DISCUSSION PAPER SERIES

No. 10311

BAILOUTS AND MORAL HAZARD: HOW IMPLICIT GOVERNMENT GUARANTEES AFFECT FINANCIAL STABILITY

Mike Mariathasan, Ouarda Merrouche
and Charlotte Werger

FINANCIAL ECONOMICS

Centre for Economic Policy Research

ISSN 0265-8003

BAILOUTS AND MORAL HAZARD: HOW IMPLICIT GOVERNMENT GUARANTEES AFFECT FINANCIAL STABILITY

Mike Mariathasan, Ouarda Merrouche and Charlotte Werger

Discussion Paper No. 10311
December 2014
Submitted 09 December 2014

Centre for Economic Policy Research
77 Bastwick Street, London EC1V 3PZ, UK
Tel: (44 20) 7183 8801
www.cepr.org

This Discussion Paper is issued under the auspices of the Centre's research programme in **FINANCIAL ECONOMICS**. Any opinions expressed here are those of the author(s) and not those of the Centre for Economic Policy Research. Research disseminated by CEPR may include views on policy, but the Centre itself takes no institutional policy positions.

The Centre for Economic Policy Research was established in 1983 as an educational charity, to promote independent analysis and public discussion of open economies and the relations among them. It is pluralist and non-partisan, bringing economic research to bear on the analysis of medium- and long-run policy questions.

These Discussion Papers often represent preliminary or incomplete work, circulated to encourage discussion and comment. Citation and use of such a paper should take account of its provisional character.

Copyright: Mike Mariathasan, Ouarda Merrouche and Charlotte Werger

BAILOUTS AND MORAL HAZARD: HOW IMPLICIT GOVERNMENT GUARANTEES AFFECT FINANCIAL STABILITY[†]

Abstract

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: bailout, banking, government guarantees and moral hazard

Mike Mariathasan mike.mariathasan@univie.ac.at
University of Vienna

Ouarda Merrouche ouarda.merrouche@eui.eu
Université de Lausanne and CEPR

Charlotte Werger charlotte.werger@eui.eu
European University Institute

[†] We gratefully acknowledge financial support from CAREFIN-Bocconi and are thankful for valuable feedback from Elena Carletti, Hans Degryse, Luca Deidda, Ann Gaeremynck, Jacob de Haan, Nancy Huyghebaert, Robert Marquez, Evi Pappa, Fernando Vega-Redondo, Gunther Wuyts and seminar participants at Norges Bank, the National Bank of Slovakia, and KU Leuven.

1 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, 1994, 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. [2013] 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 [2007] 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. [2011] 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.[1] 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

[1]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.

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

2 Analysis

2.1 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. 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 1. 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 1 shows that leverage ratios are centered around the regulatory requirement, but also that there is considerable variation net of these requirements.[2] In addition, Figure 2 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

[2]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.

regulation, and therefore subject to banks' strategic choice.[3]

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 3 provides a graphic illustration of the average ratings' region-specific evolution over time, whilst Table 4 reports summary statistics by country. Figure 3 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 3 and -in more detail- in Fitch Ratings [2013]. 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.[4]

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,

[3]See Mariathasan and Merrouche [2014] for evidence that current regulatory arrangements provide banks with relevant discretionary margins in their choice of leverage.

[4]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 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.

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 1, whereas Table 2 reports correlations for our main bank-level controls.

2.2 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:

$$Risk\,Taking_{i,j,t} = D_{j,t} + \beta \cdot X_{i,j,t} + \delta \cdot FSR_{i,j,t} + \varepsilon_{i,j,t} \tag{1}$$

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 (1) 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., 2012), 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 (2); the model for the second stage is the same as in (1), with the difference that we use predicted FSRs.

$$FSR_{i,j,t} = D_{j,t} + \alpha \cdot X_{i,j,t} + \gamma \cdot \Theta_{i,j,t} + u_{i,j,t} \tag{2}$$

In (2), $FSR_{i,j,t}$ 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 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).[5] Formally, the corresponding model is the following:

$$Risk\,Taking_{i,j,t} = Y_t + B_i + \zeta \cdot Z_{j,t} + \beta \cdot X_{i,j,t} + \delta \cdot (FSR\,2005_i \cdot D_t) + \vartheta_{i,j,t} \tag{3}$$

In (3), 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

[5]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.

