

# **Do Strict Regulators Increase the Transparency of the Banking System?**

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\* Corresponding Author. 100 Main Street, Room E62-685. E-mail: [jgranja@mit.edu](mailto:jgranja@mit.edu) We thank Amit Seru for generously providing access to the U.S. Bank Regulatory Index dataset. We also thank Brad Badertscher, Mary Barth, Jannis Bischof, Peter Demerjian (discussant), John Gallemore, Christian Leuz, Amit Seru, Rahul Vashishtha, Dushyantkumar Vyas (discussant) and workshop participants at London Business School, MIT, Rice University, Washington University (Olin), UNC Kenan-Flagler Business School, Faculdade de Economia do Porto, Universität Mannheim, and participants of the Colorado Accounting Conference and Minnesota Empirical Conference for comments. Finally, we thank Suzie Noh for stellar research assistance.

## **Abstract**

We investigate the role of regulatory incentives on the enforcement of financial reporting transparency in the U.S. banking industry. The previous literature suggests that banking regulators use discretion to facilitate regulatory forbearance. Yet, it is not clear whether these actions result from lax oversight or whether they are necessary to prevent further financial instability. Using a novel measure of the quality of regulatory enforcement, we show that strict regulators are more likely to enforce income-reducing reporting choices by forcing banks to restate their overly aggressive call reports. Further, we find that the effect of regulatory strictness on accounting enforcement is strongest in periods leading up to economic downturns and for banks with riskier asset portfolios. Overall, the results from our analyses are consistent with the notion that regulatory incentives play an important role in enforcing financial reporting transparency, particularly in periods leading up to economic crises.

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## 1. Introduction

According to a prominent narrative of the recent financial crisis, the lax regulatory enforcement of financial reporting transparency in the banking system was a key contributor to the buildup of risks that preceded the problems in the financial system.<sup>1</sup> Investors, market participants, and members of the financial press accused weak banking regulators of catering to the interests of the financial industry to extract private benefits such as future employment opportunities. Other commentators, however, have a more benign view of the lack of regulatory action. According to this view, banking regulators loosened their enforcement standards to avoid forcing financial institutions to reduce lending and sell assets at already discounted prices (e.g. Hanson, Kashyap, and Stein, 2011; Beatty and Liao, 2014; Bushman, 2014). In spite of the continuing debate on this issue, there is little systematic evidence on the relation between regulatory enforcement and financial reporting transparency before, during, and in the aftermath of the financial crisis.

We use a novel measure of regulatory strictness to provide evidence on the relation between regulatory enforcement and financial reporting transparency. The first goal of the analysis is to examine if state banking regulators that perform well on several dimensions (strict regulators) also enforce stricter accounting enforcement standards or whether these regulators concede looser enforcement standards because they fear the potential destabilizing effects of accounting transparency. The second goal of the analysis is to understand the timing of the regulatory actions of strict regulators. In particular, we

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<sup>1</sup> For examples of these arguments see “The Financial Crisis and the Role of Federal Regulators,” from the Hearing Before the Committee on Oversight and Government Reform on October 23, 2008 (<http://www.gpo.gov/fdsys/pkg/CHRG-110hhrg55764/html/CHRG-110hhrg55764.htm>). During these hearings, Christopher Cox, then chairman of the SEC, suggested that the lack of financial reporting transparency contributed to the financial crisis by letting risks grow “in darkness”.

examine whether strict regulators enforce financial reporting transparency ahead of the collapse of the financial system or only when these problems are already widely recognized by market participants.

The lack of empirical evidence on this topic can be attributed to two challenges. First, it is difficult to obtain a measure that summarizes regulatory effort in the supervision of financial institutions. Prior studies rely on cross-country measures of supervisory powers conferred to bank regulators as proxies for regulatory strictness. These proxies, however, do not fully capture the substantial heterogeneity in the implementation and enforcement of accounting rules. The second empirical challenge is that the jurisdictions of regulators do not vary significantly over time; therefore, it is difficult to identify whether observed differences in banking outcomes can be attributed to regulatory strictness or to unobserved differences in local economic conditions, banking governance, or variation in the quality of accounting standards and practices.

We use the rich institutional setting of the U.S. banking industry to overcome these empirical challenges. The U.S. banking industry provides an interesting laboratory, because both federal and state banking regulators supervise financial institutions that operate in the same geographical areas and in the same lines of business. Agarwal, Lucca, Seru, and Trebbi (2014) uncover significant heterogeneity in enforcement effort across these regulators. Exploiting the pre-determined rotation of state and federal regulators in the examination cycle of each state bank, Agarwal et al. (2014) develop an index of the leniency of each state bank regulator. Their measure captures the average relative difference in the confidential bank regulatory CAMELS ratings assigned by each state regulator versus the CAMELS rating assigned to the same bank by the federal regulator.

They document that regulatory leniency leads to negative banking outcomes, such as the increased likelihood of bank failure and lower TARP repayment rates. We use this index to examine whether strict state regulators are more likely to enforce transparent financial reports prior to and during a financial crisis.

Our identification strategy relies on the fact that state and national banks operating in the same areas face similar external incentives to provide transparent reporting because they are subject to similar economic shocks and have similar business models.<sup>2</sup> However, the regulatory enforcement of state banks and national banks operating in the same areas likely differs substantially. The oversight of state banks depends on the incentives of the local state banking authorities, including the extent to which they are “captured” by their regulated entities. By contrast, the regulatory enforcement of national banks does not change considerably across states since a single federal regulator regulates national banks. The overlapping jurisdictions of state and federal regulators allow us to rely on national banks as a benchmark for the expected level of financial reporting transparency in each local area. In doing so, we control for the cross-sectional variation in banks’ incentives to provide transparent financial reporting, and we isolate the impact of regulatory strictness on the financial reporting transparency of state banks.

Our main measure of financial reporting transparency is the likelihood of restatements of regulatory call reports. Restatements of regulatory reports are particularly well suited to capture reporting transparency because regulators must audit the content of

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<sup>2</sup> Until the 1980s, different charters implied significant differences in regulatory requirements, and therefore the incentives of state banks likely differed from that of national banks. However, Blair and Kushmeider (2006) and Pierce (2007) document that since the 1980s these differences disappeared; banks now mainly select their charter based on regulatory costs and regulators’ accessibility. Any remaining heterogeneity in state- versus national- bank charter should be absorbed through our fixed effects.

the regulatory reports as part of their on-site examinations. A regulatory restatement, even of small magnitude, signals that the regulators scrutinized the content of regulatory reports, detected material errors, and forced the bank to restate their reports and correct the internal control weaknesses that generated these errors. Hence, regulatory restatements are observable, ex post proxies for the regulatory willingness to correct internal control weaknesses and accounting errors that overstate the capitalization of the financial institution and reduce the transparency of the financial reporting.

We begin our empirical analysis by documenting that commercial banks are significantly more likely to make income-reducing restatements when they face a stricter state regulator. By contrast, we do not find an association between regulatory strictness and income-increasing restatements. We interpret this pattern of evidence as consistent with the idea that strict regulators are particularly concerned with detection and correction of material accounting errors that artificially increase regulatory capital. By preventing banks from overstating regulatory capital, enforcing income-reducing restatements can enhance the stability of the banking system.

Next, we explore whether variation in macro-economic conditions influences the relation between regulatory strictness and financial reporting transparency. The goal of this analysis is to determine whether strict regulators act pre-emptively by increasing transparency during the period leading up to economic downturns, or whether they increase their regulatory oversight only after the economic crisis unfolds. The results indicate that the relation between strict regulatory oversight and accounting restatements is strongest in the period *before* market downturns. Thus, we provide evidence that strict regulators take actions to improve transparency in advance of serious economic and

banking distress events. These results are also consistent with the idea that effective regulators are able to use supervisory information to accurately forecast and pre-empt economic downturns (Peek, Rosengren, and Tootell, 1999).

Finally, we ask whether strict regulators are more likely to direct their enforcement efforts to banks at a higher risk of financial distress. In the event of a bank failure, potential unaccounted losses in troubled banks are borne by the deposit insurance fund (e.g. James, 1991; Donovan, Frankel, and Martin, 2013). Hence we might expect strict regulators to focus their scarce resources on riskier banks. Alternatively, strict regulators might avoid enforcing accounting transparency on banks at greater risk of financial distress if they believe that transparency exacerbates financial instability in these banks. Granja, Matvos, and Seru (2014) and Cole and White (2012) show that commercial banks that failed in the aftermath of the financial crisis had abnormally high concentrations of Commercial and Real Estate (CRE) loans. Consistent with the idea that strict regulators act more swiftly in banks that are troubled, we find that early regulatory efforts to enforce transparency are focused in banks with a high concentration of CRE loans.

To address a possible concern that the enforcement of income-reducing restatements might not capture the desire for greater transparency, in supplemental analyses we validate our results by studying the relation between regulatory strictness and an alternative proxy for financial reporting transparency.<sup>3</sup> Specifically, we investigate

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<sup>3</sup> One possibility is that income reducing restatements proxy for a hidden regulatory agenda to artificially reduce regulatory capital and create a hidden capital reserve. In forcing banks to restate below the true economic value, regulators can force banks to cut dividends or to raise additional, excess capital. We note, however, a large literature documents the incentive of banks to overstate the value of the portfolio of loans and securities during recessions (e.g., James, 1991; Hovakimian and Kane, 2000; Huizinga and Laeven, 2012). We consider that income-reducing restatements are, on average, likely to bring income closer to economic value, rather than understate it. In other words, if we believe that there is an asymmetrical

whether stricter regulators are associated with more timely loan loss provisions during the financial crisis. Our results show that regulatory strictness improves the timeliness of loan loss provisions, particularly in the period before the crisis. Taken together, the relationship between regulatory strictness and both restatements and loan loss provisions suggests that strict regulators enforce greater accounting transparency than weak regulators.

Our paper is directly related to several strands of literature. First, we contribute to the literature examining the role of public enforcement on the stability of the banking system. This literature primarily uses cross-country settings to examine how bank supervisors shape the stability and the financial reporting properties of banking systems (e.g. Barth, Caprio and Levine, 2004; Bischof, Daske, Elfers, and Hail, 2015; Bushman and Williams, 2012). Bertomeu and Magee (2011) study the relation between bank supervision and financial reporting transparency in the context of a model of the political economy of standard setting. The authors find that in their model banks with high quality loans exert pressures to raise financial reporting quality in order to limit discounts that occur with liquidity shocks. We add to this literature by using a novel measure of regulatory leniency to isolate the role of regulatory oversight while holding local economic incentives, state regulations and laws, and accounting standards constant. We also speak to the broader literature on the merits and pitfalls of relying on public enforcement to ensure compliance with financial regulation (e.g. LaPorta et al, 2006, and Christensen, Hail, and Leuz, 2013).

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incentive of managers to misstate income on the positive side, then greater transparency should be achieved through asymmetric restatements on the negative side.



Second, this paper speaks to an important literature that examines the impact of financial reporting transparency on the stability of the financial system. Some suggest that transparency allows regulators and market participants to monitor the financial condition of banks and to curb the excessive buildup of risks ahead of a financial crisis (e.g. Bushman and Smith, 2001; Gallemore, 2014; Granja, 2014; Skinner, 2008.) By contrast, a recent literature argues that rigorous enforcement of financial reporting transparency during a financial crisis could further impair the stability of the financial system by creating adverse feedback effects (e.g. Goldstein and Sapra, 2014) and coordination failures among depositors and short-term creditors that could precipitate bank runs (e.g. Morris and Shin, 2002.) Furthermore, Laux (2012) and Laux and Leuz (2010) suggest that enforcing stringent reporting standards in good times and allowing discretion in bad times might not be optimal because bank managers would rationally anticipate the incremental regulatory discretion during a banking crisis and reduce their efforts to avoid excessive risk taking (e.g. Kydland and Prescott, 1977.) Our paper speaks to this literature by providing empirical evidence that strict bank regulators that perform well on a number of regulatory dimensions enforce financial reporting transparency early on during a financial crisis.

