and is consistent with an aggregate experience hypothesis documented by, e.g., Malmendier and Nagel (2011). A wake-up call entails renewed discipline being exerted after bank failures, as these events can make depositors of other banks aware that their deposits are potentially also at risk. While some recent evidence supports the notion that government interventions have weakened overall market discipline (Cubillas et al., 2012; Berger and Turk-Ariss, 2014), it remains unclear whether depositors have woken up to the risks posed by their banks. This paper provides evidence that, despite government interventions, depositors exerted discipline on their banks during the crisis and that the aforementioned failures did wake them up.

Martinez Peria and Schmukler (2001) were the first to document a wake-up of depositors, by showing that they were more responsive to banks riskiness after periods of crises in Argentina, Chile, and Mexico. Interestingly, despite expansion of deposit insurance coverage, both insured and uninsured depositors increased their monitoring. Similarly,

[1] Since the IndyMac Bank failed in 2008, the FDIC's Failed Bank List and accompanying press releases state that for most failures, the FDIC and eventual acquirer assumed all deposits.

using data on Russian banks, Karas et al. (2010, 2013) find evidence of a wake-up call for insured and uninsured depositors. Moreover, while the introduction of deposit insurance weakens overall discipline, it does not completely eliminate the wake-up call. Finally, using deposit account-level data of a bank in India, Iyer and Puri (2012) document a bank run after the failure of an unrelated bank.

Most of the work documenting the effect of the recent crisis on market discipline presents evidence of discipline on a subset of banks. For instance, Berger and Turk-Ariss (2014) find that while overall discipline decreased in both the United States and Europe, this can be chiefly attributed to decreased discipline for large and listed banks. Their finding is consistent with moral hazard by depositors following government interventions. For an international sample of banks, Bertay et al. (2013) find increased discipline on systemically large banks consistent with a wake-up call. However, similar to Berger and Turk-Ariss (2014) they document an absence of market discipline on the systemically largest banks in the United States. It therefore seems that depositors distinguish between risks posed by banks, and that they intentionally choose to discipline some banks while ignoring the risks of others. Correa et al. (2012) support this notion by documenting a bank run on U.S. branches of European banks during the European sovereign debt crisis. Evidence on developing countries is provided by e.g., Oliveira et al. (2014) who find an absence of discipline on Too-Big-To-Fail banks in Brazil. Moreover, using banks in CEE countries, Hasan et al. (2013) do not find evidence of an overall wake-up call, although there is increased discipline on affiliates of Western-European banks.

This paper investigates if the wake-up call has materialized for depositors in the United States, and whether they discipline banks during the crisis despite a weakening of incentives. In doing so, it makes two contributions to the existing literature. First, depositor behavior is analyzed in local banking markets. Previous studies on market discipline have used the bank entity as their fundamental unit of analysis, comparing banks on a national or even supra-national level. However, they overlook that the relevant market for most banks and depositors alike is the local banking market. While, increasingly, U.S. banks have nationwide activities, these are only few in absolute numbers. Despite the trend of deregulation and consolidation in the U.S., banks and banking markets tend to be fragmented for well-known historical reasons. Depositors, therefore, are generally more likely to have deposits at those banks that are active within their local market. Even though online-banking has made it possible to deposit at out-of-market banks, it is often seen as a complement, not a substitute, to physical bank branches (see e.g. DeYoung and Hunter, 2002; DeYoung, 2005; DeYoung et al., 2007; Hernando and Nieto, 2007; Onay and Ozsoz, 2013). Discipline by depositors can therefore be expected mainly on banks active in their local market, and only relative to the other banks that are also present there. For this reason, depositor behavior is best analyzed in local banking markets.

Second, by analyzing these local markets, this paper presents a cleaner identification of a possible wake-up call during the financial crisis compared to previous studies. While those studies rely on changes in deposits between banks before and after the crisis, this paper exploits the fact that banks have branches in multiple markets. Even though bank riskiness is determined and evaluated at the level of the bank, depositors can react differently to these risks across local markets. The same bank with branches operating in multiple markets can thus be subject to a varying degree of discipline in each market, depending on whether a failure occurs in the market. The identification strategy employed in this paper uses the branches of the bank in markets without failure as a control, whereas the branches of the bank that operate in a market *with* a failure are used as the treatment group. Hence, the wake-up call is measured as the difference in depositor reaction across the markets in which the bank is active, where some have experienced a failure while others have not. If experiencing bank failures is indeed the channel through which a wake-up call is achieved, I expect to find an increase in discipline for those markets where the failing banks operated a branch compared to markets without a failure.

To perform this analysis, I use publicly available information on the level of deposits in bank branches in the U.S., obtained from the FDIC's Summary of Deposits. I show that depositor discipline was present at the level of the local market between 2007 and 2013. Moreover, a wake-up call indeed materializes in those markets witnessing a bank failure, and this effect does not die out after 1 year but is long-lasting. Finally, I find that depositors react differently to bank failures of banks that are considered mainly local, compared with failures of banks whose headquarters are located out-of-market or even out-of-state. As such, this paper offers implications for the regulatory and supervisory set-up following the crisis. For instance, the Net Stable Funding Ratio (NFSR) introduced in Basel III will force banks to hold a sufficient amount of stable funding, which includes demand and other customer deposits. This paper shows that deposit funding of banks depends not only on the bank's risk characteristics, but also on what is happening to other banks in their market. Moreover, this paper also suggests that prompt action by the FDIC to close down failing banks intended to stop bank runs can actually lead to more involved depositors and possibly a safer banking system.

The rest of the paper is organized as follows. Section 2 discusses the methodology and data, followed by Section 3 which presents the results. Robustness tests are performed in Section 4, after which I briefly conclude.

2 Data and methodology

2.1 Identification

Previous studies on market discipline of participants other than depositors have investigated whether publicly available risk indicators are priced into bank funding, signaling the perceived risk to banks. For example, they find that riskier banks have higher bond yields/spreads (see e.g. Avery et al., 1988; Flannery and Sorescu, 1996; Jagtiani et al., 1999; Jagtiani and Lemieux, 2001; Sironi, 2003; Ashcraft, 2008) and a lower market value of equity (see e.g. Billett et al., 1998; Park and Peristiani, 2007; Baele et al., 2014). Depositors, on the other hand, can discipline their banks in more ways than one (Flannery, 1994). Similar to (subordinated) debt holders, depositors can require a higher interest rate from riskier banks, thereby compensating them for the risk of losing their deposits in the event the bank fails. Moreover, since deposits are liquid, depositors can also withdraw them if they feel the bank is taking excessive risks.

To measure market discipline the following equation is usually estimated:

$$\Delta \ln D_{i,t} = \beta_0 + \beta_1 \mathbf{Risk}_{i,t-1} + \beta_2 \mathbf{Controls}_{i,t-1} + \beta_i + \beta_t + \epsilon_{i,t} \tag{1}$$

where $\Delta \ln D_{i,t}$ is the growth rate of deposits of bank i in year t, $\mathbf{Risk}_{i,t-1}$ is a vector of lagged indicators of bank risk, $\mathbf{Controls}_{i,t-1}$ is a vector of control variables, and β_i and β_t are bank and time fixed effects to control for unobserved heterogeneity. Market discipline is present if depositors move their deposits to safer banks. Therefore, safer banks are expected to have a higher growth rate in deposits compared to riskier banks. In Equation (1), a negative β_1 coefficient signals the presence of market discipline, as safer banks see higher deposit growth compared to more risky peers. Risk and control variables are lagged to avoid possible endogeneity, as, for instance, bank risk can be endogenous to depositor behavior. In the absence of a counterfactual, the wake-up call is identified as the difference in behavior before or after crises, attributing all changes in behavior to the crisis.

In this paper, I propose to identify the wake-up call in a different manner. To measure the wake-up call, a perfect counterfactual would entail the same bank being exposed to a scenario with a crisis and one without. The difference in depositor behavior between scenarios would then directly identify the effect of a crisis, controlling for unobserved characteristics which impact both the control and the treated group. In the setting of depositor discipline, one would thus prefer to have the same bank in two different markets, but with different realizations of depositor behavior due to certain events. Previous literature suggests that the events leading to a wake-up call could be bank failures, as these can make depositors aware that their deposits are possibly at risk (see e.g. Martinez Peria and Schmukler, 2001; Karas et al., 2010, 2013).

While depositors can react differently across markets to this multi-market bank, bank risk itself is determined and evaluated at the bank-level. The FDIC, for instance, does not close down single branches but intervenes only in the bank entity. Identification of the wake-up call then relies on multi-market banks, which share the same bank risk across markets but experience different levels of discipline in markets with failures. This is visualized in Figure 1, where a bank is active in 7 markets, 3 experienced bank failures.[2] In light of the figure, the question is whether depositors were more aware of the risks of the bank in the markets with failure.

[Insert Figure 1 near here]

Since bank risk is determined at the level of the bank, the differences in depositor reaction between markets can only be due to the failures, using the markets without failures as a control group. Empirically, this effect is obtained by performing the following regression:

$$\Delta \ln D_{i,m,t} = \beta_0 + \beta_1 \mathbf{Risk}_{i,t-1} + \beta_2 \mathbf{Controls}_{i,m,t-1} + \beta_3 F_{m,t-k} + \beta_4 F_{m,t-k} \mathbf{Risk}_{i,t-1} + \beta_5 F_{m,t-k} \mathbf{Controls}_{i,m,t-1} + \beta_i + \beta_m + \beta_t + \epsilon_{i,m,t} \quad (2)$$

where $\Delta \ln D_{i,m,t}$ is the growth rate of deposits of bank i in market m at time t, $\mathbf{Risk}_{i,t-1}$ is still a vector of lagged indicators of bank risk measured at the level of the bank, $\mathbf{Controls}_{i,m,t-1}$ is a vector of control variables that can differ between banks or markets, and β_i, β_m and β_t are bank, market and time fixed effects to control for unobserved heterogeneity. Moreover, $F_{m,t-k}$ is a dummy variable indicating whether a bank failure occurred in market m during the last k years and is interacted with the risk and control variables. In this setting, a negative and significant β_4 now measures whether the presence of a failed bank leads to excess market discipline, with the combined discipline effect being $\beta_1 + \beta_4 F_{m,t-k}$. Moreover, the length of the window k can be adjusted to measure short-run ($k = 1$) or long-run ($k > 1$) effects. If bank failures do indeed lead to a wake-up call, it follows that the change in behavior of depositors should be noticeable in markets that experience them compared to those that do not. In Equation (2), this effect is picked up by the β_4 coefficient.

Control variables are included to control for market-specific characteristics, such as the concentration and the number of branches present, or for bank-specific characteristics. To control for the fact that depositors might move their deposits to a risky bank as long as they are sufficiently rewarded with a higher interest rate, I include the bank-specific (implicit) lagged deposit interest rate. Previous studies have indeed found evidence that risk is priced priced into bank deposit rates (see e.g. Hannan and Hanweck, 1988; Ellis and Flannery, 1992; Brewer III and Mondschean, 1994; Cook and Spellman, 1994), or that bank risk is priced into both the price and the quantity of deposits (see e.g. Park, 1995; Park and Peristiani, 1998; Demirgüç-Kunt and Huizinga, 2004; Ioannidou and de Dreu, 2006; Karas et al., 2010, 2013; Bertay et al., 2013). Put differently, riskier banks need to offer a higher interest rate to maintain or attract new deposit funding. In most cases

[2]For the purpose of this paper, a market is considered to experience a failure through the presence of branches of banks that where closed down by the FDIC.

however, the interest rate employed is an implicit interest rate, calculated as the total interest expense of a bank divided by total loans. The downside of this approach is that it does not separate between interest rates paid on insured or uninsured accounts, or between rates on existing accounts compared to new ones. Moreover, and more importantly in the context of this paper, the implicit interest rate is bank-specific, making it difficult to investigate the presence of price discipline in *local* markets. If the deposit rate is determined at the bank level, price discipline in local markets would be incorrectly identified. This depends on whether multi-market banks set their interest rates uniformly, or whether they differ across markets, something on which there is no consensus as of yet. While Craig and Dinger (2013) find that there is cross-market variation in deposit rates of multi-market banks, this is not found by Radecki (1998), Heitfield (1999) and Park and Pennacchi (2009).[3] Since identification is potentially incorrect, I do not explicitly estimate a price equation, but instead follow the estimation strategy employed by, e.g., Maechler and McDill (2006), and use the lagged implicit interest rate to take into account that these rates can influence the quantity of deposits.