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 (3) 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 (1) 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 (3) involves the inclusion of pairwise and triple interactions with pre-crisis measures of governance, $\Xi\,(2005)$.[6] The coefficient of interest in this case is the coefficient on the triple interaction $FSR\,2005_i \cdot D_t \cdot \Xi\,(2005)$.

3 Results

3.1 Benchmark

We begin our analysis of the moral hazard effect on financial stability with the estimation of our benchmark model (equation 1), and present the corresponding results in Table 5. 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 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

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

(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 et al. [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 predic-

tions 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 6, 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 5 using an instrumental variables (IV) estimator. The corresponding first stage results are presented in Table 7. 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., 2012, 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.[7]

Table 8 contains the results from the second stage, where the control variables are the same as in Table 5. 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

[7]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.

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.[8] One important difference arises with regards to the economic size of the moral hazard effect. The most conservative estimate in Table 8 now implies a change of 1.8 percentages point in response to a one-notch-change in (predicted) FSR (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 9. Columns (1) to (4) replicate the model from column (2) in Table 8 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 US 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 9 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 (3). In Table 10, we interact pre-Lehman FSRs

[8] 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.

(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 8), 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.

3.2 Governance

Table 12, replicates the model from column (2) of Table 8, 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.[9]

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,

[9]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.

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
- 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 US, 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 11, 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 12 (for the leverage ratio) and 13 (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 12), 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 13), 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 13 are more significant than in Table 12 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.

3.3 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. [2011], 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 14 and 15.[10]

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 15), 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

[10]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.

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 15 as a robustness check to those in Table 14. 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. [2011], 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. [2011] 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.

4 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 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.

References

Viral V. Acharya and Tanju Yorulmazer. Too many to fail. an analysis of time-inconsistency in bank closure policies. *Journal of Financial Intermediation*, 16(1): 1–31, 2007.

Walter Bagehot. *Lombard Street: A Description of the Money Market*. London: Henry S. King and Co., 1873.

Diana Bonfim and Moshe Kim. Liquidity risk in banking: Is there herding? *European Banking Center Discussion Paper*, 024, 2012.

Luis Brandao-Marques, Ricardo Correa, and Horacio Sapriza. International evidence on government support and risk taking in the banking sector. *Board of Governors of the Federal Reserve System International Finance Discussion Papers*, 1086, 2013.

Markus Brunnermeier, Gang Dong, and Darius Palia. Banks' non-interest income and systemic risk. *AFA 2012 Chicago Meetings Paper*, 2012.

Tito Cordella and Eduardo Levy Yeyati. Bank bailouts: moral hazard vs. value effect. *Journal of Financial Intermediation*, 12(4):300–330, 2003.

Lammertjan Dam and Michael Koetter. Bank bailouts and moral hazard: Empirical evidence from germany. *Review of Financial Studies*, 25(8):2343–2380, 2012.

Giovanni Dell'Ariccia and Lev Ratnovski. Bailouts and systemic insurance. *Mimeo*, 2014.

Robert DeYoung, Michal Kowalik, and Jack Reidhill. A theory of failed bank resolution: Technological change and political economics. *Journal of Financial Stability*, 9(4): 612–627, 2013.

Emmanuel Farhi and Jean Tirole. Collective moral hazard, maturity mismatch, and systemic bailouts. *American Economic Review*, 102(1):60–93, 2012.

Fitch Ratings. Definitions of ratings and other forms of opinion, July 2013.