Finally, we contribute to the literature on financial restatements. Observing a financial restatement is conditional on two events: (1) the bank's propensity to misreport, and (2) the probability that the error will be detected and corrected. A main challenge in the prior literature is correctly identifying whether the observed restatement is caused by the first event or by the second event (e.g. Rice and Weber, 2012). Our empirical strategy is to isolate the effect of detection and correction on the probability of observing a

restatement. Specifically, we hold accounting standards, external incentives to misreport, and economic conditions constant and examine the role of variation in regulatory oversight on accounting restatements. In doing so, we show that a higher probability of detection and correction results in a higher probability of an observed restatement.

The rest of this paper is organized as follows: Section 2 provides a background of and institutional details. Section 3 discusses the sample selection and research design. Section 4 presents the data and key variables used in the empirical tests, and Section 5 provides descriptive statistics of the main sample and variables used. Section 6 describes the empirical results and Section 7 provides robustness tests that we conduct on our main results. Section 8 offers our conclusions.

## **2. Background and Institutional Details**

Commercial banks that operate in the U.S. choose between a national and state charter. The Office of the Comptroller of the Currency (OCC) solely supervises commercial banks that choose a national charter, whereas commercial banks that choose a state charter are jointly supervised by the banking authority of their home state and by a federal regulator. Thus each state in the U.S. has a mix of banks supervised by both federal and state regulators and some banks that are supervised only by federal regulators. In spite of being supervised by different institutions, state and national banks face similar regulatory requirements and have similar business models (Blair and Kushmeider, 2006; Agarwal et al, 2014.)

In addition to its functions as primary regulator of state-chartered commercial banks, the Federal Reserve is also responsible for the consolidated supervision of financial institutions that are organized as bank holding companies (BHC).

Approximately 75% of commercial banks operating in the US are owned by a parent holding company. The oversight of a BHC requires an integrated view of the organizational structure and operations of the parent holding company and subsidiaries (Eisenbach, Haughwout, Hirtle, Kovner, Lucca, and Plosser, 2015). According to the mandate established in the Gramm-Leach-Bliley Act (GLBA), the role of the Federal Reserve is to primarily rely on the examination reports of other agencies and to assume a coordination role between several regulatory agencies that are involved in the supervision of the subsidiaries of the BHC.

The supervisors of commercial banks rely on both off-site and on-site monitoring activities to oversee the operations of financial institutions. The periodic on-site examinations are crucial to the regulatory process. These examinations allow a team of bank examiners to secure access to private information either by examining documents related to the lending and operating activities of banks or by conducting private meetings with the management of the bank.

During the interval between consecutive on-site examinations, banking regulators conduct off-site monitoring using information from various financial and regulatory reports. The accounting signals from the Reports of Condition and Income (Call Reports) are the primary source of information that regulators use to assess whether the risk profiles of banks are deteriorating and as a result, may require corrective action. The ability of the regulators to deal with the problems of distressed financial institutions in a timely manner hinges on the quality of the internal control systems and on the precision of the accounting information produced by banks. Therefore, the success of the off-site monitoring activities depends on whether regulators, auditors, and other bank governance

mechanisms ensure that the financial reporting systems produce early warning signals of financial distress.

According to FDIC Examination manuals, examiners have an active role in auditing the financial reporting systems and internal control procedures of banks. Gunther and Moore (2003) provide evidence that the on-site supervisory exams are significantly associated with adverse call report revisions and that these revisions occur both at troubled banks and at banks whose problems are just emerging. Their results validate the idea that the examiners thoroughly inspect and force the adjustment of financial reports at their on-site inspections. When bank supervisors or other external parties such as independent auditors or external accounting firms detect a material mistake or irregularity in the regulatory reports, the bank must either file an amended call report that corrects the accounting items that were misclassified or misstated, or require bank to use the cumulative effects approach to address the misstatement (i.e. catch-up adjustments).

A recent paper by Badertscher, Burks, and Easton (2015) provides evidence on the extent to which banks are required to file amended call reports. Using a proprietary dataset, they find that between 2012 and 2014, approximately 36% of the commercial banks in their sample amend their call reports after their initial submission of the report. They find that the reports take, on average, 22 calendar days to be amended. In addition, 203 out of the total 980 amendments (20.7 percent) have a non-zero impact on the regulatory capital ratios.

In a catch-up adjustment, the regulator requires the bank to adjust their balance of retained earnings to reflect the impact of the accounting errors on its regulatory capital.<sup>4</sup>

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<sup>4</sup> Ng and Rusticus (2011) suggest that banks with catch-up adjustments have a higher likelihood of failure during the financial crisis.

According to the FDIC's call report instructions, these "catch-up" adjustments should reflect "corrections resulting from material accounting errors that were made in prior years' Reports of Condition and Income and not corrected by the filing of an amended report for the period in which the error was made." These corrections could result from mistakes in the implementation of accounting principles, improper use of information that existed when the call report was prepared, mathematical mistakes, and a change from an accounting principle that is neither sanctioned nor accepted by the supervisors.

We searched the 10-Ks of SEC-registered banks that reported a regulatory accounting restatement in their regulatory filings to examine the discussion of these restatements in their SEC filings. Approximately twelve percent of the bank holding companies operating in the U.S. are publicly listed and file financial statements according to Generally Accepted Accounting Principles (GAAP) in addition to regulatory filings.<sup>5</sup> In multiple cases, the companies discuss the regulatory accounting restatement in their 10-Ks. For example, in its 2004 10-K, the Heritage Commerce Corporation discusses that: *"Management has concluded that, as of December 31, 2004, the Company did not design and implement controls over the selection and application of accounting policies for complex, non-routine transactions...This material weakness resulted in restatements of the Company's financial statements for the years ended December 31, 2002 and 2003, and the first three quarters in 2004. The material weakness resulted in accounting errors related to an asset subject to a lease, delayed equity contributions to low income housing partnerships, and leased facilities."* This and other examples suggest that these catch-up

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<sup>5</sup> In untabulated analysis, we find that GAAP quarterly earnings are also adjusted when there are regulatory accounting restatements. GAAP earnings are similar to regulatory earnings in approximately 85% of the bank-quarter observations in the sample. Moreover, the discrepancies are not reconciled by the amount of the restatement

restatements are significant enough to trigger the correction of the internal control weaknesses that originated them and to be discussed in the SEC-regulatory filings.

The catch-up method is used less frequently than the amended call-report approach, but all of the misstatements corrected under the catch-up approach have an impact on Tier 1 capital, while only 20% of the corrections under the amended call report approach affect Tier 1 capital. Conditional on impacting Tier 1 capital, an amended report has an average negative impact of 21 basis points of the Tier 1 Capital Ratio (Badertscher, Burks and Easton, 2015). The average negative impact on Tier 1 Capital for the income-decreasing restatements using the catch-up method is approximately 30 basis points. Panel A of Figure 1 plots an equal probability histogram of the restatement amount as a fraction of risk-weighted assets. Each bar of the histogram represents ten percent of the observations. The histogram suggests that approximately 30% of the restatements lower Tier1 capital by more than twelve basis points. In relative terms, a twelve basis points decrease in regulatory capital is a non-trivial shock: it represents four percent of the regulatory capital slack for a bank whose Tier 1 Capital Ratio is at the sample median. In Panel B of Figure 1, we also plot an equal probability histogram of the restatement amount as a percentage of quarterly earnings. The histogram shows that more than 60% of the income-decreasing restatements have an impact that amounts to more than ten percent of quarterly earnings. The plot suggests that these restatements represent, on average, a significant fraction of the quarterly earnings of banks. In panel C of Figure 1, we plot an equal probability histogram of the restatement amount as a percentage of the allowance for loan losses. The histogram shows that approximately half of the

regulatory accounting restatements represent more than ten percent of the total shock absorbing capacity embedded in the allowance for loan losses of banks.

We rely on the “catch up” restatements to measure financial reporting transparency. There are two main advantages of using this measure. First, the “catch-up” restatements are publicly available from the quarterly Reports of Condition of Income that are filed by the commercial banks every quarter. In contrast, amended call reports are not reported publicly; researchers can only infer that a regulatory report was amended by comparing the time stamp on the last submitted call report with the 30-day statutory filing period for a regulatory call report. If the time stamp on the last submitted call report exceeds 30 days, it is likely that the call report was amended (Badertscher et al, 2015). The second advantage of using “catch-up” restatements is that along with the restatement amount, financial institutions are required to provide a brief explanation of the cause of the restatement. This additional information allows us to identify restatements that were not likely to be initiated by banking regulators, such as tax restatements or restatements due to changes in accounting principles. The main disadvantage of using this type of restatements is that bank regulators, auditors, and other governance institutions more often force the bank to file an amended call report rather than correct the error using a catch-up restatement. While our primary tests rely on the “catch-up” restatements, we note in our robustness section that our results hold if we replace our dependent variable with a measure of the extent to which the bank was likely to file an amended call report.

### **3. Identification Strategy**

The Riegle Act of 1994 requires state and federal regulators to alternate in conducting on-site examinations of state-chartered banks.<sup>6</sup> Using a unique dataset containing the results of all on-site examinations conducted by US banking regulators, Agarwal et al. (2014) compute a measure of state-level regulatory leniency by calculating the average difference in the CAMELS rating assigned to the bank by a federal regulator versus the CAMELS rating assigned to the same bank by the corresponding state regulator. Because the assignment of state regulators follows a pre-determined rotation schedule, the regulatory leniency index should not be affected by the self-selection of banks to its preferred regulator.

Our empirical analysis uses the state-regulatory leniency index computed in Agarwal et al. (2014). Unlike Agarwal et al. (2014), we do not use the proprietary dataset containing the exact dates in which federal and state regulators conduct their on-site inspection of each commercial bank operating in the U.S. banking system. Hence our measure does not exploit the time-varying rotation of on-site inspections by state regulators. Instead, we use the *average* difference in state versus federal regulatory ratings, calculated for each state regulator over our sample period.<sup>7</sup>

In our main identification strategy, we model the likelihood of a negative restatement of bank  $i$  in quarter  $t$  using the following linear probability model specification:<sup>8</sup>

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6 A small fraction of banks are excluded from rotations. Based on the FDIC and Fed commercial bank examination manuals, which are available on their websites, only well-capitalized banks with CAMELS of 1 or 2 as of their last exam rotate under the AEP. In addition, banks with assets above \$10 billion are excluded. We include these banks in our analysis but the results remain statistically and economically significant when we exclude those banks with total asset size above \$10 billion.

7 The CAMELS rating outcomes and the on-site examination dates are not publicly-available.

8 We implement a linear probability model to allay concerns with the incidental parameters problem. The results presented in section 6 are economically and statistically significant when using a conditional logit specification. For brevity, we do not report these results in the paper.



$$\Pr(\text{Restatement})_{itcr} = \alpha_{ct} + \gamma_r + \beta \text{Leniency}_{cr} + \Gamma X_{it} + \epsilon_{itcr}, \quad (1)$$

where  $i$  indexes the bank,  $t$  indexes the time period,  $c$  indexes for the county location of the bank headquarters, and  $r$  indexes the regulatory authority (state or federal). The specification includes county-by-quarter fixed-effects,  $\alpha_{ct}$ , reflecting time-varying county-level unobservable economic factors affecting the likelihood of restatement. We also include a federal regulator fixed-effect,  $\gamma_r$ , which controls for differences in the aggregate likelihood of restatements between federal and state regulators. The main variable of interest in the paper,  $\text{Leniency}_{cr}$ , is defined as the regulatory leniency index from Agarwal et al. (2014). It takes non-zero values when a state authority regulates the bank, and it is assigned a value of zero when the bank is solely regulated by federal regulators.<sup>9</sup> Finally,  $X_{it}$  is a vector of time-varying characteristics of the commercial bank including the total assets of the bank, total deposits of the bank, percentage of residential loans, percentage of commercial real estate loans, percentage of consumer loans, fraction of loans that are classified as non-performing, liquidity ratio, and capitalization ratio. In all regressions, we cluster standard errors at the state-by-regulator level to account for any correlation in unobservables across banks that are supervised by the same regulator within a state.<sup>10</sup>

Our estimator uses the fact that, within each county and quarter, state-chartered banks operate side-by-side with national-chartered banks. State banks are regulated by state-regulators that have varying degrees of regulatory leniency depending on the state

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<sup>9</sup> The Agarwal et al. (2014) regulatory leniency index is only defined for state-chartered banks. The decision to assign a value of zero to federally-chartered banks is innocuous: the federal regulator fixed-effect absorbs the mean of the regulatory leniency index within the group of federally chartered banks. Note that federally-chartered banks are included in the analysis in order to benchmark the expected restatement rates of the state-chartered banks located in the same region.