Equation (2) is estimated using OLS. The high-dimensionality due to the extra dimension m and the number of banks and markets involved means that many different types of fixed effects can be included. Besides the standard bank, market and time fixed effects for instance, it is possible to control for other sources of unobserved heterogeneity. For instance, besides market fixed effects to control for market-specific changes in deposits, and year fixed effects to control for countrywide business cycle effects, market$\times$year fixed effects pick up local market business cycle effects that could be misinterpreted as depositor discipline. Similarly, bank$\times$market fixed effects can be employed to control for market-specific strategies, as banks might want to expand their market share in certain markets but not in others. To be able to include these types of fixed effects, I implement a within estimator specifically designed for panel data models with high dimensionality. This estimator is preferred over the LSDV estimator, since the LSDV estimator can be computationally difficult to estimate due to the large number of dummy variables required. However, the unbalanced nature of the dataset has to be taken into account. Mátyás and Balázsi (2012) show that applying an analytical within-transformation developed for a balanced panel leads to a bias in an unbalanced setting that does not drop out as $N \to \infty$. Moreover, dynamic panel models also suffer from this bias when dealing with an unbalanced setting. To estimate unbalanced panel models with high-dimensional fixed effects, Guimarães and Portugal (2010) therefore propose a feasible iterative ap-

[3]Unfortunately, the deposit rate that banks choose to offer to depositors in a given regional market at a given time is not publicly available. However, using proprietary data on interest rates at the bank-branch level, Bennett et al. (2014) and Ben-David et al. (2014) suggest there is only weak evidence of price discipline during the financial crisis. A possible solution to include price discipline in this paper is to obtain the local price level from banks that are only active in that market. However, the identification strategy employed in this paper depends on multi-market banks. A price level based on local banks would undermine this strategy.

proach based on demeaning the (in)dependent variables over one dimension at a time, in order to minimize the regression RMSE. While Guimarães and Portugal (2010) implement this iterative procedure for 2 fixed effect dimensions, it can easily be extended to 3 (Torres et al., 2013) or even N fixed effects (Rios-Avila, 2013).

To obtain standard errors for the original model, Rios-Avila (2013) suggests to use the algorithm proposed by Abowd et al. (2002), which is necessary to correct for the degrees of freedom.[4] The standard errors are clustered using the banking market as cluster. As OLS standard errors could be too small for proper inference testing in the case of within-cluster serial correlation, Bertrand et al. (2004) and Colin Cameron and Miller (2014) suggest using cluster-robust standard errors to account for possible serial correlation. Following the suggestion of Colin Cameron and Miller (2014), standard errors are clustered over the local markets as these are the fewest in number and lead to the highest standard errors.[5]

Next, I will describe the data used in this paper, before proceeding with the presentation of the results and robustness checks.

2.2 Data

The data used in this analysis are obtained from multiple sources. The main source is the FDIC's Summary of Deposits (SOD), a publicly available annual survey reporting branch-level deposits for all FDIC-insured institutions, including insured U.S. branches of foreign banks. The FDIC requires all institutions with a main office and one or more branches to file this survey. While banks can choose how to assign deposits to their offices (e.g. by proximity to the address of the account holder, the main activity, or origination of the deposit account), it should be consistent with existing internal record-keeping practices (FDIC, 2014). All branches and banks in the SOD have a unique identifier and are geo-coded, meaning that the deposits of a bank can easily be allocated to each banking market where a branch office is located. Consistent with previous literature, local markets are defined as Metropolitan Statistical Areas (MSAs) and non-MSA counties (see e.g. Prager and Hannan, 1998; Berger et al., 1999; Collender and Shaffer, 2003; Adams et al., 2007), although robustness tests are performed by estimating Equation (2) on each separate group and using the county as a local market. If multiple branches of the same bank are present in a market, the deposits located at these branches are consolidated to bank-market deposits. Since, as we will see later, the bulk of the bank failures occurred from 2007 onwards, I obtain data for the years 2007 - 2013.

Data used to calculate bank risk indicators are obtained from the Call Reports for Income and Condition, and linked to the SOD data using the bank's unique FDIC assigned

[4] I thank Fernando Rios-Avila for sharing his code.

[5] Robustness tests with clustering at the level of the bank were also performed and lead to smaller standard errors. Results are available upon request.

certificate number. Unit banks, or other banks that have not filed the SOD survey, are subsequently dropped. Data on bank failures are obtained from the FDIC's Failed Bank List, which lists failed banks for which the FDIC is appointed as receiver, the closing date and, if available, the acquiring entity. To construct a variable indicating whether a failed bank operated a branch-office in a certain market, I combine the Failed Bank List with the SOD in the year prior to the failure, as banks do not file the SOD during the failure-year itself. To remove spurious increases in bank-market deposits, I remove bank-market observations when the bank has merged or acquired another bank that was active within the same market. Data on mergers and acquisitions are obtained from the Failed Bank List and the bank merger database maintained by the Federal Reserve Bank of Chicago.[6]

Since the SOD is an annual survey, collected on June 30$^{\text{th}}$, I use the second quarter (June) Call Report to match bank-market deposits to bank fundamentals. Years are subsequently defined as periods between the filing moments and failure years are appropriately updated. For instance, a bank that failed on June 19$^{\text{th}}$, 2008 is linked to the 2007 SOD. However, a bank that failed on July 20$^{\text{th}}$, 2008 is linked to the 2008 SOD in order to determine where it was operating branches.

The SOD only reports total deposits and does not distinguish between insured and uninsured deposits. Ex-ante, most discipline can be expected from uninsured deposits as these better incentives to monitor the safety of their banks compared to insured depositors. However, previous research has shown that insured depositors are also capable of discipling banks, albeit to a lesser extent than uninsured depositors (see e.g. Park and Peristiani, 1998; Martinez Peria and Schmukler, 2001; Karas et al., 2013). Moreover, government interventions have blurred the lines between insured and uninsured deposits. First, the Dodd-Frank Act permanently increased the level of deposit insurance coverage from \$100,000 to \$250,000, thereby effectively insuring previously uninsured deposits.[7] Second, after the failure of IndyMac bank in 2008, the FDIC has assumed all deposits for most bank failures, effectively insuring the uninsured depositors. Third, the government has also bailed out the money market mutual funds, which are part of the shadow banking system and did not fall under deposit insurance in the first place. Given these interventions, it is safe to assume that uninsured depositors can behave as if they have insurance, since they are practically assured they will be compensated in the case of a failure. As all depositors were technically insured, the analyses provides a lower bound of the level of market discipline present in the local markets. Although this implicit deposit insurance could lead to less market discipline, studies on the recent financial crisis have

[6] Available at `http://www.chicagofed.org/webpages/publications/financial_institution_reports/merger_data.cfm`.

[7] While the Act was only signed into federal law in July, 2010, Congress had approved a temporary increase in the deposit insurance limit starting on October 3, 2008. The Dodd-Frank Act retroactively increased the limit to also cover failures between January 1, 2008 and October 3, 2008.

shown that market discipline was not eliminated because of these bailout guarantees (see e.g. Gropp et al., 2011).

The final dataset consists of 6,735 banks that are active in 2,328 distinct markets (388 MSAs and 1,940 non-MSA counties) during a maximum of 7 years. The average number of markets served by banks in the sample is 3, although banks such as Bank of America, Wells Fargo and U.S. Bank have branches in more than 400 markets. Moreover, on average there are 6 banks present in a banking market, although some large MSAs like Minneapolis-St. Paul-Bloomington, Chicago-Naperville-Joliet, or Dallas-Fort Worth-Arlington are served by more than 100 banks.

Summary statistics for the dependent and explanatory variables are reported in Table 1. While most of the variables of interest are ratio's, variables that are in levels are deflated to 2007Q2 dollars. The dependent variable, $\Delta \ln D_{imt}$, is the percentage change in deposits of bank i in market m in year t. The average bank-market experienced an increase in deposits of 1.73% per year during the sample period. Despite the disaggregation of the data across markets, the deposit growth mimics the values in Berger and Turk-Ariss (2014), who use bank-level data. The most a single bank-market loses in deposits from year-to-year is 29%, while the most deposits attracted represented a 58% gain. The main explanatory variables for bank risk are Equity (Equity/Total Assets), NPL (Non-Performing Loans/Total Loans), and ROA (Net Profit/Total Assets). These variables cover different dimensions of risk, as the capital buffer indicates the absorptive capacity of a bank to incur future losses, non-performing loans are a good indicator how large those future losses can be, and ROA indicates how fast a bank can rebuild the capital base when it retains earnings. F is a dummy variable indicating whether a failed bank was operating a branch in the local market. In the analysis, this variable is used to determine whether a failure has taken place in the market during the last k years. Control variables include business model characteristics (Real Estate Loans/Total Loans), efficiency estimates (Cost/Income), the ratio of liquid assets to total assets, securities held for sale and investment to total assets, the implicit interest rate calculated as the interest expense divided by total deposits, a dummy variable indicating whether the bank is a savings banks or a member of a Bank Holding Company, and market level characteristics such as the HHI (based on the level of deposits) and the number of branches present in the market. To remove outliers, the variables $\Delta \ln D_{imt}$, Equity, NPL, ROA, Real Estate/Total Loans, Cost/Income, Liquid Assets and Implicit Interest Rate are truncated at the 2.5 and 97.5 percentile. The summary statistics presented here are based on bank-market observations, banks operating in more markets are thus given a higher weight for those variables calculated at the level of the bank.

[Insert Table 1 near here]

Figure 2 shows the geographical distribution of failures occurring during the sample period. From this figure, we see that most failures occur in and around large metropolitan areas, although they are divided between both metropolitan areas and rural counties. Furthermore, Figure 3 plots the timing of the bank failures. It shows a clear peak in 2010 with over 150 banks failing, before steadily decreasing in the following years.

[Insert Figure 2 near here]

[Insert Figure 3 near here]

Table 2 shows summary statistics of failed and acquiring banks, and reports results of a t-test comparing the average differences. In total, there are 426 failing banks and 403 acquiring banks that can be matched to the SOD and Call Reports. The number of failing banks is higher than the number of acquiring banks because not all banks that were received by the FDIC were later sold, and because some banks acquired multiple failing banks. On average, acquiring banks were better capitalized, had a lower share of non-performing loans, less loans overall, and were less reliant on deposits for their funding. The failed banks were also significantly smaller, with their assets totaling $233 million versus $1.4 billion for the acquiring banks. Moreover, acquiring banks were more likely to be a member of a Bank Holding Company, while the number of savings banks that failed or acquired other banks was relatively low at around 2%. Finally, failed banks operated branches across on average 7 local markets, while the acquiring ones were active in 183 markets. These numbers, however, are skewed because of a few large failures and subsequent acquisition. Median values - 4 and 18 markets for failed and acquiring banks, respectively - also confirm that acquiring banks were active in more markets.

[Insert Table 2 near here]

Finally, Table 3 shows the characteristics of local markets with and without a failure. In general, when considering both MSAs and non-MSA counties, we can see that markets with failures were characterized by a lower level of concentration and more branches, deposits and banks. The year after failure, banks active in non-failed markets experienced higher deposit growth. The same conclusions hold when considering only the largest markets (MSAs), albeit to a lesser extent. In general, as indicated by Figure 2, bank failures occur in larger markets. To ensure that the results are not driven by this, I perform robustness tests in Section 4 using only the larger markets.

[Insert Table 3 near here]

3 Results

This section present the results of the analysis. First, I test for the existence of overall market discipline in local markets during the crisis by analyzing whether banks with better risk profiles see a higher growth in their deposits. In a second step, I test whether local market with a bank failure experience extra discipline from depositors. Finally, I explore some outcomes of the underlying mechanism to provide additional evidence, before concluding with several robustness tests.

3.1 Baseline specification

The results from the analysis of Equation (2) are presented in Table 4. I report the coefficients for the main risk characteristics, and refer the reader to Table A.1 for the full results. In all columns, the dependent variable is the change in deposits of bank i in market m in year t, while the variables of interest are the lagged capital ratio (Equity), the share of Non-Performing Loans (NPL) in the total loan portfolio, and the Return-on-Assets (ROA). All specifications include bank, market and year fixed effects.

[Insert Table 4 near here]

In column (1), we can see that market discipline was present in local markets throughout the sample, as the coefficients on the risk characteristics are statistically significant and have the correct sign. Branches belonging to banks that reported higher equity levels, a lower share of non-performing loans, and a higher return-on-assets in the previous year see a higher growth of deposits compared to other banks active within the market. When comparing banks at the 75th and 25th percentile across the three risk variables, I find that the economic effect of an improvement in the capital buffer is most important. A bank at the 75th percentile of the equity ratio distribution experiences an extra deposit growth of 2.5% compared to a bank at the 25th percentile. This value is -1.3% for the non-performing loans and 0.9% for an improvement in profitability. These are relatively large effects considering that the average deposit growth of banks in local markets is 1.7%.

In columns (2)-(4), the risk and control variables are interacted with $F_{m,t-k}$, a dummy variable indicating whether a bank failure occurred in market m during the last k years. Column (2) measures the excess discipline when a failure occurred in the preceding year, column (3) does the same for 2 years since failure, and column (4) measures the excess discipline if the time since failure is 3 or more years. Including the interactions does not change the sign or significance of the main explanatory variables, but it does show that excess discipline is exerted on banks in local market with failures. In the first year after bank failure (column (2)), we can see that extra discipline is mainly directed at the capital ratio of banks and at the share of non-performing loans. In the years afterwards, discipline is mainly directed at the capital ratio of banks, although the return-on-assets also becomes statistically significant. Regarding the economic significance of these coefficients, the capital ratio is again by far the most significant. In years 2 and 3+ after failure, the difference in deposit growth between a bank at the 75th and 25th percentile of the capital ratio is 3%, while this is only 1.2% for the return-on-assets.