Xavier Freixas, Bruno Parigi, and Jean-Charles Rochet. Systemic risk, interbank relations, and liquidity provision by the central bank. *Journal of Money, Credit and Banking*, 32(3):611–638, 2000.

Charles Goodhart and Haizhou Huang. A model of the lender of last resort. *IMF Working Paper*, 39, 1999.

Reint Gropp, Hendrik Hakenes, and Isabel Schnabel. Competition, risk-shifting, and public bail-out policies. *Review of Financial Studies*, 24(6):2084–2120, 2011.

Hendrik Hakenes and Isabel Schnabel. Banks without parachutes: Competitive effects of government bail-out policies. *Journal of Financial Stability*, 6(3):156–168, 2010.

Michael C. Keeley. Deposit insurance, risk, and market power in banking. *American Economic Review*, 80(5):1183–1200, 1990.

Se-Jik Kim. Bailout and conglomeration. *Journal of Financial Economics*, 71(2):315–347, 2004.

George Mailath and Loretta Mester. A positive analysis of bank closure. *Journal of Financial Intermediation*, 3(3):272–299, 1994.

Mike Mariathasan and Ouarda Merrouche. The manipulation of basel risk-weights. *Journal of Financial Intermediation*, 23(3):300–321, 2014.

Erlend Nier and Ursel Baumann. Market discipline, disclosure and moral hazard in banking. *Journal of Financial Intermediation*, 15(3):332–361, 2006.

Jean-Charles Rochet and Xavier Vives. Coordination failures and the lender of last resort: Was bagehot right after all? *Journal of the European Economic Association*, 2(6):1116–1147, 2004.

Table 1: **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 2: **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 1: **Capital Margins (Density)**

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

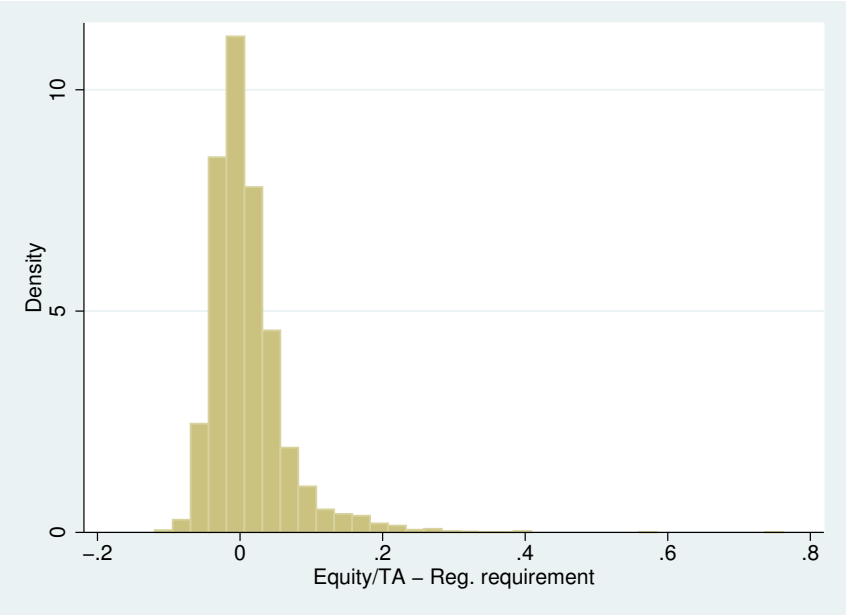

Figure 2: **Capital Margins Over Time**

Average capital margins by region and over time.

