12-2012

Banks' Survival during the Financial Crisis: The Role of Regulatory Reporting Quality

Jeffrey NG
Singapore Management University, jeffreyng@smu.edu.sg

Tjomme O. RUSTICUS
Northwestern University

Citation

Ng, Jeffrey and Tjomme O. Rusticus. 2012. "Banks' Survival during the Financial Crisis: The Role of Financial Reporting Transparency." Paper presented at World Banking and Finance Symposium, Shanghai, 17-18 December.

Singapore Management University

School of Accountancy Research Paper No. 2013-02

Banks' Survival during the Financial Crisis: The Role of Regulatory Reporting Quality

Jeffrey Ng
Tjomme O. Rusticus

Banks' Survival during the Financial Crisis:

The Role of Regulatory Reporting Quality

Jeffrey Ng
Singapore Management University
School of Accountancy
60 Stamford Road, Room 4008
Singapore 178900
jeffreyng@smu.edu.sg

Tjomme O. Rusticus
Kellogg School of Management
Northwestern University
2001 Sheridan Road, Room 6216
Evanston, IL 60208
t-rusticus@northwestern.edu

ABSTRACT

We investigate the relation between the quality of bank regulatory reporting prior to and bank stability during the financial crisis that erupted in 2008. Using a large sample of private and public commercial banks in the United States and the incidence of accounting restatements as a proxy for the overall quality of the reporting system, we find that reporting quality is positively associated with stability. We show that lower reporting quality before the crisis is associated with higher non-performing loans and lower profitability at the onset of the crisis. We document that banks with lower reporting quality are more likely to experience regulatory intervention through enforcement actions and bank failures during the crisis. We also find some evidence that higher reporting quality is associated with more effective regulatory enforcement actions. We corroborate our findings using an alternative proxy that focuses on the quality of the loan loss provision. A key implication of our findings is that good regulatory reporting is important for the success of the banking system.

Keywords: Regulatory reporting quality, financial crisis, regulatory intervention, bank failure

JEL classification: G21, G33, G38, M41

We appreciate helpful comments from Craig Chapman, John Core, Leslie Hodder, Christopher Noe, Wan Wongsunwai, Joe Weber and seminar participants at the AAA Annual Meetings 2012, the World Finance and Banking Symposium 2012, Boston University, London Business School, New York University, MIT, Syracuse University, the University of Illinois at Chicago, the University of North Carolina at Chapel-Hill, the University of Toronto, the University of Utah, and Washington University in St. Louis. We are grateful for financial support from the MIT Sloan School of Management and the Accounting Research Center at the Kellogg School of Management.

1. Introduction

The recent financial crisis has led to a large increase in the number of bank failures. We use the crisis as a setting to test the effect of regulatory reporting quality on bank stability. The banking industry is more opaque than other industries despite the detailed financial reports that banks file (Morgan, 2002). Various institutions such as the Basel Committee on Banking Supervision, the International Monetary Fund, the World Bank and bank regulators such as the Federal Deposit Insurance Corporation in the United States and the Financial Services Authority in the United Kingdom have argued that greater transparency is an important contributor to bank stability because it leads to effective bank supervision and market discipline (e.g., Basel, 1998, 2001; FDIC, 2002; Flannery and Thakor, 2006; FSA, 2011).[1] In this paper, we examine this issue by investigating the relation between regulatory reporting quality and regulatory intervention in the form of enforcement orders and bank failures.[2]

We focus on the quality of Call Reports, detailed reports that all banks in the United States must file with bank regulators by on a quarterly basis; these reports contain banks' financial information (balance sheet, income statement, and many supporting schedules). According to the FDIC, Call Reports "are extensively used by the bank regulatory agencies in their daily off-site bank monitoring activities [and] … are also used by the public, the Congress of the United States, state banking authorities, researchers, bank rating agencies and the academic community."[3] The FDIC also states that the Call Reports are the "only publicly available source of information regarding the status of U.S. banking system" and that "every

[1] Basel (1998, p. 15) defines transparency as the "disclosure of reliable and timely information that enables users of that information to make an accurate assessment of a bank's financial condition and performance, its business activities, and the risks related to those activities."

[2] Enforcement orders are issued against banks in which a federal regulator, such as the Federal Reserve, the OCC, or the FDIC, has found unsafe or unsound banking practices and violations of law and/or regulations. A bank failure, also known as a bank closure, generally refers to the closing of a bank by a federal or state banking regulatory agency due to concerns that the bank will be unable to meet its obligations to its depositors or to other creditors.

[3] http://www.fdic.gov/regulations/resources/call/.

precautionary measure is taken to preserve data integrity and accuracy."[4] In addition to off-site bank monitoring, these reports are also used by bank examiners and auditors in planning and conducting their on-site bank monitoring and audits, respectively.[5]

We use the incidence of accounting restatements in the Call Reports as a proxy for pre-crisis reporting quality. Banks need to restate their financials under the following conditions:[6]

(1) mathematical mistakes;
(2) mistakes in applying accounting principles;
(3) the improper use of information that existed when the prior Call Reports were prepared;
(4) a change from an accounting principle that is neither accepted nor sanctioned by bank supervisors to one acceptable to supervisors.

Mere changes in accounting estimates such as increases in the loan loss provisions to address previous shortfalls do not lead to restatements, since "changes in accounting estimates are an inherent part of the accrual accounting process." Since the quality of accounting estimates is an important aspect of reporting quality, we corroborate our findings using an alternative measure focusing on the quality of the loan loss provision. The logic underlying this alternative measure is similar to the widely used Dechow and Dichev (2002) model of accruals quality.

We focus on restatements because they "unambiguously reflect accounting measurement problems," as noted by Dechow, Ge, and Schrand (2010, p.352) in their survey of the earnings quality literature. It is important to note that we are not arguing that the effects that we find are due to the restatements per se. Instead we use restatements as a proxy for the overall quality of the reporting system. Research in accounting supports this argument. Doyle, Ge, and McVay (2007) find that restatements are indicative of weaknesses in internal control systems. In

[4] A unique feature of bank regulation in the United States is that Call Reports are disclosed to the public. While bank regulators in many other countries require that similar reports be filed, they are kept confidential between the banks and their regulators.
[5] http://www.federalreserve.gov/boarddocs/supmanual/cbem/0005cbem.pdf.
[6] www.ffiec.gov/PDF/FFIEC_forms/FFIEC031_041_200503_i.pdf.

addition, Dechow, Ge, Larson, and Sloan (2011) find that restatements are positively correlated with various other measures of low reporting quality such as accruals estimation errors.

Prior research has examined several consequences of restatements. Palmrose, Richardson, and Scholz (2004) document statistically and economically significant stock price responses to restatement announcements, while Gleason, Jenkins, and Johnson (2008) find that these stock price effects also extend to other firms in the same industry. Consistent with this contagion effect, Durnev and Mangen (2009) find evidence that restatements provide competitors with information important to their investment decisions. Finally, Chen, Cheng, and Lo (2009) find that following restatements, firms have problems raising capital.

Using restatements as our measure of pre-crisis regulatory reporting quality, we investigate the effect of reporting quality on bank stability and on several potential mediating mechanisms. We provide evidence that poor reporting quality is associated with a higher likelihood of subsequent regulatory intervention and bank failure. We also examine some of the underlying mechanisms through which reporting quality could lead to these associations. Potential mechanisms include the level of non-performing loans and bank profitability, because one might expect banks with poorer quality reports on decision making and monitoring to end up with more problem loans and other bad investments that lower profitability, which, in turn, attracts regulatory intervention. We provide evidence consistent with these mechanisms.

In addition, we examine the effect of reporting quality on bank capital. Bank capital is the buffer that banks have to absorb losses; it is widely regarded as a very important determinant of bank stability. Diamond and Rajan (2000) argue that banks facing greater uncertainty are prone to runs and therefore have an incentive to maintain higher capital. This suggests that banks with greater reporting quality will hold less capital. In contrast, Nier and Baumann (2006) find

empirically that higher transparency is associated with higher capital buffers; they conclude that more effective market discipline provides incentives to hold more capital. Our evidence on the relation between reporting quality and capital is mixed: poor reporting quality is associated with more equity capital, but this effect is not robust to alternative specifications.

Finally, we investigate whether reporting quality affects the effectiveness of regulatory intervention. Better reporting quality can enhance the effectiveness of regulatory intervention by alerting the regulator to potential problems on a more timely basis and by providing better information for resolving such problems. These two factors lead to the prediction that, conditional on being targeted for regulatory intervention, banks with higher reporting quality will have a lower subsequent probability of bank failure. Our evidence is consistent with this hypothesis.

Our paper adds to a growing literature that studies the problems confronting banks during the recent financial crisis. For example, Veronesi and Zingales (2010) study the cost and benefits of government intervention among banks that were the first to participate in the Capital Purchase Program under the broader Troubled Assets Relief Program (TARP). Demyanyk and Van Hemert (2011), Ivashina and Scharfstein (2010), Keys, Mukherjee, Seru, and Vig (2010), and Beatty and Liao (2011) examine the lending behavior of banks before and during the financial crisis. Campello, Graham, and Harvey (2010) study the real effects of financial constraints during the crisis. Gorton and Metrick (2011) characterize the crisis as a run on the sale and repurchase (repo) market. Knaup and Wagner (2012) find that their market-based measure of credit portfolio quality is able to forecast bank failures and share price performances during the crisis. Unlike these papers, we focus on the role of reporting quality in mitigating the adverse events that banks faced during the crisis.

Our study also relates to an early literature on the role of accounting regulations in the Savings and Loan crisis. Accounting for savings and loans was criticized for being backward-looking, while regulatory accounting was criticized for being too lenient relative to GAAP. Studies in this literature include the choice between GAAP and regulatory accounting (Hill and Ingram, 1989), accounting choices within regulatory accounting (Blacconiere, Bowen, Sefcik and Stinson, 1991), and the market response to changes in regulatory accounting for savings and loans that increased regulatory net worth (Blacconiere, 1991). Unlike this literature on accounting choice and accounting regulation, we focus on the association between regulatory reporting quality across banks and bank stability.

To the best of our knowledge, we are the first to empirically study the relation between regulatory reporting quality, regulatory enforcement, and bank failures. As discussed above, this study is motivated by statements about the important role transparency, particularly regulatory reporting quality, plays in monitoring banks. A unique feature of our study is that our analysis includes almost all U.S. commercial banks, which are mostly private, thus potentially avoiding the biases associated with looking only at a subsample of larger firms within the same industry (Ali, Klasa, and Yeung, 2009). This allows us to extend prior, typically cross-country, studies that include only the larger and/or publicly listed banks in their analyses of the relation between bank transparency and stability (see the discussion in Section 2.5). Our paper also adds to the recent non-banking literature on the relation between opacity and bad firm outcomes such as stock price crash risk (e.g., Hutton, Marcus, and Tehranian, 2009). In our analyses, not only do we examine the relation between pre-crisis reporting quality and regulatory intervention during the crisis, we also study the underlying mechanisms through which regulatory reporting quality could impact regulatory intervention. From a policy reform perspective, our finding that greater

reporting quality is associated with more bank stability supports the push by various regulators for greater bank transparency so as to increase bank stability.

The remainder of the paper is organized as follows. Section 2 provides background on U.S. federal banking regulations and the prior literature. Section 3 presents our hypotheses. Section 4 introduces the data and develops measures of regulatory reporting quality. Section 5 covers the empirical analyses on regulatory reporting quality and bank stability and Section 6 concludes.

2. Background on the regulation of commercial banks in the United States

2.1 Regulatory agencies

U.S. commercial banks are subject to oversight from various federal regulators. Commercial banks with a national bank charter are supervised by the Office of the Comptroller of the Currency (OCC). State-chartered banks are regulated by state banking regulators. In addition, state-chartered banks that are members of the Federal Reserve System are supervised by the Federal Reserve Board (FRB), while state-chartered banks that are not members are supervised by the Federal Deposit Insurance Corporation (FDIC). Furthermore, responsibilities may overlap; for example, a national charter bank may be part of a bank holding company, in which case the OCC will supervise the national bank but the FRB will oversee the bank holding company. Similarly, the FDIC insures deposits even in banks that are supervised by the OCC and the FRB.

2.2 Role of regulatory reporting in bank monitoring

The Reports of Condition and Income, which are typically referred to as Call Reports, are an important component of the regulatory supervision process and a primary source of information for outside monitors such bank rating agencies. As noted by the FDIC[7]:

> Reports of Condition and Income data are a widely used source of timely and accurate financial data regarding a bank's condition and the results of its operations. The information is extensively used by the bank regulatory agencies in their daily offsite bank monitoring activities. Reports of Condition and Income data are also used by the public, the Congress of the United States, state banking authorities, researchers, bank rating agencies and the academic community. FDIC is fully responsible for maintaining an accurate and up-to-date Reports of Condition and Income data base readily available to all users.

In addition to the off-site monitoring of banks, the three federal regulatory agencies perform annual on-site examinations of the banks they supervise.[8] For banks in good financial health, the examination interval can be extended to 18 months. Under certain conditions, further extensions are possible. As noted by the Federal Reserve, regulators use the information from Call Reports in assigning resources to examinations[9]:

> The Federal Reserve System (the System) uses automated screening systems to conduct routine monitoring of the financial condition and performance of state member banks. These surveillance systems rely on Call Reports and other financial regulatory reports, as well as examination data, to identify institutions exhibiting financial deterioration or increased risk profiles. This surveillance process ensures that these banks receive timely supervisory attention and that examination resources can be directed to weak and potentially troubled banks to supplement on-site examinations.