The results presented here suggest that depositor discipline was present in local markets during the crisis, and that experiencing bank failures leads to a wake-up call of depositors. However, interpreting the results in this manner can be misleading. Between 2009 and 2011, the Deposit Insurance Fund essentially ran out of money as evidenced by its negative reserve ratio (FDIC, 2012). To help the FDIC maintain its credibility, Congress created an emergency borrowing line in March, 2009 of up to \$100 billion, with a possibility to increase this emergency line to \$500 billion conditional on the approval from the Federal Reserve Board and the Treasury. Combined with the fact that most failures occurred in 2010 and 2011 (see Figure 3), the result in Table 4 might actually be due to an aggregate change in depositor behavior and not to bank failures. To explore this possibility, I split up the sample for the years 2008 - 2010 and 2011 - 2013, and estimate Equation (2) on these subsamples. The results are shown in Table 5. Specification (1) estimates Equation (1) using the standard bank, market and year fixed effects, and shows that general discipline is present during both crisis-periods. Moreover, the coefficients are of the same magnitude, indicating no structural break in behavior as the crisis progresses. The magnitude of the coefficients on NPL and the implicit interest rate do change, but this can be attributed to the change in the average of the variables. Whereas the average equity ratio and the average return-on-assets remained stable around 10% and 0.37%, the NPL and the implicit interest rate changed from 1.1% to 1.9%, and from 0.5% to 1.4% in the latter stages of the crisis, respectively. Finally, note that since bank fixed effects are included, the identification on the BHC and Savings Bank variables relies on banks becoming BHC members and savings banks becoming commercial banks, or vice versa.

[Insert Table 5 near here]

3.2 Do failures in all markets lead to extra discipline?

Having established that bank failures give an extra incentive to depositors to monitor banks active in their local market, I explore several outcomes that can be the consequence of this channel. The first is whether depositors receive different signals from different bank failures. For instance, a failing bank with a high local presence is presumably a stronger signal to depositors than a bank with little local presence. Since the former failure is likely due to a downturn in the local business cycle, depositors might become more risk-averse after a local failure (analogous to Malmendier and Nagel, 2011). If bank failures indeed lead to a wake-up call because of a downturn in macro-economic conditions, local failures should give a stronger signal and incentive to depositors to increase their monitoring. To investigate this possibility, I divide the failures into banks with headquarters in-market and banks whose headquarters are located out-of-market. The results are presented in Table 6, and show that for both in-market and out-of-market failures depositors monitor the equity ratio in the short and long run. Interestingly, and consistent with the experience hypothesis, depositors monitor the NPL of their banks for 3+ years after *in*-market failures but not for *out*-of-market failures. Moreover, while the return-on-assets is significant in later years after bank failures, this is only the case for out-of-market failures. These results indicate that local bank failures indeed give a stronger signal than non-local bank failures. Since local bank failures are presumably caused by local business cycle effects, I interpret this as extra evidence for the failure-induced wake-up call. Results for a similar exercise, where I look at failed banks with their headquarters in the same state, or headquarters in another state than the local market, are reported in Table A.2. The results are quantitatively similar and are therefore not discussed here.

[Insert Table 6 near here]

Another question is whether depositors wake up to the same extent when they have less choice to move their deposits within the same market. In markets with few banks, or highly concentrated markets, where is the depositor going to run to? If depositors have no choice between banks, they are less likely to move their deposits, in effect disciplining banks less. A bank failure is thus expected to lead to a lower depositor reaction in concentrated markets compared to less concentrated markets. I split up the markets according to their deposit-based HHI, following the U.S. Department of Justice guidelines to divide banking markets into concentrated markets (HHI $\geq$ 2500), moderately concentrated markets (1500 $\leq$ HHI $<$ 2500) and markets with a low level of concentration (HHI $<$ 1500). The results are shown in Table 7. General discipline is present in all markets, but depositors react differently across markets when faced with a bank failure. In markets with a high level of concentration, depositors focus mainly on the return-on-assets to decide where to move their deposits to. In less concentrated markets, depositors tend to value the equity ratio, which is arguably a better indicator of the risk of a bank than the return-on-assets. Depositors seem to only exert discipline after failures when they have a choice between banks. While it is appealing to interpret these results in this way, we have seen in Table 3 that failures occurred less in concentrated markets. The percentage of markets experiencing a failure is much higher for low concentration markets compared to high concentration markets, meaning that this conclusion might be driven by other market characteristics than the degree of concentration. To take this possibility into account, I perform the analysis on MSAs only in Section 4.

[Insert Table 7 near here]

3.3 Is this a general crisis effect?

The results presented here show consistently that failures in local markets lead to a wake-up call of depositors, and that this wake-up call is a long-run phenomenon. However, they still do not rule out that depositor behavior may have changed as a result of the crisis. Berger and Turk-Ariss (2014) indeed find that overall market discipline decreased during the crisis compared to the pre-crisis behavior of depositors. Since the sample used in this paper coincides with the beginning of the crisis, it is possible that the results presented so far are caused by a general change in depositor behavior due to the crisis. To test this possibility of a wake-up call due to a crisis effect, I extend the dataset to include the pre-crisis years 2002 - 2006. As there are hardly any failures occurring prior to the crisis, a true differences-in-differences model is unfortunately not well-identified, and I therefore estimate the following regression model:

$$\begin{aligned}\Delta \ln D_{i,m,t} = {} & \beta_0 + \beta_1 \mathbf{Risk}_{i,t-1} + \beta_2 \mathbf{Controls}_{i,m,t-1} \\ & + \beta_3 C + \beta_4 C\mathbf{Risk}_{i,t-1} + \beta_5 C\mathbf{Controls}_{i,m,t-1} \\ & + \beta_6 CF_{m,t-k} + \beta_7 CF_{m,t-k}\mathbf{Risk}_{i,t-1} + \beta_8 CF_{m,t-k}\mathbf{Controls}_{i,m,t-1} \\ & + \beta_i + \beta_m + \beta_t + \epsilon_{i,m,t} \end{aligned} \tag{3}$$

where C is a dummy variable taking the value 1 for the years 2007 through 2013 and 0 otherwise, and the rest of the covariates are the same as in Equation (2). The coefficients of interest here are the crisis interaction with the vector of risk characteristics, $\beta_4 \times C \times \mathbf{Risk}_{i,t-1}$, and the double interaction capturing the effect of risk when failures occur during the crisis, $\beta_7 \times C \times F_{m,t-k} \times \mathbf{Risk}_{i,t-1}$. The results are presented in columns (1)-(4) in Table 8.

[Insert Table 8 near here]

The table shows that there is a general wake-up effect during the crisis, as banks are disciplined more in the crisis than in the years leading up to it. The positive coefficient on the Crisis×NPL indicates that depositors heavily monitored on this variable prior to the crisis. The total effect of NPL is still negative, which is consistent with market discipline. Disciplining on the other risk variables occurs as well. From the double interaction with the crisis variable *and* the bank failure indicator, we can see that excess discipline is exerted in those markets experiencing failures. Contrary to the results of the baseline specification, the effect of capital and NPL die out 2 years after bank failures. However, similar to the baseline specification, the disciplining effect of Return-on-Assets is present 3 or more years after failure. Overall, the results indicate that, similar to Table 4, depositors exert extra discipline in banking markets where failures occurred. The next section explores the robustness of the results presented so far.

4 Robustness tests

In this section, I present four robustness tests for the results in the previous section. In the first test, I use the multidimensionality of the dataset to add extra controls for possible unobserved heterogeneity. The second test investigates the choice of MSAs and non-MSA counties as local markets, and explores some alternatives. The third and fourth test address concerns regarding endogeneity, with the third test looking at failures in neighboring markets as a way to control for local business cycle effects and the fourth test excluding banks with a large local presence.

Unobserved heterogeneity The baseline specifications in Tables 4 and A.1 include bank, market and year fixed effects to control for unobserved heterogeneity. However, given the dimensions of the dataset, it is possible to add more than the standard fixed effects to control for the heterogeneity. For instance, while the market fixed effects can control for market-specific changes in deposits, and the year fixed effects pick up the countrywide business cycle effects, market×year fixed effects can control for local market business cycle effects. Similarly, bank×market fixed effects can be employed to control for market-specific strategies, as banks might want to expand their market share in certain markets but not in others. Given the large dimensionality involved in adding bank×market and market×year fixed effects, these estimations are only feasible with the iterative within transformation employed so far. In Table A.3, the baseline specification is saturated with these extra fixed effects to control for observed and unobserved bank and market heterogeneity: columns (1)-(4) show the result where the baseline specification is augmented with bank×market fixed effects and in columns (5)-(8) both bank×market and market×year fixed effects are added. In the latter specification, variables that vary only over market and time ('HHI' and 'Ln(Number of Branches)') drop out due to perfect collinearity with the added fixed effects. Moreover, the variable indicating whether a failure occurred in the previous year is also dropped for the same reason. This problem does not occur with the dummy variables indicating if failures occurred in markets 2 or 3+ years ago. Overall, the results on the interaction with the risk characteristics are robust to adding these additional fixed effects. Depositors discipline mainly on the capital ratio, and this excess discipline is long-lasting as it is significant even 3+ years after the failure occurred. Similar to the results in Table 4, the return-on-assets becomes statistically significant in later years after failure.

I also add the extra fixed effects to regressions in Tables 5 and 8. Overall, the results are very similar. Specifications (2) and (3) in Table 5 show that adding the fixed effects does not change significance of the risk variables in the different stages of the crisis. Moreover, columns (5)-(8) in Table 8 show that adding these fixed effects does not change the result when considering a general crisis effect.

Definition of local market The second robustness test examines the definition of local markets. Consistent with previous literature, local markets are defined as MSAs and non-MSA counties. Given the research question at hand, this definition of a local banking market might not be the most appropriate. This paper tries to identify the effect on depositors who have witnessed a bank failure in their local market, but there is heterogeneity in the size of these markets. For instance, the New York-Newark-Bridgeport MSA consists of 25 counties. If a bank that is only operating branches in a few of these counties fails, the entire MSA is considered to have experienced a failure. While depositors might experience a wake-up call in these counties, it is questionable that this information could impact depositors in other counties belonging to the same MSA. Nonetheless, in MSAs news might spread faster due to a higher population density and, e.g., a higher share of commuters. Non-MSA counties, on the other hand, may be closer communities where a bank failure can have a stronger impact. Table 3 and Section 3.2 already provide some preliminary evidence, showing that failures are more likely to occur in larger and less concentrated markets such as MSAs.

In total, the dataset covers banks active in 388 MSAs and 1,940 non-MSA counties. Despite including market fixed effects, the baseline specification only considers the average impact of failures on discipline over both types, and does not allow separate slopes. To test the robustness of this assumption, I first look at counties only, after which I analyze the difference in reactions to failures in MSAs and non-MSA counties separately.

Table A.4 shows the results when defining the county as a local banking market. Columns (1)-(4) display the baseline specification with bank, market and year fixed effects, while columns (5)-(12) add bank×market and market×year fixed effects. The results indicate that general market discipline was present in the crisis, however it seems that in none of the specifications significant excess discipline is being exerted by depositors. While the point estimates have the correct sign and similar magnitude as in Table 4, they are not statistically significant and therefore the results from Section 3 do not seem robust to the choice of local banking market.

This, of course, warrants a further investigation into the causes and the robustness of the baseline specification. To do so, I revert to the original market definition of MSAs and non-MSA counties. Instead of allowing for a shared slope across both type of markets, like in Table 4, I now split up the markets and analyze the effect of failures separately in Table 9. The table shows that overall market discipline was present in both MSAs and non-MSA counties. Moreover, the table confirms the previous result that in non-MSA counties (columns (5)-(8)), there was no significant increase in discipline after bank failures. In MSAs (columns (1)-(4)), however, there *was* extra discipline based on the equity ratio of banks, and this effect is long-lasting. These results seem to suggest that failures in non-MSA counties do not lead to a wake-up effect. A possible explanation is that these markets are simply less populated and a lot smaller, and therefore depositors are less exposed to failures. This explanation, however, assumes that MSAs and non-MSA counties are subject to the same amount of bank failures. When looking at the data on bank failures in Table 3, it becomes clear this assumption is not correct and that the bulk of the failures occur in MSAs: of the local markets that have seen a failure during the sample, 57% are MSAs, while they make up a much smaller share of the total number of markets. For instance, from the markets that have not experienced a failure, only 14% is a MSA and the remaining 86% are non-MSA counties. The wake-up call thus seems more present in larger banking markets simply because failures have occurred there more often. The results from Section 3 are thus still robust, but are driven mainly by the larger markets that have experienced more failures.

[Insert Table 9 near here]

Neighboring markets Another concern is that failures do not occur randomly. While Figure 2 show that there is variation across markets and states, Table 3 and the previous section showed that larger markets suffered more failures. One way to control for this potential endogeneity issue is to look at failures in neighboring markets. These failures are likely due to the same local business cycle effects, but should not impact depositors in the own market as they did not experience them. Moreover, neighboring markets are expected to be similar in both observable and unobservable characteristics (see e.g. Huang, 2008). If experiencing failures leads to extra discipline, I expect to find that failures in neighboring markets would not lead to extra discipline, as depositors in the own market should not be impacted. Table 10 shows the estimation output, where F denotes the failure of a bank within the market the bank is active in, while F_n denotes the failure in a neighboring market.