<sup>10</sup> All results are robust to using standard errors clustered at the state-level, bank-level, or year-level.

where the bank is chartered, whereas national banks are regulated by federal regulators, which have the same leniency index regardless of the state where the bank is located. By introducing fixed-effects for every quarter within each county, we remove differences in the aggregate level of restatement rates across counties and focus on within county-quarter differences in restatement rates between state- and national- chartered banks.

Take the following illustrative example. Utah is a low-leniency state and Arizona is a high-leniency state. However, the substantial differences in economic and housing market conditions across the counties of Arizona and Utah create cross-sectional differences in the level of restatement rates that confound the empirical inferences. Our empirical strategy is to compare whether, on average, the differences in restatement rates between state and national banks within the same county are greater in the counties of Utah than in those of Arizona.

The focus on within-county variation is important because there is substantial cross-sectional variation in economic and housing market conditions across counties that could also affect the propensity to misstate (e.g. Mian and Sufi, 2009; Mian and Sufi, 2010). At the same time, state regulators are more lenient in economically depressed regions (e.g. Agarwal et al, 2014). Hence, variation in local economic shocks could simultaneously affect the banks' propensity to misstate and the leniency of state regulators thereby distorting our results. By taking differences between state and national banks within a local region, we parse out this cross-county variation in economic conditions.

One possible concern with our set of results is that the commercial banks will select their charter-authority according to their perceived level of regulatory leniency.

However, to generate our results, high quality banks with a lower propensity for restatements would have to be more likely to select more lenient state regulators. We think that this alternative, while possible, is unlikely. In addition, we show that our results persist when we limit our sample to the banks that do not switch charters during the sample period and to banks that were created prior to 1990. We conclude that our results are unlikely to be driven by charter selection.

Another potential concern stems from the limitations of the leniency index used in the empirical analysis. Because we do not know the exact dates and details of the on-site examinations, it is not possible to understand whether the accounting restatements of state-chartered banks are enforced following a federal or following a state supervisor on-site visit. Hence our results could reflect the fact that the federal regulators are systematically detecting and correcting the mistakes that strict state regulators have missed. We argue against this alternative explanation for two reasons. First, Agarwal et al. (2014) suggest that their results are unlikely to stem from an implicit “good cop/bad cop” behavior in which the regulators elicit more information by having the federal regulators go “tough” and the state regulators go “easy” on state banks. Second, because the state and federal regulators exogenously rotate in their inspections of the state-regulated banks, this hypothesis would imply that restatements of state-chartered banks would be delayed relative to those of federal-chartered banks, which are solely regulated by federal regulators. Our evidence does not suggest that the restatements rates of state-chartered banks lag those of the federal-chartered banks.

Finally, we note that if commercial banks rationally anticipate greater financial reporting enforcement from strict regulators, they will optimally invest in accounting

information systems and internal controls to reduce the probability of error. This behavior is likely to occur if the expected costs associated with a restatement are larger than the expected benefits of misstating a regulatory report. If banks engage in this behavior, it would bias our coefficients downward because state-chartered banks regulated by strict state regulators should have a lower likelihood of restatement.<sup>11</sup>

#### **4. Data and Key Variables**

We use quarterly data covering the universe of commercial banks operating in the United States between 2001 and 2010. Our sample starts in 2001 due to the availability of data on regulatory call report restatements and ends in 2010 due to the availability of the Agarwal et al. (2014) Leniency Index. We exclude savings banks and credit unions from the analysis because they file different of types regulatory reports and because the Thrift Financial Report Instructions suggest that the Office of Thrift Supervision (OTS) implemented different procedures in the classification of accounting restatements.

The financial characteristics of the commercial banks in the sample are taken from the quarterly reports of condition and income that commercial banks file with the Federal Deposit Insurance Corporation (FDIC). The dataset contains financial characteristics for commercial banks as well as the timing of regulatory accounting restatements. We collect information on the size, capital structure, and portfolio composition for each bank, as well as the date and type of accounting restatement.

Agarwal et al. (2014) generously provided the data to construct the State level U.S Banking Regulatory Index. This index captures the average relative difference in the bank regulatory CAMELS ratings assigned by each state regulator versus the CAMELS

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<sup>11</sup> In robustness tests we condition on several bank-specific measures of accounting information and internal control systems quality and find that the results are unaltered, suggesting that banks are not engaging in this behavior.

rating assigned by the federal regulator to the same banks in that state during the 1996—2010 period.

## **5. Descriptive Statistics**

Figure 2 shows the percentage of commercial banks reporting income-reducing (negative) and income-increasing (positive) restatements in the period from 2001 onward. The financial crisis of 2007 to 2009 was marked by an unprecedented number of income-reducing restatements. From 2001 to 2006, the percentage of banks reporting negative restatements of their regulatory reports hovered around two percent, whereas during 2007 and 2008 this percentage increased substantially to approximately four and ten percent, respectively. By contrast, the percentage of commercial banks reporting income-increasing restatements remained low and stable over the 2001 to 2010 period.

Table 1 presents descriptive statistics of key variables used in our analysis. There are 10,524 distinct commercial banks in our sample. The average commercial bank in the sample has a regulatory leniency index of 0.076. This number suggests that, on average, state regulators are more lenient than federal regulators: the state regulator of the average bank assigns a CAMELS rating that is 0.076 points higher than what would have been assigned to the same bank by a federal regulator. In other words, state regulators are on average more lenient in rating banks relative to federal regulators. The difference is economically meaningful; state regulators assign a better CAMELS rating than what would have been assigned to the same bank by federal regulators in 1 out of every 15 supervisory examinations.

The commercial banks in the sample report, on average, \$1.4 billion in total assets. However, our sample comprises a wide range of bank sizes, with a standard

deviation in total assets of \$23 billion. Seventy-five percent of the banks are state-chartered and hold a large percentage of their assets (60%) in real estate lending.

We also decompose the regulatory restatements into various categories using the description of the restatement provided in the regulatory report. A small percentage of all bank-quarters (0.2%) report restatements that are due to simple mathematical errors. We observe restatements because of mistakes in the implementation of accounting principles in 0.6% of all bank-quarter observations. The largest category of restatements is the ‘other restatement’ group. Included in this category is the misuse or misinterpretation of accounting information in provisioning for loan losses, the misreporting of pension estimates, and other accounting items that are too small to stand alone as a single category.

## **6. Regulatory strictness and reporting restatements**

### **6.1 The impact of regulatory strictness on income-reducing restatements**

We begin our empirical analysis focusing on whether regulatory leniency impacts the detection and correction of accounting irregularities in the regulatory reporting of commercial banks. If lenient regulators are less willing to enforce accounting rules, we expect banks with lenient regulators to report fewer accounting restatements. However, it is possible that regulatory leniency is unrelated to the likelihood of accounting restatements. For example, commercial banks could anticipate the increased oversight by strict regulators and increase their investments in internal control systems. Therefore, banks with strict regulators may have a lower probability of errors or irregularities *ex ante*, leading to a lower probability of forced restatements *ex post*.

In Panel A of Figure 3 we sort the state-chartered banks into five quintiles based on the regulatory leniency index of their state regulator. We then plot the average

likelihood of income-reducing restatement in each quintile. Approximately three percent of the banks that are supervised by the most lenient regulators report income-reducing restatements. By contrast, approximately 3.8 percent of the banks that are supervised by the strictest regulators report income-reducing restatements. The plot is consistent with the idea that strict regulators are more likely to detect and enforce income-reducing restatements.

An alternative explanation for the above pattern is that all state regulators behave alike, but commercial banks in states with strict regulators make more accounting errors that must be restated. In Panel B of Figure 3, we plot the probability of income-increasing restatements by regulatory leniency quintile. If banks facing strict regulators make more accounting errors, we would expect to observe the same pattern in both income-reducing restatements and income-increasing restatements. We do not find the same pattern for income-increasing restatements: Panel B of Figure 3 suggests that approximately 1.6 percent of the banks that are regulated by the strictest state-regulators positively restate their earnings, whereas about 2 percent of the banks regulated by the most lenient regulators restate their earnings upwards.

In Panels C and D of Figure 3, we sort the federal-chartered banks into five quintiles based on the regulatory leniency index of the state regulator operating in their state. The purpose of this exercise is to benchmark the pattern observed in Panels A and B of Figure 3. Because federal regulators are the sole regulator of the federal-chartered banks, we do not expect that a quintile sort of regulatory restatements of *national* banks based on the *state* regulatory leniency index will generate the same patterns as in Panels A and B of Figure 3.

Panel C of Figure 3 indicates that there is no clear upward or downward pattern in restatements of national banks across state leniency bins, which suggests that the regulatory leniency index captures differences in *state* regulatory enforcement rather than omitted economic factors. Panel D of Figure 3 further reinforces these conclusions by showing no trend in the percentage of income-increasing restatements of federal-chartered banks across state regulatory leniency bins.

In Table 2, we formally test whether regulatory leniency is related to the likelihood of income-reducing and income-increasing restatements. In column (1) we report results that only include the regulatory leniency index, county fixed-effects, quarter fixed-effects and regulator-type fixed-effects. For this specification, the coefficient of the regulatory leniency index is -0.053. This effect is economically meaningful; a one standard deviation increase in the leniency index (0.062) decreases the likelihood of restatement by 0.33 percentage points ( $-0.054 \times 0.062$ ). This reduction represents a 10% decrease in the likelihood of income-reducing restatements relative to the unconditional probability of negative restatement of 3.2% for the entire sample. In column (2) we report the results including county-by-quarter fixed effects and in columns (3)—(6) we repeat the analysis of columns (1) and (2), but we further condition on bank characteristics such as size, portfolio composition, and asset quality. The adjusted R-Squared suggest that our regressions capture a large portion of the variation in negative restatements. It is important to note that when including county-by-quarter fixed effects, the adjusted r-squares jump from around 6 percent to over 35 percent. This suggests that time-varying, local economic shocks explain a large portion of the variation in income-reducing restatements. However, even after controlling for these fixed effects, our main



variable of interest remains statistically significant and economically similar to that reported in column (1).

The results presented in Table 2 are consistent with two broad channels. First, they are consistent with the hypothesis that lenient regulators are more likely to forbear from requiring regulatory restatements that lower the income and regulatory capital ratios of its regulated entities. Second, the results are consistent with the idea that the entities regulated by lenient state regulators have better accounting quality and are thus less likely to restate.

We attempt to disentangle these two mechanisms by re-estimating the results of columns (1) – (6) using the likelihood of an income-increasing restatement as the dependent variable. We do not expect lenient regulators to forbear from enforcing income-increasing restatements relative to strict regulators. However, if the entities regulated by lenient state regulators have better accounting quality they will also have fewer income-increasing restatements. We present these results in columns (7) – (12). We find that regulatory leniency has no statistically significant impact on the likelihood of positive restatements.<sup>12</sup>

Overall, the results reported in Table 2 and in Figure 3 suggest that stricter regulators are more likely to enforce negative restatements relative to more lenient regulators. The evidence is consistent with the notion that strong regulatory enforcement is more likely to curb accounting practices that result in overstated capital. Nevertheless, we acknowledge that this pattern of evidence could also be consistent with the joint

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<sup>12</sup> In unreported results we also introduce controls for whether the bank is a member of the Federal Reserve. We find that the results are robust to including this control; this provides further comfort that our empirical results stem from variation in the leniency across state regulators rather than from variation in regulatory arrangements in the U.S. banking industry.

hypothesis that some lenient regulators have a lower ability to detect material errors and that the distribution of accounting misstatements is asymmetric because banks are more likely to hide losses than gains.

## **6.2 Time-series effects of regulatory strictness**

In the previous section we establish that strict state regulators are more likely to detect and enforce income-reducing restatements. Next we examine whether strict regulators are swifter in detecting and enforcing accounting irregularities. The idea is that regulators could have superior information about the underlying loans, securities, investments, and other assets held by the bank, and they may have detailed knowledge of the quality of these assets (e.g. Peek, Rosengren, and Tootell, 1999). Thus stricter regulators may identify early signs of economic deterioration and increase their supervision efforts relatively earlier. Alternatively, strict regulators may deploy more resources and increase their oversight of banks only after the problems with the banking and housing markets were already widely exposed.

