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Evidence from Before, During, and After the Crisis**

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Does Supervisory Discipline Reduce Bank Risk? Evidence from Before, During and After the Crisis

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Abstract

This paper investigates the effectiveness of supervisory discipline on bank risk over the years immediately before, during and just after the recent crisis. It is the first study to consider the effects of informal supervisory enforcement actions in addition to formal actions. Informal enforcement actions are not only much more numerous than the formal enforcement actions used in previous studies, but they are also often confidential, whereas formal enforcement actions must be public. Pre-crisis, results strongly support the risk-reducing (capital enhancing) effects of informal actions and find that using only information on formal actions leads to substantial bias. During the crisis, formal actions became a much more effective tool for slowing declines in a bank's capital ratios and informal actions were relatively less potent. Post-crisis, while it appears that the effects of enforcement actions are moving back toward the "normal" times of the pre-crisis period, the statistical relationship between supervisory discipline and target capital is less clear. In all three periods banks had strong incentives to achieve their capital targets while they were in the higher prompt corrective action capital zones. TARP capital helped quicken a bank's adjustment speed to its capital target during the crisis, but appears to slow this speed post-crisis.

Keywords and phrases *Banks; Capital Regulation; Enforcement Actions*

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1 Introduction

The financial crisis that began in late 2007 led to the failure of 322 U.S. commercial banks and thrifts by the end of 2010, dramatically more than the 58 failures that occurred in the thirteen years since the end of the previous crisis.¹ While analysts have advanced many causes for the most recent crisis, insufficient supervisory discipline of banks is one of the most frequently cited. Indeed, many policymakers have argued, and the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank Act) mandates, that stronger supervisory discipline must be a core post-crisis reform (see Bair (2011) and Bernanke (2011)). As a result, financial regulators are well on their way both to implementing the Dodd-Frank Act's hundreds of regulations and to changing supervisory policies and procedures. However, virtually all of these actions are controversial, sometimes intensely so. Moreover, critics argue that the crisis itself proves that supervisory discipline is ineffective and therefore cannot be relied upon either to deter excessive risk or prevent future crises.

This paper investigates empirically the effectiveness of supervisory discipline on bank risk² in the twelve years (1996 - 2007) before the most recent crisis, the three "core" years (2008 - 2010) of the crisis, and four post-crisis years (2011 - 2014). Our primary motivation is to contribute to the debate about the effectiveness of supervisory discipline. However, an important secondary rationale derives from the debate over an additional objective of on-going financial reform - the need to encourage market discipline of banking organizations.³ Specifically, if supervisory discipline is ineffective, then the case for encouraging market discipline is even stronger. On the other hand, if supervisory discipline is even somewhat effective,

¹In the rest of this paper we refer to banks and thrifts as banks.

²To measure risk we use four capital ratios, but focus on the two that became most relevant during the crisis - a measure of base equity capital and the leverage ratio.

³Important examples of such policies include Dodd-Frank's mandate for the orderly resolution of systemic financial institutions and on-going discussions among bank supervisors of requiring systemic bank holding companies to hold minimum amounts of unsecured debt. See Gruenberg (2015) and Tarullo (2014).

and if clues can be discovered for how to strengthen its effects on bank risk, then the case for improving both supervisory and market discipline is strengthened. For all of these reasons, empirical evidence on the effectiveness of supervisory discipline is critical.

While our study builds on previous literature, we add a number of important advances. First, this is the first study to consider the effects of informal, and therefore often non-public, supervisory enforcement actions.⁴ Previous studies have used formal, and therefore public, enforcement actions, supervisory ratings and rating changes, and sometimes the frequency of bank examinations as measures of supervisory discipline.⁵ We investigate the effects of informal actions defined both narrowly and broadly, but in many cases such actions are unknown to the public. As discussed below, we believe that informal enforcement actions provide a superior measure of supervisory discipline. Still, both types of enforcement actions are informative; ignoring one may bias any results through model misspecification. Second, this is the first paper to examine the effects of supervisory discipline in the United States on bank risk over the years immediately before, during, and just after the recent crisis. Previous studies most similar to ours rely on samples that end as our data begin. Third, our focus on bank risk allows us to delve more deeply into risk issues than has been done in most previous research, which was often chiefly concerned with the effects of supervisory discipline on credit supply – whereas we focus the effects on capital levels. Lastly, it is widely hypothesized and research tends to support the view that crisis and non-crisis periods exhibit substantially different behaviors by banks and their supervisors (see Krainer and Lopez (2009), Curry, Fissel, and Ramirez (2008), and Berger, Kyle, and Scalise (2001)). We present contemporary evidence supporting this conventional view.

⁴Berger, Bouwman, Kick, and Schaeck (2016) use non-public supervisory data to study the effects of supervisory discipline on German banks from 1999 through 2009. They do not study U.S. banks.

⁵The Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA) required that all formal enforcement actions be made public. See Brunmeier and Willardson 2006 for additional details.

Pre-crisis, our results strongly support the risk-reducing effects of nonpublic, informal actions and the view that only using information on formal actions substantially overestimates the effects of public, formal actions. In addition, banks appear to have had strong incentives to achieve their capital targets while they were in the prompt-corrective-action (PCA) “well-capitalized” zone. During the crisis, formal actions became a much more effective tool for slowing declines in a bank’s capital ratios and informal actions were relatively less potent. Many banks seem to have had even stronger incentives to stay within the well-capitalized or adequately capitalized PCA zones during the crisis than they did pre-crisis. This could indicate that banks expected more scrutiny or more conservative regulation, or that there was less flexibility in profitable capital levels. In addition, TARP capital helped quicken the pace at which a bank adjusted to its target capital ratio. Post-crisis, while it appears that the effects of enforcement actions are moving back toward the “normal” times of the pre-crisis period, the relationship between supervisor discipline and capital adjustment is less clear. Results for indicators of a bank’s position in the prompt corrective action capital zones remain strong and suggest that, post-crisis, banks may feel the need to be much more aggressive in retaining higher capital ratios. However, the retention of TARP capital appears to slow a bank’s adjustment of its capital ratios.

The paper proceeds as follows. Section 2 briefly reviews the literature. Section 3 defines our sample of troubled banks, motivates our use of three periods, discusses our enforcement action (EA) measures of supervisory discipline, and discusses the implications for our empirical models. The next section provides descriptive statistics for our sample of EAs from 1996 through 2014 and discusses their implications for our empirical analysis. Section 5 presents our partial adjustment analytical model for examining the effects of EAs. Section 6 defines our measures of bank risk and other variables and presents our empirical results. The concluding section summarizes the results and their policy implications.

2 Literature Review

Several studies of supervisory discipline have examined its effects on bank risk. Other papers have focused on the closely-related topic of supervisory discipline's effects on bank credit supply, and this remains an area of active research interest.⁶ A small number of papers has considered whether supervisors have either better or different information than market participants (e.g., Berger, Davies, and Flannery (2000)), whether bank supervisory ratings are cyclical (e.g., Krainer and Lopez (2009)), and whether depositors care about enforcement actions (e.g., Gilbert and Vaughan (2001)). The literature has also documented patterns of EAs across time and banking agencies (e.g., Hill (2012)) and examined the potential for supervisory data to improve macroeconomic forecasts (e.g., Peek, Rosengren, and Tootell (1999)).

The first study of the effects of supervisory discipline on bank risk considered the issue only indirectly.⁷ Gilbert (1993) was concerned primarily with whether the Federal Deposit Insurance Corporation Improvement Act's (FDICIA) requirement of more frequent bank examinations, enacted in late 1991, would lower expected losses to the bank insurance fund (BIF). He used data on 815 bank failures between 1985 and 1990 to investigate the effects of examination frequency on the BIF loss rate, bank asset growth, dividend payments, equity, and nonperforming loans to total assets ratios. Overall, he found that BIF losses were smaller at banks that supervisors examined more frequently.

Two papers by Peek and Rosengren (1995, 1996) considered risk more directly and analyzed the effects of formal enforcement actions on FDIC-insured banks in New England from 1989 through 1994. These authors used a bank's (leverage) capital ratio as their measure of risk, but their primary concern was with EA effects on measures of bank lending. During this crisis, New England banks were under

⁶See, for example, Danisewicz, McGowan, Onali, and Schaeck (2014), Hwa, Kapinos, and Ramirez (2015), Kiser, Prager, and Scott (2012), Curry et al. (2008), Berger et al. (2001), Peek and Rosengren (1995, 1996), and Roman (2016).

⁷Data on formal enforcement actions only began to be reported publicly in 1989.

intense pressure to raise capital and reduce certain types of real estate lending, and one-third of the banks came under formal EAs. Peek and Rosengren (1995, 1996) found that New England banks generally had great difficulty improving their capital ratio after an EA even though they shrank their loan portfolios substantially more than they would have without a formal EA.

As part of its study of the banking crisis of the 1980s and early 1990s, the Federal Deposit Insurance Corporation (1997) briefly examined the effects of formal EAs on four risk variables: asset growth, dividend restrictions, capital injections and loan loss provisions. Their results are consistent with the view that banks subject to formal EAs reduced their risk to a greater degree than did banks not subject of a formal EA.

Dahl, O’Keefe, and Hanweck (1998) examined the effects of on-site bank examinations (and external audits) on two risk measures: the timing of loan charge-offs and provisioning for loan losses. Their sample included annual observations on almost all commercial and savings banks between 1987 and 1997. While Dahl et al. (1998) did not explicitly consider EAs, their measure of supervisory discipline suggested that bank examinations “had a significant and positive effect upon commercial and industrial loan-loss recognition.”⁸

Curry, O’Keefe, Coburn, and Montgomery (1999) addressed the effects of formal EAs on bank risk. Their sample included all FDIC-supervised banks from 1978 through 1998, and they separated this interval into three regimes. Regression and other models were used to examine the effects of formal EAs on measures of bank performance (risk) including loan-loss provisions, net loan charge-offs, asset growth and capital injections. The authors’ regression models control for supervisory ratings and rating changes, and for prior period measures of loan quality and equity capital. They found that formal enforcement actions had statistically significant risk-reducing effects on bank performance measures that, in their view, are under a “high degree” of management control. These measures

⁸See Dahl et al. (1998), p. 23.

include loan-loss provisions, net charge-offs and dividends. Statistically significant effects were not found on measures over which, in their view, bank management has “relatively limited control”, such as external capital injections and asset growth. Their results also suggest that EA effects were rather short-lived, typically for two quarters or less.

Berger et al. (2016) use annual data provided by the German central bank on virtually all German banks from 1999 through 2009. Importantly, the data include non-public information on “regulatory interventions” by German regulators. The authors estimate that both supervisory discipline and direct capital injections reduce bank risk taking.⁹

Delis, Staikouras, and Tsoumas (2017) use data on formal enforcement actions taken by all three U.S. federal banking agencies against U.S. banks between 2000 and 2010. Using a difference-in-differences approach with quarterly data, these authors find that formal enforcement actions “curtail the punished banks’ risk-taking incentives in the year after such actions,” although the banks risk-based capital ratios are not improved, particularly at “the very large, systemic banks”.¹⁰ In addition, the authors’ findings suggest that formal enforcement actions tend to come too late, perhaps on the order of four to six months, and that “timely enforcement actions appear to possess a superior stabilizing effect on banks’ financial safety and soundness.”¹¹

Roman (2016) examines the effects of formal enforcement actions on loan contracts. The analysis covers 1989 through 2011 and formal enforcement actions targeting 39 banks. The author finds a significant decrease in loan interest rates following enforcement actions. Other non-price loan terms also become more favorable to the borrower.

On balance, previous research, most of which is based on the bank and thrift

⁹The primary focus of Berger et al. (2016) is the effects of interventions on so-called “liquidity creation”, a broad measure of the production of loans and other on- and off-balance sheet financial products.

¹⁰See Delis et al. (2017), p. 37.

¹¹Ibid., p. 38.

crisis of the 1980s and early 1990s, suggests that supervisory discipline has some risk reducing effects on bank behavior. This evidence is largely based on using formal, and therefore public, EAs as the primary measure of supervisory discipline. No previous studies of U.S. banks have considered the effects of informal, and therefore potentially private, EAs. As indicated above, our analysis begins with the end of the previous banking and thrift crisis and uses both informal and formal EAs as its measures of supervisory discipline.

3 Definition of Sample Banks, Sample Periods and Supervisory Discipline

This section describes our sample, puts it in the context of the broader banking industry, motivates our use of three sample periods, and discusses in some detail the types of EAs we use and the typical time-line, or process, for their initiation and enforcement. All of these factors are central to designing, and in some cases constraining, our estimation methodology.

3.1 Sample Banks and Periods

Our sample contains all banks for which the FDIC is the primary federal regulator with a composite supervisory rating of CAMELS 2 through 5 at some point from 1996 through 2014. A bank's composite CAMELS rating is a non-public integer from 1 to 5 assigned to a bank by its regulator as part of the bank's safety and soundness examination.¹² Banks rated 1 or 2 are considered to be either in excellent condition or fundamentally sound. As will be documented shortly, CAMELS 1 banks are virtually never subject to EAs and thus are excluded from our sample. Banks rated 3 exhibit moderate to severe weaknesses but are deemed unlikely to fail; and banks rated 4 or 5 are considered to be either severely or

¹²The letters in the CAMELS acronym stand for capital adequacy, asset quality, management, earnings, liquidity and sensitivity to market risk. For more on the CAMELS rating system, see Federal Financial Institutions Examination Council (1996).

critically, respectively, unsound with failure a distinct possibility. Banks rated 3 or higher are considered to be “troubled” by their supervisor. All data are from either non-public FDIC supervisory sources or public regulatory reports (collectively referred to as “Call Reports”) collected and published by the federal banking agencies.

Table 1, for each year of our study, gives the total number of FDIC-supervised banks, the percent such banks are of the total number of U.S. banks, and the percent of total assets held in FDIC-supervised banks relative to the total assets of the banking industry. While the number of banks for which the FDIC is the primary federal supervisor is large, such banks represent only part of the U.S. banking industry. Column 2 shows that the percentage of U.S. banks for which the FDIC is the primary federal regulator has been rising gradually from about 54 percent in 1996 to 63 percent in 2014. Column 3 shows that over this period the percent of total banking industry assets held in FDIC-supervised banks has remained remarkably steady at about 18 percent, but still fell slightly from 20 percent in 1996 to 17 percent in 2014.

The sample period of 1996 through 2014 was chosen for three reasons: (1) the FDIC only began systematic collection of separate categories of EAs (e.g. “capital-related” EAs) in 1996, allowing cleaner analysis, (2) it begins well after implementation of the 1991 Federal Deposit Insurance Corporation Improvement Act’s major regulatory and supervisory reforms, and (3) it includes a substantial number of pre-crisis years as well as the recent crisis/recession and post-crisis/recession periods.