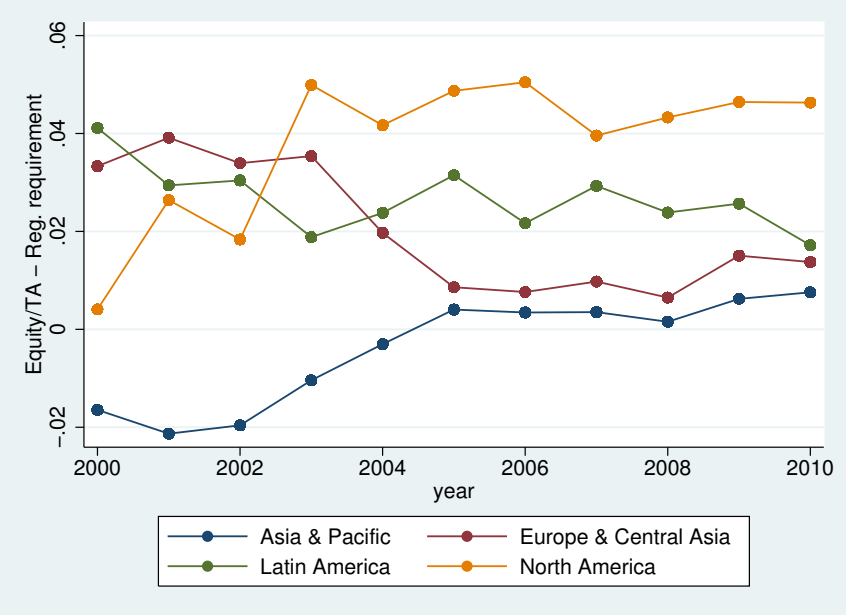

Table 3: **Definition of Fitch support ratings**

Support Rating	Definition by Fitch
1	A bank for which there is an extremely high probability of external support. The potential provider of support isvery highly rated in ist 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 ist 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 of teh 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 loack of propensity to provide support or to very weak fianncial 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 3: **Fitch Support Ratings by Region**

Regional mean of the Fitch Support Ratings over time.

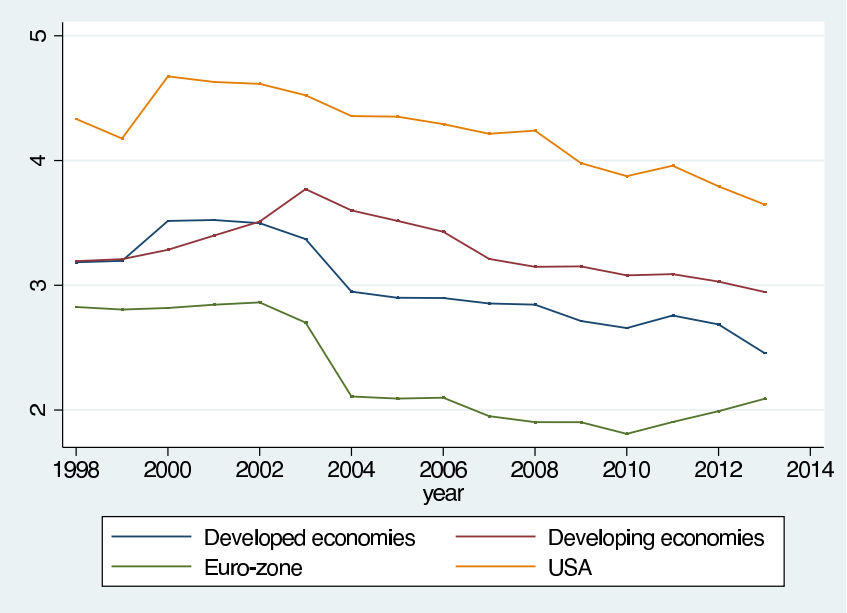

Table 4: **FSR Statistics by Country**

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 5: **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 6: **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 7: **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 Brunnermeier et al., 2012), 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 8: **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 9: **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 10: **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)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Equity/TA	Equity/TA	Equity/TA	CE/TA	CE/TA	CE/TA	LA/Dep.	LA/Dep.	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 11: **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 12: **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 13: **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 14: **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 15: **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.