In Table 3 we formally investigate whether strict regulators enforce accounting restatements in a timely manner. To this end, we extend specification (1) and interact the regulatory leniency index with measures of past and future financial distress faced by commercial banks. Each measure is standardized for ease of interpretation. In columns (1) and (2) of Table 3 we interact the regulatory leniency index with past and future values of the average TED spread, a commonly used measure of external capital market distress calculated as the difference between the interest rates on interbank loans and on short-term U.S. Government debt (Matvos and Seru, 2014; Greenlaw, Hatzius, Kashyap, and Shin, 2008). As shown in column (1), the effect of regulatory leniency on the likelihood of accounting restatements in the quarter is not significantly larger when the

external capital markets were distressed in the previous year. By contrast, the results of column (2) suggest that strict regulators are associated with a significant increase in the likelihood of restatements when the external capital market conditions significantly deteriorate in the subsequent year. In other words, stringent state regulators are more likely to act ahead of a significant deterioration in market conditions, but are not incrementally more likely to act after a deterioration in the external capital market has already occurred. The coefficients in column (2) suggest that a one standard deviation increase in the future TED spread is associated with a 50% increase in the effect of regulatory leniency.

In columns (3) and (4), we replace the TED spread with a bank-specific measure of the year-on-year change in the house price index of the local geographical market. Following Granja, Matvos, and Seru (2014) we compute this measure by weighting the change in the Federal Housing Finance Agency (FHFA) quarterly MSA house price index by the level of deposits of the bank in each MSA. This measure captures variation in the exposure of banks to geographic regions with severe house price declines. In column (3), we interact the regulatory leniency index with the bank exposure to the house price decline in the previous year. The results suggest that the effects of regulatory leniency are not significantly larger when the commercial banks were exposed to house price declines in the previous year. However, the results in column (4) show that the effect of regulatory leniency on restatements is significantly larger when the bank is exposed to house price declines in the subsequent year. A one standard deviation increase in the house price decline is associated with a 60% increase in the effect of regulatory leniency on the likelihood of income-reducing regulatory accounting restatements.

Overall, our cross-sectional findings support the idea that strict bank regulators act before the deterioration of economic and financial conditions. Nevertheless, we acknowledge that the results from our cross-sectional partitions could also be related to other factors that are correlated with the TED spread and the house-price index.

Finally, we extend specification (1) and estimate time series effects of regulatory leniency by interacting the regulatory leniency index with dummy variables for each quarter:

$$\Pr(\text{Restatement})_{itcr} = \alpha_{ct} + \gamma_r + \sum_t \beta_t \text{Leniency}_{cr} \times \text{Qrt}_t + \Gamma X_{it} + \varepsilon_{itcr}$$

Figure 4 reports the coefficients on the quarter-dummy variable interactions, along with 95% confidence intervals. The effects of regulatory leniency are statistically indistinguishable from zero in the early part of the sample. The effects of regulatory leniency become stronger and statistically significant in 2007 when the first signs of the housing crisis became apparent. These results suggest that strict regulators enforced accounting restatements at a very early stage of the 2007—2009 financial crisis. The effects of regulatory incentives become less pronounced after 2008, which is consistent with the idea that even lax regulators increased their oversight once the problems of the banking system were widely recognized. Overall, these results suggest that strict regulators increased their effort to enforce financial reporting transparency prior to the crisis. The sharp impact of regulatory strictness in 2007 is consistent with the notion that strict regulators ramped-up their monitoring efforts prior to the crisis, whereas it is difficult to explain under the hypothesis that strict regulators have a persistent superior ability to monitor their regulated entities.

### 6.3 Heterogeneity in the Time-series effects of regulatory strictness

Next, we investigate whether the effect of regulatory leniency on restatements varies based on the bank loan portfolio. The prior literature suggests that Commercial and Real Estate (CRE) loans were a particularly risky asset class during the financial crisis. Specifically, Granja et al. (2014) show that the banks that failed in the aftermath of the crisis carried a larger concentration of CRE loans, relative to other types of loans. Therefore, if stricter regulators anticipate the cross-sectional variation in the portfolio risk of commercial banks, we would expect the effect of regulatory leniency on restatements to be more pronounced in the pre-crisis period for banks with a high concentration of CRE loans.

To provide evidence on the heterogeneity in the timeliness of regulatory effectiveness, we extend specification (1) and estimate the effect of regulatory leniency on restatements in each quarter for banks with a high CRE concentration (above the median) and for banks with a low CRE concentration (below the median). Figure 5a reports the coefficients on the quarter-dummy variables, along with 95% confidence intervals, for banks with a high concentration of CRE loans. Consistent with the idea that stringent regulators act more swiftly in banks that are more likely to be troubled, we find that the relation between regulatory quality and the enforcement of reporting transparency is strongest in quarters one to three of 2007. The effects of regulatory leniency are statistically indistinguishable from zero in the early part of the sample as well as during the peak of the financial crisis.

In Figure 5b, we plot the coefficients on the quarter-dummy variables for banks with a low concentration of CRE loans. In contrast to the results in Figure 5a, the effects of regulatory leniency on restatements is indistinguishable from zero both before the

financial crisis and during the peak of the financial crisis. There is some evidence that the relation between regulatory oversight and restatements is stronger in the second quarter of 2010, well after the effects of the financial crisis were largely known. Overall, the evidence in Figures 5a and 5b suggest that stringent regulators were swifter in enforcing financial reporting rules for riskier banks with a higher concentration of CRE loans.

## 7. Robustness

### 7.1 Alternative measures of financial reporting transparency

One possible concern with the set of results presented above is that our main dependent variable measures overzealousness (e.g. Berger, Kyle, and Scalise, 2001) rather than enforcement of financial reporting transparency. We address this concern by examining whether our results are robust to other measures of accounting transparency. We follow the standard literature in accounting (e.g. Beck and Narayanamoorthy, 2013) and investigate whether regulatory strictness is associated with timely loan loss provision charges in their regulated entities.

We study whether regulatory strictness impacts the loan loss provisioning choices of banks by estimating the following linear regression:

$$LLP_{itcr} = \alpha_{ct} + \gamma_r + \sum_t \beta_t \text{Leniency}_{cr} \times Qrt_t + \sum_{s=-4}^4 CO_{i+s} + \Gamma X_{it} + \varepsilon_{itcr}$$

in which LLP represents the quarterly loan loss provisions of banks scaled by total assets,  $\alpha_{ct}$  are dummy variables that capture time-varying county-level unobservable economic factors, and  $\gamma_r$ , controls for differences in the aggregate likelihood of restatements between federal and state regulators. The main variable of interest in this specification is  $\text{Leniency}_{cr} \times Qrt_t$ , which is defined as the interaction between the regulatory leniency index and indicator variables for each quarter. The series of coefficients will measure not

only the effect of regulatory strictness on loan loss provision choices but also the timing of this effect.  $CO_{i+s}$  represent a series of lead and lag values of the ratio of charge-off loans to total assets of the bank. Finally,  $X_{it}$  is a vector of time-varying characteristics of the bank and includes the total assets of the bank, total deposits of the bank, percentage of residential loans, percentage of commercial real estate loans, percentage of consumer loans, fraction of loans that are classified as non-performing, liquidity and capital ratios, and changes in the non-performing assets of the bank. We trim the sample at the 1 and 99 percentiles for the values of LLP, CO, and non-performing assets to avoid the effect of outliers.

In Figure 6 we plot the time-series evolution of the coefficients  $\beta_t$ . The results suggest that the association between regulatory strictness and loan loss provision is tenuous until the third quarter of 2007. Following the third quarter of 2007, lenient regulators are associated with lower loan loss provisions. Finally, the relation between regulatory leniency and loan loss provisioning becomes insignificant and reverts in the last quarter of 2010. Overall, these results are consistent with the idea that strict regulators demanded greater loan loss provisions as soon as the early triggering events of the third and fourth quarter of 2007 indicated impairment in the loan portfolios of banks. Because accruals naturally reverse, we observe that the lenient regulators require greater loan loss provisioning but only in the last quarters of 2010. The results reinforce the idea that strict regulators enforce greater financial reporting transparency.

As we previously noted, regulators correct financial reporting misstatements by requiring either an amended call report or a restatement using the cumulative effects approach. One possible concern with our analysis is that most material errors might be

corrected through call report amendments rather than through restatements. We re-estimate our results using an alternative dependent variable that captures the likelihood that banking regulators required a call report amendment. Unlike Badertscher et al. (2015), we do not observe whether a call report was amended after the original call report was submitted. Nevertheless, we are able to measure whether the time stamp on the last call report submitted exceeds the 30-day statutory filing period, which is a necessary condition to identify an amendment.

We present the results of this analysis in Table 4. In Columns (1) and (2) we identify an amendment as call report whose final time stamp exceeds the 30-day statutory filing period by more than 15 days. We choose 15 days because Badertscher et al (2015) find that the median number of days between original and restated report is 18 days. Badertscher et al (2015) report that 92% of the Call Reports are released in the five trading days around the statutory limit. We use a fifteen days rather than a five days window because many banks we believe that it is possible that many banks revise very small details in their call reports few days after the initial submission. By focusing on amendments after a fifteen days window, we increase the likelihood that they result from the action of banking regulators and other private auditors. The results suggest that strict regulators are associated with a greater likelihood of regulatory amendments. A one standard deviation increase in the regulatory leniency index reduces the likelihood of call report amendment by 0.6 percentage points. In columns (3) and (4) we require that the time stamp on the call report exceeds the 30-day statutory filing period by more than 45 days. When we use this stricter threshold, the results remain economically relevant but are not statistically significant in the model (4).



One potential concern with the above analysis is that we are classifying late call reports as amendments. Therefore, our results might suggest that banks operating under the jurisdiction of strict banking regulators are more likely to file a late call report. While this is an interesting alternative, we find this explanation unlikely. Badertscher et al (2015) find that 92% of their observations file an initial version of their call report within the first five days after the statutory limit. We find that the last time stamp on 25% of the call reports on our sample exceed the 30-day statutory limit by two weeks. Together, these findings suggest that we correctly classify most of our amendments are correctly classified. Moreover, Agarwal et al. (2014) show that strict regulators are associated with *better* performance of their regulated entities, which suggests that strictly regulated banks should be less likely to file a late call report.

## **7.2 The impact of regulatory strictness on the type of restatement**

While we find that stricter regulators are more likely to impose restatements on commercial banks, one concern with our analysis thus far is that we have not determined whether the restatements imposed are economically important.

A regulatory restatement, even of small magnitude, signals that the examiner carefully scrutinized the content of regulatory reports, detected material errors, and forced the bank to restate their reports to correct errors and to tame aggressive accounting estimates. Hence, regulatory restatements are observable, ex post measures of the regulators' willingness to detect and correct the financial information included in the regulatory reports. Nevertheless, it is important to understand whether these restatements are economically important or whether they correct minor clerical accounting errors.

We decompose the restatements into five categories using the description of the restatement to gauge the economic relevance of these regulatory restatements. The first

category includes any restatement resulting from a simple mathematical error, the second category includes restatements due to the misapplication of an accounting principle, the third category includes restatements due to misestimates of tax liabilities, the fourth category includes restatements resulting from an internal or external audit review, and the final category reports all other restatements. The primary items included in the final category are misestimates of loan losses and pension assumptions.<sup>13</sup>

An additional benefit of separating these restatements into categories is to further validate the main results by empirically testing whether our measure of regulatory leniency is associated with the likelihood of restatements that were likely to be enforced by other entities such as tax authorities.

Table 5 reports the results of our restatement analysis. Columns 1-3 show that there is no effect of regulatory leniency on restatements due to simple clerical errors, accounting principles, or taxes. However, we do find that stricter regulators are more likely to impose restatements due to auditor findings and restatements due to other accounting items such as loan losses and pension estimates. Importantly, the results in Table 5 provide evidence that strict regulators impose restatements that are of economic importance to financial statement users. Further, the results in Table 5 are inconsistent with the hypothesis that strict regulators impose more restatements that result from the misinterpretation of accounting principles or from the restatements of tax liabilities.