We separate our time span into three periods: (1) pre-crisis (1996 through 2007), (2) crisis and recession (2008 through 2010), and (3) post-crisis/recession (2011 through 2014). With regard to our pre-crisis period, it is well known that changes in banking regulatory and supervisory regimes can have substantial effects on bank behavior.¹³ In our case, FDICIA’s reforms represented a major regime

¹³See Ashcraft (2008) and Covitz, Hancock, and Kwast (2004).

change for several reasons. Most importantly, supervisors were instructed to take “prompt corrective action” when a bank’s regulatory capital ratios began to deteriorate; Congress mandated that the FDIC resolve a failed institution in the “least cost” manner for the deposit insurance fund; more frequent bank examinations were required; and banking agencies were told to make formal enforcement actions public. Any one of these changes could (and was intended to) change the behavior of both the bank and its regulator. Thus, it is quite likely that a study of supervisory discipline would find substantial differences in effects pre- and post FDICIA. Because we are interested in the contemporary effects of supervisory discipline, we limit ourselves to the post-FDICIA supervisory regime.

We date the core years of the financial crisis and the ensuing Great Recession from 2008 through 2010. We begin in 2008 in part because our empirical model uses annual data and we want our first year of crisis observations to include fully the crisis and the ensuing recession, recognizing that the financial crisis was underway by the fall of 2007 and the National Bureau of Economic Research dates the start of the recession in December 2007.¹⁴ More importantly, in 2007 only three banks failed, and none because of the crisis, but the number of failures rose to 25 in 2008, 140 in 2009, and peaked at 157 in 2010. While the number of failures was still a relatively elevated 92 in 2011, it seems reasonable to argue that 2011 was well into the start of a definite improvement in the health of the banking industry.¹⁵ In addition, passage of the Dodd-Frank Act in 2010 established in the minds of bankers and their supervisors that a new supervisory and regulatory regime was about to begin.

3.2 Definition of Supervisory Discipline

We define supervisory discipline as the issuance by the FDIC of either an informal enforcement action (IEA) or a formal enforcement action¹⁶ (FEA) resulting from

¹⁴See Bernanke (2010).

¹⁵There were 51 banks failures in 2012, 24 in 2013, and 18 in 2014.

¹⁶Also referred to as “formal administrative actions”.

a bank safety and soundness examination and directed at bank capital adequacy concerns.¹⁷ We exclude enforcement actions associated with other areas, such as consumer protection and community reinvestment. IEAs and FEAs vary along several important dimensions. Perhaps the most important is the degree of public knowledge of the action; informal actions are not typically made public, while formal actions are required to be. As discussed below, we employ both a “narrow” and a “broad” definition of IEAs, but both are non-public supervisory actions aimed at bank safety and soundness issues. The non-public nature of IEAs suggests that the effects of an IEA are likely to be relatively clean measures of supervisory discipline because such effects will be isolated from the effects of any market discipline imposed on the bank that results from public announcement of a FEA.¹⁸ Still, FEAs are potentially powerful instruments of supervisory discipline and are included in our analysis.

3.3 Types of Enforcement Actions

The FDIC may issue an IEA when a bank either is in a marginally unsatisfactory condition or is otherwise engaging in activities that raise significant supervisory concerns. Informal actions are not enforceable in a court of law, and consist primarily of two types. A Bank Board Resolution (BBR) is the weakest form and is generally associated with a CAMELS 2 bank. A BBR is a declaration written by a bank’s board of directors in consultation with the supervisor outlining a plan for correcting deficiencies. It identifies specific reforms and time-lines for implementing those reforms. Alternatively, a Memorandum of Understanding (MOU) is the strongest such IEA and is generally associated with CAMELS 3 banks. An MOU is a written agreement drafted by the FDIC and signed by the FDIC and each

¹⁷Enforcement actions are categorized by the CAMELS rating to which the action applies. In this case, we keep only actions pertaining to the “C” or capital adequacy component. Focusing only on actions referencing capital adequacy implies that these actions should have a direct effect on actual and target capital levels.

¹⁸Bennett, Hwa, and Kwast (2015) show that even smaller banks of the type that characterize our sample were subject to quantity market discipline during the crisis.

member of the bank’s board. According to the FDIC, “[a]n MOU provides a structured way to correct problems at institutions that have moderate weaknesses, but have not deteriorated to a point requiring formal corrective actions.”¹⁹ It outlines specific actions a bank must take and sets deadlines for achieving those actions. Both BBRs and MOUs are included in our “narrow” definition of an IEA. Informal enforcement actions are treated as confidential information by the regulator. However, the target bank may release the information. For instance, if an enforcement action is a material event, it may be required to disclose to shareholders.

While formal actions are stronger than their informal cousins, FEAs also vary from relatively weak to quite strong directives. Unlike narrow IEAs, formal actions are enforceable in a court of law. The 1989 passage FIRREA required that all FEAs be publicized.²⁰ A “Consent Order” (CO) – sometimes referred to as a “Cease and Desist Order” – identifies specific actions the bank must take and deadlines for correcting problems. Although the issues specified in a CO may be the same as those raised in a MOU, the language in a CO is often stronger and more specific. Moreover, a CO is issued after a hearing before an administrative law judge, although the right to such a hearing is often waived by the affected bank. A CO remains in effect until it is ended or modified by the FDIC or set aside by an administrative law judge. COs can be broader in scope than their name may suggest and usually require a range of actions to correct specific problems. A bank must normally have at least a CAMELS 4 rating to receive a CO.

Prompt Corrective Action directives are another type of FEA. Under FDICIA, the FDIC is authorized to (and in some cases must) take increasingly severe actions against a bank as specific capital ratios fall below minimum levels. For example, PCA actions initially include relatively mild constraints such as prohibiting capital

¹⁹See the FDIC’s *Risk Management Manual of Examination Policies* at <https://www.fdic.gov/regulations/safety/manual/>.

²⁰See Brunmeier and Willardson (2006) for details on changes from FIRREA and FDICIA and also on types of enforcement actions.

distributions and limiting certain activities and progress to more severe requirements such as limiting growth, selling new equity shares, and either merging with another institution or being placed into an FDIC receivership.

Other types of FEAs include a menu of actions such as temporary COs, the suspension or removal of individuals from a bank’s board, executive, or employee ranks, and civil money penalties. All of these are included in our definition of FEAs.

Two other important supervisory actions need to be considered for inclusion in a “broad” definition of IEAs: the timing of a bank’s safety and soundness examination and the downgrading of a bank’s CAMELS rating. CAMELS downgrades almost always occur at the end of a bank examination and neither the occurrence of the examination nor the CAMELS downgrade are made public. Importantly, while bank examinations do not necessarily result in adverse supervisory actions, a CAMELS downgrade is always a serious act of supervisory discipline. Still, unlike the “narrow” EAs discussed above, a CAMELS downgrade does not by itself require particular actions by the bank. We address this definitional problem by estimating a range of models that in some cases include only the narrow definition of an IEA and in others include the broad definition. In addition, we experiment with whether the broad definition should include the level of a bank’s CAMELS rating rather than a downgrade. Because the timing of a CAMELS downgrade and a bank examination are approximately coincident, our empirical models do not account separately for a bank examination. CAMELS ratings are treated as confidential by the regulator and target institutions are prohibited from releasing them.

3.4 The Enforcement Action Process

Another important factor that complicates the estimation of supervisory discipline effects is the implications of the typical time-line for the bank examination,

CAMELS rating, IEA, FEA process.²¹ This “EA process” normally extends over about two years, but may stretch over a longer (shorter) period in particularly difficult (straightforward) cases.

For our purposes, it is useful to think of the EA process as proceeding in three stages (see Figure 1 for an illustrative diagram). In stage 1, a bank receives an on-site examination. If the examination discovers important problems, the bank’s CAMELS rating may be downgraded and the bank may be notified of any impending EA. However, issuance of the EA normally takes time, typically less than three months but sometimes up to six months. Thus, stage 2 begins when the supervisor actually issues the EA. In the interim between the examination and issuance of the EA, the bank may well begin to take actions either in response to a CAMELS downgrade or that it expects to be identified in the EA or that will otherwise improve its financial condition. In stage 2, assuming the bank’s problems are not too severe, the normal enforcement action would be an IEA. If the bank improves substantially over the coming months, stage 2 could be the end of the process. Moreover, a CAMELS downgrade and maintenance of the CAMELS rating at the new level may be sufficient to change the bank’s behavior, thus eliminating the need for an additional IEA and ending the process at stage 2. However, if the bank’s condition deteriorates and/or the IEA’s requirements not met, the EA process is likely to continue to stage 3.

In stage 3, a FEA is issued and additional CAMELS downgrades (usually to a 4 or 5) are likely to occur. In any event, during stage 3 the bank is subject to much more intensive monitoring (including additional examinations) and supervisory discipline than it was in stage 2. Moreover, if the stage 1 bank examination reveals particularly serious deficiencies, stage 2 may be skipped altogether and the process may go directly from stage 1 to stage 3.

This description of the EA process guides our modeling and regression estima-

²¹Curry et al. (1999) provide a more detailed account of this process. We have also benefitted from discussions with FDIC supervisory staff.

tion procedures, discussed in Sections 5 and 6 below, in at least three important ways. First, separate indicator variables are included for IEAs and FEAs. As noted earlier, no other study of supervisory discipline makes this potentially critical distinction. Second, we estimate models using both the narrow and the broad definitions of an IEA. Third, because the timing of the EA process is highly variable, complex, full of uncertain lags, and does not match the timing of any regulatory data collections we limit our investigations to annual data. In this way, we attempt to “average through” many of the complex interactions that we know can and almost surely do occur while still hoping to identify separate effects of the EAs.²²

4 Descriptive Statistics of Enforcement Actions

Table 2 describes the incidence of FDIC-imposed IEAs and Table 3 shows FEAs. Beginning with Table 2, a distinctive cyclical pattern (there was a mild recession in 2001) is not apparent in the number of IEAs until the crisis years of 2008-2010 (shown in bold). The number of IEAs jumped by 49 percent between 2008 and 2009, peaked in 2010 (250 percent greater than in 2007) and fell back slightly in 2011. By 2014, the number of IEAs was only 60 percent of the 2010 maximum. In addition, the percent of FDIC-supervised banks subject to at least one IEA, which had remained stable at around 1 percent from 2000 through 2007, jumped sharply in 2008 (to 4 percent) and 2009 (to 8 percent), peaking at 12.4 percent in 2010, and remained elevated through 2013.

One can see similar patterns in the time series of the number of FEAs (Table 3). However, on average, and in every year, both the number of FEAs and the percent of banks subject to at least one FEA are considerably smaller than the number of IEAs and the percent of banks subject to at least one IEA. As with the

²²Use of annual data is common in the literature. See, for example, Berger et al. (2001), and Berger, DeYoung, Flannery, Lee, and Öztekin (2008).

IEAs, the number of FEAs rose markedly in 2008. By 2009 the number of FEAs was dramatically higher than in 2007 (23 vs 245, respectively). This lagged pattern of FEAs relative to IEAs is consistent with the stages of the EA process described in the previous section. Table 3 also shows that consent orders are consistently the most common type of FEA, averaging 92 percent of FEAs over the 19 sample years.

Table 4 displays, for each year in our sample, the number of FDIC-supervised banks sorted by their CAMELS rating and, for each CAMELS-based group, the percentages of banks in each year with any type of EA, with an IEA and with a FEA. Several important observations emerge from Table 4. First, as expected, essentially no CAMELS 1 banks have any type of EA. Indeed, the mean percentages to one decimal point for both types of EAs are zero over the 19 year sample.

In every year of our sample except 1996, there were CAMELS 2 banks with some type of EA. While the mean percent of CAMELS 2 banks with an EA was only 3.2 percent, the percent for each year after 2009 was substantially above the mean, peaking at 11.5 percent in 2012. Consistent with the EA process described above, the percentage of CAMELS 2 banks with an IEA was typically much larger than the percentage with a FEA. On average, 3 percent of the CAMELS 2 banks had an IEA, but only 0.2 percent incurred a FEA.

The jump in the incidence of EAs at CAMELS 3 banks relative to CAMELS 2 banks is, unsurprisingly, quite pronounced. For example, the mean percent of CAMELS 3 banks with an EA is 43.2 percent, almost 14 times the mean at the CAMELS 2 banks. As with the CAMELS 2 banks, at the CAMELS 3 banks the incidence of IEAs dominates the incidence of FEAs - the percent of IEAs is larger by a substantial margin in every year of the sample.

Also as expected, the average percent of CAMELS 4 and 5 banks with an EA is larger than that of any other group. However, this pattern reverses in 2011, reinforcing the importance of considering separately the post-crisis period.

In sharp contrast to the CAMELS 2 and 3 banks, except for the first two years of the sample, the incidence of FEAs at the CAMELS 4 and 5 banks is always substantially greater than the incidence of IEAs. This is again consistent with the EA process described in section 3, in which the financial condition of the CAMELS 4 and 5 banks is viewed as being much worse and persistently poorer than the condition of the CAMELS 3 banks.

Lastly, the incidence of EAs, especially at the CAMELS 3 and CAMELS 4 and 5 banks, picks up in 2008 and remains elevated through at least 2012, well after the peak years (2009 and 2010) for the number of bank failures in this period. This too is consistent with the EA process described above where it was noted that the EA process normally extends over about two years but may be longer in particularly difficult (e.g. during a major financial crisis and severe recession) cases.

Table 5 presents another and similar view of the dynamics of the CAMELS rating system. The Table shows the empirical transition probabilities between the five CAMELS ratings and failure for each of the three time periods. The data reinforce the view that, at least in the pre-crisis “normal” times, CAMELS ratings are quite sticky, where usually the most likely future rating is the current rating. For example, in the pre-crisis period 88 percent of the banks that were rated a CAMELS 1 in year t were rated a one the next year. However, there are notable differences between the time periods. First and unsurprisingly, banks were much more likely to transition to worse ratings during the crisis. Thus, for example, during the crisis 78 percent of banks that were rated a one in year t were rated a one the next year. Second, ratings post-crisis have, once again, become more persistent. Thus, post crisis 89 percent of banks that were rated one in year t were rated a one the next year.

Table 5 shows changes in the risk environment faced by banks in our periods of analysis. One direct measure of this is the number of failures per year. There were

an average of four failures per year during the pre-crisis period. This escalates to 108 during the crisis, but returns to a lower level at 46 during the post-crisis period. Also, these risks are shown by the transitions of banks' ratings from their one-year lagged status to a current status that has 3 or above ratings. We can look at the one-year lagged rating of 1 and the transition to a 3, 4 or 5 rating the next year is 0.36 percent during the pre-crisis, rising to 2.18 percent during the crisis, before falling back to 0.27 percent during the post-crisis period.