[Insert Table 10 near here]

Overall, we can see that the results from the baseline specification hold when adding the neighboring failures. Depositors still react to Equity and NPL, and this is a long-lasting effect. Failures in neighboring markets do not seem to consistently lead to extra discipline in the own market, even though banks on average have a lower growth in deposits if banks in neighboring markets fail. In the specification with only bank, market and year fixed effects, the effects on Equity and NPL of banks in the own market are only significant 3 or more years after the neighboring failure. When adding extra controls in bank×market and market×year fixed effects, it becomes clear that neighboring failures do not consistently lead to extra discipline. However, the effect of Equity after a failure within the own market is always significant and of the correct sign. It therefore seems that only experiencing failures in the own market leads to extra depositor discipline, and this channel is robust for local business cycle effects.

Local bank endogeneity A second source of potential endogeneity is the relationship between changes in deposits and a bank's risk characteristics. Even though Equation (2) tries to solve this by lagging the vector of bank risk characteristics, there could potentially be a problem if a bank depends on most of its deposit funding from the same market. If banks obtain deposit funding equally from multiple markets, there is no mechanical link between the deposit growth of each bank in a certain market and the bank-level risk characteristic. However, if banks rely mainly on funding from their one single market, there is a potential link between the *bank-market* level change in deposits and *bank* level risk characteristics. While this is partially dealt with in Equation (2) by lagging the risk characteristics, the source of the potential endogeneity is removed in order to test the robustness. I classify banks that have at least 75% of their deposits in the market as local banks, and remove these from the sample before redoing the analysis. Table 11 shows the results, which are similar to the baseline specification: extra discipline is mainly directed at the capital ratio of banks and the share of non-performing loans the first year after bank failure. In the years afterwards, discipline is again mainly directed at the capital ratio of banks, although similar to the baseline specification the return-on-assets also becomes statistically significant.

[Insert Table 11 near here]

5 Conclusion

This paper has looked at whether depositor discipline was present during the crisis, and whether the bank failures have indeed increased discipline by serving as a 'wake-up call'. In doing so, this paper offers two contributions compared to the existing literature. First, instead of measuring discipline at the level of the bank entity, this paper looks at depositor discipline in local markets. The focus on the local market is motivated by the fact that depositors generally only choose to keep their savings at banks that are active in their vicinity. By comparing banks at a national or even supranational level, this fact is not taken into account and therefore offers a distorted identification of depositor discipline. Second, by analyzing the behavior of depositors in local markets, this paper presents a cleaner identification of the wake-up call than previous studies have managed, as not all local markets have seen bank failures and therefore experienced the potential for a wake-up call.

I find that discipline was present in local markets between 2007 and 2013, and that depositors mainly focused on the capital buffers of banks. Furthermore, discipline was more severe in those local markets that saw a failure, and the analyses show that this is a long-run phenomenon. Depositors were also able to distinguish between different types of failures. Whereas they reacted more heavily to failures of banks with main offices within their local market, out-of-market and out-of-state failures did not give depositors the incentive to increase monitoring on the remaining banks. Finally, since more failures occurred in larger banking markets, the effect seems to be mainly driven by these markets.

The findings presented in this paper have important implications for the regulatory and supervisory set-up following the crisis. Despite interventions such as bailouts and increases in the level of deposit insurance, depositors still seem to monitor bank riskiness and adjust their deposits holdings accordingly. Moreover, depositor discipline is more present in markets in which the FDIC has let banks fail, even though the depositors were often fully compensated. These failures, possibly serving as a reminder regarding banks inherent riskiness, can actually lead to more involved depositors and potentially a safer banking system. Finally, the Net Stable Funding Ratio (NFSR) introduced in Basel III will force banks to hold a sufficient amount of stable funding, which includes demand and other customer deposits. This paper shows that deposit funding of banks depends not only on the bank's risk characteristics, but also on what is happening to other banks in their market.

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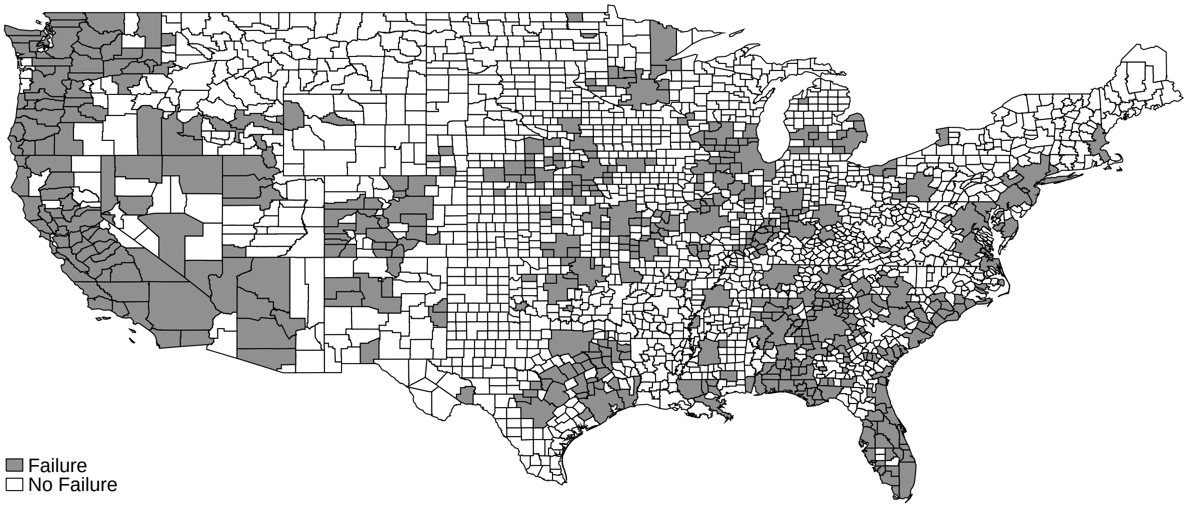
Figures and Tables

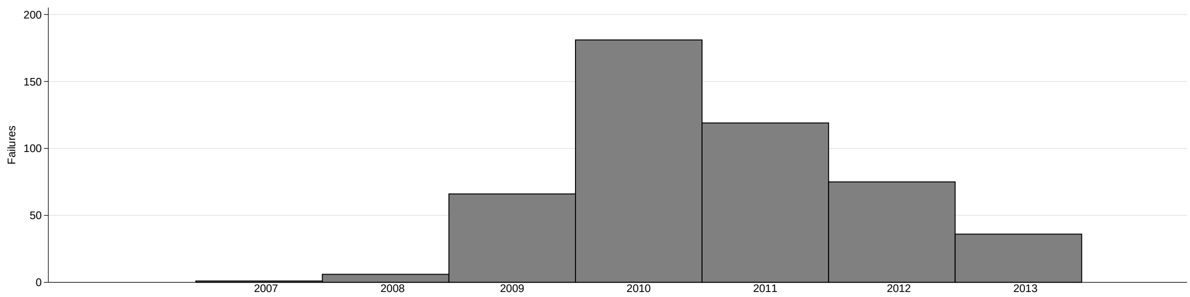
Figure 1: Identification Strategy

Figure 2: Location of bank failures 2007 - 2013



This figure shows the location of all bank failures between 2007 and 2013 on a market-level. Markets, defined as a MSA or non-MSA county, where failed banks operated branches are highlighted. Source: FDIC Failed Bank List and Summary of Deposits.

Figure 3: Bank failures over time



This figure shows the number of bank failures in the U.S. per year. Source: FDIC Failed Bank List.

Table 1: Summary statistics

Variable	Obs	Mean	Std. Dev	Min	Max
Dependent Variable					
$\Delta \ln D_{imt}$	123615	0.0173	0.1370	-0.2949	0.5845
Main Explanatory Variables					
Equity	133117	0.1072	0.0251	0.0631	0.1960
NPL	136667	0.0149	0.0139	0	0.0698
ROA	133238	0.0038	0.0038	-0.0137	0.0122
F	140170	0.1513	0.3583	0	1
Control Variables					
Real Estate/Total Loans	132765	0.6917	0.1492	0.3131	0.9604
Cost/Income	133108	0.6892	0.1428	0.4355	1.2804
Liquid Assets (%)	133193	0.0802	0.0608	0.0148	0.3127
Securities for Sale and Investment	133172	0.1943	0.1060	0.0088	0.5185
Implicit Interest Rate	133156	0.0085	0.0057	0.0012	0.0228
Ln(Total Assets)	140170	14.079	3.0107	4.3474	21.201
Savings Banks	140170	0.0466	0.2108	0	1
BHC	140170	0.8799	0.3250	0	1
HHI	140170	0.2171	0.1398	0.0495	1
Ln(no. branches)	140170	0.8066	0.9322	0	6.9392

This table shows summary statistics for the variables used in the analysis. The dependent variable $\Delta \ln D_{imt}$ is the percentage change in deposits of bank i in market m in year t. The main explanatory variables are Equity (Equity/Total Assets), NPL (Non-Performing Loans/Total Loans) and ROA (Net Profit/Total Assets). F is a dummy variable indicating whether a local market has experienced a failing bank. The control variables include business model characteristics (Real Estate Loans/Total Loans), efficiency estimates (Cost/Income), the ratio of liquid assets to total assets, securities held for sale and investment to total assets, the implicit interest rate calculated as the interest expense divided by total deposits, a dummy variable indicating whether the bank is a savings banks or a member of a Bank Holding Company, and market level characteristics such as the HHI (based on the level of deposits) and the number of branches present in the market. For banks merging or acquiring other banks, bank-market observations of the dependent variable are removed. Furthermore, the variables $\Delta \ln D_{imt}$, Equity, NPL, ROA, Real Estate/Total Loans, Cost/Income, Liquid Assets and Implicit Interest Rate are truncated at the 2.5 and 97.5 percentile to exclude outliers. The data is deflated to 2007Q2 dollars.

Table 2: Difference failed and acquiring banks

	Failed Banks	Acquiring Banks	Difference Failed - Acquiring
Equity	0.039	0.121	−0.082***
Loans	0.719	0.669	0.050***
NPL	0.102	0.021	0.081***
Deposits	0.888	0.782	0.106***
Ln(Total Assets)	12.36	14.20	−1.840***
BHC	0.815	0.916	−0.101***
Savings	0.028	0.022	0.006
Number of Markets	7.525	183.8	−176.262***
N	426	403	

This table shows differences in some key statistics between the failed banks and the banks that acquired them. The variables are Equity (Equity/Total Assets), Loans (Loans/Total Assets) NPL (Non-Performing Loans/Total Loans), Deposits (Deposits/Total Assets), Ln(Total Assets), variables indicating whether the banks were part of a Bank Holding Company (BHC) or were a Savings bank (Savings), and the average number of markets it had branches in. T-tests to compare the average were performed and reported in the last column. The number of failed banks differs from the number of acquiring banks because not all failed banks were acquired, and some banks acquired more than 1 failed bank.

Table 3: Difference markets with and without a failure

Panel A: MSA and non-MSA counties

	Market level				Bank-level		
	Non-Failed	Failed	Difference		Non-Failed	Failed	Difference
HHI	3484	2047	1437***	$\Delta \ln D_{i,m,t}$	0.020	0.002	0.018***
Ln(Number of Branches)	2.352	3.964	-1.612***				
Ln(Total Deposits)	12.69	14.66	-1.973***				
Ln(Number of Banks)	1.666	2.698	-1.033***				

Panel B: MSA

	Market level				Bank-level		
	Non-Failed	Failed	Difference		Non-Failed	Failed	Difference
HHI	1708	1526	182***	$\Delta \ln D_{i,m,t}$	0.033	0.006	0.028***
Ln(Number of Branches)	4.431	5.156	-0.725***				
Ln(Total Deposits)	15.14	16.10	-0.954***				
Ln(Number of Banks)	2.860	3.365	-0.505***				

This table shows differences in some key statistics between markets with and without failed banks. The market-level variables are the deposit-level Herfindahl-Hirschman Index, the number of branches operating in the market, the total deposits available in the market and the total number of banks operating in the market. The bank-level variable is the dependent variable, the change in the level of deposits of bank i in market m at time t. This bank-level variable is measured the year after failure, while the market-level characteristics are measured during the year of failure. Panel A shows the statistics for both MSA and non-MSA counties, while Panel B does this for only MSAs.

Table 4: Do failures lead to a wake-up effect?

	(1)	(2)	(3)	(4)
	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$
Time since failure (k)		1 year	2 year	3+ year
Equity	0.853***	0.801***	0.790***	0.784***
	(0.063)	(0.058)	(0.058)	(0.059)
NPL	−0.725***	−0.657***	−0.670***	−0.683***
	(0.064)	(0.067)	(0.067)	(0.068)
ROA	2.435***	2.277***	2.091***	1.920***
	(0.264)	(0.286)	(0.293)	(0.298)
F		−0.086***	−0.066***	−0.076***
		(0.028)	(0.026)	(0.025)
$F\times$ Equity		0.266***	0.206***	0.196***
		(0.065)	(0.060)	(0.058)
$F\times$ NPL		−0.299**	−0.166	−0.123
		(0.120)	(0.111)	(0.108)
$F\times$ ROA		0.846	1.142**	1.433***
		(0.550)	(0.510)	(0.488)
Control Variables	Included	Included	Included	Included
Bank Fixed Effects	Included	Included	Included	Included
Market Fixed Effects	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included
Within $\bar{R}^2$	0.031	0.032	0.033	0.034
N	84,131	84,131	84,131	84,131

This table shows the estimation results for Equation (2), regressing the percentage change in deposits of bank i in local market m in year t on risk measures of bank i in year $t-1$. Control variables are as indicated in Table 1, every specification includes bank, market and time fixed effects to control for demand effects. Column (2) measures the impact on market discipline 1 year after the failure has occurred, column (3) measures the long-run effect 2 years after failure and column (4) measures the long-run effect 3 or more years after bank failure. Full results are shown in Table A.1. Standard errors in parentheses, clustered on market. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table 5: Is there a difference during the crisis?