### **7.3 Variation in accounting quality**

Our objective in this paper is to capture the increased probability that a strict regulator will detect and correct an error, rather than to capture variation in the bank's

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<sup>13</sup> We obtain brief descriptions of the cause of the restatement from the restated Call Report, and we hand code the restatement type based on these descriptions.

propensity to misreport. However, as discussed earlier managers of banks facing stricter regulators may anticipate the regulatory oversight and increase reporting quality ex ante. We address this issue in two ways. First, our fixed effect structure controls for much of the potential unobserved variation in underlying incentives that affect reporting quality. We condition on county-by-quarter fixed effects that absorb unobserved local factors that influence the likelihood of restatements. Second, if banks with strict regulators improved their reporting quality ex ante, we should observe no relation or a negative relation between regulatory strictness and restatements. Our results thus far provide comfort that we are not simply capturing variation in the bank's propensity to misreport.

Nonetheless, we augment our specification of model (1) to explicitly control for measures of underlying accounting quality. Specifically, we include two measures of accounting quality developed by Beatty and Liao (2011). Both measures proxy for the timeliness of loan loss provisions and attempt to capture the quality of the accounting system. AQ1 is measured as the difference in the r-squares of a model regressing loan loss provisions on past non-performing loans versus a model regressing loan loss provisions on both past and future non-performing loans. AQ2 is a proxy for the speed with which the bank incorporates market information into the loan loss provision.

We also include a control for the level of external auditing work performed for the bank by independent external auditors during the previous year, collected from the March bank regulatory call reports. This measure is captured on a scale, where 1 represents an independent audit of the bank conducted in accordance with generally accepted auditing standards and 9 represents no external audit work.

The results of the analysis are reported in Table 6. We also include quarter-by-county and regulator fixed effects. Our regulatory leniency index continues to load as expected; specifically, more lenient regulators are less likely to impose income-reducing restatements even after controlling for a comprehensive set of accounting quality measures. The results provide further validation that our results capture the increased propensity for a strict regulator to enforce accounting transparency, rather than the alternative explanation that banks facing strict regulation are more likely to misreport.

#### **7.4 Regulator selection**

A final concern with our results is that they might be driven by commercial banks that select their charter-authority according to their perceived level of regulatory leniency. As discussed earlier, we do not have access to the confidential data that would allow us to examine the time-varying, predetermined rotation of on-site inspections by state and federal regulators (as in Agarwal et al., 2014). Instead, we use the *average* difference in state versus federal regulatory ratings, calculated for each state regulator over our sample period. However, to generate our results, banks with high financial reporting quality would have to self-select into a state-charter agency specifically when the state regulator is more lenient. While we view this alternative explanation as unlikely, we impose more rigorous constraints on our data in order to further minimize the concern. In particular, we limit our sample to the banks that have not switched charters during the sample period. We also exclude banks that were created after 1990, to eliminate the concern that the bank selected the charter based on the perceived level of regulatory scrutiny at inception.

Table 7 reports the results. In columns (1)—(2), we exclude banks that switched regulators or state headquarters during the sample period, and in columns (3)—(4), we

exclude banks that are created after January 1, 1990. We also include quarter-by-county, and regulator fixed effects. In all specifications our regulatory leniency index continues to load in the predicted manner.

## **8. Conclusion**

In this paper we explore a new measure of the leniency of state regulators in order to examine whether the quality of regulatory enforcement is associated with predictable variation in financial reporting outcomes. The results of this analysis inform our understanding of the effects of regulatory enforcement on the quality of financial reporting in the banking system. Specifically, we find that lenient regulators are more likely to tolerate accounting irregularities and are less timely in correcting regulatory accounting restatements in response to the deterioration in economic conditions.

We interpret these findings as consistent with the idea that financial reporting outcomes may not transparently portray the financial condition of a bank when its regulators willingly forbear from detecting and correcting accounting irregularities. Moreover, we uncover these facts in the US banking setting, where political pressures are less intense and the legal and institutional tradition of bank resolution is well established. As a result, the forces that we document in this paper are likely to be stronger in other countries and institutional environments.

We believe that these results are likely to be of interest to both academics and policy makers. Our paper adds to the literature on regulation and disclosure, suggesting that regulatory leniency leads to reduced disclosure quality. These results are likely to be useful to policymakers as they debate the causes and consequences of the recent financial crisis.

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**Table 1: Summary Statistics**

This table presents descriptive statistics of the sample used in the analysis. *Federal Regulator* is an indicator variable that takes the value of one if the bank is chartered by the Office of the Comptroller of the Currency. *Regulatory Leniency Index* is our measure of regulatory leniency of the state regulator which is derived from the analysis in Agarwal et al. (2014) and is interpreted as the average difference between the federal regulator and each state regulator in the bank regulatory ratings assigned to the same bank. *Total Assets* is the total assets of a bank in thousands of USD (RCFD2170). *Total Deposits* is the total deposits held by a bank in thousands of USD (RCON2200). *Residential Loans/Total Loans* is measured as the percentage of residential real estate loans (RCON1797+RCON5367+RCON5368) relative to total loans (RCFD2122). *Commercial & Real Estate (CRE) Loans/Total Loans* is measured as the percentage of commercial and real estate loans (RCON1415+RCON1460+RCON1480+RCFD2746) relative to total loans (RCFD2122). *Consumer Loans/Total Loans* is measured as the percentage of consumer loans (RCFDB538+RCFDB539+RCFD2011) relative to total loans (RCFD2122). *Nonperforming Loans/Total Loans* is defined as non-performing loans (non-accrual) (RCFD1403) and loans 90 days or more past due (RCFD1407) over total loans (RCFD2122). *Unused Commitment Ratio* is defined as total unused commitments divided by total unused commitments and total loans. *Well Capitalized* is an indicator variable if the Tier 1 Capital Ratio of the bank is above the well-capitalized threshold as defined by the FDIC. *Negative Restatement* is an indicator variable that takes the value of one if the bank makes an income-decreasing restatement on its prior years' Reports of Condition and Income due to corrections of material accounting errors and changes in accounting principles. *Positive Restatement* is an indicator variable that takes the value of one if the bank makes an income-increasing restatement on its prior years' Reports of Condition and Income due to corrections of material accounting errors and changes in accounting principles. *Error Restatement* is an indicator variable that takes the value of one if the bank makes an income-decreasing restatement on its prior years' Reports of Condition and Income and the bank states that the restatement is due to the correction of mathematical error. *Principle Restatement* is an indicator variable that takes the value of one if the bank makes an income-decreasing restatement on its prior years' Reports of Condition and Income and the bank states that the restatement is due to change in accounting principles. *Tax Restatement* is an indicator variable that takes the value of one if the bank makes an income-decreasing restatement on its prior years' Reports of Condition and Income and the bank indicates that the restatement is due to errors in tax filings. *Audit Restatement* is an indicator variable that takes the value of one if the bank makes an income-decreasing restatement on its prior years' Reports of Condition and Income and the bank indicates that the restatement is due to the conclusions of an internal or external audit review, and *Other Restatement* is an indicator variable that takes the value of one if the bank makes an income-decreasing restatement on its prior years' Reports of Condition and Income and the bank indicates that the restatement is due to material accounting errors that cannot be included in the prior categories.

	N	Mean	St. Dev.	p25	p50	p75
<i>Bank Characteristics</i>						
Federal Regulator	310,500	0.226	0.418	0	0	0
Regulatory Leniency Index	310,500	0.076	0.062	0	0.084	0.116
Total Assets	310,500	1,139,067	21,060,705	54,765	113,812	259,178
Total Deposits	310,500	753,351	12,789,006	45,566	94,228	211,609
<i>Loan Compositions</i>						
Residential Loans/Total Loans	310,500	0.280	0.189	0.143	0.247	0.374
Commercial & Real Estate (CRE) Loans/Total Loans	310,500	0.324	0.217	0.144	0.295	0.477
Consumer Loans/Total Loans	310,500	0.093	0.110	0.027	0.063	0.119
Nonperforming Loans/Total Loans	310,500	0.014	0.025	0.002	0.007	0.017
Unused Commitment Ratio	310,500	0.128	0.083	0.072	0.118	0.171
Well Capitalized	310,500	0.995	0.077	1	1	1
<i>Types of Restatements</i>						
Negative Restatement	310,500	0.032	0.175	0	0	0
Positive Restatement	310,500	0.020	0.140	0	0	0
Error Restatement	310,500	0.002	0.040	0	0	0
Principle Restatement	310,500	0.006	0.077	0	0	0
Tax Restatement	310,500	0.006	0.078	0	0	0
Audit Restatement	310,500	0.002	0.049	0	0	0
Other Restatement	310,500	0.016	0.128	0	0	0

**Table 2: Likelihood of Negative Restatement**

This table reports the results of OLS regressions. The dependent variable *Negative Restatement* is an indicator variable that takes the value of one if the bank makes an income-decreasing restatement on its prior years' Reports of Condition and Income due to corrections of material accounting errors and changes in accounting principles. *Regulatory Leniency Index* is our measure of regulatory leniency of the state regulator which is derived from the analysis in Agarwal et al. (2014) and is interpreted as the average difference between the federal regulator and each state regulator in the bank regulatory ratings assigned to the same bank.  $\ln(\text{Total Assets})$  is the natural logarithm of total assets of a bank ( $\ln(\text{RCFD2170})$ ).  $\ln(\text{Total Deposits})$  is the natural logarithm of total deposits held by a bank ( $\ln(\text{RCON2200})$ ). *Residential Loans/Total Loans* is measured as the percentage of residential real estate loans (RCFDB538+RCFDB539+RCFD2011) relative to total loans (RCFD2122). *CRE Loans/Total Loans* is measured as the percentage of commercial and real estate loans (RCON1415+RCON1480+RCON1480+RCFD2746) relative to total loans (RCFD2122), and *Nonperforming Loans/Total Loans* is defined as non-performing loans (non-accrual) (RCFD1403) and loans 90 days or more past due (RCFD1407) over total loans (RCFD2122). *Unused Commitment Ratio* is defined as total unused commitments divided by total unused commitments and total loans. *Well Capitalized* is an indicator variable if the Tier 1 Capital Ratio of the bank is above the well-capitalized threshold as defined by the FDIC. Standard errors are presented in parentheses, and are clustered at the level of the state.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Negative Restatement			Positive Restatement								
Regulatory Leniency Index	-0.0530*** (0.014)	-0.0535*** (0.017)	-0.0532*** (0.017)	-0.0553*** (0.021)	-0.0572*** (0.017)	-0.0589*** (0.021)	0.0126 (0.023)	0.0238 (0.027)	0.0113 (0.023)	0.0233 (0.027)	0.0067 (0.022)	0.0187 (0.025)
$\ln(\text{Total Assets})$			-0.0038* (0.002)	-0.0045 (0.003)	-0.0070*** (0.002)	-0.0078*** (0.003)			-0.0055*** (0.002)	-0.0053* (0.003)	-0.0080*** (0.003)	-0.0080*** (0.003)
$\ln(\text{Total Deposits})$			0.0076*** (0.002)	0.0082*** (0.002)	0.0114*** (0.002)	0.0123*** (0.003)			0.0072*** (0.002)	0.0073*** (0.003)	0.0099*** (0.003)	0.0103*** (0.003)
Residential Loans/Total Loans					0.0113 (0.007)	0.0088 (0.009)			0.0061 (0.005)	0.0082 (0.007)	0.0061 (0.005)	0.0082 (0.007)
Consumer Loans/Total Loans					0.0269*** (0.010)	0.0234* (0.012)			0.0003 (0.007)	0.0003 (0.012)	0.0003 (0.007)	0.0055 (0.007)
CRE Loans/Total Loans					-0.0018 (0.006)	-0.0079 (0.007)			-0.0136*** (0.007)	-0.0136*** (0.007)	-0.0136*** (0.007)	-0.0131* (0.008)
Nonperforming Loans/Total Loans					0.0654*** (0.030)	0.0823* (0.045)			0.1354*** (0.036)	0.1354*** (0.036)	0.1354*** (0.036)	0.1472*** (0.048)
Other Real Estate Owned Ratio					0.0248 (0.070)	0.0985 (0.100)			-0.0360 (0.069)	-0.0360 (0.069)	-0.0360 (0.069)	-0.0193 (0.089)
Unused Commitment Ratio					-0.0207** (0.009)	-0.0253** (0.012)			0.0060 (0.010)	0.0060 (0.012)	0.0060 (0.013)	0.0075 (0.018)
Well Capitalized					0.0010 (0.006)	-0.0040 (0.008)			-0.0089 (0.008)	-0.0089 (0.008)	-0.0089 (0.008)	-0.0113 (0.011)
Observations	313,673	313,673	312,152	312,152	310,500	310,500	313,673	313,673	312,152	312,152	310,500	310,500
R-squared	0.064	0.351	0.066	0.354	0.066	0.356	0.054	0.319	0.055	0.320	0.056	0.323
Quarter Fixed-Effects	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
County Fixed-Effects	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Regulator Fixed-Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Quarter/County Fixed-Effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