The observations we have made regarding Tables 2 through 5 have several important implications for the specification of our empirical models. First, the data strongly reinforce the importance of accounting for both IEAs and FEAs. Studies that only use FEAs may well be subject to omitted variable bias. Second, the data emphasize the uniqueness of the crisis period for the number and type of EAs and the percent of banks subject to an enforcement action. Third, the data support the view that the post-crisis period is worthy of separate analysis. Lastly, the virtual absence of EAs of any type at CAMELS 1 banks, even during and after the crisis, strongly suggests that the financial condition of these banks is considerably better than that of banks in the other three CAMELS groups. Thus, we drop the CAMELS 1 banks from further consideration.

5 Partial Adjustment

We model a bank's changes to its capital structure using a partial adjustment framework.^{footnote}See Flannery and Ranganm (2006) and Berger et al. (2008) for other examples. Write the capital ratio for bank i at time t as $k_{i,t}$. Assume that each institution adjusts its current capital ratio towards its individual target capital ratio, $k_{i,t}^*$. Using the standard partial-adjustment framework, we then have

$$k_{i,t+1} - k_{i,t} = \lambda(k_{i,t+1}^* - k_{i,t}) + T_t + \delta_{i,t+1}, \quad (1)$$

where T_t is a yearly fixed effect and $\delta_{i,t+1}$ is a random error. Further, we allow the target capital be a function of bank-specific, time-varying factors ($X_{i,t}$ and a bank fixed effect B_i). In the first stage, we use Equation 2 (below) to get estimates for β and B_i . These are estimated using the GMM method from Blundell and Bond (1998). That is, we estimate,

$$k_{i,t+1}^* = \beta X_{i,t} + B_i. \quad (2)$$

Thus, target capital is a function of bank specific on- and off-balance sheet characteristics and a bank-level fixed effect. Its primary purpose in our modeling is to “control” for the capital ratio a bank would seek to achieve on its own if it were not subject to any supervisory actions. Similar to the second step of Berger et al. (2008) (and mentioned in Flannery and Ranganm (2006)), we also let the adjustment speed, λ , vary based on other bank-specific characteristics. However, in contrast to their study, we want to test whether EAs affect the speed with which a bank adjusts toward its target capital ratio.

$$\lambda_{i,t} = \Lambda Z_{i,t}. \quad (3)$$

By substituting, we are left with the second stage regression given by

$$k_{i,t+1} - k_{i,t} = \Lambda Z_{i,t}(\beta X_{i,t} + B_i - k_{i,t}) + T_t + \delta_{i,t+1}. \quad (4)$$

We then use the predictions from the first stage estimation, \hat{k}^* , for this second stage estimation. This provides estimates for the relative importance of the various factors, $Z_{i,t}$, including EAs, on banks’ speed of adjustment towards their target capital. For estimation of the econometric model, we followed the “BB” technique described in Flannery and Hankins (2013).²³ Specifically, we employ their two-step

²³In Flannery and Hankins (2013) the “BB” technique is a specific implementation of the methods from Blundell and Bond (1998).

procedure, with a maximum of two lags and setting the explanatory variables as “predetermined”.

6 Empirical Analysis

We measure bank risk using two measures of capital k: Base Capital is the ratio of total book equity to total book assets and the Leverage Ratio is the ratio of tier-1 risk-based capital to book assets²⁴ During the crisis, market participants focused on such measures as being most relevant to the survival of the firm, and discounted the importance of the risk-based measures. Post-crisis, the emphasis on core equity has continued by banks, their regulators and market participants.²⁵

Observations include only banks primarily regulated at the federal level by the FDIC and banks with a composite CAMELS rating of 1 are excluded. In addition, to avoid counting capital transfers between separately incorporated banks of a single “parent” holding company as net capital injections, we consider only institutions which are either under no or a holding company controlling a single bank. We exclude institutions chartered outside of the 50 United States, and if business loans or retail deposits are less than 0% or more than 100% of total assets, the observation is dropped.

Enforcement actions were filtered to include only actions based on safety and soundness examinations and focused on capital adequacy concerns.²⁶ In addition, actions without termination dates were assigned the mean duration of terminated actions. By number, these mostly represent missing data, but because all new, open actions will have no termination date, this will tend to bias durations downward.

²⁴See 12 CFR 324.2 for regulatory definitions of the risk-based capital measures.

²⁵For example, the 2009 stress tests conducted by the Federal Reserve and other regulators focused on common equity because it “is the first element of the capital structure to absorb losses, offering protection to more senior parts of the capital structure and lowering the risk of insolvency” (Board of Governors of the Federal Reserve System (2009), p. 2). The Basel III capital rules, adopted in the United States in July 2013, continued the regulatory emphasis on common equity tier 1 capital (see Board of Governors of the Federal Reserve System (2013)).

²⁶Further, we excluded Y2K-based actions, and some types of insurance terminations (8(P) and 8(Q)).

This measurement error would enter as an attenuation bias, biasing our final estimates towards no result. Finally, we exclude observations where the duration is greater than the 99th percentile and where the action start date is after the action termination date (likely data errors). To match our annual data, we say that an EA existed for a given year observation, if at any time during that year, an EA was in effect.

6.1 Results

We begin by comparing the average target capital ratio estimated in the stage 1 regression to the average actual capital ratio held by our sample banks. As indicated in section 5, these targets depend upon individual bank on- and off-balance sheet variables and bank fixed effects, not explicit supervisory actions taken in response to a bank's financial condition.²⁷ Figures 2 - 5 show the means for each of the four capital ratios used.²⁸ The solid lines give the means of the target ratios, while the dashed lines provide the means of the actual ratios.

Figures 2 - 5 reveal several important points. First, it is immediately apparent that after beginning to rise in about 2000, mean target ratios of all four capital measures began falling in the years just before and during the start of the crisis. Indeed, average target ratios did not return to pre-crisis levels for the base and leverage capital measures until 2010 or slightly later. Mean estimated target ratios for Tier 1 and total capital ratios recovered by about 2009. Second, it is clear that during both the pre-crisis and crisis periods, banks on average are estimated to have preferred (absent explicit supervisory actions) to maintain lower capital ratios than they actually held. It is only in the post-crisis years that mean target ratios are generally higher than the actual means.²⁹

We can only speculate regarding the reasons for these two patterns. Perhaps

²⁷Passive supervisory and regulatory constraints, such as minimum standards, are inevitably embedded in the variables.

²⁸Berger et al. (2008) show comparable tables.

²⁹In all cases, the mean target capital ratios are well above the minimum levels defined as "adequately capitalized" for prompt corrective action.

in the relatively prosperous pre-crisis years, banks generally felt little need to maintain high capital ratios and may have been trying to maximize the value of the federal safety net put option. During the crisis it seems reasonable to argue that most banks could neither raise capital nor sell assets fast enough to maintain or increase their capital ratios.³⁰ Post-crisis, perhaps the shock of the crisis, including the failure of many banks with their size and other characteristics, caused banks on average to desire higher capital ratios even without explicit supervisory action.

Whatever the banks' motivations, the observed patterns of target and actual capital ratios have important implications for the interpretation of the stage 2 coefficients on the enforcement action indicator variables. If banks would otherwise seek lower capital ratios, then effective enforcement actions would slow their progress towards that lower level. In our model's partial adjustment context, this means that when target capital ratios are below actuals the estimated effect of EAs on a bank's adjustment speed should be negative. Alternatively, when target capital ratios are above actuals, EAs should quicken a bank's adjustment toward its target and thus the estimated effect of EAs on adjustment speed should be positive. These alternative interpretations are explicitly accounted for in our estimations.

6.2 Right-Hand Side Variables

Tables 6 through 17 provide our two-stage regression results.³¹ Column (1) of each table gives our results for the first-stage regression which, as indicated above, we use to compute a bank's target capital ratio as a function of selected on- and off-balance sheet characteristics plus bank fixed effects. Our choice of right-hand-side variables follows Berger et al. (2008) where possible. Variables attempt to account for the initial amount of capital (however defined), a bank's size, liability and asset composition, and extent of off-balance sheet activity. While we do not

³⁰An extensive fire sale literature suggests that banks might be unwilling and/or unable to sell assets during a crisis. See Shleifer and Vishny (2011).

³¹The definitions for all variables are given in Table 19.

have strong priors regarding the signs of these variables (conflicting theories may well exist), it is reasonable to argue that the concepts they represent are relevant inputs to a bank's determination of its target capital ratio.

Columns (2) - (5) provide our stage 2 results for four specifications of the effects of enforcement actions on a bank's speed of adjustment toward its target capital ratio. Starting with how we measure the effects of EAs, column (2) only uses an indicator variable for a formal action, and thus the coefficient on FEA only reflects the effects of publicly-available information. Columns (3) - (5) use indicator variables to add three definitions of an informal action to the stage 2 equation. Column (3) employs a narrow definition of an IEA by excluding any information regarding a bank's CAMELS' rating. Column (4) expands our definition of an IEA by adding two indicator variables which reflect whether a bank has experienced a CAMELS downgrade to 3 (DG3) or to 4 or 5 (DG45). Column (5) replaces these latter two variables with indicator variables reflecting a bank's CAMELS rating of 3 (CAM3) or 4 or 5 (CAM45). As discussed above, the expected sign of these variables varies with the relationship between a bank's target and actual capital ratio. Lastly, each set of five regressions is estimated separately for the three time periods we analyze and for each of our four capital ratios.

With one exception, the other right-hand-side variables follow Berger et al. (2008). Seven indicator variables control for where a bank lies in various regulatory capital zones, all of which build off prompt corrective action definitions. The idea is that how close a bank is to certain zones may influence the speed with which it attempts to reach its target capital ratio. As with the Stage 1 independent variables, we have no strong priors regarding the signs of these variables.

A new right-hand-side variable indicates whether the bank received TARP funds and, if so, whether a balance is currently outstanding.³² This variable, obviously relevant only in the crisis and post-crisis periods, could easily affect a bank's speed

³²Under the Troubled Asset Relief Program (TARP), enacted in late 2008, banks of all sizes could apply for federal government equity injections.

of adjustment. During the crisis many banks were under intense pressure to raise their capital ratios. Yet, at that time, outside capital was virtually impossible to raise and selling assets was unattractive or impossible. In that situation, a bank would likely only accept TARP funds if the funds would speed-up the bank's adjustment toward its target ratio. In this case, we would expect a positive sign on TARP. Post-crisis, the cushion provided by low-cost TARP funds would likely slow a bank's capital ratio adjustment.

6.3 Target Capital Ratio: Stage 1

Our Stage 1 results generally support use of the variables we have selected. While we have no strong priors regarding their signs, we do expect a high degree of statistical significance. In the pre-crisis period (Tables 6 - 9), three of the five variables are consistently significant: lagged capital, retail deposits, and business loans. During the crisis (Tables 10 - 13), four of the five variables are significant; the same variables as in the pre-crisis regressions plus size. After the crisis (Tables 14 - 17), both the number of statistically significant variables and the level of their significance drop off a bit. At least two variables are significant at the 10 percent level or lower: lagged capital, size, and off balance-sheet assets (for base capital only). On balance, we conclude that our Stage 1 results are well above minimum standards for the purpose for which we use them.

6.4 Adjustment Speed to Target: Stage 2

Here we examine the Stage 2 regressions that estimate the effects of enforcement actions on a bank's speed of adjustment to its target capital ratio. For the reasons discussed at the end of Subsection 6.1, we run separate regressions for dependent variables with positive and negative values; that is, where the target ratio is above or below the actual ratio, respectively. Each of our three time periods is examined separately. To condense the information from the numerous results, Table 18 gives

average coefficient estimates from Stage 2 only and across the capital definitions for each time period in a single table.

Pre-Crisis

Tables 6 through 9 report results for the pre-crisis period. Recall that a positive (negative) sign on an EA variable in the positive (negative) regressions indicates that enforcement actions typically speeded up (slowed) the movement of a bank's capital ratio toward the higher (lower) level targeted by the bank. As we show below, in the pre-crisis period, there is relatively more evidence to show that supervisory discipline acted to slow declines in capital, rather than to speed increases.

For the negative regressions (Tables 7 - 9), in both the base capital and leverage ratio equations, the coefficients on downgrades are negative and statistically significant (column (4)). The CAMELS ratings themselves are marginally significant for both capital measures. On balance, for the pre-crisis period these results support both the importance of informal actions (broadly defined) as an instrument of supervisory discipline and the view that studies that only use information on FEAs are likely to overestimate the importance of FEAs.

The sign of the difference between the target capital and the actual capital leads to substantially different model estimates (Table 6 versus 7 and 8 vs 9). Looking at the results when the target capital is below the actual (negative, meaning the bank would seek to lower capital), the parameter estimates are always negative in the base equity and leverage ratio regressions. This implies that supervisory discipline slowed adjustment towards the target capital level when actual capital levels were higher. In other words, supervisory discipline slowed adjustment for banks who would seek to lower their capital. When the target capital level is above the actual capital level, parameter estimates are more frequently positive or of a lower magnitude. Therefore, it is clearly important to control for these factors

in a study of how banks adjust their capital structure.

Looking briefly at results for the indicators of a bank's position in prompt corrective action capital zones (in 6 for example), in the base equity and leverage ratio regressions where the target capital level is below actual, all the coefficients are positive and significant at the one percent level or lower. However, in regressions when the target level is above the actual capital level, the coefficient estimate switch from negative and significant to positive and significant as the capitalization category goes down (at the top category, the estimate is -0.0058 and significant at 1%, while at the lower categories, the estimate is positive at 1%). Therefore, it is important to control for these factors in a study of how banks adjust their capital structure.

Perhaps of more interest, statistical tests reveal a generally increasing pattern in the size of these effects as a bank's base capital and leverage ratios fall from the highest (600 - 800 bps above well capitalized) toward lower prompt corrective action zones (adequately and under capitalized).³³ Specifically, when measured against the higher zones, the adjustment speed coefficients get significantly larger at the 1 percent level in a consecutive manner through the under-capitalized category when target capital is above actual capital and through the smallest well-capitalized grouping when target capital is below actual. One possible explanation for this result is that moving toward a bank's target capital ratios is relatively easy and inexpensive if the bank is well-capitalized, but it becomes increasingly difficult and costly as a bank falls out of the well-capitalized category. So, banks would have a strong incentive to achieve their targets while they are still well-capitalized.

The Crisis

Tables 10 through 13 report regression results for the financial crisis. The enforcement action results for the crisis differ quite markedly from those of the pre-crisis period. For example, in the negative regressions of both the base equity and lever-

³³These tests are available on request from the authors.

age ratio equations (Tables 11 and 13), the estimated parameters on supervisory discipline are mostly negative and never significant. However, in stark contrast to this and the pre-crisis result, the measures of supervisory discipline are positive and statistically significant in both of the positive regressions (Tables 10 and 12). This would imply that supervisory discipline sped adjustment towards target capital levels in banks whose capital was below their target. That is, supervisory discipline increased adjustment speed for banks which would seek to increase their capital levels.