	(1) $\Delta \ln \mathrm{D}_{imt}$		(2) $\Delta \ln \mathrm{D}_{imt}$		(3) $\Delta \ln \mathrm{D}_{imt}$	
	2008 - 2010	2011 - 2013	2008 - 2010	2011 - 2013	2008 - 2010	2011 - 2013
Main Explanatory Variables						
Equity	0.880***	0.919***	0.961***	0.902***	0.979***	0.948***
	(0.102)	(0.126)	(0.101)	(0.126)	(0.114)	(0.140)
NPL	−0.765***	−0.481***	−0.708***	−0.486***	−1.031***	−0.475***
	(0.131)	(0.106)	(0.129)	(0.103)	(0.145)	(0.117)
ROA	1.513***	1.600***	0.872*	1.688***	2.231***	1.603***
	(0.475)	(0.434)	(0.477)	(0.436)	(0.532)	(0.492)
Control Variables						
Implicit Interest Rate	1.527***	4.560***	0.975*	5.226***	0.205	3.862***
	(0.537)	(1.028)	(0.531)	(1.028)	(0.623)	(1.157)
Ln(Total Assets)	−0.130***	−0.157***	−0.138***	−0.159***	−0.150***	−0.171***
	(0.014)	(0.012)	(0.014)	(0.013)	(0.015)	(0.014)
BHC	−0.027*	−0.012	−0.024*	−0.026*	−0.031**	−0.022
	(0.014)	(0.015)	(0.014)	(0.015)	(0.014)	(0.017)
Ln(Number of Branches)	−0.013***	−0.006***	−0.028***	−0.030***		
	(0.001)	(0.001)	(0.011)	(0.010)		
HHI	0.064	0.010	0.067	0.011		
	(0.040)	(0.029)	(0.043)	(0.029)		
Cost/Income	−0.006	0.037**	−0.015	0.035**	−0.014	0.033*
	(0.017)	(0.016)	(0.017)	(0.016)	(0.019)	(0.017)
Real Estate Loans	−0.104***	−0.048*	−0.092***	−0.049*	−0.056*	−0.051*
	(0.030)	(0.026)	(0.030)	(0.026)	(0.032)	(0.028)
Liquid Assets	−0.591***	−0.361***	−0.580***	−0.361***	−0.533***	−0.351***
	(0.034)	(0.029)	(0.033)	(0.028)	(0.037)	(0.031)
Securities for Sale and Investment	−0.264***	−0.288***	−0.247***	−0.286***	−0.260***	−0.292***
	(0.026)	(0.024)	(0.026)	(0.024)	(0.028)	(0.027)
Savings Bank	0.215**	−0.100***	0.207**	−0.101***	0.262**	−0.097***
	(0.100)	(0.005)	(0.098)	(0.005)	(0.107)	(0.005)
Bank Fixed Effects	Included	Included	Included	Included	Included	Included
Market Fixed Effects	Included	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included	Included
Bank×Market Fixed Effects			Included	Included	Included	Included
Market×Year Fixed Effects					Included	Included
Within $\bar{R}^2$	0.038	0.032	0.050	0.048	0.056	0.047
N	40,186	43,945	40,186	43,945	40,186	43,945
Failed	0.138	0.168	0.138	0.168	0.138	0.168

This table explores the difference in depositor reaction during two phases of the crisis using a subsample analysis. Specification (1) shows the results for the years 2008 - 2010 and the years 2011 - 2013. Specifications (2)-(3) repeat the analysis but add bank×market and market×year fixed effects, respectively. Since 'HHI' and 'Ln(Number of Branches)' are market-level indicators and vary only over market and time, they are dropped in specification (3). 'Failed' indicates the percentage of markets that experienced a failure during the time period. Standard errors in parentheses, clustered on market. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table 6: Is there a difference between in-market and out-of-market failures?

	(1)		(2)		(3)	
	$\Delta \ln \mathrm{D}_{imt}$		$\Delta \ln \mathrm{D}_{imt}$		$\Delta \ln \mathrm{D}_{imt}$	
Time since failure (k)	1 year		2 year		3+ year	
Type of failure	In-Market	Out-of-Market	In-Market	Out-of-Market	In-Market	Out-of-Market
Main Explanatory Variables						
Equity	0.815***	0.815***	0.800***	0.805***	0.797***	0.792***
	(0.058)	(0.059)	(0.058)	(0.058)	(0.058)	(0.059)
NPL	−0.655***	−0.680***	−0.650***	−0.683***	−0.652***	−0.686***
	(0.064)	(0.066)	(0.065)	(0.066)	(0.065)	(0.067)
ROA	2.378***	2.330***	2.290***	2.166***	2.189***	2.056***
	(0.269)	(0.283)	(0.271)	(0.292)	(0.273)	(0.294)
Control Variables						
Implicit Interest Rate	2.522***	2.466***	2.524***	2.532***	2.509***	2.665***
	(0.355)	(0.356)	(0.356)	(0.359)	(0.357)	(0.364)
Ln(Total Assets)	−0.055***	−0.054***	−0.056***	−0.055***	−0.057***	−0.057***
	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
BHC	−0.019**	−0.019**	−0.019**	−0.017*	−0.018**	−0.016*
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Ln(Number of Branches)	−0.010***	−0.010***	−0.011***	−0.012***	−0.012***	−0.012***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
HHI	0.028*	0.025	0.032*	0.022	0.036**	0.020
	(0.017)	(0.017)	(0.018)	(0.017)	(0.018)	(0.018)
Cost/Income	0.078***	0.078***	0.075***	0.078***	0.072***	0.075***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.010)
Real Estate Loans	−0.054***	−0.058***	−0.049***	−0.054***	−0.045***	−0.046***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Liquid Assets	−0.327***	−0.319***	−0.331***	−0.323***	−0.332***	−0.325***
	(0.017)	(0.018)	(0.018)	(0.018)	(0.018)	(0.018)
Securities for Sale and Investment	−0.185***	−0.183***	−0.186***	−0.186***	−0.186***	−0.183***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Savings Bank	0.139**	0.141**	0.139**	0.138**	0.139**	0.138**
	(0.066)	(0.067)	(0.066)	(0.066)	(0.066)	(0.067)
Interaction Main Explanatory Variables						
F	−0.115***	−0.092***	−0.094**	−0.062**	−0.102***	−0.061**
	(0.039)	(0.030)	(0.038)	(0.028)	(0.036)	(0.027)
$F\times$ Equity	0.272***	0.290***	0.296***	0.210***	0.255***	0.210***
	(0.083)	(0.078)	(0.076)	(0.065)	(0.074)	(0.062)
$F\times$ NPL	−0.521***	−0.274**	−0.398***	−0.126	−0.348***	−0.118
	(0.146)	(0.137)	(0.135)	(0.120)	(0.127)	(0.116)
$F\times$ ROA	0.238	0.838	0.595	1.048**	1.023	1.104**
	(0.760)	(0.608)	(0.703)	(0.530)	(0.663)	(0.509)
Interaction Control Variables						
$F\times$ Implicit Interest Rate	0.614	1.006	0.683	0.997*	0.710	0.534
	(0.673)	(0.650)	(0.658)	(0.585)	(0.628)	(0.570)
$F\times$ Ln(Total Assets)	0.005***	0.002***	0.004***	0.002**	0.004***	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
$F\times$ BHC	0.010	−0.003	0.005	−0.004	0.005	−0.004
	(0.008)	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
$F\times$ Ln(Number of Branches)	−0.000	0.004**	0.003	0.006***	0.005***	0.007***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
$F\times$ HHI	0.011	0.016	−0.010	0.028*	−0.017	0.027*
	(0.021)	(0.018)	(0.020)	(0.016)	(0.023)	(0.016)
$F\times$ Cost/Income	0.026	0.036**	0.020	0.012	0.027*	0.008
	(0.019)	(0.017)	(0.017)	(0.016)	(0.016)	(0.015)
$F\times$ Real Estate Loans	−0.038**	−0.017	−0.053***	−0.038***	−0.051***	−0.041***
	(0.017)	(0.013)	(0.016)	(0.014)	(0.017)	(0.014)
$F\times$ Liquid Assets	0.125***	0.018	0.149***	0.067**	0.153***	0.083***
	(0.039)	(0.031)	(0.032)	(0.028)	(0.030)	(0.027)
$F\times$ Securities for Sale and Investment	0.037**	0.012	0.040**	0.031**	0.042**	0.020
	(0.018)	(0.016)	(0.017)	(0.015)	(0.016)	(0.015)
$F\times$ Savings Bank	−0.005	−0.009	−0.008	−0.003	−0.009	−0.008
	(0.012)	(0.015)	(0.010)	(0.012)	(0.010)	(0.010)
Bank Fixed Effects	Included	Included	Included	Included	Included	Included
Market Fixed Effects	Included	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included	Included
Within $\bar{R}^2$	0.032	0.031	0.033	0.032	0.034	0.033
N	84,131	84,131	84,131	84,131	84,131	84,131
Failed	0.090	0.107	0.090	0.107	0.090	0.107

This table explores the difference in depositor reaction to bank failures whose headquarters is located in the local market, versus bank failures whose headquarters are located out-of-market. 'Failed' indicates the percentage of markets that experienced a failure during the time period. Standard errors in parentheses, clustered on market. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table 7: Do depositors discipline differently in markets with high or low concentration?

	(1) $\Delta \ln \mathrm{D}_{imt}$				(2) $\Delta \ln \mathrm{D}_{imt}$				(3) $\Delta \ln \mathrm{D}_{imt}$			
HHI	HHI $\geq$ 2500				1500 $\leq$ HHI $<$ 2500				HHI $<$ 1500			
Time since failure (k)		1 year	2 year	3+ year		1 year	2 year	3+ year		1 year	2 year	3+ year
Equity	0.752***	0.744***	0.745***	0.737***	0.607***	0.579***	0.576***	0.575***	1.042***	0.985***	0.963***	0.937***
	(0.106)	(0.105)	(0.105)	(0.105)	(0.097)	(0.094)	(0.093)	(0.093)	(0.112)	(0.107)	(0.109)	(0.111)
NPL	−0.570***	−0.518***	−0.540***	−0.556***	−0.587***	−0.561***	−0.590***	−0.623***	−0.877***	−0.850***	−0.859***	−0.853***
	(0.128)	(0.123)	(0.123)	(0.124)	(0.120)	(0.121)	(0.119)	(0.123)	(0.103)	(0.120)	(0.122)	(0.130)
ROA	2.423***	2.196***	2.083***	2.028***	2.384***	2.418***	2.332***	2.163***	2.557***	2.348***	2.031***	1.760***
	(0.521)	(0.526)	(0.527)	(0.530)	(0.462)	(0.492)	(0.502)	(0.511)	(0.462)	(0.545)	(0.588)	(0.611)
F		−0.210***	−0.124*	−0.099		−0.085	−0.057	−0.081		−0.041	−0.034	−0.046
		(0.081)	(0.074)	(0.066)		(0.060)	(0.051)	(0.050)		(0.035)	(0.035)	(0.035)
$F\times$ Equity		0.001	−0.010	0.051		0.397***	0.239**	0.185		0.179**	0.161**	0.201**
		(0.190)	(0.181)	(0.161)		(0.136)	(0.118)	(0.116)		(0.084)	(0.081)	(0.081)
$F\times$ NPL		−0.725	−0.242	−0.041		−0.236	0.044	0.140		−0.063	−0.023	−0.052
		(0.488)	(0.384)	(0.386)		(0.263)	(0.243)	(0.228)		(0.182)	(0.177)	(0.177)
$F\times$ ROA		5.025**	5.313***	4.428**		−0.643	−0.191	0.461		0.460	0.836	1.209
		(2.008)	(1.849)	(1.751)		(1.168)	(1.093)	(1.007)		(0.806)	(0.800)	(0.792)
Control Variables	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Bank Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Market Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Within $\bar{R}^2$	0.023	0.025	0.025	0.026	0.024	0.026	0.026	0.026	0.044	0.045	0.046	0.046
N	24,550	24,550	24,550	24,550	29,102	29,102	29,102	29,102	30,479	30,479	30,479	30,479
Failed	0.051	0.051	0.051	0.051	0.102	0.102	0.102	0.102	0.267	0.267	0.267	0.267