**Table 3: Likelihood of Negative Restatement: Timing Analysis**

This table reports the results of OLS regressions. The dependent variable *Negative Restatement* is an indicator variable that takes the value of one if the bank makes an income-decreasing restatement on its prior years' Reports of Condition and Income due to corrections of material accounting errors and changes in accounting principles. *Regulatory Leniency Index* is our measure of regulatory leniency of the state regulator which is derived from the analysis in Agarwal et al. (2014) and is interpreted as the average difference between the federal regulator and each state regulator in the bank regulatory ratings assigned to the same bank. *Past TED Spread* and *Future TED Spread* are the average TED spreads over the past and subsequent four quarters, respectively. *Past HPI Change* and *Future HPI Change* are the House Price Index (HPI) growth rates in the bank's branch service area over the past and subsequent four quarters, respectively. The HPI change is calculated using the all-transactions indexes at the MSA and state non-metropolitan levels provided by the Federal Housing Finance Agency. We calculate the HPI change for each bank by weighting the HPI change variable for each bank by the percentage of deposits of the bank. Other controls include  $\ln(\text{Total Assets})$ ,  $\ln(\text{Total Deposits})$ ,  $\text{Residential Loans}/\text{Total Loans}$ ,  $\text{Consumer Loans}/\text{Total Loans}$ ,  $\text{CRE Loans}/\text{Total Loans}$ ,  $\text{Nonperforming Loans}/\text{Total Loans}$ ,  $\text{Other Real Estate Owned Ratio}$ ,  $\text{Unused Commitment Ratio}$ , and  $\text{Well Capitalized}$ . All specifications include Quarter/County Fixed-Effects and Regulator Fixed-Effects. Standard errors are presented in parentheses, and are clustered at the level of the state.

	(1)	(2)	(3)	(4)
	Negative Restatement			
Regulatory Leniency Index	-0.0637*** (0.020)	-0.0707*** (0.023)	-0.0531** (0.021)	-0.0586*** (0.022)
Regulatory Leniency Index $\times$ Past TED Spread	-0.0077 (0.007)			
Regulatory Leniency Index $\times$ Future TED Spread		-0.0306** (0.012)		
Future HPI Change			-0.0163* (0.009)	
Regulatory Leniency Index $\times$ Future HPI Change			0.0278* (0.015)	
Past HPI Change				-0.0069 (0.008)
Regulatory Leniency Index $\times$ Past HPI Change				0.0239 (0.016)
Observations	305,718	272,247	309,038	309,038
R-squared	0.360	0.364	0.357	0.357
Controls	Yes	Yes	Yes	Yes
Regulator Fixed-Effects	Yes	Yes	Yes	Yes
Quarter/County Fixed-Effects	Yes	Yes	Yes	Yes

**Table 4: Likelihood of Call Report Amendment**

This table reports the results of OLS regressions. The dependent variable *Amendment* which is an indicator variable that takes the value of one if the last time stamp on each individual call report exceeds the corresponding call report deadline by  $n$  days, where  $n = \{15,45\}$ . *Regulatory Leniency Index* is our measure of regulatory leniency of the state regulator which is derived from the analysis in Agarwal et al. (2014) and is interpreted as the average difference between the federal regulator and each state regulator in the bank regulatory ratings assigned to the same bank.  $\ln(\text{Total Assets})$  is the the natural logarithm of total assets of a bank ( $\ln(\text{RCFD2170})$ ).  $\ln(\text{Total Deposits})$  is the natural logarithm of total deposits held by a bank ( $\ln(\text{RCON2200})$ ). *Residential Loans/Total Loans* is measured as the percentage of residential real estate loans ( $\text{RCON1797}+\text{RCON5367}+\text{RCON5368}$ ) relative to total loans ( $\text{RCFD2122}$ ). *Consumer Loans/Total Loans* is measured as the percentage of consumer loans ( $\text{RCFDB538}+\text{RCFDB539}+\text{RCFD2011}$ ) relative to total loans ( $\text{RCFD2122}$ ). *CRE Loans/Total Loans* is measured as the percentage of commercial and real estate loans ( $\text{RCON1415}+\text{RCON1460}+\text{RCON1480}+\text{RCFD2746}$ ) relative to total loans ( $\text{RCFD2122}$ ), and *Nonperforming Loans/Total Loans* is defined as non-performing loans (non-accrual) ( $\text{RCFD1403}$ ) and loans 90 days or more past due ( $\text{RCFD1407}$ ) over total loans ( $\text{RCFD2122}$ ). *Unused Commitment Ratio* is defined as total unused commitments divided by total unused commitments and total loans. *Well Capitalized* is an indicator variable if the Tier 1 Capital Ratio of the bank is above the well-capitalized threshold as defined by the FDIC. All specifications include Quarter/County Fixed-Effects and Regulator Fixed-Effects. Standard errors are presented in parentheses, and are clustered at the level of the state.

	(1)	(2)	(3)	(4)
	Amendment			
Regulatory Leniency Index	-0.1389** (0.054)	-0.1081* (0.062)	-0.0972* (0.051)	-0.0873 (0.060)
$\ln(\text{Total Assets})$	-0.2032*** (0.024)	0.0342*** (0.007)	0.0265*** (0.006)	0.0242*** (0.007)
$\ln(\text{Total Deposits})$	0.0097* (0.006)	0.0115* (0.007)	0.0107* (0.006)	0.0128* (0.007)
Residential Loans/Total Loans	-0.0264 (0.018)	-0.0278 (0.020)	-0.0239 (0.016)	-0.0204 (0.020)
Consumer Loans/Total Loans	-0.0774*** (0.027)	-0.0511 (0.034)	-0.0335 (0.025)	-0.0316 (0.030)
CRE Loans/Total Loans	0.0872*** (0.019)	0.0579** (0.022)	0.0376** (0.017)	0.0379* (0.021)
Nonperforming Loans/Total Loans	0.6169*** (0.175)	0.5551** (0.240)	0.5411*** (0.172)	0.4815** (0.217)
Other Real Estate Owned Ratio	1.1919*** (0.287)	1.0835** (0.430)	0.8945*** (0.293)	0.8431* (0.438)
Unused Commitment Ratio	-0.0105 (0.028)	0.0311 (0.035)	0.0275 (0.026)	0.0397 (0.033)
Well Capitalized	0.0034 (0.018)	-0.0116 (0.027)	0.0122 (0.019)	-0.0006 (0.028)
Observations	163,255	163,255	163,255	163,255
R-squared	0.126	0.372	0.105	0.355
Number of late days	>15 days	>15 days	>45 days	>45 days
Quarter Fixed-Effects	Yes	No	Yes	No
County Fixed-Effects	Yes	No	Yes	No
Regulator Fixed-Effects	Yes	Yes	Yes	Yes
Quarter/County Fixed-Effects	No	Yes	No	Yes

**Table 5: Likelihood of Negative Restatement by Type**

This table reports the results of OLS regressions. The dependent variable *Negative Restatement* is an indicator variable that takes the value of one if the bank makes an income-decreasing restatement on its prior years' Reports of Condition and Income due to corrections of material accounting errors and changes in accounting principles. *Regulatory Leniency Index* is our measure of regulatory leniency of the state regulator which is derived from the analysis in Agarwal et al. (2014) and is interpreted as the average difference between the federal regulator and each state regulator in the bank regulatory ratings assigned to the same bank. *Error Restatement* is an indicator variable that takes the value of one if the bank makes an income-decreasing restatement on its prior years' Reports of Condition and Income and the bank states that the restatement is due to the correction of mathematical error. *Principle Restatement* is an indicator variable that takes the value of one if the bank makes an income-decreasing restatement on its prior years' Reports of Condition and Income and the bank states that the restatement is due to the conclusions of an internal or external audit review, and *Other Restatement* is an indicator variable that takes the value of one if the bank makes an income-decreasing restatement on its prior years' Reports of Condition and Income and the bank indicates that the restatement is due to material accounting errors that cannot be included in the prior categories. Other controls include  $Ln(Total Assets)$ ,  $Ln(Total Deposits)$ ,  $Residential Loans/Total Loans$ , *Consumer Loans/Total Loans*, *CRE Loans/Total Loans*, *Nonperforming Loans/Total Loans*, *Other Real Estate Owned Ratio*, *Unused Commitment Ratio*, and  $Well Capitalized$ . All specifications include Quarter/County Fixed-Effects and Regulator Fixed-Effects. Standard errors are presented in parentheses, and are clustered at the level of the state.

	(1)	(2)	(3)	(4)	(5)
Regulatory Leniency Index	0.0033 (0.005)	-0.0012 (0.010)	Negative Restatement -0.0129 (0.010)	-0.0148* (0.008)	-0.0360* (0.018)
Observations	310,500	310,500	310,500	310,500	310,500
R-squared	0.315	0.374	0.326	0.285	0.349
Restatement Type	Error Restatements	Principle Restatements	Tax Restatements	Audit Restatements	Other Restatements
Controls	Yes	Yes	Yes	Yes	Yes
Quarter Fixed-Effects	No	No	No	No	No
County Fixed-Effects	No	No	No	No	No
Regulator Fixed-Effects	Yes	Yes	Yes	Yes	Yes
Quarter/County Fixed-Effects	Yes	Yes	Yes	Yes	Yes

**Table 6: Likelihood of Negative Restatement: Conditioning on Accounting Quality**

This table reports the results of OLS regressions. The dependent variable *Negative Restatement* is an indicator variable that takes the value of one if the bank makes an income-decreasing restatement on its prior years' Reports of Condition and Income due to corrections of material accounting errors and changes in accounting principles. *Regulatory Leniency Index* is our measure of regulatory leniency of the state regulator which is derived from the analysis in Agarwal et al. (2014) and is interpreted as the average difference between the federal regulator and each state regulator in the bank regulatory ratings assigned to the same bank. *AQ1* and *AQ2*, respectively, are the primary and secondary measures of accounting quality developed by Beatty and Liao (2011). *Audit Level = i* is the number that best describes the most comprehensive level of auditing work performed for the bank by independent external auditors, where  $i = 1$  is independent audit of the bank conducted in accordance with generally accepted auditing standards by a certified public accounting firm;  $i = 2$  is an independent audit of the bank's parent holding company conducted in accordance with generally accepted auditing standards;  $i = 3$  is an attestation on bank's management assertion on the effectiveness of the bank's internal control over financial reporting;  $i = 4$  is a directors' examination of the bank conducted in accordance with generally accepted auditing standards by a certified public accounting firm;  $i = 5$  is a directors' examination of the bank performed by other external auditors;  $i = 6$  is a review of the bank's financial statements by external auditors;  $i = 7$  is a compilation of the bank's financial statements by external auditors;  $i = 8$  are other audit procedures (excluding tax preparation work) and  $i = 9$  being no external audit work (RCFD6724). Other controls include  $\ln(\text{Total Assets})$ ,  $\ln(\text{Total Deposits})$ ,  $\text{Residential Loans}/\text{Total Loans}$ ,  $\text{Consumer Loans}/\text{Total Loans}$ ,  $\text{CRE Loans}/\text{Total Loans}$ ,  $\text{Nonperforming Loans}/\text{Total Loans}$ ,  $\text{Other Real Estate Owned Ratio}$ ,  $\text{Unused Commitment Ratio}$ , and  $\text{Well Capitalized}$ . All specifications include Quarter/County Fixed-Effects and Regulator Fixed-Effects. Standard errors are presented in parentheses, and are clustered at the level of the state.