In short, during the crisis, the effects of enforcement actions appear to have been quite different from the pre-crisis period, a result that is perhaps not surprising given the extraordinary nature of this period. In contrast to Peek and Rosengren (1995, 1996), the results suggest that during the most recent crisis supervisory discipline became more of a tool for speeding a bank's increase in its capital ratio. One possible reason for this result may be that during the crisis, banks that became stressed, and for whom raising their capital ratios would have been difficult and costly, were particularly subject to supervisory discipline.

Results for the indicators of a bank's position in prompt corrective action capital zones are stronger in the crisis than they are pre-crisis only for banks whose target capital levels are above their actual levels. Relative to the pre-crisis period these banks had significantly larger coefficient differences at the one percent level or greater. Also, banks whose target is above actual capital levels had significantly larger adjustment speed coefficients. For the regressions where target capital is below actual capital, all of the coefficients in all of the equations for each capital ratio measures are positive and statistically significant at the one percent level or lower. Therefore, these results strongly reinforce the need to control for these factors in a study of bank adjustments to their capital structure and emphasize the unique environment of the crisis.

For the positive regressions, the TARP indicator variable is positive and

significant at the one percent level or lower, except in one case where it is significant at five percent. Conversely, TARP is always insignificant in the negative regressions (when the target capital level was lower than the actual capital level). The result is intuitive since TARP was intended and designed to increase capital levels. Thus, our result strongly supports the view that TARP funds helped quicken the pace at which a bank receiving TARP funds adjusted to its higher target capital ratio. Moreover, the results confirm the need to control for access to TARP funds in any study of bank capital structure during this period.

Post-Crisis

Tables 14 through 17 present results for the post-crisis period. The enforcement action results for the post-crisis period differ from those of both the pre-crisis and the crisis periods. While it appears that the effects of supervisory discipline are in some ways moving back toward the “normal” times of the pre-crisis period, the overwhelming impression is that the estimated effects of supervisory discipline remain less clear (or perhaps substantially changing) period. In the post-crisis period, the results with respect to informal enforcement actions (broadly defined) are mixed. Indeed, on balance, the estimated effect of supervisory discipline on the speed of a bank’s adjustment to either its target base equity or leverage ratio, is unclear.

Results for the indicators of a bank’s position in the prompt corrective action capital zones remain very strong, especially in the negative regressions, reinforcing the need to control for and better understand such factors. Moreover, the general pattern is maintained in each of the periods, both across capital position and target capital relative to actual capital. All of these coefficients in all of the equations for each of the capital ratio measures are positive and statistically significant at least at the one percent level in the negative regressions. As was true in the previous two periods, statistical tests indicate that their magnitudes increase as a bank falls

into lower capital categories. The capital adjustment coefficients are significantly greater than the higher capital groups for each capital category consecutively down to the significantly under-capitalized group in the positive adjustment regressions and the under-capitalized group in the negative adjustment regressions. This result suggests the very interesting (and hopeful) conclusion that, post-crisis, banks have felt the need to be much more aggressive in retaining higher capital ratios.

Post-crisis, the TARP indicator variable in all but one of the regressions is negative and statistically significant at the one percent level or better. This result is puzzling in that, while the relationship between TARP and capital adjustment is clear during the crisis, the net effect of TARP in the years following the crisis is unclear.

7 Conclusion

This paper has examined the efficacy of supervisory discipline, defined as supervisory enforcement actions, for reducing risk at small and medium-sized banks before, during, and after the recent financial crisis and Great Recession. Unlike previous studies, we are able to distinguish between informal (non-public) and formal (public) enforcement actions. In addition, ours is the first study we know of to consider the effects of enforcement actions in the United States during and after the crisis. We measure risk using four capital ratios, but focus on the two that became most relevant during the crisis - a measure of base equity capital and the leverage ratio.

In the pre-crisis period, our results strongly support both the risk-reducing effects of informal actions and the view that studies that only use information on formal actions are likely to substantially overestimate the importance of such actions. In addition, the evidence suggests that banks had strong incentives to achieve their capital targets while they were in the prompt corrective action “well-capitalized” category.

During the crisis, we find that formal actions became a much more effective tool for slowing declines in a bank's capital ratios and informal actions were relatively less potent as an independent instrument of supervisory discipline. It also appears that during the crisis, many banks had even stronger incentives to stay within the well-capitalized or adequately capitalized prompt corrective action zones than they did pre-crisis. In addition, the acquisition of TARP capital helped quicken the pace at which a bank adjusted to its target capital ratio.

Post-crisis, while it appears that the effects of enforcement actions are moving back toward the "normal" times of the pre-crisis period, the effects of supervisory discipline are more difficult to estimate. Results for indicators of a bank's position in the prompt corrective action capital zones remain strong and suggest that, post-crisis, banks may feel the need to be much more aggressive in retaining higher capital ratios. However, the retention of TARP capital appears to slow a bank's adjustment of its capital ratios.

Our results strongly support the view that supervisory discipline has been and can continue to be an effective tool for reducing bank risk. However, our results also find that understanding the role of supervisory discipline requires understanding the roles of both informal and formal supervisory activities. In addition, the crisis introduced new challenges to supervisors and banks, challenges that are still being worked out in the post-crisis period. Thus, policymakers should continue to improve the ability of both supervisory and market discipline to control bank risk.

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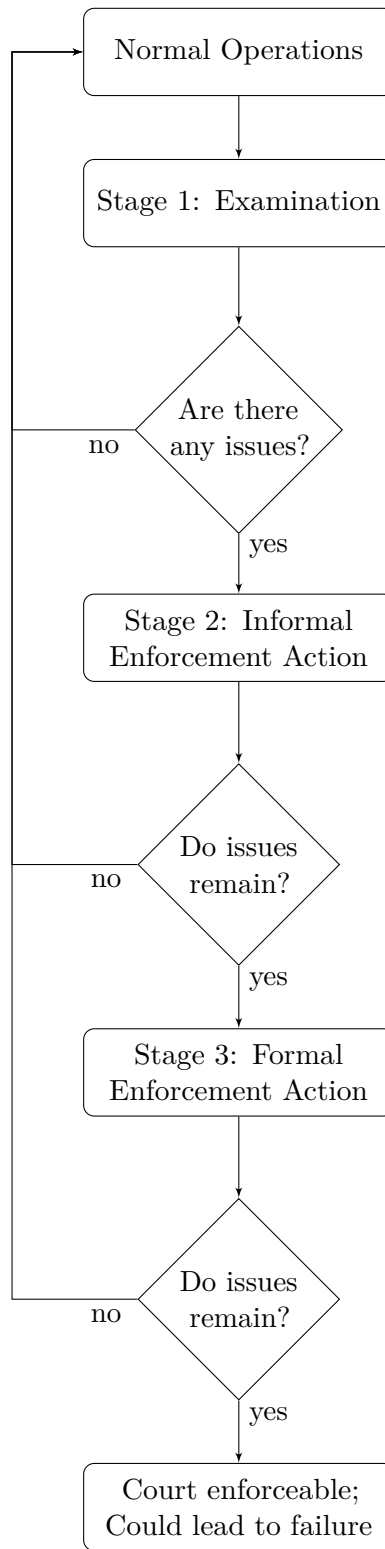


Figure 1: Highly stylized general progression of the enforcement action process. This diagram is provided for illustrative purposes only. It is applicable for the current analysis and for no other purpose.

Figure 2: Mean Target Base and Actual Capital Ratios

This figure charts the mean stage 1 estimated base (total equity) capital (to total assets) target ratio (solid line) for sample banks and the mean base capital actual ratio (dashed line) for those banks for each year from 1996 through 2014. Target ratios depend upon individual bank on- and off-balance sheet variables and bank fixed effects.

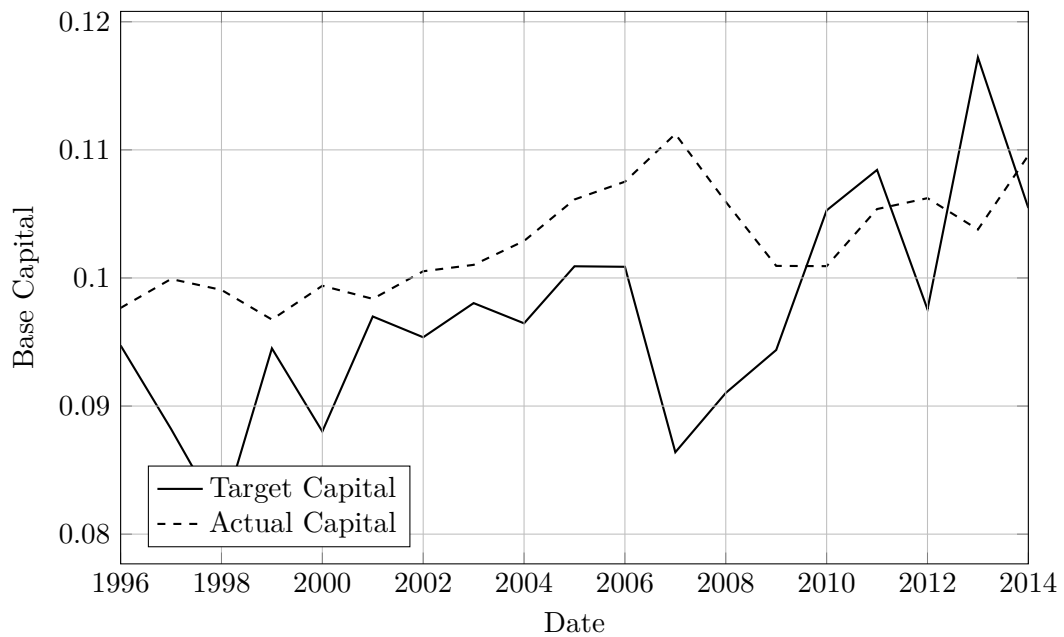


Figure 3: Mean Target Leverage and Actual Capital Ratios

This figure charts the mean stage 1 estimated tier-1 risk-based capital (to total assets) target leverage ratio (solid line) for sample banks and the mean actual leverage ratio (dashed line) for those banks for each year from 1996 through 2014. Target ratios depend upon individual bank on- and off-balance sheet variables and bank fixed effects.

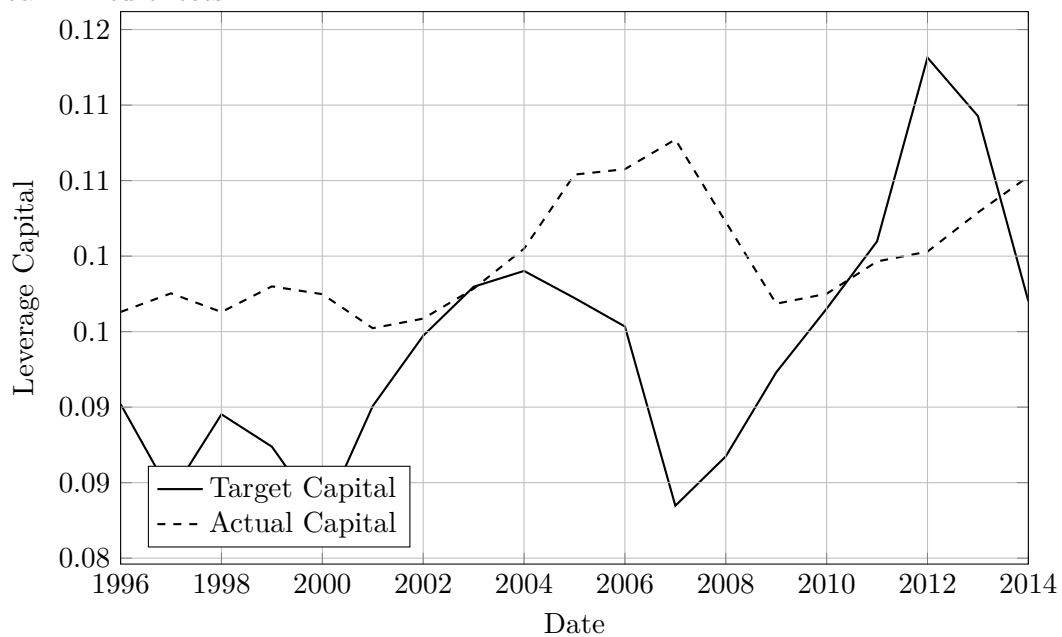


Figure 4: Mean Target Tier-1 and Actual Risk-Based Capital Ratios

This figure charts the mean stage 1 estimated tier-1 risk-based capital (to total risk-weighted assets) target ratio (solid line) for sample banks and the mean actual tier-1 capital ratio (dashed line) for those banks for each year from 1996 through 2014. Target ratios depend upon individual bank on- and off-balance sheet variables and bank fixed effects.

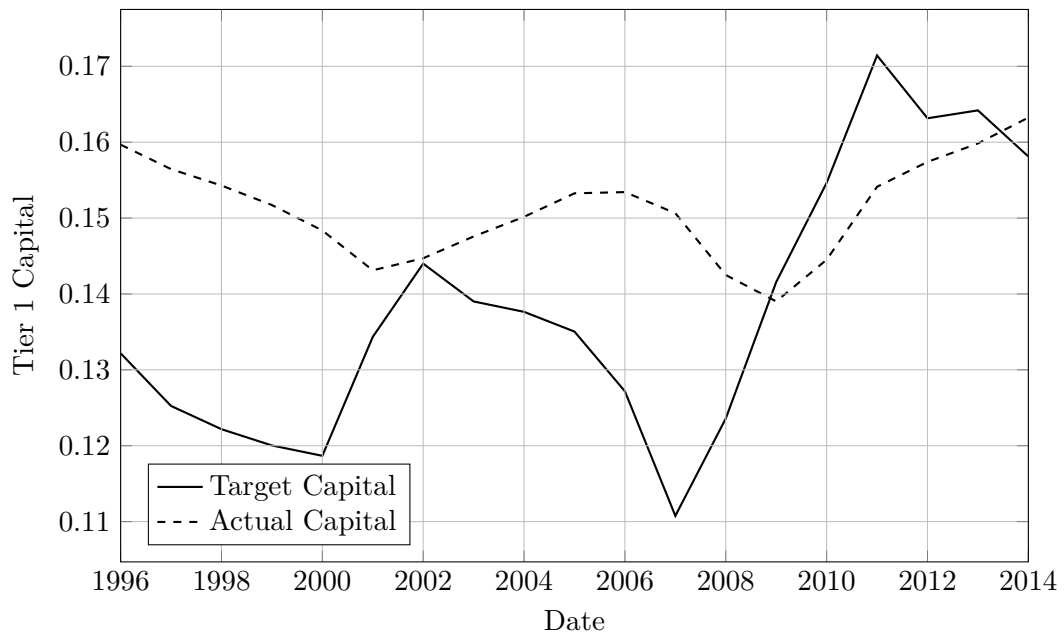


Figure 5: Mean Target Total and Actual Risk-Based Capital Ratios

This figure charts the mean stage 1 estimated tier 1 plus tier 2 total risk-based capital (to total risk-weighted assets) target ratio (solid line) for sample banks and the mean actual total risk-based capital ratio (dashed line) for those banks for each year from 1996 through 2014. Target ratios depend upon individual bank on- and off-balance sheet variable and bank fixed effects.