This table explores whether depositors react differently across high, moderate or low concentration markets. Markets are divided according to HHI and in accordance with the U.S. Department of Justice. High concentration is defined as HHI values above 2500, moderate concentration is defined as values between 1500 and 2500, and low concentration is defined as values below 1500. Control variables are as indicated in Table 1, every specification includes bank, market and time fixed effects to control for demand effects. 'Failed' indicates the percentage of markets that experienced a failure during the time period. Full results are available upon request. Standard errors in parentheses, clustered on market. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table 8: Is there a general crisis effect?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	$\Delta \ln D_{imt}$	$\Delta \ln D_{imt}$	$\Delta \ln D_{imt}$	$\Delta \ln D_{imt}$	$\Delta \ln D_{imt}$	$\Delta \ln D_{imt}$	$\Delta \ln D_{imt}$	$\Delta \ln D_{imt}$	$\Delta \ln D_{imt}$	$\Delta \ln D_{imt}$	$\Delta \ln D_{imt}$	$\Delta \ln D_{imt}$
Time since failure (k)		1 year	2 year	3+ year		1 year	2 year	3+ year		1 year	2 year	3+ year
Equity	0.183*	0.179*	0.179*	0.180*	0.231**	0.227**	0.227**	0.228**	0.360***	0.350***	0.345***	0.343***
	(0.098)	(0.099)	(0.100)	(0.100)	(0.105)	(0.106)	(0.106)	(0.107)	(0.099)	(0.099)	(0.100)	(0.101)
NPL	−1.877***	−1.853***	−1.848***	−1.848***	−1.798***	−1.780***	−1.777***	−1.777***	−1.902***	−1.891***	−1.895***	−1.900***
	(0.144)	(0.143)	(0.143)	(0.143)	(0.143)	(0.143)	(0.143)	(0.143)	(0.133)	(0.133)	(0.133)	(0.133)
ROA	0.783	0.766	0.740	0.717	0.586	0.580	0.556	0.522	0.416	0.427	0.396	0.355
	(0.732)	(0.733)	(0.734)	(0.729)	(0.707)	(0.708)	(0.710)	(0.702)	(0.634)	(0.635)	(0.635)	(0.631)
Crisis Interaction												
Crisis	0.373	0.424	0.430	0.458	−0.060	−0.051	−0.049	−0.044	−0.092	−0.140	−0.085	−0.077
	(6.801)	(6.835)	(6.873)	(6.958)	(0.854)	(0.849)	(0.846)	(0.840)	(0.118)	(0.161)	(0.115)	(0.122)
$C\times$ Equity	0.324***	0.291***	0.296***	0.299***	0.370***	0.340***	0.347***	0.355***	0.398***	0.368***	0.377***	0.384***
	(0.059)	(0.059)	(0.060)	(0.059)	(0.061)	(0.062)	(0.064)	(0.062)	(0.067)	(0.065)	(0.067)	(0.065)
$C\times$ NPL	0.978***	1.025***	0.997***	0.974***	0.966***	1.023***	0.994***	0.972***	1.052***	1.089***	1.039***	1.000***
	(0.270)	(0.275)	(0.264)	(0.258)	(0.280)	(0.288)	(0.278)	(0.275)	(0.203)	(0.211)	(0.203)	(0.199)
$C\times$ ROA	3.451***	3.157***	2.983***	2.841***	3.388***	3.147***	2.976***	2.807***	3.823***	3.665***	3.434***	3.168***
	(0.937)	(0.984)	(0.986)	(0.986)	(0.934)	(0.971)	(0.969)	(0.967)	(0.820)	(0.875)	(0.885)	(0.888)
Crisis and Failure Interaction												
$C \times F$		−0.088**	−0.063	−0.062		−0.066	−0.053	−0.065		0.324	−0.034	−0.062
		(0.041)	(0.042)	(0.043)		(0.042)	(0.044)	(0.049)		(1.075)	(0.047)	(0.052)
$C \times F\times$ Equity		0.228***	0.138	0.104		0.245***	0.139	0.074		0.244***	0.138	0.097
		(0.082)	(0.090)	(0.085)		(0.093)	(0.104)	(0.108)		(0.082)	(0.087)	(0.094)
$C \times F\times$ NPL		−0.363**	−0.174	−0.090		−0.354**	−0.152	−0.109		−0.165	0.028	0.107
		(0.163)	(0.143)	(0.152)		(0.174)	(0.156)	(0.181)		(0.178)	(0.154)	(0.180)
$C \times F\times$ ROA		1.670	1.940	2.202*		1.387	1.969	2.386*		0.785	1.519	2.171*
		(1.339)	(1.302)	(1.256)		(1.333)	(1.324)	(1.280)		(1.258)	(1.221)	(1.178)
Control Variables	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Bank Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Market Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Bank×Market Fixed Effects					Included	Included	Included	Included	Included	Included	Included	Included
Market×Year Fixed Effects									Included	Included	Included	Included
Within $\bar{R}^2$	0.047	0.048	0.048	0.049	0.055	0.055	0.056	0.056	0.051	0.052	0.052	0.053
N	149,721	149,721	149,721	149,721	149,721	149,721	149,721	149,721	149,721	149,721	149,721	149,721

This table explores the cumulative effect of the crisis and bank failures. Control variables are as indicated in Table 1, every specification includes bank, market and time fixed effects to control for demand effects, while columns 5-12 include bank×market fixed effects and columns 9-12 also include market×year fixed effects. Full results are available upon request. Standard errors in parentheses, clustered on market. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table 9: Do failures lead to a wake-up effect in all markets?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$
Market	MSAs				Non-MSA Counties			
Time since failure (k)		1 year	2 year	3+ year		1 year	2 year	3+ year
Equity	0.986***	0.897***	0.859***	0.836***	0.714***	0.712***	0.718***	0.717***
	(0.096)	(0.090)	(0.091)	(0.092)	(0.067)	(0.067)	(0.068)	(0.068)
NPL	−0.885***	−0.818***	−0.875***	−0.864***	−0.503***	−0.506***	−0.505***	−0.536***
	(0.103)	(0.122)	(0.124)	(0.132)	(0.074)	(0.076)	(0.076)	(0.077)
ROA	2.431***	2.258***	1.910***	1.666***	2.732***	2.673***	2.622***	2.517***
	(0.406)	(0.489)	(0.521)	(0.545)	(0.346)	(0.350)	(0.353)	(0.355)
F		−0.066**	−0.065**	−0.074**		−0.074	−0.017	−0.029
		(0.032)	(0.031)	(0.032)		(0.061)	(0.048)	(0.042)
$F\times$ Equity		0.278***	0.296***	0.314***		0.097	−0.076	−0.087
		(0.074)	(0.072)	(0.072)		(0.111)	(0.093)	(0.091)
$F\times$ NPL		−0.139	0.010	−0.028		−0.055	0.116	0.308
		(0.147)	(0.147)	(0.150)		(0.265)	(0.215)	(0.198)
$F\times$ ROA		0.234	0.663	0.923		1.953	2.034	2.538**
		(0.669)	(0.671)	(0.677)		(1.656)	(1.267)	(1.080)
Control Variables	Included	Included	Included	Included	Included	Included	Included	Included
Bank Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included
Market Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included
Within $\bar{R}^2$	0.041	0.042	0.044	0.045	0.026	0.026	0.026	0.026
N	37,203	37,203	37,203	37,203	46,928	46,928	46,928	46,928
Failed	0.274	0.274	0.274	0.274	0.034	0.034	0.034	0.034

This table explores the robustness of the definition of a market, by using using only MSAs or non-MSA counties as the regional market in which depositors move their deposits. Since there were no changes in type between savings and commercial banks in the non-MSA counties, the 'Savings Bank' variable was omitted from all specifications. 'Failed' indicates the percentage of markets that experienced a failure during the time period. Standard errors in parentheses, clustered on market. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table 10: Do neighboring failures lead to a wake-up effect?

	(1)			(2)			(3)		
	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$
Time since failure (k)	1 year	2 year	3+ year	1 year	2 year	3+ year	1 year	2 year	3+ year
Equity	0.795***	0.774***	0.753***	0.864***	0.841***	0.812***	0.889***	0.868***	0.843***
	(0.055)	(0.055)	(0.056)	(0.055)	(0.055)	(0.056)	(0.062)	(0.063)	(0.063)
NPL	−0.692***	−0.710***	−0.757***	−0.646***	−0.665***	−0.713***	−0.706***	−0.729***	−0.782***
	(0.065)	(0.067)	(0.070)	(0.064)	(0.067)	(0.071)	(0.075)	(0.078)	(0.083)
ROA	2.186***	1.972***	1.639***	2.033***	1.749***	1.325***	2.621***	2.327***	1.966***
	(0.280)	(0.293)	(0.299)	(0.286)	(0.302)	(0.310)	(0.319)	(0.337)	(0.345)
F	−0.068**	−0.044*	−0.038	−0.048*	−0.035	−0.034		−0.057	−0.080*
	(0.030)	(0.027)	(0.026)	(0.029)	(0.028)	(0.029)		(0.035)	(0.048)
$F\times$ Equity	0.258***	0.190***	0.141**	0.295***	0.220***	0.148*	0.284***	0.220***	0.165*
	(0.071)	(0.064)	(0.063)	(0.077)	(0.077)	(0.084)	(0.078)	(0.080)	(0.088)
$F\times$ NPL	−0.378***	−0.210*	−0.216*	−0.260**	−0.113	−0.131	−0.171	−0.002	0.002
	(0.123)	(0.115)	(0.113)	(0.130)	(0.136)	(0.139)	(0.137)	(0.142)	(0.149)
$F\times$ ROA	0.487	0.801	0.900	0.095	0.411	0.401	−0.104	0.599	0.966
	(0.595)	(0.564)	(0.554)	(0.609)	(0.578)	(0.605)	(0.697)	(0.638)	(0.683)
F_n	−0.028	−0.032*	−0.053***	−0.026	−0.040**	−0.070***		−0.027	−0.058*
	(0.021)	(0.019)	(0.020)	(0.021)	(0.020)	(0.022)		(0.032)	(0.035)
$F_n\times$ Equity	0.022	0.026	0.085*	−0.002	0.013	0.102	−0.025	−0.025	0.051
	(0.054)	(0.049)	(0.049)	(0.057)	(0.054)	(0.062)	(0.062)	(0.058)	(0.065)
$F_n\times$ NPL	0.164	0.101	0.188*	0.064	0.038	0.120	0.116	0.006	0.080
	(0.101)	(0.099)	(0.096)	(0.109)	(0.108)	(0.111)	(0.125)	(0.123)	(0.124)
$F_n\times$ ROA	0.494	0.384	0.699	0.651	0.922*	1.458***	0.055	0.100	0.245
	(0.523)	(0.513)	(0.493)	(0.550)	(0.540)	(0.536)	(0.646)	(0.556)	(0.582)
Control Variables	Included	Included	Included	Included	Included	Included	Included	Included	Included
Bank Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included	Included
Market Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included	Included
Bank×Market Fixed Effects				Included	Included	Included	Included	Included	Included
Market×Year Fixed Effects							Included	Included	Included
Within $\bar{R}^2$	0.032	0.034	0.035	0.037	0.038	0.041	0.038	0.039	0.042
N	84,131	84,131	84,131	84,131	84,131	84,131	84,131	84,131	84,131
Failed	0.151	0.151	0.151	0.151	0.151	0.151	0.151	0.151	0.151
Failed Neighbor	0.198	0.198	0.198	0.198	0.198	0.198	0.198	0.198	0.198

This table explores the effect of bank failures in a neighboring market. F indicates a failure in the home market, while F_n indicates a failure in the neighboring market. Specification (1) includes the standard fixed effects, while specifications (2) and (3) add bank×market and market×year fixed effects, respectively. Since 'HHI' and 'Ln(Number of Branches)' are market-level indicators and vary only over market and time, they are dropped in specification (3). For the same reason, F drops out as it is measures failures in a market during the previous year only, and is therefore perfectly correlated with the market×year fixed effects. 'Failed' indicates the percentage of markets that experienced a failure during the time period, while 'Failed Neighbor' indicates the percentage of neighboring markets experiencing a failure. Standard errors in parentheses, clustered on market. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table 11: Do failures lead to a wake-up effect when removing local banks?

	(1)	(2)	(3)	(4)
	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$
Time since failure (k)		1 year	2 year	3+ year
Equity	0.448***	0.428***	0.425***	0.424***
	(0.059)	(0.059)	(0.059)	(0.060)
NPL	−0.616***	−0.572***	−0.596***	−0.614***
	(0.075)	(0.078)	(0.078)	(0.080)
ROA	3.010***	2.909***	2.736***	2.557***
	(0.310)	(0.329)	(0.337)	(0.342)
F		−0.062*	−0.047	−0.062**
		(0.036)	(0.032)	(0.031)
$F\times$ Equity		0.163**	0.118*	0.109*
		(0.072)	(0.064)	(0.062)
$F\times$ NPL		−0.266*	−0.046	−0.022
		(0.157)	(0.142)	(0.134)
$F\times$ ROA		0.888	1.117*	1.403**
		(0.708)	(0.646)	(0.616)
Control Variables	Included	Included	Included	Included
Bank Fixed Effects	Included	Included	Included	Included
Market Fixed Effects	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included
Within $\bar{R}^2$	0.016	0.017	0.018	0.018
N	63,440	63,440	63,440	63,440
Failed	0.125	0.125	0.125	0.125

This table explores the robustness of the results when removing banks that are considered local (i.e. that have at least 75% of their deposits in the market). As the changes in deposits might lead to a worse risk profile in the next period, these banks are removed for possible endogeneity concerns. 'Failed' indicates the percentage of markets that experienced a failure during the time period. Standard errors in parentheses, clustered on market. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Appendix A Additional Figures and Tables

Table A.1: Do failures lead to a wake-up effect?