	(1)	(2)	(3)	(4)
	Negative Restatement			
Regulatory Leniency Index	-0.0587*** (0.021)	-0.0598*** (0.023)	-0.0585*** (0.021)	-0.0566** (0.022)
AQ1	-0.0023 (0.002)			-0.0030 (0.002)
AQ2		-0.0013 (0.002)		-0.0011 (0.002)
Audit Level=1			0.0033 (0.029)	0.0123 (0.045)
Audit Level=2			-0.0085 (0.007)	-0.0148 (0.010)
Audit Level=3			-0.0125* (0.007)	-0.0189* (0.011)
Audit Level=4			-0.0143** (0.007)	-0.0208** (0.009)
Audit Level=5			-0.0078 (0.007)	-0.0132 (0.010)
Audit Level=6			-0.0103 (0.007)	-0.0167* (0.010)
Audit Level=7			-0.0027 (0.012)	-0.0100 (0.015)
Audit Level=8			-0.0115 (0.014)	-0.0076 (0.013)
Audit Level=9			0.0023 (0.008)	-0.0036 (0.011)
Observations	299,329	277,481	308,881	273,032
R-squared	0.367	0.387	0.358	0.391
Controls	Yes	Yes	Yes	Yes
Quarter Fixed-Effects?	No	No	No	No
County Fixed-Effects	No	No	No	No
Regulator Fixed-Effects	Yes	Yes	Yes	Yes
Quarter/County Fixed-Effects	Yes	Yes	Yes	Yes

**Table 7: Likelihood of Negative Restatement: Selection**

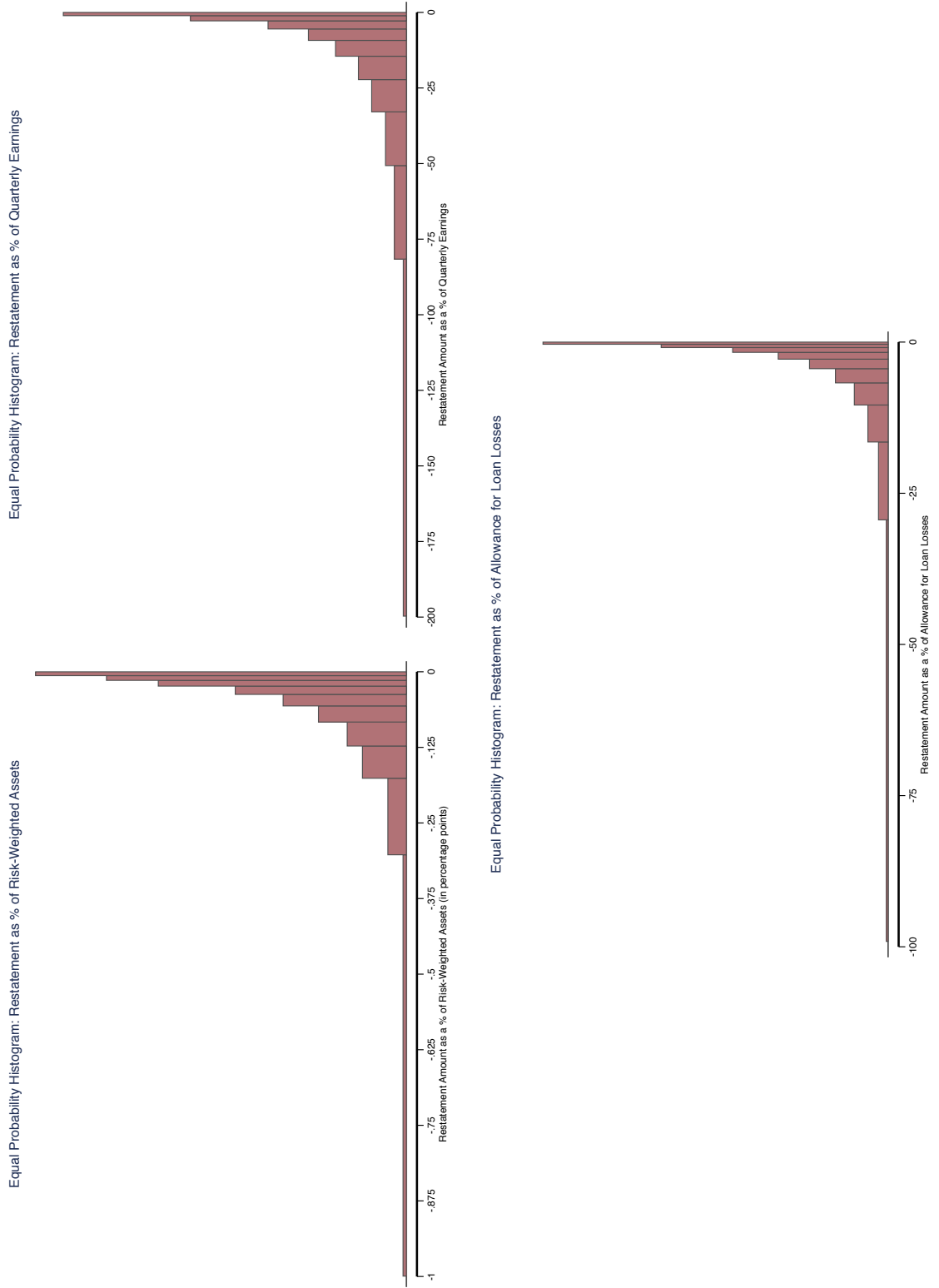
This table reports the results of OLS regressions. The dependent variable *Negative Restatement* is an indicator variable that takes the value of one if the bank makes an income-decreasing restatement on its prior years' Reports of Condition and Income due to corrections of material accounting errors and changes in accounting principles. *Regulatory Leniency Index* is our measure of regulatory leniency of the state regulator which is derived from the analysis in Agarwal et al. (2014) and is interpreted as the average difference between the federal regulator and each state regulator in the bank regulatory ratings assigned to the same bank. In the specifications of Columns (1) – (2) we exclude banks that switched regulators or state headquarters during the sample period. In the specifications of Columns (3) – (4) we exclude banks created after January 1st, 1990. Other controls include  $\ln(\text{Total Assets})$ ,  $\ln(\text{Total Deposits})$ ,  $\text{Residential Loans/Total Loans}$ ,  $\text{Consumer Loans/Total Loans}$ ,  $\text{CRE Loans/Total Loans}$ ,  $\text{Other Real Estate Owned Ratio}$ ,  $\text{Unused Commitment Ratio}$ , and  $\text{Well Capitalized}$ . All specifications include Quarter/County Fixed-Effects and Regulator Fixed-Effects. Standard errors are presented in parentheses, and are clustered at the level of the state.

	(1)	(2)	(3)	(4)
Regulatory Leniency Index	-0.0636*** (0.019)	-0.0695*** (0.024)	-0.0847*** (0.027)	-0.0883*** (0.043)
Observations	298,982	298,982	193,420	193,420
R-squared	0.068	0.365	0.082	0.466
Controls	Yes	Yes	Yes	Yes
Quarter Fixed-Effects	Yes	No	Yes	No
County Fixed-Effects	Yes	No	Yes	No
Regulator Fixed-Effects	Yes	Yes	Yes	Yes
Quarter/County Fixed-Effects	No	Yes	No	Yes



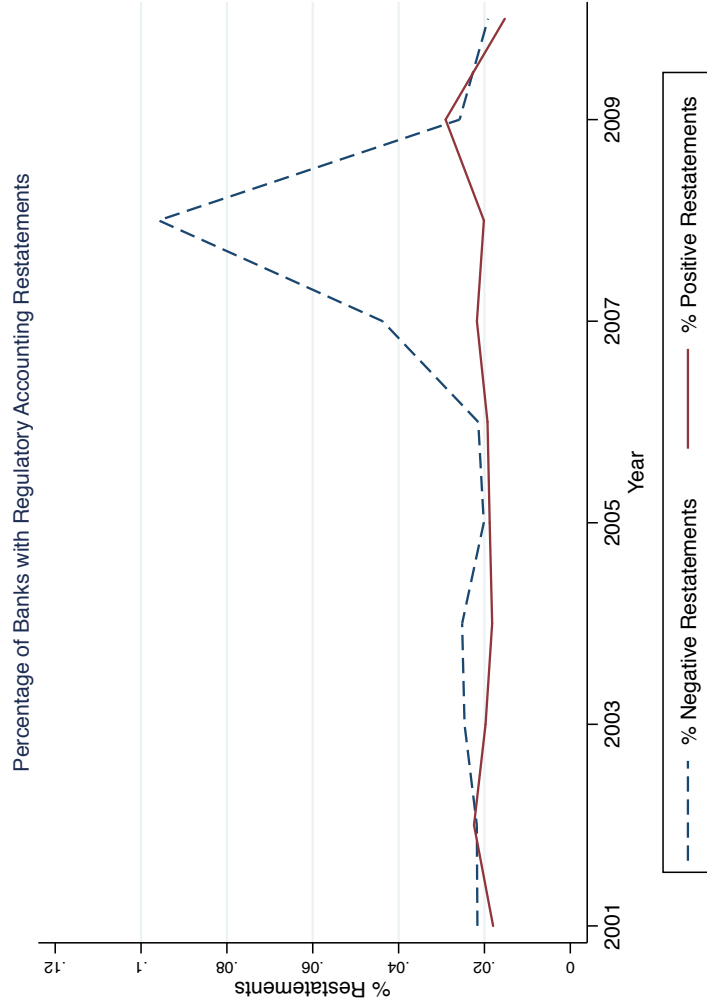
## Figure 1: Magnitude of Accounting Restatements

Figure 1 plots equal probability histograms that represent the magnitude of our main measure of accounting restatements. Panel A of Figure 1 represents an equal probability histogram of the ratio between the restatement amount and respective total risk-weighted assets. Each bar of the histogram represents ten percent of the observations. The histogram shows that more than 30% of the income-decreasing restatements lower Tier 1 Capital by more than ten basis points. Panel B of Figure 1 represents an equal probability histogram of the ratio between the restatement amount and respective quarterly earnings. Each bar of the histogram represents ten percent of the observations. The histogram shows that more than 60% of the income-decreasing restatements have an impact that amounts to more than ten percent of quarterly earnings. Panel C of Figure 1 represents an equal probability histogram of the ratio between the restatement amount and the corresponding Allowance for Loan Losses. Each bar of the histogram represents ten percent of the observations. The histogram shows that approximately half of the regulatory accounting restatements represent more than ten percent of the total shock absorbing capacity embedded in the allowance for loan losses of banks.