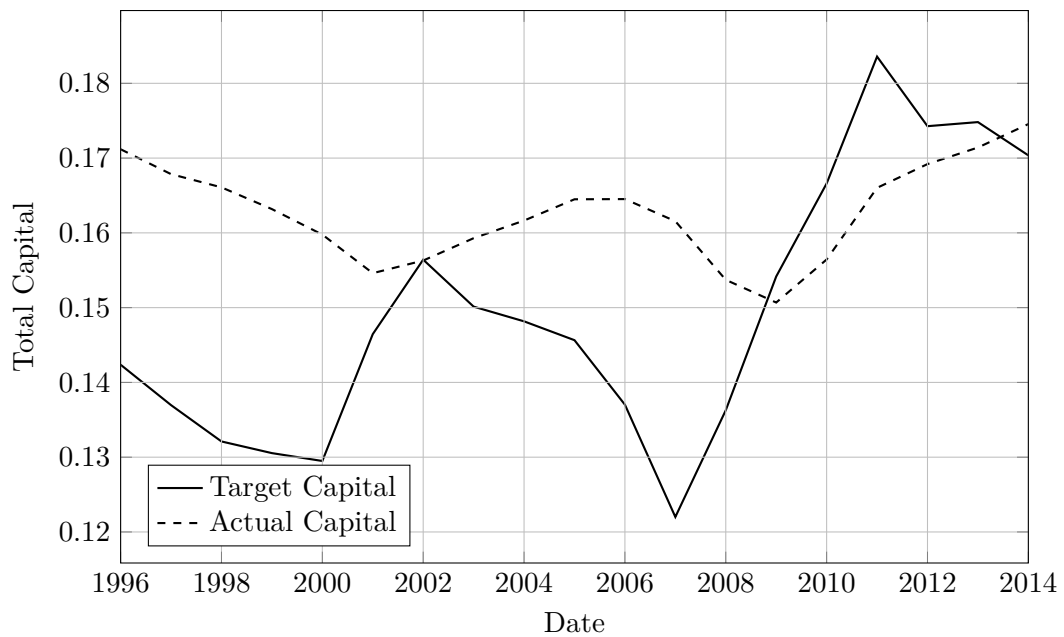


Table 1: FDIC Supervised Banks

This table shows, for each year from 1996 through 2014, the number of FDIC-supervised banks (column 1), the percent this number is of the total number of U.S. banks (column 2), and the percent of total banking assets held in FDIC-supervised banks (column 3).

Year	Industry		
	Total FDIC Banks (#) (1)	Bank Coverage (%) (2)	Asset Coverage (%) (3)
1996	6,396	54.1	20.2
1997	6,135	54.3	17.9
1998	5,882	54.4	17.9
1999	5,756	54.5	18.5
2000	5,627	55.1	18.8
2001	5,497	55.0	18.8
2002	5,363	55.5	19.0
2003	5,328	56.4	19.5
2004	5,272	57.1	18.6
2005	5,253	57.9	18.8
2006	5,228	58.6	18.3
2007	5,205	59.3	16.7
2008	5,103	59.6	16.4
2009	4,947	59.8	17.3
2010	4,721	59.5	16.9
2011	4,604	60.2	16.9
2012	4,466	60.3	17.1
2013	4,318	60.3	17.2
2014	4,144	62.9	17.1
Mean	5,223	57.6	18.0
(std)	600	2.7	1.1

Table 2: FDIC Informal Enforcement Actions

This table shows, for each year from 1996 through 2014, the total number of FDIC informal enforcement actions (IEAs), the percentages of those actions that were Bank Board Resolutions (BBRs), Memoranda of Understanding (MOUs), and CAMELS downgrades (DGs), and the percent of FDIC-supervised banks with at least one IEA. Data for crisis years are shown in bold.

Year	IEAs	BBRs (%)	MOUs (%)	OIAs (%)	DGs (%)	Banks (%)
	(1)	(2)	(3)	(4)	(5)	(6)
1996	877	0.8	0.7	0.0	98.5	0.2
1997	650	1.1	3.7	0.2	95.1	0.5
1998	475	2.9	4.8	0.0	92.2	0.6
1999	421	2.9	9.3	0.0	87.9	0.9
2000	430	7.0	9.5	0.5	83.0	1.3
2001	471	6.6	12.3	0.0	81.1	1.6
2002	522	5.2	12.8	0.8	81.2	1.8
2003	527	5.5	11.8	0.2	82.5	1.7
2004	546	5.7	11.2	1.3	81.9	1.8
2005	509	4.9	9.4	0.2	85.5	1.4
2006	452	3.5	11.7	0.2	84.5	1.3
2007	352	6.5	17.3	0.0	76.1	1.6
2008	394	13.2	40.9	0.0	45.9	4.1
2009	588	10.5	62.2	0.7	26.5	8.6
2010	881	9.1	57.3	0.5	33.1	12.4
2011	792	6.3	31.8	1.0	60.9	6.7
2012	823	5.2	18.0	0.2	76.5	4.3
2013	742	2.7	12.5	0.1	84.6	2.6
2014	511	0.2	1.8	0.0	98.0	0.2

Table 3: FDIC Formal Enforcement Actions

This table shows, for each year from 1996 through 2014, the total number of FDIC formal enforcement actions (FEAs), the percentages of those actions that were Consent Orders (COs) and Other types of FEAs, and the percent of FDIC-supervised banks with at least one FEA. Data for crisis years are shown in bold.

Year	FEAs	COs (%)	OFAs (%)	Banks (%)
	(1)	(2)	(3)	(4)
1996	0	0.0	0.0	0.0
1997	5	80.0	20.0	0.1
1998	10	100.0	0.0	0.2
1999	11	90.9	9.1	0.2
2000	17	88.2	11.8	0.3
2001	21	95.2	4.8	0.4
2002	31	100.0	0.0	0.6
2003	23	95.7	4.3	0.4
2004	26	92.3	7.7	0.5
2005	11	90.9	9.1	0.2
2006	13	100.0	0.0	0.2
2007	23	87.0	13.0	0.4
2008	77	83.1	16.9	1.5
2009	245	93.9	6.1	5.0
2010	280	88.9	11.1	5.9
2011	110	84.5	15.5	2.4
2012	52	84.6	15.4	1.2
2013	13	84.6	15.4	0.3
2014	2	100.0	0.0	0.0

Table 4: FDIC Banks and Enforcement Actions by CAMELS Rating.

This table shows in four panels, for each year from 1996 through 2014, data on FDIC enforcement actions at FDIC-supervised banks sorted by a bank's supervisory CAMELS rating. The top left-hand panel gives CAMELS 1 banks, the top right-hand panel CAMELS 2 banks, the bottom left-hand panel CAMELS 3 banks, and the bottom right-hand panel CAMELS 4 and 5 banks. Each panel gives the number of FDIC-supervised banks in a given CAMELS category and the percentages of those banks with an enforcement action (EA), an informal enforcement action (IEA), and a formal enforcement action (FEA). Data for crisis years are shown in bold.

CAMEL 1 Banks					CAMEL 2 Banks				
Year	Banks (#)	EA (%)	IEA (%)	FEA (%)	Year	Banks (#)	EA (%)	IEA (%)	FEA (%)
1996	2,831	0	0	0	1996	3,161	0.0	0.0	0.0
1997	2,891	0	0	0	1997	2,889	0.2	0.2	0.0
1998	2,818	0	0	0	1998	2,709	0.7	0.6	0.0
1999	2,621	0	0	0	1999	2,711	0.8	0.7	0.1
2000	2,426	0	0	0	2000	2,748	1.7	1.5	0.2
2001	2,306	0	0	0	2001	2,729	1.9	1.8	0.1
2002	2,200	0	0	0	2002	2,682	2.1	1.8	0.2
2003	2,154	0	0	0	2003	2,678	2.8	2.5	0.3
2004	2,130	0	0	0	2004	2,707	3.5	3.3	0.3
2005	2,085	0	0	0	2005	2,770	3.5	3.1	0.4
2006	2,025	0	0	0	2006	2,834	2.7	2.4	0.2
2007	1,878	0	0	0	2007	2,871	1.3	0.9	0.3
2008	1,533	0	0	0	2008	2,757	1.2	1.1	0.1
2009	1,133	0	0	0	2009	2,418	1.9	1.7	0.2
2010	936	0.1	0.1	0	2010	2,222	5.0	4.9	0.2
2011	921	0.4	0.4	0	2011	2,287	9.1	8.8	0.3
2012	1,018	0.2	0.2	0	2012	2,336	11.5	11.2	0.3
2013	1,089	0	0	0	2013	2,392	9.9	9.5	0.4
2014	1,166	0	0	0	2014	2,362	6.1	5.8	0.3
Mean	1,903	0	0	0	Mean	2,645	3.2	3.0	0.2
(std)	669	0.1	0.1	0	(std)	237	3.3	3.2	0.1

CAMEL 3 Banks					CAMEL 4 & 5 Banks				
Year	Banks (#)	EA (%)	IEA (%)	FEA (%)	Year	Banks (#)	EA (%)	IEA (%)	FEA (%)
1996	268	3.7	3.7	0	1996	67	4.5	3	1.5
1997	197	13.7	13.2	0.5	1997	55	32.7	18.2	14.5
1998	205	19	18.5	0.5	1998	52	42.3	9.6	32.7
1999	259	23.9	21.6	2.3	1999	53	49.1	13.2	35.8
2000	302	25.8	23.2	2.6	2000	62	48.4	9.7	38.7
2001	316	30.7	27.8	2.8	2001	85	55.3	16.5	38.8
2002	334	38	34.7	3.3	2002	100	65	17	48
2003	330	40	34.8	5.2	2003	92	63	13	50
2004	292	47.6	37.7	9.9	2004	59	66.1	11.9	54.2
2005	228	46.9	38.6	8.3	2005	42	64.3	14.3	50
2006	207	42	34.3	7.7	2006	34	58.8	8.8	50
2007	267	46.1	41.2	4.9	2007	62	56.5	9.7	46.8
2008	524	49.4	45.6	3.8	2008	220	55.9	12.7	43.2
2009	853	52.6	51.3	1.3	2009	531	71.6	14.5	57.1
2010	945	72.9	71	1.9	2010	615	77.2	10.4	66.8
2011	840	78.9	73.7	5.2	2011	555	73	8.5	64.5
2012	653	76.7	64.6	12.1	2012	459	65.4	6.8	58.6
2013	478	66.7	51	15.7	2013	357	50.7	7.3	43.4
2014	384	45.8	29.9	15.9	2014	231	27.3	4.8	22.5
Mean	415	43.2	37.7	5.5	Mean	196	62.1	10.2	51.9
(std)	231	20.4	18.3	4.8	(std)	196	17.3	4	16.2

Table 5: CAMELS Transition Matrices.

This table shows the number and proportion of year-to-year movement between Composite CAMELS Rating and failure. The three panels show the statistics for each of the three analysis periods.

Pre-Crisis Period: 1996-2007								
		CAMELS (t)					Failure	Total
		1	2	3	4	5		
CAMELS ($t-1$)	1	49,710 86.52%	7,367 12.82%	334 0.58%	33 0.06%	9 0.02%	2 0%	57,455 100%
	2	6,860 7.62%	77,523 86.12%	4,659 5.18%	786 0.87%	164 0.18%	28 0.03%	90,020 100%
	3	16 0.13%	4,292 35.22%	6,619 54.32%	1,016 8.34%	202 1.66%	41 0.34%	12,186 100%
	4	1 0.03%	187 5.09%	970 26.4%	1,913 52.07%	496 13.5%	107 2.91%	3,674 100%
	5	0 0%	16 1.05%	72 4.73%	216 14.18%	840 55.15%	379 24.89%	1,523 100%
	Total	56,587 34.32%	89,385 54.22%	12,654 7.68%	3,964 2.4%	1,711 1.04%	557 0.34%	164,858 100%

Crisis Period: 2008-2010								
		CAMELS (t)					Failure	Total
		1	2	3	4	5		
CAMELS ($t-1$)	1	7,312 77.82%	1,878 19.99%	181 1.93%	17 0.18%	7 0.07%	1 0.01%	9,396 100%
	2	633 3.41%	15,081 81.28%	2,173 11.71%	519 2.8%	131 0.71%	18 0.1%	18,555 100%
	3	2 0.07%	517 17.22%	1,753 58.37%	532 17.72%	163 5.43%	36 1.2%	3,003 100%
	4	0 0%	22 2.28%	98 10.14%	480 49.69%	277 28.67%	89 9.21%	966 100%
	5	0 0%	3 0.76%	12 3.05%	27 6.85%	171 43.4%	181 45.94%	394 100%
	Total	7,947 24.59%	17,501 54.16%	4,217 13.05%	1,575 4.87%	749 2.32%	325 1.01%	32,314 100%

Post-Crisis Period: 2011-2014								
		CAMELS (t)					Failure	Total
		1	2	3	4	5		
CAMELS ($t-1$)	1	2 4,905 89.28%	3 574 10.45%	4 15 0.27%	5 0 0%	Failure 0 0%	Total 0 0%	5,494 100%
	2	988 6.27%	14,249 90.37%	477 3.03%	46 0.29%	5 0.03%	2 0.01%	15,767 100%
	3	2 0.05%	1,562 37.33%	2,400 57.36%	200 4.78%	20 0.48%	0 0%	4,184 100%
	4	0 0%	67 3.84%	495 28.33%	1,017 58.21%	160 9.16%	8 0.46%	1,747 100%
	5	0 0%	5 0.51%	35 3.56%	152 15.46%	616 62.67%	175 17.8%	983 100%
	Total	5,895 20.92%	16,457 58.41%	3,422 12.15%	1,415 5.02%	801 2.84%	185 0.66%	28,175 100%

Note: The bottom number of each rating cell is the row percentage value.