A lack of transparency in regulatory reporting can arise from either intentional or unintentional mistakes. While, from the users' perspective, the former might be considered more egregious, either type of mistake makes it more difficult to use the information in the regulatory

[7] http://www.fdic.gov/regulations/resources/call/.
[8] Details of the three regulators' policies on bank examinations and their administrative actions can be found at: http://www.fdic.gov/regulations/safety/manual/, http://www.occ.gov/static/publications/handbook/lbs.pdf, and http://www.federalreserve.gov/boarddocs/supmanual/cbem/cbem.pdf.
[9] Federal Reserve Commercial Bank Examination Manual, p. 141.

reports to monitor the banks. For example, poor regulatory reporting of either type will lead to poor predictions from the econometric models that regulators use to carry out off-site surveillance of banks and plan on-site monitoring. This can affect both the timing and the resource allocation of the on-site examination. To preserve data integrity and accuracy, regulators assign Call Report analysts to each bank to provide them with assistance in the report's preparation.[10] Hence, while regulators have access to private information other than what is contained in the Call Reports, the information in the Call Reports is an important component of the entire information set used to monitor the banks; consequently, the quality of such information is important.

2.3 Regulatory enforcement orders and bank failures

The regulators' examinations consist of a comprehensive review of the six CAMELS components of a bank's financial conditions. Under the Uniform Financial Institutions Rating System (UFIRS), financial institutions are assigned a score for each component and a composite rating. The ratings are discussed with the bank's senior management so as to give them a better understanding of how they are derived and to enable the management to better address any weakness in specific areas. If the examination reveals serious weaknesses, regulators can take formal administrative actions to ensure the bank remedies them. While the ratings are confidential, formal regulatory actions are publicly disclosed on the website of the relevant regulator (FDIC, OCC, or FRB). These enforcement actions identify weaknesses and offer specific instructions on how and when to address them. The instructions can contain both governance provisions, which require changes in board and management people and practices, and provisions regarding the bank's operations and risk management. In addition, the enforcement actions target banks' reporting practices, in particular the loan loss provision. At the

[10] http://www.fdic.gov/regulations/resources/call/callanalyst.html.

FDIC and the OCC, they take the form of cease-and-desist orders; at the FRB, the primary conduit is comprised of written agreements. For some examples of these enforcement actions, see Appendix A.

A bank failure is the closing of a bank by a federal or state banking regulatory agency. Generally, a bank is closed when it is unable to meet its obligations to depositors and others. When a bank fails, the FDIC acts in two capacities. First, as the insurer of the bank's deposits, the FDIC pays insurance to the depositors up to the insurance limit. Second, the FDIC, as the receiver of the failed bank, assumes the task of selling/collecting the bank's assets and settling its debts, including claims for deposits in excess of the insured limit. The Federal Deposit Insurance Corporation Improvement Act (FDICIA) of 1991 mandates the use of the least-cost resolution method for bank failures, the objective of which is to minimize the present value of the net losses incurred by the FDIC. See Appendix B for an example of an FDIC press release of a bank failure.

2.4 Related literature

By studying the relation between regulatory reporting quality and bank stability, this paper extends the prior literature on the relation between bank transparency and stability. Historically, this literature relies almost exclusively on cross-country analyses, with mixed results. In an influential cross-country study of how regulatory and supervisory regimes influence the likelihood of country-level banking crises in a sample of 51 countries during the late 1980s and 1990s, Barth, Caprio, and Levine (2004) do not find any significant evidence of the effect of transparency. They define transparency as the market's ability to monitor banks and measure it at the country level as an aggregate of the following individual indicators: (i) whether audits of banks' accounts were required; (ii) the percentage of a country's top ten banks that

were rated by a rating agency; (iii) whether or not the country had an explicit deposit insurance scheme; (iv) whether banks were required to disclose off-balance sheet items, risk management procedures, and non-performing loans; and (v) whether subordinated debt counted as regulatory capital.

In contrast, in a study of 550 listed banks from 32 countries for the years 1994-2000, Nier (2005) uses a disclosure index based on a count of the number of disclosures in the annual reports, as reported in the BankScope database, and shows that greater transparency is associated with a lower likelihood of dramatic stock price drops in any given year. Demirgüç-Kunt, Detragiache, and Tressel (2008), using a sample of 203 banks from 39 countries, find that banks receive more favorable Moody's financial strength ratings in countries that better comply with the Basel Core Principles that relate to information provision. Using a sample of banks from 23 countries, Bushman and Williams (2009) distinguish between more and less transparent accounting regimes by the extent to which banks in each country use loan loss provisioning to smooth accounting earnings. Their findings suggest that accounting discretion over loan loss provisions increases earnings management and weakens the discipline exerted over bank risk taking.

In contrast to the above (mostly cross-country) studies that examine different aspects of transparency, we focus on a distinct dimension of transparency, restatements in regulatory reports, and study its association with bank stability within the U.S. banking environment. This approach has several advantages. First, by conducting a within-country analysis, the overall economic, legal, and regulatory environment facing each bank is similar, thus mitigating concerns about omitted correlated variable biases. Second, as discussed earlier, restatements are good indicators of poor quality regulatory reporting. Third, we can rely on data on actual

regulatory enforcement actions and bank failures, rather than noisy proxies for financial stability (Boyd and De Nicoló, 2005). Fourth, because regulatory reports are publicly available for all banks in the U.S., our approach allows us to use data on both public and private banks, leading to a large sample of 7,085 banks.

3. Hypothesis development

As discussed in Section 2.2, high quality regulatory reporting is important in facilitating external monitoring by regulators and other stakeholders (e.g., bank rating agencies, investors, and customers). Higher reporting quality can improve the efficacy of external monitoring by providing external stakeholders with timelier and more precise information about the condition of the bank. With better reporting quality, these stakeholders can then take appropriate actions to prevent problems from accumulating and festering, which should, in turn, reduce the risk of bank instability, especially in times of crisis. While regulators obtain more detailed information during their on-site examinations, regulatory reports are required for the express purpose of helping regulators monitor banks. They are an important initial source of information and help regulators allocate time and resources to banks and areas that most need it, given that regulators' resources are too limited to audit every aspect of a bank's business in detail.

Other external stakeholders such as investors and depositors can also rely on regulatory reports to monitor the bank either directly or through bank rating agencies, which can further improve bank stability.[11] However, this assessment has several caveats. First, Cordella and Yeyati (1998) show that under some conditions, full transparency can raise the deposit interest rate that banks have to pay, which in turn reduces profitability and may increase the chance of

[11] As noted earlier, a unique feature of the bank regulatory environment in the United States is that Call Reports are made available to the general public soon after they are filed with the regulator. This allows various stakeholders to access significant amounts of information about all banks, including private (non-listed) ones.

bank failure. Second, external monitoring may be less effective if some stakeholders are insulated from the negative effects of bank failures. For example, deposit insurance removes depositors' incentives to monitor the bank's failure risk (as long as their deposits remain below the insured limit). For this reason, Hyytinen and Takalo (2002) suggest that transparency regulation aimed at reducing financial fragility might not work because an extensive financial safety net eliminates the disciplinary effect of transparency regulation. In fact, given that greater transparency is costly, it dilutes charter values, which reduces the private costs of risk taking; this in turn may increase the risk of bank failure (Keeley, 1990). However, given that uninsured deposits constitute 40% of all deposits in our sample and that they are concentrated among larger, more sophisticated clients, this insurance effect will likely reduce but not eliminate the disciplinary effect of transparency.

While reporting quality primarily affects external monitoring, to the extent that poor reporting quality is a symptom of a weaker internal reporting system rather than a deliberate obfuscation of information, it can also affect the efficacy of internal monitoring. While managers have access to more detailed information than what is reported externally, the information system's overall quality will affect both internal and external decision makers. Consistent with this, recent work by Bhat, Ryan, and Vyas (2012) suggests that when banks invest more in information gathering, such as the use of stress tests and more advanced credit risk modeling, the timeliness of the loan loss provisions improves, which also affects the banks' lending behavior.

Bank regulators also pay close attention to whether directors and management are adequately performing their monitoring, as can be seen from the regulatory enforcement orders

issued to banks (see Appendix A).[12] For example, the orders would typically require the bank to submit plans that include a description of the information that is regularly reviewed by the board as a part of its oversight of operations and management, including information on the bank's adversely classified assets, allowance of loan and lease losses, capital, liquidity, and earnings, all of which are included in the Call Reports.

Overall, the literature provides competing hypotheses regarding the effect of transparency on bank failure. It is plausible that in equilibrium countervailing mechanisms arise that mitigate any effects of reporting quality on bank stability. Our study addresses this issue in two ways. First, the use of the financial crisis as a setting can help us provide more directional predictions. By providing a large shock to the banking system that surpasses that of a typical recession, the financial crisis should have a greater effect on firms with weaker reporting quality, given that a quick response to the crisis is hampered by the lack of good information. Second, we try to separate the various ways in which reporting quality can affect bank stability by investigating the relation between reporting quality and several mediating mechanisms.

First, to the extent that internal and external monitoring is weaker when reporting quality is lower (see earlier discussion), we predict that banks with lower reporting quality will end up with more non-performing loans (loans that are more than 90 days past due but still accruing interest and non-accruing loans). Because of competition, banks cannot sufficiently increase the interest they charge on their loans to offset their greater costs due to non-performing loans, as this would merely drive better borrowers to the bank's competitors. We therefore also predict that banks with lower reporting quality will be less profitable. This leads to the following hypotheses:

[12] In fact, an important aspect of a regulator's examination of a bank is to review the individual profiles of the members of the board of directors and the management to determine whether the bank has personnel of sufficient expertise and experience to properly oversee its operations.

H1: Pre-crisis reporting quality is negatively associated with non-performing loans at the onset of the crisis.

H2: Pre-crisis reporting quality is positively associated with profitability at the onset of the crisis.

Bank failure is a function not just of the current performance but also of the buffer that the bank has to absorb the losses (e.g., Jin, Kanagaretnam, and Lobo, 2011). There are two opposing effects at work. First, lower profitability directly leads to lower equity capital because retained earnings are lower. Second, to safeguard against the additional risk caused by lower reporting quality, banks can opt to hold more equity capital. To ensure that banks hold adequate capital, regulators set minimum capital ratio guidelines; the minimum Tier 1 and total capital that must be maintained is, respectively, 4% and 8% of risk-weighted assets (Basel II). However, these are the minimum capital ratios; regulators encourage higher levels and banks can hold additional capital at their own discretion.

According to the theory of bank capital proposed by Diamond and Rajan (2000), bank deposits are prone to runs and increased uncertainty increases the likelihood of runs. As a result, banks associated with greater uncertainty have an incentive to maintain greater bank capital so as to reduce the probability of financial distress. In addition, regulators may also pressure these banks into holding more capital. However, using a sample of about 450 banks from 32 countries, Nier and Baumann (2006) find that higher transparency is associated with higher capital buffers.[13] They conclude that more effective market discipline due to higher transparency provides incentives to hold higher capital buffers. This leads to the following hypothesis, stated in null form because of the competing arguments:

[13] Nier and Baumann (2006) measure transparency in terms of: (i) whether the bank has a listing on a primary U.S. exchange; (ii) whether the bank is rated by a major rating agency; and (iii) a disclosure index based on a count of the number of disclosures in the annual reports, as reported in the BankScope database.

H3: Pre-crisis reporting quality is not associated with the level of bank capital at the onset of the crisis.

Next, we investigate the relation between reporting quality and bank failures by looking at two sets of measures. In addition to the bank failures, we look at the enforcement actions of the three federal regulators (OCC, FRB, and FDIC). Our purpose in doing so is twofold. First, regulatory enforcement actions are targeted at banks with serious, but not yet fatal, weaknesses in their operations. This broader definition of "failure" allows for a larger sample. Second, to the extent that regulatory intervention is successful in improving the bank, this may diminish the effect of reporting quality on bank failure. As we hypothesized above, we expect banks with lower reporting quality to have more non-performing loans and lower profitability, which will lead to a higher incidence of bank failure. However, to the extent that these banks hold more capital, the effect is more ambiguous. Given that the setting of our paper is the financial crisis of 2008, a worse-than-usual crisis, we expect the first effect to dominate. This leads to the following hypotheses:

H4: Pre-crisis reporting quality is associated with a lower likelihood of regulatory enforcement during the crisis.

H5: Pre-crisis reporting quality is associated with a lower likelihood of bank failure during the crisis.