	(1)	(2)	(3)	(4)
	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$
Time since failure (k)		1 year	2 year	3+ year
Main Explanatory Variables				
Equity	0.853***	0.801***	0.790***	0.784***
	(0.063)	(0.058)	(0.058)	(0.059)
NPL	−0.725***	−0.657***	−0.670***	−0.683***
	(0.064)	(0.067)	(0.067)	(0.068)
ROA	2.435***	2.277***	2.091***	1.920***
	(0.264)	(0.286)	(0.293)	(0.298)
Control Variables				
Implicit Interest Rate	2.347***	2.580***	2.629***	2.709***
	(0.346)	(0.360)	(0.361)	(0.362)
Ln(Total Assets)	−0.053***	−0.055***	−0.056***	−0.058***
	(0.004)	(0.005)	(0.005)	(0.005)
BHC	−0.020**	−0.018**	−0.017*	−0.016*
	(0.009)	(0.009)	(0.009)	(0.009)
Ln(Number of Branches)	−0.009***	−0.011***	−0.012***	−0.013***
	(0.001)	(0.001)	(0.001)	(0.001)
HHI	0.026	0.027	0.027	0.028
	(0.017)	(0.017)	(0.018)	(0.018)
Cost/Income	0.083***	0.077***	0.076***	0.071***
	(0.009)	(0.009)	(0.009)	(0.010)
Real Estate Loans	−0.057***	−0.055***	−0.050***	−0.043***
	(0.014)	(0.014)	(0.014)	(0.014)
Liquid Assets	−0.319***	−0.324***	−0.329***	−0.330***
	(0.017)	(0.018)	(0.018)	(0.019)
Securities for Sale and Investment	−0.181***	−0.184***	−0.187***	−0.185***
	(0.012)	(0.012)	(0.012)	(0.012)
Savings Bank	0.140**	0.140**	0.137**	0.139**
	(0.067)	(0.067)	(0.066)	(0.068)
Interaction Main Explanatory Variables				
F		−0.086***	−0.066***	−0.076***
		(0.028)	(0.026)	(0.025)
$F\times$ Equity		0.266***	0.206***	0.196***
		(0.065)	(0.060)	(0.058)
$F\times$ NPL		−0.299**	−0.166	−0.123
		(0.120)	(0.111)	(0.108)
$F\times$ ROA		0.846	1.142**	1.433***
		(0.550)	(0.510)	(0.488)
Interaction Control Variables				
$F\times$ Implicit Interest Rate		0.895	1.068**	0.994**
		(0.548)	(0.520)	(0.489)
$F\times$ Ln(Total Assets)		0.003***	0.002***	0.003***
		(0.001)	(0.001)	(0.001)
$F\times$ BHC		−0.000	0.001	0.000
		(0.006)	(0.006)	(0.006)
$F\times$ Ln(Number of Branches)		0.004**	0.005***	0.006***
		(0.002)	(0.001)	(0.001)
$F\times$ HHI		0.008	0.008	0.004
		(0.015)	(0.013)	(0.015)
$F\times$ Cost/Income		0.027*	0.009	0.013
		(0.015)	(0.014)	(0.014)
$F\times$ Real Estate Loans		−0.027**	−0.040***	−0.041***
		(0.013)	(0.013)	(0.012)
$F\times$ Liquid Assets		0.055*	0.088***	0.095***
		(0.029)	(0.027)	(0.026)
$F\times$ Securities for Sale and Investment		0.015	0.027**	0.023*
		(0.014)	(0.014)	(0.014)
$F\times$ Savings Bank		−0.008	−0.007	−0.014
		(0.011)	(0.009)	(0.008)
Bank Fixed Effects	Included	Included	Included	Included
Market Fixed Effects	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included
Within $\bar{R}^2$	0.031	0.032	0.033	0.034
N	84,131	84,131	84,131	84,131

This table shows the full estimation results for Equation (2), including control variables that were left out in Table 4 for reason of brevity. Similar to Table 4, every specification includes bank, market and time fixed effects to control for demand effects. Column 2 measures the impact on market discipline 1 year after the failure has occurred, column 3 measures the long-run effect 2 years after failure and column 4 measures the long-run effect 3 or more years after bank failure. Standard errors in parentheses, clustered on market. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table A.2: Is there a difference between in-state and out-of-state failures?

	(1) $\Delta \ln \mathrm{D}_{imt}$		(2) $\Delta \ln \mathrm{D}_{imt}$		(3) $\Delta \ln \mathrm{D}_{imt}$	
Time since failure (k)	1 year		2 year		3+ year	
Type of failure	In-State	Out-of-State	In-State	Out-of-State	In-State	Out-of-State
Main Explanatory Variables						
Equity	0.812***	0.814***	0.791***	0.804***	0.786***	0.794***
	(0.058)	(0.059)	(0.058)	(0.058)	(0.058)	(0.058)
NPL	−0.676***	−0.668***	−0.666***	−0.656***	−0.667***	−0.675***
	(0.065)	(0.066)	(0.066)	(0.065)	(0.066)	(0.066)
ROA	2.455***	2.325***	2.354***	2.144***	2.210***	2.016***
	(0.275)	(0.279)	(0.277)	(0.289)	(0.281)	(0.292)
Control Variables						
Implicit Interest Rate	2.466***	2.526***	2.525***	2.559***	2.566***	2.658***
	(0.354)	(0.357)	(0.357)	(0.361)	(0.360)	(0.361)
Ln(Total Assets)	−0.054***	−0.054***	−0.055***	−0.056***	−0.056***	−0.057***
	(0.005)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
BHC	−0.020**	−0.019**	−0.019**	−0.017*	−0.018**	−0.016*
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Ln(Number of Branches)	−0.010***	−0.011***	−0.010***	−0.012***	−0.011***	−0.012***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
HHI	0.028	0.026	0.029*	0.025	0.033*	0.026
	(0.017)	(0.017)	(0.018)	(0.017)	(0.018)	(0.018)
Cost/Income	0.080***	0.078***	0.077***	0.077***	0.073***	0.073***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Real Estate Loans	−0.058***	−0.056***	−0.053***	−0.052***	−0.047***	−0.045***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)	(0.014)
Liquid Assets	−0.327***	−0.319***	−0.332***	−0.322***	−0.333***	−0.322***
	(0.017)	(0.017)	(0.018)	(0.018)	(0.018)	(0.018)
Securities for Sale and Investment	−0.185***	−0.185***	−0.186***	−0.185***	−0.185***	−0.184***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Savings Bank	0.139**	0.140**	0.136**	0.138**	0.137**	0.138**
	(0.066)	(0.067)	(0.065)	(0.066)	(0.066)	(0.067)
Interaction Main Explanatory Variables						
F	−0.129***	−0.078***	−0.100***	−0.062**	−0.106***	−0.070**
	(0.034)	(0.030)	(0.033)	(0.028)	(0.030)	(0.028)
$F\times$ Equity	0.380***	0.240***	0.360***	0.200***	0.320***	0.201***
	(0.078)	(0.074)	(0.072)	(0.067)	(0.067)	(0.064)
$F\times$ NPL	−0.368***	−0.316**	−0.286**	−0.230*	−0.254**	−0.137
	(0.143)	(0.130)	(0.121)	(0.126)	(0.115)	(0.124)
$F\times$ ROA	−0.115	0.862	0.072	1.270**	0.530	1.466***
	(0.660)	(0.636)	(0.626)	(0.567)	(0.587)	(0.539)
Interaction Control Variables						
$F\times$ Implicit Interest Rate	0.826	0.783	0.596	1.042*	0.509	0.831
	(0.569)	(0.614)	(0.573)	(0.601)	(0.545)	(0.571)
$F\times$ Ln(Total Assets)	0.004***	0.002***	0.003***	0.002**	0.004***	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
$F\times$ BHC	0.008	0.001	0.007	−0.004	0.005	−0.003
	(0.006)	(0.007)	(0.006)	(0.006)	(0.006)	(0.007)
$F\times$ Ln(Number of Branches)	0.001	0.004**	0.001	0.007***	0.003**	0.007***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
$F\times$ HHI	0.004	0.018	0.001	0.025	−0.010	0.016
	(0.020)	(0.018)	(0.015)	(0.017)	(0.018)	(0.016)
$F\times$ Cost/Income	0.016	0.035**	0.002	0.019	0.011	0.018
	(0.018)	(0.017)	(0.017)	(0.016)	(0.015)	(0.015)
$F\times$ Real Estate Loans	−0.003	−0.037**	−0.025*	−0.048***	−0.028*	−0.050***
	(0.015)	(0.014)	(0.014)	(0.015)	(0.015)	(0.014)
$F\times$ Liquid Assets	0.109***	0.023	0.128***	0.068**	0.133***	0.081***
	(0.034)	(0.035)	(0.030)	(0.031)	(0.028)	(0.029)
$F\times$ Securities for Sale and Investment	0.030*	0.022	0.035**	0.031**	0.027*	0.028*
	(0.016)	(0.017)	(0.015)	(0.015)	(0.015)	(0.016)
$F\times$ Savings Bank	−0.007	−0.008	−0.011	−0.002	−0.017**	−0.010
	(0.011)	(0.013)	(0.009)	(0.010)	(0.009)	(0.009)
Bank Fixed Effects	Included	Included	Included	Included	Included	Included
Market Fixed Effects	Included	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included	Included
Within $\bar{R}^2$	0.032	0.032	0.033	0.033	0.033	0.033
N	84,131	84,131	84,131	84,131	84,131	84,131
Failed	0.094	0.110	0.094	0.110	0.094	0.110

This table explores the difference in depositor reaction to bank failures whose headquarters is located in the same state, versus bank failures whose headquarters are located out-of-state. 'Failed' indicates the percentage of markets that experienced a failure during the time period. Standard errors in parentheses, clustered on market. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table A.3: Do failures lead to a wake-up effect?

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$	$\Delta \ln \mathrm{D}_{imt}$
Time since failure (k)		1 year	2 year	3+ year		1 year	2 year	3+ year
Main Explanatory Variables								
Equity	0.916***	0.868***	0.858***	0.850***	0.943***	0.891***	0.876***	0.869***
	(0.063)	(0.058)	(0.058)	(0.058)	(0.070)	(0.066)	(0.066)	(0.066)
NPL	−0.681***	−0.624***	−0.634***	−0.650***	−0.718***	−0.681***	−0.707***	−0.735***
	(0.064)	(0.066)	(0.067)	(0.069)	(0.073)	(0.077)	(0.078)	(0.081)
ROA	2.268***	2.148***	1.977***	1.795***	2.668***	2.671***	2.442***	2.210***
	(0.270)	(0.294)	(0.303)	(0.309)	(0.299)	(0.327)	(0.340)	(0.348)
Control Variables								
Implicit Interest Rate	2.211***	2.155***	2.194***	2.334***	1.939***	1.979***	2.124***	2.295***
	(0.346)	(0.354)	(0.357)	(0.361)	(0.392)	(0.403)	(0.409)	(0.412)
Ln(Total Assets)	−0.044***	−0.044***	−0.046***	−0.047***	−0.055***	−0.055***	−0.056***	−0.058***
	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
BHC	−0.021**	−0.022**	−0.021**	−0.020**	−0.019**	−0.019**	−0.019**	−0.018*
	(0.009)	(0.009)	(0.009)	(0.009)	(0.010)	(0.009)	(0.009)	(0.009)
Ln(Number of Branches)	−0.039***	−0.038***	−0.038***	−0.038***				
	(0.005)	(0.005)	(0.005)	(0.005)				
HHI	0.032*	0.031*	0.032*	0.034*				
	(0.017)	(0.017)	(0.018)	(0.018)				
Cost/Income	0.085***	0.081***	0.082***	0.076***	0.079***	0.079***	0.078***	0.068***
	(0.009)	(0.009)	(0.010)	(0.010)	(0.010)	(0.011)	(0.011)	(0.011)
Real Estate Loans	−0.059***	−0.060***	−0.058***	−0.054***	−0.048***	−0.052***	−0.054***	−0.052***
	(0.014)	(0.014)	(0.014)	(0.014)	(0.015)	(0.015)	(0.015)	(0.016)
Liquid Assets	−0.319***	−0.317***	−0.326***	−0.338***	−0.316***	−0.317***	−0.330***	−0.345***
	(0.017)	(0.018)	(0.018)	(0.019)	(0.019)	(0.020)	(0.020)	(0.021)
Securities for Sale and Investment	−0.180***	−0.183***	−0.187***	−0.187***	−0.190***	−0.197***	−0.207***	−0.207***
	(0.012)	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)	(0.014)	(0.014)
Savings Bank	0.115*	0.116*	0.114*	0.116*	0.153**	0.153**	0.151**	0.153**
	(0.060)	(0.060)	(0.060)	(0.061)	(0.075)	(0.075)	(0.075)	(0.077)
Interaction Main Explanatory Variables								
F		−0.066**	−0.063**	−0.090***			−0.061	−0.101*
		(0.028)	(0.026)	(0.026)			(0.037)	(0.053)
$F\times$ Equity		0.291***	0.231***	0.220***		0.267***	0.204***	0.198***
		(0.070)	(0.069)	(0.068)		(0.073)	(0.072)	(0.071)
$F\times$ NPL		−0.231*	−0.105	−0.083		−0.112	−0.008	0.031
		(0.128)	(0.130)	(0.131)		(0.133)	(0.136)	(0.141)
$F\times$ ROA		0.562	1.121**	1.488***		−0.067	0.682	1.135*
		(0.557)	(0.522)	(0.519)		(0.615)	(0.590)	(0.586)
Interaction Control Variables								
$F\times$ Implicit Interest Rate		0.310	0.681	0.549		−2.390***	−2.972***	−3.785***
		(0.508)	(0.508)	(0.491)		(0.766)	(0.765)	(0.769)
$F\times$ Ln(Total Assets)		0.000	0.001	0.002***		0.000	0.001*	0.003***
		(0.001)	(0.001)	(0.001)		(0.001)	(0.001)	(0.001)
$F\times$ BHC		0.005	0.006	0.005		0.001	0.003	0.003
		(0.006)	(0.006)	(0.006)		(0.006)	(0.006)	(0.006)
$F\times$ Ln(Number of Branches)		0.001	0.003*	0.004**				
		(0.002)	(0.002)	(0.002)				
$F\times$ HHI		−0.000	0.001	−0.004				
		(0.015)	(0.013)	(0.016)				
$F\times$ Cost/Income		0.011	0.000	0.013		0.001	0.001	0.021
		(0.016)	(0.015)	(0.015)		(0.016)	(0.016)	(0.016)
$F\times$ Real Estate Loans		0.013	−0.004	−0.008		0.031**	0.024	0.024
		(0.013)	(0.014)	(0.014)		(0.015)	(0.016)	(0.017)
$F\times$ Liquid Assets		0.003	0.061**	0.109***		−0.004	0.056*	0.107***
		(0.032)	(0.030)	(0.030)		(0.034)	(0.031)	(0.032)
$F\times$ Securities for Sale and Investment		0.019	0.039**	0.036**		0.038**	0.064***	0.058***
		(0.017)	(0.017)	(0.017)		(0.019)	(0.018)	(0.018)
$F\times$ Savings Bank		−0.004	−0.004	−0.015		0.001	0.003	−0.006
		(0.013)	(0.010)	(0.010)		(0.014)	(0.011)	(0.012)
Bank Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included
Market Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included
Bank×Market Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included
Market×Year Fixed Effects					Included	Included	Included	Included
Within $\bar{R}^2$	0.036	0.036	0.037	0.037	0.036	0.037	0.038	0.039
N	84,131	84,131	84,131	84,131	84,131	84,131	84,131	84,131