Table 6: Pre-Crisis, Base Capital, Positive

This table shows Stage 1 and Stage 2 regression results for the pre-crisis period (1996 through 2007) for our measure of a bank's base (total equity) capital (to total assets) ratio. These regressions are restricted to observations where the target capital level is higher than the actual current capital level. Stage 1 (column 1) estimates a bank's target capital ratio as a function of on-and off-balance sheet ratios and bank fixed effects (not shown). Stage 2 estimates a bank's adjustment speed toward that target ratio as a function of indicator variables for a bank's position in selected prompt corrective action capital zones and whether the bank is subject to one or more types of enforcement actions. Results for four Stage 2 models are presented. Column 2 shows results if only an indicator for formal enforcement actions (FEA) is used. Column 3 shows results when both formal and narrowly-defined informal enforcement actions (IEA) are accounted for. Column 4 adds indicators for a CAMELS downgrade to a 3 (DG3) and to 4 or 5 (DG45) to the definition of an informal enforcement action. Column 5 substitutes a CAMELS level of 3 (CAM3) and 4 or 5 (CAM45) for the CAMELS downgrade indicators of column 4. The number of observations and the R^2 statistic are given for each column.

	(1) Step 1 b/se	(2) Step 2a b/se	(3) Step2b b/se	(4) Step2c b/se	(5) Step2d b/se
CAPBase	0.6033*** (0.0169)				
ln(Asset)	0.0002 (0.0009)				
Retail Deposits	0.0079** (0.0028)				
Business Loans	-0.0433*** (0.0032)				
Off Balance-Sheet	-0.0003 (0.0010)				
Well Capitalized (600-800)		-0.0058*** (0.0015)	-0.0058*** (0.0015)	-0.0058*** (0.0015)	-0.0057*** (0.0015)
Well Capitalized (400-600)		-0.0037* (0.0015)	-0.0037* (0.0015)	-0.0037* (0.0015)	-0.0037* (0.0015)
Well Capitalized (200-400)		0.0024 (0.0015)	0.0024 (0.0015)	0.0024 (0.0015)	0.0024 (0.0015)
Well Capitalized (0-200)		0.0098*** (0.0016)	0.0098*** (0.0016)	0.0098*** (0.0016)	0.0098*** (0.0016)
Adequately Capitalized		0.0108** (0.0038)	0.0108** (0.0038)	0.0109** (0.0039)	0.0102** (0.0038)
Under Capitalized		0.0179*** (0.0049)	0.0178*** (0.0049)	0.0179*** (0.0050)	0.0169** (0.0052)
Significantly Under Capitalized		0.0131 (0.0092)	0.0131 (0.0092)	0.0131 (0.0091)	0.0123 (0.0089)
FEA		0.0019 (0.0018)	0.0020 (0.0018)	0.0021 (0.0018)	0.0005 (0.0017)
IEA			0.0009 (0.0007)	0.0009 (0.0008)	0.0005 (0.0008)
DG3				-0.0002 (0.0006)	
DG45				-0.0005 (0.0015)	
CAM3					0.0005 (0.0006)
CAM45					0.0025 (0.0016)
Intercept	0.0351** (0.0114)	0.0154*** (0.0015)	0.0154*** (0.0015)	0.0154*** (0.0015)	0.0153*** (0.0015)
N	25,951	12,760	12,760	12,760	12,760
r2		0.1208	0.1210	0.1210	0.1215

Table 7: Pre-Crisis, Base Capital, Negative

This table shows Stage 1 and Stage 2 regression results for the pre-crisis period (1996 through 2007) for our measure of a bank's base (total equity) capital (to total assets) ratio. These regressions are restricted to observations where the target capital level is lower than the actual current capital level. Stage 1 (column 1) estimates a bank's target capital ratio as a function of on-and off-balance sheet ratios and bank fixed effects (not shown). Stage 2 estimates a bank's adjustment speed toward that target ratio as a function of indicator variables for a bank's position in selected prompt corrective action capital zones and whether the bank is subject to one or more types of enforcement actions. Results for four Stage 2 models are presented. Column 2 shows results if only an indicator for formal enforcement actions (FEA) is used. Column 3 shows results when both formal and narrowly-defined informal enforcement actions (IEA) are accounted for. Column 4 adds indicators for a CAMELS downgrade to a 3 (DG3) and to 4 or 5 (DG45) to the definition of an informal enforcement action. Column 5 substitutes a CAMELS level of 3 (CAM3) and 4 or 5 (CAM45) for the CAMELS downgrade indicators of column 4. The number of observations and the R^2 statistic are given for each column.

	(1) Step 1 b/se	(2) Step 2a b/se	(3) Step2b b/se	(4) Step2c b/se	(5) Step2d b/se
CAPBase	0.6033*** (0.0169)				
ln(Asset)	0.0002 (0.0009)				
Retail Deposits	0.0079** (0.0028)				
Business Loans	-0.0433*** (0.0032)				
Off Balance-Sheet	-0.0003 (0.0010)				
Well Capitalized (600-800)		0.0332*** (0.0021)	0.0332*** (0.0021)	0.0332*** (0.0021)	0.0329*** (0.0021)
Well Capitalized (400-600)		0.0403*** (0.0020)	0.0404*** (0.0021)	0.0405*** (0.0021)	0.0403*** (0.0020)
Well Capitalized (200-400)		0.0429*** (0.0021)	0.0430*** (0.0021)	0.0432*** (0.0021)	0.0429*** (0.0021)
Well Capitalized (0-200)		0.0420*** (0.0035)	0.0422*** (0.0035)	0.0435*** (0.0034)	0.0440*** (0.0032)
Adequately Capitalized		0.0348*** (0.0080)	0.0347*** (0.0080)	0.0374*** (0.0090)	0.0438*** (0.0077)
Under Capitalized		0.0287*** (0.0023)	0.0285*** (0.0023)	0.0501*** (0.0085)	0.0513*** (0.0101)
Significantly Under Capitalized		0.0424*** (0.0047)	0.0425*** (0.0047)	0.0423*** (0.0047)	0.0653*** (0.0107)
FEA		-0.0183 (0.0124)	-0.0186 (0.0124)	-0.0143 (0.0117)	-0.0065 (0.0098)
IEA			-0.0043* (0.0020)	-0.0028 (0.0020)	-0.0010 (0.0022)
DG3				-0.0054** (0.0019)	
DG45				-0.0220** (0.0074)	
CAM3					-0.0038* (0.0017)
CAM45					-0.0238* (0.0092)
Intercept	0.0351** (0.0114)	-0.0599*** (0.0022)	-0.0599*** (0.0022)	-0.0598*** (0.0022)	-0.0589*** (0.0021)
N	25,951	10,353	10,353	10,353	10,353
r2		0.1957	0.1961	0.1994	0.2032

Table 8: Pre-Crisis, Leverage Ratio, Positive

This table shows Stage 1 and Stage 2 regression results for the pre-crisis period (1996 through 2007) for our measure of a bank's tier-1 risk-based capital (to total assets) leverage ratio. These regressions are restricted to observations where the target capital level is higher than the actual current capital level. Stage 1 (column 1) estimates a bank's target capital ratio as a function of on-and off-balance sheet ratios and bank fixed effects (not shown). Stage 2 estimates a bank's adjustment speed toward that target ratio as a function of indicator variables for a bank's position in selected prompt corrective action capital zones and whether the bank is subject to one or more types of enforcement actions. Results for four Stage 2 models are presented. Column 2 shows results if only an indicator for formal enforcement actions (FEA) is used. Column 3 shows results when both formal and narrowly-defined informal enforcement actions (IEA) are accounted for. Column 4 adds indicators for a CAMELS downgrade to a 3 (DG3) and to 4 or 5 (DG45) to the definition of an informal enforcement action. Column 5 substitutes a CAMELS level of 3 (CAM3) and 4 or 5 (CAM45) for the CAMELS downgrade indicators of column 4. The number of observations and the R^2 statistic are given for each column.

	(1) Step 1 b/se	(2) Step 2a b/se	(3) Step2b b/se	(4) Step2c b/se	(5) Step2d b/se
CAPLEV	0.6195*** (0.0169)				
ln(Asset)	-0.0004 (0.0008)				
Retail Deposits	0.0059* (0.0027)				
Business Loans	-0.0389*** (0.0029)				
Off Balance-Sheet	0.0002 (0.0009)				
Well Capitalized (600-800)		-0.0073*** (0.0019)	-0.0073*** (0.0019)	-0.0073*** (0.0019)	-0.0072*** (0.0019)
Well Capitalized (400-600)		-0.0066*** (0.0018)	-0.0067*** (0.0018)	-0.0067*** (0.0018)	-0.0066*** (0.0018)
Well Capitalized (200-400)		-0.0011 (0.0018)	-0.0011 (0.0018)	-0.0011 (0.0018)	-0.0010 (0.0018)
Well Capitalized (0-200)		0.0055** (0.0018)	0.0055** (0.0018)	0.0055** (0.0018)	0.0055** (0.0018)
Adequately Capitalized		0.0102* (0.0040)	0.0101* (0.0041)	0.0100* (0.0041)	0.0098* (0.0041)
Under Capitalized		0.0093 (0.0056)	0.0093 (0.0056)	0.0093 (0.0056)	0.0077 (0.0054)
Significantly Under Capitalized		0.0061 (0.0083)	0.0061 (0.0083)	0.0061 (0.0084)	0.0047 (0.0082)
FEA		0.0019 (0.0018)	0.0021 (0.0018)	0.0020 (0.0018)	0.0002 (0.0018)
IEA			0.0015* (0.0007)	0.0014* (0.0007)	0.0012 (0.0008)
DG3				0.0004 (0.0006)	
DG45				0.0003 (0.0015)	
CAM3					0.0004 (0.0005)
CAM45					0.0032* (0.0016)
Intercept	0.0396*** (0.0111)	0.0171*** (0.0018)	0.0171*** (0.0018)	0.0171*** (0.0018)	0.0169*** (0.0018)
N	25,951	12,656	12,656	12,656	12,656
r2		0.0938	0.0944	0.0944	0.0952

Table 9: Pre-Crisis, Leverage Ratio, Negative

This table shows Stage 1 and Stage 2 regression results for the pre-crisis period (1996 through 2007) for our measure of a bank's tier-1 risk-based capital (to total assets) leverage ratio. These regressions are restricted to observations where the target capital level is lower than the actual current capital level. Stage 1 (column 1) estimates a bank's target capital ratio as a function of on-and off-balance sheet ratios and bank fixed effects (not shown). Stage 2 estimates a bank's adjustment speed toward that target ratio as a function of indicator variables for a bank's position in selected prompt corrective action capital zones and whether the bank is subject to one or more types of enforcement actions. Results for four Stage 2 models are presented. Column 2 shows results if only an indicator for formal enforcement actions (FEA) is used. Column 3 shows results when both formal and narrowly-defined informal enforcement actions (IEA) are accounted for. Column 4 adds indicators for a CAMELS downgrade to a 3 (DG3) and to 4 or 5 (DG45) to the definition of an informal enforcement action. Column 5 substitutes a CAMELS level of 3 (CAM3) and 4 or 5 (CAM45) for the CAMELS downgrade indicators of column 4. The number of observations and the R^2 statistic are given for each column.

	(1) Step 1 b/se	(2) Step 2a b/se	(3) Step2b b/se	(4) Step2c b/se	(5) Step2d b/se
CAPLEV	0.6195*** (0.0169)				
ln(Asset)	-0.0004 (0.0008)				
Retail Deposits	0.0059* (0.0027)				
Business Loans	-0.0389*** (0.0029)				
Off Balance-Sheet	0.0002 (0.0009)				
Well Capitalized (600-800)		0.0337*** (0.0022)	0.0337*** (0.0022)	0.0337*** (0.0022)	0.0333*** (0.0021)
Well Capitalized (400-600)		0.0416*** (0.0021)	0.0416*** (0.0021)	0.0417*** (0.0021)	0.0414*** (0.0021)
Well Capitalized (200-400)		0.0438*** (0.0021)	0.0439*** (0.0021)	0.0440*** (0.0022)	0.0437*** (0.0021)
Well Capitalized (0-200)		0.0437*** (0.0030)	0.0439*** (0.0030)	0.0448*** (0.0029)	0.0451*** (0.0028)
Adequately Capitalized		0.0443*** (0.0057)	0.0446*** (0.0057)	0.0486*** (0.0068)	0.0516*** (0.0061)
Under Capitalized		0.0313*** (0.0025)	0.0312*** (0.0025)	0.0544*** (0.0096)	0.0551*** (0.0110)
Significantly Under Capitalized		0.0462*** (0.0074)	0.0463*** (0.0074)	0.0461*** (0.0074)	0.0702*** (0.0129)
FEA		-0.0193 (0.0130)	-0.0195 (0.0130)	-0.0153 (0.0122)	-0.0066 (0.0102)
IEA			-0.0033 (0.0019)	-0.0016 (0.0018)	0.0004 (0.0021)
DG3				-0.0057** (0.0018)	
DG45				-0.0237** (0.0084)	
CAM3					-0.0042* (0.0017)
CAM45					-0.0250* (0.0100)
Intercept	0.0396*** (0.0111)	-0.0617*** (0.0023)	-0.0617*** (0.0023)	-0.0616*** (0.0023)	-0.0607*** (0.0022)
N	25,951	10,457	10,457	10,457	10,457
r2		0.2089	0.2092	0.2127	0.2167

Table 10: Crisis, Base Capital, Positive

This table shows Stage 1 and Stage 2 regression results for the crisis period (2008 through 2010) for our measure of a bank's base (total equity) capital (to total assets) ratio. These regressions are restricted to observations where the target capital level is higher than the actual current capital level. Stage 1 (column 1) estimates a bank's target capital ratio as a function of on-and off-balance sheet ratios and bank fixed effects (not shown). Stage 2 estimates a bank's adjustment speed toward that target ratio as a function of indicator variables for a bank's position in selected prompt corrective action capital zones and whether the bank is subject to one or more types of enforcement actions. Results for four Stage 2 models are presented. Column 2 shows results if only an indicator for formal enforcement actions (FEA) is used. Column 3 shows results when both formal and narrowly-defined informal enforcement actions (IEA) are accounted for. Column 4 adds indicators for a CAMELS downgrade to a 3 (DG3) and to 4 or 5 (DG45) to the definition of an informal enforcement action. Column 5 substitutes a CAMELS level of 3 (CAM3) and 4 or 5 (CAM45) for the CAMELS downgrade indicators of column 4. The number of observations and the R^2 statistic are given for each column.

	(1) Step 1 b/se	(2) Step 2a b/se	(3) Step2b b/se	(4) Step2c b/se	(5) Step2d b/se
CAPBase	0.6119*** (0.0260)				
ln(Asset)	0.0053* (0.0022)				
Retail Deposits	0.0221*** (0.0051)				
Business Loans	-0.0324*** (0.0067)				
Off Balance-Sheet	-0.0009 (0.0017)				
Well Capitalized (600-800)		0.0007 (0.0018)	0.0008 (0.0018)	0.0008 (0.0017)	0.0015 (0.0018)
Well Capitalized (400-600)		0.0023 (0.0016)	0.0023 (0.0016)	0.0025 (0.0016)	0.0032* (0.0016)
Well Capitalized (200-400)		0.0104*** (0.0016)	0.0103*** (0.0016)	0.0100*** (0.0016)	0.0106*** (0.0016)
Well Capitalized (0-200)		0.0276*** (0.0020)	0.0274*** (0.0020)	0.0250*** (0.0020)	0.0241*** (0.0020)
Adequately Capitalized		0.0476*** (0.0035)	0.0473*** (0.0035)	0.0439*** (0.0035)	0.0405*** (0.0036)
Under Capitalized		0.0587*** (0.0044)	0.0584*** (0.0044)	0.0563*** (0.0043)	0.0522*** (0.0045)
Significantly Under Capitalized		0.0579*** (0.0032)	0.0578*** (0.0033)	0.0556*** (0.0032)	0.0507*** (0.0028)
TARP Balance Indicator		0.0053*** (0.0014)	0.0050*** (0.0014)	0.0047** (0.0014)	0.0050*** (0.0014)
FEA		0.0055** (0.0018)	0.0061*** (0.0018)	0.0027 (0.0019)	-0.0040 (0.0021)
IEA			0.0024** (0.0009)	0.0002 (0.0009)	-0.0012 (0.0011)
DG3				0.0034*** (0.0010)	
DG45				0.0130*** (0.0014)	
CAM3					0.0041*** (0.0010)
CAM45					0.0144*** (0.0017)
Intercept	-0.0323 (0.0279)	0.0154*** (0.0015)	0.0152*** (0.0015)	0.0149*** (0.0015)	0.0141*** (0.0016)
N	8,664	4,836	4,836	4,836	4,836
r2		0.2389	0.2406	0.2636	0.2680

Table 11: Crisis, Base Capital, Negative

This table shows Stage 1 and Stage 2 regression results for the crisis period (2008 through 2010) for our measure of a bank's base (total equity) capital (to total assets) ratio. These regressions are restricted to observations where the target capital level is lower than the actual current capital level. Stage 1 (column 1) estimates a bank's target capital ratio as a function of on-and off-balance sheet ratios and bank fixed effects (not shown). Stage 2 estimates a bank's adjustment speed toward that target ratio as a function of indicator variables for a bank's position in selected prompt corrective action capital zones and whether the bank is subject to one or more types of enforcement actions. Results for four Stage 2 models are presented. Column 2 shows results if only an indicator for formal enforcement actions (FEA) is used. Column 3 shows results when both formal and narrowly-defined informal enforcement actions (IEA) are accounted for. Column 4 adds indicators for a CAMELS downgrade to a 3 (DG3) and to 4 or 5 (DG45) to the definition of an informal enforcement action. Column 5 substitutes a CAMELS level of 3 (CAM3) and 4 or 5 (CAM45) for the CAMELS downgrade indicators of column 4. The number of observations and the R^2 statistic are given for each column.

	(1) Step 1 b/se	(2) Step 2a b/se	(3) Step2b b/se	(4) Step2c b/se	(5) Step2d b/se
CAPBase	0.6119*** (0.0260)				
ln(Asset)	0.0053* (0.0022)				
Retail Deposits	0.0221*** (0.0051)				
Business Loans	-0.0324*** (0.0067)				
Off Balance-Sheet	-0.0009 (0.0017)				
Well Capitalized (600-800)		0.0339*** (0.0035)	0.0339*** (0.0035)	0.0339*** (0.0035)	0.0339*** (0.0035)
Well Capitalized (400-600)		0.0400*** (0.0035)	0.0399*** (0.0034)	0.0400*** (0.0034)	0.0401*** (0.0034)
Well Capitalized (200-400)		0.0425*** (0.0035)	0.0425*** (0.0034)	0.0426*** (0.0034)	0.0427*** (0.0034)
Well Capitalized (0-200)		0.0401*** (0.0046)	0.0400*** (0.0045)	0.0405*** (0.0045)	0.0412*** (0.0045)
Adequately Capitalized		0.0490*** (0.0033)	0.0490*** (0.0033)	0.0528*** (0.0045)	0.0547*** (0.0056)
Under Capitalized		0.0455*** (0.0065)	0.0454*** (0.0064)	0.0453*** (0.0072)	0.0465*** (0.0065)
Significantly Under Capitalized		0.0158*** (0.0037)	0.0159*** (0.0038)	0.0159*** (0.0039)	0.0214*** (0.0059)
TARP Balance Indicator		0.0042 (0.0023)	0.0041 (0.0023)	0.0041 (0.0022)	0.0041 (0.0022)
FEA		-0.0037 (0.0035)	-0.0037 (0.0035)	-0.0023 (0.0032)	0.0008 (0.0050)
IEA			0.0004 (0.0018)	0.0003 (0.0018)	0.0002 (0.0018)
DG3				0.0005 (0.0015)	
DG45				-0.0037 (0.0030)	
CAM3					0.0003 (0.0018)
CAM45					-0.0056 (0.0047)
Intercept	-0.0323 (0.0279)	-0.0584*** (0.0033)	-0.0584*** (0.0033)	-0.0585*** (0.0034)	-0.0585*** (0.0034)
N	8,664	3,186	3,186	3,186	3,186
r2		0.1621	0.1621	0.1622	0.1625

Table 12: Crisis, Leverage Ratio, Positive

This table shows Stage 1 and Stage 2 regression results for the crisis period (2008 through 2010) for our measure of a bank's tier-1 risk-based capital (to total assets) leverage ratio. These regressions are restricted to observations where the target capital level is higher than the actual current capital level. Stage 1 (column 1) estimates a bank's target capital ratio as a function of on-and off-balance sheet ratios and bank fixed effects (not shown). Stage 2 estimates a bank's adjustment speed toward that target ratio as a function of indicator variables for a bank's position in selected prompt corrective action capital zones and whether the bank is subject to one or more types of enforcement actions. Results for four Stage 2 models are presented. Column 2 shows results if only an indicator for formal enforcement actions (FEA) is used. Column 3 shows results when both formal and narrowly-defined informal enforcement actions (IEA) are accounted for. Column 4 adds indicators for a CAMELS downgrade to a 3 (DG3) and to 4 or 5 (DG45) to the definition of an informal enforcement action. Column 5 substitutes a CAMELS level of 3 (CAM3) and 4 or 5 (CAM45) for the CAMELS downgrade indicators of column 4. The number of observations and the R^2 statistic are given for each column.

	(1) Step 1 b/se	(2) Step 2a b/se	(3) Step2b b/se	(4) Step2c b/se	(5) Step2d b/se
CAPLEV	0.6167*** (0.0268)				
ln(Asset)	0.0055** (0.0021)				
Retail Deposits	0.0199*** (0.0049)				
Business Loans	-0.0316*** (0.0066)				
Off Balance-Sheet	-0.0017 (0.0016)				
Well Capitalized (600-800)		-0.0007 (0.0022)	-0.0009 (0.0022)	-0.0011 (0.0022)	-0.0000 (0.0022)
Well Capitalized (400-600)		0.0008 (0.0019)	0.0008 (0.0019)	0.0008 (0.0019)	0.0018 (0.0019)
Well Capitalized (200-400)		0.0075*** (0.0019)	0.0073*** (0.0019)	0.0070*** (0.0019)	0.0078*** (0.0019)
Well Capitalized (0-200)		0.0241*** (0.0021)	0.0238*** (0.0021)	0.0219*** (0.0021)	0.0215*** (0.0021)
Adequately Capitalized		0.0449*** (0.0040)	0.0445*** (0.0040)	0.0404*** (0.0040)	0.0380*** (0.0042)
Under Capitalized		0.0539*** (0.0053)	0.0536*** (0.0053)	0.0522*** (0.0049)	0.0468*** (0.0053)
Significantly Under Capitalized		0.0511*** (0.0037)	0.0507*** (0.0037)	0.0484*** (0.0036)	0.0447*** (0.0034)
TARP Balance Indicator		0.0056*** (0.0015)	0.0054*** (0.0015)	0.0051*** (0.0015)	0.0053*** (0.0015)
FEA		0.0033 (0.0018)	0.0039* (0.0018)	0.0005 (0.0019)	-0.0057** (0.0021)
IEA			0.0024** (0.0009)	0.0002 (0.0009)	-0.0012 (0.0011)
DG3				0.0038*** (0.0010)	
DG45				0.0121*** (0.0014)	
CAM3					0.0041*** (0.0010)
CAM45					0.0135*** (0.0016)
Intercept	-0.0356 (0.0266)	0.0174*** (0.0018)	0.0173*** (0.0018)	0.0171*** (0.0018)	0.0161*** (0.0019)
N	8,664	4,676	4,676	4,676	4,676
r2		0.2084	0.2102	0.2317	0.2345

Table 13: Crisis, Leverage Ratio, Negative

This table shows Stage 1 and Stage 2 regression results for the crisis period (2008 through 2010) for our measure of a bank's tier-1 risk-based capital (to total assets) leverage ratio. These regressions are restricted to observations where the target capital level is lower than the actual current capital level. Stage 1 (column 1) estimates a bank's target capital ratio as a function of on-and off-balance sheet ratios and bank fixed effects (not shown). Stage 2 estimates a bank's adjustment speed toward that target ratio as a function of indicator variables for a bank's position in selected prompt corrective action capital zones and whether the bank is subject to one or more types of enforcement actions. Results for four Stage 2 models are presented. Column 2 shows results if only an indicator for formal enforcement actions (FEA) is used. Column 3 shows results when both formal and narrowly-defined informal enforcement actions (IEA) are accounted for. Column 4 adds indicators for a CAMELS downgrade to a 3 (DG3) and to 4 or 5 (DG45) to the definition of an informal enforcement action. Column 5 substitutes a CAMELS level of 3 (CAM3) and 4 or 5 (CAM45) for the CAMELS downgrade indicators of column 4. The number of observations and the R^2 statistic are given for each column. Dashes imply that there were no banks of this category in the subsample.

	(1) Step 1 b/se	(2) Step 2a b/se	(3) Step2b b/se	(4) Step2c b/se	(5) Step2d b/se
CAPLEV	0.6167*** (0.0268)				
ln(Asset)	0.0055** (0.0021)				
Retail Deposits	0.0199*** (0.0049)				
Business Loans	-0.0316*** (0.0066)				
Off Balance-Sheet	-0.0017 (0.0016)				
Well Capitalized (600-800)		0.0361*** (0.0039)	0.0361*** (0.0039)	0.0361*** (0.0038)	0.0361*** (0.0038)
Well Capitalized (400-600)		0.0438*** (0.0039)	0.0438*** (0.0038)	0.0439*** (0.0038)	0.0439*** (0.0038)
Well Capitalized (200-400)		0.0477*** (0.0038)	0.0477*** (0.0038)	0.0478*** (0.0037)	0.0478*** (0.0037)
Well Capitalized (0-200)		0.0472*** (0.0044)	0.0472*** (0.0043)	0.0481*** (0.0042)	0.0481*** (0.0043)
Adequately Capitalized		-	-	-	-
Under Capitalized		0.0466*** (0.0054)	0.0466*** (0.0054)	0.0477*** (0.0060)	0.0483*** (0.0056)
Significantly Under Capitalized		0.0147*** (0.0041)	0.0147*** (0.0042)	0.0147*** (0.0042)	0.0186** (0.0058)
TARP Balance Indicator		0.0013 (0.0021)	0.0013 (0.0021)	0.0013 (0.0021)	0.0012 (0.0021)
FEA		-0.0047 (0.0035)	-0.0047 (0.0035)	-0.0034 (0.0032)	-0.0017 (0.0046)
IEA			-0.0001 (0.0016)	0.0001 (0.0015)	-0.0003 (0.0016)
DG3				-0.0006 (0.0013)	
DG45				-0.0042 (0.0029)	
CAM3					0.0004 (0.0016)
CAM45					-0.0039 (0.0043)
Intercept	-0.0356 (0.0266)	-0.0617*** (0.0037)	-0.0617*** (0.0037)	-0.0617*** (0.0037)	-0.0618*** (0.0037)
N	8,664	3,346	3,346	3,346	3,346
r2		0.1898	0.1898	0.1900	0.1900

Table 14: Post-Crisis, Base Capital, Positive

This table shows Stage 1 and Stage 2 regression results for the post-crisis period (2011 through 2014) for our measure of a bank's base (total equity) capital (to total assets) ratio. These regressions are restricted to observations where the target capital level is higher than the actual current capital level. Stage 1 (column 1) estimates a bank's target capital ratio as a function of on-and off-balance sheet ratios and bank fixed effects (not shown). Stage 2 estimates a bank's adjustment speed toward that target ratio as a function of indicator variables for a bank's position in selected prompt corrective action capital zones and whether the bank is subject to one or more types of enforcement actions. Results for four Stage 2 models are presented. Column 2 shows results if only an indicator for formal enforcement actions (FEA) is used. Column 3 shows results when both formal and narrowly-defined informal enforcement actions (IEA) are accounted for. Column 4 adds indicators for a CAMELS downgrade to a 3 (DG3) and to 4 or 5 (DG45) to the definition of an informal enforcement action. Column 5 substitutes a CAMELS level of 3 (CAM3) and 4 or 5 (CAM45) for the CAMELS downgrade indicators of column 4. The number of observations and the R^2 statistic are given for each column.

	(1) Step 1 b/se	(2) Step 2a b/se	(3) Step2b b/se	(4) Step2c b/se	(5) Step2d b/se
CAPBase	0.7026*** (0.0289)				
ln(Asset)	-0.0050*** (0.0014)				
Retail Deposits	0.0041 (0.0057)				
Business Loans	0.0095 (0.0084)				
Off Balance-Sheet	0.0037** (0.0011)				
Well Capitalized (600-800)		-0.0019 (0.0023)	-0.0018 (0.0023)	-0.0018 (0.0023)	-0.0019 (0.0023)
Well Capitalized (400-600)		0.0025 (0.0022)	0.0027 (0.0022)	0.0026 (0.0022)	0.0026 (0.0022)
Well Capitalized (200-400)		0.0126*** (0.0023)	0.0126*** (0.0023)	0.0126*** (0.0023)	0.0123*** (0.0023)
Well Capitalized (0-200)		0.0311*** (0.0030)	0.0311*** (0.0030)	0.0310*** (0.0030)	0.0293*** (0.0031)
Adequately Capitalized		0.0364*** (0.0048)	0.0363*** (0.0047)	0.0363*** (0.0048)	0.0339*** (0.0048)
Under Capitalized		0.0515*** (0.0041)	0.0510*** (0.0041)	0.0510*** (0.0041)	0.0484*** (0.0043)
Significantly Under Capitalized		0.0585*** (0.0054)	0.0581*** (0.0054)	0.0582*** (0.0054)	0.0554*** (0.0056)
TARP Balance Indicator		-0.0080*** (0.0016)	-0.0077*** (0.0015)	-0.0077*** (0.0015)	-0.0079*** (0.0015)
FEA		-0.0005 (0.0015)	-0.0011 (0.0015)	-0.0012 (0.0016)	-0.0029 (0.0019)
IEA			-0.0026** (0.0009)	-0.0027** (0.0009)	-0.0026* (0.0010)
DG3				0.0006 (0.0021)	
DG45				0.0011 (0.0027)	
CAM3					-0.0000 (0.0011)
CAM45					0.0033 (0.0017)
Intercept	0.0863*** (0.0189)	0.0114*** (0.0022)	0.0121*** (0.0022)	0.0121*** (0.0022)	0.0120*** (0.0022)
N	8,114	2,806	2,806	2,806	2,806
r2		0.3010	0.3034	0.3035	0.3050

Table 15: Post-Crisis, Base Capital, Negative

This table shows Stage 1 and Stage 2 regression results for the post-crisis period (2011 through 2014) for our measure of a bank's base (total equity) capital (to total assets) ratio. These regressions are restricted to observations where the target capital level is lower than the actual current capital level. Stage 1 (column 1) estimates a bank's target capital ratio as a function of on-and off-balance sheet ratios and bank fixed effects (not shown). Stage 2 estimates a bank's adjustment speed toward that target ratio as a function of indicator variables for a bank's position in selected prompt corrective action capital zones and whether the bank is subject to one or more types of enforcement actions. Results for four Stage 2 models are presented. Column 2 shows results if only an indicator for formal enforcement actions (FEA) is used. Column 3 shows results when both formal and narrowly-defined informal enforcement actions (IEA) are accounted for. Column 4 adds indicators for a CAMELS downgrade to a 3 (DG3) and to 4 or 5 (DG45) to the definition of an informal enforcement action. Column 5 substitutes a CAMELS level of 3 (CAM3) and 4 or 5 (CAM45) for the CAMELS downgrade indicators of column 4. The number of observations and the R^2 statistic are given for each column. Dashes imply that there were no banks of this category in the subsample.

	(1) Step 1 b/se	(2) Step 2a b/se	(3) Step2b b/se	(4) Step2c b/se	(5) Step2d b/se
CAPBase	0.7026*** (0.0289)				
ln(Asset)	-0.0050*** (0.0014)				
Retail Deposits	0.0041 (0.0057)				
Business Loans	0.0095 (0.0084)				
Off Balance-Sheet	0.0037** (0.0011)				
Well Capitalized (600-800)		0.0334*** (0.0040)	0.0332*** (0.0039)	0.0331*** (0.0039)	0.0332*** (0.0039)
Well Capitalized (400-600)		0.0418*** (0.0039)	0.0415*** (0.0038)	0.0415*** (0.0038)	0.0417*** (0.0038)
Well Capitalized (200-400)		0.0463*** (0.0039)	0.0461*** (0.0038)	0.0462*** (0.0039)	0.0466*** (0.0039)
Well Capitalized (0-200)		0.0429*** (0.0061)	0.0427*** (0.0061)	0.0433*** (0.0063)	0.0442*** (0.0062)
Adequately Capitalized		0.0424*** (0.0043)	0.0421*** (0.0042)	0.0419*** (0.0042)	0.0433*** (0.0042)
Under Capitalized		0.0506*** (0.0039)	0.0504*** (0.0039)	0.0501*** (0.0039)	0.0515*** (0.0039)
Significantly Under Capitalized		-	-	-	-
TARP Balance Indicator		-0.0061*** (0.0018)	-0.0066*** (0.0018)	-0.0066*** (0.0018)	-0.0065*** (0.0018)
FEA		-0.0032 (0.0025)	-0.0025 (0.0026)	-0.0023 (0.0026)	0.0016 (0.0037)
IEA			0.0024 (0.0016)	0.0027 (0.0019)	0.0035 (0.0028)
DG3				-0.0037 (0.0075)	
DG45				-0.0022 (0.0029)	
CAM3					-0.0017 (0.0031)
CAM45					-0.0053 (0.0031)
Intercept	0.0863*** (0.0189)	-0.0618*** (0.0039)	-0.0623*** (0.0041)	-0.0622*** (0.0040)	-0.0622*** (0.0040)
N	8,114	2,234	2,234	2,234	2,234
r2		0.1547	0.1552	0.1555	0.1557

Table 16: Post-Crisis, Leverage Ratio, Positive

This table shows Stage 1 and Stage 2 regression results for the post-crisis period (2011 through 2014) for our measure of a bank's tier-1 risk-based capital (to total assets) leverage ratio. These regressions are restricted to observations where the target capital level is higher than the actual current capital level. Stage 1 (column 1) estimates a bank's target capital ratio as a function of on-and off-balance sheet ratios and bank fixed effects (not shown). Stage 2 estimates a bank's adjustment speed toward that target ratio as a function of indicator variables for a bank's position in selected prompt corrective action capital zones and whether the bank is subject to one or more types of enforcement actions. Results for four Stage 2 models are presented. Column 2 shows results if only an indicator for formal enforcement actions (FEA) is used. Column 3 shows results when both formal and narrowly-defined informal enforcement actions (IEA) are accounted for. Column 4 adds indicators for a CAMELS downgrade to a 3 (DG3) and to 4 or 5 (DG45) to the definition of an informal enforcement action. Column 5 substitutes a CAMELS level of 3 (CAM3) and 4 or 5 (CAM45) for the CAMELS downgrade indicators of column 4. The number of observations and the R^2 statistic are given for each column.

	(1) Step 1 b/se	(2) Step 2a b/se	(3) Step2b b/se	(4) Step2c b/se	(5) Step2d b/se
CAPLEV	0.8138*** (0.0294)				
ln(Asset)	-0.0008 (0.0013)				
Retail Deposits	0.0100* (0.0051)				
Business Loans	-0.0030 (0.0077)				
Off Balance-Sheet	0.0015 (0.0010)				
Well Capitalized (600-800)		-0.0060* (0.0030)	-0.0060* (0.0031)	-0.0061* (0.0031)	-0.0061* (0.0031)
Well Capitalized (400-600)		-0.0038 (0.0028)	-0.0037 (0.0028)	-0.0037 (0.0028)	-0.0039 (0.0028)
Well Capitalized (200-400)		0.0061* (0.0028)	0.0062* (0.0028)	0.0061* (0.0028)	0.0058* (0.0028)
Well Capitalized (0-200)		0.0233*** (0.0032)	0.0233*** (0.0032)	0.0232*** (0.0032)	0.0213*** (0.0032)
Adequately Capitalized		0.0405*** (0.0042)	0.0405*** (0.0042)	0.0404*** (0.0042)	0.0372*** (0.0043)
Under Capitalized		0.0522*** (0.0040)	0.0520*** (0.0040)	0.0520*** (0.0040)	0.0485*** (0.0042)
Significantly Under Capitalized		0.0583*** (0.0053)	0.0582*** (0.0054)	0.0581*** (0.0054)	0.0544*** (0.0055)
TARP Balance Indicator		-0.0042*** (0.0011)	-0.0041*** (0.0011)	-0.0041*** (0.0011)	-0.0042*** (0.0011)
FEA		-0.0001 (0.0011)	-0.0004 (0.0011)	-0.0004 (0.0011)	-0.0029 (0.0015)
IEA			-0.0010 (0.0007)	-0.0010 (0.0006)	-0.0009 (0.0007)
DG3				-0.0014 (0.0017)	
DG45				0.0003 (0.0019)	
CAM3					-0.0002 (0.0007)
CAM45					0.0043** (0.0014)
Intercept	0.0204 (0.0187)	0.0217*** (0.0028)	0.0220*** (0.0028)	0.0220*** (0.0028)	0.0220*** (0.0028)
N	8,114	3,507	3,507	3,507	3,507
r2		0.4004	0.4009	0.4011	0.4045

Table 17: Post-Crisis, Leverage Ratio, Negative

This table shows Stage 1 and Stage 2 regression results for the post-crisis period (2011 through 2014) for our measure of a bank's tier-1 risk-based capital (to total assets) leverage ratio. These regressions are restricted to observations where the target capital level is lower than the actual current capital level. Stage 1 (column 1) estimates a bank's target capital ratio as a function of on-and off-balance sheet ratios and bank fixed effects (not shown). Stage 2 estimates a bank's adjustment speed toward that target ratio as a function of indicator variables for a bank's position in selected prompt corrective action capital zones and whether the bank is subject to one or more types of enforcement actions. Results for four Stage 2 models are presented. Column 2 shows results if only an indicator for formal enforcement actions (FEA) is used. Column 3 shows results when both formal and narrowly-defined informal enforcement actions (IEA) are accounted for. Column 4 adds indicators for a CAMELS downgrade to a 3 (DG3) and to 4 or 5 (DG45) to the definition of an informal enforcement action. Column 5 substitutes a CAMELS level of 3 (CAM3) and 4 or 5 (CAM45) for the CAMELS downgrade indicators of column 4. The number of observations and the R^2 statistic are given for each column. Dashes imply that there were no banks of this category in the subsample.

	(1) Step 1 b/se	(2) Step 2a b/se	(3) Step2b b/se	(4) Step2c b/se	(5) Step2d b/se
CAPLEV	0.8138*** (0.0294)				
ln(Asset)	-0.0008 (0.0013)				
Retail Deposits	0.0100* (0.0051)				
Business Loans	-0.0030 (0.0077)				
Off Balance-Sheet	0.0015 (0.0010)				
Well Capitalized (600-800)		0.0397*** (0.0049)	0.0394*** (0.0048)	0.0394*** (0.0048)	0.0395*** (0.0048)
Well Capitalized (400-600)		0.0477*** (0.0049)	0.0474*** (0.0048)	0.0475*** (0.0048)	0.0476*** (0.0048)
Well Capitalized (200-400)		0.0486*** (0.0049)	0.0481*** (0.0047)	0.0484*** (0.0047)	0.0486*** (0.0047)
Well Capitalized (0-200)		0.0504*** (0.0059)	0.0497*** (0.0056)	0.0501*** (0.0054)	0.0510*** (0.0057)
Adequately Capitalized		0.0603*** (0.0049)	0.0599*** (0.0048)	0.0595*** (0.0048)	0.0611*** (0.0048)
Under Capitalized		-	-	-	-
Significantly Under Capitalized		-	-	-	-
TARP Balance Indicator		0.0006 (0.0018)	0.0001 (0.0017)	0.0000 (0.0018)	0.0001 (0.0017)
FEA		-0.0055* (0.0028)	-0.0048 (0.0030)	-0.0045 (0.0029)	-0.0010 (0.0044)
IEA			0.0025 (0.0022)	0.0029 (0.0025)	0.0034 (0.0036)
DG3				-0.0068 (0.0121)	
DG45				-0.0051 (0.0040)	
CAM3					-0.0016 (0.0042)
CAM45					-0.0051 (0.0039)
Intercept	0.0204 (0.0187)	-0.0561*** (0.0050)	-0.0566*** (0.0052)	-0.0563*** (0.0051)	-0.0563*** (0.0051)
N	8,114	1,533	1,533	1,533	1,533
r2		0.1636	0.1640	0.1647	0.1643

Table 18: Average Coefficient Values – Base & Leverage Capital Regressions

Values in the table are average parameter estimates for significant coefficients and R^2 values for the Base and Leverage Capital regressions where insignificant coefficients equal zero. Dashes imply there were no significant parameter estimates. The “Positive” columns give the average estimate for cases when the target capital is greater than the actual capital, and “Negative” is when target capital is less than the actual capital.

	Pre-Crisis		Crisis		Post-Crisis	
	Positive	Negative	Positive	Negative	Positive	Negative
Well Capitalized (600-800)	-0.00650	0.03328	–	0.03500	-0.00610	0.03630
Well Capitalized (400-600)	-0.00518	0.04098	0.00320	0.04198	–	0.04458
Well Capitalized (200-400)	–	0.04345	0.00885	0.04523	0.00920	0.04745
Well Capitalized (0-200)	0.00765	0.04435	0.02313	0.04448	0.02620	0.04715
Adequately Capitalized	0.01023	0.04535	0.04070	0.05375	0.03695	0.05145
Under Capitalized	0.01740	0.05273	0.05188	0.04695	0.04998	0.05080
Significantly Under Capitalized	–	0.05598	0.04985	0.01765	0.05653	–
TARP Balance Indicator			0.00503	–	-0.00598	-0.00655
FEA	–	–	-0.00570	–	–	–
IEA	0.00140	–	–	–	-0.00265	–
DG3	–	-0.00555	0.00360	–	–	–
DG45	–	-0.02285	0.01255	–	–	–
CAM3	–	-0.00400	0.00410	–	–	–
CAM45	0.0016	-0.02440	0.01395	–	0.00215	–
Average R^2	0.10803	0.20800	0.24945	0.17618	0.35353	0.16005

Table 19: Variable Definitions

Variable	Description
CAPBase	Total equity capital / Total Assets
CAPLEV	Tier 1 capital / Total Assets
CAPTier1	Tier 1 capital / Risk-weighted Assets
CAPTotal	(Tier1 + Tier2 risk-based capital) / Risk-weighted Assets
ln(Asset)	Natural Log of Total on-Balance Sheet Assets (Total Assets)
Retail Deposits	Non-brokered Insured Deposits / Total Liabilities
Business Loans	(Commercial and Industrial & Finance Commercial Project Loans) / Total Loans
Off Balance-Sheet	contains off balance-sheet assets in portfolio {Dummy Var.}
Well Capitalized (600-800)	6 to 8% capital cushion above Prompt Corrective Action (PCA) minimum level {Dummy Var.}
Well Capitalized (400-600)	4 to 6% capital cushion above PCA minimum level {Dummy Var.}
Well Capitalized (200-400)	2 to 4% capital cushion above PCA minimum level {Dummy Var.}
Well Capitalized (0-200)	0 to 2% capital cushion above PCA minimum level {Dummy Var.}
Adequately Capitalized	Within the Adequately Capitalized PCA level {Dummy Var.}
Under Capitalized	Within the Undercapitalized PCA level {Dummy Var.}
Significantly Under Capitalized	Within the Significantly Under Capitalized PCA level {Dummy Var.}
TARP Balance Indicator	Indicates whether TARP funds exist on portfolio {Dummy Var.}
FEA	Formal Enforcement Action {Dummy Var.}
IEA	Informal Enforcement Action {Dummy Var.}
DG3	Downgrade to CAMELS 3 level {Dummy Var.}
DG45	Downgrade to CAMELS 4 or 5 level {Dummy Var.}
CAM3	CAMELS 3 level {Dummy Var.}
CAM45	CAMELS 4 or 5 level {Dummy Var.}