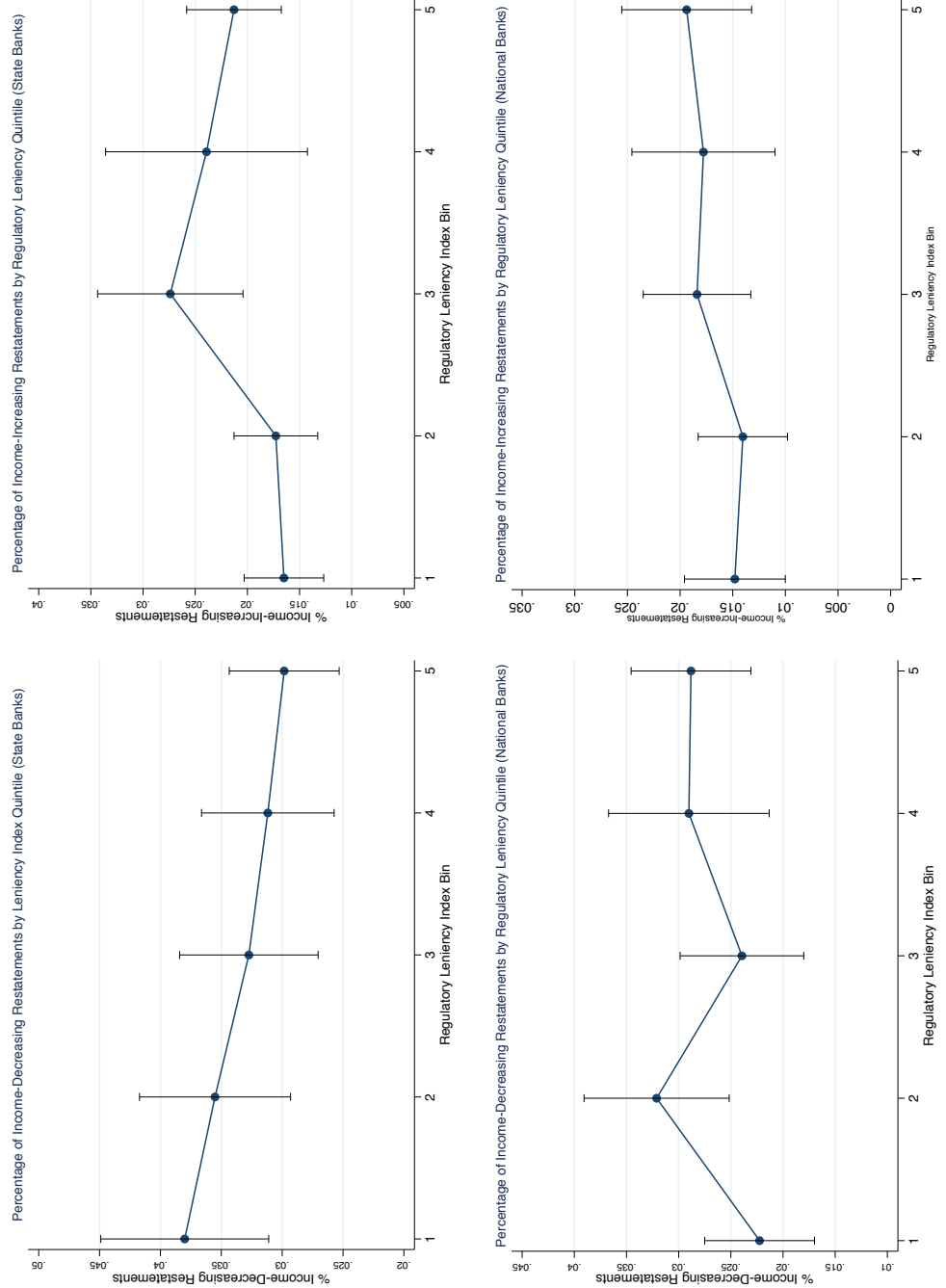
**Figure 2: Percentage of Negative and Positive Restatements over Time**

Figure 2 plots the time series of the percentage of commercial banks making a regulatory accounting restatements during the period 2001–2010. The dashed blue line represents the time series of income-decreasing restatements during the sample period. The red solid line represents the time series of income-increasing restatements over the same time period. The time series document a spike in the percentage of negative restatements that occurred in 2007 and 2008 after a relatively stable period from 2001 until 2006.



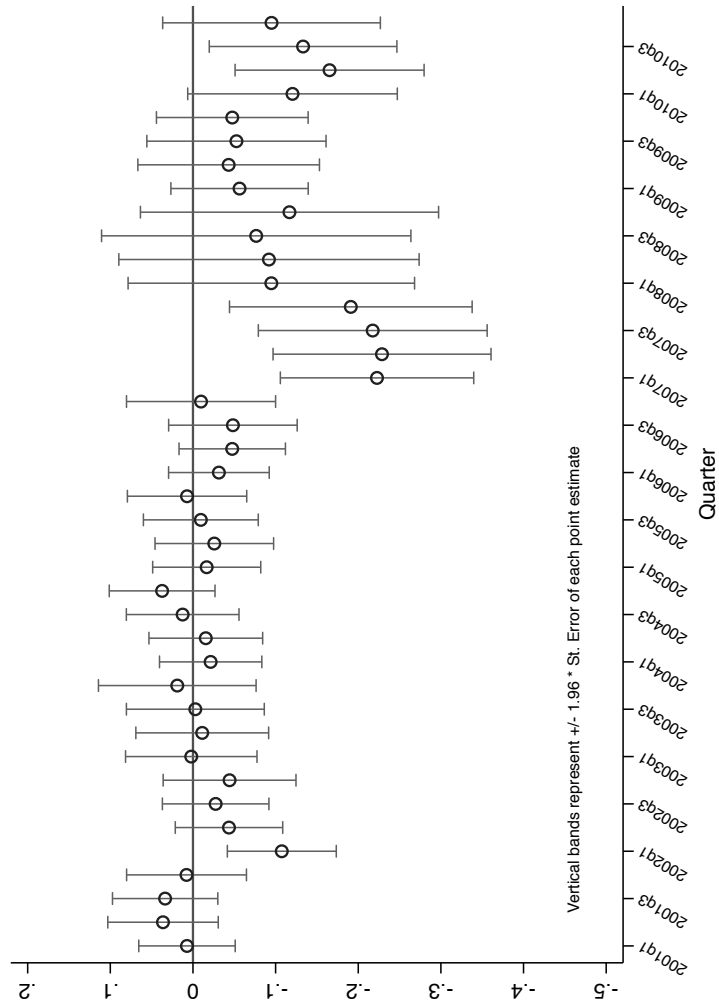
**Figure 3: Regulatory Accounting Restatements and Regulatory Leniency**

Figure 3 plots the percentage of state-chartered commercial banks and federal-chartered banks that restate their regulatory reports in each regulatory leniency quintile. Figure 3a plots the percentage of state-chartered banks making an income-decreasing restatement in each quintile of regulatory leniency of the state regulator. The first quintile bin in Figure 3a indicates that approximately 3.8% of the state-chartered banks negatively restate their earnings during the sample period when they are supervised by the most strict regulators. The last quintile in Figure 3a indicates that approximately 3% of the state-chartered commercial banks restate their earnings during the sample period if they are supervised by the most lenient regulators. Figure 3a documents a clear downward trend in the percentage of restatements as state-chartered commercial banks are regulated by less strict regulators. Figure 3b plots the percentage of state-chartered banks making an income-increasing restatement in each quintile of regulatory leniency of the state regulators. The first quintile bin in Figure 3b indicates that approximately 1.6% of all state-chartered banks make a positive-income restatement during the sample period when they are supervised by the strictest state regulators. The last quintile bin in Figure 3b indicates that approximately 2% of all state-chartered banks make a positive-income restatement during the sample period when they are supervised by the most lenient state regulators. Figure 3b does not document any clear trend in the percentage of income-increasing restatements. In panels C and D stratify the federal-chartered commercial banks by the state-regulatory leniency of the states in which these banks are located. Figure 3c plots the percentage of federally-chartered banks making an income-decreasing restatement by state regulatory leniency quintile. The first quintile bin in Figure 3c indicates that approximately 2.25% of the federal-chartered banks located in low-leniency states negatively restate their earnings during the sample period. The last quintile in Figure 3c indicates that approximately 3% of the federal-chartered commercial banks located in high-leniency states restate their earnings during the sample period. Figure 3d plots the percentage of federally-chartered banks making an income-increasing restatement by state regulatory leniency quintile. The first quintile bin in Figure 3d indicates that approximately 1.5% of the federal-chartered banks located in low-leniency states negatively restate their earnings during the sample period. The last quintile in Figure 3d indicates that approximately 2% of the federal-chartered commercial banks located in high-leniency states restate their earnings during the sample period.



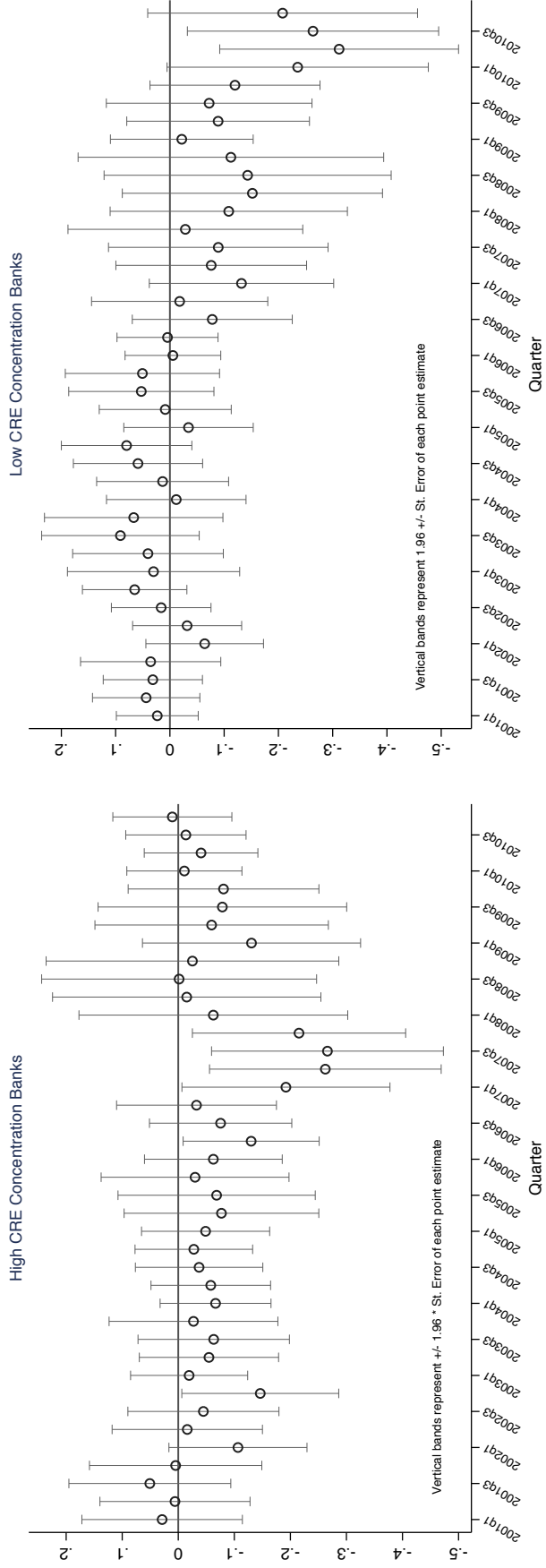
**Figure 4: Regulatory Leniency and the Likelihood of Restatements by Quarter**

Figure 4 plots the average impact of regulatory leniency on the likelihood of income-decreasing restatements in each quarter of the sample period. The shallow circles represent the coefficients from interacting a set of dummy variables representing each quarter in the sample with the regulatory leniency index in the model:  $Y_{it} = \theta_{ct} + \psi_r + \sum_t \beta_t LenIndex_{er} \times Qrt_t + \Gamma X_{it} + \epsilon_{it}$  and the vertical bands represent 95% confidence intervals for the point estimates in each quarter.



**Figure 5: Regulatory Leniency and the Likelihood of Restatements by Quarter: Heterogeneity across CRE Lending Specialization**

Figure 5 plots the average impact of regulatory leniency on the likelihood of income-decreasing restatements in each quarter of the sample period. The shallow circles represent the coefficients from interacting a set of dummy variables representing each quarter in the sample with the regulatory leniency index in the model:  $Y_{it} = \theta_{ct} + \psi_r + \sum_t \beta_t LemIndex_{cr} \times Qrt_t + \Gamma X_{it} + \epsilon_{it}$  and the vertical bands represent 95% confidence intervals for the point estimates in each quarter. Figure 5a plots the average impact of regulatory leniency in the subsample of banks with above median concentration of Commercial and Real Estate (CRE) Loans. Figure 5b plots the average impact of regulatory leniency in the subsample of banks with below median concentration of Commercial and Real Estate (CRE) Loans.



**Figure 6: Regulatory Leniency and the Timeliness of Loan Loss Provisions**

Figure 6 plots the average impact of regulatory leniency on loan loss provisions in each quarter of the sample period. The shallow circles represent the coefficients from interacting a set of dummy variables representing each quarter in the sample with the regulatory leniency index in the model:  $LLP_{it} = \theta_{ct} + \psi_r + \sum_t \beta_t LenIndex_{cr} \times Qrt_t + \sum_{s=-4}^{s=4} CO_{t+s} + \Gamma X_{it} + \epsilon_{it}$  and the vertical bands represent 95% confidence intervals for the point estimates in each quarter.