This table shows robustness analyses for the estimation results of Equation (2). Compared to Table 4, this table exploits the multi-dimensionality of the dataset by adding bank×market fixed effects in columns 1-8 and market×year fixed effects in columns 5-8. The bank×market fixed effects control for different depositor reaction in each bank-market pairing, and the market×year fixed effects control for a different depositor reaction per market over time. Since 'HHI' and 'Ln(Number of Branches)' are market-level indicators and vary only over market and time, they are dropped in columns 5-8. For the same reason, F drops out in column 5, as it is measures failures in a market during the previous year only, and is therefore perfectly correlated with the market×year fixed effects. The results in Table 4 are robust to adding these control variables. Standard errors in parentheses, clustered on market. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.

Table A.4: Do failures lead to a wake-up effect at the county level?

Time since failure (k)	(1) $\Delta \ln \mathrm{D}_{imt}$	(2) $\Delta \ln \mathrm{D}_{imt}$ 1 year	(3) $\Delta \ln \mathrm{D}_{imt}$ 2 year	(4) $\Delta \ln \mathrm{D}_{imt}$ 3+ year	(5) $\Delta \ln \mathrm{D}_{imt}$	(6) $\Delta \ln \mathrm{D}_{imt}$ 1 year	(7) $\Delta \ln \mathrm{D}_{imt}$ 2 year	(8) $\Delta \ln \mathrm{D}_{imt}$ 3+ year	(9) $\Delta \ln \mathrm{D}_{imt}$	(10) $\Delta \ln \mathrm{D}_{imt}$ 1 year	(11) $\Delta \ln \mathrm{D}_{imt}$ 2 year	(12) $\Delta \ln \mathrm{D}_{imt}$ 3+ year
Main Explanatory Variables												
Equity	0.660***	0.636***	0.619***	0.610***	0.728***	0.710***	0.699***	0.681***	0.704***	0.685***	0.672***	0.649***
	(0.161)	(0.160)	(0.160)	(0.159)	(0.165)	(0.165)	(0.168)	(0.167)	(0.168)	(0.166)	(0.168)	(0.164)
NPL	−0.843***	−0.803***	−0.800***	−0.820***	−0.792***	−0.759***	−0.769***	−0.787***	−0.795***	−0.772***	−0.791***	−0.801***
	(0.128)	(0.136)	(0.132)	(0.129)	(0.125)	(0.134)	(0.133)	(0.135)	(0.118)	(0.128)	(0.129)	(0.134)
ROA	2.200**	2.055**	1.940**	1.713*	2.010**	1.903**	1.771*	1.523	2.703***	2.747***	2.562**	2.299**
	(0.893)	(0.961)	(0.989)	(0.988)	(0.836)	(0.918)	(0.956)	(0.940)	(0.831)	(0.976)	(1.016)	(1.011)
Control Variables												
Implicit Interest Rate	0.475	0.649	0.831	1.031	0.407	0.332	0.494	0.753	−0.041	−0.061	0.259	0.571
	(1.427)	(1.409)	(1.368)	(1.336)	(1.459)	(1.426)	(1.364)	(1.314)	(1.269)	(1.254)	(1.213)	(1.181)
Ln(Total Assets)	−0.046**	−0.048***	−0.049***	−0.052***	−0.035	−0.035	−0.037*	−0.040*	−0.042**	−0.042**	−0.043***	−0.047***
	(0.018)	(0.018)	(0.017)	(0.017)	(0.022)	(0.022)	(0.022)	(0.021)	(0.017)	(0.017)	(0.016)	(0.015)
BHC	−0.027**	−0.026**	−0.025**	−0.024**	−0.033***	−0.033***	−0.032***	−0.031***	−0.034***	−0.034***	−0.033***	−0.032***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Ln(Number of Branches)	−0.015***	−0.016***	−0.017***	−0.018***	−0.046***	−0.046***	−0.046***	−0.046***				
	(0.001)	(0.001)	(0.001)	(0.001)	(0.007)	(0.007)	(0.007)	(0.007)				
HHI	0.027*	0.025	0.024	0.025	0.033*	0.030	0.029*	0.030*				
	(0.016)	(0.016)	(0.016)	(0.016)	(0.019)	(0.018)	(0.017)	(0.018)				
Cost/Income	0.096***	0.094***	0.094***	0.087***	0.098***	0.097***	0.100***	0.093***	0.099***	0.100***	0.100***	0.091***
	(0.031)	(0.029)	(0.028)	(0.027)	(0.032)	(0.029)	(0.029)	(0.026)	(0.032)	(0.030)	(0.030)	(0.028)
Real Estate Loans	−0.055	−0.054	−0.049	−0.040	−0.059	−0.058	−0.056	−0.050	−0.046	−0.048	−0.048	−0.045
	(0.048)	(0.047)	(0.047)	(0.047)	(0.049)	(0.048)	(0.048)	(0.049)	(0.043)	(0.044)	(0.044)	(0.044)
Liquid Assets	−0.330***	−0.327***	−0.329***	−0.328***	−0.334***	−0.322***	−0.323***	−0.329***	−0.333***	−0.324***	−0.328***	−0.334***
	(0.045)	(0.047)	(0.047)	(0.049)	(0.046)	(0.047)	(0.047)	(0.051)	(0.046)	(0.048)	(0.048)	(0.053)
Securities for Sale and Investment	−0.200***	−0.197***	−0.198***	−0.195***	−0.197***	−0.194***	−0.197***	−0.197***	−0.207***	−0.208***	−0.214***	−0.216***
	(0.036)	(0.036)	(0.037)	(0.038)	(0.036)	(0.037)	(0.037)	(0.039)	(0.040)	(0.040)	(0.040)	(0.041)
Savings Bank	0.098	0.098	0.095	0.094	0.103**	0.104**	0.102**	0.101*	0.111**	0.113**	0.111**	0.110**
	(0.070)	(0.070)	(0.072)	(0.074)	(0.050)	(0.050)	(0.051)	(0.053)	(0.046)	(0.046)	(0.046)	(0.047)
Interaction Main Explanatory Variables												
F		−0.065	−0.049	−0.064		−0.038	−0.025	−0.062			−0.047	−0.108
		(0.047)	(0.047)	(0.049)		(0.053)	(0.055)	(0.061)			(0.059)	(0.072)
$F\times$ Equity		0.110	0.118	0.118		0.127	0.086	0.100		0.116	0.061	0.102
		(0.109)	(0.114)	(0.109)		(0.137)	(0.154)	(0.164)		(0.131)	(0.149)	(0.168)
$F\times$ NPL		−0.190	−0.114	−0.052		−0.141	−0.008	0.009		−0.132	−0.041	−0.059
		(0.158)	(0.142)	(0.153)		(0.184)	(0.175)	(0.204)		(0.185)	(0.177)	(0.219)
$F\times$ ROA		1.146	1.172	1.507		0.731	1.219	1.708		−0.138	0.575	1.098
		(1.413)	(1.348)	(1.339)		(1.528)	(1.527)	(1.519)		(1.515)	(1.508)	(1.487)
Interaction Control Variables												
$F\times$ Implicit Interest Rate		1.760**	1.628**	1.286*		0.875	0.812	0.474		−0.365	−1.403	−2.417
		(0.796)	(0.773)	(0.777)		(0.868)	(0.869)	(0.876)		(1.487)	(1.667)	(1.939)
$F\times$ Ln(Total Assets)		0.002***	0.002**	0.003***		0.000	0.000	0.002		0.000	0.002*	0.004**
		(0.001)	(0.001)	(0.001)		(0.001)	(0.001)	(0.002)		(0.001)	(0.001)	(0.002)
$F\times$ BHC		0.003	0.003	0.002		0.010	0.008	0.008		0.004	0.002	0.003
		(0.007)	(0.007)	(0.007)		(0.007)	(0.008)	(0.008)		(0.007)	(0.007)	(0.008)
$F\times$ Ln(Number of Branches)		0.003*	0.005**	0.006***		0.002	0.004	0.005*				
		(0.002)	(0.002)	(0.002)		(0.002)	(0.002)	(0.003)				
$F\times$ HHI		0.021	0.019	0.014		0.019	0.015	0.012				
		(0.017)	(0.017)	(0.017)		(0.018)	(0.019)	(0.019)				
$F\times$ Cost/Income		0.023	0.005	0.010		−0.001	−0.011	0.002		−0.010	−0.003	0.016
		(0.033)	(0.029)	(0.030)		(0.033)	(0.032)	(0.037)		(0.032)	(0.030)	(0.033)
$F\times$ Real Estate Loans		−0.026	−0.044	−0.046		0.012	−0.015	−0.020		0.027	0.015	0.020
		(0.029)	(0.028)	(0.028)		(0.033)	(0.035)	(0.038)		(0.036)	(0.038)	(0.042)
$F\times$ Liquid Assets		0.012	0.045	0.057		−0.060	−0.017	0.031		−0.058	−0.018	0.028
		(0.045)	(0.044)	(0.045)		(0.051)	(0.048)	(0.061)		(0.051)	(0.047)	(0.060)
$F\times$ Securities for Sale and Investment		−0.026	−0.012	−0.013		−0.021	0.002	0.005		0.007	0.023	0.026
		(0.022)	(0.021)	(0.023)		(0.027)	(0.026)	(0.030)		(0.031)	(0.029)	(0.031)
$F\times$ Savings Bank		−0.006	0.001	−0.003		0.001	0.007	0.003		0.004	0.010	0.009
		(0.012)	(0.010)	(0.011)		(0.015)	(0.012)	(0.014)		(0.017)	(0.014)	(0.015)
Bank Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Market Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included	Included
Bank×Market Fixed Effects					Included	Included	Included	Included	Included	Included	Included	Included
Market×Year Fixed Effects									Included	Included	Included	Included
Within $\bar{R}^2$	0.026	0.027	0.028	0.028	0.028	0.028	0.029	0.029	0.026	0.026	0.027	0.028
N	109,223	109,223	109,223	109,223	109,223	109,223	109,223	109,223	109,223	109,223	109,223	109,223
Failed	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128	0.128

This table explores the robustness of the definition of a market, by using a county as the regional market in which depositors move their deposits. Bank×market fixed effects are added in columns 5-12, and market×year fixed effects are added in columns 9-12. The bank×market fixed effects control for different depositor reaction in each bank-market pairing, and the market×year fixed effects control for a different depositor reaction per market over time. Since 'HHI' and 'Ln(Number of Branches)' are market-level indicators and vary only over market and time, they are dropped in columns 9-12. For the same reason, F drops out in column 9, as it is measures failures in a market during the previous year only, and is therefore perfectly correlated with the market×year fixed effects. Standard errors in parentheses, clustered on market. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent.