Bank Regulation in a Post-Financial Crisis Landscape: Essays of the Interaction Between Financial Institutions

Charlotte Werger

Thesis submitted for assessment with a view to obtaining the degree of Doctor of Economics of the European University Institute

Florence, 04 February 2016

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Department of Economics

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Bank Regulation in a Post-Financial Crisis Landscape: Essays of the Interaction Between Financial Institutions

Charlotte Werger*

This thesis is a nexus of three topics; financial stability, banking regulation and financial influence. In four separate chapters, this work examines how financial institutions interact with their regulators, in particular after the financial crisis of 2008. Size, incentives, guarantees, moral hazard, treatment, capture and influence play an important role in the analysis. The first chapter focusses on the relation between bank size and support, confirming the hypothesis that bank size is positively related to support ratings. It also finds evidence that the effect is non-linear, confirming the 'too-big-to-rescue' theory. Chapter two tests whether the expectation of individual and systemic government support induces moral hazard. It shows that banks tend to be more leveraged, funded with capital of lower quality, more heavily invested in risky assets and exposed to more severe liquidity mismatch when they are perceived as being more likely to benefit from government support. In the last two chapters the focus is shifted to banks' political activities and connections. Both chapters leverage a unique dataset that links U.S. banks' sources of influence (e.g., lobbying expenditures, proximity to the relevant legislative committee, prior affiliation with regulatory or government institutions) to bank financial data, actual bank supervisory actions, and market-inferred expected government support. The findings in chapter three suggest that banks' political influence indeed matters for the regulatory treatment of distressed banks, as well as for the expectation of support regardless of bank distress. Chapter four further dives into determinants of bank lobbying, and explores whether political connections and risk taking influence the decision to lobby. In combination, these findings are instructive for understanding the political landscape surrounding banks and their regulators. It also helps us to have a broader understanding of what drives government support to banks, and how in turn that support can trigger moral hazard within banks.

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Preface

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Abstracts

Chapter 1. Size and support ratings of U.S. banks - *T. Poghosyan, C. Werger and J. de Haan*

We examine whether Fitch support ratings of U.S. banks depend on bank size. Using quarterly data for the period 2004:Q4 to 2012:Q4 and controlling for several factors that make large and small banks different, we find that bank size is positively related to support ratings. However, the effect is non-linear in line with the 'too-big-to-rescue' argument. After the failure of Lehman Brothers and the passing of Dodd-Frank the relation between size and potential support has become stronger.

JEL classification: G21; G32; L25

Keywords: Support ratings; Bank size; Too-big-too-fail; Financial crises

Chapter 2. Bailouts And Moral Hazard: How Implicit Government Guarantees Affect Financial Stability - *M. Mariathasan, O. Merrouche and C. Werger*

The recent crisis has shown that banks in distress can often expect to benefit from (implicit) government guarantees. This paper analyzes a panel of 781 banks from 90 countries to test whether the expectation of individual and systemic government support induces moral hazard. It shows that banks tend to be more leveraged, funded with capital of lower quality, more heavily invested in risky assets and exposed to more severe liquidity mismatch when they themselves -but also when their competitors- are perceived as being more likely to benefit from government support. We show that the default of Lehman Brothers in 2008 reduced moral hazard in the short-run, but not in the long-run, as the systemic consequences of Lehman's failure became apparent. In addition, our large country coverage allows us to provide new results on policies, institutions, and regulations that can be put in place to reduce moral hazard induced by implicit guarantees to the banking sector.

JEL classification: G20, G21 and G28

Keywords: banking, moral hazard, government guarantees, bailout

Chapter 3. Between Capture and Discretion - The Determinants of Distressed Bank Treatment and Expected Government Support - *M. Ignatowski, J. Korte and C. Werger*

In this paper, we analyze how sources of political influence relate to the actual regulatory treatment of distressed banks and to the expectation of bank support provided by the government. We assemble a unique dataset that links U.S. banks' sources of influence (e.g., lobbying expenditures, proximity to the relevant legislative committee, prior affiliation with regulatory or government institutions) to bank financial data, actual bank supervisory actions, and market-inferred expected government support. Employing this novel data, we cast some light on how regulatory decision making is affected by these sources of influence. Our findings suggest that banks' influence matters for the regulatory treatment of distressed banks, as well as for the expectation of support regardless of bank distress. Several conditions increase the effectiveness of sources of influence in actual regulatory treatment: Lobbying activities are more effective with increasing lobbying expenditures, deteriorating capital ratios, and with the aid of former politicians. In addition, the effectiveness of proximity to representatives of the relevant legislative committee increases with the amount of campaign contributions from the financial industry. However, there seems to be a limit to the impact of influence when it comes to closure decisions of the most severely distressed banks. Our findings are instructive for understanding the political influence banks can leverage on shaping regulatory decisions and propose increased attention to the relations between legislators, regulators, and banks.

JEL classification: D72, G21, G28

Keywords: Bank regulation, lobbying, bank sources of influence, regulatory discretion, government support, Prompt Corrective Action

Chapter 4. Bank Lobbying in the U.S. - *C. Werger*

Influence exertion by banks and the financial industry and its impact on their regulatory treatment is a particularly important topic, especially in times when the banking industry has faced serious problems, banking regulation and supervision is being essentially revised, and the fate of banks and sovereigns is increasingly interrelated. The objective of this paper is therefore to explore the data on lobbying in the financial industry in the U.S., and to better understand what drives banks to lobby, by exploring determinants of lobbying. More specifically, we look at whether political connections and risk taking influence the decision to lobby. Our findings suggests that larger banks are more likely to lobby, as well as banks with political connections via former employment of their board members. Profitability seems to be negatively correlated with the likelihood of lobbying. Moreover, we find no evidence that risky banks tend to lobby more often. We do find in fact the opposite; risk measured with balance sheet risk weights is negatively correlated with the likelihood of lobbying, suggesting that less risky banks actually lobby more often.

JEL-classification: D72, G21, G28

Keywords: Lobbying, political connections, bank risk taking

Chapter 1. Size and support ratings of U.S. banks

T. Poghosyan, C. Werger and J. de Haan

Introduction

As acquiring information is costly and leads to collective action problems, investors seek to outsource creditworthiness assessments to credit rating agencies (CRAs). Investors' reliance on credit ratings has increased over the past 30 years (Hau et al., 2013). CRAs are probably best known for their credit ratings, which provide an assessment of the credit risk of borrowers (Amtenbrink and de Haan, 2012). However, Fitch – the smaller of the big three CRAs – also provides external support ratings that, according to the Fitch website, "do not assess the intrinsic credit quality of a bank. Rather they communicate the agency's judgment on whether the bank would receive support should this become necessary. These ratings are exclusively the expression of Fitch Ratings' opinion even though the principles underlying them may have been discussed with the relevant supervisory authorities and/or owners[1]."

This paper examines whether support ratings of Fitch for U.S. banks are related to their size[2]. Fitch does not provide details about their rating methodology, but it seems likely that size plays a crucial role. As pointed out by Boyd and Runkle (1993), failure of a large bank is supposedly more feared by supervisors than failure of a small bank, since the former is more likely to result in macroeconomic externalities. Therefore, it is more likely that large banks will receive government support if needed. However, Brewer and Jagtiani (2013, p. 3) argue that "it is not always clear which institutions are 'too big to fail' (TBTF) and would be rescued in the event of a crisis. This was evident recently when AIG and Bear Stearns received support while Lehman Brothers did not. The general perception is that relatively larger institutions are more likely to be considered TBTF, although the specific TBTF threshold has never been officially defined." Banks that are TBTF receive a de facto government guarantee, which will be reflected in their riskiness as perceived by creditors (see Strahan (2013) for a review of the TBTF literature). Such a government guarantee reduces market discipline by decreasing investors' incentives to monitor and price the risk taking of TBTF banks (Acharya et al., 2013). In addition, TBTF financial institutions can borrow at costs that do not reflect the risks otherwise inherent in their operations (Jacewitz and Pogach, 2013)[3].

Even though the Comptroller of the Currency named eleven banks "too big to fail" in 1984, generally authorities do not announce their willingness to support institutions they consider too big to fail, but prefer to be ambiguous about which institutions, if any, would receive support if they got into trouble (Acharya et al., 2013). Despite this "constructive ambiguity" several studies (to be discussed in more detail in section 2) provide evidence that TBTF institutions benefit from the government's implicit guarantee.

However, recently, some studies have pointed out that banks may also be 'too big to be rescued'. For instance, for a sample of 91 banks from 24 countries in the period 2002-2007 Völz and Wedow (2009) find a U-shaped relationship between size and CDS spreads, suggesting that some banks have grown so large that they

[1] See: `https://www.fitchratings.com/jsp/general/RatingsDefinitions.faces?context=5&detail=505&context_ln=5&detail_ln=500`

[2] The paper that comes closest to ours is Rime (2005) who shows that issuer ratings (which take external support into account) increases with asset size or measures of size relative to GDP (using data from many countries). In contrast to Rime, we focus on U.S. banks only. As pointed out by Kroszner (2013, p. 12), "Including non-U.S. institutions .... involves an "apples to oranges" comparison since the rules and expectations concerning the potential for government support vary considerably across the globe." Another related study is by Hau et al. (2013) who show that CRAs generally assign more favorable ratings to larger banks. Their study focuses on the quality of ratings by comparing the ranking of banks' credit ratings and the ranking of banks based on expected default two years later. In one of their robustness checks these authors also use Fitch external support ratings. The study by Hau et al. (2013) is based on an international panel of banks and therefore suffers from the 'apples and oranges' problem identified by Kroszner (2013).

[3] Several studies examine whether banks increase their risk taking in the presence of government guarantees. The evidence is mixed. While several studies find support for it (e.g. Gropp et al., 2010), others find that guarantees reduce risk taking (Cordella and Yeyati, 2003), possibly resulting from greater regulatory oversight (Acharya et al., 2013).

are too-big-to-be-rescued. Demirgüç-Kunt and Huizinga (2013) report that banks' CDS spreads are negatively related to the fiscal balance of the government in the banks' home country. Arguably, countries with sound public finances can spend more on bank bailouts resulting in lower losses on bank liabilities (hence lower CDS spreads). Similarly, Correa et al. (2014) report that sovereign rating changes have a significant, non-linear and robust impact on bank excess stock returns. This effect is stronger for sovereign downgrades than for upgrades. Their results suggest that banks with more government support before the rating event tend to experience a significantly larger fall in excess stock returns. Following these studies, we test for a non-linear relationship between bank size and external support ratings.

According to Kroszner (2013) and Strahan (2013), perceptions of government support have varied considerably over time. We therefore examine whether the impact of size on external support ratings has changed since the failure of Lehman Brothers. On the one hand, the fact that U.S. authorities were not willing to rescue Lehman Brothers may have led to a downward re-assessment of the link between size and external support ratings. Indeed, Acharya et al. (2013) report that following the collapse of Lehman Brothers, larger financial institutions experienced greater increases in their spreads than smaller institutions. On the other hand, the failure of Lehman Brothers has also made it clear that it is very costly to let a large bank fail, due to its interconnectedness (Strahan, 2013). This experience may have reinforced the impact of size on external support ratings[4].

Similarly, we analyse whether the passing of the Dodd-Frank law has affected the relationship between size and external support ratings. As pointed out by Kroszner (2013), the Dodd-Frank has set in motion reforms that may have ended TBTF expectations. For instance, Dodd-Frank's new resolution approach directs the FDIC to impose losses on uninsured creditors, shareholders, and managers and thus, in principle, ought to help mitigate TBTF by increasing the ex ante belief that creditors would bear losses in default (Strahan, 2013). The law also created the Financial Stability Oversight Council whose objective is, in part, to "promote market discipline, by eliminating expectations on the part of shareholders, creditors, and counterparties of [large financial] companies that the government will shield them from losses in the event of failure." The Council can subject TBTF institutions to additional oversight, including liquidation. Kroszner refers to warnings by credit ratings agencies that they are re-evaluating the likelihood of government support in light of the implementation of Dodd-Frank. The only study that we are aware of examining the impact of Dodd-Frank is Acharya et al. (2013). Their evidence suggests that Dodd-Frank actually lowered spreads for the largest financial institutions. The authors therefore conclude that Dodd-Frank failed to eliminate investors' expectations of future support for major financial institutions: "Dodd-Frank's designation of certain institutions as systemically important may have had the unintended consequence of firming market expectations that these institutions are likely to receive government support in the future should they encounter financial problems." (p. 18).

The remainder of the paper is structured as follows. The next section discusses related studies and explains how our study adds to the literature. Section 3 outlines our methodology and section 4 describes our data. Section 5 offers our main results. The final section concludes.

Related literature

Our paper is related to three strands of literature. This section outlines the main issues in these literatures and explains how our paper contributes.

[4]After Lehman's failure Congress passed the Troubled Asset Relief Program (TARP), which provided hundreds of billions of dollars to support banks. In addition, the Federal Reserve Board provided support to the banks through a series of newly created special lending facilities. On top of that, the Fed and Treasury also took extraordinary actions to keep Citigroup and Bank of America solvent.

First, several studies have examined the impact of bank size on bank risk[5]. Arguably, larger banks are better diversified. However, Demsetz and Strahan (1997) report that large bank holding companies are not less risky than small bank holding companies, as large banks use their diversification advantage to work with lower capital ratios and to pursue riskier strategies. In line with this argument, DeYoung and Roland (2001) report that fee-based activities are associated with increased earnings volatility. Stiroh (2004, 2006b) and de Haan and Poghosyan (2012) find that a greater reliance on non-interest income is associated with more volatile returns. As pointed out by Stiroh (2006a), a shift into new activities affects the portfolio variance by changing the weights on the components and by introducing a diversifying covariance. Apparently, the higher reliance on relatively volatile non-interest activities outweighs the diversification benefits. In our regressions we include leverage, several proxies for risk, and diversification (proxied by the share of non-interest income in total income of banks) as controls.

Second, several papers have examined the importance of economies of scale. Arguably, banks can benefit from scale economies because the credit risk of their loans and financial services and the liquidity risk of their deposits become better diversified, thereby reducing the cost of managing these risks and allowing banks to conserve equity capital as well as reserves and liquid assets. Furthermore, overhead costs may be reduced due to scale economies (Hughes and Mester, 2011). However, economies of scale may disappear once a certain size threshold is reached, with diseconomies emerging due to the complexity of managing large institutions and implementing effective risk management systems (cf. Laeven and Levine, 2007; Demirgüç-Kunt and Huizinga, 2011).

Until recently, most research did not yield strong support for economies of scale in U.S. banking. However, more recent studies, such as Hughes and Mester (2011) and Wheelock and Wilson (2012), report strong evidence for scale economies. For instance, Hughes and Mester (2011) find positive scale economies for even the largest institutions. In their robustness checks these authors examine whether perceptions of government support could account for these results and do not find support for that hypothesis. We take the efficiency of banks into account in our regressions.

Finally, a more recent strand of literature examines the benefits that banks receive due to their TBTF status (see Kroszner 2013 for an excellent review[6]). A challenge faced in this line of literature is to come up with an approach that any measured difference between large and small banks is primarily due to perceptions of government support and not due to other factors that might be associated with size but are unrelated to perceptions of government support, such as diversification and scale economies (Kroszner, 2013).

A good example of this line of research is the study by Brewer and Jagtiani (2013). Using data from the bank merger boom in the U.S. of 1991–2004, these authors find that banking organizations were willing to pay an added premium for mergers that would put them over the asset sizes that are commonly viewed as the thresholds for being TBTF. After controlling for risk factors and macroeconomic factors, they find that the combined cumulative abnormal returns to the target and the acquiring banks increase significantly for those mergers that allow the merged firms to become TBTF. In addition, their analysis of bond spreads before and after the mergers also indicates that the combined banking organizations face a lower funding cost after becoming TBTF through the merger.

Others follow different strategies. For instance, Jacewitz and Pogach (2013) focus on funding through deposits and document significant and persistent pricing advantages at the largest banks for comparable deposit products and deposit risk premiums. Between 2005 and 2008, the risk premium paid by the largest banks was 15-40 bps lower than at other banks, even after controlling for common risk variables.

[5]This part draws on de Haan and Poghosyan (2012). Recently, Hovakimian et al. (2012) examined banks' systemic risk. They find that bank size, leverage, and asset risk are key drivers of a bank's systemic risk.

[6]As pointed out by Kroszner, funding cost differentials appear to exist generally between large and small firms in many industries, not simply in banking. In addition, funding costs differentials in banking are not unusual compared to other sectors. This implies that "one cannot simply conclude that a funding cost difference in banking is due to perceptions of government support" (p. 5).

Some studies in this line of literature employ credit ratings. For instance, Morgan and Stiroh (2005) find that the naming of the TBTF banking organizations by the Office of the Comptroller of the Currency (OCC) in 1984 elevated the bond ratings of those banks about one notch compared with non-TBTF organizations. Acharya et al. (2013) find that between 1990 and 2010 a positive relationship exists between risk and spreads for medium-sized and small institutions, but the risk-to-spread relationship is not present for the largest institutions. These results are robust to various bond-, firm-, and macro-level controls. In one of their robustness analyses, Acharya et al. (2013) use Fitch's long-term issuer rating (which incorporates implicit government support) and Fitch's individual rating as independent variables in the spread regression. Their evidence suggests that banks likely to receive government support pay lower spreads on their bonds[7]. However, Araten (2013) investigates market-based bond spreads as well as CDS spreads and finds that for the largest banks (>$500 billion) these market-based indicators more closely track the standalone rather than the with-support ratings. The purpose of our paper is not to determine the TBTF subsidy using credit ratings, but is more modest, namely to examine whether a (time-varying and non-linear) relationship exists between Fitch support ratings and banks size.

Methodology

The model specification is as follows:

$$Rating_{i,t} = \alpha_{i,t} + \beta_1 Size_{i,t} + \beta_2 Size^2_{i,t} + \gamma_i X_{i,t} + \epsilon_{i,t} \quad (1)$$

where $Size_{i,t}$ is a proxy for size of bank i at time t; and $X_{i,t}$ is a vector of bank-specific control variables. In order to allow for non-linear ('too big to rescue') effects, the square of size is taken up. The model includes a vector of state fixed effects to control for state-specific macroeconomic developments and a vector of time fixed effects to control for systemic factors affecting all banks simultaneously (for example, the level of interest rates). The dependent variable $Rating_{i,t}$ is the log of Fitch's external support rating.

Our approach is to first estimate the model with only the size variables and fixed effects and then step-wise augment the model with additional factors that may be related to size and affect support ratings, such as firm-specific risk measures, returns, leverage, efficiency, etc. (Kroszner, 2013). We can thus examine to what extent the impact of size on external support ratings may be wrongly attributed to omitted variables. We use the following bank-specific variables:

*Bank size.*A recent survey of the Bank for International Settlements shows that all but one central bank consider size as the most important factor for determining the systemic relevance of a bank (BIS, 2009). We use two measures of size: (i) share of individual bank assets in total banking system assets and (ii) share of individual bank assets in nominal GDP (multiplied by 1 million to get coefficients comparable to other estimates).

*Bank size squared.*To test a non-linear relationship between support ratings and size, a quadratic size term is included as well in the regressions in the first two steps of our analysis (cf. Demirgüç-Kunt and Huizinga, 2013).

Returns. Following Acharya et al. (2013), we include Return on Assets (ROA). If big banks are more profitable than small banks, the significance of size may wrongly be attributed to size if ROA is not controlled for.

Riskiness. An important driver of credit ratings is riskiness. According to Demsetz and Strahan (1997), large banks hold a greater fraction of assets in loans relative to safer government securities. To control for this we include the *share of high-risk securities*, which is defined as the sum of equity securities, trading accounts, and asset-backed securities relative to total securities. Following Brewer and Jagtiani (2013), we also include

[7]However, Kroszner (2013) argues that CDS spreads of banks that will receive government support according to the CRAs and those that will not are virtually the same. This does not "support the assumption that a ratings "uplift" automatically translates into lower borrowing costs, and hence calls into question the use of the "uplift" as a measure of funding cost differentials." (p. 17).

the percentage of *non-performing loans* over total loans (NPLs) as indicator of riskiness of the banks' assets. In addition, we include the Z-score, calculated as the sum of ROA and equity ratio (ratio of book equity to total assets), averaged over four quarters, divided by the standard deviation of ROA over four quarters. The Z-score indicates the number of standard deviations that a bank's return on assets has to drop below its expected value before equity is depleted and the bank is insolvent (see Boyd and Runkle, 1993). Thus, a higher Z-score indicates that a bank is less fragile.

Subsidiary. This variable is a dummy that is one for subsidiaries and that captures possible support from a mother bank. Subsidiaries often rely on lifelines from their mother bank, which decrease their risk.

$Cost - to - income\ ratio$. We use the ratio of bank total non-interest costs to total non-interest revenues to proxy the efficiency of bank operations (following Shezad et al., 2010), where a higher ratio implies less efficiency. As pointed out in section 2, larger banks may be more efficient than small banks.

Leverage. Leverage of banks has been found to be increasing in size (cf. Demsetz and Strahan, 1997 and de Haan and Poghosyan, 2012). High-leveraged banks are arguably more risky than banks with lower leverage (cf. Brewer and Jagtiani, 2013). Leverage is measured as the ratio of bank total assets to total equity.

$Diversification$. We include the share of non-interest income to total income of banks to control for diversification (cf. Stiroh, 2004 and de Haan and Poghosyan, 2012).

Funding structure. Finally, we include a variable to account for funding structure, which is measured as total assets minus equity and interest bearing deposits, divided by total liabilities.

Data description and analysis

Bank balance sheet and income statement data are taken from the Federal Reserve's: (i) Reports on Condition and Income (the "Call Report"), and (ii) Y-9C Reports. These reports provide financial data for (i) all commercial, savings, and cooperative banks in the U.S. and (ii) domestic bank holding companies (BHCs) with total consolidated assets of U.S.$500 million or more. The data is reported on a consolidated basis in the form of balance sheets, income statements, and detailed supporting schedules, including schedules of off balance-sheet items. This information is used to assess and monitor the financial condition of banks and BHCs, which may include parent, bank, and non-bank entities. We drop data on U.S. insular areas (American Samoa, Guam, Puerto Rico, and Virgin Islands), keeping the total number of states used in the analysis to 51. We do not use any thresholds to select banks to the sample. Table 1 provides summary statistics for the bank statistics used. The appendix presents a table containing correlations of the explanatory variables (Table A1) and provides information on the number of banks per state in our sample (Table A2). Our sample runs from 2004:Q4 to 2012:Q4 and contains 8,289 bank-year observations (out of which 2,718 observations are for BHCs).

[Table 1]

Data on credit ratings were retrieved from BankScope. As only Fitch publishes an external support rating, we use Fitch's support ratings as dependent variable. This rating runs from 1 to 5, with 1 being the highest attainable notch meaning that a bank has a high likelihood of receiving external support. As shown in Table 2, most banks are assigned rating 5 (lowest likelihood of external support). In our sample, the average rating is around 4.4 and the median is 5. The dispersion around the mean has slightly increased following the collapse of Lehman Brothers (see Figure 1), while the number of banks with a rating of 5 has declined and the number of banks with a rating of 1 increased (see Figure 2). There was also some uptick in the number of banks with rating = 2 (close to TBTF) in 2012.

[Table 2]

For most banks support ratings did not change during the sample under consideration (2004Q4 – 2012Q4). Of the 374 banks in our sample, 34 experienced at least one downgrade over the sample, while 35 had at least

one upgrade. In the following section we will present the empirical results from the model as described in section 3.

Results

Table 3 shows the basic results using the log of Fitch's external support ratings as dependent variable. Column (1) shows the results if only our measures of size (assets to GDP ratio) and the fixed effects are included. In columns (2) and (3) control variables are added, and in columns (4)-(6) the procedure is repeated for an alternative measure of size (assets to total assets). The results suggest that an increase in our relative size variable (Size) leads to decrease in the Fitch support rating, which corresponds to bigger banks having a higher likelihood of receiving support when in trouble. The squared-size term (Size^2) furthermore indicates that this effect is non-linear and that there is a marginal decrease in the effect. When size increases to a very large extent, the so-called "too-big-to-fail" effect on the support rating at some point decreases for the very large banks. The tipping point of size is estimated at 7.3 percent of GDP (average of columns 1-3) and 4.0 percent of total bank assets (average of columns 4-6). The results for the diversification variable (Diversification) suggest that banks that have more diverse activities are more likely to receive support. This is in line with the findings of Brunnermeier et al. (2012) who suggest that more diversified banks potentially impose more systemic risk on the financial system. According to our findings such banks are then also more likely to receive government support. The non-performing loans variable (Non performing loans) indicates that banks with a low quality of assets (a high share of non-performing loans) are less likely to receive support. Apparently, Fitch considers that external support is less likely perhaps because the institutional supporter may not want to support banks that are fundamentally weak, and thereby creating "zombie banks". Banks with relatively risky securities (High sec. risk) are also more likely to receive government support. The results for funding structure indicate that banks that rely more heavily on wholesale debt relative to deposit funding are less likely to be bailed out. This is not surprising, as also banks with a high level of deposits could be considered "politically sensitive". Perhaps more surprising is that some other control variables (leverage, efficiency, Z-score and return on assets) do not seem to influence the Fitch support rating. Comparing columns (1)-(3) and (4)-(6) shows that our findings are independent of the definition of our relative size variable, i.e. our results are similar for the bank's size relative to GDP as well as the bank's size relative to total banks assets in the U.S..

[Table 3]

The following tables contain extensions of our model as presented in Table 3 in order to investigate whether there is a structural break in the relation between size and expected support. We first examine whether the failure of Lehman Brothers in the third quarter of 2008 has affected the relationship between size and external support rating. One might expect that the failure of Lehman Brothers could have led to a decrease in support ratings, as Lehman being a large bank, did not receive support. On the other hand, one can also hypothesize that, given that the failure of Lehman Brothers had a disastrous effect on the financial system, regulators and the government wanted to prevent further disasters and decided to bailout any large failing banks afterwards. Table 4 presents the results for a sample split based on the Lehman Brothers failure. Comparing pre- and post-Lehman Brothers samples suggests that the second hypothesis is true. The higher coefficient of our size measures for the post-Lehman Brothers sample indicates that the relation between size and Fitch support ratings became stronger, i.e. the too-big-to-fail effect became more prevalent, after the failure of Lehman Brothers.

[Table 4]

In Table 5 we investigate whether the passing of the Dodd-Frank act has changed the relation between size and support ratings. One could expect that the more stringent regulation on SIFIs in the Dodd-Frank act might

lead to a reduction in the effect of size on the likelihood of receiving a bailout. However, the results in Table 5 suggest that after the passing of Dodd-Frank the relation between size and potential support has only become stronger as the coefficients of the size variables in the regression for the post-Dodd Frank act period are higher than those in the model for the pre-Dodd Frank act period. In line with the results of Acharya et al. (2013), these findings suggest that the relation between size and support has become stronger over time, regardless of any shocks that could have weakened the TBTF phenomenon, such as the failure of Lehman Brothers or the passage of the Dodd-Frank act.

[Table 5]

Sensitivity analysis

As a check for robustness, we have re-estimated the regressions as reported in Tables 3-5 using data for BHC and non-BHC banks separately. Tables 6 and 7 present the results for these regressions. They present similar results for the relation between size and support, and thus confirm our earlier qualitative findings.

[Table 6]

The reason why we decided to split the sample into BHC and non-BHC entities is that these types of corporations are intrinsically different. For example, BHC Barclays receives a different support rating then Barclays Bank (a support rating of 5 versus 1 for the latter). BHCs consist of different parts and corporate activities, and not all parts can count on external support, which can result in lower support ratings for the BHC as a whole. We therefore explore the relation between size and support for both BHCs and non-BHCs separately. We find, however, that the TBTF effect is present for both the non-BHC (Table 6) and BHC subsample (Table 7). For the non-BHC sample we see again an amplification of the TBTF effect for the post-Lehman and post-Dodd Frank periods, suggesting the effect has become stronger over time. For the BHC sample this doesn't seem to be the case. We actually see a reduction for the post-Lehman period for BHCs. However, as the sample is significantly reduced here, it is hard to compare the size of the coefficients with our base model or the non-BHC sample.

[Table 7]

Conclusion

We examine whether Fitch support ratings of U.S. banks depend on bank size. Using quarterly data for the period 2004:Q4 to 2012:Q4 and controlling for several factors that make large and small banks different, we find that bank size is positively related to support ratings. This finding provides evidence for the existence of a 'too big to fail' effect. However, the effect of size on support ratings is non-linear. This finding provides support for the 'too-big-to-save' argument and is in line with the results of Demirgüç-Kunt and Huizinga (2013) and Correa et al. (2014). A possible alternative interpretation is that for the largest banks, the government and regulators might look for alternative resolutions rather than simply providing capital injections and bailouts as means of support. It would be an interesting exercise to investigate other types of resolutions, although the benefit of using Fitch Support ratings would then obviously be lost. After the failure of Lehman Brothers and the passing of Dodd-Frank the relation between size and potential support has become stronger. These results suggest that the regulatory efforts to reduce the too big to fail problem have not been successful. This conclusion is

in line with the findings of Acharya et al. (2013). As we focus our analysis on Fitch Support ratings only, our analysis would gain in robustness if we could confirm our findings using other proxies for government support. An example would be to use the difference in interest rates charged for guaranteed deposits by various banks. Although the Fitch support ratings are unique in their ability to proxy external support (they are after all constructed for that purpose), it would be interesting to expand this analysis to a broader set of government support variables. This is left for future research.

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Table 1: Descriptive Statistics

This table provides summary statistics. See the main text for details on the definition of the variables used.

	Mean	Standard deviation	Minimum	Maximum	Observations
Fitch external support rating	4.15	1.51	1.00	5.00	8,285
Bank assets as share in total banking system	0.26	0.86	0.00	10.07	8,016
Bank assets as share in GDP	0.49	1.63	0.00	16.29	8,016
ROA	0.00	0.01	-0.33	0.39	8,228
Share of high-risk securities	0.09	0.18	0.00	1.00	6,206
Non-performing loans	0.03	0.04	0.00	1.00	7,845
Z-score	0.41	6.43	0.00	527	7,051
Dummy for BHC subsidiaries	0.59	0.49	0.00	1.00	8,302
Cost-to-income ratio	0.53	0.99	0.00	39.22	5,524
Leverage	10.23	4.09	1.00	144.31	7,935
Diversification	0.31	0.21	0.00	1.00	7,969
Funding structure	0.87	2.46	-204.09	1.00	7,901

Table 2: Overview of support ratings of 374 U.S. banks, 2004-2012

Number of ratings, of which:	8289
Rating = 1	1363
Rating = 2	170
Rating = 3	274
Rating = 4	499
Rating = 5	5983

Figure 1: Fitch Support Ratings of U.S. banks, 2004 - 2012

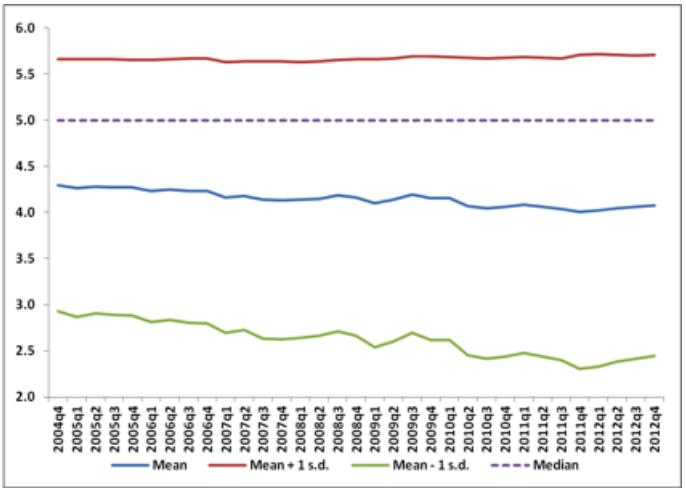

Figure 2: Number of banks with particular Fitch Support Rating, 2004-2012

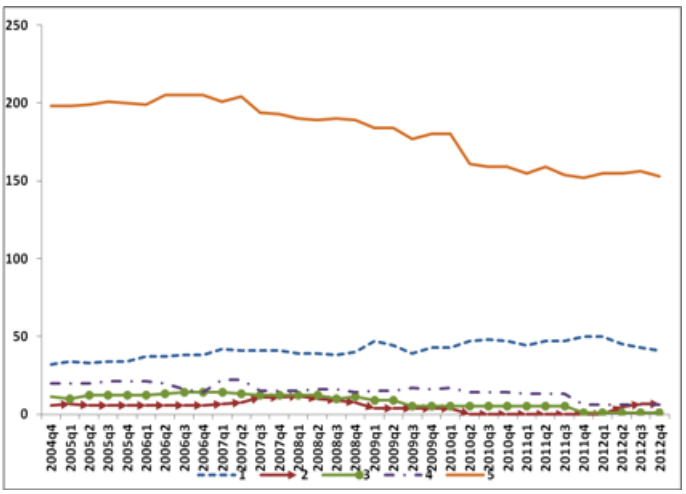

Table 3: Determinants of Fitch Support Ratings

This table shows estimates of equation (1). The dependent variable is the natural logarithm of Fitch external support rating. In columns (1)-(3) the size variable is the bank's assets to GDP, while in columns (4)-(6) size is measured as the bank's share in the banking sector's total assets. In columns (1) and (4) only size and its square are included. In columns (2) and (4) a dummy for subsidiaries and proxies for leverage, diversification, efficiency, NPLs, and the share of high-risk securities are included (see main text for a description), while in columns (3) and (6) also the Z-score, ROA and funding structure are included. Estimations are performed using the OLS estimator. Robust standard errors are reported in parentheses. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1*.

Dependent variable	Log Fitch support ratings					
Size variable	Assets/GDP			Assets/Total assets US		
	(1)	(2)	(3)	(4)	(5)	(6)
Size	-0.2304***	-0.4035***	-0.4187***	-0.4337***	-0.7206***	-0.7415***
	[0.0163]	[0.0273]	[0.0288]	[0.0286]	[0.0576]	[0.0615]
Size^2	0.0144***	0.0288***	0.0300***	0.0510***	0.0930***	0.0960***
	[0.0014]	[0.0027]	[0.0029]	[0.0045]	[0.0119]	[0.0127]
Subsidiary		0.1355***	0.1151***		0.1337***	0.1132***
		[0.0370]	[0.0420]		[0.0371]	[0.0421]
Leverage		0.0039	0.0035		0.0040	0.0035
		[0.0030]	[0.0026]		[0.0030]	[0.0026]
Diversification		-0.2233***	-0.1116*		-0.2292***	-0.1196**
		[0.0486]	[0.0599]		[0.0488]	[0.0600]
Cost to income		-0.0346	-0.0324		-0.0344	-0.0315
		[0.0235]	[0.0365]		[0.0235]	[0.0363]
Non-performing loans		1.4367***	1.2984***		1.4598***	1.3225***
		[0.2035]	[0.2017]		[0.2041]	[0.2021]
Share of high-securities risk		-0.4230***	-0.4261***		-0.4269***	-0.4289***
		[0.0571]	[0.0618]		[0.0573]	[0.0620]
Z-score			-0.0356			-0.0369
			[0.0248]			[0.0250]
ROA			0.1159			0.1679
			[1.4474]			[1.4554]
Funding structure			0.4926***			0.4910***
			[0.1311]			[0.1318]
Observations	8020	4634	4058	8020	4634	4058
R-Squared	0.2907	0.4567	0.4703	0.2915	0.4552	0.4685
R-Squared adj	0.2837	0.4468	0.4593	0.2846	0.4453	0.4574
Time FE	YES	YES	YES	YES	YES	YES
State FE	YES	YES	YES	YES	YES	YES
Constant	YES	YES	YES	YES	YES	YES

Table 4: Bank size and ratings: Pre- and post-failure of Lehman Brothers

This table shows the effect of size on support ratings using the models in columns (3) and (6) of Table 3, when the sample is split in the periods before and after the fall of Lehman Brothers. Robust standard errors are reported in parentheses. Estimations are performed using the OLS estimator. The dependent variable is the natural logarithm of Fitch external support rating. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1*.

	(1)	(2)	(3)	(4)
Dependent variable	Log Fitch support rating			
Time sample	*Pre-Lehman*		*Post-Lehman*	
Size variable	Assets/GDP	Assets/Total assets US	Assets/GDP	Assets/Total assets US
Size	-0.2826***	-0.5175***	-0.5338***	-0.8883***
	[0.0475]	[0.0876]	[0.0318]	[0.0823]
Size^2	0.0179***	0.0600***	0.0410***	0.1206***
	[0.0051]	[0.0168]	[0.0031]	[0.0173]
Observations	1933	1933	2125	2125
R-Squared	0.5244	0.5246	0.5487	0.5423
R-Squared adj	0.5076	0.5078	0.5345	0.5279
Time FE	YES	YES	YES	YES
State FE	YES	YES	YES	YES
Constant	YES	YES	YES	YES
Controls	YES	YES	YES	YES

Table 5: Bank size and ratings: Pre- and post-Dodd Frank act

This table shows the effect of size on support ratings using the models in columns (3) and (6) of Table 3, when the sample is split in the periods before and after the adoption of the Dodd-Frank act. Robust standard errors are reported in parentheses. Estimations are performed using the OLS estimator. The dependent variable is the natural logarithm of Fitch external support rating. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1*. The sample split is before and after 2010Q3.

	(1)	(2)	(3)	(4)
Dependent variable	Log Fitch support rating			
Time sample	*Pre-Dodd Frank*		*Post-Dodd Frank*	
Size variable	Assets/GDP	Assets/Total assets US	Assets/GDP	Assets/Total assets US
Size	-0.3799***	-0.6462***	-0.5668***	-1.0305***
	[0.0362]	[0.0763]	[0.0479]	[0.0991]
Size^2	0.0276***	0.0815***	0.0434***	0.1469***
	[0.0037]	[0.0161]	[0.0049]	[0.0203]
Observations	2890	2890	1168	1168
R-Squared	0.4651	0.4627	0.5448	0.5424
R-Squared adj	0.4512	0.4487	0.5214	0.5189
Time FE	YES	YES	YES	YES
State FE	YES	YES	YES	YES
Constant	YES	YES	YES	YES
Controls	YES	YES	YES	YES

Table 6: Fitch support ratings and size: non-BHC banks only

This table shows estimates of equation (1) for a sub-sample of non-BHC banks. The dependent variable is the natural logarithm of Fitch external support rating. In columns (1)-(5) the size variable is the bank's assets to GDP, while in columns (6)-(10) size is measured as the bank's share in the banking sector's total assets. Estimations are performed for the total sample and subsamples split by Lehman and Dodd-Frank events. Estimations are performed using the OLS estimator. Robust standard errors are reported in parentheses. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1*.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable	Log Fitch support rating									
Size variable	*Assets/GDP*					*Assets/Total assets US*				
Time sample	Total sample	Pre-Lehman	Post-Lehman	Pre-Dodd Frank	Post-Dodd Frank	Total sample	Pre-Lehman	Post-Lehman	Pre-Dodd Frank	Post-Dodd Frank
Size	-0.4187***	-0.2826***	-0.5338***	-0.3799***	-0.5668***	-0.7415***	-0.5175***	-0.8883***	-0.6462***	-1.0305***
	[0.0288]	[0.0475]	[0.0318]	[0.0362]	[0.0479]	[0.0615]	[0.0876]	[0.0823]	[0.0763]	[0.0991]
Size^2	0.0300***	0.0179***	0.0410***	0.0276***	0.0434***	0.0960***	0.0600***	0.1206***	0.0815***	0.1469***
	[0.0029]	[0.0051]	[0.0031]	[0.0037]	[0.0049]	[0.0127]	[0.0168]	[0.0173]	[0.0161]	[0.0203]
Observations	4058	1933	2125	2890	1168	4058	1933	2125	2890	1168
R-Squared	0.4703	0.5244	0.5487	0.4651	0.5448	0.4685	0.5246	0.5423	0.4627	0.5424
R-Squared adj	0.4593	0.5076	0.5345	0.4512	0.5214	0.4574	0.5078	0.5279	0.4487	0.5189
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
State FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Table 7: Fitch support ratings and size: BHC banks only

This table shows estimates of equation (1) for a sub-sample of BHC banks. The dependent variable is the natural logarithm of Fitch external support rating. In columns (1)-(5) the size variable is the bank's assets to GDP, while in columns (6)-(10) size is measured as the bank's share in the banking sector's total assets. Estimations are performed for the total sample and subsamples split by Lehman and Dodd-Frank events. Estimations are performed using the OLS estimator. Robust standard errors are reported in parentheses. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1*.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable	Log Fitch support rating									
Size variable	*Assets/GDP*					*Assets/Total assets US*				
Time sample	Total sample	Pre-Lehman	Post-Lehman	Pre-Dodd Frank	Post-Dodd Frank	Total sample	Pre-Lehman	Post-Lehman	Pre-Dodd Frank	Post-Dodd Frank
Size	-0.2122***	-0.4190***	-0.2686***	-0.1602***	-0.2681***	-0.3972***	-0.8208***	-0.4519***	-0.2668***	-0.5447***
	[0.0473]	[0.1065]	[0.0593]	[0.0476]	[0.0781]	[0.0771]	[0.1941]	[0.0966]	[0.0908]	[0.1315]
Size^2	0.0214***	0.0941***	0.0325***	0.0213***	0.0299***	0.0764***	0.3418***	0.1038***	0.0668***	0.1164***
	[0.0064]	[0.0279]	[0.0074]	[0.0056]	[0.0100]	[0.0170]	[0.0907]	[0.0188]	[0.0230]	[0.0231]
Observations	1398	492	906	892	506	1398	492	906	892	506
R-Squared	0.3526	0.5902	0.4477	0.3564	0.5341	0.3537	0.5924	0.4487	0.3551	0.5421
R-Squared adj	0.32	0.5437	0.4134	0.3124	0.4886	0.3212	0.5462	0.4144	0.311	0.4973
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
State FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Appendix

Table A1: Correlation matrix of independent variables

	Bank assets share in total banking system	Bank assets share in GDP	Dummy for BHC subsidiaries	Leverage	Diversification	Inefficiency	Credit risk	High risk securities	Z-score	ROA	Funding structure
Bank assets share in total banking system	1.00										
Bank assets share in GDP	0.99	1.00									
Dummy for BHC subsidiaries	0.06	0.06	1.00								
Leverage	0.00	-0.01	0.06	1.00							
Diversification	0.19	0.19	-0.01	-0.08	1.00						
Inefficiency	0.00	0.00	-0.03	-0.02	0.14	1.00					
Credit risk	0.10	0.10	-0.02	-0.11	-0.10	0.19	1.00				
High risk securities	0.44	0.44	0.03	-0.02	0.30	0.05	0.06	1.00			
Z-score	0.00	0.00	0.04	-0.04	-0.07	-0.10	-0.24	-0.08	1.00		
ROA	0.02	0.02	0.00	0.00	0.07	-0.67	-0.26	0.00	0.13	1.00	
Funding structure	-0.05	-0.06	0.04	0.03	-0.43	-0.15	-0.02	-0.16	0.07	0.02	1.00

Table A2: Number of banks and BHCs in each state

Alabama	AL	9
Arizona	AZ	1
California	CA	31
Colorado	CO	0
Connecticut	CT	5
Delaware	DE	11
Florida	FL	15
Georgia	GA	18
Hawaii	HI	6
Illinois	IL	15
Indiana	IN	4
Kentucky	KY	1
Louisiana	LA	4
Massachusetts	MA	13
Maryland	MD	9
Maine	ME	4
Michigan	MI	5
Minnesota	MN	11
Missouri	MO	6
Mississippi	MS	4
Montana	MT	2
North Carolina	NC	7
North Dakota	ND	3
Nebraska	NE	3
New Hampshire	NH	1
New Jersey	NJ	7
New Mexico	NM	1
Nevada	NV	3
New York	NY	40
Ohio	OH	15
Oklahoma	OK	3
Oregon	OR	2
Pennsylvania	PA	16
Puerto Rico	PR	6
Rhode Island	RI	2
South Carolina	SC	4
South Dakota	SD	2
Tennessee	TN	6
Texas	TX	6
Utah	UT	12
Virginia	VA	7
Vermont	VT	2
Washington	WA	5
Wisconsin	WI	7
Total	Total	334

Chapter 2. Bailouts And Moral Hazard: How Implicit Government Guarantees Affect Financial Stability

M. Mariathasan, O. Merrouche and C. Werger

Introduction

We study an unbalanced panel of 781 banks from 90 countries, over a period of 13 years (2001-13), to investigate whether the expectation of implicit government guarantees induces banks to assume inefficiently high investment and financing risks. Combining balance sheet information from Bureau van Dijk's *Bankscope* database with information from the World Bank's *Bank Regulation & Supervision Survey* (BRSS) and *Worldwide Governance Indicators* (WGI), we also explore the systemic consequences of government guarantees, and investigate whether and how regulatory and institutional parameters affect the severity of the moral hazard problem.

Our results show that banks tend to be more leveraged, more weakly capitalised, and exposed to more severe liquidity mismatch when they, or their competitors, are assigned a lower Fitch Support Rating (FSR), i.e. when they are perceived as more likely to benefit from government support. Because lower pre-crisis FSRs are associated with more severe losses during the crisis, our findings also suggest that perceived bailout guarantees lead to more excessive investment in risky assets. The default of Lehman Brothers in 2008 appears to have reduced moral hazard in the short-run, but but not in the long-run, as the systemic consequences of Lehman's failure became apparent. When the permissible range of banks' activities is restricted more, the effect on leverage and capital quality is weaker; the effect on risky investments, instead, is reduced when banks are overseen by multiple supervisors, and when government effectiveness is high. Indicating a systemic impact of bailout expectations, banks tend to be more leveraged and funded with less loss-absorbing capital when the average likelihood of support to competitors is high. Throughout, the use of instrumental variables and difference-in-difference estimators suggests that these effects reflect causal relationships. In short, our paper empirically supports and refines the long-standing hypothesis that public bailouts have adverse ex ante effects on banks' risk-taking. By emphasising the impact on leverage and the loss-absorbing properties of bank capital, we identify expectations of governmental support as a source of financial instability. This has important implications for financial regulation and points towards the benefits of, and the need for, credible resolution mechanisms. In the absence of such mechanisms, or to complement them, our findings also lend support to proposals suggesting to regulate the size of banks (because large banks are more likely to receive support), and the range of activities financial institutions are allowed to engage in. Taken at face value, our results on multiple supervisors could be interpreted as an argument for pluralism in financial regulation; alternatively, they could be read as implying that thorough supervision can reduce bailout-induced moral hazard.

The broader hypothesis that motivates our analysis goes back to the late 19th century. Bagehot (1873) famously argued that a promise of government support would reduce banks' incentives to prioritise prudence and famously recommended that the Lender of Last Resort (LOLR) should only support illiquid (as opposed to insolvent) banks, whilst charging a penalty rate for emergency support. The anticipation of the penalty, he argued, would rectify adverse ex ante incentives and prevent banks from assuming risks they would not choose to bear without the expected government guarantee. Since then, many papers have elaborated on the nature of moral hazard in this context (important examples include Mailath and Mester, 1994a, Goodhart and Huang, 1999 and Rochet and Vives, 2004). What all of them have in common, is the observation that government guarantees reduce the downside risk associated with investment and financing decisions in expectations, and the prediction that banks respond to this reduction by assuming excessive risks.

More recently, a number of papers have shown that the problem of moral hazard is not confined to situations in which banks choose to bear excessive exogenous risk, but that it extends to situations where they create aggregate risk by positioning themselves strategically. Farhi and Tirole (2012), for example, have argued that banks choose leverage in response to how they expect the government to react to *aggregate* maturity mismatch, whilst DeYoung et al. (2013a) suggest that limited regulatory skills can induce banks to adopt more complex business models (because the regulator will be less likely to resolve institutions that are complex and therefore not transparent). In the same spirit, Acharya and Yorulmazer (2007a) have shown that possible bailout guarantees provide incentives for banks to choose a more correlated portfolio in order to raise the likelihood of public support during adverse circumstances. Kim (2004) proposes a related mechanism when he suggests that all firms, not just banks, have an incentive to make a strategic choice towards conglomeration to increase the probability of government bailouts.

Whilst this shows that there are many reasons to believe that bailout anticipation increases risk in the financial sector, one could in principle also imagine the opposite effect: Cordella and Yeyati (2003), for instance, suggest that banks might be induced to reduce risk-taking if the government could commit to bailouts. Their argument, building on Keeley (1990), relies on the hypothesis that a bailout commitment raises banks' charter values, and thus their incentives to protect it. Investigating the argument further, Hakenes and Schnabel (2010) find that the effect from anticipated bailouts depends on transparency: if depositors know about the bailout commitment before setting the deposit rate, monitoring is reduced and banks make more risky investments; if depositors are uninformed, instead, banks' rents are potentially higher and incentives to make more risky investments are weaker. With these different mechanisms in mind, the question of whether (implicit) bailout guarantees induce moral hazard, and under which circumstances, is ultimately an empirical one.

The empirical studies most closely related to ours are the following: in work predating the global financial crisis, Nier and Baumann (2006) study the role of market discipline for bank capital in a multi-country panel comparable to ours; like us, they find a higher likelihood of government support to be associated with lower levels of capital. Using data that includes the period of the Lehman failure, enables us to complement their analysis by studying the changing degree of moral hazard over time, and by assessing pre-crisis investment decisions using realised losses. Gropp et al. (2011a) examine the effect of implicit bailout guarantees in the cross-section and show that guarantees provided to competitors (and not the bank itself) affect risk-taking. Whilst we confirm their result on the effect of expected peer-group support, our deviating results on the adverse incentive effects of banks' own bailout expectations suggest that the added time dimension carries valuable information. Finally, Dam and Koetter (2012) analyse the impact of bailout expectations on German banks' investment decisions by instrumenting implicit guarantees with the political affiliation of bank board members. Exploiting their access to Bundesbank information, the authors are able to identify that weak regulatory interventions such as hearings or official warnings reinforce the moral hazard problem. Their main conclusion on excessively risky investments is consistent with ours, and although we are unable to study interventions in the same level of detail, our panel provides us with complementary variation in regulatory characteristics across countries.[8] In summary, our contribution to the literature is to empirically test the moral hazard hypothesis for investment, funding and liquidity risk in a cross-sectional panel that encompasses the period of the Lehman failure, and to derive lessons for financial regulation from studying the differential effect of moral hazard across institutional and regulatory environments, and over time.

To arrive at this contribution, the remainder of the paper is organised as follows: Section 2 describes our

[8]More recently, a working paper by Brandao-Marques et al. (2013) analyses the effect of government support on financial stability in an international panel similar (but smaller) than ours. The main difference between our analyis and theirs is that they are looking at the effect on default probabilities, rather than leverage. Since default probabilities are determined by factors that are not only decided by the bank, we believe that our choice of dependent variable is better suited to capture moral hazard. We also look at a wider range of institutional and regulatory characteristics and focus on the effect of (explicitly provided) Fitch support ratings, while they mostly use (implicit) support ratings from Moody's.

sample and introduces our econometric approach. Section 3 presents our estimation results, and Section 4 concludes.

Data

Our sample covers annual observations on 781 banks from 90 different countries over a period of 13 years (2001-13). We combine consolidated (C1 and C2) balance sheet information and measures of profitability on individual banks from Bureau Van Dijk's Bankscope database with government support ratings provided by Fitch. Our time series is at an annual frequency, as data coverage on the quarterly frequency in the Bankscope database is low. Our sample covers both listed and unlisted banks, and is limited to those banks that receive ratings by Fitch. In addition, we integrate the World Bank's WGI and BRSS to build an unbalanced, cross-sectional panel that allows us to study up to 5,159 bank-year observations.

Summary statistics of our main variables are provided in Table 8. The first three lines contain our dependent variables. Our main measure of financial stability is leverage, i.e. the ratio of total equity (the sum of all Tier1 and Tier2 capital) over total assets (Equity/TA); for robustness, but also to capture capital quality as an additional margin for moral hazard, we also provide results for the ratio of common equity over total assets (CE/TA). To explore the impact on liquidity risk, we follow Bonfim and Kim (2012) and include the ratio of liquid assets over deposits and short-term borrowings (LA/Dep.) as a measure of maturity mismatch. All ratios are expressed in percentage terms. In addition to the summary statistics, we provide graphic illustrations of the variation in capital margins (the difference between our measure of leverage and the regulatory capital requirement). The histogram of pooled bank-year observations in Figure 3 shows that leverage ratios are centered around the regulatory requirement, but also that there is considerable variation net of these requirements.[9] In addition, Figure 4 illustrates variation in average capital margins, by region and over time. Both figures convey the message that leverage is influenced, but not fully pinned down, by regulation, and therefore subject to banks' strategic choice.[10]

The key explanatory variable and our measure of bailout expectations is the FSR; it is constructed to assess the likelihood that a particular bank has access to support from the government *conditional* on the bank being in distress. Figure 5 provides a graphic illustration of the average ratings' region-specific evolution over time, whilst Table 11 reports summary statistics by country. Figure 5 shows, in particular, that FSRs do not respond to the financial crisis and the events of 2008, suggesting that ratings reflect a relatively accurate assessment of government's inclination to support distressed banks (because they did not have to be significantly revised). Fitch discloses few observable determinants of their support ratings, and reports that many of the variables going into the calculation are confidential and obtained directly from firms and governments (recall, for example, the measure of political linkages exploited in the work of Dam and Koetter, 2012). What is clear, however, is that the ratings reflect both, governments' *propensity* and *capacity* to support a bank in distress, and we use both of these factors when instrumenting FSR in our analysis. Ratings range from one (extremely high probability of external support) to five (possibility of support that cannot be relied upon), with lower ratings indicating a higher support probability, and are explained in Table 10 and -in more detail- in Fitch Ratings (2013b). A key advantage of these ratings, for our purposes, is that they are designed to reflect conditional support probabilities, and that at least their known components are related to aggregate conditions and thus exogenous to the banks' risk-taking choices.[11]

[9] Note that regulatory requirements are defined relative to risk-weighted assets, while we report the leverage ratio as equity relative to total assets. This explains why negative capital margins are possible.

[10] See Mariathasan et al. (2014) for evidence that current regulatory arrangements provide banks with relevant discretionary margins in their choice of leverage.

[11] Note that this is different from the implicit bailout expectations that can be derived as the difference of stand-alone and support ratings from Moody's, used in Brandao-Marques et al. (2013). However, even with the explicit Fitch ratings, one could still imagine

In addition to FSRs, we use standard bank-level control variables. Broadly consistent with the basic trade-off theory of the capital structure, these controls include the return on average assets (ROA) as well as loan loss provisions (to control for asset and collateral quality), the standard deviation of asset returns to control for cash flow volatility, measures of deposit funding (to control for monitoring incentives), bank size (to account for the ability to diversify), and bank type dummies as well as measures of overhead costs and dividend payments to account for potential agency problems. Lastly, we also include measures of institutional quality at the country level (to investigate the differential impact of bailout anticipation in different regulatory environments), and time varying country characteristics such as the central government cash deficit (to explain FSRs in the first stage of our instrumental variable setting). Descriptive statistics of all variables are provided in Table 8, whereas Table 9 reports correlations for our main bank-level controls.

Models

Our benchmark model is a panel regression model with country*year fixed effects, allowing us to control for regulatory changes and/or changing economic conditions in any given country. Formally, the model is specified as follows:

$$Risk\,Taking_{i,j,t} = D_{j,t} + \beta \cdot X_{i,j,t} + \delta \cdot FSR_{i,j,t} + \varepsilon_{i,j,t} \tag{2}$$

We typically measure risk-taking with the ratio of total equity over total assets for bank i in country j, during year t. In variations of the model, we also use the ratio of common equity over total assets and the ratio of liquid assets over deposits and short-term funding. $FSR_{i,j,t}$ is the Fitch support rating of bank i in country j at year t, D is a matrix of country*year dummies, and X is a matrix of bank-specific controls; $\varepsilon_{i,j,t}$ is the disturbance term for which we assume standard properties.

Although we have argued before that support ratings are meant to capture conditional probabilities, the setup in (2) is not free from concerns, with the main problem being simultaneity. A better support rating may lead to higher leverage, but a better capitalised bank might also expect to receive a more favourable treatment from the supervisor than a bank that is operating at the regulatory limit.

To address these concerns, and to extract the causal component in the correlation between risk-taking and FSR, we offer two solutions: we instrument FSRs using the bank's systemic size (a dummy variable that is equal to one if a bank's total assets exceed 2% of its host country's GDP), the ratio of non-interest income over total interest revenues as a proxy of systemic risk (as suggest in Brunnermeier et al., 2012a), and interactions with the countries' fiscal ability to provide support (whether or not a country has been assigned a sovereign credit rating of BB or lower, and the central government's cash deficit). Instruments are chosen according to two criteria: first, they should not be affected by the bank's leverage ratio, and second, they should account for the propensity and the ability of a country to bail out a certain bank. The setup of the first stage regression is given by the model in equation (3); the model for the second stage is the same as in (2), with the difference that we use predicted FSRs.

$$FSR_{i,j,t} = D_{j,t} + \alpha \cdot X_{i,j,t} + \gamma \cdot \Theta_{i,j,t} + u_{i,j,t} \tag{3}$$

In (3), $FSR_{i,j,t}$ is the Fitch support rating of bank i in country j at year t, D is a matrix of country*year dummy variables, X is a matrix of bank-specific controls and Θ is a matrix of exogenous instruments; $u_{i,j,t}$ is the disturbance term for which we assume standard properties. As previously described, Θ includes a systemic

that a bank which is operating more prudently will also be in higher standing with its supervisor, or that a government would be more willing to support a bank holding assets that are perceived as more valuable. We will provide a discussion of the related endogeneity concerns as well as robustness checks in more detail in the subsequent sections.

size dummy, interactions between the size dummy and the host country's capacity to support, and non-interest income relative to interest revenues as a measure of systemic relevance, and thus the regulator's propensity to support.

To address remaining endogeneity concerns, and to explore the effect of bailout-induced moral hazard on investment decisions, we also estimate the effect of a "Post 2007"-dummy on the leverage ratio of banks with different pre-crisis FSRs. The hypothesis behind this difference-in-difference estimation is that banks with higher support expectations invested more excessively in assets that lost value during the crisis. The "Post 2007"-dummy should thus be associated with higher leverage, when government support was more likely prior to the crisis (i.e. when FSRs in 2005 were low).[12] Formally, the corresponding model is the following:

$$Risk\,Taking_{i,j,t} = Y_t + B_i + \zeta \cdot Z_{j,t} + \beta \cdot X_{i,j,t} + \delta \cdot (FSR\,2005_i \cdot D_t) + \vartheta_{i,j,t} \tag{4}$$

In (4), risk-taking is the ratio of equity over total assets, or the ratio of common equity over total assets, for bank i in country j, during year t. Y is a vector of year fixed effects, B is a vector of bank fixed effects, X is a matrix of time-varying bank-level controls, Z is a matrix of time-varying country-level controls (e.g. GDP growth or GDP per capita) capturing changing macroeconomic conditions. D_t is a dummy variable that is equal to one from 2008 onwards and zero otherwise (the "Post 2007"-dummy), $FSR\,2005$ is the vector of banks' pre-crisis support ratings, and $\vartheta_{i,j,t}$ is the disturbance term. The coefficient of interest is δ. Consistent with our hypothesis, a significant positive value for δ would imply that banks with low ratings in 2005 are relatively more leveraged after 2007. To ensure that the "Post 2007"-dummy captures the loss of asset value during the crisis, and not the effect of subsequent restructuring, we estimate the model on the period between 2004 and 2008 only. For robustness, we also estimate model (4) using yearly averages of the spread between the Asset-Backed Commercial Paper (ABCP) index and the Federal Funds Rate instead of the "Post 2007"-dummy. The spread is meant to proxy for toxic assets' loss of value, so that a significant positive estimate of δ implies that the value of equity of banks with lower pre-crisis FSR is linked more closely to the value of risky assets.

The final step in our analysis is then to explore the role of institutional quality for the severity of moral hazard. To this end, we use country-specific governance indicators from the World Bank and add them to our benchmark specifications. The underlying hypothesis is that moral hazard resulting from last resort lending should be reduced in environments where governance quality is high, and regulation effective. Collecting measures of governance quality in matrix Ξ, the extension of model (2) in these instances is given by:

$$Risk\,Taking_{i,j,t} = D_{j,t} + \beta \cdot X_{i,j,t} + \delta \cdot FSR_{i,j,t} + \eta \cdot (\Xi_{j,t} \cdot FSR_{i,j,t}) + \varepsilon_{i,j,t}$$

The corresponding extension of model (4) involves the inclusion of pairwise and triple interactions with pre-crisis measures of governance, $\Xi\,(2005)$.[13] The coefficient of interest in this case is the coefficient on the triple interaction $FSR\,2005_i \cdot D_t \cdot \Xi\,(2005)$.

Results - Benchmark

We begin our analysis of the moral hazard effect on financial stability with the estimation of our benchmark model (equation 2), and present the corresponding results in Table 12. The dependent variable is our measure of leverage, i.e. the ratio of total equity over total assets, in columns (1) to (4), our measure of capital quality, i.e. the ratio of common equity over total assets, in columns (5) and (6), or our measure of liquidity

[12] The prediction on leverage is based on the assumption that equity is junior to debt and that a loss in asset value is reflected in a loss of equity value, and thus in a relatively larger share of debt financing.

[13] Provided that they are not accounted for by the fixed effects.

mismatch, i.e. the ratio of liquid assets over deposits and short-term funding, in columns (7) and (8). Control variables include measures of expected government support (FSR), monitoring incentives (High deposits), asset quality (LLP/TA), the volatility of returns (Sd(ROA)), possible agency costs (High dividends, High overheads), profitability (ROA) and bank size (Large (95th)). FSR are Fitch support ratings measuring the probability that a bank in distress will receive public support. High deposits, High dividends, and High overheads are dummy variables equal to one if the underlying ratio of deposits, dividends, or overhead costs to total assets (Deposits/TA, Dividends/TA, Overheads/TA) is in the 75th percentile. ROA is the return over average assets according to *Bankscope* definitions, Large is a dummy variable equal to one if the natural logarithm of total assets is in the 95th percentile. LLP/TA is the ratio of loan loss provisions over total assets, and Sd(ROA) is the standard deviation of ROA over a three year rolling window. Bank type dummies (for savings banks, cooperative banks, investment banks, and real estate banks) and country*year fixed effects are included throughout, but not reported. Standard errors are clustered at the country level. In columns (7) and (8), we also include the interaction of FSR and a dummy variable that is equal to one if the World Bank index on restrictions to access to the Real-Time Gross Settlement (RTGS) system is above the sample mean (High RTGS restr.). This is motivated by Freixas (2000), who argue that one might interpret access to the RTGS system as a proxy for access to LOLR facilities. The hypothesis is then that banks with more restricted LOLR access are more likely to rely on expected government support for liquidity coverage.

Column (1) contains our most parsimonious specification, in which we do not control for size. The coefficient on FSR is significant and positive, implying that a lower support rating (i.e. a higher probability of conditional support) is associated with higher leverage (i.e. a lower ratio of equity over total assets). This is consistent with the presence of moral hazard. The coefficient on High deposits is significant and negative, suggesting that weaker incentives for monitoring from debtors (i.e. a high fraction of insured deposit funding) are associated with lower equity levels; an observation that is consistent with the textbook rationale that weaker monitoring incentives make equity more expensive. High overheads correspond to less leverage (i.e. more equity relative to total assets); since theory predicts that low levels of debt are associated with low levels of managerial and shareholder discipline, this is again the sign we would expect. Higher bank profitability (ROA) is associated with higher levels of equity as well, which is plausible if profitability proxies for a higher return on equity. Loan loss provisions are positively correlated with equity levels as well (although not significantly); precisely what one would expect if provisions reflect asset and thus collateral quality. The coefficient on the volatility of returns is significant and positive. To the extent that the volatility of returns reflects cash flow volatility, this is also consistent with the predictions of the trade-off theory, which suggests that debt is more affordable when cash flow volatility is low.

In columns (2) and (4) we include our measure of bank size and find a significantly negative coefficient, implying that larger banks are associated with more leverage. Including size in the model, however, also leads to a smaller point estimate of the coefficient on government support; this is consistent with the observation that size is closely linked to bailout expectations ("Too-Big-To-Fail"), and implies that we should expect to underestimate the effect of FSR when we control for bank size. Since there are also other channels through which bank size might affect leverage (e.g. due to better opportunities for diversification), however, we continue to include our size dummy in subsequent specifications. In columns (3) and (4), instead, we verify that our estimates are robust to different proxies for agency costs.

In terms of the economic relevance of the estimated moral hazard effect, a coefficient of 0.336 (column 1), implies that a change in the support rating by one point leads to a change in the ratio of total equity over total assets of 0.336 percentage points. Relative to a sample average of 9.9%, and minimum capital requirements of around 8% (for equity over risk-weighted assets), we consider this to be an economically relevant effect.

Next, we replicate the models from columns (1) and (2), replacing the dependent variable by our measures

of capital quality (columns 4 and 5) and maturity mismatch (columns 7 and 8), respectively. In columns (7) and (8) we also add the interaction of FSR with LOLR access. The results on capital quality indicate that expected government support corresponds to lower levels of loss-absorbing capital, although the coefficient on FSR becomes insignificant when we include the bank size dummy. The results on maturity mismatch, instead, confirm our hypothesis that maturity mismatch is particularly severe (i.e. the ratio of liquid assets short-term liabilities is particularly low) amongst banks with low FSRs *and* restricted access to LOLR facilities. Taking the point estimate in column (5) at face value, the economic magnitude of the effect on capital quality is comparable to that on leverage, whilst the impact on maturity mismatch of banks with restricted LOLR access is even more significant (a change of around 0.250 percentage points relative to a sample average of 2.41%).

To get a better understanding of the degree of change in expected government support that is neccesary to induce additional risk-taking, we repeat our benchmark analysis in Table 13, using dummy variables that are equal to one if a bank has been assigned a particular rating. FSR1, for example, is a dummy variable that is equal to one whenever the FSR is equal to 1 and zero otherwise. The ommitted category is for banks with a rating equal to 5. Across models, we find that a ratings change from 5 to 4 is not associated with strong differences in leverage; banks with a rating of 3, instead, have an average ratio of equity over total assets that is around 1 percentage point lower than that of the average bank with a rating of 5; for banks with a rating of 1 the difference is around 1.5 percentage points. For the effect on capital quality, we only find a significant effect (of around 1 percentage points) for a rating of 1 relative to a rating of 5. For the effect on maturity mismatch, we estimate our model for banks with restricted LOLR access only, but find none of the dummy variables to be significant.

Taking into account the potential simultaneity problem, we also estimate the same range of models as in Table 12 using an instrumental variables (IV) estimator. The corresponding first stage results are presented in Table 14. The dependent variable is FSR. The exogenous instruments include a dummy variable that is equal to one if the total assets of a bank exceed 2% of the host country's GDP (Systemic), a dummy variable that is equal to one if the host country is a low rated country (LRC), i.e. a country with a long-term credit rating of BB or lower, and the size of the central government cash deficit. Because of country*year fixed effects, LRC and Central gov cash deficit only enter as interaction terms. Following Brunnermeier et al., 2012b, we also include the ratio of total non-interest operating income over total interest revenues (NII/Interest revenue) to capture banks' systemic relevance. As expected we find that systemic size increases conditional support, and that being a low rated country reduces the effect; the coefficient on the government's cash deficit, instead, does not seem to be significant. Suprisingly, we find non-interest income to be significant with a positive coefficient.[14]

Table 15 contains the results from the second stage, where the control variables are the same as in Table 12. According to the Hansen J statistics, we cannot reject the null hypothesis of independence of our instruments and the disturbance term, whilst the Kleibergen-Paap test statistics (Underid test) implies that we can reject the null hypothesis of weak instruments. Across different specifications, we find the significance and the sign of the coefficients from our benchmark estimation confirmed. The results in the regression on capital quality are now significant independent of whether we include the size dummy or not, whereas the results on maturity mismatch are somewhat weaker. The coefficient on FSR is only significant when we include the dummy for bank size, and in column (8) the independence of the instruments is rejected at the 10% significance level.[15] One important difference arises with regards to the economic size of the moral hazard effect. The most conservative estimate in Table 15 now implies a change of 1.8 percentages point in response to a one-notch-change in (predicted) FSR

[14] One reason why the sign of the coefficient on non-interest income is different from what we expect, could be that the variable is picking up bank specific effects, that we are not controling for with our bank-type dummies; e.g. for universal banks which would be classified as commercial banks, but which also engage in investment banking activities.

[15] We provide estimates for the entire sample of banks. The results, however, are qualitatively the same if we consider only banks with restricted access to LOLR facilities.

(column 4).

To continue to take possible simultaneity concerns into account we proceed with the IV version of our model. First, in order to assess the robustness of our estimates, we vary the sample period in Table 16. Columns (1) to (4) replicate the model from column (2) in Table 15 for the sample before 2008 (column 1), for 2008 and 2009 (columns 2 and 3 respectively), and for the period after 2009 (column 4). We find a moral hazard effect on leverage for the period before 2008 (i.e. before the bailout of Lehman), no effect during 2008, a positive effect during 2009 and a slightly larger point estimate after 2009. These observations are consistent with the narrative that the decision of the U.S. government to let Lehman Brothers go bankrupt in 2008, initially reduced banks' reliance on expected government support. By 2009, when the consequences of the Lehman failure had become apparent, this reduction was replaced by the conviction that governments would stand by the implicitly provided guarantees in the future. In columns (5) to (8) we repeat the exercise for the ratio of common equity over total assets, and in columns (9) to (12) for the ratio of liquid assets over deposits and short-term liabilities. The estimates for capital quality exhibit the same pattern as those for the leverage ratio, whilst the effect on maturity mismatch occurs only in 2008, and seems to become gradually weaker afterwards. For the period after 2009, all estimates are consistent with our previous findings that stronger implicit government guarantees correspond to more leverage, to a reduction in the capacity to absorb losses, and to more severe maturity mismatch.

Whilst the results in Table 16 are suggestive of time-varying degrees of moral hazard, as we explained, an alternative explanation for lower equity levels in the post-Lehman period is also possible. Under the hypothesis that banks with higher pre-crisis support probabilities invested more excessively in risky assets, equity values of these banks should drop more severely during an economic downturn. We investigate this alternative hypothesis with the estimation of model (4). In Table 17, we interact pre-Lehman FSRs (from 2005) with a time dummy that is equal to one for the post-Lehman years (starting from 2008), and with yearly averages of the spread between the ABCP index and the Federal Funds Rate (as a proxy for toxic asset risk). The prediction is that banks with a higher support rating in 2005 invested more excessively in risky assets and should therefore experience a more severe loss in asset (and therefore equity) value after 2007, and when toxic assets are particularly risky (i.e. when the ABCP spread is wide). Our difference-in-difference estimates are consistent with both of these predictions, for the leverage ratio (columns 1 to 3) and for common equity (columns 4 to 6). To focus on the effect of lost asset value, we estimate the version of the model with the post-Lehman dummy on the period 2005-08 only; for the version using the ABCP spread, instead, we report results for the period 2005-08 only, but also for the period after 2004 and find no important difference. For completeness, we also report the results for maturity mismatch in columns (7) to (9), but find no significant effect; given that there is no clear prediction as to why a loss in asset value should affect the degree of maturity mismatch on banks' balance sheets, one could interpret these results as a placebo regression, supporting the view that the "Post 2007"-dummy primarily captures the rapid loss in risky asset value during the first years of the crisis.

Whilst this alternative explanation of the post-Lehman decline in equity value can potentially explain why the point estimates of the coefficients on FSR are larger after 2009 (Table 15), it cannot account for the insignificant estimates in 2008. We therefore conclude that both forces are at work. Moral hazard related to banks' leverage choice was reduced initially by the decision to let Lehman default, and resurfaced when the consequences of this decision became aparent; at the same time, banks with strong pre-crisis support expectations also invested more heavily in risky assets.

In summary, this section has documented the presence of an economically sizeable moral hazard effect on bank leverage and the quality of bank capital. A higher likelihood of receiving government support during distress periods (i.e. being assigned a lower Fitch support rating), corresponds to lower ratios of total and common equity over total assets. This effect is robust to introducing a number of different control variables

and, importantly, to instrumenting FSR. Both effects seem to vanish in the year of the Lehman default, but are particularly robust in subsequent years. In addition, our evidence is also consistent with an adverse impact of moral hazard on banks' liquidity risk; the effect is particularly strong when banks have restricted access to LOLR facilities, but point estimates are less robust than for the effects on leverage and loss-absorbing capacity. Complementary to these results, our findings also suggest that bailout expectations impair financial stability indirectly, through their impact on the asset side of banks' balance sheets. Banks, which are more likely to benefit from government guarantees seem to make more risky investment choices, which causes equity values to drop when these investments fail to perform.

Consequently, our results provide evidence of adverse effects of bailout expectations on the stability of financial institutions. To investigate how regulatory and institutional circumstances can reduce these adverse effects, we proceed by analysing how moral hazard interacts with different governance indicators.

Results - Governance

Table 19, replicates the model from column (2) of Table 15, for Equity/TA, CE/TA, and LA/Dep. as dependent variables, and adds interactions of FSR with different governance indices: a measure of the range of activities that banks are permitted to engage in (columns 1, 3 and 5), and a dummy variable indicating whether banks are overseen by multiple supervisory agencies (columns 2, 4 and 6). Results for a general measure of government effectivness and a variable capturing the degree of corruption control were estimated in unreported regressions. In each of these cases (except for the variable capturing whether banks are overseen by multiple supervisors), we construct dummy variables indicating whether or not the governance indices exceed threshold values.[16]

While the rationale for studying the effect of government effectiveness and corruption control is simple, the intuition behind examining activity restrictions and the number of supervisory agencies deserves explanation. One argument made frequently in defense of the numerous bailouts during the recent financial crisis is that the consequences of a failure of the bank in question were unpredictable and potentially far more expensive than the cost of the bailout. In response to this reasoning, legislation regulating the scope of activities that banks are permitted to engage in, i.e. legislation in the tradition of the Glass-Steagall Act, has made a comeback and re-entered the regulatory debate, for example in the form of the Volcker rule. The idea underlying this debate is that a larger range of activities increases complexity, as well as banks' systemic relevance, and thus the likelihood of governmental support during distress. A higher restriction of banks' permissible activities should thus be associated with a reduction in moral hazard. The index we use to test this hypothesis is taken from the World Bank's BRSS, and measures the degree of restrictions in the following three business areas:

> Securities: extent to which banks may engage in underwriting, brokering and dealing in securities and all aspects of the mutual fund industry.
>
> Insurance: extent to which banks may engage in insurance underwriting and selling.
>
> Real estate: extent to which banks may engage in real estate investment, development and management.

Within each of these sectors, the degree of regulatory restriction is assessed on a scale from 1 to 4:

> Unrestricted = 1: full range of activities can be conducted directly in the bank
>
> Permitted = 2: full range of activities can be conducted, but some or all must be conducted in subsidiaries

[16] The threshold values are 9.75, 1.5, and 1.5 for activity restrictions, government effectiveness and corruption control respectively. In each case this corresponds approximately to the sum of the minimum sample value plus 75% of the difference between sample maximum and sample minimum.

Restricted = 3: less than full range of activities can be conducted in the bank or subsidiaries

Prohibited = 4: the activity cannot be conducted in either the bank or subsidiaries.

A different discussion that arose in the aftermath of the crisis, concerns the question of why regulators were unable to identify financial sector fragilities before the collapse. One set of explanations, especially for the U.S., evolves around the observation that the presence of multiple supervisory agencies enabled some banks to engage in regulatory arbitrage. Multiple supervisors are likely to use information less efficiently, to respond more sluggishly if regulatory action requires coordination, and they frequently have to deal with grey areas of regulatory responsibility (when banks' business models fall between, or extend across, their respective domains). At the same time, however, one can also imagine that a single regulator is more likely to be subject to regulatory capture, or that the lack of multiple perspectives leads to less thorough and potentially less complete assessments. We use the variable on multiple supervisors to investigate which of these forces dominate.

From interactions with the respective dummy variables, we find that stronger restrictions on banks' activities reduce moral hazard related to leverage and capital quality (Table 18, columns 1 and 3), whereas multiple supervisors seem to reduce the effect on liquidity risk (column 6). In contrast, none of the dimensions of moral hazard appears to be affected by stronger corruption control or general government effectiveness (unreported). In order to assess how the regulatory environment affects risk-taking on the asset side of the balance sheet, we also extend our difference-in-difference model and include interactions with pre-crisis (i.e. 2005) values of the governance indicators. The corresponding results are presented in Tables 19 (for the leverage ratio) and 20 (for capital quality). In order to keep the exhibition of the results simple, we do not report all pairwise interactions and focus on the coefficient of interest, i.e. on the coefficient on the triple interaction of FSR(2005), the governance indicator and either the post-Lehman dummy (columns 1 to 4), or the ABCP spread (columns 5 to 8). For the impact on leverage (Table 19), we find that moral hazard is reduced when banks are overseen by multiple supervisors and when government effectiveness is high; the estimates are not statistically significant when we use the post-Lehman dummy (and therefore the shorter sample), but significant when we use the ABCP spread. For the impact on common equity (Table 20), instead, we find significant estimates independent of the variable we use to capture asset risk. The point estimates suggest that moral hazard is reduced in the case of multiple supervisors, when government effectiveness is high and when corruption control is strong. Because differences in seniority would suggest that the loss in asset value is reflected stronger in the value of common equity than in the value of other forms of Tier 1 and Tier 2 equity, the fact that the estimates in Table 20 are more significant than in Table 19 offers additional support to our empirical strategy.

Overall, our results indicate that multiple supervisors, and a more effective and transparent government, can successfully reduce bailout-induced moral hazard on the asset side of the balance sheet. Restricting the range of permissible bank activities, instead, does not seem to reduce excessively risky investments. This is in contrast to the effects on the liability side of banks balance sheets, where we find that activity restrictions, but not multiple supervisors or a more effective government, are successful in reducing excessive risk-taking. Excessive maturity mismatch (which depends on both sides of the balance sheet) appears to be reduced under the scrutiny of multiple supervisors.

Results - Peer effects

As a final step in our analysis, we examine the systemic impact of government guarantees. This step is motivated by recent work on systemic insurance (Dell'Ariccia and Ratnovski, 2014), suggesting that system-wide bailout expectations reduce the risk of contagion. Because risk of contagion is -to a certain degree- exogenous from the perspective of the bank, its removal increases the banks' return to protecting their franchise value. Dell'Ariccia

and Ratnovski (2014) make this point in the context of monitoring incentives, but the intuition applies to the funding structure as well. Loosely interpreted, the corresponding hypothesis is that stronger government support to peers should provide banks with incentives to reduce leverage. At the same time, the results in this section are also related to the aforementioned work by Gropp et al. (2011a), who show that banks increase risk-taking in response to government guarantees to competitors.

To analyze this systemic effect of implicit government guarantees, we investigate whether expected support to other banks, within the same year and country, and of the same type, induces banks to adopt more risk. We calculate the average FSR (Avg. FSR), within each year-country-bank type cluster, and regress our dependent variables on Avg. FSR and controls. Taking the average across industries allows us to maintain our benchmark regression model, and in particular the use of country*year fixed effects. In subsequent steps, we also include interactions of Avg. FSR with different governance indicators, and each individual bank's FSR, as regressors, to study how the regulatory environment affects the systemic impact of bailoit guarantees. The corresponding results from OLS regressions are presented in Tables 21 and 22.[17]

Across specifications, we find that banks' funding choices are more risky, when expected government support to peers is high. That is, the higher the (perceived) likelihood that a government will bail out a bank's competitors, the weaker is this bank's capital structure. This continues to be true when we control for the banks' individual FSR (Table 22), although the high correlation between Avg. FSR and FSR means that significance levels are reduced. The finding applies primarily to the leverage ratio, and is less robust for capital quality and liquidity risk. Consistent with -and in support of- our previous findings, interactions with governance indicators suggest that activity restrictions reduce the adverse impact on leverage and capital quality, whilst multiple supervisory agencies are successful in mitigating the effect on liquidity risk; general government effectiveness and a strong stance against corruption, instead, do not reduce moral hazard-induced risk-taking (regressions not reported). When we also control for individual FSRs these patterns are preserved. Different from our earlier findings, however, the coefficients on the interaction of FSR and governance indicators suggests that multiple supervisors also reduce moral hazard with respect to leverage and capital quality, whereas activity restrictions appear to worsen liquidity risk in response to individual bailout guarantees. Taking into account the strong correlation between average and individual support probabilities, we do not want to overinterpret these findings, and interpret the results in Table 22 as a robustness check to those in Table 21. We therefore conclude that there is moral hazard in response to government support provided to competitors -primarily with respect to the leverage ratio- and that the patterns that are robust across both tables, i.e. that activity restrictions curb moral hazard with respect to leverage and loss-absorbing capacity, whereas multiple supervisors reduce liquidity risk, are in line with our previous findings.

In view of the existing literature, these results are consistent with the analysis of Gropp et al. (2011a), but challenge the mechanism proposed by Dell'Ariccia and Ratnovski (2014). We cannot reject their hypothesis that peer support increases the return to protecting a bank's charter value, but our findings suggest that the competition effect discussed in Gropp et al. (2011a) dominates; in other words: banks respond by making more, rather than less, risky choices when they expect their peers to be more likely to benefit from government guarantees.

Conclusion

This paper provides evidence in support of the hypothesis that (implicit) government guarantees for banks lead to risky financing and investment choices; more specifically to more leverage, lower loss-absorbing capacity, more

[17]We have also instrumented Avg. FSR with the corresponding averages of our benchmark instruments and found consistent results. We chose to report the results from the OLS regression, because test statistics did not allow us to reject the null hypothesis of weak instruments in the IV framework.

excessive investment in risky assets, and more severe liquidity mismatch. It also shows that the detrimental effect on bank capital is mitigated when the range of permissible bank activities is regulated more. The effect on risky investment choices, instead, is unaffected by activity restrictions, but reduced when banks are overseen by multiple supervisors, and when they operate in environments with more effective governments or stronger corruption control. We identify the presence of moral hazard prior to the default of Lehman Brothers, an initial reduction in moral hazard in the year of the default, and resurgent adverse incentives when it was learned that governments would not let another systemic bank fail. We also find that bailout expectations have a systemic effect, in the sense that higher expected support to competitors provides incentives for banks to engage in more risk-taking. Finally, we show that excessive maturity mismatch in response to bailout expectations is reduced when banks are overseen by multiple supervisors, and that facilitated access to LOLR lending can reduce moral hazard-induced liquidity risk. Our results are robust to instrumenting bailout expectations with bank size and host country characteristics, to different specifications of the benchmark model, and they suggest that the effects are economically relevant.

Based on our analysis we derive the following regulatory lessons: first, our results lend support to the proposal of structured resolution mechanisms. Such mechanisms increase the expected cost of distress for the banks in question and should therefore reduce risk-taking. Second, if a credible commitment to structured resolution should not be implementable, our findings advocate the regulation of universal banks, and the separation of commercial banking from activities such as trading in securities or real estate, and banks' engagment in the insurance industry. The reduction in complexity that accompanies such a restriction of activities, and the reduced systemic relevance mitigate adverse incentives and are therefore conducive to financial stability. For the same reasons, the results from our first stage regressions also support the idea of a regulatory cap on bank size. Finally, the result on multiple supervisors shows that the benefits from multiple regulatory supervisors outweigh their costs when it comes to reducing bailout-induced liquidity and investment risk. In the context of European financial regulation, this finding suggests that there is a potential benefit to preserving regulatory functions at the country level, whilst augmenting them with centralised oversight at the level of the Eurozone.

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Table 8: **Summary statistics**

The sample covers banks from 90 countries over the period 2001-2013. Equity/TA is the ratio of total equity over total assets, CE/TA is the ratio of common equity over total assets, LA/Dep. is the ratio of liquid assets over deposit and short-term funding. FSR are Fitch support ratings measuring the probability that a bank in distress will receive public support. They range from one (extremely high probability of external support) to five (possibility of support that cannot be relied upon). FSR1 to FSR4 are dummy variables equal to one if the FSR is equal to 1, 2, 3, or 4 respectively. Deposits/TA is the ratio of deposits to total assets. Dividends/TA is the ratio of dividend payments to total assets. Overheads/TA is the ratio of overhead costs to total assets. ROA is the return over average assets, Size is the natural logarithm of total assets. LLP/TA is the ratio of loan loss provisions over total assets. Sd(ROA) is the standard deviation of ROA over a three year rolling window. Savings bank, Cooperative bank, Investment bank, Real estate & mortgage bank and Other bank are bank type dummies. High actvities restriction, High gov. effectiveness, and High corruption control are dummy variables equal to one if the corresponding World Bank indices are larger than 9.75, 1.5. and 1.5 respectively. Multiple supervisors is a dummy variable equal to one if the banks in a given country are overseen by more than one supervisory authority. Systemic is a dummy equal to one when a banks total assets exceed 2% of its host countries GDP. LRC stands for low rated country (countries with a Fitch long-term sovereign rating of BB or lower), Cash deficit is a country's central government cash deficit, and NII/Interest revenue is the ratio of a bank's non-interest income to total interest revenue.

	Obs.	Mean	SD	Min	Max
Equity/TA	5159	9.90	5.78	0.00	99.84
CE/TA	5158	9.13	5.70	0.00	99.84
LA/Dep.	5033	2.41	1.96	0.14	11.60
FSR	5159	3.04	1.56	1.00	5.00
FSR1	5159	0.23	0.42	0.00	1.00
FSR2	5159	0.21	0.41	0.00	1.00
FSR3	5159	0.16	0.37	0.00	1.00
FSR4	5159	0.10	0.30	0.00	1.00
Deposits/TA	5045	0.59	0.22	0.00	1.10
Dividends/TA	3924	0.00	0.00	-0.01	0.07
Overheads/TA	5159	0.03	0.04	0.00	0.68
ROA	5159	1.05	1.69	-7.48	8.02
Size	5159	21.34	1.97	15.71	25.93
LLP/TA	5159	0.74	1.57	-18.33	48.11
Sd(ROA)	5159	0.61	1.01	0.00	9.31
Savings bank	5159	0.03	0.17	0.00	1.00
Cooperative bank	5159	0.02	0.15	0.00	1.00
Investment bank	5159	0.05	0.22	0.00	1.00
Real estate & mortgage bank	5159	0.02	0.15	0.00	1.00
Other bank	5159	0.01	0.11	0.00	1.00
High activities restriction	5159	0.47	0.50	0.00	1.00
Multiple supervisors	5100	0.23	0.42	0.00	1.00
High gov. effectiveness	5159	0.32	0.47	0.00	1.00
High corruption control	5159	0.31	0.46	0.00	1.00
Systemic	3559	0.17	0.37	0.00	1.00
Systemic*LRC	3559	0.01	0.08	0.00	1.00
Systemic*Cash deficit	3559	-0.34	2.68	-30.93	29.06
NII/Interest revenue	3559	1.11	20.52	-383.60	581.25

Table 9: **Correlations**

This table presents correlations of the main bank-specific variables. Equity/TA is the ratio of total equity over total assets, CE/TA is the ratio of common equity over total assets, LA/Dep. is the ratio of liquid assets over deposit and short-term funding. FSR are Fitch support ratings measuring the probability that a bank in distress will receive public support. They range from one (extremely high probability of external support) to five (possibility of support that cannot be relied upon). FSR1 to FSR4 are dummy variables equal to one if the FSR is equal to 1, 2, 3, or 4 respectively. Deposits/TA is the ratio of deposits to total assets. Dividends/TA is the ratio of dividend payments to total assets. Overheads/TA is the ratio of overhead costs to total assets. ROA is the return over average assets, Size is the natural logarithm of total assets. LLP/TA is the ratio of loan loss provisions over total assets. Sd(ROA) is the standard deviation of ROA over a three year rolling window.

	Equity/TA	CE/TA	LA/Dep.	FSR	Deposits/TA	Dividends/TA	Overheads/TA	ROA	Size	LLP/TA	Sd(ROA)
Equity/TA	1										
CE/TA	0.931***	1									
LA/Dep.	0.177***	0.155***	1								
FSR	0.232***	0.210***	-0.0230	1							
Deposits/TA	-0.108***	-0.110***	-0.277***	0.0649***	1						
Dividends/TA	0.228***	0.220***	0.126***	0.145***	-0.106***	1					
Overheads/TA	0.350***	0.349***	0.175***	0.356***	-0.113***	0.163***	1				
ROA	0.409***	0.377***	0.197***	0.117***	0.0664***	0.150***	0.120***	1			
Size	-0.485***	-0.461***	-0.147***	-0.435***	-0.0979***	-0.343***	-0.352***	-0.222***	1		
LLP/TA	0.159***	0.157***	-0.0670***	0.120***	-0.0880***	-0.00468	0.333***	-0.259***	-0.153***	1	
Sd(ROA)	0.369***	0.320***	0.226***	0.126***	-0.164***	0.0525**	0.267***	0.0438**	-0.270***	0.215***	1

* p<0.05, ** p<0.01, *** p<0.001

Figure 3: **Capital Margins (Density)**

Density of capital margins (difference between capital ratio and regulatory requirement).

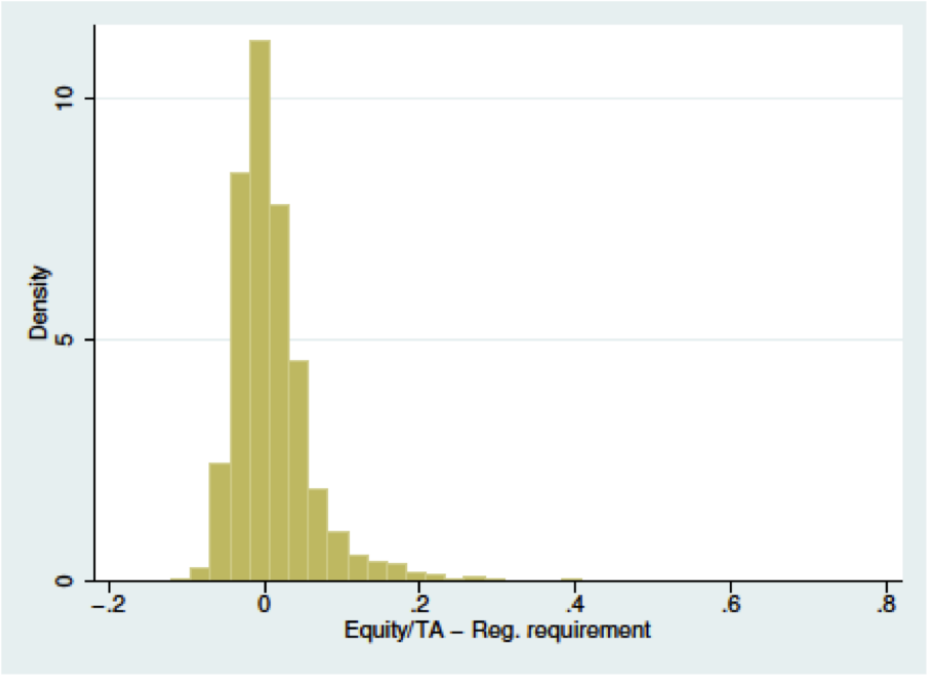

Figure 4: **Capital Margins Over Time**

Average capital margins by region and over time.

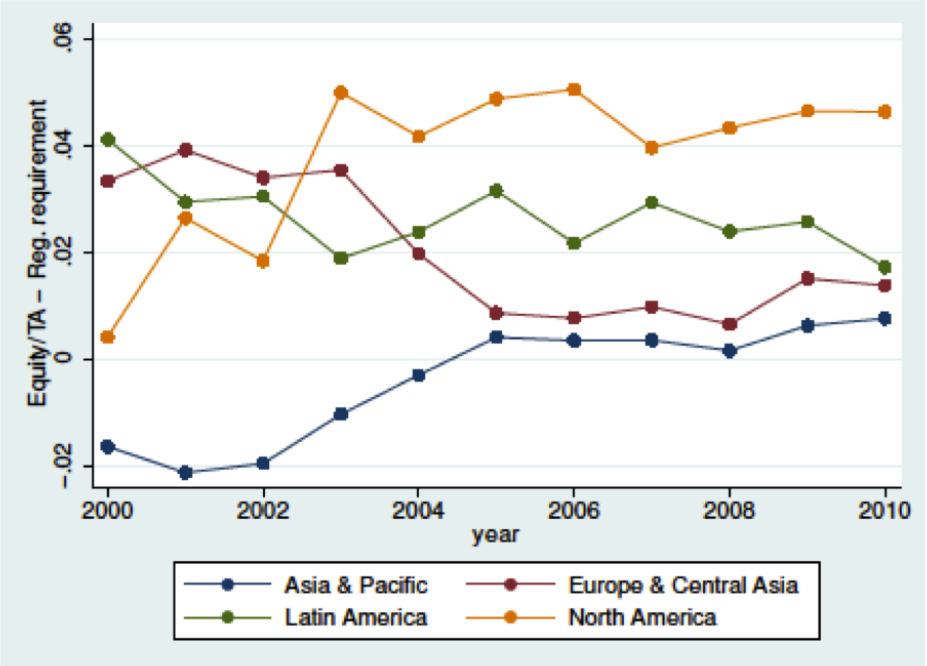

Table 10: **Definition of Fitch support ratings**

This table provides an overview of the different support rating categories. Following the definition given by Fitch ratings, the support ratings are explicitly not a measure for the intrinsic credit quality of a bank. Rather, the support ratings capture the rating agency's assessment on whether a bank would receive external support in case it experiences financial difficulties. The core assumption is that any necessary support will be sufficiently sustained so that the supported bank is able to continue meeting its financial obligations until the difficulties are over. In that regard, the support ratings capture both the agency's judgment about potential supporter's propensity and ability to support a bank. The former is a pure judgment. The latter is set by the potential supporter's own credit ratings. Where the support rating is based on sovereign support, Fitch also derives a support rating floor. This floor is expressed on the usual AAA long-term scale and indicates the level below which it would not expect to lower the issuer default rating (Fitch Ratings, 2013)

Support rating	Definition by Fitch
1	A bank for which there is an extremely high probability of external support. The potential provider of support is very highly rated in its own right and has a very high propensity to support the bank in question. This probability of support indicates a minimum Long-Term Rating floor of A-.
2	A bank for which there is a high probability of external support. The potential provider of support is highly rated in its own right and has a high propensity to provide support to the bank in question. This probability of support indicates a minimum Long-Term Rating floor of BBB-.
3	A bank for which there is a moderate probability of support because of uncertainties about the ability or propensity of the potential provider of support to do so. This probability of support indicates a minimum Long-Term Rating floor of BB-.
4	A bank for which there is a limited probability of support because of significant uncertainties about the ability or propensity of any possible provider of support to do so. This probability of support indicates a minimum Long-Term Rating floor of B.
5	A bank for which there is a possibility of external support, but it cannot be relied upon. This may be due to a lack of propensity to provide support or to very weak financial ability to do so. This probability of support indicates a Long-Term Rating floor no higher than B- and in many cases, no floor at all.

Figure 5: **Fitch Support Ratings by Region**

Regional mean of the Fitch Support Ratings over time.

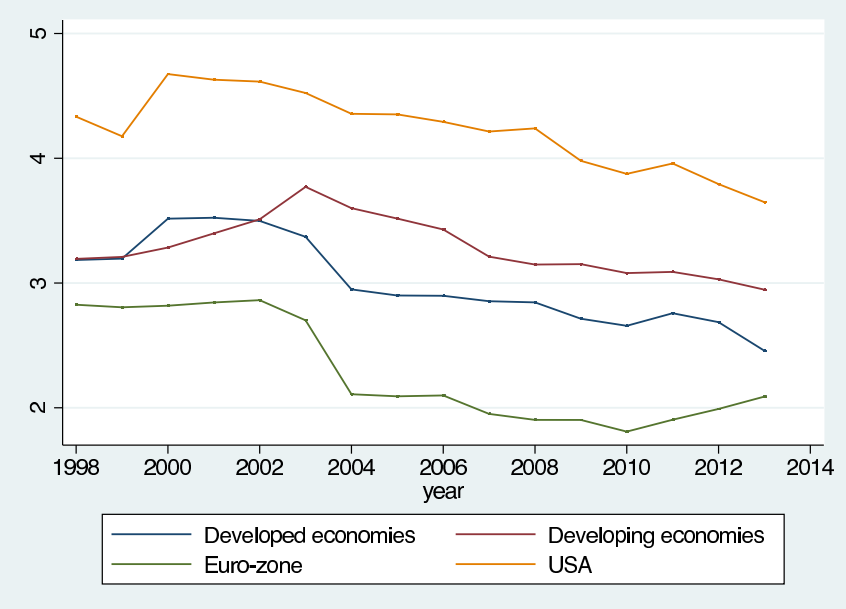

Table 11: **FSR Statistics by Country**

Number of observations, average FSR, and standard deviation by country.

Country	Obs.	Mean	SD	Country	Obs.	Mean	SD	Country	Obs.	Mean	SD
AD	32	3.34	1.07	GB	234	2.67	1.65	NO	36	2.50	1.00
AE	103	1.45	0.52	GE	36	4.39	0.64	NZ	34	1.94	1.61
AM	5	3.00	0.00	GR	6	2.50	0.84	OM	11	1.55	0.52
AR	50	4.68	0.55	GT	11	3.27	0.47	PA	27	3.48	1.50
AT	35	1.29	0.46	HK	83	2.13	0.88	PE	27	2.70	0.72
AU	53	2.13	1.40	HR	24	2.21	0.41	PH	61	3.38	0.49
AZ	23	4.04	1.07	HU	61	1.70	0.84	PK	26	4.85	0.37
BD	3	4.00	0.00	ID	118	3.85	0.85	PL	59	1.44	0.62
BE	30	1.07	0.25	IE	41	1.34	0.62	PT	46	2.20	1.11
BG	23	2.61	1.31	IL	36	1.94	0.86	QA	55	1.45	0.50
BH	74	3.19	1.69	IN	96	3.17	1.04	RO	39	2.51	0.97
BM	15	3.27	1.62	IT	117	2.38	1.08	RU	267	3.91	1.33
BR	202	4.18	1.07	JM	7	4.43	0.53	SA	105	1.61	0.66
BY	34	4.68	0.47	JO	30	3.20	0.41	SE	38	1.50	1.01
CA	5	3.00	1.41	JP	271	2.37	0.90	SG	14	1.43	0.51
CH	43	2.67	2.00	KE	14	4.79	0.58	SI	51	2.51	1.19
CL	18	1.78	0.73	KR	5	1.20	0.45	SK	26	1.46	0.71
CN	90	2.00	1.05	KW	61	1.54	0.92	SV	30	3.37	1.30
CO	23	3.17	0.58	KY	7	5.00	0.00	TG	6	5.00	0.00
CR	9	3.00	0.00	KZ	61	4.20	0.83	TH	105	2.73	1.04
CY	39	2.33	0.87	LB	37	4.54	0.61	TN	44	2.34	0.48
CZ	24	1.33	0.56	LT	12	3.33	2.06	TR	140	3.49	0.97
DE	79	1.66	1.23	LU	9	3.56	1.74	TT	15	2.87	0.83
DK	16	1.00	0.00	LV	19	2.95	1.58	TW	22	4.36	0.49
DO	3	4.00	0.00	MA	19	2.47	0.51	UA	42	4.50	0.63
EC	22	5.00	0.00	MO	14	2.00	0.96	US	821	4.31	1.44
EG	7	3.29	0.49	MT	20	3.20	1.51	UZ	6	4.33	0.52
ES	74	2.38	0.93	MX	82	3.10	1.53	VE	34	4.56	0.75
FI	19	1.00	0.00	NG	9	4.22	0.44	VN	41	4.44	0.50
FR	138	1.61	1.23	NL	46	2.46	1.38	ZA	54	2.67	1.44

Table 12: **Benchmark**

The sample covers banks from 90 countries over the period 2001-2013. The dependent variable is the ratio of total equity over total assets (columns 1 to 4), the ratio of common equity to total assets (columns 5 to 6), or the ratio of liquid assets over deposit and short-term funding (columns 7 to 8). FSR are Fitch support ratings measuring the probability that a bank in distress will receive public support. They range from one (extremely high probability of external support) to five (possibility of support that cannot be relied upon). High RTGS restr. is a dummy variable equal to one if the World Bank index on restrictions to access to the Real-Time Gross Settlement (RTGS) system is above the sample mean. High deposits is a dummy variable equal to one if Deposits/TA is in the 75th percentile. High dividends is a dummy variable equal to one if Dividends/TA is in the 75th percentile. High overheads is a dummy variable equal to one if Overheads/TA is in the 75th percentile. ROA is the return over average assets, Large is a dummy variable equal to one if the natural logarithm of total assets is in the 95th percentile. LLP/TA is the ratio of loan loss provisions over total assets. Sd(ROA) is the standard deviation of ROA over a three year rolling window. Bank type dummies are included but not reported. Standard errors are clustered at the country level; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	(1) Equity/TA	(2) Equity/TA	(3) Equity/TA	(4) Equity/TA	(5) CE/TA	(6) CE/TA	(7) LA/Dep.	(8) LA/Dep.
FSR	0.336**	0.285*	0.386**	0.334*	0.237*	0.181	-0.145	-0.114
	(0.147)	(0.164)	(0.161)	(0.181)	(0.129)	(0.143)	(0.105)	(0.086)
FSR*High RTGS restr.							0.250**	0.241**
							(0.113)	(0.113)
High deposits	-0.900***	-1.004***	-0.955***	-1.057***	-0.727**	-0.839**	0.081	0.135
	(0.325)	(0.340)	(0.313)	(0.327)	(0.339)	(0.347)	(0.166)	(0.177)
High overheads	1.760**	1.692**			1.830**	1.756**	0.199**	0.233**
	(0.736)	(0.756)			(0.759)	(0.776)	(0.092)	(0.110)
High dividends			0.934***	0.860***				
			(0.270)	(0.270)				
Large (95th)		-1.923***		-1.952***		-2.088***		0.990*
		(0.595)		(0.601)		(0.542)		(0.509)
ROA	1.120***	1.117***	1.132***	1.129***	1.104***	1.101***	0.084*	0.086*
	(0.123)	(0.123)	(0.124)	(0.124)	(0.116)	(0.116)	(0.048)	(0.048)
LLP/TA	0.125	0.115	0.164	0.153	0.167	0.156	-0.126*	-0.121*
	(0.216)	(0.215)	(0.226)	(0.224)	(0.211)	(0.210)	(0.068)	(0.066)
Sd(ROA)	1.166***	1.159***	1.293***	1.281***	0.992***	0.985***	0.194***	0.197***
	(0.203)	(0.202)	(0.235)	(0.235)	(0.195)	(0.192)	(0.071)	(0.072)
Constant	6.596***	6.915***	6.378***	6.719***	6.200***	6.548***	2.253***	2.087***
	(0.713)	(0.832)	(0.702)	(0.829)	(0.566)	(0.681)	(0.220)	(0.230)
Observations	5159	5159	5159	5159	5158	5158	5033	5033
R-squared	0.21	0.21	0.20	0.21	0.18	0.18	0.11	0.13
Countries	90.00	90.00	90.00	90.00	90.00	90.00	88.00	88.00
F-stat	20.44	28.27	21.76	30.31	20.36	29.10	5.14	5.05
Country*year FE	yes	yes	yes	yes	yes	yes	yes	yes

Clustered standard errors in parentheses.

Table 13: **Support ratings**

The sample covers banks from 90 countries over the period 2001-2013. The dependent variable is the ratio of total equity over total assets (columns 1 to 4), the ratio of common equity to total assets (columns 5 to 6), or the ratio of liquid assets over deposit and short-term funding (columns 7 to 8). FSR1 to FSR4 are dummy variables equal to one if a bank has received the corresponding FSR (the ommitted category is FSR=5). High RTGS restr. is a dummy variable equal to one if the World Bank index on restrictions to access to the Real-Time Gross Settlement (RTGS) system is above the sample mean. High deposits is a dummy variable equal to one if Deposits/TA is in the 75th percentile. High dividends is a dummy variable equal to one if Dividends/TA is in the 75th percentile. High overheads is a dummy variable equal to one if Overheads/TA is in the 75th percentile. ROA is the return over average assets, Large is a dummy variable equal to one if the natural logarithm of total assets is in the 95th percentile. LLP/TA is the ratio of loan loss provisions over total assets. Sd(ROA) is the standard deviation of ROA over a three year rolling window. Bank type dummies are included but not reported. Standard errors are clustered at the country level; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	(1) Equity/TA	(2) Equity/TA	(3) Equity/TA	(4) Equity/TA	(5) CE/TA	(6) CE/TA	(7) LA/Dep.	(8) LA/Dep.
FSR1	-1.615**	-1.364*	-1.831**	-1.576*	-1.241**	-0.972	-0.537	-0.576
	(0.633)	(0.718)	(0.698)	(0.795)	(0.556)	(0.631)	(0.325)	(0.350)
FSR2	-0.543	-0.558	-0.676	-0.693	-0.126	-0.142	-0.544	-0.532
	(0.624)	(0.617)	(0.661)	(0.659)	(0.555)	(0.545)	(0.484)	(0.488)
FSR3	-0.838*	-0.912*	-0.939*	-1.017**	-0.441	-0.519	-0.457	-0.431
	(0.498)	(0.473)	(0.532)	(0.509)	(0.427)	(0.403)	(0.347)	(0.350)
FSR4	-0.592	-0.639	-0.760	-0.803	-0.378	-0.427	-0.299	-0.277
	(0.536)	(0.528)	(0.543)	(0.539)	(0.537)	(0.528)	(0.314)	(0.313)
High deposits	-0.969***	-1.052***	-1.028***	-1.107***	-0.808**	-0.896***	0.002	0.027
	(0.312)	(0.327)	(0.299)	(0.314)	(0.323)	(0.333)	(0.141)	(0.141)
High overheads	1.740**	1.671**			1.814**	1.740**	0.224	0.243
	(0.724)	(0.746)			(0.747)	(0.766)	(0.151)	(0.154)
High dividends			0.933***	0.857***				
			(0.266)	(0.267)				
Large (95th)		-1.889***		-1.914***		-2.009***		0.441
		(0.618)		(0.626)		(0.582)		(0.438)
ROA	1.118***	1.112***	1.129***	1.123***	1.105***	1.099***	0.082	0.085
	(0.121)	(0.122)	(0.122)	(0.122)	(0.116)	(0.116)	(0.072)	(0.074)
LLP/TA	0.129	0.117	0.169	0.155	0.174	0.161	-0.089	-0.086
	(0.215)	(0.212)	(0.225)	(0.222)	(0.210)	(0.208)	(0.063)	(0.063)
Sd(ROA)	1.159***	1.155***	1.283***	1.274***	0.982***	0.978***	0.170***	0.172***
	(0.201)	(0.200)	(0.232)	(0.231)	(0.194)	(0.191)	(0.057)	(0.057)
Constant	8.317***	8.437***	8.360***	8.499***	7.363***	7.490***	2.731***	2.689***
	(0.472)	(0.453)	(0.465)	(0.437)	(0.477)	(0.454)	(0.318)	(0.322)
Observations	5159	5159	5159	5159	5158	5158	3229	3229
R-squared	0.21	0.22	0.20	0.21	0.18	0.19	0.16	0.16
Countries	90.00	90.00	90.00	90.00	90.00	90.00	66.00	66.00
F-stat	16.82	23.33	16.82	24.70	16.19	24.46	13.89	16.69
Country*year FE	yes	yes	yes	yes	yes	yes	yes	yes
High RTGS restr.	-	-	-	-	-	-	yes	yes

Clustered standard errors in parentheses

Table 14: **Benchmark - IV (First Stage)**

The dependent variable is FSR and ranges from one (extremely high probability of external support) to five (possibility of support that cannot be relied upon). The exogenous instruments used to explain variation in FSR are a dummy variable that is equal to one if the total assets of a bank exceed 2% of the host country's GDP (Systemic), the ratio of total non-interest operating income over total interest revenues (motivated by **?**), and the interaction of Systemic with a dummy variable that is equal to one if the host country is a low ranked country (i.e. ranked BB or lower by Fitch), and with the size of the central government's cash deficit. Because of country-year fixed effects, LRC and Central gov cash deficit only enter as interaction terms. High deposits is a dummy variable equal to one if Deposits/TA is in the 75th percentile. High dividends is a dummy variable equal to one if Dividends/TA is in the 75th percentile. High overheads is a dummy variable equal to one if Overheads/TA is in the 75th percentile. ROA is the return over average assets, Large is a dummy variable equal to one if the natural logarithm of total assets is in the 95th percentile. LLP/TA is the ratio of loan loss provisions over total assets. Sd(ROA) is the standard deviation of ROA over a three year rolling window. Bank type dummies are included but not reported. Standard errors are clustered at the country level; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	(1) FSR	(2) FSR	(3) FSR	(4) FSR	(5) FSR	(6) FSR	(7) FSR	(8) FSR
High deposits	0.082	0.074	0.056	0.048	0.085	0.078	0.083	0.075
	(0.124)	(0.119)	(0.122)	(0.118)	(0.125)	(0.120)	(0.125)	(0.120)
High overheads	0.557***	0.544***			0.556***	0.543***	0.570***	0.557***
	(0.115)	(0.108)			(0.115)	(0.108)	(0.108)	(0.103)
High dividends			0.315**	0.304**				
			(0.134)	(0.122)				
Large (95th)		-0.299		-0.330		-0.302		-0.299
		(0.334)		(0.343)		(0.335)		(0.328)
ROA	0.083***	0.082***	0.088***	0.087***	0.083***	0.082***	0.093***	0.092***
	(0.026)	(0.026)	(0.029)	(0.029)	(0.026)	(0.026)	(0.029)	(0.029)
LLP/TA	0.004	0.003	0.016	0.014	0.004	0.003	0.004	0.002
	(0.015)	(0.015)	(0.020)	(0.019)	(0.015)	(0.015)	(0.018)	(0.018)
Sd(ROA)	-0.032	-0.031	0.014	0.014	-0.033	-0.032	-0.040	-0.039
	(0.033)	(0.033)	(0.035)	(0.035)	(0.033)	(0.034)	(0.039)	(0.039)
Systemic	-0.930***	-0.856***	-0.896***	-0.817***	-0.930***	-0.856***	-0.955***	-0.882***
	(0.189)	(0.172)	(0.189)	(0.181)	(0.189)	(0.171)	(0.183)	(0.164)
Systemic*LRC	1.526***	1.399***	1.682***	1.536***	1.528***	1.399***	1.306***	1.176***
	(0.277)	(0.241)	(0.301)	(0.251)	(0.277)	(0.241)	(0.263)	(0.228)
Systemic*Cash deficit	-0.013	-0.018	-0.011	-0.017	-0.013	-0.018	-0.021	-0.027*
	(0.018)	(0.018)	(0.020)	(0.020)	(0.018)	(0.018)	(0.016)	(0.015)
NII/Interest revenue	0.002*	0.002	0.002**	0.002**	0.002*	0.001	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
Observations	3559	3559	3559	3559	3558	3558	3492	3492
Countries	62	62	62	62	62	62	62	62
R-squared	0.11	0.11	0.09	0.10	0.11	0.11	0.11	0.11
F-stat	30.48	31.25	1002.56	2527.42	29.69	30.56	28.20	29.39

Clustered standard errors in parentheses.

Table 15: **Benchmark - IV (Second Stage)**

The dependent variable is the ratio of total equity over total assets (columns 1 to 4), the ratio of common equity to total assets (columns 5 to 6), or the ratio of liquid assets over deposit and short-term funding (columns 7 to 8). FSR are Fitch support ratings measuring the probability that a bank in distress will receive public support; they range from one (extremely high probability of external support) to five (possibility of support that cannot be relied upon). The exogenous instruments used to explain variation in FSR are a dummy variable that is equal to one if the total assets of a bank exceed 2% of the host country's GDP (Systemic), the ratio of total non-interest operating income over total interest revenues, and the interaction of Systemic with a dummy variable that is equal to one if the host country is a low ranked country, and with the size of the central government's cash deficit. High deposits is a dummy variable equal to one if Deposits/TA is in the 75th percentile. High dividends is a dummy variable equal to one if Dividends/TA is in the 75th percentile. High overheads is a dummy variable equal to one if Overheads/TA is in the 75th percentile. ROA is the return over average assets, Large is a dummy variable equal to one if the natural logarithm of total assets is in the 95th percentile. LLP/TA is the ratio of loan loss provisions over total assets. Sd(ROA) is the standard deviation of ROA over a three year rolling window. Bank type dummies are included but not reported. Standard errors are clustered at the country level; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	(1) Equity/TA	(2) Equity/TA	(3) Equity/TA	(4) Equity/TA	(5) CE/TA	(6) CE/TA	(7) LA/Dep.	(8) LA/Dep.
FSR	2.160***	1.807***	2.178***	1.781***	2.374***	2.006***	0.213	0.664***
	(0.638)	(0.528)	(0.656)	(0.535)	(0.685)	(0.589)	(0.259)	(0.256)
High deposits	-0.964*	-0.962*	-0.992*	-0.998**	-0.876	-0.869	0.160	0.170
	(0.549)	(0.522)	(0.519)	(0.491)	(0.565)	(0.537)	(0.187)	(0.143)
High overheads	0.861	1.013			0.765	0.927	0.076	-0.109
	(0.984)	(0.946)			(1.001)	(0.965)	(0.161)	(0.150)
High dividends			0.139	0.226				
			(0.387)	(0.363)				
Large (95th)		-1.077***		-1.199***		-1.046**		1.674***
		(0.402)		(0.376)		(0.419)		(0.620)
ROA	1.030***	1.056***	1.044***	1.076***	0.988***	1.015***	0.048	0.014
	(0.194)	(0.181)	(0.200)	(0.186)	(0.179)	(0.166)	(0.064)	(0.069)
LLP/TA	0.051	0.048	0.072	0.072	0.096	0.093	-0.132*	-0.125*
	(0.231)	(0.229)	(0.237)	(0.237)	(0.227)	(0.226)	(0.073)	(0.071)
Sd(ROA)	1.176***	1.173***	1.250***	1.262***	1.044***	1.041***	0.214*	0.222*
	(0.257)	(0.255)	(0.296)	(0.293)	(0.253)	(0.248)	(0.123)	(0.132)
Observations	3559	3559	3559	3559	3558	3558	3492	3492
Countries	62.00	62.00	62.00	62.00	62.00	62.00	62.00	62.00
F-stat	950.34	118.50	92.19	53.81	30.75	33.96	7.06	11.79
Hansen J-stat	3.03	2.79	2.74	2.46	3.35	3.16	6.07	7.31
P-value	0.39	0.42	0.43	0.48	0.34	0.37	0.11	0.06
Underid test	21.25	20.99	20.27	20.34	21.23	20.96	21.04	20.59
P-value	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Country*year FE	yes	yes	yes	yes	yes	yes	yes	yes

Clustered standard errors in parentheses.

Table 16: **Lehman - IV (Second Stage)**

The dependent variable is the ratio of total equity over total assets (columns 1 to 4), the ratio of common equity to total assets (columns 5 to 8), or the ratio of liquid assets over deposit and short-term funding (columns 9 to 12). FSR are Fitch support ratings measuring the probability that a bank in distress will receive public support. They range from one (extremely high probability of external support) to five (possibility of support that cannot be relied upon). The exogenous instruments used to explain variation in FSR are a dummy variable that is equal to one if the total assets of a bank exceed 2% of the host country's GDP (Systemic), the ratio of total non-interest operating income over total interest revenues, and the interaction of Systemic with a dummy variable that is equal to one if the host country is a low ranked country, and with the size of the central government's cash deficit. High deposits is a dummy variable equal to one if Deposits/TA is in the 75th percentile. High dividends is a dummy variable equal to one if Dividends/TA is in the 75th percentile. High overheads is a dummy variable equal to one if Overheads/TA is in the 75th percentile. ROA is the return over average assets, Large is a dummy variable equal to one if the natural logarithm of total assets is in the 95th percentile. LLP/TA is the ratio of loan loss provisions over total assets. Sd(ROA) is the standard deviation of ROA over a three year rolling window. Bank type dummies are included but not reported. Standard errors are clustered at the country level; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	(1) Equity/TA	(2) Equity/TA	(3) Equity/TA	(4) Equity/TA	(5) CE/TA	(6) CE/TA	(7) CE/TA	(8) CE/TA	(9) LA/Dep.	(10) LA/Dep.	(11) LA/Dep.	(12) LA/Dep.
FSR	1.596***	0.835	1.741***	1.987***	1.270**	0.950	2.059***	2.666***	0.638	1.207***	0.538**	0.556*
	(0.575)	(0.728)	(0.566)	(0.664)	(0.566)	(0.665)	(0.635)	(0.759)	(0.395)	(0.433)	(0.222)	(0.289)
High deposits	-1.247***	-0.548	-1.335**	-0.716	-0.862*	-0.172	-1.619***	-1.044	0.427**	0.252	0.006	-0.101
	(0.470)	(0.804)	(0.582)	(0.743)	(0.450)	(0.735)	(0.587)	(0.765)	(0.203)	(0.431)	(0.207)	(0.144)
High overheads	0.407	2.129**	1.131	1.648	0.577	1.481	0.744	1.732	0.056	-0.700*	-0.161	-0.068
	(1.163)	(0.920)	(0.764)	(1.282)	(1.108)	(0.945)	(0.919)	(1.456)	(0.222)	(0.387)	(0.217)	(0.173)
Large (95th)	-1.413***	-1.990***	-1.029	-0.373	-1.559***	-2.016***	-0.998	0.150	2.059***	1.402**	0.992	1.296
	(0.224)	(0.647)	(0.663)	(0.679)	(0.208)	(0.626)	(0.819)	(0.775)	(0.343)	(0.692)	(0.751)	(0.807)
ROA	1.345***	0.962***	0.893***	0.725***	1.260***	0.943***	0.801***	0.738***	-0.043	-0.043	0.124*	0.044
	(0.348)	(0.244)	(0.195)	(0.198)	(0.304)	(0.219)	(0.166)	(0.240)	(0.076)	(0.155)	(0.072)	(0.091)
LLP/TA	0.591	0.096	0.053	-0.758	0.520	0.352***	0.073	-0.770	-0.372***	-0.130	-0.057	-0.142
	(0.360)	(0.183)	(0.154)	(1.008)	(0.342)	(0.132)	(0.149)	(1.047)	(0.084)	(0.105)	(0.051)	(0.152)
Sd(ROA)	1.020***	1.734***	1.236***	1.198**	0.930***	1.746***	0.832**	1.202**	0.017	0.857***	0.455***	0.177
	(0.298)	(0.359)	(0.449)	(0.582)	(0.316)	(0.270)	(0.360)	(0.547)	(0.130)	(0.285)	(0.165)	(0.178)
Observations	1594	489	503	973	1594	489	503	972	1565	483	493	951
Countries	56.00	52.00	52.00	54.00	56.00	52.00	52.00	54.00	55.00	52.00	52.00	53.00
F-stat	40.17	14.01	43.93	15.67	28.35	35.17	23.21	16.29	36.93	5.77	8.65	12.56
Hansen J-stat	1.47	5.38	2.57	1.21	1.73	4.56	1.72	1.88	4.39	4.81	4.22	4.40
P-value	0.69	0.15	0.46	0.75	0.63	0.21	0.63	0.60	0.22	0.09	0.12	0.22
Underid test	17.43	14.97	14.53	14.10	17.43	14.97	14.53	14.14	15.60	13.70	14.12	11.40
P-value	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.02
Country*year FE	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Period	<2008	2008	2009	>2009	<2008	2008	2009	>2009	<2008	2008	2009	>2009

Clustered standard errors in parentheses.

Table 17: **Lehman - Asset Risk**

The dependent variable is the ratio of total equity over total assets (columns 1 to 3), the ratio of common equity to total assets (columns 4 to 6), or the ratio of liquid assets over deposit and short-term funding (columns 7 to 9). FSR(2005) are Fitch support ratings in 2005, measuring the probability that a bank in distress will receive public support. They range from one (extremely high probability of external support) to five (possibility of support that cannot be relied upon). Post 2007 is a dummy variable equal to one if the year is 2008 or later. ABCP Spread is the yearly average of the spread between the Asset-Backed Commercial Paper (ABCP) index and the Federal Funds Rate. High deposits is a dummy variable equal to one if Deposits/TA is in the 75th percentile. High overheads is a dummy variable equal to one if Overheads/TA is in the 75th percentile. ROA is the return over average assets, Large is a dummy variable equal to one if the natural logarithm of total assets is in the 95th percentile. LLP/TA is the ratio of loan loss provisions over total assets. Sd(ROA) is the standard deviation of ROA over a three year rolling window. GDP growth is the annual growth rate of the gross domestic product (GDP), GDP/capita is GDP per capita. Standard errors are clustered at the country level; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	(1) Equity/TA	(2) Equity/TA	(3) Equity/TA	(4) CE/TA	(5) CE/TA	(6) CE/TA	(7) LA/Dep.	(8) LA/Dep.	(9) LA/Dep.
Post 2007*FSR(2005)	0.369***			0.259*			0.006		
	(0.088)			(0.137)			(0.039)		
ABCP Spread*FSR(2005)		0.510***	0.583***		0.367*	0.492**		0.003	-0.042
		(0.125)	(0.172)		(0.193)	(0.229)		(0.055)	(0.031)
High deposits	-0.538***	-0.545***	0.254	-0.576***	-0.581***	0.258	-0.104	-0.104	-0.013
	(0.166)	(0.165)	(0.288)	(0.203)	(0.203)	(0.290)	(0.095)	(0.094)	(0.070)
High overheads	1.374***	1.376***	0.782*	1.208***	1.207***	0.741	0.276**	0.277**	0.095
	(0.311)	(0.310)	(0.463)	(0.420)	(0.419)	(0.496)	(0.122)	(0.122)	(0.097)
Large (95th)	-0.909***	-0.879***	0.032	-1.156***	-1.136***	-0.371	0.219*	0.221*	0.590***
	(0.312)	(0.298)	(0.408)	(0.198)	(0.189)	(0.427)	(0.119)	(0.120)	(0.169)
ROA	0.482**	0.484**	0.598***	0.398	0.400	0.580***	0.051	0.051	0.033
	(0.236)	(0.237)	(0.120)	(0.330)	(0.330)	(0.143)	(0.032)	(0.032)	(0.037)
LLP/TA	-0.105	-0.104	-0.224	0.090	0.091	-0.166	-0.019	-0.019	-0.032*
	(0.113)	(0.113)	(0.325)	(0.138)	(0.138)	(0.356)	(0.014)	(0.014)	(0.018)
Sd(ROA)	0.397	0.394	0.462**	0.383	0.380	0.244	0.088	0.088	0.190***
	(0.341)	(0.342)	(0.192)	(0.350)	(0.351)	(0.253)	(0.187)	(0.187)	(0.058)
GDP growth	-0.068	-0.070*	-0.043	-0.040	-0.042	-0.040	0.013	0.013	0.016
	(0.041)	(0.042)	(0.029)	(0.044)	(0.044)	(0.029)	(0.016)	(0.017)	(0.011)
GDP/capita	-0.000	-0.000	-0.000*	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	9.934***	9.387***	8.296***	8.239***	7.833***	7.163***	2.745***	2.749***	2.266***
	(1.130)	(1.204)	(0.532)	(0.908)	(0.951)	(0.540)	(0.320)	(0.349)	(0.220)
Observations	1721	1721	3834	1721	1721	3833	1694	1694	3755
R-squared	0.15	0.14	0.14	0.07	0.07	0.11	0.07	0.07	0.07
Countries	76.00	76.00	78.00	76.00	76.00	78.00	75.00	75.00	78.00
F-stat	18.97	18.05	12.38	11.71	11.68	9.53	12.72	12.99	10.97
Year FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Bank FE	yes	yes	yes	yes	yes	yes	yes	yes	yes
Period	2005-08	2005-08	>2004	2005-08	2005-08	>2004	2005-08	2005-08	>2004

Clustered standard errors in parentheses.

Table 18: **Governance - IV (Second Stage)**

The dependent variable is the ratio of total equity over total assets (columns 1 and 2), the ratio of common equity to total assets (columns 3 and 4), or the ratio of liquid assets over deposit and short-term funding (columns 5 and 6). FSR are Fitch support ratings measuring the probability that a bank in distress will receive public support. They range from one (extremely high probability of external support) to five (possibility of support that cannot be relied upon). High RTGS restr. is a dummy variable equal to one if the World Bank index on restrictions to access to the Real-Time Gross Settlement (RTGS) system is above the sample mean. The exogenous instruments used to explain variation in FSR are a dummy variable that is equal to one if the total assets of a bank exceed 2% of the host country's GDP (Systemic), the ratio of total non-interest operating income over total interest revenues, and the interaction of Systemic with a dummy variable that is equal to one if the host country is a low ranked country, and with the size of the central government's cash deficit. High act. restr. is a dummy variable equal to one if the World Bank index on "Activity Restrictions" exceeds 9.75 (it ranges from 3 to 12 in our sample). Mult. sup. is a dummy variable equal to one if the banks in a given country are overseen by multiple supervisory agencies. High deposits is a dummy variable equal to one if Deposits/TA is in the 75th percentile. High overheads is a dummy variable equal to one if Overheads/TA is in the 75th percentile. ROA is the return over average assets, Large is a dummy variable equal to one if the natural logarithm of total assets is in the 95th percentile. LLP/TA is the ratio of loan loss provisions over total assets. Sd(ROA) is the standard deviation of ROA over a three year rolling window. Bank type dummies are included but not reported. Standard errors are clustered at the country level; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	(1) Equity/TA	(2) Equity/TA	(3) CE/TA	(4) CE/TA	(5) LA/Dep.	(6) LA/Dep.
FSR	1.969***	1.574***	2.212***	1.720***	0.683**	0.633**
	(0.606)	(0.421)	(0.671)	(0.488)	(0.291)	(0.256)
FSR*High act. restr.	-2.285***		-2.085***		0.185	
	(0.741)		(0.756)		(0.480)	
FSR*Mult. sup.		-2.408		-2.425		-0.618*
		(1.472)		(1.662)		(0.328)
High deposits	-1.039**	-0.817**	-0.948*	-0.707*	0.103	0.079
	(0.494)	(0.415)	(0.512)	(0.418)	(0.189)	(0.207)
High overheads	0.847	1.747**	0.721	1.690*	-0.065	-0.000
	(0.953)	(0.888)	(0.971)	(0.956)	(0.211)	(0.203)
Large (95th)	-1.046***	-2.237**	-0.985**	-2.251***	0.953	0.859
	(0.401)	(0.894)	(0.441)	(0.844)	(0.682)	(0.644)
ROA	1.024***	1.116***	0.987***	1.079***	0.065	0.057
	(0.181)	(0.147)	(0.168)	(0.135)	(0.095)	(0.098)
LLP/TA	0.045	0.072	0.092	0.117	-0.060	-0.063
	(0.229)	(0.225)	(0.225)	(0.220)	(0.057)	(0.058)
Sd(ROA)	1.225***	1.131***	1.100***	0.996***	0.090	0.090
	(0.253)	(0.246)	(0.248)	(0.234)	(0.087)	(0.087)
Observations	3729	3559	3728	3558	2110	2000
Countries	68.00	62.00	68.00	62.00	49.00	44.00
F-stat	27.05	43.60	28.05	27.61	36.72	22.50
Hansen J-stat	4.33	4.50	5.71	6.14	6.94	5.62
P-value	0.36	0.48	0.22	0.29	0.14	0.23
Underid test	18.61	7.19	18.57	7.14	15.48	10.00
P-value	0.00	0.30	0.00	0.31	0.01	0.08
Country*year FE	yes	yes	yes	yes	yes	yes
High RTGS restr.	-	-	-	-	yes	yes

Clustered standard errors in parentheses.

Table 19: **Governance - Leverage**

The dependent variable is the ratio of total equity over total assets. FSR(2005) are Fitch support ratings in 2005, measuring the probability that a bank in distress will receive public support. They range from one (extremely high probability of external support) to five (possibility of support that cannot be relied upon). Post 2007 is a dummy variable equal to one if the year is 2008 or later. ABCP Spread is the yearly average of the spread between the Asset-Backed Commercial Paper (ABCP) index and the Federal Funds Rate. High act. restr.(2005) is a dummy variable equal to one if the World Bank index on "Activity Restrictions" exceeds 9.75 in 2005. Mult. sup.(2005) is a dummy variable equal to one if the banks in a given country are overseen by multiple supervisory agencies in 2005. High gov. eff.(2005), and High corr. control(2005) are dummy variables equal to one if the corresponding World Bank indices exceed 1.5 in 2005. High deposits is a dummy variable equal to one if Deposits/TA is in the 75th percentile. High overheads is a dummy variable equal to one if Overheads/TA is in the 75th percentile. ROA is the return over average assets, Large is a dummy variable equal to one if the natural logarithm of total assets is in the 95th percentile. LLP/TA is the ratio of loan loss provisions over total assets. Sd(ROA) is the standard deviation of ROA over a three year rolling window. GDP growth is the annual growth rate of the gross domestic product (GDP), GDP/capita is GDP per capita. Pairwise interactions of the triple interaction terms are included, but not reported. Standard errors are clustered at the country level; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	X = "Post 2007"				X = "ABCP Spread"			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Equity/TA	Equity/TA	Equity/TA	Equity/TA	Equity/TA	Equity/TA	Equity/TA	Equity/TA
X*FSR(2005)	0.362***	0.359***	0.416***	0.409***	0.579***	0.712***	0.806***	0.743***
	(0.092)	(0.126)	(0.154)	(0.145)	(0.169)	(0.186)	(0.187)	(0.178)
X*FSR(2005)*High act. restr.(2005)	0.073				-0.160			
	(0.337)				(0.495)			
X*FSR(2005)*Mult. sup.(2005)		-0.056				-0.410*		
		(0.135)				(0.213)		
X*FSR(2005)*High gov. eff.(2005)			-0.101				-0.452**	
			(0.155)				(0.208)	
X*FSR(2005)*High corr. control(2005)				-0.112				-0.336
				(0.148)				(0.219)
High deposits	-0.533***	-0.544***	-0.551***	-0.551***	0.257	0.255	0.214	0.209
	(0.171)	(0.168)	(0.166)	(0.166)	(0.290)	(0.305)	(0.293)	(0.293)
High overheads	1.376***	1.405***	1.351***	1.360***	0.785*	0.773	0.765	0.767*
	(0.313)	(0.318)	(0.311)	(0.311)	(0.462)	(0.467)	(0.460)	(0.460)
Large (95th)	-0.924***	-0.940***	-0.871***	-0.909***	0.020	0.063	0.014	0.026
	(0.325)	(0.297)	(0.316)	(0.299)	(0.422)	(0.411)	(0.397)	(0.399)
ROA	0.477**	0.484**	0.486**	0.484**	0.596***	0.592***	0.591***	0.590***
	(0.238)	(0.238)	(0.238)	(0.237)	(0.122)	(0.118)	(0.118)	(0.118)
LLP/TA	-0.112	-0.115	-0.103	-0.104	-0.229	-0.226	-0.229	-0.230
	(0.118)	(0.114)	(0.114)	(0.114)	(0.328)	(0.327)	(0.325)	(0.325)
Sd(ROA)	0.402	0.368	0.384	0.389	0.464**	0.451**	0.467**	0.466**
	(0.343)	(0.331)	(0.329)	(0.328)	(0.191)	(0.193)	(0.191)	(0.191)
GDP growth	-0.070*	-0.069*	-0.060	-0.061	-0.045	-0.045	-0.044	-0.046
	(0.041)	(0.041)	(0.043)	(0.043)	(0.030)	(0.029)	(0.029)	(0.029)
GDP/capita	-0.000	-0.000	-0.000	-0.000	-0.000*	-0.000*	-0.000*	-0.000*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	1721	1712	1721	1721	3834	3817	3834	3834
R-squared	0.15	0.15	0.15	0.15	0.14	0.14	0.15	0.15
Countries	76.00	75.00	76.00	76.00	78.00	77.00	78.00	78.00
F-stat	17.93	18.06	20.69	16.94	11.99	13.13	19.41	32.73
Year FE	yes	yes	yes	yes	yes	yes	yes	yes
Bank FE	yes	yes	yes	yes	yes	yes	yes	yes
Period	2005-08	2005-08	2005-08	2005-08	>2004	>2004	>2004	>2004

Clustered standard errors in parentheses

Table 20: **Governance - Capital Quality**

The dependent variable is the ratio of common equity to total assets. FSR(2005) are Fitch support ratings in 2005, measuring the probability that a bank in distress will receive public support. They range from one (extremely high probability of external support) to five (possibility of support that cannot be relied upon). Post 2007 is a dummy variable equal to one if the year is 2008 or later. ABCP Spread is the yearly average of the spread between the Asset-Backed Commercial Paper (ABCP) index and the Federal Funds Rate. High act. restr.(2005) is a dummy variable equal to one if the World Bank index on "Activity Restrictions" exceeds 9.75 in 2005. Mult. sup.(2005) is a dummy variable equal to one if the banks in a given country are overseen by multiple supervisory agencies in 2005. High gov. eff.(2005), and High corr. control(2005) are dummy variables equal to one if the corresponding World Bank indices exceed 1.5 in 2005. High deposits is a dummy variable equal to one if Deposits/TA is in the 75th percentile. High overheads is a dummy variable equal to one if Overheads/TA is in the 75th percentile. ROA is the return over average assets, Large is a dummy variable equal to one if the natural logarithm of total assets is in the 95th percentile. LLP/TA is the ratio of loan loss provisions over total assets. Sd(ROA) is the standard deviation of ROA over a three year rolling window. GDP growth is the annual growth rate of the gross domestic product (GDP), GDP/capita is GDP per capita. Pairwise interactions of the triple interaction terms are included, but not reported. Standard errors are clustered at the country level; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	X = "Post 2007"				X = "ABCP Spread"			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	CE/TA	CE/TA	CE/TA	CE/TA	CE/TA	CE/TA	CE/TA	CE/TA
X*FSR(2005)	0.221	0.397**	0.462**	0.464**	0.447*	0.710***	0.823***	0.764***
	(0.137)	(0.176)	(0.214)	(0.202)	(0.227)	(0.220)	(0.242)	(0.227)
X*FSR(2005)*High act. restr.(2005)	0.565				0.395			
	(0.359)				(0.648)			
X*FSR(2005)*Mult. sup.(2005)		-0.378*				-0.658**		
		(0.196)				(0.260)		
X*FSR(2005)*High gov. eff.(2005)			-0.409*				-0.677**	
			(0.227)				(0.277)	
X*FSR(2005)*High corr. control(2005)				-0.436**				-0.571**
				(0.211)				(0.274)
High deposits	-0.595***	-0.637***	-0.611***	-0.613***	0.255	0.214	0.187	0.181
	(0.205)	(0.200)	(0.202)	(0.201)	(0.293)	(0.312)	(0.302)	(0.303)
High overheads	1.214***	1.241***	1.222***	1.232***	0.753	0.717	0.712	0.715
	(0.421)	(0.417)	(0.403)	(0.404)	(0.496)	(0.500)	(0.494)	(0.494)
Large (95th)	-1.147***	-1.128***	-1.085***	-1.120***	-0.379	-0.331	-0.393	-0.381
	(0.211)	(0.212)	(0.237)	(0.214)	(0.433)	(0.429)	(0.406)	(0.406)
ROA	0.387	0.390	0.385	0.382	0.574***	0.569***	0.566***	0.565***
	(0.331)	(0.326)	(0.324)	(0.323)	(0.144)	(0.139)	(0.137)	(0.137)
LLP/TA	0.072	0.095	0.081	0.080	-0.176	-0.166	-0.175	-0.176
	(0.136)	(0.133)	(0.138)	(0.137)	(0.357)	(0.359)	(0.356)	(0.355)
Sd(ROA)	0.397	0.418	0.421	0.429	0.252	0.260	0.253	0.251
	(0.354)	(0.349)	(0.349)	(0.348)	(0.252)	(0.257)	(0.250)	(0.250)
GDP growth	-0.049	-0.048	-0.046	-0.048	-0.044	-0.042	-0.044	-0.045
	(0.044)	(0.042)	(0.042)	(0.043)	(0.030)	(0.028)	(0.028)	(0.029)
GDP/capita	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	1721	1712	1721	1721	3833	3816	3833	3833
R-squared	0.08	0.08	0.08	0.08	0.12	0.12	0.12	0.12
Countries	76.00	75.00	76.00	76.00	78.00	77.00	78.00	78.00
F-stat	10.99	10.72	11.29	11.22	8.96	11.35	13.56	28.68
Year FE	yes	yes	yes	yes	yes	yes	yes	yes
Bank FE	yes	yes	yes	yes	yes	yes	yes	yes
Period	2005-08	2005-08	2005-08	2005-08	>2004	>2004	>2004	>2004

Clustered standard errors in parentheses

Table 21: **Peer Effects**

The dependent variable is the ratio of total equity over total assets (columns 1 to 4), the ratio of common equity to total assets (columns 5 and 6), or the ratio of liquid assets over deposit and short-term funding (columns 7 and 8). FSR are Fitch support ratings measuring the probability that a bank in distress will receive public support. They range from one (extremely high probability of external support) to five (possibility of support that cannot be relied upon). Avg. FSR is the average FSR within country, year and bank type. High act. restr. is a dummy variable equal to one if the World Bank index on "Activity Restrictions" exceeds 9.75 (it ranges from 3 to 12 in our sample). Mult. sup. is a dummy variable equal to one if the banks in a given country are overseen by multiple supervisory agencies. High deposits is a dummy variable equal to one if Deposits/TA is in the 75th percentile. High overheads is a dummy variable equal to one if Overheads/TA is in the 75th percentile. ROA is the return over average assets, Large is a dummy variable equal to one if the natural logarithm of total assets is in the 95th percentile. LLP/TA is the ratio of loan loss provisions over total assets. Sd(ROA) is the standard deviation of ROA over a three year rolling window. Bank type dummies are included but not reported. Standard errors are clustered at the country level; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	(1) Equity/TA	(2) Equity/TA	(3) Equity/TA	(4) CE/TA	(5) CE/TA	(6) LA/Dep.	(7) LA/Dep.
Avg.FSR	0.931**	0.985**	0.888*	0.809**	0.656	0.086	0.431*
	(0.403)	(0.404)	(0.527)	(0.354)	(0.472)	(0.289)	(0.238)
Avg.FSR*High act. restr.		-2.470**		-3.281***		-1.111	
		(1.014)		(1.126)		(0.779)	
Avg.FSR*Mult. sup.			0.190		0.323		-1.206***
			(0.598)		(0.598)		(0.328)
High deposits	-0.916***	-0.905***	-0.858**	-0.760**	-0.746**	0.134	0.074
	(0.324)	(0.322)	(0.329)	(0.318)	(0.330)	(0.154)	(0.142)
High overheads	1.718**	1.698**	1.720**	1.725**	1.751**	0.224**	0.227**
	(0.788)	(0.784)	(0.789)	(0.793)	(0.800)	(0.095)	(0.091)
ROA	1.123***	1.121***	1.115***	1.100***	1.103***	0.082	0.075
	(0.134)	(0.135)	(0.132)	(0.126)	(0.124)	(0.049)	(0.046)
Large (95th)	-2.095***	-2.104***	-2.082***	-2.203***	-2.180***	0.993*	0.980*
	(0.512)	(0.511)	(0.513)	(0.467)	(0.468)	(0.548)	(0.545)
LLP/TA	0.113	0.112	0.111	0.155	0.155	-0.127*	-0.126*
	(0.215)	(0.215)	(0.215)	(0.210)	(0.210)	(0.068)	(0.067)
Sd(ROA)	1.135***	1.127***	1.118***	0.954***	0.966***	0.207***	0.177**
	(0.203)	(0.202)	(0.206)	(0.200)	(0.208)	(0.078)	(0.072)
Constant	4.952***	5.834***	4.893***	6.041***	4.816***	2.365***	1.966***
	(1.180)	(1.051)	(1.177)	(0.907)	(0.934)	(0.821)	(0.484)
Observations	5159	5159	5100	5158	5099	5033	4974
R-squared	0.22	0.22	0.22	0.19	0.19	0.13	0.15
Countries	90.00	90.00	87.00	90.00	87.00	88.00	85.00
F-stat	26.58	24.11	25.36	24.81	28.02	4.84	8.48
Country*year FE	yes	yes	yes	yes	yes	yes	yes

Clustered standard errors in parentheses.

Table 22: **Peer Effects (cont.)**

The dependent variable is the ratio of total equity over total assets (columns 1 to 4), the ratio of common equity to total assets (columns 5 and 6), or the ratio of liquid assets over deposit and short-term funding (columns 7 and 8). FSR are Fitch support ratings measuring the probability that a bank in distress will receive public support. They range from one (extremely high probability of external support) to five (possibility of support that cannot be relied upon). Avg. FSR is the average FSR within country, year and bank type. High act. restr. is a dummy variable equal to one if the World Bank index on "Activity Restrictions" exceeds 9.75 (it ranges from 3 to 12 in our sample). Mult. sup. is a dummy variable equal to one if the banks in a given country are overseen by multiple supervisory agencies. High deposits is a dummy variable equal to one if Deposits/TA is in the 75th percentile. High overheads is a dummy variable equal to one if Overheads/TA is in the 75th percentile. ROA is the return over average assets, Large is a dummy variable equal to one if the natural logarithm of total assets is in the 95th percentile. LLP/TA is the ratio of loan loss provisions over total assets. Sd(ROA) is the standard deviation of ROA over a three year rolling window. Bank type dummies are included but not reported. Standard errors are clustered at the country level; *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	(1) Equity/TA	(2) Equity/TA	(3) Equity/TA	(4) CE/TA	(5) CE/TA	(6) LA/Dep.	(7) LA/Dep.
Avg.FSR	0.788*	0.837*	0.501	0.725*	0.402	0.118	0.348
	(0.455)	(0.460)	(0.451)	(0.409)	(0.419)	(0.274)	(0.263)
Avg.FSR*High act. restr.		-2.380**		-3.006**		-1.654**	
		(1.178)		(1.270)		(0.785)	
Avg.FSR*Mult. sup.			0.911		0.861		-0.980***
			(0.565)		(0.613)		(0.344)
FSR	0.154	0.159	0.391***	0.089	0.254*	-0.031	0.082
	(0.179)	(0.188)	(0.136)	(0.166)	(0.139)	(0.063)	(0.085)
FSR*High act. restr.		-0.088		-0.297		0.593***	
		(0.442)		(0.340)		(0.155)	
FSR*Mult. sup.			-0.739***		-0.553***		-0.225***
			(0.150)		(0.162)		(0.081)
High deposits	-0.938***	-0.926***	-0.840**	-0.764**	-0.726**	0.122	0.086
	(0.325)	(0.325)	(0.325)	(0.319)	(0.326)	(0.165)	(0.159)
High overheads	1.652**	1.630**	1.700**	1.689**	1.753**	0.232**	0.234**
	(0.756)	(0.750)	(0.755)	(0.770)	(0.779)	(0.112)	(0.106)
ROA	1.114***	1.112***	1.104***	1.095***	1.097***	0.085*	0.074
	(0.127)	(0.128)	(0.126)	(0.121)	(0.120)	(0.048)	(0.045)
Large (95th)	-1.988***	-2.005***	-2.099***	-2.180***	-2.220***	1.049**	0.950*
	(0.599)	(0.577)	(0.649)	(0.516)	(0.585)	(0.501)	(0.516)
LLP/TA	0.114	0.114	0.121	0.155	0.162	-0.126*	-0.123*
	(0.216)	(0.216)	(0.214)	(0.211)	(0.209)	(0.068)	(0.067)
Sd(ROA)	1.136***	1.129***	1.120***	0.958***	0.967***	0.199**	0.176**
	(0.202)	(0.201)	(0.203)	(0.200)	(0.206)	(0.076)	(0.070)
Constant	4.943***	5.824***	4.903***	6.043***	4.828***	2.347***	1.965***
	(1.174)	(1.045)	(1.160)	(0.907)	(0.925)	(0.826)	(0.487)
Observations	5159	5159	5100	5158	5099	5033	4974
R-squared	0.22	0.22	0.22	0.19	0.19	0.14	0.15
Countries	90.00	90.00	87.00	90.00	87.00	88.00	85.00
F-stat	25.00	22.69	23.34	22.24	36.70	5.22	19.18
Country*year FE	yes	yes	yes	yes	yes	yes	yes

Clustered standard errors in parentheses.

Chapter 3. Between Capture and Discretion - The Determinants of Distressed Bank Treatment and Expected Government Support

M. Ignatowski, J. Korte and C. Werger

Introduction

The recent financial crisis has been argued to be instructive and eye-opening on a lot of issues. When it comes to bank regulators' actions, two particularly noteworthy phenomena were observable. The first phenomenon concerns the support that the banking industry received from its regulators and the governments in many countries. Cooperation between regulators and the regulated industry is hardly new and need not be unhealthy to the functioning of both. However, at the height of the financial meltdown in 2008/2009, when regulators saw themselves confronted with unprecedented decision-making on vital issues such as bank closure or bailout and new regulations, a rather interesting turn in this cooperation occurred. Activities intended to influence regulation and supervision, such as lobbying, campaign contributions, or wielding political connections, spread throughout the financial industry. For example, registered annual expenditures for lobbying on financial topics by financial institutions in the U.S. more than tripled from around U.S.D 500 million in 2000 to peak at U.S.D 1,800 million in 2010 (see Figure 9). Moreover, following policies of bank bailouts, the fate of banks and their highly indebted sovereigns have become intricately linked, culminating in the "hazardous tango" described by Merler and Pisani-Ferry (2012) and Acharya et al. (2014).

[Figure 9]

One might possibly call this outright regulatory capture, if it were not for a second noteworthy phenomenon that emerges at a closer look. While regulation and standards were rigorously applied to some banks, more discretion was exercised for others. This becomes most obvious when looking at regulatory intervention and closure decisions. In the U.S., for example, the Federal Deposit Insurance Corporation closed nearly 500 banks through their standard intervention procedure, while hundreds of other banks received capital injections through the Troubled Asset Relief Program (TARP). The conditions were similar in Europe, where regulatory discretion was vastly exercised in bank closure decisions.

These two phenomena warrant more detailed analysis. We address a series of important and novel questions in this paper by investigating if and how banks' sources of influence drive the expectation of government support to banks and the actual regulatory treatment of banks once they encounter difficulties. Can banks leverage lobbying activities or political connections to influence their regulatory treatment when they are in distress? Is there any limit to the impact of these sources of influence? Regardless of bank distress, do banks in general benefit from sources of influence through higher expected support? In other words, we investigate if and under what conditions banks effectively utilize sources of influence on de facto regulatory treatment and expected government support. However, one word of caution: We cannot conclude whether this influence leads to efficient or inefficient results. Thus, we do not address the economic efficiency of regulatory treatment influenced by lobbying or political connections, but examine the effectiveness of several sources of influence on selected regulatory policies. The rationale for the link between banks' influence and regulatory treatment might be found in the self-interest and private incentives of regulators and legislators that induce them to handle certain banks particularly beneficial (e.g., expecting campaign contributions or attractive exit jobs).

The influence of regulated industries on their regulation has been studied in general and the sources of influence have been modeled in the existing literature (e.g., Stigler, 1971; Besley and Coate, 2001; Dal Bó, 2006). However, specific evidence on how individual banks can influence their regulatory treatment is still scarce. While the connection between bank lobbying and TARP capital support decisions has been studied by

Duchin and Sosyura (2012), there is not much evidence on individual banks' sources of influence that affect their regulatory treatment or their expected support measures as evaluated by rating agencies.

We employ a unique (and partly novel) dataset of regulatory actions and market-inferred expected bank support, as well as data on bank financial reporting, bank lobbying, and political connections in the U.S. In our empirical setup, we use the latter sources of influence data as explanatory variables to test for their effect on the de facto regulatory treatment of distressed banks, i.e., whether they change the probability that banks which fall below the regulatory thresholds for undercapitalization in the Prompt Corrective Action (PCA) framework receive discretionary treatment. Our tests show that lobbying activities and political connections through proximity to relevant legislative committees and prior regulatory or government affiliation of bank directors lower the probability of obtaining additional discretionary regulatory measures (in addition to the mandatory actions in the PCA framework that become effective automatically). The effects we find hold for alternative explanations and are robust to different variable and model specifications, as well as reverse causality concerns. Several conditions even further increase the effectiveness of banks' influence exertion: The probability of a more preferential treatment when in distress increases with lobbying expenditures. However, we find that even small amounts are effective, which indicates that the mere existence of a channel between the bank and the lobbied institution rather than the magnitude of lobbying expenditures is crucial for having an impact on regulatory treatment. Besides lowering the probability of obtaining additional discretionary measures, we find that lobbying activities decelerate the propensity for additional sanctions with deteriorating capital ratios. Engaging a former member of congress as a lobbyist and campaign contributions from the financial industry to legislative committee members are found to amplify the favorable regulatory treatment. However, there seems to be a limit to the efficacy of influence when it comes to the closure decisions of the most severely distressed banks. When employing a more general measure of preferential treatment regardless of bank distress, expected government support to banks (measured by the Fitch support ratings), we find that both lobbying activities and proximity to relevant legislative committees significantly increase the expectation that a distressed bank will receive a government bailout.

We focus our analysis on the U.S. because of data availability, although our results likely have wider implications. Our findings are instructive for the determinants of regulatory decision making and help to understand the effectiveness of banks' sources of influence in current regulatory practice. Thus, our findings are highly relevant for the institutional setup of bank regulation and should motivate legislators to make bank regulation (and supervision) more robust to influences from the regulated industry, not only in the U.S., but also elsewhere.

The remainder of this paper is organized as follows. In Section 2, we discuss the related literature and how our analysis contributes to it. Section 3 provides background information on our dataset, and summary statistics of the main variables. In Section 4, our core empirical analysis is presented, which is the model relating sources of political influence to de facto regulatory treatment of distressed banks. In Section 5, we evaluate the effects of sources of influence on potential government support as an extension to our core empirical analysis. Concluding remarks are in Section 6.

Motivation, related literature, and contribution

The influence of regulated industries on their regulation has primarily been studied in industries that involve natural monopolies warranting regulation, e.g., utilities (Dal Bó, 2006). The early theory on regulatory influence was based on the observation that - contrary to the predictions by the public interest literature - regulatory outcomes often benefit regulated industries and regulation is an empirical phenomenon even in industries not warranting it by their economic structure. Stigler (1971), Posner (1974), and Peltzman (1976) pioneered the development of the literature has developed theoretical predictions for the sources of regulatory influence and explanations of how firms can influence policy outcomes (e.g., Besley and Coate, 2001; Helpman and Persson,

2001).

Based on the theoretical and empirical literature, we categorize several sources of political influence as follows:

Financial resources channeled to regulators and policymakers (e.g., in the form of bribes or campaign contributions);

Revolving doors that are an indirect way of channeling benefits to regulators and policymakers by attractive pre- or post-employment positions in the industry;

Superior presence of information, as it is facilitated through lobbying activities, for example

Public pressure or voting resources exercised (e.g., in the form of lobby campaigns) or experienced during specific periods in the election cycle.

This literature offers several findings that are related to ideas of political and regulatory influence by firms and banks and explores the idea that regulation is exposed to (and also a product of) pressures by different private and public interests.

To begin with the sources of influence, Besley and Coate (2001) and Helpman and Persson (2001), among others, have developed theoretical models explaining how firm lobbying or political connections can be effective in influencing policy outcomes. However, there is a paucity of empirical research that tests some of these theoretical implications. Many studies focus on campaign contributions and often report that campaign contributions do not matter to a greater extent (Dal Bó, 2006) and that individuals rather than special interest groups are the main contributors (Ansolabehere et al., 2003). Mian et al. (2013) contradict these findings and suggest that campaign contributions do in fact partly contribute to changes in policy. They find that "campaign contributions from the mortgage industry, and constituent interests, measured by the share of subprime borrowers in a congressional district, may have influenced U.S. government policy towards subprime mortgage credit expansion from 2002 to 2007". Looking at firm lobbying, Chen et al. (2015) find that companies that lobby intensely are more profitable, on average, than those that do not. Kerr et al. (2014) study the determinants and dynamics of firm lobbying and find that over the 1998-2006 period: (i) few firms actually lobby; (ii) lobbying status is associated with firm size; and (iii) lobbying is constant over time. Igan et al. (2012) use U.S. lobbying data from financial firms and focus on the mortgage lending behavior of banks. They find that those banks that intensely lobby on mortgage-related issues have riskier and faster growing loan portfolios and securitize higher portions of these loans.

Several contributions address the outcome that we are interested in: the regulatory treatment of firms and banks, and how this may be the product of a political economy setup. As set out in Kane (1990) and Boot and Thakor (1993), regulators' decisions might be guided by self-interest, inducing them to pursue reputation building or collude with the banking industry. Indeed, Demirgüç-Kunt et al. (2008) show that generous deposit insurance schemes are adopted in countries where the banking sector is dominated by weak banks that benefit from regulatory forbearance and weak market discipline. Barth et al. (2004) argue that government-led banking regulation and supervision is associated with weak bank sectors and that regulatory agencies in many countries are heavily politically influenced. Brown and Dinç (2005) show that shortly before elections banks are less likely to receive government intervention than after elections. In a later paper, Brown and Dinç (2011) extend this finding and state that also macroeconomic factors and bank-sector characteristics play an important role in determining government interventions. With regard to regulatory discretion, Boot and Thakor (1993), Mailath and Mester (1994b), Acharya and Yorulmazer (2007b), and DeYoung et al. (2013b), among others, have modeled implicitly or explicitly why, how, and to what extent regulators use their discretion; however, empirical evidence on the drivers of discretion is scarce.

The two above streams of literature are connected by empirical contributions that investigate the direct link between banks' (as well as other firms') sources of influence and political and regulatory outcomes, particularly individual regulatory treatment. Regarding firms, Faccio et al. (2006) find that politically connected firms with prior government affiliation of at least one of its top executives or large shareholders are more likely to be bailed out than comparable firms without political connections. Turning to banks, Ramirez and De Long (2001) provide evidence that the U.S. Senate vote on the Glass-Steagall Act of 1933 on universal banking restrictions was significantly influenced by special interest groups (including national banks). Imai (2009) shows that banks with strong political ties were declared insolvent much later than those without political influential power during Japan's financial turbulence of 1999-2002. Behn et al. (2014) examine bailouts of distressed German savings banks. The authors show that distressed banks are less likely to receive public bailouts in the year before elections than in years following elections and in highly competitive election campaigns. Duchin and Sosyura (2012) examine lobbying and campaign contributions to determine to what extent banks are politically connected, and demonstrate that politically connected banks are more likely to receive capital injections under the TARP bailout program. Igan and Mishra (2011) investigate lobbying and congressional voting behavior and find that banks' influential activities are likely to alter legislators' attitudes towards deregulation. Our paper complements this recent literature. In addition to proving that banks can effectively leverage sources influence to gain favorable regulatory treatment, we contribute to the existing literature by testing for conditions that further increase the effectiveness of banks' political activities (e.g., engaging a former member of congress as lobbyist), as well as investigating limits to the efficacy of influence.

Thus far, most of the literature has been focused on particular legislation, macro-level decisions or actual bank bailout decisions during crisis periods (e.g., providing TARP funding or not) when measuring support to the financial industry. While the determinants and rationale for bailout (e.g., Perotti and Suarez, 2002; Gorton and Huang, 2004; Acharya and Yorulmazer, 2008; Acharya et al., 2011; Philippon and Schnabl, 2013) and closure decisions (e.g., Wheelock and Wilson, 2000; Perotti and Suarez, 2002; Kasa and Spiegel, 2008; Cole and White, 2012) have been extensively discussed in the literature, a particular regulatory action in the U.S. banking regulatory arsenal that enables banks to recover quickly from looming undercapitalization (even before bailout or closure decisions become urgent), the Prompt Corrective Action framework, has not been remarkably investigated so far in terms of determinants.[18] Literature on PCA has been focused on the optimal structure of capital regulation (e.g., Peek and Rosengren, 1996; Freixas and Parigi, 2007; Shim, 2011) and on the impact of PCA on capital and risk (e.g., Dahl and Spivey, 1995; Aggarwal and Jacques, 2001), but the application of discretionary provisions implied in the PCA regulation has scarcely been studied.

In this paper, we propose the use of additional discretionary measures within the PCA framework as a proxy for regulators' individual bank treatment to investigate regulatory preferential treatment. In addition, we apply a market-based dataset of bank-specific support ratings provided by Fitch for the identification of expected government support to banks (rather than using industry aggregates, as done, for example, by Igan and Mishra (2011)). Not only is this a novel measure, but it also allows us to look at expected government support to banks over an extended period of time, covering periods before and after the recent financial crisis. Regarding the sources of political interest, we do not intend to analyze the factors that have been shown to drive regulatory policies on a national scale (e.g., election cycles or the state of the economy), but rather more granular sources of influence that banks can directly leverage (e.g., lobbying activities, political connections). Therefore, we assemble a unique dataset that combines banks' various political activities (e.g., lobbying expenditures, proximity to the relevant legislative committee, prior aliation with regulatory or government institutions).

[18] To the best of our knowledge, Kocherlakota and Shim (2007) are the only ones to study the usage of PCA versus forbearance. They show that the usage of PCA is determined by the shock to the value of banking assets.

Datas and variable definitions

Dataset description

We use a unique dataset composed of three subsets: (i) regulatory intervention data and expected government support for banks; (ii) data on banks' lobbying activities, proximity to policymakers, and prior affiliation of directors with regulatory or government institutions; and (iii) financial data on banks. Each subset is assembled from various data sources and combined into one dataset.

Regulatory intervention data

As a first source for the regulatory intervention data, we identify PCA directives and bank closure decisions as proxies for actual regulatory treatment. The PCA rule book was introduced by the Federal Deposit Insurance Corporation Improvement Act (FDICIA) in 1991 with the goal to prevent supervisory forbearance in dealing with troubled banks. It requires insured depository institutions to take certain actions (e.g., provide a capital restoration plan) as well as stipulates certain provisions (e.g., limits on senior manager compensation and dividends, restrictions on growth and expansion) when a bank falls below predefined regulatory capital ratio thresholds.[19] The first stage of capital insufficiency is defined by the regulator as "undercapitalized", the second stage is called "significantly undercapitalized", and the third and most severe stage is "critically undercapitalized".[20] While certain actions and provisions are mandatory at each stage and are automatically imposed by operation of law, the regulator has the discretion to impose additional actions (e.g., dismiss board, divest subsidiaries) through the issuance of a PCA directive that is publically announced. Announcements of formal regulatory actions can lead to noticeable market reactions (Jordan et al., 2000). Therefore, imposing discretionary provisions in addition to mandatory actions can send a more substantial negative signal about the bank's financial condition to its stakeholders than only obtaining mandatory actions. We interpret these discretionary provisions as a less preferential treatment not only because of additional (and probably more rigorous) actions but also due to the signaling effect. Data on PCA directives are available on the websites of the four primary regulators, the Federal Deposit Insurance Corporation (FDIC), the Federal Reserve Board, the Office of the Comptroller of the Currency (OCC), and the Office of Thrift Supervision (OTS). For bank closure decisions, we employ the FDIC's publicly available failed bank list to identify which banks have been resolved by the FDIC and to obtain closure dates. We collect data for both types of regulatory actions for the years 2003 to 2012 and manually match it to bank financial data based on bank name and location.

As a second source for the regulatory intervention data, we use Fitch support ratings and support rating changes for all banks listed in the Bankscope database. By composition, these support ratings capture the rating agency's opinion on the likelihood of external support to a bank should this become necessary (Fitch Ratings, 2013a). In that regard, support ratings (or "ratings floor") have frequently been used in the empirical literature as a proxy for bailout probability (e.g., Gropp et al., 2006, 2011b; Acharya et al., 2014; Mariathasan et al., 2014). A detailed description of the rating composition and the different rating classes is provided in Appendix B.

Banks' sources of influence data

We assemble data from various sources to construct our indicators for bank lobbying activities and political connections to policymakers and regulators. We obtain data on lobbying activities from the reports filed in accordance with the Lobbying Disclosure Act (LDA). The Act requires all firms or individuals conducting

[19] See Benston and Kaufman (1997) and Spong (2000) for a detailed explanation of PCA.

[20] In the extreme case of a "critically undercapitalized" bank (i.e., tangible equity ratio falls below 2 percent) the bank has to be put in receivership unless the primary regulator with the concurrence of the FDIC determines that other actions would be more appropriate for the purpose of prompt corrective action.

lobbying activities involving a member of the federal legislative or executive branch or any federal employee to register with the Secretary of the Senate. If that firm or individual spends more than U.S.D 10,000 on lobbying activities in a period, a report has to be filed semi-annually (until 2007) or quarterly (from 2008 onwards) with the Senate Office of Public Records (SOPR). These lobbying disclosure reports contain detailed information on the lobbying expenditure amount, the lobbying firm, and the individual lobbyists, the immediate and ultimate client, whether former members of the Congress were employed by the lobbying firm, as well as the government agencies and institutions that were contacted, and the issues that were discussed. We collect the actual data for the years 1999 to 2012 from the Center for Responsive Politics (CPR), a non-profit and non-partisan organization that assembles the data directly from the SOPR and provides a full lobbying activities database. We restrict the dataset to all lobbying activities that are related to banks and financial markets, i.e., all lobbying activities carried out by or for a financial firm (according to the classification in the relevant reports) or that deal with an issue related to banking and finance.[21]We manually match the lobbying activities to bank financial data based on bank name and location. As firms can lobby either through their in-house lobbyists or can hire external lobbying firms, we identify and match banks from both the clients and lobby firm/registrants information. We use the information on holding structures and conglomerates obtained from the bank financial data (described below) to compute and analyze not only the lobbying expenditures by a bank directly, but also the spending through its holding structure and through related firms, constituting the full lobbying amount that this particular company might benefit from.[22]

Combining the data on lobbying activities and bank financial data enables us to cast light on the details of bank lobbying. Figure 13 displays the share of banks over different asset size classes that have a lobbying history (defined as reporting lobbying expenditures within their conglomerate at some point over the last four years). It is evident that the share is increasing in banks' asset size, with only about 2% of small banks and more than 80% of banks with total assets above U.S.D 50 billion reporting some lobbying in their conglomerate.

[Figure 13]

We use data on the congressional districts of the members of the U.S. House of Representatives Subcommittee on Financial Institutions and Consumer Credit that we connect to the district of incorporation of individual banks as a first proxy for political connections. The subcommittee overseas all financial regulators and matters related to the safety and soundness of the financial system. We obtain the information on subcommittee membership from congressional records available on the website of the U.S. Library of Congress and identify all members starting at the 108th Congress (2003-2004) to the 112th Congress (2011-2012). We identify whether a bank has a subcommittee member in the proximity based on the banks' headquarter locations and the subcommittee members' congressional districts using ZIP Codes as the matching variable.[23]

Figure 8 shows the share of banks that have political connections through a subcommittee member over different asset size classes. This source of influence seems to be more often available to larger banks, of which around 25% have such political connections, while only 8% of small banks do. This correlation with bank asset size might also be explained by the phenomenon that politicians choose their field of specialization to cater their constituency. Thus, politicians from districts in which large banks are present are probably more likely to

[21]The reporting form provides a list of 76 issues from which at least one has to be selected as area of interest of the lobbying activities by the firm or individual filing the report. We define the following issues as being related to banking and finance: accounting (ACC), banking (BAN), bankruptcy (BNK), financial institutions, investments, and securities (FIN), housing and mortgages (HOU), and minting and money (MON).

[22]Note that we do not attribute lobbying expenditures by banking industry interest groups and associations to individual banks because most of these have dozens or even thousands of member associations (which would result in very low shares of the total lobbying expenditures being assigned to most of them) and it is not conceivable why a general contribution should benefit a particular bank.

[23]The relationship of ZIP Codes and congressional districts is obtained from the website of the U.S. Census Bureau. Note that we only consider ZIP Codes that can be uniquely assigned to one distinct congressional district.

choose financial institutions as a field of activity, which would not be an indicator of preferential treatment on its own.

[Figure 8]

Moreover, we also collect data on campaign contributions using the Federal Election Commission political contributions reports provided by the CPR. The campaign contributions data cover contributions from Political Action Committees (PACs; channels for political contributions) to candidates' election campaigns, to political parties, and to other PACs. The data are bi-annual, covering federal elections every second year from 1998 to 2012. The CRP moreover makes a distinction between direct and indirect contributions to candidates. Direct contribution amounts are legally restricted and serve a specific candidate's purpose. Indirect contributions are not subject to contribution limits and are made completely independent of the candidate. We focus on direct contributions and select all PACs that are classified in the CRP database as affiliated with the financial industry. We then aggregate all direct contributions from financial industry PACs to each of the candidates running in the corresponding election cycle and identify all subcommittee members in the subsequent Congress. This gives us an additional dimension to the political connection between the financial industry and their subcommittee members, as we can measure the amounts of campaign contributions from the financial industry.

As an additional proxy for political connections, we employ data on the former employment of the board of directors of publically listed bank holding companies and identify all affiliations with relevant regulators (FDIC, Federal Reserve Board, OCC, OTS), government bodies (Congress, Department of the Treasury, Executive Office of the President) or federal agencies (Federal Financial Institutions Examination Council, Federal Financing Bank, Federal Housing Finance Agency, Securities and Exchange Commission, National Economic Council). We obtain these data from BoardEx. The Securities and Exchange Commission requires all publically listed companies to reveal their directors' employment history over the past five years. Since we cannot evaluate the accuracy and completeness of the information for non-listed companies, we restrict the information we obtain from BoardEx to only listed bank holding companies and match these data manually to top holding company data based on name and location.[24] We focus on all members of the banks' board of directors who are active from the third quarter of 2003 to the second quarter of 2012.

Bank financial data

We construct the bank financials dataset based on two main sources. On the individual bank level, we assemble data from the Consolidated Reports of Condition and Income (FFIEC031/041), commonly known as call reports. These reports cover financial data that any U.S. bank with a state or national charter is required to file on a quarterly basis. Our sample contains the full set of banks (up to 8,943 individual institutions) and financial data for the period covering the third quarter of 2003 to the fourth quarter of 2012. In a second step, we obtain identifiers for the top holders (i.e., the ultimate owner of any individual bank) from the FDIC's Statistics on Depository Institutions (SDI) to match the individual banks to their respective bank holding companies.

Variable definitions and summary statistics

Our final sample covers quarterly observations from the third quarter of 2003 to the fourth quarter of 2012. To ensure consistent eligibility triggers for regulatory actions, we only consider bank-quarter observations where banks fall below the "undercapitalized" regulatory threshold at which mandatory prompt corrective actions are imposed on the bank and the regulator can consider issuing additional discretionary actions through a PCA directive (and only for banks in the "critically undercapitalized" category as a foundation for closure decisions).

[24] Note that only bank holding companies (and not banks) are publically listed in the U.S.

We find 782 banks that have ever fallen below the undercapitalized threshold, resulting in 2,849 undercapitalized bank-quarter observations with non-missing information for lobbying activities. Regarding proximity to the legislative committee, we find 792 undercapitalized banks (2,866 undercapitalized bank-quarter observations) with non-missing information.[25] Note that the "undercapitalized" sample is defined as below the first regulatory threshold for undercapitalization and also includes the "significantly undercapitalized" and "critically undercapitalized" subsamples. Regarding the regulatory capital category at which the supervisory institution should consider closing the bank, our sample contains 392 (402) banks ever being "critically undercapitalized", yielding 629 (641) bank-quarter observations with non-missing information for lobbying activities (proximity to the relevant legislative committee). Note that these are rather minor subsamples of the U.S. bank universe consisting of small banks. The prevalence of lobbying activities among smaller banks is low (see Figure 13), however small banks that lobby spend rather significant amounts relative to their size.

Table 23 presents summary statistics on the main variables. Panel A contains the sample of undercapitalized bank-quarter observations. Panel B provides an overview over the sample of bank-quarter observations with Fitch support ratings that we use to estimate expected government support.[26] Table 37 provides detailed descriptions and data sources for each variable and Table 41 shows the correlations between all variables (Appendix A).

[Table 23]

Dependent variables

The PCA indicator variable takes a value equal to 1 if a bank received a PCA directive (respectively if an existing PCA directive has not been terminated) in the next quarter and implies whether the regulator imposed additional discretionary actions (besides mandatory prompt corrective actions) conditional that the bank has fallen below certain capital ratio thresholds. In 15% of undercapitalized bank-quarter observations, a PCA directive has been employed; in 24% of significantly undercapitalized observations, a PCA directive was binding; in 50% of critically undercapitalized observations, banks have been closed or resolved.

Fitch support ratings are constructed to capture the likelihood that a bank will have access to external support (e.g., from the government) should the bank incur distress. The ratings range from 1 (a bank with an extremely high probability of external support) to 5 (a bank with a probability of external support, but it cannot be relied upon). Important for our analysis is to understand that the Fitch support ratings do not fluctuate heavily over time and seem to be rather stable. This practically removes the time-dimension we could explore in our empirical analysis. We find that the 1 and 5 ratings are the most frequent, and the intermediary ratings are much less frequently assigned. The mean value for the Fitch ratings in our sample lies at around 4, as the share of banks assigned with high ratings is larger than those with low ratings (high expected government support).

Main explanatory variables

The past lobbying indicator (*past lobbying*) indicates whether there have been any lobbying activities in the last four years at the conglomerate level including all entities belonging to a respective holding company.[27]

[25] Note that this sample of banks differs substantially from the sample of TARP recipient employed by Duchin and Sosyura (2012). We find only 35 banks that received TARP funding and have been undercapitalized during the financial crisis (only 11 banks when restricting to critically undercapitalized).

[26] Note that in the regulatory treatment sample, we are looking at banks that are undercapitalized and that got into distress. In general, these tend to be small banks. In the expected government support sample, we are dealing with large banks that are rated by Fitch. This might lead to differences in the mean values between both samples.

[27] We believe that a longer retrospective view is necessary to account for causality between lobbying efforts and preferential regulatory treatment, although the time span of four years is arbitrarily chosen. We test different definitions of lobbying activities for robustness reasons.

Lobbying expenditure should not be understood as a mere direct financial transfer from a firm or bank to a regulatory or legislative institution but rather as an indication of an actively maintained liaison between a firm or bank lobbyist and the institution that can be leveraged as a source of influence. Also, regulators or legislators can expect potential benefits in the future from these established contacts (e.g., in the form of further lobbying activities or revolving doors). Therefore, we define lobbying activities as a dummy variable rather than a continuous variable of the financial lobbying expenditures, highlighting the fact that there exists a channel between the bank and the lobbied institution. We find past lobbying history according to our definition at the conglomerate level for 2% of the observations. A smaller fraction of these lobbying activities is conducted with the help of a former politician: around 0.1% of all observations at the conglomerate level report lobbying involving a former member of Congress, 1.8% lobbying without such involvement. Moreover, we vary the aggregation level (top holding level only), time dimension (pre-crisis lobbying activities), and scale (continuous lobbying spent) of lobbying activities in our robustness tests.

With regard to proximity to the relevant legislative committee (*subcom rep*), we assign a dummy variable equal to 1 to each bank if any entity within the bank's conglomerate is located in the congressional district of a member of the relevant legislative committee. Following this definition, 10 percent of bank-quarter observations are connected to a subcommittee member who is a member of the Subcommittee on Financial Institutions. For robustness reasons, we modify the time horizon of political connections through proximity to the relevant legislative committee (past four years at least).

We define prior regulatory or government affiliations (*prior affiliation*) as equal to 1 if any member of the board of directors of the top holding company held an office with any relevant regulator, government body, or federal agency and 0 otherwise.[28] We obtain only 306 undercapitalized bank-quarter observations because we restrict the board of directors data to publically listed bank holding companies. We find political connections through board prior affiliation for 14% of these observations.

Control variables

We use bank-level controls referring to the absolute size of the bank, which is an important proxy for systemic importance. Note that the average bank size in the sample of undercapitalized bank-quarter observations is rather small with 519 million U.S.D. We furthermore control for asset quality using non-performing loan shares, as a regulator might be more inclined to issue an additional regulatory measure to a bank with a sub-par quality of assets. Return on assets controls for the efficiency of a bank's operations. Since the probability of receiving a more severe treatment increases with declining capital sufficiency, we include the leverage ratio as a capital ratio. We apply the regulatory definition of leverage ratio as used in the PCA rule book and defined as Tier 1 capital divided by average assets. Tier 1 ratio and risk-based capital ratio are included in an extension of the regulatory treatment model. We control for business models using relative shares of deposits and non-interest income (see Brunnermeier et al. (2012c) for a discussion of how non-interest income is an indicator for systemic risk). The organizational structure of banks can also matter for receiving regulatory treatment or expected government support, e.g., regulators might treat banks belonging to bank holding companies differently from independent banks. We thus include indicator variables identifying independent banks and banks belonging to global systemically important financial institution bank holding companies (G-SIFIs) as defined by the Financial Stability Board in November 2013. Moreover, we control for the TARP recipients, as the capital injections should have influenced leverage ratios.[29] Lastly, we also include year dummies as well as charter and regulator dummies in certain model specifications to account for unobserved heterogeneity in PCA decisions that might be constant over time, regulators, and bank charters.

[28]Note that we only consider previous jobs and roles with (given) start or end dates before the start of the bank director role.

[29]TARP recipient status might be also considered as a regulatory outcome variable. When excluding this indicator from our regression, we obtain results similar in economic size and significance.

Sources of influence and regulatory treatment of distressed banks

In the first step of our empirical analysis, we focus on the de facto actions taken by the regulator: PCA and closure decisions. Regarding the PCA decisions, we distinguish between issuing a PCA directive (additional discretionary provisions) and no additional provisions imposed conditional on a capital distress situation that requires prompt corrective actions. In an extension of this model, we also investigate closure decisions and distinguish whether a bank has been closed conditional on whether it has fallen into the critically undercapitalized capital category that requires putting the bank into receivership within 90 days. As the dependent variable, we define a dummy variable that indicates whether a bank receives preferential treatment (i.e., no additional discretionary actions, no closure) and employ a linear probability model[30] to estimate the probability of regulatory action. Our baseline model for regulatory treatment is depicted in the following equation:

$$(Regulatory\,treatment_{i,t+1} \mid c_{i,t} = 1) = \alpha + \beta \cdot source\,of\,influence_{i,t} + \gamma_t + X_{i,t} + \varepsilon_{i,t}. \tag{5}$$

In model (5), $regulatory\,treatment_{i,t+1}$ is a dummy variable equal to 1 if bank i receives a PCA directive or if an existing PCA directive is not terminated (is closed or resolved) in year and quarter $t+1$ (and 0 otherwise). $c_{i,t} = 1$ constitutes the condition that bank i falls into the undercapitalized or even significantly undercapitalized category at which certain mandatory actions and provisions are triggered by the PCA regulation (falls into the critically undercapitalized category) in year and quarter t. The variable of interest is $source of influence_{i,t}$. We identify three possible source of influence: lobbying activities, proximity to the relevant legislative committee, and prior regulatory or government affiliation. For lobbying activities, we define a variable indicating whether bank i, its top holding company, or any other institution belonging to its holding company has ever lobbied for financial issues in the past four years.[31] We expect banks to have close political connections through proximity to legislative decision makers (member of the Financial Institutions and Consumer Credit subcommittee) and board of directors' previous affiliation with regulatory or government institutions. The variable for proximity to the relevant legislative committee takes the value 1 if bank i, its top holding company, or any other institution belonging to its holding company is located in the congressional district of a subcommittee member at time t. The variable for prior affiliation equals 1 if any member of the board of directors of bank i, its top holding company, or any other institution belonging to its holding company at time t has held an office with any relevant regulator, government body, or federal agency prior to time t. γ_t is a time indicator variable for each year. $X_{i,t}$ is a matrix of bank level control variables. $\varepsilon_{i,t}$ is the disturbance term for which we assume standard properties. β is the major parameter to be estimated. Our main hypothesis is that lobbying efforts and closer proximity to legislatively relevant representatives should facilitate receiving favorable treatment. If bank lobbying activities and political connections indeed influence regulatory treatment ot a bank once it becomes distressed, we expect a negative and significant coefficient β (i.e., source of influence are expected to decrease the probability of a PCA directive or of being closed).

The model might suffer from endogeneity through omitted variables or reverse causality. We try to exclude omitted variable bias by using sufficient control variables and fixed effects. However, endogeneity might also arise, for example, if banks lobby because they assume to encounter financial problems soon or if representatives join the subcommittee because they know that banks in their congressional district might soon need their help. While we cannot conclusively rule this out, it does not seem to impair the main result that lobbying activities or political connections are considered (and prove to be) effective sources of influence. Furthermore, this endogeneity problem is reduced if the sample is limited to banks that are in financial distress as defined above.

[30] We choose a linear model despite the binary structure of the dependent variable due to the incidental parameters problem: Nonlinear models (such as probit and logit) cannot consistently estimate fixed effects and coefficients of control variables in panel datasets with large N (number of groups) but limited time periods. For robustness reasons, we employ a fixed effect logit model as an alternative estimation method.

[31] In addition, we explore a variety of alternative measures of lobbying activities for robustness purposes.

When doing so, banks that are not undercapitalized and hence might have decided to abstain from lobbying in anticipation of this (as would be essential to the reverse causality argument), are removed from the sample. If we suspect reverse causality, our estimates would be biased upwards (i.e., we would suspect $Cov(X, \epsilon) > 0$) since regulatory treatment could be positively predictive of lobbying activities.[32] Nevertheless, to account for reverse causality concerns, we conduct a series of robustness tests varying the time horizon of the lobbying activities and political connection variables and matching the sample of banks on their asset quality.

Results for the baseline model

Table 24 shows the baseline estimation results for the probability of receiving a PCA directive employing lobbying activities as the source of influence. Our main variable of interest, *past lobbying,* is an indicator variable that takes the value 1 if there have been any lobbying activities at the conglomerate level in the past four years and 0 otherwise. Panel A shows the results of all tests on the sample of undercapitalized bank-quarter observations (including significantly undercapitalized and critically undercapitalized subsamples). Panel B shows the results for the significantly undercapitalized subsample (including the critically undercapitalized subsample). We calculate simple correlations between the lobbying indicator and the probability of a PCA directive (column 1). The results indicate that *past lobbying* has a negative (decreasing) and at least at 5% level significant effect on the probability of receiving additional measures given that the bank is in financial distress. When adding time-varying bank control variables and year dummies (column 2), the coefficients for *past lobbying* become highly significant.[33] The economic size of the effect is considerable: Banks that have lobbied in the past and fall below the undercapitalized threshold have a 12% lower probability of receiving additional discretionary provisions; when falling below the significantly undercapitalized threshold, they have an 18% lower probability. For robustness, we add sets of dummy variables that might determine the regulatory treatment in the next two model specifications. First, time-invariant heterogeneity across regulators who are the ultimate decision makers when it comes to PCA decisions might affect regulatory treatment, e.g., one regulator might always issue additional discretionary actions when a bank becomes undercapitalized. Hence, we add fixed effects for the four primary bank regulators (column 3). Second, state-chartered banks are also supervised by state regulators in addition to federal supervision. Regulatory decisions at the federal level might turn out differently if a state regulator is involved (Agarwal et al., 2014). In column 4, we add dummy variables for the bank charter type to control for state-regulated banks. Our results hold in both model specifications.

[Table 24]

Table 25 presents the results of the baseline estimations for PCA decisions using proximity to the relevant legislative committee as the channel for banks' influence exertion. The main explanatory variable, *subcom rep*, equals 1 if the bank or any entity within the bank's conglomerate is located in the congressional district of a member of the Subcommittee on Financial Institutions. The results that we obtain for the proximity to the relevant legislative committee are similar to the results for lobbying activities in direction and significance. When considering the specification with bank controls and year dummies, we find that the proximity to relevant subcommittee members lowers the probability of receiving additional discretionary provisions by 4% in the case of undercapitalization and by 10% when falling below the significantly undercapitalized threshold.

[Table 25]

We repeat our baseline estimations for the third channel of banks' influence: previous regulatory or government affiliations of the board of directors. The results for these estimations are shown in Table 26. *Prior*

[32] The OLS estimator converges to the true value β if and only if the covariance between the covariates X and the error term ε equals zero, i.e., $plim(\hat{\beta}) = \beta + \frac{Cov(X,\epsilon)}{Var(X)}$. If $Cov(X, \epsilon) > 0$, then $plim(\hat{\beta}) > \beta$ and we would thus be overestimating the true effect.

[33] Note that we include year fixed effects instead of quarter fixed effects to avoid over-specification of the model.

affiliation takes a value equal to 1 if any director of the top holding company has ever held office with a regulatory or government institution. Since we only gather data for bank directors at publically listed bank holding companies due to transparency obligations and data quality, we reduce the number of undercapitalized bank-quarter observations to only 306 (only 181 significantly undercapitalized observations). The results for prior regulatory or government affiliations are in line with the results for lobbying and proximity to decision makers as sources of influence: Banks that can leverage prior regulatory or government affiliations of their board members have a 14% to 16% lower probability of receiving additional discretionary provisions. Despite the small sample size, the estimation results for *prior affiliation* are significant for all model specifications in the undercapitalized sample. In the significantly undercapitalized sample, the estimation results become insignificant when further dummy controls are added to the model which can be attributed to the small number of observations and relatively large number of indicator variables.

[Table 26]

In sum, we find evidence for the existence of effective channels for banks' influence exertion and for the impact of these sources of influence on the regulatory treatment of distressed banks.

Robustness tests for alternative explanations and specifications

To account for robustness of our baseline results, we test our PCA decision model for alternative explanations and different specifications. Table 27 reports the results of the robustness tests. Panel A shows the robustness results for the regressions with lobbying activities as the source of influence. Panels B and C report the results for proximity to the relevant legislative committee and prior regulatory or government affiliations as the sources of influence, respectively. All robustness tests are conducted on the sample of undercapitalized bank-quarter observations, including bank control variables and year dummies.

As there might be alternative explanations for our findings, we test our models using different sample definitions. If not explicitly stated, the results discussions relate to all three sources of influence employed in the baseline estimations. First, we might find a difference in regulatory treatment because lobbying and non-lobbying banks (banks with and without proximity to the relevant legislative committee or prior board affiliations) are systematically different, especially regarding their condition and capitalization before they entered capital distress. This might encourage different expectations in terms of their long-term viability and potential to emerge from capital distress without any additional provisions. To test for potential systematic differences, we match lobbying and non-lobbying banks (banks with and without proximity to the relevant legislative committee or prior board affiliations) on a two-year moving average leverage ratio and the remaining control variables using propensity score matching (up to 20 nearest neighbors within a caliper of 0.0001) and rerun our models with the matched sample (column 1).[34] The coefficients of the main explanatory variables in the regression with the matched samples are similar in economic size and statistical significance to the baseline results.

Second, banks might have exited the sample through closure or acquisitions, making the urgency for the regulator to intervene obsolete. To account for this, we exclude bank-quarter observations where banks exit the sample in the next quarter. The results of the estimations accounting for bank exits (column 2) are consistent with our baseline results.

Third, regulators can also issue other enforcement actions (i.e., cease and desist orders, capital directives, other formal agreements or consent orders) when banks get into financial difficulties and therefore reduce the need for additional discretionary actions. Although these enforcement actions are made public (exactly like PCA directives), they usually represent a more preferential treatment than the additional discretionary actions

[34] With this methodology we are able to match 47 non-lobbying banks to samples of banks that do not lobby. Applying the matching procedure for proximity to the relevant legislative committee, we find 292 matches; for prior board affiliations 38 matches.

contained in PCA directives.[35] Therefore we expect the signaling effect to be more severe for PCA directives than for any other enforcement action. We control for other enforcement actions by including a dummy variable that identifies all bank-quarter observations in which other enforcement actions have been issued or were still valid, and rerun our estimations (column 3). We find coefficients for all three sources of influence similar in direction, size and significance as the coefficients of our baseline estimations, meaning that even when controlling for other (and less severe) enforcement actions, bank's influence exertion significantly decrease the probability of severe additional actions.

Fourth, a further argument that might bias our results is that pressure on the regulator to intervene might have increased during the financial crisis, reducing his leeway for lenient regulatory treatment. When restricting the dataset to all bank-quarter observations after the outbreak of the financial crisis, i.e., starting with the third quarter of 2008 (column 4), we find coefficients similar in economic size, and significance as the baseline models with all observations from the third quarter of 2003 to the fourth quarter of 2012. In this context, the question might arise whether there is a difference in the effect of bank influence exertion between the pre-crisis period and the crisis period. We do not obtain reasonable results for our baseline model with lobbying activities as the source of influence for the pre-crisis period (2003Q3-2008Q2) due to the low number of overall observations, PCA issues, and past lobbying activities; yet, we find a significant effect when rerunning the model with proximity to the relevant legislative committee as the source of influence for the pre-crisis period, which is in line with the results for the crisis period.[36] When exploring the effect of sources of influence on the expectation of government support, we apparently find no striking difference between the period before and after the onset of the financial crisis.[37] Therefore, we assume that banks' influence has already been effective before the financial crisis, although distressed bank cases where influence exertion would have been useful were rare.

So far we have used a linear probability model for our estimations. Nonlinear models such as probit or logit would also be suitable to account for the binary nature of our dependent variable. We employ a fixed effects logit model as alternative estimation method to account for this concern. The results are reported in column 5 and are in line with our estimation results for the linear model in terms of significance and direction.

We also test our measures for alternative variable definitions. First, instead of capturing sources of influence at the conglomerate level (that might also include other entities not related to the respective bank), we only consider lobbying activities and proximity to the relevant legislative committee at the top holding company level (*past lobbying top* and *subcom rep top*). Likewise, the results are comparable to the baseline model when using this different aggregation level (column 6).

Finally, we test both sources of influence, lobbying activities and proximity to the relevant legislative committee, simultaneously in one model (column 7 in Panel A) to rule out that both sources cancel each other. We find both sources to be significantly effective in decreasing the probability of discretionary PCA actions when considered simultaneously. Apparently, the decreasing effect of lobbying activities seems to be larger than the effect of proximity to the relevant legislative committee.[38]

[Table 27]

Taken together, the effect of banks' influence exertion on the probability of obtaining a PCA directive is robust to a variety of alternative variable and model specifications and holds for different sample splits and alternative explanations.

[35] For example, capital directives imply the order to increase capital to a certain level without further consequences, while cease and desists orders usually prohibit certain activities that are deemed suspect. On the contrary, PCA directives can constitute a real punishment for banks due to dismissal of boards or divestment of business units.

[36] For brevity, we do not report the results of these tests in Table 27.

[37] Compare to Table 35 in Section 5.

[38] Note that due to little overlap between both sources of influence, constructing a interaction term is not meaningful.

Robustness tests accounting for reverse causality

As previously mentioned, our model might suffer from endogeneity caused by reverse causality (e.g., banks might lobby because they might be in distress soon). Even though this does not impair our main result that lobbying activities or political connections are effective sources of influence, we conduct several robustness tests to account for reverse causality concerns. The results are reported in Table 28. We employ lobbying activities as the source of influence in Panel A and proximity to the relevant legislative committee in Panel B. All tests are conducted on the sample of undercapitalized bank-quarter observations, including bank control variables and year dummies.

The first concern is that far-sighted banks that anticipate being in financial difficulties soon or make some highly risky investments that might lead them to the edge of solvency might prepare for more preferential treatment in distress through lobbying. To address this argument, we identify lobbying activities during the period before the financial crisis (*pre-crisis lobbying*) and combine it with regulatory treatment after the onset of the financial crisis (2008Q3-2012Q4) assuming that banks would not have been able to predict future financial turbulence (not to mention the financial crisis itself). We find results consistent with our previous findings when incorporating the larger time lag between influence exertion and regulatory treatment (column 1 in Panel A). A similar concern is that legislators might be prone to join the Subcommittee on Financial Institutions if they know (or at least anticipate) that banks in their congressional district might need their support soon. As such behavior would typically happen at short notice, we control for subcommittee representation and bank location in the congressional district of a subcommittee member for a longer time horizon, i.e., four subsequent years at least (*subcom rep for 4 years*). The results are in line with our baseline estimation when employing a more conservative definition for proximity to the relevant legislative committee, however at a lower significance level (column 1 in Panel B).

We conduct a further test to ensure that lobbying and non-lobbying banks (banks with and without political connections to subcommittee members) do not systematically differ in their asset quality. Banks that hold risky portfolios or make risky investments and thus increase their likelihood to fail might be more prone to lobby or leverage a subcommittee member. Hence, differences in asset quality might amplify the reverse causality problem. Although we control for asset quality by the non-performing loan ratio in all model specifications, we perform an additional test matching banks with and without influence exertion on the current value and a (past) two-year moving average of the non-performing loan ratio using propensity score matching (up to 20 nearest neighbors within a caliper of 0.0001) and rerun our models with the matched sample (column 2).[39] The coefficients of the main explanatory variables in the regression with the matched samples are similar in economic size and statistical significance to the baseline results. As an additional test, we combine both approaches, meaning that we match banks on their asset quality using *pre-crisis lobbying* as the treatment and rerun the regression on the undercapitalized sample after the onset of the financial crisis. The assumption that banks could not have different anticipations about their future financial state, which would explain lobbying and non-lobbying behavior, should be very stringent in this matched sample. The results in this specification hold and are in line with previous results, indicating that our findings cannot be caused solely by the reverse causality problem.

[Table 28]

Thus, we are able to prove to a great extent that our findings are robust to reverse causality concerns.

[39] We are able to match 54 non-lobbying banks to samples of banks that do not lobby. Applying the matching procedure for proximity to the relevant legislative committee, we find 203 matches.

Conditions for effectiveness

In this section, we investigate whether certain conditions exist, which alter or even increase the effect of banks' sources of influence. First, we want to explore how the effect of lobbying on preferential regulatory treatment interacts with different lobbying expenditures (Table 29). We construct a continuous lobbying variable that proxies lobbying intensity (natural logarithm of total lobbying expenditures aggregated over all entities within the conglomerate over the past four years) and replace the indicator lobbying variable with this continuous variable. We find that with rising lobbying expenditures, the probability of receiving additional discretionary provisions decreases (column 1). As a robustness test, we scale lobbying expenditures by total assets of the bank (column 2).[40] The results of this model specification are in line with the previous result for lobbying intensity. Does the size of lobbying expenditures matter to a great extent; more precisely, are only large amounts effective? To investigate this question, we split the sample of lobbying banks into banks with small (below 100,000 U.S.D at the conglomerate level over the past four years) and large lobbying expenditures (above 100,000 U.S.D at the conglomerate level over the past four years) and rerun our model specification with the indicator lobbying variable (*past lobbying*) separately for small and large lobbying expenditures. The results show that both lobbying with rather small and rather large expenditures is effective in decreasing the probability of additional discretionary actions in distress. This supports our presumption that the magnitude of lobbying expenditures is not crucial but rather the fact that there is a channel between the bank and the lobbied institution that can be leveraged in case of distress.

[Table 29]

Second, we test whether there is any interaction effect with the financial health of banks. The results are shown in Table 30. Panel A shows the tests with lobbying activities as the source of influence. In Panel B, we employ proximity to the relevant legislative committee as the source of influence. Note that we do not repeat the regressions for the prior regulatory or government affiliation variable due to the low number of observations. The tests are conducted on the sample of "undercapitalized" bank-quarter observation, including bank control variables and year dummies.

Regarding the financial health of banks, we investigate whether the regulator's propensity to enforce additional actions with decreasing capital ratios is mitigated by influence exertion. We supplement our model with the interaction term $source\ of\ influence_{i,t} * capital\ ratio_{i,t}$, employing three different capital ratios: leverage ratio (column 1), Tier 1 ratio (column 2), and risk-based capital ratio (column 3). If banks' sources of influence indeed counterbalance the propensity of additional actions with deteriorating capitalization, we expect a positive and significant coefficient on the interaction term. Throughout all specifications, capital ratios are significant drivers of additional regulatory actions. Looking at the stand-alone source of influence variables (*past lobbying* and *subcom rep*), we find, as expected, negative and highly significant coefficients. For lobbying activities as the source of influence, the coefficients of the interaction terms are positive and significant, suggesting that banks' lobbying efforts in fact moderate the increasing propensity for additional actions with decreasing capital ratios. Comparing the absolute values of the coefficients for capital ratios with the interaction terms, the interaction term coefficient is always smaller than the stand-alone coefficient. This means that for banks that have lobbied, the probability of obtaining a PCA directive still increases with declining capital levels, however at a much slower pace than for banks without lobbying activities. Looking at proximity to the relevant legislative committee as the source of influence, we only find a slightly significant coefficient (at the 10% level) for the interaction term with leverage ratio, but not for the interaction terms with the other capital ratios. This indicates that

[40] Since total lobbying expenditures of the conglomerate over the past four years can be larger than total bank assets, we restrict the ratio of lobbying expenditures to total assets to 1.

subcommittee members do no not mitigate the propensity of more severe measures with decreasing financial state of a bank.

[Table 30]

Third, other conditions related to the sources of influence might drive their effectiveness. In Table 31, we test two hypotheses: (i) lobbying may be more effective when it is conducted by former politicians, who might have personal connections to decisions makers, and (ii) subcommittee members may be more prone to preferential regulatory bank treatment when they received larger campaign contributions from the financial industry during their election period. We analyze the first hypothesis by including two variables: one for the lobbying activities involving a former member of Congress and the other one for the lobbying activities not involving a former member of Congress. We are interested in the difference between these two variables to see whether the effect on regulatory treatment is considerably larger if lobbying is conducted on behalf of a former member of Congress. We find that both lobbying activities significantly decrease the probability of receiving additional discretionary actions, but the relative size of the coefficients suggests that the lobbying activities involving a member of Congress are more effective (although the *p-value* does not hint to a significant difference between the two coefficients). This result suggests that personal networks and connections can exacerbate the effect of lobbying. Regarding the second hypothesis, we replace the indicator variable for proximity to the relevant legislative committee with a continuous variable measuring the amount of campaign contributions from the financial industry (average sum of contributions received by subcommittee members from congressional districts of all entities within a bank's conglomerate). We find a negative and significant coefficient for *financial industry PACs to subcom rep*, suggesting that with increasing contributions from financial institutions, the effectiveness of proximity to legislators increases.

[Table 31]

Taken together, our results show that several conditions amplify the effectiveness of bank's political influence. Lobbying activities not only lower the probability of receiving additional actions when encountering financial difficulties, they also decelerate the propensity for additional actions with deteriorating financial health. Moreover, lobbying can be more effective when it involves a former Congress member. Proximity to the relevant legislative committee is more effective the more campaign contributions the subcommittee members received from the financial industry.

Limits of influence

So far we have shown that banks' influence exertion has an effect on obtaining additional discretionary provisions when banks breach the threshold for the undercapitalized regulatory category. However, we want to investigate whether limits to this influence exist. One potential limit is the severity of capital insufficiency. The PCA framework stipulates that banks that fall into the most severe critically undercapitalized regulatory category should be closed or resolved within 90 days. We test banks' political influence on these closure decisions (Table 32). Panel A shows the results of regressions with lobbying activities as the source of influence, while we employ proximity to the relevant legislative committee in Panel B. Note that we do not repeat the regressions for the prior regulatory or government affiliation variable due to the low number of observations. We find that throughout all model specifications, banks' influence has no significant impact on the closure decisions of critically undercapitalized banks, although a negative coefficient in most specifications points to a decreasing effect on closure probabilities.

[Table 32]

To rule out that this "non-finding" is driven by the structure of the data, we draw random samples from the subsample of critically undercapitalized bank observations as well as split the sample by existing PCA directives, other existing enforcement actions, primary regulator, and bank charter type and repeat the estimations on closure decisions. In all subsample specifications, we do not find a significant negative effect on closure decisions, i.e., decreasing the probability of bank closure.[41] Although bank sources of influence do not apparently reduce the probability of closure, it might well be that they prolong the duration until closure as regulators might give critically undercapitalized banks time to recover. Hence, we are interested in the length of time until a bank is closed or until it gets out of distress, i.e., the maximum number of quarters being critically undercapitalized. A standard method for analyzing duration data is to employ a hazard model. We use a Weibull distribution for the hazard function as we assume that the hazard of closure increases with distress duration. Table 33 shows the results of this estimation with lobbying activities as the source of influence in Panel A and proximity to the relevant legislative committee as the source of influence in Panel B. In most specifications, the estimated coefficient is negative and the hazard ratio below 1, indicating that sources of influence decrease the hazard of closure in any given period of time and prolong the duration until closure. However, again the estimates are not significant in any of the specifications.

[Table 33]

In sum, these results suggest that although banks can induce a preferential treatment at the onset of financial difficulties, they cannot apparently avert bank closure when they are in deep financial distress.

Sources of influence and expected government support

We next explore the effect of lobbying and proximity to the relevant legislative committee on expected government support. For this purpose, we estimate variations of the following model:

$$FSR_{i,t} = \alpha + \beta \cdot source\,of\,influence_{i,t} + \gamma_t + X_{i,t} + \varepsilon_{i,t} \tag{6}$$

In model (6), $FSR_{i,t}$ is the Fitch support rating of bank i at year and quarter t. A support rating of 1 indicates the highest probability, while a rating of 5 represents the lowest probability of external support. The variable of interest is again $source\,of\,influence_{i,t}$, which is a variable either indicating whether bank i (or any entity in the respective conglomerate) has lobbied in the past four years, or whether the subcommittee member in the respective congressional district of the financial institution is a member of the Financial Institutions and Consumer Credit subcommittee. We explore a variety of alternative measures of lobbying activities for robustness purposes as well. γ_t is a time indicator variable for each year. $X_{i,t}$ is a matrix of bank level control variables. $\varepsilon_{i,t}$ is the disturbance term for which we assume standard properties. β is the parameter of interest to be estimated. If banks can indeed leverage lobbying activities and proximity to decision makers to increase external support probability, as we would hypothesize, we expect the coefficient β to be negative and significant.

Results for the baseline model

Table 34 contains the estimation results for the model we use to explain the effect of sources of influence on the Fitch support ratings. In Panel A, the source of influence is past lobbying activities, while in Panel B we focus on the subcommittee member in the congressional district. To make sure that we are not measuring any "too-big-to-fail" effect in our sample, we exclude bank holding companies as well as banks that belong to bank holding companies that have been identified as "systemically important financial institutions" by the Financial Stability Board. Column 1 reports the results of a simple correlation between the source of influence variable

[41] We do not report the results of these robustness tests for brevity.

and the Fitch support rating. We then step-wise add control variables and year dummies (column 2), regulator dummies (column 3), and bank-charter dummies (column 4) to control for any other factors that can affect our dependent variable.[42]

In Panel A, our main variable of interest is *past lobbying,* an indicator variable that takes the value 1 if any entity belonging to the bank's top holding company has lobbied in the past four years. The results show that the effect of lobbying activities on the Fitch support rating is significant, regardless of the controls or dummies employed. Note that the negative coefficient corresponds to a reduction in the Fitch support rating, which implies an increase in the likelihood of expected government support. Throughout the different model setups, we find that past lobbying activities lead to a reduction of about 1.6 points in the current rating compared to banks that do not engage in lobbying. Economically speaking, this effect is significant, as Ueda and di Mauro (2013) show that banks with better support ratings enjoy an "implicit subsidy" in the form of cheaper funding costs. To be more precise, they claim "a one-unit increase in government support for banks in advanced economies has an impact equivalent to 0.55 to 0.9 notches (on a numerical scale from D to AAA) on the overall long-term credit rating at the end-2007", and that "the effect increased to 0.8 to 1.23 notches by the end-2009". The authors go as far as translating the advantage in long-term ratings to a funding advantage in basis points of CDS spreads. For this calculation, we refer to the full paper. In short, the take away is that a reduction in Fitch support ratings should result in lower funding costs, i.e., lobbying and political connections can potentially indirectly reduce funding costs for banks via these support ratings. However, it is important to understand that our sample mostly consists of banks with a 1 or 5 rating. Given this fact and the resulting almost abnormal distribution of the ratings, the jump might actually imply the difference between a bank that has no support and a bank with almost guaranteed support, rather than an evaluation around the mean.[43]

Panel B shows the same results for the presence of the subcommittee member in the congressional district of the bank. The proximity to politicians leads to a reduction of about 1.1 points in the Fitch support rating, i.e., an increase of support. In reality this corresponds to a significant jump in the Fitch support rating.

[Table 34]

Robustness tests

In order to test the robustness of our baseline results for model (2), we explore the effect of alternative measures of lobbying activities, as well as an alternative estimation procedure and a subsample restricted to the post-crisis time period. Table 35 presents the corresponding results. Panel A shows the results of robustness tests for the regressions with lobbying activities at the conglomerate level as the source of influence, while Panel B reports the robustness results for proximity to the relevant legislative committee as the source of influence. In column 1, we present the results from a matching procedure using propensity score matching to estimate the effect of lobbying activities and subcommittee member proximity on the Fitch support ratings.[44] We obtain results when employing the matched sample that are in line with the baseline results, i.e., the sources of influence significantly reduce the support rating and therefore increase the likelihood of support. We then investigate whether our results are potentially driven by increased pressure on regulators and legislators during the financial crisis to intervene in troubled banks (columns 2 and 3). We rerun the estimation on a pre-crisis sample (2003Q3-2008Q2) and compare it to estimations using a sample after that Lehman collapse (2008Q3-2012Q4). Again, we find that the effect does not change for the lobbying variable, nor for the subcommittee variable.

[42] We do not repeat this model with the prior affiliation explanatory variable due to the limited amount of observations resulting from combining the BoardEx data with the Fitch support ratings.

[43] In order to account for the binary distribution of the Fitch support ratings, we also utilize an alternative estimator such as the logit estimator (after transforming the ratings to a 0-1 scale). This does not change the results at all.

[44] With this methodology we are able to match 180 non-lobbying banks to samples of banks that do not lobby and the same amount of matches for the proximity to the relevant legislative committee sample.

We also test whether our results hinge on the definition of our lobby and subcommittee variables. We therefore explore alternative specifications in which we vary the aggregation level (conglomerate vs. top holding level) and scale (continuous vs. dichotomous) as we did in the regulatory treatment robustness tests. The results in columns 4-6 in Panel A confirm that our results are robust for alternative specifications of the lobby variable. For the alternative definition of the subcommittee variable, we find that proximity to decision makers of all entities of the conglomerate rather than only of the top holding company is important, as the alternative definition of our variable (column 4 in Panel B) does not seem to be significant anymore.

[Table 35]

Conditions for effectiveness

In Table 36, we extend upon our baseline results for model (2) and explore again whether lobbying with the aid of a former politician (Congress member) becomes more effective and whether campaign contributions increase the benefit of having close proximity to decision makers. In column (1), the coefficient for lobbying with a former Congress member seems larger than lobbying without a former Congress member; the size of the coefficients indicates that lobbying with a former Congress member becomes almost twice as effective. Our results show that this difference is significant ($p\text{-}value < .000$). This is in line with our earlier findings. We repeat the exercise of adding campaign contributions data to our subcommittee variable and only present the interaction term (column 2). The interaction term suggests that if candidates received relatively large campaign contributions from the financial industry, the beneficial effect of proximity to decision makers becomes stronger.

[Table 36]

Conclusion

In this paper, we provides evidence that banks can effectively leverage sources of influence such as lobbying activities or political connections to gain favorable regulatory treatment when undercapitalized as well as to increase the likelihood of receiving government support in case of distress. Our results are robust to a variety of alternative variable specifications, different sample splits, alternative explanations, as well as reverse causality concerns. We find evidence on conditions that determine the effectiveness of these sources of influence. Increasing lobbying expenditures raise the probability of preferential regulatory treatment, but even small lobbying expenditures prove to be effective. Besides lowering the probability of receiving less beneficial treatment, we find that lobbying activities decelerate the propensity for additional discretionary measures with deteriorating capital ratios. Lobbying becomes more effective by involving former politicians as lobbyists. The effectiveness of proximity to the relevant legislative committee increases with the amount of campaign contributions from the financial industry that elected legislators receive. However, there seems to be a limit to the efficacy of political influence when it comes to the closure decisions of the most severely distressed banks.

Our findings are instructive for the determinants of regulatory decisions and help to understand the sources of influence that banks can leverage. However, we want to point out four caveats of our analysis. First, we only study actual and expected regulatory treatment in the case of bank distress as a regulatory outcome. Other areas and modes of preferential treatment or beneficial policy outcomes might also be conceivable. Second, the sample of banks for the analysis of actual regulatory treatment consists of rather small banks with a low prevalence of lobbying activities and political connections. However, since we find evidence for the effect of smaller banks' political influence, we can assume that political influence by larger banks may be similarly effective due to their higher lobbying activities and better political connections. Third, we do not account for indirect lobbying expenditures via banking associations and network organizations. As such, one could expect the real effect of

lobbying to be even stronger. Finally, we take only into account sources of influence that are officially reported. There may be many more activities take place unofficially, i.e., without being reported. Thus, future research efforts exploring the magnitude of political influence on other modes of regulatory treatment, for the group of large banks, and by means of different sources of influence might add further insights about the effect of influence.

Moreover, several further questions beyond the scope of our paper might also be worth exploring. We focus solely on the effectiveness of sources of influence on regulatory treatment without evaluating the impact on the overall economy. Therefore, we highly encourage studying the economic efficiency of regulatory treatment influenced by lobbying or political connections, e.g., linking lobbying activities to financial stability or macroeconomic factors. Another question that arises is how our results would translate into other regions. The U.S. Lobby Disclosure Act requires firms to report their politically connected expenditures, which creates a level of transparency unlike anywhere else. The forced transparency could change the behavior of U.S. firms relative to firms in other jurisdictions that have no mandatory reporting. Given that lobbying takes place behind closed doors in other parts of the world, the impact of lobbying activities may be even larger. Lastly, the extent to which supervisors and regulators are sensitive to lobbying activities could very well depend on their intrinsic structure, e.g., the way these institutions are financed. For example, if a supervisory body is (partly) financed by the financial industry itself, it could be more susceptive to lobbying. An interesting exercise would be to investigate how the degree of independence from both political pressure and the financial industry would affect the impact on regulatory treatment.

Our evidence indicates that expenditures on lobbying are on the rise, and that banks are increasing their influence activities. In light of current global reforms of financial regulation, it is important to be aware that regulatory treatment is not immune to the influence of banks, and that we might expect this influence to further increase. Thus, our findings might motivate legislators to make bank regulation and supervision more robust to influences from the regulated industry. We do not advocate fully rule-based regulation and supervision as discretion in regulatory decisions is not detrimental by default and can even enhance the economic outcome, e.g., when the supervisor has superior knowledge about future business prospects. However, we believe that extensive transparency requirements and strict rules as to influence exertion such as lobbying or hiring former regulators can certainly help to avoid regulatory capture dominating regulatory discretion.

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Figure 6: **Lobbying on finance**
This figure presents the development of total lobbying expenditures by financial firms (i.e., firms belonging to the financial industry according to the classification on the lobbying activity reports) and on financial issues (i.e., classified to one of the following issues in the filed reports: accounting, banking, bankruptcy, financial institutions, investments, securities, housing and mortgages, minting and money).

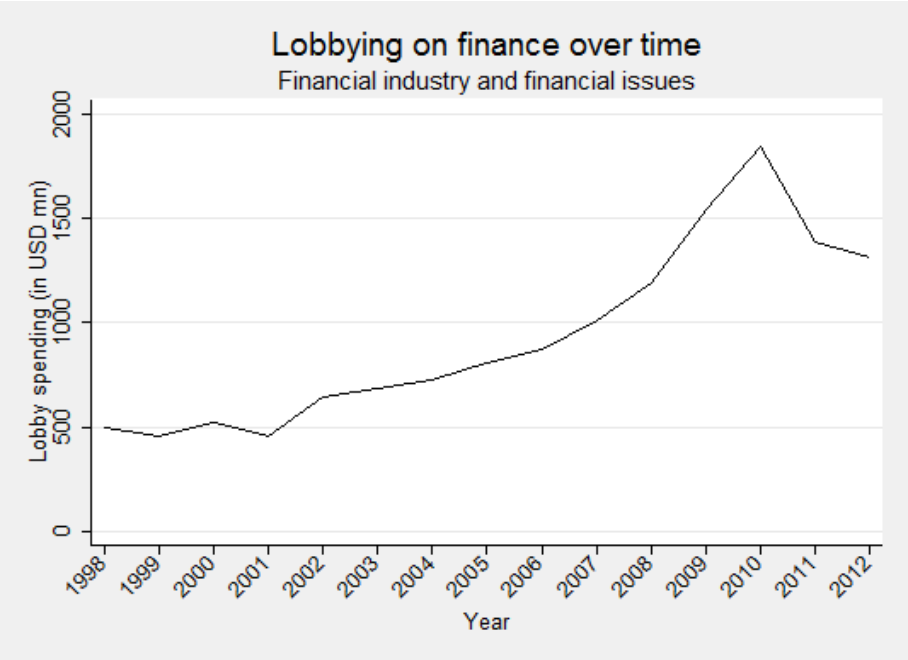

Figure 7: **Lobbying history by bank size**
This figure presents the share of banks in the U.S. that have a lobbying history over different asset size classes. Lobbying history is defined as reporting lobby spending within the bank conglomerate at some point over the last four years.

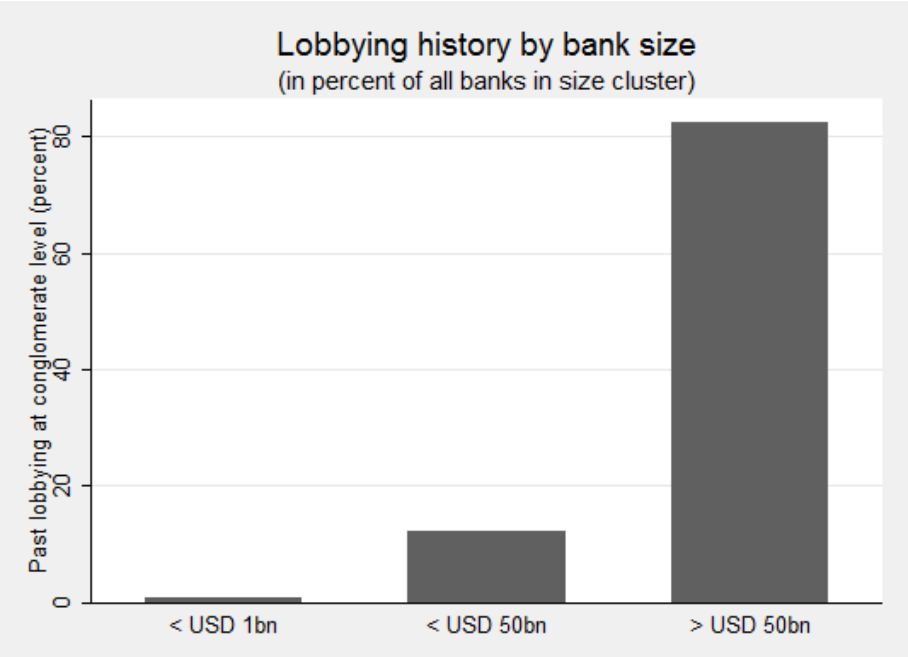

Figure 8: **Proximity to legislative committee by bank size**
This figure presents the share of banks in the U.S. with proximity to pertinent legislative committee over different asset size classes. Proximity to legislative committee is defined as the Representative from the voting district where the bank is incorporated being a member of the Subcommittee on Financial Institutions and Consumer Credit.

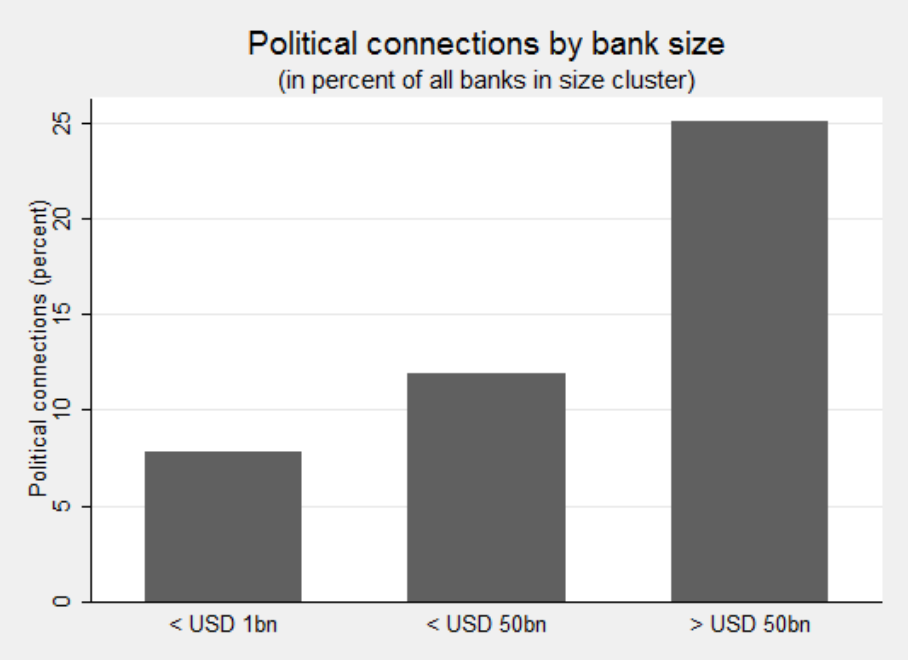

Table 23: **Summary statistics**
This table presents summary statistics, reporting variable names, means, standard deviations, minimum and maximum values, and the number of observations for which data is available in our sample. Unless otherwise stated, the data is reported in percentages. For the sake of readers' convenience all indicator variables are scaled by 100. All observations are on bank level, constitute bank-quarter observations, and cover the period 2003Q3-2012Q4. In Panel A we include bank-quarter observations where banks fall into the *undercapitalized* regulatory capital category (except for the closure indicator where only *critically undercapitalized* bank-quarter observation are considered). Panel B consists of all quarterly observations of banks with Fitch support ratings. The sources are: Federal Deposit Insurance Corporation, Federal Reserve Board, Office of the Comptroller of the Currency, Office of Thrift Supervision, U.S. Senate Office of Public Records, U.S. Center for Responsive Politics, U.S. Library of Congress, U.S. Census Bureau, FED Chicago BHC database, FDIC SDI database and call reports, U.S. Department of the Treasury.

Panel A: Regulatory treatment sample

Variable group and name	Mean	SD	Min	Max	N
Dependent variables					
PCA indicator (undercapitalized)	15.48	36.18	0	100	2849
PCA indicator (sign. undercapitalized)	23.80	42.60	0	100	1496
Closure indicator	49.92	50.04	0	100	629
Explanatory variables					
Past lobbying (congl.)	1.90	13.64	0	100	2849
Past lobbying (top hold.)	0.95	9.69	0	100	2849
Pre-crisis lobbying (congl.)	1.10	10.43	0	100	2822
Past lobbying (congl., fcong)	0.11	3.24	0	100	2849
Past lobbying (congl., no fcong)	1.79	13.26	0	100	2849
Past lobbying expenditures (congl.) (in U.S.D th)	5.78	175	0	8528	2849
Subcom rep (congl.)	10.29	30.39	0	100	2866
Subcom rep (top hold.)	11.46	31.86	0	100	1894
Subcom rep for 4 years (congl.)	3.86	19.26	0	100	2799
Fin industry PACs to subcom rep (in U.S.D th)	26.64	90.87	0	674	2295
Prior affiliation (top hold.)	14.38	35.15	0	100	306
Additional bank- and quarter-varying variables					
Total assets (in U.S.D mn)	518	1696	7.73	37737	2849
Leverage ratio (PCA)	3.01	1.95	-31.13	10.56	2849
Tier 1 ratio (PCA)	4.13	2.84	-58.49	24.99	2849
Risk-based capital ratio (PCA)	5.34	3.05	-58.49	25.60	2849
Earnings (RoA)	-1.04	0.92	-2.35	1.53	2849
Non-interest income ratio	15.72	27.73	-20.35	95.8	2849
Liquidity ratio	9.71	6.59	0.40	42.53	2849
Deposit ratio	79.42	8.27	4.19	89.27	2849
Non-performing loan ratio	14.50	6.29	0	22.13	2849
CPP recipient	3.37	18.05	0	100	2849
GSIFI BHC	0.04	1.87	0	100	2849
Independent bank	24.39	42.95	0	100	2849

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Table 23 – *Continued from previous page*

Panel B: Expected government support sample

Variable group and name	Mean	SD	Min	Max	N
Dependent variable					
Fitch support ratings	4.06	1.54	1	5	5402
Explanatory variables					
Past lobbying (congl.)	37.06	48.30	0	100	5402
Past lobbying (top hold.)	31.94	46.63	0	100	5402
Past lobbying (congl., fcong)	9.72	29.62	0	100	5402
Past lobbying (congl., no fcong)	28.03	44.92	0	100	5402
Past lobbying expenditures (congl.) (in U.S.D th)	2386	6782	0	39165	5402
Subcom rep (congl.)	23.68	42.52	0	100	3019
Subcom rep (top hold.)	10.41	30.54	0	100	4583
Fin industry PACs to subcom rep (in U.S.D th)	59.04	117.57	0	516.81	4904
Additional bank- and quarter-varying variables					
Total assets (in U.S.D mn)	13206	12902	64.59	33133	5402
Leverage ratio (eq/cap)	11.33	5.97	2.78	67.11	5402
Earnings (RoA)	0.19	0.47	-2.35	1.53	5402
Non-interest income ratio	28.81	21.18	-20.35	95.80	5402
Liquidity ratio	5.52	7.05	0.40	42.53	5402
Deposit ratio	58.67	14.68	1.16	89.27	5402
Non-performing loan ratio	3.38	3.63	0	22.13	5402
CPP recipient	14.39	35.10	0	100	5402
GSIFI BHC	9.40	29.19	0	100	5402
Independent bank	11.87	32.34	0	100	5402

Table 24: **Regulatory treatment: Baseline model with lobbying activities as source of influence**
This table presents multivariate estimates of the effect of lobbying activities on regulatory treatment (additional discretionary prompt corrective actions). *Past lobbying* takes the value of 1 if any entity within the respective conglomerate has lobbied in the last four years (0 otherwise). *Undercapitalized* and *significantly undercapitalized* are regulatory capital categories at which the supervisory instution has the discretion to issue additional prompt corrective actions. *PCA indicator* takes the value of 1 if the bank receives a Prompt Corrective Action directive or if an existing PCA directive is not terminated in the next quarter (0 otherwise). Control variables comprise size (natural logarithm of total bank assets), leverage ratio (defined as Tier 1 capital divided by average assets), profitability, non-interest income ratio, liquidity ratio, deposit ratio, non-performing loan ratio, and indicator variables for CPP recipient banks, banks belonging to G-SIFI bank holding companies, and independent banks. All observations are on bank level, include bank-quarter observations where banks fall into the respective regulatory capital category, and cover the period 2003Q3-2012Q4. Standard errors are robust and reported in parentheses. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1.

Panel A: Undercapitalized sample (incl. significantly and critically undercapitalized)

	(1)	(2)	(3)	(4)
Dep. variable	**Prompt Corrective Action directive**			
Past lobbying	-0.0847**	-0.1208***	-0.0950**	-0.0807*
	(0.0351)	(0.0399)	(0.0418)	(0.0415)
Total assets		0.0123**	0.0014	0.0011
		(0.0062)	(0.0060)	(0.0061)
Leverage ratio		-3.0727***	-2.7785***	-2.7773***
		(0.5703)	(0.5614)	(0.5578)
Earnings		0.4069	0.7867	0.9705
		(0.8561)	(0.8319)	(0.8364)
Non-interest income ratio		-0.0327	-0.0196	-0.0205
		(0.0253)	(0.0246)	(0.0247)
Liquidity ratio		0.3159***	0.3197***	0.3283***
		(0.1184)	(0.1159)	(0.1159)
Deposit ratio		0.1206	0.1196	0.0901
		(0.0925)	(0.0942)	(0.0939)
Non-performing loan ratio		0.1255	0.2303**	0.2641**
		(0.1139)	(0.1102)	(0.1099)
CPP recipient		-0.0386	-0.0575*	-0.0499
		(0.0346)	(0.0307)	(0.0307)
GSIFI BHC		-0.0178	0.0865	0.0726
		(0.0643)	(0.0662)	(0.0659)
Independent bank		0.0695***	0.0232	0.0057
		(0.0172)	(0.0171)	(0.0179)
Year dummies	NO	YES	YES	YES
Regulator dummies	NO	NO	YES	NO
Charter dummies	NO	NO	NO	YES
Observations	2,868	2,849	2,849	2,849
Number of banks	793	782	782	782
R-squared	0.0011	0.0572	0.1376	0.1356

Panel B: Significantly undercapitalized (sub-)sample (incl. critically undercapitalized)

	(1)	(2)	(3)	(4)
Dep. variable	**Prompt Corrective Action directive**			
Past lobbying	-0.1181**	-0.1859***	-0.1553**	-0.1325**
	(0.0579)	(0.0635)	(0.0664)	(0.0651)
Bank controls	NO	YES	YES	YES
Year dummies	NO	YES	YES	YES
Regulator dummies	NO	NO	YES	NO
Charter dummies	NO	NO	NO	YES
Observations	1,508	1,496	1,496	1,496
Number of banks	583	576	576	576
R-squared	0.0017	0.0412	0.1597	0.1512

Table 25: **Regulatory treatment: Baseline model with proximity to legislative committee as source of influence**
This table presents multivariate estimates of the effect of proximity to legislative committee on regulatory treatment (additional discretionary prompt corrective actions). *Subcom rep* takes the value of 1 if any entity within the respective conglomerate is located in the voting district of a member of the Subcommittee on Financial Institutions (0 otherwise). *Undercapitalized* and *significantly undercapitalized* are regulatory capital categories at which the supervisory instution has the discretion to issue additional prompt corrective actions. *PCA indicator* takes the value of 1 if the bank receives a Prompt Corrective Action directive or if an existing PCA directive is not terminated in the next quarter (0 otherwise). Control variables comprise size (natural logarithm of total bank assets), leverage ratio (defined as Tier 1 capital divided by average assets), profitability, non-interest income ratio, liquidity ratio, deposit ratio, non-performing loan ratio, and indicator variables for CPP recipient banks, banks belonging to G-SIFI bank holding companies, and independent banks. All observations are on bank level, include bank-quarter observations where banks fall into the respective regulatory capital category, and cover the period 2003Q3-2012Q4. Standard errors are robust and reported in parentheses. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1.

Panel A: Undercapitalized sample (incl. significantly and critically undercapitalized)

	(1)	(2)	(3)	(4)
Dep. variable	**Prompt Corrective Action directive**			
Subcom rep	-0.0549***	-0.0668***	-0.0453**	-0.0476**
	(0.0188)	(0.0195)	(0.0186)	(0.0189)
Total assets		0.0132**	0.0018	0.0022
		(0.0059)	(0.0058)	(0.0059)
Leverage ratio		-2.8618***	-2.5687***	-2.5930***
		(0.5558)	(0.5386)	(0.5366)
Earnings		0.5086	0.9039	1.0850
		(0.8413)	(0.8132)	(0.8181)
Non-interest income ratio		-0.0340	-0.0239	-0.0242
		(0.0243)	(0.0235)	(0.0235)
Liquidity ratio		0.3291***	0.3181***	0.3336***
		(0.1146)	(0.1123)	(0.1123)
Deposit ratio		0.1933**	0.2096**	0.1741**
		(0.0879)	(0.0883)	(0.0878)
Non-performing loan ratio		0.1228	0.2132**	0.2375**
		(0.1112)	(0.1073)	(0.1065)
CPP recipient		-0.0433	-0.0608**	-0.0535*
		(0.0346)	(0.0307)	(0.0307)
GSIFI BHC		-0.0563	0.0563	0.0511
		(0.0569)	(0.0550)	(0.0556)
Independent bank		0.0577***	0.0079	-0.0073
		(0.0169)	(0.0163)	(0.0171)
Year dummies	NO	YES	YES	YES
Regulator dummies	NO	NO	YES	NO
Charter dummies	NO	NO	NO	YES
Observations	2,888	2,866	2,866	2,866
Number of banks	805	792	792	792
R-squared	0.0022	0.0560	0.1403	0.1390

Panel B: Significantly undercapitalized (sub-)sample (incl. critically undercapitalized)

	(1)	(2)	(3)	(4)
Dep. variable	**Prompt Corrective Action directive**			
Subcom rep	-0.0871***	-0.1145***	-0.0981***	-0.0996***
	(0.0305)	(0.0319)	(0.0293)	(0.0302)
Bank controls	NO	YES	YES	YES
Year dummies	NO	YES	YES	YES
Regulator dummies	NO	NO	YES	NO
Charter dummies	NO	NO	NO	YES
Observations	1,531	1,516	1,516	1,516
Number of banks	595	586	586	586
R-squared	0.0040	0.0436	0.1679	0.1601

Table 26: **Regulatory treatment: Baseline model with prior affiliation as source of influence**
This table presents multivariate estimates of the effect of prior regulatory or government affiliation on regulatory treatment (additional discretionary prompt corrective actions). *Prior affiliation* takes the value of 1 if any member of the Board of Directors of the top holding company has been previously employed by a relevant regulatory or government institution (0 otherwise). *Undercapitalized* and *significantly undercapitalized* are regulatory capital categories at which the supervisory institution has the discretion to issue additional prompt corrective actions. *PCA indicator* takes the value of 1 if the bank receives a Prompt Corrective Action directive or if an existing PCA directive is not terminated in the next quarter (0 otherwise). Control variables comprise size (natural logarithm of total bank assets), leverage ratio (defined as Tier 1 capital divided by average assets), profitability, non-interest income ratio, liquidity ratio, deposit ratio, non-performing loan ratio, and indicator variables for CPP recipient banks, banks belonging to G-SIFI bank holding companies, and independent banks. All observations are on bank level, include bank-quarter observations where banks fall into the respective regulatory capital category, and cover the period 2003Q3-2012Q4. Standard errors are robust and reported in parentheses. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1.

Panel A: Undercapitalized sample (incl. significantly and critically undercapitalized)

	(1)	(2)	(3)	(4)
Dep. variable	**Prompt Corrective Action directive**			
Prior affiliation	-0.1638***	-0.1332**	-0.1474**	-0.1414**
	(0.0512)	(0.0660)	(0.0626)	(0.0626)
Leverage ratio		-6.1955***	-6.7773***	-7.4614***
		(2.0192)	(2.0897)	(2.1607)
Total assets		-0.0288	-0.0112	-0.0064
		(0.0218)	(0.0225)	(0.0223)
Earnings		2.0142	3.4283	3.1615
		(3.0381)	(2.9219)	(2.9269)
Non-interest income ratio		0.0512	0.0501	0.0283
		(0.0861)	(0.0858)	(0.0855)
Liquidity ratio		0.2289	0.5074	0.5226
		(0.3622)	(0.3598)	(0.3647)
Deposit ratio		-0.4276	-0.1533	-0.0602
		(0.3153)	(0.3328)	(0.3218)
Non-performing loan ratio		0.3406	0.2007	0.2088
		(0.4546)	(0.4444)	(0.4436)
CPP recipient		-0.0289	-0.0245	-0.0325
		(0.1008)	(0.0937)	(0.0938)
Independent bank		-0.0428	0.0568	0.2249
		(0.0959)	(0.1700)	(0.2157)
Year dummies	NO	YES	YES	YES
Regulator dummies	NO	NO	YES	NO
Charter dummies	NO	NO	NO	YES
Observations	307	306	306	306
Number of banks	108	107	107	107
R-squared	0.0185	0.1869	0.2378	0.2488

Panel B: Significantly undercapitalized (sub-)sample (incl. critically undercapitalized)

	(1)	(2)	(3)	(4)
Dep. variable	**Prompt Corrective Action directive**			
Prior affiliation	-0.2519***	-0.1396	-0.1440	-0.1440
	(0.0793)	(0.1219)	(0.1086)	(0.1086)
Bank controls	NO	YES	YES	YES
Year dummies	NO	YES	YES	YES
Regulator dummies	NO	NO	YES	NO
Charter dummies	NO	NO	NO	YES
Observations	182	181	181	181
Number of banks	76	75	75	75
R-squared	0.0347	0.1368	0.2298	0.2298

Table 27: **Regulatory treatment: Robustness tests for alternative explanations and specifications**
This table presents multivariate estimates of the effect of lobbying activities proximity to legislative committee, and prior affiliation on regulatory treatment (additional discretionary prompt corrective actions), performing several robustness checks with alternative sample, variable, and model specifications. Column (1) reports the results from our model run on a matched subsample. To test for potential systemic differences between banks with and without influence exertion, we match both groups on the control variables and a 2-year rolling average leverage ratio using propensity score matching (up to 20 nearest neighbors within 0.0001-caliper). In column (2) we control for bank exits that make regulatory actions redundant. We exclude bank-quarter observations in which banks exited the sample (e.g., bank closure, acquisition). In column (3) we control for all observations where banks received other enforcement actions that might reduce the need for additional PCA actions. Column (4) reports the results of our model run over the period since the onset of the financial crisis (2008Q3-2012Q4) assuming that the regulators' urgency to take regulatory actions increased during that period. Column (5) reports the results from a fixed-effects logit model specification. In column (6) we consider lobbying activity and proximity to legislative committee on top holding company level (instead of conglomerate level). Column (7) in Panel A shows the results employing lobbying activity and proximity to legislative committee simultaneously. *Past lobbying* takes the value of 1 if any entity within the respective conglomerate has lobbied in the last four years (0 otherwise). *Past lobbying top* takes the value of 1 if the top holding company has lobbied in the last four years (0 otherwise). *Subcom rep* takes the value of 1 if any entity within the respective conglomerate is located in the voting district of a member of the Subcommittee on Financial Institutions (0 otherwise). *Prior affiliation* takes the value of 1 if any member of the Board of Directors of the top holding company has been previously employed by a relevant regulatory or government institution (0 otherwise)). *PCA indicator* takes the value of 1 if the bank receives a Prompt Corrective Action directive or if an existing PCA directive is not terminated in the next quarter (0 otherwise). Control variables comprise size (natural logarithm of total bank assets), leverage ratio (defined as Tier 1 capital divided by average assets), profitability, non-interest income ratio, liquidity ratio, deposit ratio, non-performing loan ratio, and indicator variables for CPP recipient banks, banks belonging to G-SIFI bank holding companies, and independent banks. In column (3) we include a dummy variable equal to 1 for bank-quarter observations where any other enforcement action has been valid (0 otherwise). All observations are on bank level, include bank-quarter observations where banks fall into the *undercapitalized* regulatory capital category, and cover the period 2003Q3-2012Q4 except for column (4). Standard errors are robust and reported in parentheses. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1.

Panel A: Lobbying activities as source of influence

Model	(1) **Matched sample**	(2) **Excl. exits and closures**	(3) **Contr. other enf. actions**	(4) **After mid 2008**	(5) **Logit model**	(6) **Top holding level**	(7) **Both sources simultaneously**
Dep. variable	**PCA**	**PCA**	**PCA**	**PCA**	**PCA**	**PCA**	**PCA**
Past lobbying	-0.1047**	-0.0864**	-0.1427***	-0.1228***	-1.4839**		-0.1074***
	(0.0448)	(0.0368)	(0.0407)	(0.0418)	(0.0856)		(0.0411)
Past lobbying top						-0.1679***	
						(0.0601)	
Subcom rep							-0.0651***
							(0.0201)
Bank controls	YES	YES	YES	YES	YES	YES	YES
Year dummies	YES	YES	YES	YES	YES	YES	YES
Observations	654	2,429	2,109	2,672	2,792	2,849	2,799
Number of banks	363	720	617	702	754	782	773
R-squared	0.0960	0.0540	0.0770	0.0538		0.0572	0.058
Pseudo R-squared					0.0516		

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Table 27 – *Continued from previous page*

Panel B: Proximity to legislative committee as source of influence

	(1)	(2)	(3)	(4)	(5)	(6)
Model	**Matched sample**	**Excl. exits and closures**	**Contr. other enf. actions**	**After mid 2008**	**Logit model**	**Top holding level**
Dep. variable	**PCA**	**PCA**	**PCA**	**PCA**	**PCA**	**PCA**
Subcom rep	-0.0688***	-0.0587***	-0.0677***	-0.0613***	-0.6415***	
	(0.0196)	(0.0201)	(0.0211)	(0.0219)	(0.2104)	
Subcom rep top						-0.0479**
						(0.0234)
Bank controls	YES	YES	YES	YES	YES	YES
Year dummies	YES	YES	YES	YES	YES	YES
Observations	2,392	2,436	2,135	2,686	2,810	2,834
Number of banks	781	731	626	712	765	568
R-squared	0.0625	0.0493	0.0711	0.0529		0.0549
Pseudo R-squared					0.0514	

Panel C: Prior affiliation as source of influence

	(1)	(2)	(3)	(4)	(5)
Model	**Matched sample**	**Excl. exits and closures**	**Contr. other enf. actions**	**After mid 2008**	**Logit model**
Dep. variable	**PCA**	**PCA**	**PCA**	**PCA**	**PCA**
Prior affiliation	-0.1204	-0.1273*	-0.1107	-0.1364**	-1.0951*
	(0.0772)	(0.0664)	(0.0717)	(0.0665)	(0.6467)
Bank controls	YES	YES	YES	YES	YES
Year dummies	YES	YES	YES	YES	YES
Observations	195	260	247	289	269
Number of banks	82	96	84	96	90
R-squared	0.2806	0.1832	0.2190	0.1757	
Pseudo R-squared					0.0944

Table 28: **Regulatory treatment: Robustness tests accounting for reversed causality**
This table presents multivariate estimates of the effect of lobbying activities and proximity to legislative committee on regulatory treatment (additional discretionary prompt corrective actions) testing for reversed causality concerns. In column (1) in Panel A we employ lobbying activity in the pre-crisis period (2003-2006) to estimate the impact on prompt corrective actions since the onset of the financial crisis (2008Q3-2012Q4). In column (1) in Panel B we control for a longer time horizon of political connections through proximity to legislative committee (past four subsequent years at least). Column (2) reports the results from our model run on a matched subsample. To rule out potential systemic differences in asset quality between banks with and without influence exertion, we match both groups on the current and the 2-year rolling average non-performing loan ratio (up to 20 nearest neighbors within 0.0001-caliper). In column (3) in Panel A we combine the approaches in columns (1) and (2). *Past lobbying* takes the value of 1 if any entity within the respective conglomerate has lobbied in the last four years (0 otherwise). *Pre-crisis lobbying* takes the value of 1 if any entity within the respective conglomerate has lobbied in 2003-2006 (0 otherwise). *Subcom rep* takes the value of 1 if any entity within the respective conglomerate is located in the voting district of a member of the Subcommittee on Financial Institutions (0 otherwise). *Subcom rep for 4 years* takes the value of 1 if any entity within the respective conglomerate has been located in the voting district of a member of the Subcommittee on Financial Institutions for the past four subsequent years (0 otherwise). *PCA indicator* takes the value of 1 if the bank receives a Prompt Corrective Action directive or if an existing PCA directive is not terminated in the next quarter (0 otherwise). Control variables comprise size (natural logarithm of total bank assets), leverage ratio (defined as Tier 1 capital divided by average assets), profitability, non-interest income ratio, liquidity ratio, deposit ratio, non-performing loan ratio, and indicator variables for CPP recipient banks, banks belonging to G-SIFI bank holding companies, and independent banks. All observations are on bank level, include bank-quarter observations where banks fall into the *undercapitalized* regulatory capital category, and cover the period 2003Q3-2012Q4. Standard errors are robust and reported in parentheses. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1.

Panel A: Lobbying activities as source of influence

	(1)	(2)	(3)
Model	**Pre-crisis lobbying activity**	**Sample matched on asset quality**	**Sample matched & pre-crisis**
Dep. variable	**PCA**	**PCA**	**PCA**
Pre-crisis lobbying	-0.1075***		-0.1290***
	(0.0372)		(0.0404)
Past lobbying		-0.1189***	
		(0.0410)	
Bank controls	YES	YES	YES
Year dummies	YES	YES	YES
Observations	2,686	1,420	758
Number of banks	710	515	430
R-squared	0.0524	0.0601	0.0611

Panel B: Proximity to legislative committee as source of influence

	(1)	(2)
Model	**Longer time horizon**	**Sample matched on asset quality**
Dep. variable	**PCA**	**PCA**
Subcom rep for 4 years	-0.0815**	
	(0.0322)	
Subcom rep		-0.0642***
		(0.0198)
Bank controls	YES	YES
Year dummies	YES	YES
Observations	2,849	2,464
Number of banks	782	765
R-squared	0.0572	0.0547

Table 29: **Regulatory treatment: Lobbying expenditures**
This table presents multivariate estimates of the effect of lobby amounts spent on regulatory treatment (additional discretionary prompt corrective actions). Columns (1) and (2) show the results employing a continuous variable for lobbying activity (lobbying expenditures). In columns (3) and (4) we split the sample of lobbying observations into lobbying amounts below and above 100.000 U.S.D (over last four years) and rerun the model separately for lobbying activities with small total amounts and large total amounts. *Past lobbying* takes the value of 1 if any entity within the respective conglomerate has lobbied in the last four years (0 otherwise). *Lobbying expenditures* is the natural logarithm of the total lobbying amount spent aggregated over all entities within respective conglomerate over the last four years. *Lobbying expenditures (scaled)* is the total lobbying amount spent aggregated over all entities within respective conglomerate over the last four years divided by total bank assets. *PCA indicator* takes the value of 1 if the bank receives a Prompt Corrective Action directive or if an existing PCA directive is not terminated in the next quarter (0 otherwise). Control variables comprise size (natural logarithm of total bank assets), leverage ratio (defined as Tier 1 capital divided by average assets), profitability, non-interest income ratio, liquidity ratio, deposit ratio, non-performing loan ratio, and indicator variables for CPP recipient banks, banks belonging to G-SIFI bank holding companies, and independent banks. All observations are on bank level, include bank-quarter observations where banks fall into the *undercapitalized* regulatory capital category, and cover the period 2003Q3-2012Q4. Standard errors are robust and reported in parentheses. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1.

Model	(1) **Lobby amount spent**	(2) **Scaled by total assets**	(3) **Small lobby amounts**	(4) **Large lobby amounts**
Dep. variable	**PCA**	**PCA**	**PCA**	**PCA**
Lobbying expenditures	-0.0288***			
	(0.0083)			
Lobbying expenditures (scaled)		-0.1792***		
		(0.0465)		
Past lobbying			-0.1177**	-0.1511**
			(0.0467)	(0.0695)
Bank controls	YES	YES	YES	YES
Year dummies	YES	YES	YES	YES
Observations	2,849	2,849	2,836	2,808
Number of banks	782	782	776	772
R-squared	0.0573	0.0563	0.0565	0.0612

Table 30: **Regulatory treatment: Bank financial condition and effectiveness of sources of influence**
This table presents multivariate estimates of the effect of lobbying activities and proximity to legislative committee on regulatory treatment (additional discretionary prompt corrective actions) interacted with bank financial condition. *Past lobbying* takes the value of 1 if any entity within the respective conglomerate has lobbied in the last four years (0 otherwise). *Subcom rep* takes the value of 1 if any entity within the respective conglomerate is located in the voting district of a member of the Subcommittee on Financial Institutions (0 otherwise). *Leverage ratio* is defined as Tier 1 capital divided by average assets, *Tier 1 ratio* as Tier 1 capital divided by risk-weighted assets, and *RB capital ratio* as total risk-based capital divided by risk-weighted assets. *PCA indicator* takes the value of 1 if the bank receives a Prompt Corrective Action directive or if an existing PCA directive is not terminated in the next quarter (0 otherwise). Control variables comprise size (natural logarithm of total bank assets), leverage ratio (defined as Tier 1 capital divided by average assets), profitability, non-interest income ratio, liquidity ratio, deposit ratio, non-performing loan ratio, and indicator variables for CPP recipient banks, banks belonging to G-SIFI bank holding companies, and independent banks. All observations are on bank level, include bank-quarter observations where banks fall into the *undercapitalized* regulatory capital category, and cover the period 2003Q3-2012Q4. Standard errors are robust and reported in parentheses. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1.

Panel A: Lobbying activities as source of influence

	(1)	(2)	(3)
Dep. variable	**Prompt Corrective Action directive**		
Past lobbying	-0.1882***	-0.1915***	-0.2059***
	(0.0475)	(0.0456)	(0.0485)
Leverage ratio (PCA)	-3.6720***		
	(0.5098)		
Past lobbying x leverage ratio	3.3535***		
	(0.7029)		
Tier 1 ratio (PCA)		-2.8783***	
		(0.3812)	
Past lobbying x Tier 1 ratio		2.7152***	
		(0.4644)	
RB capital ratio (PCA)			-2.5225***
			(0.3399)
Past lobbying x RB capital ratio			2.3323***
			(0.4401)
Bank controls	NO	YES	YES
Year dummies	NO	YES	YES
Observations	2,849	2,849	2,849
Number of banks	782	782	782
R-squared	0.0613	0.0664	0.0640

Continued on next page

Table 30 – *Continued from previous page*

Panel B: Proximity to legislative committee as source of influence

	(1)	(2)	(3)
Dep. variable	**Prompt Corrective Action directive**		
Subcom rep	-0.1202***	-0.1033**	-0.1120**
	(0.0424)	(0.0443)	(0.0490)
Leverage ratio (PCA)	-3.0549***		
	(0.6109)		
Subcom rep x leverage ratio	1.7998		
	(1.1160)		
Tier 1 ratio (PCA)		-2.1557***	
		(0.5473)	
Subcom rep x Tier 1 ratio		0.9112	
		(0.8641)	
RB capital ratio (PCA)			-1.9695***
			(0.4697)
Subcom rep x RB capital ratio			0.8576
			(0.7695)
Bank controls	YES	YES	YES
Year dummies	YES	YES	YES
Observations	2,866	2,866	2,866
Number of banks	792	792	792
R-squared	0.0570	0.0592	0.0584

Table 31: **Regulatory treatment: Other conditions for effectiveness of sources of inuence**
This table presents multivariate estimates of the effect of lobbying activities and proximity to legislative committee on regulatory treatment (additional discretionary prompt corrective actions) testing for different conditions that might increase its effectiveness. In column (1) we differentiate whether a former member of congress is involved in the lobbying activities. In column (2) we employ the amount of campaign contributions that the financial subcommittee member received from the financial industry. *Past lobbying (former congressman)* takes the value of 1 if any lobbying activity on conglomerate level in the last four years was conducted involving a former member of congress (0 otherwise), *past lobbying (no former congressman)* indicates that all lobbying activity on conglomerate level in the last four years was conducted without the engagement of a former member of congress (0 otherwise). *Financial industry PACs to subcom rep* is the natural logarithm of the average sum of campaign contributions from the financial industry that subcommittee members from the voting districts of all conglomerate's entities received. *PCA indicator* takes the value of 1 if the bank receives a Prompt Corrective Action directive or if an existing PCA directive is not terminated in the next quarter (0 otherwise). Control variables comprise size (natural logarithm of total bank assets), leverage ratio (defined as Tier 1 capital divided by average assets), profitability, non-interest income ratio, liquidity ratio, deposit ratio, non-performing loan ratio, and indicator variables for CPP recipient banks, banks belonging to G-SIFI bank holding companies, and independent banks. All observations are on bank level, include bank-quarter observations where banks fall into the *undercapitalized* regulatory capital category, and cover the period 2003Q3-2012Q4. Standard errors are robust and reported in parentheses. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)
Model	**Former Congress member as lobbyist**	**Campaign contributions to representative**
Dep. variable	**PCA**	**PCA**
Past lobbying (former congressman)	-0.2456***	
	(0.0606)	
Past lobbying (no former congressman)	-0.1131***	
	(0.0416)	
Financial industry PACs to subcom rep		-0.0066***
		(0.0018)
p-value *test (former congressman)= (no former congressman)*	0.0641	
Bank controls	YES	YES
Year dummies	YES	YES
Observations	2,849	2,295
Number of banks	782	623
R-squared	0.0574	0.0661

Table 32: **Regulatory treatment: Closure decisions**
This table presents multivariate estimates of the effect of lobbying activities and proximity to legislative committee on closure decisions. *Past lobbying* takes the value of 1 if any entity within the respective conglomerate has lobbied in the last four years (0 otherwise). *Subcom rep* takes the value of 1 if any entity within respective conglomerate is located in the voting district of a member of the Subcommittee on Financial Institutions (0 otherwise). *Critically undercapitalized* is a regulatory capital category at which the supervisory institution should consider closing the bank. Control variables comprise size (natural logarithm of total bank assets), leverage ratio (defined as Tier 1 capital divided by average assets), profitability, non-interest income ratio, liquidity ratio, deposit ratio, non-performing loan ratio, and indicator variables for CPP recipient banks, banks belonging to G-SIFI bank holding companies, and independent banks. All observations are on bank level, include bank-quarter observations where banks fall into the *critically undercapitalized* regulatory capital category, and cover the period 2003Q3-2012Q4. Standard errors are robust and reported in parentheses. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1.

Panel A: Lobbying activity as source of influence

	(1)	(2)	(3)
Sample	**Critically undercapitalized**		
Dep. variable	**Closure**		
Past lobbying	0.0411	-0.0196	-0.0318
	(0.1132)	(0.1290)	(0.1345)
Bank controls	NO	YES	YES
Year dummies	NO	NO	YES
Observations	641	629	629
Number of banks	398	392	392
R-squared	0.0002	0.1266	0.1649

Panel B: Proximity to legislative committee as source of influence

	(1)	(2)	(3)
Sample	**Critically undercapitalized**		
Dep. variable	**Closure**		
Subcom rep	-0.0845	-0.0680	-0.0769
	(0.0654)	(0.0645)	(0.0657)
Bank controls	NO	YES	YES
Year dummies	NO	NO	YES
Observations	654	641	641
Number of banks	408	402	402
R-squared	0.0025	0.1248	0.1633

Table 33: **Regulatory treatment: Duration and hazard of closure**
This table presents multivariate estimates of the effect of lobbying activities and proximity to legislative committee on the risk of closure decisions with increasing duration being critically undercapitalized. The model is estimated using a hazard model with Weibull distribution. The dependent variable is time to closure, which measures the maximum number of quarters being critically undercapitalized (potentially until closure). *Past lobbying* takes the value of 1 if any entity within the respective conglomerate has lobbied in the last four years (0 otherwise). *Subcom rep* takes the value of 1 if any entity within respective conglomerate is located in the voting district of a member of the Subcommittee on Financial Institutions (0 otherwise). *Critically undercapitalized* is a regulatory capital category at which the supervisory institution should consider closing the bank. Control variables comprise size (natural logarithm of total bank assets), leverage ratio (defined as Tier 1 capital divided by average assets), profitability, non-interest income ratio, liquidity ratio, deposit ratio, non-performing loan ratio, and indicator variables for CPP recipient banks, banks belonging to G-SIFI bank holding companies, and independent banks. All observations are on bank level, represent the final bank-quarter being in the *critically undercapitalized* regulatory capital category, and cover the period 2003Q3-2012Q4. Standard errors are robust and reported in parentheses. Baseline hazard estimates are reported in italics. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1.

Panel A: Lobbying activity as source of influence

	(1)	(2)	(3)
Sample	**Critically undercapitalized**		
Dep. variable	**Time to closure**		
Past lobbying	-0.1224	0.2319	0.0036
	(0.3156)	(0.2459)	(0.2785)
	0.8848	*1.2610*	*1.0036*
	(0.2792)	*(0.3100)*	*(0.2795)*
Bank controls	NO	YES	YES
Year dummies	NO	NO	YES
Number of banks	398	388	388
Wald chi2	0.15	229.00	1161.56

Panel B: Proximity to legislative committee as source of influence

	(1)	(2)	(3)
Sample	**Critically undercapitalized**		
Dep. variable	**Time to closure**		
Subcom rep	-0.0797	-0.2243	-0.3605
	(0.2375)	(0.2500)	(0.2650)
	0.9234	*0.7991*	*0.6973*
	(0.2193)	*(0.1997)*	*(0.1848)*
Bank controls	NO	YES	YES
Year dummies	NO	NO	YES
Number of banks	408	397	397
Wald chi2	0.11	264.06	1414.35

Table 34: **Expected government support: Lobbying activities and proximity to legislative committee**
The table below presents estimates of lobbying activities and proximity to legislative committee on expected government support (proxied by Fitch support ratings). *Fitch support rating* measures the probability that a bank in distress will receive public support; the ratings range from 1 (extremely high probability of external support) to 5 (probability of support that cannot be relied upon). *Past lobbying* takes the value of 1 if any entity within the respective conglomerate has lobbied in the last four years (0 otherwise). *Subcom rep* takes the value of 1 if any entity within the respective conglomerate is located in the voting district of a member of the Subcommittee on Financial Institutions (0 otherwise). Control variables comprise size (natural logarithm of total bank assets), leverage ratio (defined as Tier 1 capital divided by average assets), profitability, non-interest income ratio, liquidity ratio, deposit ratio, non-performing loan ratio, and indicator variables for CPP recipient banks, banks belonging to G-SIFI bank holding companies, and independent banks. All observations are on bank level and cover the period 2003Q3-2012Q4. Standard errors are clustered at the bank level and are reported in parentheses. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1.

Panel A: Lobbying activity as source of influence

	(1)	(2)	(3)	(4)
Dep. variable	**Fitch support rating**			
Past lobbying	-1.6143***	-0.7234***	-0.7446***	-0.7418***
	(0.2069)	(0.1938)	(0.1858)	(0.1850)
Leverage ratio		-3.3062***	-2.9862**	-3.0681***
		(1.2031)	(1.1733)	(1.1720)
Total assets		-0.2005***	-0.2112***	-0.2145***
		(0.0428)	(0.0452)	(0.0453)
Earnings		-1.6495	-0.5065	-0.7645
		(8.9742)	(8.7478)	(8.9316)
Non-interest income		0.2328	0.1531	0.1633
		(0.3126)	(0.3040)	(0.3149)
Liquidity ratio		-1.0374	-0.6287	-0.6017
		(0.8192)	(0.8317)	(0.8285)
Deposit ratio		0.0220	0.1741	0.1580
		(0.5516)	(0.5490)	(0.5449)
Non-performing loan ratio		1.0485	1.4559	1.2624
		(1.3852)	(1.3478)	(1.5627)
CPP recipient		0.6607***	0.6910***	0.7051***
		(0.1655)	(0.1651)	(0.1703)
GSIFI BHC		-2.3848***	-2.4345***	-2.4199***
		(0.1995)	(0.2023)	(0.2039)
Independent bank		-0.3839	-0.5561*	-0.6189**
		(0.2620)	(0.2901)	(0.3129)
Year dummies	NO	YES	YES	YES
Regulator dummies	NO	NO	YES	NO
Charter dummies	NO	NO	NO	YES
Observations	5,402	5,253	5,253	5,253
Number of banks	234	228	228	228
R-squared	0.2488	0.5071	0.5178	0.5193

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Table 34 – *Continued from previous page*

Panel B: Proximity to legislative committee as source of influence

	(1)	(2)	(3)	(4)
Dep. variable	**Fitch support rating**			
Subcom rep	-1.6095***	-0.5629**	-0.5145**	-0.5238*
	(0.3100)	(0.2362)	(0.2568)	(0.2706)
Leverage ratio		-3.5807***	-3.4401***	-3.5301***
		(1.3419)	(1.1825)	(1.1746)
Total assets		-0.3159***	-0.3324***	-0.3332***
		(0.0581)	(0.0620)	(0.0610)
Earnings		7.1146	6.3681	7.6831
		(10.3073)	(10.5528)	(10.7660)
Non-interest income		0.5082	0.4366	0.4563
		(0.4212)	(0.3994)	(0.4076)
Liquidity ratio		-2.3595*	-2.1532*	-2.1434*
		(1.2878)	(1.2992)	(1.2835)
Deposit ratio		-0.5052	-0.2209	-0.2238
		(0.4782)	(0.5302)	(0.5261)
Non-performing loan ratio		4.4939**	4.0841**	3.8967*
		(2.0783)	(1.9930)	(2.0516)
CPP recipient		0.4114**	0.4372**	0.4424**
		(0.1931)	(0.1956)	(0.1939)
GSIFI BHC		-2.4953***	-2.4640***	-2.4497***
		(0.2619)	(0.2617)	(0.2692)
Independent bank		-0.0627	-0.2776	-0.3796
		(0.2914)	(0.3591)	(0.3822)
Bank controls	NO	YES	YES	YES
Year dummies	NO	YES	YES	YES
Regulator dummies	NO	NO	YES	NO
Charter dummies	NO	NO	NO	YES
Observations	3,107	3,020	3,020	3,020
Number of banks	150	146	146	146
R-squared	0.1790	0.5737	0.5850	0.5867

Table 35: **Expected government support: Robustness tests for alternative explanations and variable definitions**
This table presents multivariate estimates of the effect of lobbying activities and proximity to legislative committee on expected government support, performing several robustness checks with alternative sample and variable definitions. Column (1) reports the results from our model run on a matched subsample. To test for potential systemic differences between lobbying and non-lobbying banks, we match both groups on the control variables using propensity score matching (up to 20 nearest neighbors within 0.0001-caliper). Columns (2) and (3) report the results of our model run over the period before (2003Q3-2008Q2) and after (2008Q3-2012Q4) the onset of the financial crisis. In column (4) we consider lobbying activity on top holding company level (instead of conglomerate level). Column (5) shows the results employing a continuous variable for lobbying activity (lobbying expenditures). *Past lobbying* takes the value of 1 if any entity within the respective conglomerate has lobbied in the last four years (0 otherwise). *Past lobbying top* takes the value of 1 if the top holding company has lobbied in the last four years (0 otherwise). *Past lobbying spent* is the natural logarithm of the total lobbying amount spent aggregated over all entities within the respective conglomerate over the last four years (in U.S.D th). *Subcom rep* takes the value of 1 if any entity within the respective conglomerate is located in the voting district of a member of the Subcommittee on Financial Institutions (0 otherwise). *FSR* measure the probability that a bank in distress will receive public support; Fitch support ratings range from 1 (extremely high probability of external support) to 5 (probability of support that cannot be relied upon). Control variables comprise size (natural logarithm of total bank assets), leverage ratio (defined as Tier 1 capital divided by average assets), profitability, non-interest income ratio, liquidity ratio, deposit ratio, non-performing loan ratio, and indicator variables for CPP recipient banks, banks belonging to G-SIFI bank holding companies, and independent banks. All observations are on bank level and cover the period 2003Q3-2012Q4 except for columns (2) and (3), where we explore different time samples for robustness purposes. Standard errors are clustered at the bank level and are reported in parentheses. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1.

Panel A: Lobbying activities as source of influence

	(1)	(2)	(3)	(4)	(5)
Model	**Matched sample**	**Before mid 2008**	**After mid 2008**	**Top holding level**	**Lobby amount spent**
Dep. variable	**FSR**	**FSR**	**FSR**	**FSR**	**FSR**
Past lobbying	-1.1500***	-1.5829***	-1.6800***		
	(0.1002)	(0.2150)	(0.2274)		
Past lobbying top				-1.3701***	
				(0.2291)	
Past lobbying spent					-0.2592***
					(0.0226)
Bank controls	YES	YES	YES	YES	YES
Year dummies	YES	YES	YES	YES	YES
Observations	2,943	2,554	2,671	5,402	5,402
Number of banks	173	214	189	234	234
R-squared	0.0268	0.2440	0.2543	0.1660	0.3745

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Table 35 – *Continued from previous page*

Panel B: Proximity to legislative committee as source of influence

	(1)	(2)	(3)	(4)
Model	**Matched sample**	**Before mid 2008**	**After mid 2008**	**Top holding level**
Dep. variable	**FSR**	**FSR**	**FSR**	**FSR**
Subcom rep	-1.3969***	-1.5486***	-1.6575***	-0.6032
	(0.1067)	(0.3121)	(0.3932)	(0.5926)
Bank controls	YES	YES	YES	YES
Year dummies	YES	YES	YES	YES
Observations	1,115	1,448	1,553	1,343
Number of banks	63	138	115	102
R-squared	0.0994	0.1860	0.1793	0.0211

Table 36: **Expected government support: Other conditions for effectiveness of sources of influence**
This table presents multivariate estimates of the effect of lobbying activities and proximity to legislative committee on expected government support testing for different conditions that might increase its effectiveness. In column (1) we differentiate whether a former member of congress is involved in the lobbying activities. In column (2) we employ the amount of campaign contributions that the financial subcommittee member received from the financial industry. *Past lobbying (fcong)* takes the value of 1 if any lobbying activity on conglomerate level in the last four years was conducted involving a former member of congress (0 otherwise), *past lobbying (no fcong)* indicates that all lobbying activity on conglomerate level in the last four years was conducted without the engagement of a former member of congress (0 otherwise). *Fin industry PACs to subcom rep* is the natural logarithm of the average sum of campaign contributions from the financial industry that subcommittee members from the voting districts of all conglomerate's entities received. *Fitch support rating* measures the probability that a bank in distress will receive public support; Fitch support ratings range from 1 (extremely high probability of external support) to 5 (probability of support that cannot be relied upon). Control variables comprise size (natural logarithm of total bank assets), leverage ratio (defined as Tier 1 capital divided by average assets), profitability, non-interest income ratio, liquidity ratio, deposit ratio, non-performing loan ratio, and indicator variables for CPP recipient banks, banks belonging to G-SIFI bank holding companies, and independent banks. All observations are on bank level and cover the period 2003Q3-2012Q4. Standard errors are clustered at the bank level and reported in parentheses. Significance levels are indicated by *** p<0.01, ** p<0.05, * p<0.1.

	(1)	(2)
Model	**Former Congress member**	**Campaign contributions**
Dep. variable	**Fitch support rating**	**Fitch support rating**
Past lobbying (fcong)	-2.4824***	
	(0.2706)	
Past lobbying (no fcong)	-1.3366***	
	(0.2121)	
Fin industry PACs to subcom rep		-0.1098***
		(0.0199)
p-value		
test (fcong)=(no fcong)	<0.000	
Bank controls	YES	YES
Year dummies	YES	YES
Observations	5,402	5,047
Number of banks	234	218
R-squared	0.2895	0.1484

Appendix - Variable definitions and correlation matrix

Table 37: **Variable sources and definitions**
This table reports variable definitions and data sources. The sources are: Bankscope from Bureau van Dijk, BoardEx, Federal Deposit Insurance Corporation (FDIC), Federal Reserve Board (FED), Office of the Comptroller of the Currency (OCC), Office of Thrift Supervision (OTS), U.S. Senate Office of Public Records (SEN), U.S. Center for Responsive Politics (CPR), U.S. Library of Congress (LOC), U.S. Census Bureau (CB), FED Chicago BHC database (BHC), FDIC SDI database and call reports (SDI), U.S. Department of the Treasury (TR).

Variable	Source	Definition
Dependent variables		
PCA indicator	FDIC, FED, OCC, OTS	Dummy variable, takes the value of 1 if the bank receives Prompt Corrective Action directive or if an existing PCA directive is still valid in the next quarter and 0 otherwise
Closure indicator	FDIC	Dummy variable, takes the value of 1 if the bank is resolved/closed in the next quarter and 0 otherwise
Fitch Support rating	Bankscope	Proxy for the probability that a bank in distress will receive external support; range from 1 (high probability of external support) to 5 (probability of support that cannot be relied upon)
Explanatory variables		
Past lobbying (congl.)	SEN, CPR, BHC	Dummy variable, takes the value of 1 if any entity within the respective conglomerate has lobbied in the last four years and 0 otherwise
Past lobbying (top hold.)	SEN, CPR, BHC	Dummy variable, takes the value of 1 if the top holding company has lobbied in the last four years and 0 otherwise
Lobbying expenditures (congl.)	SEN, CPR, BHC	Total lobbying amount spent aggregated over all entities within the respective conglomerate over the last four years
Pre-crisis lobbying (congl.)	SEN, CPR, BHC	Dummy variable, takes the value of 1 if any entity within the respective conglomerate has lobbied in 2003-2006 and 0 otherwise
Past lobbying (congl., fcong)	SEN, CPR, BHC	Dummy variable, takes the value of 1 if any entity within the respective conglomerate has lobbied involving a former congressman in the last four years and 0 otherwise
Past lobbying (congl., no fcong)	SEN, CPR, BHC	Dummy variable, takes the value of 1 if any entity within the respective conglomerate has lobbied not involving a former congressman in the last four years and 0 otherwise
Subcom rep (congl.)	LOC, CB	Dummy variable, takes the value of 1 if any entity within the respective conglomerate is located in the voting district of a member of the Subcommittee on Financial Institutions and 0 otherwise
Subcom rep (top hold.)	LOC, CB	Dummy variable, takes the value of 1 if the top holding company is located in the voting district of a member of the Subcommittee on Financial Institutions and 0 otherwise
Subcom rep for 4 years (congl.)	LOC, CB	Dummy variable, takes the value of 1 if any entity within the respective conglomerate has been located in the voting district of a member of the Subcommittee on Financial Institutions for the past four subsequent years and 0 otherwise
Fin industry PACs to subcom rep (congl.)	SEN, CPR, LOC, CB	Average sum of campaign contributions from financial industry that subcommittee members from voting districts of all entities within the respective conglomerate received
Prior affiliation (top hold.)	BoardEx	Dummy variable, takes the value of 1 if a member of the Board of Directors of the top holding company has been previously employed by a relevant regulatory or government institution and 0 otherwise
Control variables		
Total assets	SDI	Total assets
Leverage ratio (PCA)	SDI	Tier 1 capital divided by average assets
Tier 1 ratio (PCA)	SDI	Tier 1 capital divided by risk-weighted assets
Risk-based capital ratio (PCA)	SDI	Total risk-based capital divided by risk-weighted assets
Earnings (RoA)	SDI	Return on assets, i.e., net income divided by average assets
Non-interest income ratio	SDI	Non-interest income divided by total income
Liquidity ratio	SDI	Cash and balances at other depository institutions divided by total assets
Deposit ratio	SDI	Deposits divided by total assets
Non-performing loan ratio	SDI	Past due and nonaccrual loans divided by total loans
CPP recipient	TR	Indicator variable, takes the value of 1 if the bank receives Capital Purchase Program funds in the respective quarter and 0 otherwise
GSIFI BHC	SDI	Indicator variable, takes the value of 1 if the bank belongs to a G-SIFI bank holding company in the respective quarter and 0 otherwise
Independent bank	SDI	Indicator variable, takes the value of 1 if the bank does not belong to any bank holding company in the respective quarter and 0 otherwise

Table 38: **Correlation between variables**
This table reports correlations between variables for all observations included in the samples. In Panel A we include bank-quarter observations where banks fall into the *undercapitalized* regulatory capital category. Panel B consists of all quarterly observations of banks with Fitch support ratings.

Panel A: Regulatory treatment sample

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(1) PCA indicator	1.0000														
(2) Closure indicator	0.1878	1.0000													
(3) Past lobbying	-0.0310	0.0681	1.0000												
(4) Subcom rep	-0.0446	-0.0144	0.0498	1.0000											
(5) Prior affiliation	-0.1244	-0.0695	-0.0615	0.3894	1.0000										
(6) Total assets	0.0141	0.0672	0.2304	0.0336	-0.0651	1.0000									
(7) Leverage ratio	-0.1796	-0.4649	-0.1016	-0.0029	-0.0352	0.0038	1.0000								
(8) Earnings	-0.0321	-0.1223	-0.0596	-0.0708	-0.0715	0.2536	-0.0651	1.0000							
(9) Non-interest income ratio	-0.0084	0.0704	-0.0083	-0.0066	-0.1080	-0.1187	0.0261	-0.0607	1.0000						
(10) Liquidity ratio	0.0836	0.0086	0.0102	0.0186	0.1931	-0.1438	-0.1181	0.0562	0.0078	1.0000					
(11) Deposit ratio	0.0663	0.0955	-0.1564	-0.0204	-0.0068	-0.1085	-0.1418	0.0291	-0.0306	-0.0323	1.0000				
(12) Non-performing loan ratio	0.0825	0.2393	0.0070	-0.0082	-0.0078	-0.2559	0.1118	-0.2130	0.0382	0.0238	0.2115	1.0000			
(13) CPP recipient	-0.0208	-0.0436	0.0026	-0.0628	-0.0909	0.0044	0.1430	-0.0083	-0.0032	0.0236	-0.0208	-0.0085	1.0000		
(14) GSIFI BHC	-0.0080	-0.0073	0.1348	0.0567	na	-0.0121	0.0571	-0.0003	0.0452	0.0473	-0.0920	-0.0420	-0.0035	1.0000	
(15) Independent bank	0.0913	0.0000	-0.0130	0.0975	0.1313	-0.0698	-0.1061	-0.0122	0.0230	0.0048	0.0643	-0.0592	-0.1061	-0.0106	1.0000

Panel B: Expected government support sample

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Fitch support rating	1.00												
(2) Past lobbying	-0.62	1.00											
(3) Subcom rep	-0.43	0.32	1.00										
(4) Leverage ratio	-0.30	0.21	0.19	1.00									
(5) Total assets	-0.49	0.49	0.20	0.16	1.00								
(6) Earnings	-0.10	0.10	0.08	0.10	0.07	1.00							
(7) Non-interest income	-0.26	0.29	0.28	0.21	0.32	0.15	1.00						
(8) Liquidity ratio	-0.19	0.23	0.17	0.17	0.09	-0.09	0.39	1.00					
(9) Deposit ratio	0.31	-0.41	-0.22	-0.34	-0.34	-0.16	-0.16	-0.06	1.00				
(10) Non-performing loan ratio	-0.03	0.04	0.14	-0.00	0.06	-0.44	0.04	0.15	0.05	1.00			
(11) CPP recipient	0.00	0.14	-0.00	0.02	0.08	-0.20	-0.07	0.05	-0.08	0.29	1.00		
(12) GSIFI BHC	-0.63	0.46	0.46	0.20	0.24	0.09	0.20	0.13	-0.34	0.15	0.13	1.00	
(13) Independent bank	0.00	-0.11	-0.05	0.20	0.07	-0.05	0.11	0.03	0.04	0.06	-0.14	-0.12	1.00

Chapter 4. Bank Lobbying in the U.S.

C. Werger

Introduction

Influence exertion by banks and the financial industry and its impact on their regulatory treatment is a particularly important topic, especially in times when the banking industry is facing serious problems, banking regulation and supervision is being essentially revised, and the fate of banks and sovereigns is increasingly interrelated. While the influence of regulated industries on their regulation has been extensively studied (e.g., Besley and Coate (2001); Helpman and Persson (2001)), empirical evidence and data analysis of this phenomenon is still rare. The objective of this paper is therefore twofold; first we explore the data on lobbying in the financial industry in the U.S., using a new dataset linking lobby expenditures to bank balance sheet data. The second objective is to better understand what drives banks to lobby by exploring potential lobby determinants. More specifically we look at whether political connections and risk taking influence the decision to lobby. Both pieces of analysis will help us better understand the recent developments of bank lobbying in the U.S..

Lobbying comprises the transfer of information and financial resources that are channeled from a firm or bank to a regulatory or legislative institution. Beyond that, lobbying constitutes an actively maintained liaison between a firm or bank lobbyist and the institution. Lobbying activities can potentially be leveraged as a source of influence to induce preferential treatment or beneficial policy outcomes. The rationale for the impact of influence exertion on preferential treatment might be found in the private incentives of regulators and policymakers, e.g., expecting campaign contributions or attractive exit jobs in the industry ("revolving doors"). As set out in Kane (1990) and Boot and Thakor (1993), regulators' decisions might not necessarily be guided by welfare maximizing goals but instead by self-interest inducing them to pursue reputation building or collude with the banking industry. Several literature contributions investigate bank lobbying and the effects of banks' influence on political and regulatory outcomes and particularly on individual regulatory treatment. Ramirez and De Long (2001) provide evidence that the Senate vote on the Glass-Steagall Act of 1933 on universal banking restrictions in the U.S. was significantly influenced by important interest groups (including national banks). Imai (2009) shows in his empirical analysis that banks with strong political ties were declared insolvent much later than those without such links during Japan's financial turbulence of 1999-2002. Igan and Mishra (2011) investigate lobbying and congressional voting behavior and find that banks' influential activities are likely to alter legislators' attitude towards deregulation. The link between banks' political influence exertion and bailout decisions has recently been studied by Duchin and Sosyura (2012), where political connections prove to have an effect on the grant of capital injections under the Troubled Asset Relief Program. The effectiveness of lobbying has previously been studied. There are however currently no papers, to our knowledge, that explore the determinants of lobbying. Therefore in this paper we aim to better understand which types of banks lobby and what drives them to lobby in the first place. In a related paper, Ignatowski, Korte and Werger (2015) show that banks' political influence exertion matters for the treatment in case of financial distress: Banks employing political influence are less likely to receive additional discretionary actions, i.e., less preferential treatment, when eligible for Prompt Corrective Actions. Moreover, banks that lobby are more likely to receive government support when in trouble. A question that arose in that paper is, given the potential benefits of lobbying when in distress, do banks strategically lobby when their situation deteriorates; i.e. do banks start lobbying when they anticipate future financial problems. We address this particular issue, by estimating the relation between bank risk taking and lobbying. The authors in that papers hypothesize that, if that were the case, we should see banks with relatively higher risk levels (e.g. less Tier 1 capital) lobby more often. This hypothesis will be addressed in the analysis to follow.

This paper is outlined as follows; section 2 describes the dataset, section 3 provides the descriptive analysis of the lobby data. We continue with exploring the empirical model and empirical results in the following two sections, and section 6 concludes.

Data on lobbying in the U.S. financial industry

To study the structure and development of lobbying and political connections in the U.S. financial industry, we assemble an unique dataset combining information on bank lobbying activities, bank financial data and data on former employment of the board of directors of banks. We obtain the data on lobbying activities from reports filed to the Senate Office of Public Records in accordance with the Lobbying Disclosure Act and restrict the dataset to all lobbying activities (in-house or through external lobbying firms) that are related to the financial industry and on financial issues, i.e., financial industry includes all firms classified as financial firms in the lobbying activities reports while financial issues cover all lobbying activities that have been filed as being concerned with accounting (ACC), banking (BAN), bankruptcy (BNK), financial institutions, investments, and securities (FIN), housing and mortgages (HOU), minting and money (MON). We use the information on holding structures and conglomerates obtained from the bank financial datasets to compute lobbying expenditures through its holding structure and through related firms, besides direct expenditures. The entire lobbying dataset covers the years 1998 to 2012, but we restrict our sample to observations between 2003 and 2012, as the coverage is low for earlier years. Additionally, we collect bank financial data from the Consolidated Reports of Condition and Income ("call reports") and information regarding the ultimate owners from the Federal Deposit Insurance Corporation's Statistics on Depository Institutions to match the individual banks to their respective bank holding companies. Finally, we add data on the former employment of the board of directors of publically listed bank holding companies, available from BoardEx. That data allows us to identify former affiliations with relevant regulators (FDIC, Federal Reserve Board, OCC, OTS), government bodies (Congress, Department of the Treasury, Executive Office of the President) or federal agencies (Federal Financial Institutions Examination Council, Federal Financing Bank, Federal Housing Finance Agency, Securities and Exchange Commission, National Economic Council). As all publically listed firms in the U.S. are required to reveal the employment history of the board of directors, we limit our data here to listed bank holding companies only, as the data on non-listed banks also has limited coverage. Table 39 and table 40 provide summary statistic and variable description for more detail on the data. The following section continues with an exploratory and descriptive analysis of the dataset.

Descriptive analysis

To begin with, we analyze the development of total lobbying expenditure of the financial industry and on financial issues. Financial industry includes all firms classified as financial firms in the lobbying activity reports while financial issues cover all lobbying activities that have been filed as being concerned with accounting (ACC), banking (BAN), bankruptcy (BNK), financial institutions, investments, and securities (FIN), housing and mortgages (HOU), minting and money (MON). Figure 9 presents the development of total lobbying expenditures over time. While the total spending was relatively stable in the end of the 1990s and early 2000s, we can observe a steady increase, particularly during the financial crisis after 2007. The total lobbying expenditures almost quadrupled, reaching a record high of more than U.S.D 1.8 billion in 2010. Thereafter, spending fell by about 30 percent within two years. Most importantly, however, this figure underlines that lobbying is a significant phenomenon in the financial industry. The synchronized development with the financial crisis seems to be no coincidence - and is in line with the phenomena observed in the literature, e.g., by Duchin and Sosyura (2012) and Igan et al. (2012).

To better understand the composition and development of lobbying by the different branches within the financial sector, we classify the financial industry into (1) banks and lending firms, (2) securities and investment firms, (3) insurance companies, and (4) real estate firms and other financial services (such as financial consulting). The lobbying expenditures of each of the branches over time is displayed in Figure 10. It is noteworthy that most branches of the industry follow the previously observed trend. However, lobbying expenditures were not reduced after the financial crisis for banks and securities firms as well as real estate firms. In particular, real estate firms follow a slightly different trend, with lobbying expenditures peaking already in the years before the financial crisis. In the following figures as well as in the analyses in the next sections, we focus only on the lobbying expenditures by banks and lending institutions.

[Figure 10]

Which agencies are targeted by bank lobbying?

Lobbying might be a significant phenomenon for banks, but which agencies are targeted by bank lobbying? In general, we find that nearly all lobbying activity reports filed as one of the targets the U.S. legislative, i.e., the Senate or the House of Representatives. Beyond this, however, many reports contain details about the specific financial sector agencies that were targeted by the respective lobbying efforts. Therefore, we present the number of lobby activities by target agencies in Figure 11. Each lobbying activity represents an individual bank's lobbying effort consisting of at least one contact with a given government agency in a semiannual/quarterly period. Those target agencies include bank regulators (i.e., the Federal Deposit Insurance Corporation (FDIC), the National Credit Union Administration (NCUA), the Office of the Comptroller of the Currency (OCC), and the Office of Thrift Supervision (OTS)), the Federal Reserve (Fed), financial regulators (i.e., the Securities and Exchange Commission (SEC), the Commodity Futures Trading Commission (CFTC), the Farm Credit Administration (FCA), and the Federal Housing Finance Board (FHFB)), and the Department of the Treasury. It is interesting to observe that the Treasury and the bank regulators receive most of the lobbying activities, while particularly the other financial regulators are increasingly targeted after the financial crisis. One reason for this observation could be the increasingly important role that these regulators play in bank regulation after the Dodd-Frank Act, for example in the implementation of the Volcker Rule.

[Figure 11]

Which banks lobby?

In the next step, we want to better understand the structure and channels of bank lobbying. By tracing the holding structures of the banking system from the regulatory data described above, we are able to disentangle and re-combine the different sources of lobbying expenditures within a financial conglomerate. Figure 12 presents the total lobbying expenditures (in U.S.D) through the different channels or sources of lobbying, i.e., either through the bank itself, through the top holding company of the bank, or through other related banks (belonging to the same conglomerate). Only banks for which lobbying expenditures through any of these channels is reported are included and quarterly averages are formed over the period of the full dataset. Figure 12 displays this split for three classes of banks that are categorized along the total asset size. It is noteworthy that only a small part of bank lobbying emerges from a bank directly, the major part of lobbying seems to be done on the top holding level and some parts by other related banks in the same conglomerate. One should be cautious with the interpretation of these numbers: There are some banks that have indeed large direct lobbying expenditures, but there is a multitude of banks that do not report any direct lobbying expenditures at all - only their holding company does. This explains the low share of direct lobbying on average. Taken together, however, lobbying

through other parts of the conglomerate, particularly through the top holding company, seems important for most of the banks.

[Figure 12]

As a second observation, we find that total lobbying expenditures are growing in bank size. This is not surprising as a larger bank size supposedly enables banks to spend larger amounts on lobbying activities. However, this is not necessarily a linear relationship. To analyze this in more detail, we put the direct lobbying expenditures of a bank in relation to its total assets and display this share over the same bank size classes in Figure 14. The result is quite unambiguous: Larger banks spend a smaller proportion (in relation to their assets) on lobbying. Thus, while small banks have lower lobbying expenditures in absolute terms, lobbying seems to be a more significant phenomenon for them in relative terms.

[Figure 14]

Empirical analysis

In order to further explore the characteristics of banks that decide to lobby, we will estimate the following model:

$$Lobbying_{i,t} = \alpha_{i,t} + \beta_1 Affiliation_{i,t-1} + \gamma X_{i,t-4} + \epsilon_{i,t} \tag{7}$$

where $Lobbying_{i,t}$ is the dependent variable, which takes the value 1 if any of the banks withing the bank conglomerate has lobbied during the quarter, and 0 otherwise. In this first model we explore the determinants of lobbying with $X_{i,t-4}$, lagged (by one year) control variables comprising of:

1. *size*, measured by total assets
2. a variety of variables that proxy the banks' *business model,* such as loan ratio, deposit ratio and non-interest income
3. *return on assets (ROA)* to control for profitability
4. *liquidity,* measured by liquid assets over total assets
5. *affiliation*, measured by whether any board members have been previously employed at relevant public entities

We hypothesize that these are relevant factors that might influence the decision to lobby or not. Regarding size, larger banks are more likely to lobby, as they tend to be more in the public eye and are perhaps under more regulatory scrutiny. Bank type could matter for lobbying, as again certain activities such as deposit taking and bank lending might be more heavily regulated then other activities such as investment banking. Profitability could be an explanatory variable, as more (or potentially less) profitable banks might find it worthwhile to influence regulation and legislation to their advantage. Lastly, liquidity is included as a control variable for liquidity risk as well as business model.

Additionally we will focus in this model on the variable $Affiliation_{i,t-1}$, a dummy variable which takes the value 1 if a member of the board of directors of the bank conglomerate has been previously employed by a relevant regulatory or government institution, and 0 otherwise. We argue here that banks with connections

to public entities via social networks, are better equipped for lobbying and interaction with the regulatory and legislatory bodies. As such, they have better means to lobbying than banks without connections. The hypothesis is that we should find a positive correlation between social connections via previous affiliation of board members and lobbying activities.

$$Lobbying_{i,t} = \alpha_{i,t} + \beta_2 Risk_{i,t-4} + \gamma X_{i,t-4} + \epsilon_{i,t} \tag{8}$$

A potential issue with bank lobbying, that was raised by Ignatowski et al. (2015), is that banks might start lobbying strategically when risk levels deteriorate, and when they have a higher probability of getting into trouble. We shall explore the relation between risk taking and lobbying further in this model. As such, we take various lagged risk indicators (non-performing loan share, ROA volatility, risk weights, z-score and tier-1 equity ratio) as explanatory variables in a Logit panel regression. We want to test the hypothesis that banks will lobby strategically when risk-levels deteriorate. In that situation, banks might consider lobbying more attractive when possible corrective actions or bailouts are deemed more likely. In this Logit panel regression we will explore within bank variation over time, lagging the risk indicators by 1 year[45]. This lag should allow enough time for the effect of the increased risk to take place, and for the bank to start lobbying.

Empirical results

Lobbying and social connections

Table 42 presents the results of model 7. We start by exploring the determinants of lobbying in column (1) and add bank fixed effects to the control variables in column (2).

To start with, in the fixed effects model in column (2), we see that return on assets (ROA) seems to be negatively associated with lobbying. In the fixed effects model we exploit within bank variation over time. This implies that as ROA deteriorates, the likelihood of that bank engaging in lobbying increases, or visa versa, that more profitable banks tend to lobby less. Although we do not further see this effect in this table, the consecutive models in table 43 and 44 will also demonstrate a consistent negative correlation between ROA and lobbying. This effect could suggest that banks might associate lobbying with a potential to increase profitability, and that more profitable banks find it less necessary to engage in lobbying. Another potential explanation could be that lobbying is actually a determinant of profitability (a case of reversed causality), and as such that resources are used less efficiently when paying for lobbying[46]. Secondly we find a positive correlation between liquidity and lobbying, when a banks' liquid assets on their balance sheet increase, the probability for lobbying also increases. Again, we find this correlation in the models in table 43 and 44

Liquidity is included in the model to control for a degree of bank specialization. Bonfim and Kim (2014) point out that liquidity is negatively correlated to the lending ratio; "lending to customers have, as would be expected, higher loan to deposit ratios, but also lower interbank ratios and lower liquidity ratios. Globally, these are banks with more vulnerable funding structures" (Bonfim, & Kim, 2014, p. 16). Moreover liquidity is also negatively correlated with size according to Bonfim and Kim (2014), as larger banks tend to manage liquidity more efficiently, and thus less need for liquid assets on the balance sheet. As there doesn't seem to be a very obvious explanation for the effect of liquid assets on lobbying, we assume that the liquid assets control variable is picking up a residual effect from either size or loan-ratio[47]. Alternatively one could argue that since lobbying

[45] Since the data is quarterly this implies a t-4 lag in the model

[46] This is an explanation we cannot exclude in this model set-up, although we do try to take this into account by using lagged explanatory variables.

[47] We find a -0.187 correlation coefficient between liquid assets and size and a -0.279 correlation coefficient between liquid assets and loan ratio in the sample, presented in table 41

via external lobbyists requires a liquid form of funding, banks with more liquid assets are better equipped for lobby expenditures, however this seems a less likely explanation.

Thirdly, size seems to be positively correlated with lobbying. This suggests that when banks get larger, they are more likely to lobby. A possible explanation is that as banks become larger, they potentially attract more attention and regulatory scrutiny, and as such are more likely to engage in conversation with their regulatory body.

Lastly, we explore whether banks that employ board members that are connected to relevant regulatory and legislatory bodies, are more likely to lobby. The hypothesis that banks use their political connections seems to hold up, we indeed find a positive correlation in the models in column (3), (4), (6) and (7). Note that we can only talk about correlation here, as one can argue that banks that lobby are also more likely to hire board members with strong political ties in order to support their lobbying activities. The columns (3)-(7) show different model specifications for robustness purposes. In column (3) we explore a simple fixed effects regression model, where prior affiliation is lagged with one quarter. In column (4) we expand the lag to a year. Column (5) shows a Logit panel regression. However, the Logit model removes banks that have no variation over time in variables (there are quite a few banks that have score 0 or 1 for lobbying or prior affiliation over the entire period) and reduces the sample significantly and we do not find a significant result for that sample. Column (6) is a Probit panel regression using random effects, and is thus able to also exploit across bank variation. In column (7) we apply a propensity score matching model and lastly in column (8), we explore whether the amount of lobbying varies for those banks that lobby. In this model we only take the banks that lobby, hence the smaller sample, and take the amount of lobbying as dependent variable. Surprisingly, prior affiliation is not significant in this specification. This implies that banks that lobby via their political connections do not tend to spend more on lobbying. This is in line with the findings in Ignatowski et al. (2015), where the authors also demonstrate that the decision to lobby or not is more relevant than the actual amount spent.

Lobbying and risk taking

As we have explored some of the determinants of lobbying in the previous table, we continue to look at indicators of risk taking and their relation to lobbying. We start off in table 43 by looking at a selection of risk indicators; non-performing loan share, ROA volatility, risk weights from RWA, z-score and tier-1 equity ratio. It seems that only risk weights and the Z-score variable have a significant effect on the lobby indicator. Altman's Z-score is an indicator of a banks' insolvency risk, where a lower z-score indicates more risk (similar to a credit rating). The positive coefficient indicates that banks with lower insolvency risk are more likely to lobby. This is actually evidence against the hypothesis that more risky banks tend to lobby for strategic reasons. Secondly, the coefficient of risk weights also points in this direction. Risk weights are calculated by dividing the Risk Weighted Assets (RWA) by total assets. Higher risk weights tends to indicate more risky assets on the balance sheet, as the risk weights and RWA are used to calculate regulatory capital ratios[48] . The negative coefficient here indicates that when banks become less risky, they are more likely to engage in lobbying activities. One might think that risk is correlated with profitability, and as such it is simply picking up the profitability effect we found earlier. However, the coefficient for profitability is consistently significant, even with the addition of risk weights and other various risk measures. That gives us some comfort into thinking that this is not simply driven by the underlying correlation with profitability [49]. In the following table 44 we provide some further robustness for these findings. In column (1)-(4) we explore different estimators, starting with Probit in (1) and (2) and the OLS estimator in (3) and (4). The significant result of the Z-score disappears, but the coefficient of the risk weights seems to confirm our earlier findings. In columns (5)-(8) we want to test whether

[48] Riskier assets receive higher risk weights, which will then result in a higher required capital buffer

[49] Additionally, we find a correlation coefficient between ROA and risk weights of 0.058, suggesting this is not a problem in this model

our results depend on the size of the time lag between the lobby indicator and the explanatory variables. It turns out that we do find the same significant result for risk weights when we decrease the lag from a year (t-4) to half a year (t-2) to a quarter (t-1). However Z-score again doesn't hold up in this robustness test. These results demonstrate that there is a correlation between risk on the bank balance sheet and lobbying. However, the evidence points in the opposite direction to the original hypothesis; that more risky banks tend to lobby strategically anticipating potential support or corrective actions. It seems that rather the opposite is true, the less risky banks are more engaged with their regulators and legislators then their risky counterparts. As such, this result suggests that the interaction between the financial industry and its regulators might not necessarily only be a negative thing, as we do not find evidence of a relation between risk and lobbying.

Conclusion

The descriptive analysis demonstrated that there was a large increase of total lobby expenditures in the U.S. right after the global financial crisis up until 2010. Not only did we see total expenditures almost quadrupling, we also saw that bank regulators received increased attention in that period. Unsurprisingly this is when the Dodd-Frank Act and Volcker Rule were drafted and implemented, potentially explaining this rise in interaction. The data also showed that while large banks spend more in absolute terms, in seems that smaller banks tend to spend more in proportion to their size. However, moving away from lobby expenditures to the likelihood of lobbying, our empirical results from the first model suggest that larger banks are more likely to lobby in the first place, as we find a positive correlation between size and the likelihood of lobbying in our panel regressions. Additionally, we find that profitability is negatively correlated with our lobby indicator. This suggests that as profitability within the bank deteriorates, the likelihood of lobbying increases. An obvious explanation could be that this is due to a time effect; after the financial crisis banks were struggling financially, but were also lobbying increasingly. However, as we control for time effects, this cannot be driving this finding. A potential explanation could be that banks with lower profitability find it worthwhile to put in the effort to lobby, to increase the profit potential by influencing regulation in their favor. Another potential explanation could be that lobbying is actually a determinant of profitability (a case of reversed causality), and as such that resources are used less efficiently when paying for lobbying. Diving deeper into the relation between profitability and lobbying is beyond the scope of this paper, but could be interesting to explore in future research. Secondly we found that banks with connections to legislators and regulators via the former employment of their board members have a higher likelihood of lobbying. This is not surprisingly, as the threshold for interacting with regulators is much smaller if there is an already established social connection. However, we found that these social connections did not necessarily increase the amount spent on lobbying activities. Moving on to our second model, we explored the relation between risk taking and lobbying. We hypothesized that more risky banks could find it more attractive to lobby, anticipating potential bailouts and corrective actions. However, we found for the majority of our risk indicators show no relation whatsoever. For one measure, risk weights of the risk weighted assets, we found actually the opposite effect. We saw that there is actually a negative correlation between risk and lobbying. This suggests that less risky banks tend to interact more with their regulators and legislators, not supporting the somewhat negative statement that banks lobby strategically when anticipating financial trouble.

This paper has highlighted some major aspects and determinants of bank lobbying in the U.S. However, as we have seen a sharp increase in lobbying expenditures from the financial industry in the last years, it is important to understand how this might effect bank decisions making at the micro level, and ultimately global financial stability and effectiveness of regulation at the macro level. This paper has made a start by diving into some of the determinants of lobbing and as such trying to understand what drives banks to lobby in the first place. Research looking more at macro level determinants of lobbying expenditures might be an interesting

addition to this work, as well as looking into lobbying of financial industries of different global regions, outside the U.S.

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Figure 9: **Lobbying on finance**
This figure presents the development of total lobbying expenditures by financial firms (i.e., firms belonging to the financial industry according to the classification on the lobbying activity reports) and on financial issues (i.e., classified to one of the following issues in the filed reports: accounting, banking, bankruptcy, financial institutions, investments, securities, housing and mortgages, minting and money).

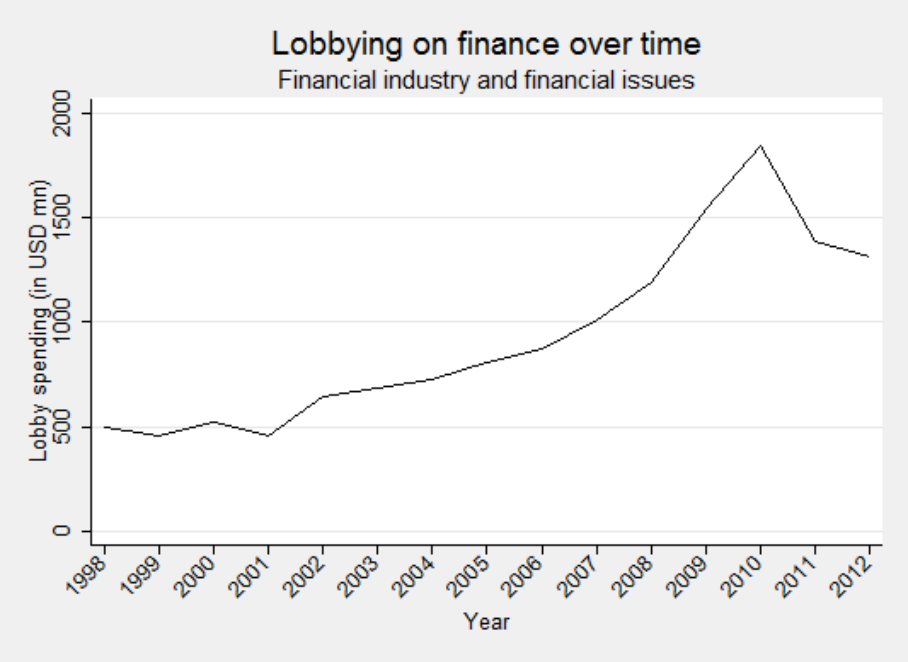

Figure 10: **Lobbying of the financial industry**
This figure presents the development of total lobbying expenditures by financial firms over time. The financial industry is classified into (1) banks and lending firms, (2) securities and investment firms, (3) insurance companies, and (4) real estate firms and other financial services such as financial consulting.

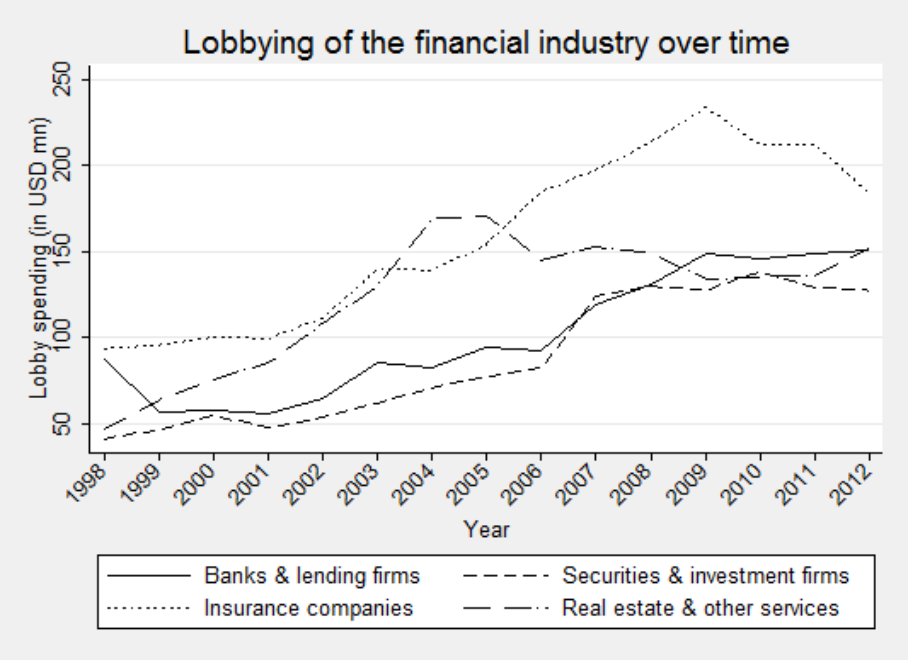

Figure 11: **Lobbying targets**
This figure presents the number of lobby activities, i.e., individual bank lobbying with at least one contact with a given government agency in a semiannual/quarterly period, by target agencies. Target agencies include bank regulators (the Federal Deposit Insurance Corporation (FDIC), the National Credit Union Administration (NCUA), the Office of the Comptroller of the Currency (OCC), and the Office of Thrift Supervision (OTS)), the Federal Reserve (Fed), financial regulators (the Securities and Exchange Commission (SEC), the Commodity Futures Trading Commission (CFTC), the Farm Credit Administration (FCA), and the Federal Housing Finance Board (FHFB)), and the Department of the Treasury.

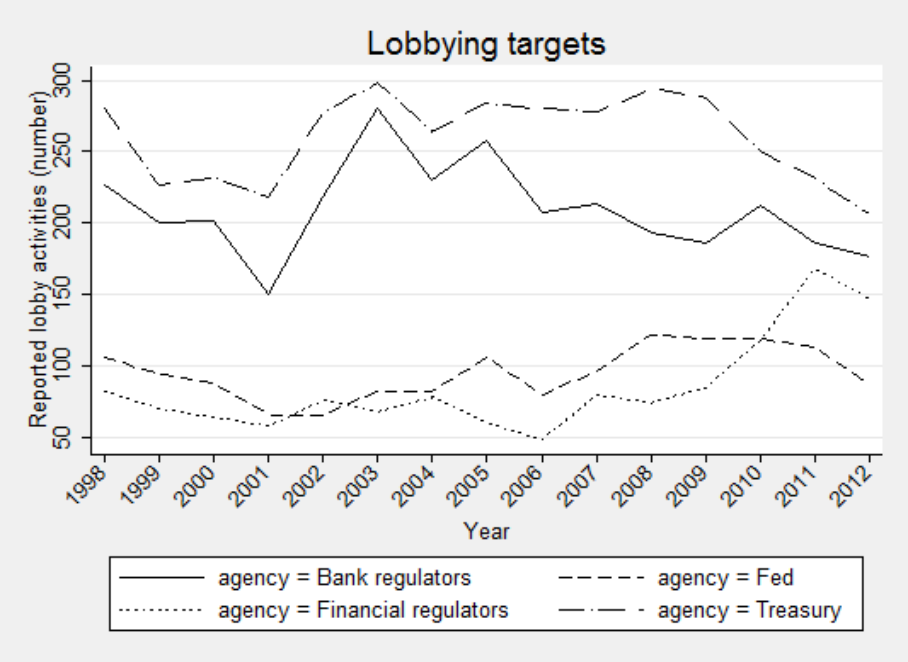

Figure 12: **Lobbying channels**
This figure presents the total lobbying expenditures (in U.S.D) through the different channels of lobbying, i.e., the bank itself, the top holding company, and other related banks, over bank size classes. Only banks for which lobbying expenditures through any of the above channels is reported are included.

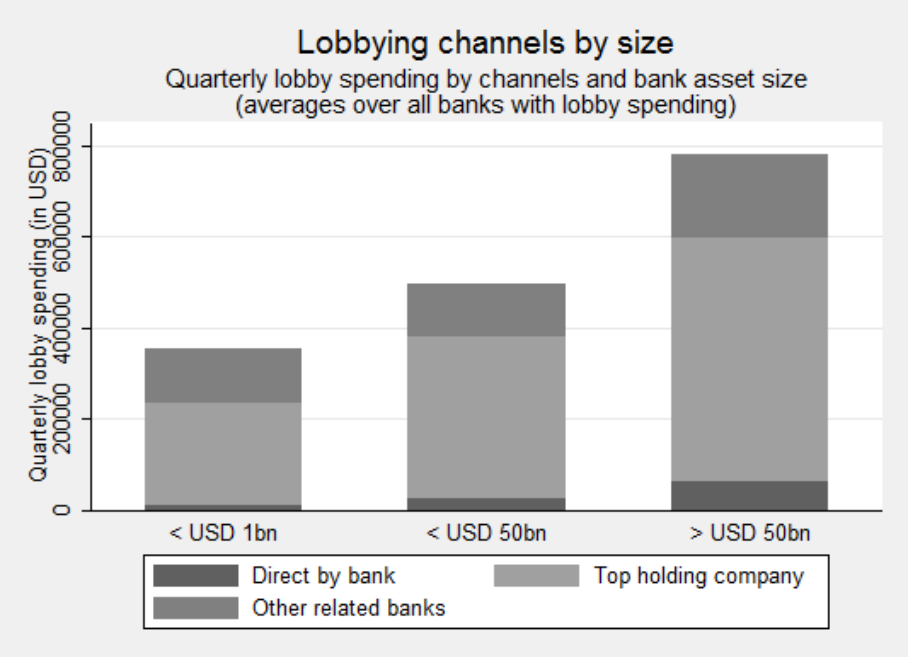

Figure 13: **Lobbying history by bank size**
This figure presents the share of banks in the U.S. that have a lobbying history over different asset size classes. Lobbying history is defined as reporting lobby spending within the bank conglomerate at some point over the last four years.

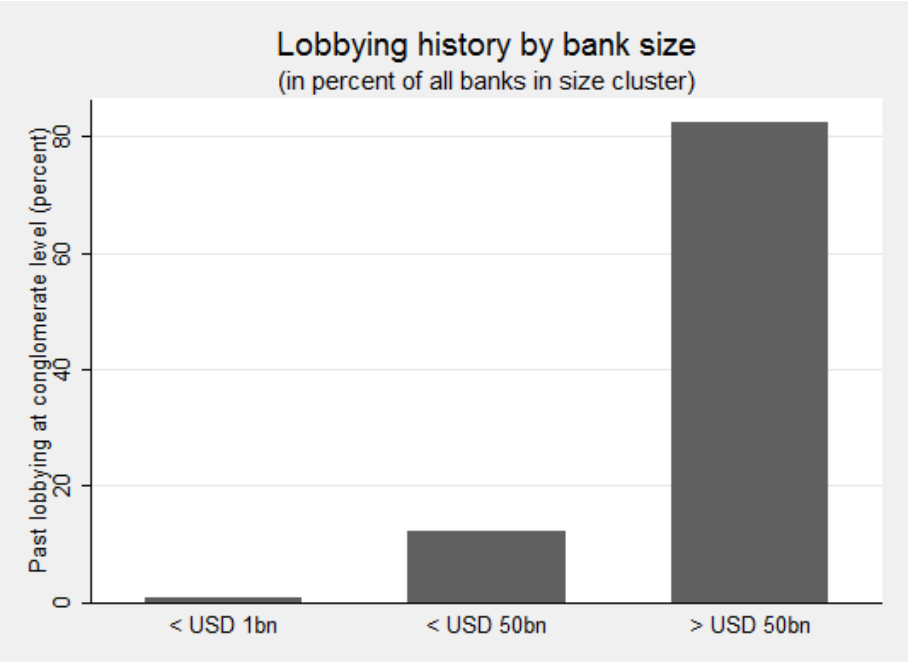

Figure 14: **Lobbying by asset size**
This figure presents the direct lobbying expenditures in relation to total assets over bank size classes. Only banks for which lobbying expenditures is reported are included.

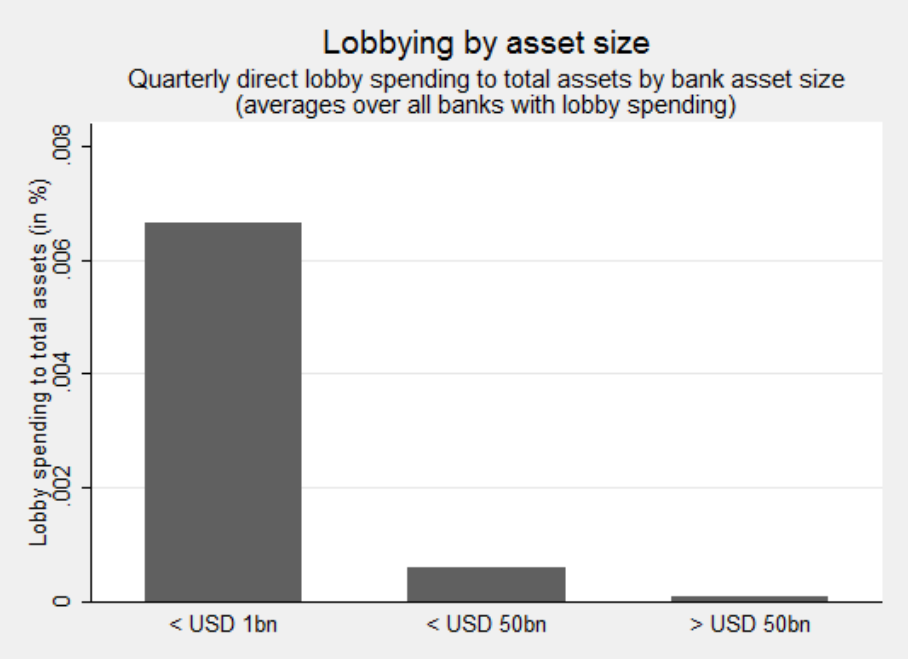

Table 39: **Summary statistics**
This table presents summary statistics, reporting variable names, means, standard deviations, minimum and maximum values, and the number of observations for which data are available in our sample. Unless otherwise stated, the data are reported in percentages. All observations are at the bank level, constitute bank-quarter observations, and cover the period 2003Q3-2012Q4.

Variable name	**N**	**Mean**	**SD**	**Min**	**Max**
Dependent variable					
Lobby indicator	314516	0.016	0.124	0	1
Explanatory variables					
Prior affiliation	25216	0.254	0.435	0	1
Risk weights RWA	314516	0.674	0.145	0.21	1.010
Tier-1 ratio	314513	0.183	0.187	0.05	1.980
ROA volatility	313104	0.002	0.003	0.00	0.021
NPLs	312053	0.015	0.024	0.00	0.156
Z-score	312451	4.968	1.182	1.16	8.521
Control variables					
Total Assets	314516	5.043	1.374	-2.69	14.456
Loan ratio	314516	0.631	0.169	0.00	0.994
ROA	314516	0.002	0.004	-0.02	0.015
Non-interest income	314516	0.162	0.139	-0.20	0.958
Liquidity	314516	0.064	0.065	0.00	0.425
Deposit ratio	314516	0.690	0.117	0.01	0.893

Table 40: **Variable sources and definitions**
This table reports variable definitions and data sources. The sources are: BoardEx, U.S. Senate Office of Public Records (SEN), U.S. Center for Responsive Politics (CPR), FED Chicago BHC database (BHC) and the FDIC SDI database and call reports (SDI)

Variable	**Source**	**Definition**
Dependent variables		
Lobby indicator	SEN, CPR, BHC	Dummy variable, takes the value of 1 if any entity within the respective conglomerate has lobbied in the quarter at time t and 0 otherwise.
Explanatory variables		
Prior affiliation	BoardEx	Dummy variable, takes the value of 1 if a member of the board of directors of the conglomerate has been previously employed by a relevant regulatory or government institution and 0 otherwise.
Risk weights RWA	SDI	Risk weighted assets divided by total assets.
Tier 1 ratio (PCA)	SDI	Tier 1 capital divided by risk-weighted assets.
ROA volatility	SDI	Annual volatility of return on assets.
Non-performing loan ratio (NPLs)	SDI	Past due and nonaccrual loans divided by total loans.
Z-score	SDI	Measure of bank's risk of insolvency, natural logarithm of the ROA-mean plus leverage, divided by the ROA-volatility.
Control variables		
Total assets	SDI	Natural logarithm of total assets.
Loan ratio	SDI	Total loans divided by total assets.
ROA	SDI	Return on assets (i.e., net income divided by average assets).
Non-interest income ratio	SDI	Non-interest income divided by total income.
Liquidity ratio	SDI	Cash and balances at other depository institutions divided by total assets.
Deposit ratio	SDI	Deposits divided by total assets.

Table 41: **Correlation matrix**
This table reports correlations between variables for all observations included in the sample.

Variables		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1)	Lobby indicator	1.000												
(2)	Prior affiliation	0.073	1.000											
(3)	Risk weights RWA	-0.024	-0.084	1.000										
(4)	Tier-1 ratio	0.069	-0.022	-0.491	1.000									
(5)	ROA volatility	0.037	-0.020	0.053	0.166	1.000								
(6)	NPLs	-0.000	-0.010	0.065	-0.097	0.408	1.000							
(7)	Z-score	-0.015	0.027	-0.142	0.099	-0.728	-0.418	1.000						
(8)	Total Assets	0.276	0.128	0.203	-0.210	-0.041	0.058	0.067	1.000					
(9)	Loan ratio	-0.059	-0.097	0.637	-0.390	-0.060	-0.034	-0.025	0.177	1.000				
(10)	ROA	0.035	0.058	-0.037	-0.017	-0.311	-0.274	0.292	0.047	-0.018	1.000			
(11)	Non-interest income	0.162	0.097	-0.055	0.143	0.119	0.015	-0.055	0.177	-0.183	0.163	1.000		
(12)	Liquidity	0.018	0.006	-0.214	0.153	0.115	0.123	-0.107	-0.187	-0.279	-0.092	0.084	1.000	
(13)	Deposit ratio	-0.195	-0.059	0.090	-0.338	-0.087	0.054	-0.035	-0.094	0.235	-0.076	-0.326	-0.083	1.000

Table 42: **Lobbying and connections to legislators and regulators**
The table below presents estimates of board members prior affiliation to relevant government entities on the lobby indicator dummy variable. The dependent variable, *Lobby indicator* takes the value of 1 if any entity within the respective conglomerate has lobbied in the last four years (0 otherwise). Control variables comprise size (natural logarithm of total bank assets), profitability measured by Return on Assets (ROA), non-interest income ratio, liquidity ratio, deposit and loan ratios, which are all ratios measured relative to total assets. All control variables are lagged by one quarter. All observations are at the bank level and cover the period 2003Q3-2012Q4. Robust standard errors are reported in parentheses. Significance levels are indicated by *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Lobbying via social connections

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. variable	**Lobby indicator**							
Prior affiliation			0.0145**	0.0122*	0.4520	0.2954**	0.0674***	0.0001
			(0.0067)	(0.0070)	(0.3219)	(0.1308)	(0.0161)	(0.0002)
Size	0.0249***	0.0036***	0.0031	0.0021	-0.0876	0.6952***		-0.0002*
	(0.0004)	(0.0011)	(0.0088)	(0.0027)	(0.2224)	(0.0752)		(0.0001)
Loan ratio	-0.0417***	0.0020	0.0529	0.0319	-0.7991	-0.9287**		0.0005
	(0.0022)	(0.0067)	(0.0400)	(0.0254)	(1.0624)	(0.4439)		(0.0005)
ROA	0.0821	-0.3055***	-0.3287	-0.0431	-0.0261	3.4733		0.0016
	(0.0664)	(0.0716)	(0.3234)	(0.2683)	(20.8805)	(8.8729)		(0.0085)
Non-interest income	0.0484***	-0.0000	-0.0211	-0.0195	-0.0552	0.7140**		-0.0001
	(0.0032)	(0.0044)	(0.0274)	(0.0226)	(0.7495)	(0.3113)		(0.0006)
Liquidity	0.0958***	0.0237***	0.1040	0.0457	-0.9111	2.1137***		-0.0002
	(0.0054)	(0.0086)	(0.0903)	(0.0676)	(1.7633)	(0.8095)		(0.0009)
Deposit ratio	-0.1396***	-0.0018	0.0005	0.0111	0.6754	-3.2753***		0.0009
	(0.0046)	(0.0085)	(0.0478)	(0.0372)	(1.1307)	(0.5414)		(0.0010)
Bank fixed effects	NO	YES	YES	YES	YES	YES	YES	YES
Year dummies	YES	YES	YES	YES	YES	YES	YES	YES
Observations	314559	314559	25221	25226	2562	25221	6618	2074
No of banks	10132	10132	1918	2331	118	1918	6418	211
Regression Model	OLS	FE panel	FE panel	FE panel	Logit	Probit	Matching	FE panel - lobby amount
Time lag	t-1	t-1	t-1	t-4	t-1	t-1	t-1	t-1
Dependent Var	Lobby indicator	Lobby indicator	Lobby indicator	Lobby indicator	Lobby indicator	Lobby indicator	Lobby indicator	Lobby amount|ind=1

Table 43: **The relation between risk taking and lobbying**
The table below presents estimates of various measures of bank risk on bank lobbying. The dependent variable, a lobbying indicator variable, takes the value of 1 if any entity within the respective bank conglomerate has reported lobbying activities in the current quarter at time *t*. The risk measures of interest are *NPLs*, non-performing loans share of total loans, *ROA volatility* measured as yearly volatility of net income over average assets, *Risk weights RWA* derived from risk weighted assets of total assets, *Z-score* a measure of Altmann's z-score, and *Tier 1 ratio*, a measure of Tier 1 equity over total assets. Control variables comprise size (natural logarithm of total bank assets), profitability measured by Return on Assets (ROA), non-interest income ratio, liquidity ratio, deposit and loan ratios, which are all ratios measured relative to total assets. All control variables are lagged by one quarter. All observations are at the bank level and cover the period 2003Q3-2012Q4. Robust standard errors are reported in parentheses. Significance levels are indicated by *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Lobbying and risk taking

	(1)	(2)	(3)	(4)	(5)
Dep. variable	**Lobby indicator**				
NPLs	-0.3821				
	(1.4033)				
ROA volatility		-15.6838			
		(9.5847)			
Risk weights RWA			-1.5825***		
			(0.2795)		
Z-score				0.0534*	
				(0.0288)	
Tier-1 ratio					0.2611
					(0.1653)
Total Assets	0.0486	0.0707	0.0751	0.0687	0.0818*
	(0.0483)	(0.0463)	(0.0468)	(0.0463)	(0.0468)
Loan ratio	0.1108	0.1824	0.6089**	0.1617	0.2586
	(0.3155)	(0.2840)	(0.3001)	(0.2850)	(0.2842)
ROA	-33.5508***	-40.2996***	-36.8981***	-40.6829***	-37.4685***
	(7.5303)	(7.4641)	(7.2964)	(7.4127)	(7.2507)
Non-interest income	0.1243	0.1805	0.2509	0.1653	0.1331
	(0.2744)	(0.2580)	(0.2593)	(0.2584)	(0.2564)
Liquidity	3.6369***	3.2307***	3.3318***	3.2753***	3.2709***
	(0.7078)	(0.6562)	(0.6592)	(0.6572)	(0.6539)
Deposit ratio	-0.5749*	-0.4279	-0.3427	-0.4245	-0.3441
	(0.3342)	(0.3100)	(0.3110)	(0.3108)	(0.3135)
Bank fixed effects	YES	YES	YES	YES	YES
Year dummies	YES	YES	YES	YES	YES
Observations	8874	9073	9130	9052	9130
No of banks	317	325	325	325	325
Regression Model	Logit panel	Logit panel	Logit panel	Logit panel	Logit panel

Table 44: **The relation between risk taking and lobbying - Robustness**
The table below presents estimates of various measures of bank risk on bank lobbying. The dependent variable, a lobbying indicator variable, takes the value of 1 if any entity within the respective bank conglomerate has reported lobbying activities in the current quarter at time *t*. In this table we expore robustness of the risk measures *Risk weights RWA*, derived from risk weighted assets of total assets, and *Z-score* a measure of Altmann's z-score. Control variables comprise size (natural logarithm of total bank assets), profitability measured by Return on Assets (ROA), non-interest income ratio, liquidity ratio, deposit and loan ratios, which are all ratios measured relative to total assets. All control variables are lagged by one quarter. All observations are at the bank level and cover the period 2003Q3-2012Q4. Robust standard errors are reported in parentheses. Significance levels are indicated by *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Lobbying and risk taking

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. variable	**Lobby indicator**							
Risk weights RWA	-0.8778***		-0.0150**		-2.6788***		-1.9147***	
	(0.1350)		(0.0062)		(0.4443)		(0.3491)	
Z-score		0.0115		0.0002		-0.0146		-0.0124
		(0.0141)		(0.0003)		(0.0293)		(0.0290)
Total Assets	0.3431***	0.3396***	0.0038***	0.0036***	0.0730	0.0815*	0.0718	0.0636
	(0.0158)	(0.0158)	(0.0011)	(0.0011)	(0.0467)	(0.0476)	(0.0468)	(0.0467)
Loan ratio	-0.0043	-0.3405***	0.0073	0.0012	1.4352***	0.2400	0.9297***	0.1693
	(0.1364)	(0.1265)	(0.0078)	(0.0067)	(0.3792)	(0.2836)	(0.3265)	(0.2870)
ROA	-17.0160***	-17.7563***	-0.3160***	-0.3178***	-34.8305***	-40.0470***	-34.5810***	-38.2575***
	(3.4710)	(3.5729)	(0.0731)	(0.0738)	(7.2807)	(7.7991)	(7.2969)	(7.6234)
Non-interest income	0.4246***	0.3956***	0.0001	0.0003	0.3062	0.2467	0.2860	0.0827
	(0.1166)	(0.1170)	(0.0044)	(0.0043)	(0.2604)	(0.2657)	(0.2604)	(0.2600)
Liquidity	1.3678***	1.3320***	0.0230***	0.0234***	2.7123***	3.2650***	2.9457***	3.2719***
	(0.2818)	(0.2836)	(0.0085)	(0.0087)	(0.6595)	(0.6579)	(0.6571)	(0.6600)
Deposit ratio	-1.2036***	-1.2575***	-0.0010	-0.0008	-0.2241	-0.4557	-0.2185	-0.5281*
	(0.1405)	(0.1408)	(0.0085)	(0.0086)	(0.3115)	(0.3121)	(0.3110)	(0.3142)
Bank fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Year dummies	YES	YES	YES	YES	YES	YES	YES	YES
Observations	314516	312451	314516	312451	9130	9053	9130	9028
No of banks	10131	10131	10131	10130	325	325	325	325
Regression model	Probit	Probit	OLS	OLS	Logit	Logit	Logit	Logit
Time lag	t-4	t-4	t-4	t-4	t-1	t-1	t-2	t-2