Our hypotheses so far address whether banks with better reporting quality have better outcomes in terms of their performance, the likelihood of regulatory intervention, and the likelihood of bank failure. An interesting follow-up question concerns the effect of reporting quality on the effectiveness of regulatory intervention. As the regulators' actions are observable, we are able to directly examine the behavior of an important external monitor. Better reporting

quality can enhance the effectiveness of regulatory intervention by alerting the regulator earlier to potential problems and by providing better information for resolving such problems. These two factors lead to the prediction that, conditional on being targeted for regulatory intervention, banks with higher reporting quality will have a lower subsequent probability of bank failure. In contrast, if the information that regulators obtain during their bank examinations fully eliminates any effects of regulatory reporting quality, then we would expect no relation between regulatory reporting quality and bank failure. This leads to the following hypothesis:

H6: Pre-crisis reporting quality is associated with a lower incidence of bank failures following regulatory enforcement actions during the crisis.

In testing hypotheses 4 through 6, we first consider the total effect of reporting quality on regulatory enforcement action and failure. Next, we separately consider the effects of the mediating mechanisms identified in hypotheses 1 through 3 and the remaining effect after controlling for these mechanisms. Obviously, the three mechanisms we identify (non-performing loans, profitability, and Tier 1 capital) affect enforcement actions and bank failures for reasons other than reporting quality. The implicit assumption we are making in the analysis is that the other causes are uncorrelated with our measures of reporting quality after the control variables are included. We therefore extensively control for risk and other bank characteristics. If the three mechanisms we identify capture most or all of the ways in which reporting quality affects bank stability, then we would predict no relation between reporting quality and bank stability after controlling for the mechanisms. If, on the other hand, our set of mechanisms is incomplete or measured with error, then we would still expect a negative relation between reporting quality and regulatory intervention and bank failure. The connection between the hypotheses is depicted in Figure 1.

In addition to the causal hypotheses described above, there is a non-causal hypothesis. Poor reporting quality may be indicative of poor management.[14] If low quality managers lack both the skills to properly manage the bank and report on its operations, then low reporting quality acts as a signal of poor managerial quality. Similar to the hypotheses above, in that case poor reporting quality is likely related to worse outcomes during the crisis, and reporting quality acts as a leading indicator of firm performance during the crisis. Both the causal and non-causal hypotheses are interesting because both suggest that reporting quality is diagnostically useful, it helps predict which banks will perform poorly in a crisis, and therefore is useful in guiding bank oversight.

4. Data and measures

We obtain data on the banks' financial information from the Call Reports (that is, FFIEC 031 Consolidated Reports of Condition and Income for a Bank with Domestic and Foreign Offices and FFIEC 041 Consolidated Reports of Condition and Income for a Bank with Domestic Offices Only) that banks file with the Federal Reserve, the Federal Deposit Insurance Corporation, or the Office of the Comptroller of the Currency.[15] In the Call Reports, banks and their subsidiaries are required to present their financial condition and the results of operations on a consolidated basis in accordance with U.S. generally accepted accounting principles (GAAP).[16] However, the reports are not required to be audited by an independent external auditor in accordance with generally accepted auditing standards.

[14] To the best of our knowledge, the literature does not typically control for managerial quality in examining the effects of information quality because managerial quality is difficult to measure directly. This difficulty is more pertinent in our setting because most of the banks in our sample are private banks that provide limited, if any, information about their management.

[15] The data is available in machine-readable form at the Chicago Federal Reserve website: http://www.chicagofed.org/webpages/banking/financial_institution_reports/commercial_bank_data.cfm.

[16] For detailed instructions, see: http://www.fdic.gov/regulations/resources/call/crinst/callinst2008_Dec.html.

Each Call Report essentially consists of an income statement, a balance sheet, and a series of schedules linked to either the income statement or the balance sheet. Because most of the banks in our sample are privately held, the Call Reports are the only source of financial information about them. Hence, except for the hand-collected data on regulatory enforcement orders and bank failure, our analyses are limited to variables that can be constructed with these reports.

4.1 Restatements

Our primary measure of regulatory reporting quality is based on whether the bank needed to restate prior reports. We obtain information on restatements from the Call Reports (item RIAD B507: Cumulative Effect of Changes in Accounting Principles and Corrections of Material Accounting Errors). We construct the restatement variable by identifying banks with restatements during the period from 2004 to 2006. We measure reporting quality in the pre-crisis period, so that our measure is not affected by the reverse causality concern that restatements arise from managers trying to hide the bad news during the crisis. We use an indicator variable, *RESTATEMENT*, which is equal to one if the bank had a restatement in any year of this period, zero otherwise. Firms with restatements are regarded as having lower regulatory reporting quality. During the sample period, the majority of the banks (87%) had no restatements, while the remaining 13% had one or more restatements. Descriptive statistics for the *RESTATEMENT* variable are displayed in Table 1.

As can be seen from Table 1, the restatements are fairly evenly distributed over the years and nearly evenly split into upwards (46%) and downwards (54%) restatements. The restatements are generally fairly modest in magnitude. It is important to note that we use restatements as a proxy of the overall reporting quality. Thus, even though upwards restatements

are "good news" in one sense, they are still indicative of a low quality reporting system and are thus expected to lead to bad outcomes during the subsequent crisis period. Panel B shows the distribution of the number of restatement years across banks. The results indicate that most banks in our restatement sample only restated their reports once, although there are a few repeat offenders.

The Call Reports also provide some limited textual information on restatements. We have read through these to gain more insight into the underlying reasons for the restatements. Based on our reading, the majority of restatements are due to various accounting errors. Less than 10% mention changes in accounting standards as the source of a restatement. The level of detail in the discussion is, in many cases, very limited. Relatively uninformative explanations such as "Prior period equity adjustments", "Adjustment as per auditor", or "Material accounting errors" are not uncommon. Where specific accounts are noted, a variety of accounts receive mention, with the most common being (deferred) taxes. A number of items seem to indicate a lack of timeliness in the regulatory reporting, where regulatory reports have been filed before all end-of-period adjusting entries have been recorded.

Overall, our analysis of the text information supports the notion that restatements indicate weaknesses in the regulatory reporting. These weaknesses could be due to either poor internal reporting systems or deliberate obfuscation. Based on our reading of the data, there are two factors that suggest that restatements are driven mostly by the former. First, the restatements are nearly evenly split between upwards and downwards restatements. Second, the textual analysis suggests that in many cases the restatements are due to a lack of timeliness in the reporting function. Restatements often occur because important adjusting entries and estimates of deferred

taxes were not made in time for the filing of the report. This suggests that our restatement variable captures poor reporting quality for the purpose of both internal and external monitoring.

4.3 Sample construction and descriptive statistics

In this paper, we focus on the Call Reports filed by commercial banks (rather than bank holding companies) for two reasons: i) the traditional banking operations of deposit-taking and loan-making take place at commercial banks and ii) the traditional notion of bank closure as a shutdown by regulators and a payment of insured deposits out of the deposit insurance fund, and thus our bank failure data, occurs at the commercial bank level.[17] To be included in our sample, a bank must have sufficient data to compute the proxy for reporting quality and the control variables which are constructed from the December 2007 Call Reports. There are 8,097 banks filing 2007 Call Reports. First, we require the banks to have non-zero assets and loans, reducing the sample to 7,662 banks. Given that we are using a sample of mostly non-listed banks with limited public information other than what is contained in the Call Reports, we have to constrain all the variables, including the controls, to those that are measurable using the Call Report data. These data requirements reduce the sample to 7,085 banks.

We then obtain data on enforcement actions from the websites of the three federal regulators. Included are the cease-and-desist orders issued by all three regulators and the written agreements issued by the Federal Reserve Board. We also obtain bank failure data from the website of the FDIC. The FDIC is appointed as the receiver in the event of a bank failure and consequently makes public a press release that provides details about the bank at the time of the

[17] To illustrate the nature of our sample, Bank of America Corporation is a bank holding company that holds five commercial banks: i) Bank of America, National Association; ii) FIA Card Services, National Association; iii) Bank of America Rhode Island, National Association; iv) Bank of America California, National Association; and v) Bank of America Oregon, National Association. Bank of America Corporation also owns other banking and non-banking subsidiaries, such as Merrill Lynch.

failure, including the actions being taken to deal with it. See Figure 1 for the link between the hypotheses and the timeline for the construction of the variables.

Table 2 provides descriptive statistics for the enforcement actions and bank failures. Panel A presents the number of banks and enforcement actions by regulator. The FDIC is the primary regulatory authority for almost two thirds of the sample banks. It also issues the majority of the enforcement actions in the sample, although it is smaller in terms of the percentage of banks under supervision, suggesting that the FDIC issues enforcement actions to a lesser degree than do the other two regulators. Panel B shows the time-series of commercial bank failures. From this it is clear that the number of bank failures drastically increases during the financial crisis. We provide both the total commercial bank failures (on the left) and those of the banks in our final sample (on the right). From this comparison, it can be seen that we capture most of the bank failures in both number and total cost to the FDIC. Panel C shows the distribution of regulatory enforcements (bank failures) in 2008, 2009, and 2010 across the various states and overseas territories.

Table 3 provides descriptive statistics for the variables used in the regression analysis. Panel A shows the distribution of the main variables and the control variables; Panel B offers a correlation table of the reporting quality measure and the dependent variables. Univariate correlations with the dependent variables are in the hypothesized direction. We next discuss the results of the multivariate analysis.

5. Empirical analyses

The framework for our empirical analyses is depicted in Figure 1. To study the overall link between reporting quality and regulatory intervention, we first examine how reporting

quality is associated with three important factors that regulators focus on: non-performing loans, profitability, and bank capital. We then examine the overall link between reporting quality and regulatory intervention, as well as determine whether reporting quality has a direct effect on regulatory intervention, after accounting for non-performing loans, profitability, and bank capital as mediating mechanisms.

5.1 The effect of regulatory reporting quality on non-performing loans, profitability, and capital

We first test the effect of reporting quality on the mediating mechanism (H1 through H3). To ensure that our results can be attributed to reporting quality rather than to a bank's underlying risk, we control for several dimensions of risk. First, we control for the loan composition of the bank by including the fraction of loans in each major loan category. *LOAN_REAL_ESTATE* is real estate loans as a percentage of total loans. *LOAN_COMMERCIAL* is commercial and industrial loans as a percentage of total loans. *LOAN_DEPOSITORY* is loans to depository institutions and acceptances of other banks as a percentage of total loans. *LOAN_AGRICULTURAL* is loans to finance agricultural production as a percentage of total loans. *LOAN_INDIVIDUAL* is loans to individuals for personal expenditures as a percentage of total loans.

In addition to the controls for loan composition described above, we also include *LOAN_CONCENTRATION* as a measure of the diversification across loan types (measured as the Herfindahl index of loan types). We also include the standard deviation of profitability (*STD_ROA*), a widely used measure of risk. Finally, we use an ex ante measure of risk, which is the fraction of assets with the highest risk weighting (*ASSET_RISK*). We also include indicator variables for the bank's region, its primary federal regulator, and whether the bank is listed,

which might also be related to the bank's risk profile. *RESTATEMENT* and *STD_ROA* are measured over the 2004-2006 period; all other variables are measured as of 2007. The results are displayed in Table 4.

The first column shows the relation between our measures of reporting quality, *RESTATEMENT*, and the fraction of non-performing loans. Consistent with our prediction, banks with poorer reporting quality have more non-performing loans. Given that our reporting quality variable is an indicator variable, the economic significance can readily be seen from the coefficients. The coefficient on *RESTATEMENT* is 0.25, indicating that banks with prior restatements have 0.25% more non-performing loans as a percentage of total loans. This compares to a sample average *NPL* fraction of 1.2% of total loans, suggesting that this is an economically meaningful effect. A notable finding in the control variables is that banks with a large portion of real estate loans have, by the end of 2007, already begun to accumulate more non-performing loans.

The second column shows the relation between reporting quality and banks' profitability, measured by *ROA*. Consistent with the prediction, banks with better reporting quality enjoy a higher profitability. The difference in profitability for banks with and without restatements is 0.16%, compared to a sample average ROA of 0.95%, which again suggests that this is an economically meaningful effect. These findings imply that reporting quality does not just affect the quality of the loan portfolio; it also directly affects the bank's bottom line.

The final column shows the relation between reporting quality and a bank's equity capital holdings. We find that banks with weaker reporting quality have higher regulatory capital ratios. This is consistent with the theory presented in Diamond and Rajan (2000) that more transparent banks hold less capital; it is inconsistent with findings in Nier and Baumann (2006) that more

transparent banks hold more capital. Control variables generally load in the expected direction. Banks with less diversified loan portfolios hold more capital, and larger banks hold less capital. In addition, banks with a large portion of real estate loans hold less capital. While this may seem strange given the role of mortgages in the current financial crisis, in general, these loans are considered less risky due to the greater amount of collateral.

While the results are generally supportive of the hypotheses, it is difficult to firmly establish causality. Ideally, we would rely on a natural experiment or, barring that, on an analysis of changes where we can use each bank as its own control. Unfortunately, the data requirements for our reporting quality variables are such that it is hard to crisply identify changes in reporting quality. Hence, we rely on a control variable approach in which we try to control for alternative explanations. In particular, we try to carefully control for different dimensions of the bank's risk exposure, and our key independent variable, *RESTATEMENT*, is measured over the pre-crisis period (2004-2006) and thus lagged relative to the other variables. This is important to ruling out the alternative explanation that banks reduce their reporting quality to hide their problems during the crisis.

Another potential explanation is that both reporting quality and bank stability are determined by another factor such as management or governance quality. Given the data limitations, we cannot directly measure and control for these factors. However, to the extent that these factors are relatively stable over time, we can at least partially control for their effect by including the lagged dependent variable. Therefore, as an additional robustness analysis, we also perform the regressions including the lagged dependent variable at its 2003 value, in order to control for the condition of the bank before the measurement of the reporting quality variable. The results are shown in Panel B. As expected, in all regressions, the lagged dependent variable

has a positive and statistically significant coefficient. In addition, the coefficients on *RESTATEMENT* maintain their sign, although the coefficient magnitudes are somewhat reduced. The main change from the prior analysis is that the relation between *RESTATEMENT* and equity capital is no longer significant, suggesting that the prior analysis for that variable is not robust. Overall, these analyses provide some added assurance to our analysis and reduce concerns that the results are driven by reverse causality or some other factor.[18]

5.2 The effect of regulatory reporting quality on regulatory enforcement actions and bank failure

Table 5 displays our tests of H4, the effect of reporting quality on regulatory intervention. The dependent variable is an indicator equal to one if the bank was targeted by its federal regulator with an enforcement action at any point in the 2008 to 2010 period. We again rely on the timing of the variable measurement (by measuring restatement from 2004-2006) to rule out the alternative explanation that enforcement actions lead to restatements. In the first column, we show the *RESTATEMENT* results with the risk and general controls included, but excluding the hypothesized mediating mechanisms. The results indicate that banks with weaker reporting quality are more likely to be targeted by regulators. To evaluate the economic significance of the effects, we calculate the marginal effects at the mean of the control variables. The marginal effect (not tabulated) for *RESTATEMENT* is 1.9%. As a comparison, the baseline probability of receiving an enforcement action is 4.8% at the mean of all the variables in the model, and the unconditional probability of receiving an enforcement action is 8.3%.

[18] Another potential mechanism through which reporting quality affects bank stability is the access to financing. If banks with better reporting quality can more easily attract new equity capital, then this will also enhance their stability. In untabulated tests we examine the relation between reporting quality and the likelihood of obtaining new equity capital during the crisis. We find do not find a statistically significant effect.

The second column shows the effects of the mediating mechanisms; the coefficients are in the expected direction and highly significant. The third column shows the full model. As discussed earlier, if the three mechanisms that we identify capture most or all of the ways in which reporting quality affects bank stability, then we would predict no relation between reporting quality and bank stability after controlling for these mechanisms. While the coefficient on *RESTATEMENT* is somewhat smaller than it is in the first column, it is still statistically significant. This suggests that the effect of *RESTATEMENT* is not fully subsumed by the three mediating mechanisms. The marginal effect (not tabulated) for *RESTATEMENT* is 0.9%. As a comparison, the baseline probability of receiving an enforcement action is 3.8% at the mean of all the variables in the model; the unconditional probability of receiving an enforcement action is 8.3%.

Next, Table 6 shows the relation between reporting quality and bank failures (hypothesis 5). The dependent variable is an indicator equal to one if the bank failed during any of the years between 2008 and 2010. In the first column, we show the results with the risk and general controls included, but excluding the hypothesized mediating mechanisms. The results indicate that banks with weaker reporting quality are more likely to fail. The marginal effect (not tabulated) for *RESTATEMENT* is 0.37%. As a comparison, the baseline probability of bank failure is 0.88% at the mean of all the variables in the model and the unconditional probability of bank failure is 3.5%.

The second column shows the effects of the mediating mechanisms; the coefficients are in the expected direction and highly significant. The final column shows the full model. The coefficient on *RESTATEMENT* is still positive, but no longer statistically significant. This would suggest that reporting quality works primarily through the mediating mechanisms, but the lack of

power makes it difficult to make strong statements about the relative importance of the mediating mechanisms and other factors as the channels through which reporting quality affects bank failure.

Our results so far suggest that banks with better reporting quality have better outcomes in terms of their performance, the likelihood of regulatory intervention, and the likelihood of bank failure. We next examine the effect of reporting quality on the effectiveness of regulatory intervention. We test this prediction using the sample of 589 banks targeted by their regulator for a formal intervention (cease-and-desist orders and written agreements). These banks tend to have significant problems. While only about 3.5% of banks in the full sample fail, in this subsample, 27% of banks fail. If reporting quality affects the effectiveness of regulatory intervention, then we expect the incidence of bank failure following enforcement actions to be lower for banks with higher regulatory reporting quality.[19]

The results are reported in Table 7. The findings are consistent with reporting quality improving the effectiveness of regulatory enforcement actions. Within the subsample of banks with enforcement actions, banks with weaker reporting quality are more likely to fail. The marginal effect (not tabulated) of *RESTATEMENT* is 9.4%. As a comparison, the baseline probability of bank failure is 23% at the mean of all the variables in the model and the unconditional probability of bank failure is 27% in the sample of banks that received a regulatory enforcement action. These results provide some evidence that reporting quality affects the effectiveness of regulatory intervention and that audits performed by the regulator cannot fully overcome deficiencies in a bank's reporting system.

[19] An alternative measure of regulatory effectiveness is to examine the likelihood of 'surprise' bank failures, banks that failed before the regulator took action. The drawback of this approach is that the sample size becomes very small, leading to low power. Less than one third of the failures can be characterized as 'surprise' failures. Using this alternative test, the univariate results are consistent with the hypotheses and statistically significant. However, after including the control variables, the results are no longer statistically significant.

In the preceding analyses we use an indicator equal to one if the bank had any restatements during the 2004-2006 period as a parsimonious measure of reporting quality. Alternative approaches would be to take into account the frequency and/or the severity of the restatements. In untabulated tests we repeat the main analyses of Tables 5 and 6 using these alternative approaches. When using the number of restatements as the measure of reporting quality we find consistent results, the number of restatements has a positive and statistically significant relation with enforcement orders and bank failures. The results using the absolute value of the restated amounts (scaled by total assets) as the measure of reporting quality, are in the right direction but not statically significant. This suggests that the presence of restatements is more important than the exact magnitude.

We use all restatements as a proxy for overall reporting quality. As such, even upwards restatements, which increase equity capital, are an indication of poor reporting quality. Nevertheless, it may be of interest to directly test whether the results are driven by downwards restatements. For this purpose, we redo the analyses in Tables 5 and 6 using an interaction term if the restatement reduced equity capital. In untabulated tests, we find that there is no statistically significant difference between upwards and downwards restatements. In addition, the sign on the interaction term is negative in the analysis of enforcement actions, but positive in the analysis of failure. These results suggest that there are no systematic differences between upwards and downwards restatements for the purpose of our study, with the caveat that these comparisons suffer from lower power.

We also conduct an exploratory analysis of the effect of being publicly listed on the relation between reporting quality and bank outcomes. On the one hand, publicly listed firms have more alternative sources of information available, thereby potentially reducing the effect of

regulatory reporting quality. On the other hand, public firms are likely to have more sophisticated reporting systems, suggesting that if a restatement does happen it is more likely to be an indication of more serious problems. In addition, top managers at public banks are likely further removed from the bank's day-to-day operations, making them more dependent on the quality of aggregate reports for their internal monitoring. Given these conflicting predictions, we view our analysis as exploratory and do not have a formal hypothesis.[20] To test whether the relation between reporting quality and bank stability depends on the listing status of the bank, we include an interaction between *RESTATEMENT* and *PUBLIC*. Overall, we do not find any statistically significant differences in the relation between reporting quality and bank stability for publicly listed and private banks. These results suggest that there are no systematic differences between public and private banks for the purpose of our tests, again with the caveat that these comparisons suffer from lower power.

5.3 Alternative proxy for reporting quality

We use restatements as our primary measure of reporting quality. However, this measure has several drawbacks. First, some of the more severe reporting errors require amended filings rather than restatements. Whether the filing has been amended is not recorded in the data and thus cannot be used to construct our measure. Second, reports can be of low quality without requiring restatements, as, for example, when banks make accrual estimates that are of low quality. We therefore supplement our main analysis with a measure of reporting quality based on Dechow and Dichev's (2002) accruals quality measure. Their measure tracks how well the firm's accruals reflect the underlying cash flows. Our measure focuses on one of the most important

[20] In terms of the key variables, the samples of public and private banks are reasonably similar. The fraction of public (private) banks with restatements is 0.129 (0.132), the fraction with regulatory enforcement actions is 0.109 (0.081), and the fraction ultimately failing is 0.045 (0.034).

accruals in a bank, the loan loss provision; we measure how well this accrual maps onto the underlying losses in the loan portfolio.

The advantage of this approach is that it captures the quality of the accounting estimates, which is an important aspect of the usefulness of reporting information and is not fully captured by the restatement variable. However, given that these estimates are under the management's discretion, low quality estimates could capture deliberate obfuscation. Thus, relative to the restatement variable, this variable potentially captures more of the discretionary aspects of reporting quality. In that case this variable might speak more directly to the external monitoring role of reporting quality than it does to the internal monitoring role.

In constructing our measure, we use the standard deviation of the residuals from an economic/accounting model of loan loss provisions as an indicator of reporting quality. To do so, we begin with a simple economic/accounting equation regarding loan loss reserves:

$$\text{Reserves}_t = \text{Reserves}_{t-1} - \text{Net charge-offs}_t + \text{Loan loss provisions}_t. \quad (1a)$$

The loan loss reserves at the end of the prior period, i.e., *t-1*, reflect an estimate of the loans that were expected to be charged off. During the period, actual net charge-offs (charge-offs are also known as loan losses) reduce the available reserves. The loan loss provisions are then used to increase the reserves, such that the ending balance reflects the loan losses that are expected to occur in the future. Hence, the equation for loan loss provisions is:

$$\text{Loan loss provisions}_t = -\text{Reserves}_{t-1} + \text{Net charge-offs}_t + \text{Reserves}_t. \quad (1b)$$

This setup suggests the following two drivers of the loan loss provisions made at time *t*. First, banks are expected to make more loss loan provisions if the beginning loan loss reserves were insufficient or if there are high levels of current charge-offs (e.g., Wahlen, 1994; Beaver and Engel, 1996; Beatty, Ke, and Petroni, 2002). Hence, loan loss provisions are expected to be

negatively related to beginning loan loss reserves and positively related to contemporaneous charge-offs. Second, banks are expected to make more loan loss provisions if they expect future loan losses to be higher (e.g., Wahlen, 1994; Beaver and Engel, 1996; Beatty et al., 2002; Beatty and Liao, 2011). To capture these expectations, we use realized net charge-offs at *t+1* as a proxy for banks' ex ante expectations of these losses at time *t*; we expect a positive association between loan loss provisions and net charge-offs at *t+1*. In addition, we use the change in non-performing loans (loans that are 90 days or more past due or that are nonaccrual) at time *t* and time *t+1* as a proxy for expectations of future charge-offs; hence, we expect a positive association between loan loss provisions and the contemporaneous and future changes in non-performing loans. Hence our empirical model for loan loss provisions is:

$$LLP_t = \beta_0 + \beta_1 LLR_{t-1} + \beta_2 NCO_t + \beta_3 NCO_{t+1} + \beta_4 CH\_NPL_t + \beta_5 CH\_NPL_{t+1} + \varepsilon_t,$$

where LLP_t is loan loss provisions at time *t*; LLR_{t-1} is the beginning-of-period level of the loan loss reserves; NCO_t, and NCO_{t+1} are net charge-offs at times *t* and *t+1*, respectively; and CH_NPL_t and CH_NPL_{t+1} are the change in non-performing loans from time *t-1* to time *t*, and from time *t* to *t+1*, respectively. All variables are scaled by total loans at time *t*.

Taking the average of the coefficients of the yearly regressions from 2002 to 2006, the regression equation is $LLP_t = 0.236 - 0.112\ LLR_{t-1} + 0.800\ NCO_t + 0.029\ CH\_NPL_t + 0.206\ NCO_{t+1} + 0.012\ CH\_NPL_{t+1}$. All coefficients are statistically significant at the one percent level. The average annual R-squared of 68% suggests that the model fits the data well.

Similar to how accruals quality is defined in Dechow and Dichev (2002), loan loss provision quality, *LLPQ*, is then constructed for each bank by first taking the standard deviation of the bank-specific residuals, ε, over the five years and then multiplying the resulting number by minus one. The latter step is done so that higher values of *LLPQ* indicate higher loan loss

provision quality. Two sources of error in the loan loss provisioning process will lead to a higher standard deviation of residuals. First, if the bank has a poor understanding of the development of its loans losses and instead relies on average loss rates, it will result in a mismatch between loan loss provision and its economic determinants, which, in turn, will result in more volatile residuals. Second, if the bank uses the loan loss reserve to manage earnings, then the earnings management and subsequent reversals will increase the volatility of the residuals. In our sample, we measure *LLPQ* as of 2007 as the negative of the standard deviation of its five loan loss provision residuals from 2002 to 2006; the one year lag is introduced because the loan loss provision model at time *t* requires net charge-offs at time *t+1*. The number of banks for which *LLPQ* can be estimated is 6,762.

Consistent with prior literature on model-based measures of accounting quality and restatements (Dechow et al., 2011), we find that the relation between *LLPQ* and *RESTATEMENT* is in the predicted direction and highly statistically significant; the Pearson correlation is -0.068 and statistically significant at the 1% level. To account for outliers and potential non-linearities, we use indicator variables for the extreme terciles rather than the continuous *LLPQ* variable. This is a parsimonious approach that is more robust to outliers and potential non-linearities. Lys and Sabino (1992) show that a tercile approach is close to the power-maximizing grouping. In particular, *HIGH_LLPQ* (*LOW_LLPQ*) is an indicator variable equaling one if the firm is in the top (bottom) tercile of *LLPQ*. We note that results are similar with the continuous *LLPQ* measure.

Table 8 presents the regression results of the analysis with LLPQ. Consistent with our main results, we find that higher quality reporting is associated with a lower incidence of regulatory enforcement actions and bank failures. The enforcement action results remain

significant after including the mediating mechanisms, but the bank failure results become insignificant. Overall these findings are consistent with and provide added assurance to our main results.

6. Conclusion

In this paper, we examine the effect of regulatory reporting quality on bank stability during the financial crisis. We posit that weaker reporting quality reduces the effectiveness of monitoring and leads to lower quality loan portfolios, which results in more non-performing loans and lower profitability. We find evidence consistent with both of these predictions. A potential factor that offsets the negative outcomes of weaker reporting quality is that, ex ante, banks might hold more capital to safeguard against higher uncertainty (Diamond and Rajan, 2000); our results on this are mixed. Next, we investigate the relation between reporting quality and bank stability, focusing on two measures of the latter. First, the bank regulators perform regular audits of the commercial banks. If they find significant weaknesses in a bank's operations, they will issue enforcement actions against it. Using these enforcement actions and data on actual bank failures, we find that banks with lower reporting quality have a greater incidence of regulatory intervention and bank failure. We also find some evidence that higher reporting quality improves the effectiveness of regulatory intervention. Overall, our findings highlight the importance of banks' regulatory reporting quality.

Our findings are subject to several caveats. First, our results do not speak to the optimality of a bank's choices about reporting quality, merely to the effect of those choices on stability. Second, there might be concerns about endogeneity due to reverse causality and omitted correlated variables. We attempt to mitigate this concern by using leads and lags in

structuring our regressions. We also include an extensive array of control variables regarding the composition of the banks' loan portfolio and overall risk exposure. However, we note that even if these attempts are not fully successful, at a minimum our results show that reporting quality is diagnostically useful, as it helps predict which banks will perform poorly in a crisis. Another limitation of our study is that because we only use data from the Call Reports, we cannot fully capture the overall quality of the information available to managers and reported to regulators, which includes information that is not made available to the public.

Our results suggest that to reduce banking problems, regulators and other stakeholders might want to pay closer attention to banks that have a history of poor regulatory reporting quality. From a monitoring perspective, poor quality reporting reduces regulators' and other monitors' ability to use the reported information to effectively monitor banks, which, in turn, can lead to problems that reduce bank stability. Possible solutions include more coordination between regulators and banks to ensure data integrity and accuracy, as well more on-site monitoring for those banks with a history of poor regulatory reporting quality.

Appendix A: Extracts from enforcement actions against banks

Example 1: FRB Written Agreement with Century Bank of Florida

Full report available at: http://www.federalreserve.gov/newsevents/press/enforcement/enf20090917a1.pdf.

"WHEREAS, in recognition of their common goal to maintain the financial soundness of Century Bank of Florida, Tampa, Florida (the "Bank"), a state chartered bank that is a member of the Federal Reserve System, the Bank, the Federal Reserve Bank of Atlanta (the "Reserve Bank"), and the State of Florida Office of Financial Regulation (the "OFR") have mutually agreed to enter into this Written Agreement (the "Agreement"); and

WHEREAS, on August 25, 2009, the board of directors of the Bank, at a duly constituted meeting, adopted a resolution authorizing and directing Jose Vivero to enter into this Agreement on behalf of the Bank, and consenting to compliance with each and every provision of this Agreement by the Bank and its institution-affiliated parties, as defined in Section 3(u) of the Federal Deposit Insurance Act, as amended
(the "FDI Act") (12 U.S.C. § 1813(u)), and Section 655.005(1)(i), Florida Statutes.

NOW, THEREFORE, the Bank, the Reserve Bank, and the OFR agree as follows:"

Board Oversight
"Within 60 days of this Agreement, the board of directors of the Bank shall submit to the Reserve Bank and the OFR a written plan to strengthen board oversight of the management and operations of the Bank. The plan shall, at a minimum, address, consider, and include:

(a) The actions that the board of directors will take to improve the Bank's condition and maintain effective control over and supervision of the Bank's senior management and major operations and activities, including, but not limited to, credit risk management, loan underwriting, credit administration, the adequacy of the allowance for loan and lease losses ("ALLL"), capital, and earnings;
(b) a description of the information and reports that will be regularly reviewed by the board of directors in its oversight of the operations and management of the Bank, including information on the Bank's adversely classified assets, ALLL, capital, liquidity, and earnings;
(c) the establishment of measures to ensure Bank staff's adherence to approved policies and procedures; and
(d) the establishment of written procedures to ensure corrective actions are promptly taken to address regulatory findings."

Management Review
"Within 30 days of this Agreement, the board of directors of the Bank shall retain an independent consultant acceptable to the Reserve Bank and the OFR to conduct a review of all managerial and staffing needs of the Bank and the qualifications and performance of all senior Bank management and all loan officers (the "Management Review"), and to prepare a written report of findings and recommendations (the "Report"). The primary purpose of the Management Review shall be to aid in the development of a suitable management structure that is adequately staffed by qualified and trained personnel, particularly in the areas of problem loan resolution and credit risk management."

Loan Review
"Within 60 days of this Agreement, the Bank shall submit to the Reserve Bank and the OFR an acceptable written program for the on-going review and grading of the Bank's loan portfolio. The program shall, at a minimum, address, consider, and include:

(a) The scope and frequency of loan review, including external loan reviews;
(b) standards and criteria for assessing the credit quality of loans;
(c) application of loan grading standards and criteria to the loan portfolio;
(d) controls to ensure adherence to the revised loan review and grading standards; and
(e) written reports to the board of directors, at least quarterly, that identify and report the status of those loans that are nonperforming or adversely graded and the prospects for full collection or strengthening of the quality of any such loans."

Asset Improvement

"The Bank shall not, directly or indirectly, extend or renew any credit to or for the benefit of any borrower, including any related interest of the borrower, who is obligated to the Bank in any manner on any extension of credit or portion thereof that has been charged off by the Bank or classified, in whole or in part, "loss" in the report of examination of the Bank by the Reserve Bank that commenced on February 17, 2009 (the "Report of Examination") or in any subsequent report of examination, as long as such credit remains uncollected."

Allowance for Loan and Lease Losses

"(a) Within 10 days of this Agreement, the Bank shall eliminate from its books, by charge-off or collection, all assets or portions of assets classified "loss" in the Report of Examination that have not been previously collected in full or charged off. Thereafter the Bank shall, within 30 days from the receipt of any federal or state report of examination, charge off all assets classified "loss" unless otherwise approved in writing by the Reserve Bank and the OFR.

(b) Within 60 days of this Agreement, the Bank shall review and revise its allowance for ALLL methodology consistent with relevant supervisory guidance, including the Interagency Policy Statements on the Allowance for Loan and Lease Losses, dated July 2, 2001 (SR 01-17 (Sup)) and December 13, 2006 (SR 06-17), and the findings and recommendations regarding the ALLL set forth in the Report of Examination, and submit a description of the revised methodology to the Reserve Bank and the OFR. The revised ALLL methodology shall be designed to maintain an adequate ALLL and shall address, consider, and include, at a minimum, the reliability of the Bank's loan grading system, the volume of criticized loans, concentrations of credit, the current level of past due and nonperforming loans, past loan loss experience, evaluation of probable losses in the Bank's loan portfolio, including adversely classified loans, and the impact of market conditions on loan and collateral valuations and collectability."

Example 2: FDIC Cease-and-Desist Order against Hometown Bank of Villa Rica

Full report available at: http://www.fdic.gov/bank/individual/enforcement/2008-01-01.pdf.

ORDER TO CEASE AND DESIST

"IT IS HEREBY ORDERED, that the Bank, its institution-affiliated parties, as that term is defined in section 3(u) of the Act, 12 U.S.C. § 1813(u), and its successors and assigns cease and desist from the following unsafe and unsound banking practices and violations of law and regulation:

(a) operating with a board of directors ("Board") that has failed to provide adequate supervision over and direction to the management of the Bank;
(b) operating with inadequate management;
(c) operating with inadequate equity capital and reserves in relation to the volume and quality of assets held by the Bank;
(d) operating with a large volume of poor quality loans;
(e) operating with an inadequate allowance for loan and lease losses ("ALLL");
(f) following hazardous lending and lax collection practices;
(g) operating with inadequate routine and controls policies;
(h) operating in such a manner as to produce operating losses; and
(i) violating laws, regulations and/or statements of policy as more fully described on pages 17-22 of the FDIC Report of Examination as of September 30, 2006 ("Report")."

"IT IS HEREBY ORDERED, that the Bank, its institution-affiliated parties, and its successors and assigns, take affirmative action as follows:"

BOARD OF DIRECTORS

"Immediately upon the effective date of this Order, the Board shall increase its participation in the affairs of the Bank, assuming full responsibility for the approval of sound policies and objectives and for the supervision of all of the Bank's activities, consistent with the role and expertise commonly expected for directors of banks of comparable size. This participation shall include meetings to be held no less frequently than monthly at which, at a minimum, the following areas shall be reviewed and approved: reports of income and expenses; new, overdue, renewal, insider, charged-off, and recovered loans; investment activity; operating policies; and individual committee actions. Board minutes shall document these reviews and approvals, including the names of any dissenting directors."

MANAGEMENT

"Within sixty (60) days from the effective date of this Order, the Bank shall have and retain qualified management. Each member of management shall have qualifications and experience commensurate with his or her duties and responsibilities at the Bank. Management shall include a chief executive officer responsible for supervision of the lending function and with oversight responsibility for all other areas of bank operations. This individual must have the proven ability in managing a bank of comparable size and in effectively implementing lending, investment and operating policies in accordance with sound banking practices. Management shall also include a senior lending officer with significant appropriate lending, collection, and loan supervision experience, and proven success in upgrading a low quality loan portfolio. Each member of management shall be provided appropriate written authority from the Board to implement the provisions of this Order."

CAPITAL

"Within thirty (30) days from the effective date of this Order, the Bank shall have Tier 1 capital in such an amount as to equal or exceed 7.0 percent of the Bank's total assets. Thereafter, during the life of this Order, the Bank shall maintain Tier 1 capital in such an amount as to equal or exceed 7.0 percent of the Bank's total assets."

CHARGE-OFF

"Within ten (10) days from the effective date of this Order, the Bank shall eliminate from its books, by charge-off or collection, all assets or portions of assets classified "Loss" and fifty (50) percent of all assets or portions of assets classified "Doubtful" in the Report that have not been previously collected or charged-off. (If an asset classified "Doubtful" is a loan, the Bank may, in the alternative, increase its ALLL by an amount equal to fifty (50) percent of

the loan classified “Doubtful.”) Elimination of these assets through proceeds of other loans made by the Bank is not considered collection for purposes of this paragraph.”

NO ADDITIONAL CREDIT
“Beginning with the effective date of this Order, the Bank shall not extend, directly or indirectly, any additional credit to, or for the benefit of, any borrower who has a loan or other extension of credit from the Bank that has been charged off or classified, in whole or in part, "Loss" or "Doubtful" and is uncollected. The requirements of this paragraph shall not prohibit the Bank from renewing (after collection in cash of interest due from the borrower) any credit already extended to any borrower.”

PLANS FOR REDUCING/IMPROVING CLASSIFIED ASSETS
“Within ninety (90) days of the effective date of this Order, the Bank shall submit to the Supervisory Authorities specific plans and proposals to effect the reduction and/or improvement of any lines of credit which are adversely classified by the Supervisory Authorities as of the date of the Report and which aggregate $500,000 or more as of that date. Such plans shall thereafter be monitored and progress reports thereon resubmitted by the Bank at 90-day intervals concurrently with the other reporting requirements set forth in Paragraph 25 of this Order.”

LENDING AND COLLECTION POLICIES
“Within sixty (60) days from the effective date of this Order, the Bank shall revise, adopt, and implement written lending and collection policies to provide effective guidance and control over the Bank's lending function, which policies shall include specific guidelines for placing loans on a non-accrual basis as well as monitoring individual and industry loan concentrations. In addition, the Bank shall obtain adequate and current documentation for all loans in the Bank's loan portfolio. Such policies and their implementation shall be in a form and manner acceptable to the Supervisory Authorities as determined at subsequent examinations and/or visitations.”

REDUCE CONCENTRATIONS OF CREDIT
“Within thirty (30) days from the effective date of this Order, the Bank shall adopt and produce to the Supervisory Authorities a plan to reduce, within one hundred eighty (180) days, each loan concentration as specified on Pages 75-76 of Report to an amount which shall be less than twenty-five (25) percent of the Bank's total equity capital and reserves for each individual concentration. In addition, the Bank shall not make new extensions of credit to any borrower or associated entities which will equal twenty-five (25) percent or more of the Bank's total equity capital and reserves.”

ESTABLISH/MAINTAIN ALLOWANCE FOR LOAN/LEASE LOSSES
“Within thirty (30) days from the effective date of this Order, the Board shall review the appropriateness of the ALLL and establish a comprehensive policy for determining an appropriate level of the ALLL and for documenting its analysis according to the standards set forth in the July 25, 2001, Interagency Policy Statement on Allowance for Loan and Lease Losses Methodologies and Documentation for Banks and Savings Associations. For the purpose of this determination, an appropriate ALLL shall be determined after the charge-off of all loans or other items classified "Loss." The policy shall provide for a review of the ALLL at least once each calendar quarter. Said review should be completed at least ten (10) days prior to the end of each quarter, in order that the findings of the Board with respect to the ALLL may be properly reported in the quarterly Reports of Condition and Income. The review should focus on the results of the Bank's internal loan review, loan and lease loss experience, trends of delinquent and non-accrual loans, an estimate of potential loss exposure of significant credits, concentrations of credit, and present and prospective economic conditions. A deficiency in the ALLL shall be remedied in the calendar quarter it is discovered, prior to submitting the Report of Condition, by a charge to current operating earnings. The minutes of the Board meeting at which such review is undertaken shall indicate the results of the review. The Bank’s policy for determining the adequacy of the Bank’s ALLL and its implementation shall be satisfactory to the Supervisory Authorities as determined at subsequent examinations and/or visitations.”

Appendix B: Sample FDIC press release of a bank failure

FDIC Approves the Assumption of all the Deposits of Douglass National Bank, Kansas City, Missouri

Media Contact:
David Barr (202) 898-6992
cell: (703) 622-4790
e-mail: dbarr@fdic.gov

FOR IMMEDIATE RELEASE
January 25, 2008

The Board of Directors of the Federal Deposit Insurance Corporation (FDIC) today approved the assumption of all the deposits of Douglass National Bank, Kansas City, Missouri, by Liberty Bank and Trust Company, New Orleans, Louisiana.

Douglass National, with $58.5 million in total assets and $53.8 million in total deposits as of October 22, 2007, was closed today by the Office of the Comptroller of the Currency, and the FDIC was named receiver.

Depositors of Douglass National will automatically become depositors of the assuming bank. The failed bank's three offices will reopen on Monday as branches of Liberty Bank and Trust. Over the weekend, customers can access their money by writing checks, or by using their debit or ATM cards.

In addition to assuming all of the deposits of the failed bank, Liberty Bank and Trust will purchase approximately $55.7 million of Douglass National's assets at book value, less a discount of $6.1 million. The FDIC will retain approximately $2.8 million in assets for later disposition.

Customers with questions about today's transaction or who would like more information about the failure of Douglass National can visit the FDIC's Web site at http://www.fdic.gov/bank/individual/failed/Douglas.html or call the FDIC toll-free at 1-888-206-4662.

The transaction is the least costly resolution option, and the FDIC estimates that the cost to its Deposit Insurance Fund is approximately $5.6 million. Douglass National is the first FDIC-insured bank to fail this year, and the first in Missouri since Superior National Bank, Kansas City, was closed on April 14, 1994. Last year, three FDIC-insured institutions failed.

# # #

Congress created the Federal Deposit Insurance Corporation in 1933 to restore public confidence in the nation's banking system. The FDIC insures deposits at the nation's 8,560 banks and savings associations and it promotes the safety and soundness of these institutions by identifying, monitoring and addressing risks to which they are exposed. The FDIC receives no federal tax dollars – insured financial institutions fund its operations.

FDIC press releases and other information are available on the Internet at www.fdic.gov, by subscription electronically (go to www.fdic.gov/about/subscriptions/index.html) and may also be obtained through the FDIC's Public Information Center (877-275-3342 or 703-562-2200). **PR-7-2008**

References

Ali, A., Klasa, S., and Yeung, P.E., 2009. The limitations of industry concentration measures constructed with Compustat data: Implications for finance research. *Review of Financial Studies* 22: 3839-3871.

Barth, J., Caprio, G., and Levine, R., 2004. Bank regulation and supervision: What works best? *Journal of Financial Intermediation* 13: 205-248.

Basel Committee on Banking Supervision (Basel), 1998. Enhancing bank transparency. Electronic version: http://www.bis.org/publ/bcbs41.htm.

Basel Committee on Banking Supervision (Basel), 2001. A new capital adequacy framework: Pillar 3 market discipline. Electronic version: http://www.bis.org/publ/bcbs65.pdf.

Beatty, A., Ke, B., and Petroni, K.R., 2002. Earnings management to avoid earnings declines across publicly and privately held banks. *The Accounting Review* 77: 547-570.

Beatty, A., and Liao, S., 2011. Do delays in expected loss recognition affect banks' willingness to lend? *Journal of Accounting and Economics* 52: 1-20.

Beaver, W.H., and Engel, E.E., 1996. Discretionary behavior with respect to allowances for loan losses and the behavior of security prices. *Journal of Accounting and Economics* 22: 177-206.

Bhat, G., Ryan, S.G., and Vyas, D., 2012. The implications of banks' credit risk modeling disclosures for their loan loss provision timeliness and loan origination procyclicality. Working paper, Washington University at St Louis.

Blacconiere, W.G., 1991. Market reactions to accounting regulations in the savings and loan industry. *Journal of Accounting and Economics* 14: 91-113.

Blacconiere, W.G., Bowen, R.M., Sefcik, S.E., and Stinson, C.H., 1991. Determinants of the use of regulatory accounting principles by savings and loans. *Journal of Accounting and Economics* 14: 167-201.

Boyd, J.H., and De Nicoló, G., 2005. The theory of bank risk taking and competition revisited. *Journal of Finance* 60: 1329-1343.

Bushman, R.M., and Williams, C.D., 2009. Accounting discretion, loan loss provisioning, and discipline of banks' risk taking. Working paper, University of North Carolina.

Campello, M., Graham, J.R., and Harvey, C.R., 2010. The real effects of financial constraints: Evidence from a financial crisis. *Journal of Financial Economics* 97: 470-487.

Chen, X., Cheng, Q., and Lo, A., 2009. The consequences of aggressive financial reporting: The case of external financing. Working paper, University of Wisconsin.

Cordella, T., and Yeyati, E.L., 1998. Public disclosure and bank failures. *IMF Staff Papers* 45: 110-131.

Dechow, P.M., and Dichev, I.D., 2002. The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review* 77: 35-59.

Dechow, P.M., Ge, W., Larson, C.R., and Sloan R.G., 2011. Predicting material accounting misstatements. *Contemporary Accounting Research* 28: 17-82.

Dechow, P.M., Ge, W., and Schrand, C., 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics* 50: 344-401.

Demirgüç-Kunt, A., Detragiache, E., and Tressel, T., 2008. Bank on the principles: Compliance with Basel core principles and bank soundness. *Journal of Financial Intermediation* 17: 511-542.

Demyanyk, Y., and Van Hemert, O., 2011. Understanding the subprime mortgage crisis. *Review of Financial Studies* 24: 1848-1880.

Diamond, D.W., and Rajan, R.G., 2000. A theory of bank capital. *Journal of Finance* 55: 2431-2465.

Doyle, J.T., Ge, W., and McVay, S.E., 2007. Accruals quality and internal control over financial reporting. *The Accounting Review* 82: 1141-1170.

Durnev, A., and Mangen C., 2009. Corporate investments: Learning from restatements. *Journal of Accounting Research* 47: 679-720.

Federal Deposit Insurance Corporation (FDIC), 2002. Enhancing financial transparency: A symposium sponsored by the FDIC. *Bank Trends* July 2002. Electronic version: http://www.fdic.gov/bank/analytical/bank/bt0206.html.

Financial Services Authority (FSA), 2011. Disclosure rules and transparency rules. Electronic version: http://fsahandbook.info/FSA//handbook/DTR.pdf.

Flannery, M., and Thakor, A.V., 2006. Accounting, transparency and bank stability. *Journal of Financial Intermediation* 15: 281-284.

Gleason, C., Jenkins, N., and Johnson, W., 2008. The contagion effects of accounting restatements. *The Accounting Review* 83: 83–110.

Gorton, G., and Metrick, A., 2011. Securitized banking and the run on repo. *Journal of Financial Economics*, forthcoming.

Hill, J.W., and Ingram, R.W., 1989. Selection of GAAP or RAP in the savings and loan industry. *The Accounting Review* 64: 667-679.

Hutton, A.P., Marcus, A.J., and Tehranian, H., 2009. Opaque financial reports, R^2, and crash risk. *Journal of Financial Economics* 94: 67-86.

Hyytinen, A., and Takalo, T., 2002. Enhancing bank transparency: A re-assessment. *European Finance Review* 6: 429-445.

Ivashina, V., and Scharfstein, D., 2010. Bank lending during the financial crisis of 2008. *Journal of Financial Economics* 97: 319-338.

Jin, J.Y., Kanagaretnam, K., and Lobo, G.J., 2011, Ability of accounting and audit quality variables to predict bank failure during the crisis. 35, 2811-2819.

Keeley, M., 1990. Deposit insurance, risk and market power in banking. *American Economic Review* 80: 1183-1200.

Keys, B.J., Mukherjee, T., Seru, A., and Vig, V., 2010. Did securitization lead to lax screening? Evidence from subprime loans. *The Quarterly Journal of Economics* 125: 307-362.

Knaup, M., and Wagner, W., 2012. A market-based measure of credit portfolio quality and banks: Performance during the subprime crisis. *Management Science* 58: 1423-1437.

Lys, T.Z., and Sabino J.S., 1992. Research design issues in groupings-based tests. *Journal of Financial Economics* 32: 355-387.

Morgan, D.P., 2002. Rating banks: Risk and uncertainty in an opaque industry. *American Economic Review* 92: 874-888.

Nier, E.W., 2005. Bank stability and transparency. *Journal of Financial Stability* 1: 342-354.

Nier, E., and Baumann, U., 2006. Market discipline, disclosure and moral hazard in banking. *Journal of Financial Intermediation* 15: 332-361.

Palmrose, Z., Richardson, V., and Scholz, S., 2004. Determinants of market reactions to restatement announcements. *Journal of Accounting and Economics* 37: 59–89.

Veronesi, P., and Zingales, L., 2010. Paulson's gift. *Journal of Financial Economics* 97: 339-368.

Wahlen, J.M., 1994. The nature of information in commercial bank loan loss disclosures. *The Accounting Review* 69: 455-478.

Figure 1: Connection between hypotheses

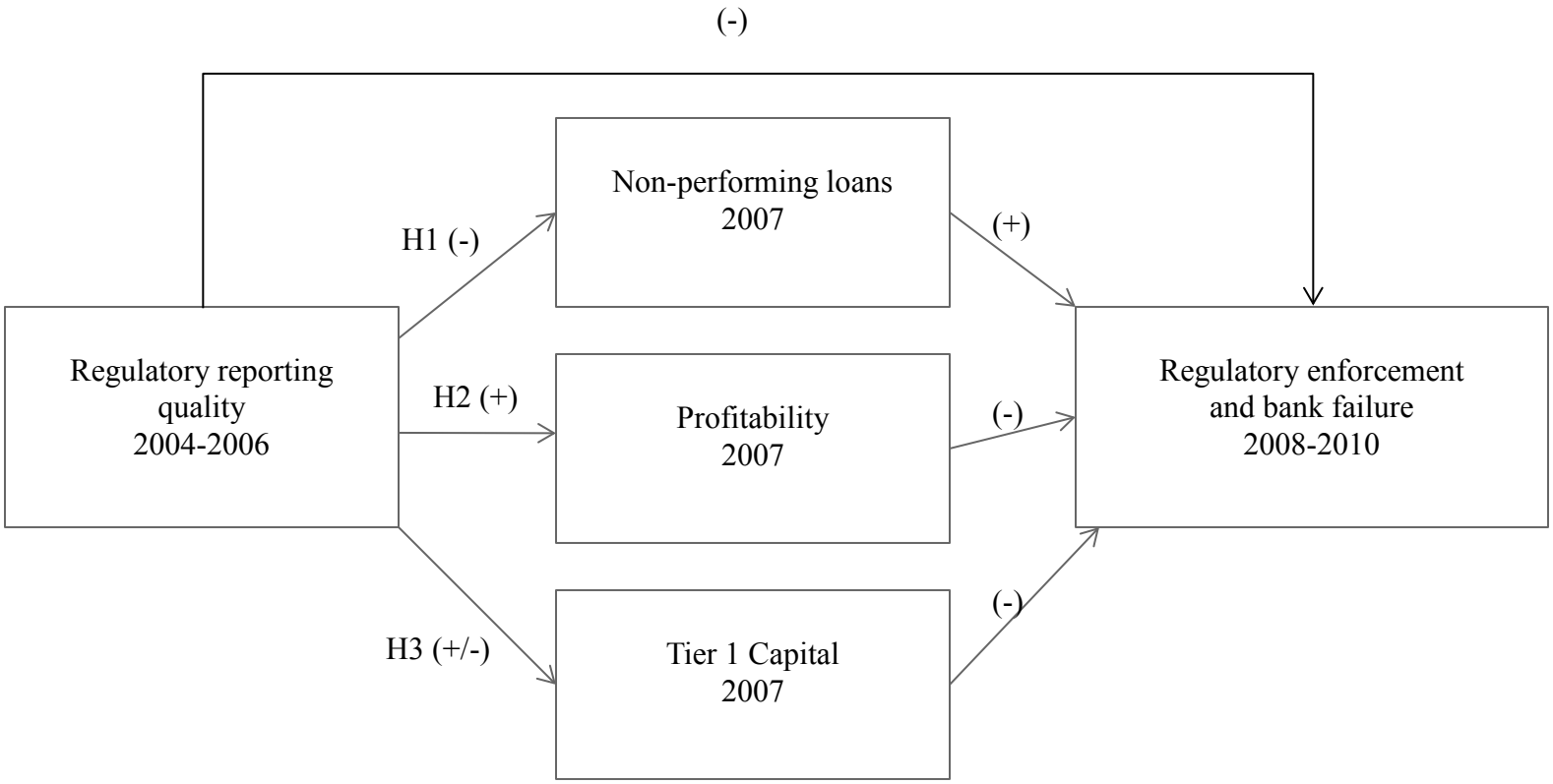

Table 1 Restatements

This table presents the descriptive statistics for the restatements in our sample of 7,085 banks. The sample period is from 2004-2006. Panel A presents information on the number of upward and downward restatements, the aggregate dollar value of restatements and the aggregate net income in each year. Panel B presents the frequency of the banks' restatements. Dollar amounts are in millions.

Panel A Restatements by year

Year	Banks restating	Banks restating upwards			Banks restating downwards		
	Number (Percent)	Number	Average restatement as a percentage of assets	Average ROA as a percentage of assets	Number	Average restatement as a percentage of assets	Average ROA as a percentage of assets
2004	412 (5.8%)	180	0.133	0.799	232	-0.099	0.903
2005	374 (5.3%)	180	0.092	0.940	194	-0.098	0.870
2006	415 (5.9%)	191	0.090	0.999	224	-0.146	0.941

Dollar amounts are in millions.

Panel B Number of restatements per bank

Number of restatements	Number of banks	Percentage of banks
0	6,151	86.82
1	719	10.15
2	163	2.30
3	52	0.73

Table 2 Regulatory enforcement and bank failures

This table presents descriptive information about regulatory enforcement and bank failures within our sample of 7,085 banks. Panel A provides information on the distribution of bank and regulatory enforcements across the three regulators, the FDIC, FED, and OCC. Panel B presents the distribution of commercial bank failures, which have been reported by the FDIC since 2001. Panel C shows the distribution of regulatory enforcements (bank failures) in 2008, 2009, and 2010 across the various states and overseas territories. The format of the set of numbers within each parenthesis is X / Y / Z, where X is the number of banks that have received at least one regulatory enforcement action between January 2008 to December 2010, Y is the number of banks that failed between January 2008 to December 2010, and Z is the number of banks.

Panel A Regulatory enforcement from 2008 to 2010

	Regulator			
	FDIC	FED	OCC	Total
Total number of banks	4,698 66.31%	1499 21.16%	888 12.53%	7,085
Banks issued at least one enforcement action from 2008 to 2010	321 54.50%	136 23.09%	132 22.41%	589

Panel B Distribution of bank failures

Year	All commercial bank failures			Bank failures within sample of 7,085 banks		
	Bank failures	Bank failures with FDIC cost info	Total cost ($m)	Bank failures	Bank failures with FDIC cost info	Total cost ($m)
2001	3	3	4.6			
2002	10	4	361.9			
2003	3	2	135.6			
2004	3	3	14.1			
2005	0	.	.			
2006	0	.	.			
2007	2	1	3.0			
2008	20	19	4,580.5	17	16	4,268.2
2009	120	120	24,100.9	105	105	21,536.0
2010	139	139	20,243.7	124	124	19,640.2

Panel C Regional distribution of regulatory enforcement and bank failures

Region 1: Northeast: Enforce = 3.72%; Fail = 0.93%	
New England	**Middle Atlantic**
Connecticut (0 / 0 / 44)	New Jersey (6 / 2 / 77)
Maine (0 / 0 / 26)	New York (6 / 1 / 120)
Massachusetts (3/ 1 / 155)	Pennsylvania (8 / 2 / 189)
New Hampshire (0 / 0 / 15)	
Rhode Island (1 / 0 / 6)	
Vermont (0 / 0 / 13)	

Region 2: Midwest: Enforce = 6.63%; Fail = 2.56%		
East North Central	**West North Central**	
Indiana (4 / 1 / 118)	Iowa (5 / 0 / 366)	Nebraska (13 / 1 / 234)
Illinois (53 / 36 / 594)	Kansas (24 / 6 / 333)	North Dakota (1 / 0 / 93)
Michigan (20 / 8 / 140)	Minnesota (31 / 15 / 408)	South Dakota (5 / 1 / 82)
Ohio (13 / 2 / 178)	Missouri (17 / 8 / 315)	
Wisconsin (21 / 2 / 263)		

Region 3: South: Enforce = 7.94%; Fail = 3.67%		
South Atlantic	**East South Central**	**West South Central**
Delaware (3 / 0 / 21)	Alabama (8 / 3 / 135)	Arkansas (6 / 1 / 137)
District of Columbia (0 / 0 / 5)	Kentucky (12 / 0 / 181)	Louisiana (6 / 1 / 134)
Florida (45 / 29 / 214)	Mississippi (3 / 1 / 89)	Oklahoma (9 / 2 / 252)
Georgia (50 / 43 / 282)	Tennessee (11 / 0 / 168)	Texas (22 / 7 / 594)
Maryland (7 / 2 / 53)		
North Carolina (7 / 2 / 80)		
South Carolina (6 / 3 / 59)		
Virginia (8 / 0 / 92)		
West Virginia (0 / 0 / 62)		

Region 4: West: Enforce = 20.35%; Fail = 8.49%		
Mountain		**Pacific**
Arizona (8 / 6 / 34)	Montana (7 / 0 / 70)	Alaska (0 / 0 / 5)
Colorado (23 / 3 / 138)	Utah (12 / 4 / 52)	California (52 / 20 / 210)
Idaho (2 / 0 / 12)	Nevada (7 / 8 / 24)	Hawaii (0 / 0 / 5)
New Mexico (6 / 1 / 46)	Wyoming (4 / 1 / 37)	Oregon (10 / 6 / 33)
		Washington (20 / 14 / 76)

Region 5: Overseas Territories: Enforce = 25.00%, Fail = 18.75%	
American Samoa (0 / 0 / 1)	Virgin Islands (0 / 0 / 2)
Guam (0 / 0 / 2)	Federated States of Micronesia (0 / 0 / 1)
Puerto Rico (4 / 3 / 10)	

Table 3 Descriptive statistics

This table presents descriptive statistics for the variables used in the analyses. The sample consists of 7,085 banks. *RESTATEMENT* is an indicator variable equaling one if the bank has at least one restatement from 2004 to 2006. *ENFORCE* is an indicator variable equaling one if the bank was issued at least one enforcement order by its regulator in the years 2008 to 2010, and zero otherwise. *FAIL* is an indicator variable equaling one if the bank was closed by the FDIC in the years 2008 to 2010, zero otherwise. The remaining variables are measured as of the end of 2007. *NPL* is non-performing loans as a percentage of total loans. *ROA* is return on assets, expressed as a percentage. *TIER1* is Tier 1 capital as a percentage of total risk-weighted assets. *LOAN_REAL_ESTATE* is real estate loans as a percentage of total loans. *LOAN_COMMERCIAL* is commercial and industrial loans as a percentage of total loans. *LOAN_DEPOSITORY* is loans to depository institutions and acceptances of other banks as a percentage of total loans. *LOAN_AGRICULTURAL* is loans to finance agricultural production as a percentage of total loans. *LOAN_INDIVIDUAL* is loans to individuals for personal expenditures as a percentage of total loans. *LOAN_TO_ASSET* is total loans as a percentage of total assets. *LOAN_CONCENTRATION* is the Herfindahl index of the various classes of loans in the bank's loan portfolio, specifically, real estate loans, loans to depository institutions, agricultural loans, commercial and industrial loans, loans to individuals, and loans to foreign governments; a higher Herfindahl index indicates a greater concentration (i.e., a less diversified loan portfolio). *ASSET_RISK* is the percentage of total assets that have a 100% risk-weight. *STD_ROA* is the standard deviation of the return on assets for the years 2004 to 2006. *TOTAL_ASSET* is the bank's total assets in billions of dollars. *LIQUIDITY* is cash as a percentage of total deposits. *UNINSURED_DEPOSIT* is uninsured assessable deposits as a percentage of total assessable deposits. *PUBLIC* is an indicator variable that equals one if the bank or its bank holding company has ordinary shares listed on NYSE, AMEX, or NASDAQ. *FDIC*, *FED*, and *OCC* are indicator variables equaling one if a bank is supervised by the FDIC, FED, and OCC, respectively. All continuous variables have been winsorized at the 1st and 99th percentiles within 2007.

Panel A: Descriptive statistics

Variable	Mean	Std Dev	P25	Median	P75
RESTATEMENT	0.132	0.338	0.000	0.000	0.000
NPL	1.215	1.622	0.194	0.669	1.561
ROA	0.949	0.746	0.568	0.947	1.315
TIER1	15.259	7.259	10.540	12.890	17.180
ENFORCE	0.083	0.276	0.000	0.000	0.000
FAILED	0.035	0.183	0.000	0.000	0.000
LOAN_REAL_ESTATE	68.403	20.161	57.292	71.859	82.678
LOAN_COMMERCIAL	3.736	9.175	0.000	0.000	0.000
LOAN_DEPOSITORY	0.109	2.127	0.000	0.000	0.000
LOAN_AGRICULTURAL	7.504	12.650	0.000	1.038	9.759
LOAN_INDIVIDUAL	8.066	10.221	2.338	5.350	10.198
LOAN_TO_ASSET	66.314	15.291	57.487	68.825	77.550
LOAN_CONCENTRATION	55.053	19.731	39.604	54.140	69.267
ASSET_RISK	56.386	17.027	44.712	57.437	68.839
STD_ROA	0.279	0.377	0.093	0.163	0.302
TOTAL_ASSET	0.484	1.447	0.065	0.139	0.317
LIQUIDITY	5.312	4.688	2.857	3.971	5.891
UNINSURED_DEPOSIT	39.776	15.093	29.165	37.548	47.969
PUBLIC	0.085	0.278	0.000	0.000	0.000
FDIC	0.663	0.473	0.000	1.000	1.000
FED	0.212	0.408	0.000	0.000	0.000
OCC	0.125	0.331	0.000	0.000	0.000

Panel B: Correlation table

This panel presents correlations between the restatements and the main dependent variables. Pearson (Spearman) correlations are found above (below) the diagonal. All the variables are defined in Panel A. The p-values for the correlations are provided below the correlations.

	RESTATEMENT	*NPL*	*ROA*	*TIER1*	*ENFORCE*	*FAIL*
RESTATEMENT	1.000	0.054	-0.080	0.026	0.037	0.026
		<.0001	<.0001	0.030	0.002	0.027
NPL	0.041	1.000	-0.250	-0.063	0.268	0.281
	0.001		<.0001	<.0001	<.0001	<.0001
ROA	-0.075	-0.141	1.000	0.117	-0.151	-0.132
	<.0001	<.0001		<.0001	<.0001	<.0001
TIER1	0.022	-0.132	0.110	1.000	-0.140	-0.112
	0.067	<.0001	<.0001		<.0001	<.0001
ENFORCE	0.037	0.208	-0.134	-0.189	1.000	0.390
	0.002	<.0001	<.0001	<.0001		<.0001
FAIL	0.026	0.180	-0.099	-0.171	0.390	1.000
	0.027	<.0001	<.0001	<.0001	<.0001	

Table 4 Regulatory reporting quality, non-performing loans, return on assets, and Tier 1 capital

This table presents the results of regressions that examine how restatements are associated with non-performing loans (*NPL*), return on assets (*ROA*), and Tier 1 capital (*TIER1).* In Panel B, each regression includes the lag dependent variable (*LAG_DEPVAR)* as a control (measured at the end of 2003). All the variables are defined in Table 3. The t-statistic of each coefficient is provided in brackets below the coefficient. Significance levels are based on two-tailed tests. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Regulatory reporting quality and mediating variables

	NPL	*ROA*	*TIER1*
RESTATEMENT	0.25***	-0.16***	0.38**
	(4.59)	(-6.27)	(2.04)
LOAN_REAL_ESTATE	0.01***	-0.00**	-0.12***
	(5.82)	(-2.27)	(-14.39)
LOAN_COMMERCIAL	-0.00	0.00***	-0.05***
	(-0.59)	(4.16)	(-5.89)
LOAN_DEPOSITORY	0.02*	0.01***	0.05
	(1.86)	(3.33)	(1.53)
LOAN_AGRICULTURAL	0.01***	0.01***	-0.01
	(2.90)	(5.01)	(-1.13)
LOAN_INDIVIDUAL	0.01**	0.01***	-0.01
	(1.99)	(4.49)	(-1.42)
LOAN_TO_ASSET	-0.01***	0.00***	-0.16***
	(-6.36)	(2.71)	(-23.89)
LOAN_CONCENTRATION	0.01***	0.00	0.11***
	(5.44)	(0.04)	(18.20)
ASSET_RISK	0.02***	0.00	-0.13***
	(10.88)	(0.50)	(-21.46)
STD_ROA	0.55***	-0.26***	1.65***
	(10.87)	(-11.11)	(9.44)
TOTAL_ASSET	0.04**	-0.01	-0.43***
	(2.56)	(-1.34)	(-8.26)
LIQUIDITY	-0.01	0.01***	0.09***
	(-1.29)	(3.07)	(6.59)
UNINSURED_DEPOSIT	-0.01***	0.00**	-0.03***
	(-4.56)	(2.28)	(-5.09)
PUBLIC	0.05	-0.07**	-0.94***
	(0.70)	(-2.05)	(-3.68)
REGION AND REGULATOR FE	YES	YES	YES
Adjusted R-square (%)	8.94%	8.87%	46.60%

Panel B: Regulatory reporting quality and mediating variables (with lag dependent variable)

	NPL	*ROA*	*TIER1*
RESTATEMENT	0.17***	-0.11***	0.21
	(3.13)	(-5.10)	(1.48)
LOAN_REAL_ESTATE	0.01***	-0.00***	-0.06***
	(5.74)	(-2.71)	(-9.43)
LOAN_COMMERCIAL	-0.00	0.00	-0.01
	(-0.57)	(0.91)	(-1.48)
LOAN_DEPOSITORY	0.01	0.01**	0.02
	(1.04)	(2.44)	(0.94)
LOAN_AGRICULTURAL	0.00	0.00***	0.00
	(1.44)	(3.72)	(0.38)
LOAN_INDIVIDUAL	-0.00	0.00	0.00
	(-0.69)	(0.98)	(0.55)
LOAN_TO_ASSET	-0.01***	0.00***	-0.10***
	(-6.71)	(3.72)	(-18.30)
LOAN_CONCENTRATION	0.01***	-0.00	0.06***
	(5.29)	(-1.33)	(12.77)
ASSET_RISK	0.02***	0.00	-0.08***
	(13.23)	(1.37)	(-16.04)
STD_ROA	0.66***	-0.03	-0.75***
	(11.34)	(-1.30)	(-4.65)
TOTAL_ASSET	0.04***	-0.02***	-0.27***
	(2.65)	(-3.60)	(-6.76)
LIQUIDITY	-0.01	0.01***	0.07***
	(-1.62)	(3.64)	(6.15)
UNINSURED_DEPOSIT	-0.00**	0.00***	-0.03***
	(-2.18)	(4.59)	(-7.07)
PUBLIC	0.10	-0.10***	-0.21
	(1.44)	(-3.29)	(-1.06)
LAG_DEPVAR	0.20***	0.40***	0.46***
	(21.41)	(42.11)	(70.27)
REGION AND REGULATOR FE	YES	YES	YES
Adjusted R-square (%)	15.30%	26.80%	69.00%

Table 5 Regulatory reporting quality and regulatory enforcement orders

This table presents the results of regressions that examine how regulatory reporting quality, as proxied by *RESTATEMENT*, is associated with the likelihood of being issued at least one regulatory enforcement order by its regulator in the years 2008 to 2010 (*ENFORCE*). All the variables are defined in Table 3. The t-statistic of each coefficient is provided in brackets below the coefficient. Significance levels are based on two-tailed tests. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	ENFORCE		
RESTATEMENT	0.36***		0.22*
	(2.89)		(1.68)
NPL		0.30***	0.30***
		(12.38)	(12.35)
ROA		-0.41***	-0.41***
		(-6.41)	(-6.23)
TIER1		-0.06***	-0.06***
		(-3.95)	(-4.00)
LOAN_REAL_ESTATE	0.00	-0.01	-0.00
	(0.65)	(-0.74)	(-0.74)
LOAN_COMMERCIAL	-0.01**	-0.01*	-0.01*
	(-2.14)	(-1.85)	(-1.91)
LOAN_DEPOSITORY	0.02	0.04*	0.04*
	(1.19)	(1.75)	(1.75)
LOAN_AGRICULTURAL	-0.03***	-0.03***	-0.03***
	(-3.97)	(-3.89)	(-3.88)
LOAN_INDIVIDUAL	-0.03***	-0.03***	-0.03***
	(-3.79)	(-3.45)	(-3.47)
LOAN_TO_ASSET	0.01	0.01**	0.01**
	(1.36)	(2.20)	(2.21)
LOAN_CONCENTRATION	0.01***	0.01**	0.01**
	(2.88)	(2.39)	(2.41)
ASSET_RISK	0.04***	0.02***	0.02***
	(7.84)	(4.63)	(4.63)
STD_ROA	0.27***	0.01	0.01
	(2.61)	(0.12)	(0.13)
TOTAL_ASSET	0.12***	0.09***	0.09***
	(3.80)	(2.83)	(2.77)
LIQUIDITY	-0.02	-0.00	-0.00
	(-1.25)	(-0.24)	(-0.25)
UNINSURED_DEPOSIT	-0.00	0.00	0.00
	(-0.10)	(0.84)	(0.83)
PUBLIC	-0.53***	-0.69***	-0.69***
	(-3.17)	(-3.99)	(-3.98)
REGION AND REGULATOR FE	YES	YES	YES
Pseudo R-square (%)	16.25%	23.60%	23.67%

Table 6 Regulatory reporting quality and bank failure

This table presents the results of regressions that examine how regulatory reporting quality, as proxied by *RESTATEMENT*, is associated with the likelihood of bank closure in the years 2008 to 2010 (*FAIL*). All the variables are defined in Table 3. The t-statistic of each coefficient is provided in brackets below the coefficient. Significance levels are based on two-tailed tests. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	FAIL		
RESTATEMENT	0.36*		0.24
	(1.95)		(1.19)
NPL		0.33***	0.33***
		(10.53)	(10.54)
ROA		-0.36***	-0.35***
		(-3.79)	(-3.67)
TIER1		-0.13***	-0.13***
		(-4.11)	(-4.16)
LOAN_REAL_ESTATE	0.01	-0.00	-0.00
	(1.09)	(-0.39)	(-0.36)
LOAN_COMMERCIAL	0.00	0.00	0.00
	(0.45)	(0.51)	(0.47)
LOAN_DEPOSITORY	-0.05	-0.06	-0.07
	(-0.34)	(-0.37)	(-0.41)
LOAN_AGRICULTURAL	-0.02	-0.02	-0.02
	(-1.50)	(-1.48)	(-1.47)
LOAN_INDIVIDUAL	-0.10***	-0.08***	-0.08***
	(-3.46)	(-2.92)	(-2.94)
LOAN_TO_ASSET	-0.01	-0.00	-0.00
	(-0.96)	(-0.35)	(-0.34)
LOAN_CONCENTRATION	0.03***	0.02***	0.02***
	(3.50)	(3.08)	(3.07)
ASSET_RISK	0.06***	0.04***	0.04***
	(7.06)	(4.74)	(4.73)
STD_ROA	0.35**	0.20	0.20
	(2.51)	(1.21)	(1.22)
TOTAL_ASSET	0.11**	0.07	0.07
	(2.34)	(1.46)	(1.47)
LIQUIDITY	-0.15***	-0.13***	-0.14***
	(-4.36)	(-3.71)	(-3.75)
UNINSURED_DEPOSIT	0.00	0.01	0.01
	(0.13)	(1.25)	(1.23)
PUBLIC	-0.74***	-1.02***	-1.03***
	(-3.07)	(-3.97)	(-3.98)
REGION AND REGULATOR FE	YES	YES	YES
Pseudo R-square (%)	23.78%	33.59%	33.65%

Table 7 Regulatory reporting quality and the effectiveness of regulatory enforcement

This table presents the results of regressions that examine how regulatory reporting quality, as proxied by *RESTATEMENT*, is associated with the likelihood of bank closure in the years 2008 to 2010 (*FAIL*), conditional on regulatory enforcement actions. The sample consists of the 589 banks that were subject to enforcement actions from 2008 to 2010. All the variables are defined in Table 3. The t-statistic of each coefficient is provided in brackets below the coefficient. Significance levels are based on two-tailed tests. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	FAIL		
RESTATEMENT	0.48*		0.39
	(1.89)		(1.47)
NPL		0.13***	0.12***
		(2.99)	(2.96)
ROA		-0.27**	-0.25**
		(-2.18)	(-2.02)
TIER1		-0.05	-0.05
		(-1.11)	(-1.16)
LOAN_REAL_ESTATE	-0.02	-0.01	-0.02
	(-0.93)	(-0.74)	(-0.85)
LOAN_COMMERCIAL	0.00	0.01	0.01
	(0.12)	(0.67)	(0.58)
LOAN_DEPOSITORY	-0.05	-0.03	-0.04
	(-0.35)	(-0.26)	(-0.30)
LOAN_AGRICULTURAL	0.00	0.01	0.01
	(0.11)	(0.65)	(0.54)
LOAN_INDIVIDUAL	-0.07**	-0.06*	-0.07*
	(-2.17)	(-1.94)	(-1.96)
LOAN_TO_ASSET	-0.02	-0.01	-0.01
	(-1.26)	(-1.07)	(-1.06)
LOAN_CONCENTRATION	0.03**	0.02*	0.02*
	(1.97)	(1.66)	(1.74)
ASSET_RISK	0.04***	0.03**	0.03***
	(3.07)	(2.56)	(2.61)
STD_ROA	-0.21	-0.23	-0.24
	(-0.86)	(-0.83)	(-0.86)
TOTAL_ASSET	0.10	0.10	0.10
	(1.42)	(1.44)	(1.37)
LIQUIDITY	-0.10**	-0.10**	-0.10**
	(-2.39)	(-2.44)	(-2.43)
UNINSURED_DEPOSIT	0.01	0.01	0.01
	(1.39)	(1.44)	(1.41)
PUBLIC	-0.53	-0.59	-0.58
	(-1.48)	(-1.61)	(-1.59)
REGION AND REGULATOR FE	YES	YES	YES
Pseudo R-square (%)	0.114	0.1433	0.1464

Table 8 Alternative proxy for financial reporting quality – loan loss provision quality

This table presents the results of regressions that examine how regulatory reporting quality, as proxied by loan loss provision quality, is associated with the likelihood of being issued at least one regulatory enforcement order by its regulator (*ENFORCE*) or with the likelihood of bank closure (*FAIL*). *HIGH_LLPQ* (*LOW_LLPQ*) is an indicator variable equaling one if the firm is in the top (bottom) tercile of loan loss provision quality. All the other variables are defined in Table 3. The t-statistic of each coefficient is provided in brackets below the coefficient. Significance levels are based on two-tailed tests. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	ENFORCE		*FAIL*	
LOW_LLPQ	0.51***	0.36***	0.30*	0.13
	(4.47)	(3.02)	(1.74)	(0.71)
HIGH_LLPQ	-0.47***	-0.29**	-0.60***	-0.36
	(-3.52)	(-2.10)	(-2.83)	(-1.63)
NPL		0.29***		0.31***
		(11.04)		(8.98)
ROA		-0.37***		-0.31***
		(-5.43)		(-3.07)
TIER1		-0.06***		-0.14***
		(-4.03)		(-4.10)
LOAN_REAL_ESTATE	0.01	-0.00	0.01	-0.00
	(1.15)	(-0.59)	(1.23)	(-0.31)
LOAN_COMMERCIAL	-0.01*	-0.01*	0.00	0.00
	(-1.91)	(-1.87)	(0.44)	(0.26)
LOAN_DEPOSITORY	0.02	0.04	-0.11	-0.12
	(1.14)	(1.62)	(-0.51)	(-0.55)
LOAN_AGRICULTURAL	-0.03***	-0.03***	-0.02	-0.02
	(-3.48)	(-3.59)	(-1.34)	(-1.35)
LOAN_INDIVIDUAL	-0.03***	-0.03***	-0.08***	-0.07***
	(-3.53)	(-3.27)	(-2.92)	(-2.62)
LOAN_TO_ASSET	0.01***	0.02***	-0.00	-0.00
	(2.61)	(2.93)	(-0.28)	(-0.26)
LOAN_CONCENTRATION	0.01***	0.01***	0.03***	0.03***
	(2.91)	(2.62)	(3.45)	(3.15)
ASSET_RISK	0.03***	0.02***	0.05***	0.04***
	(6.56)	(3.81)	(6.25)	(4.35)
STD_ROA	0.44***	0.13	0.49**	0.25
	(3.09)	(0.80)	(2.28)	(1.07)
TOTAL_ASSET	0.13***	0.09***	0.14***	0.09*
	(4.21)	(2.91)	(2.97)	(1.83)
LIQUIDITY	-0.01	-0.00	-0.14***	-0.13***
	(-0.94)	(-0.07)	(-3.79)	(-3.37)
UNINSURED_DEPOSIT	0.00	0.01	0.01	0.01*
	(0.73)	(1.30)	(1.02)	(1.82)
PUBLIC	-0.54***	-0.70***	-0.96***	-1.27***
	(-3.13)	(-3.88)	(-3.61)	(-4.51)
REGION AND REGULATOR FE	YES	YES	YES	YES
Pseudo R-square (%)	17.90%	24.37%	24.56%	32.96%