How do Banks Respond to Capital Regulation? — The Impact of the Basel III Reforms in the United States*

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Abstract

How do banks respond to new capital regulation? Studying the announcement of the proposed rules for implementing Basel III in the US, we find that banks increased their tier 1 capital ratio by 0.26 percentage points for every 1 percentage point decline in the same measure implied by the proposed rules. For the larger regional banks the effect is twice as strong as for smaller banks. The strength of the response declines with the size of the capital buffer above regulatory minimums and increases among regional banks. Banks responded well before the new rule came into force. Understanding the effect of capital regulation helps policy makers use this key tool of financial regulation effectively.

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1 Introduction

Capital adequacy standards are a fundamental pillar of modern banking regulation in economies around the world, meant to protect the stability of the banking system and safeguard its ability to provide funding for the real economy in times of stress. Such regulations generally work by specifying a minimum capital ratio, measured by the amount of capital that a bank must employ relative to its risk-adjusted asset position, to ensure there is sufficient capital to absorb potential losses without threatening the bank's solvency. The introduction of common standards on capital regulation was a primary function of the first Basel Capital Accord (Basel I) published in 1988 and they have continued to be a focus of subsequent reforms to the Basel rules, up to and including the most recent Basel III Endgame package proposed in 2023. Following the global financial crisis of 2007–2009, tightening capital regulation was one of the main instruments that regulators employed to avoid future crises. The Basel III framework proposed in 2010, among other key elements, both increased the required capital ratios and tightened the definition of what was considered capital to meet the requirements. More recently, following the failure of Silicon Valley Bank and a subsequent episode of the stress in the US banking sector US regulators have announced the outlines of a new set of changes to capital regulation, aiming to increase capital among the largest banks.[1] To ensure that capital regulation achieves its objectives, it is critical for policymakers to understand how it impacts the banking system. Studying the response of banks to new regulation is an essential part of this effort.

In this paper, we ask how and when banks respond to new capital regulation. We study this question in the context of the implementation of the Basel III reforms in the US by banking regulators. A key challenge in the literature on capital regulations concerns

[1] See, for example, the speech by Federal Reserve Vice Chair for Supervision Barr on July 20, 2023.

the identification of the effects of the regulations. Much of the existing empirical work that looks at the effects of regulatory reforms within the banking sector attempts to identify the causal effects of regulatory changes by exploiting time variation in regulatory requirements that were implemented by certain foreign central banks, comparing outcomes prior to the changes with outcomes after the changes (Aiyar et al., 2014) or analyzing settings where regulations vary over time by design (Jiménez et al., 2017). Another strand of the literature utilizes cross-sectional variation in the effects of regulatory changes across banks, such as in Gropp et al. (2019). One key advantage of the Basel III implementation we study is that it affected banks differently depending on their balance sheet position prior to the announcement of the new regulation. This feature allows us to compare both across time and across banks with different exposure to the new regulation.

Our paper is one of the first in the literature to study the "when" as well as the "how" of bank responses to new capital regulations. We show that banks adjusted their regulatory capital positions in response to the new rules subsequent to the *announcement* of the proposed rules in 2012, well before the implementation date for the new Basel III regime. In addition, while many of the existing papers in the field explore the effect of regulations on lending, we focus on the way banks adjust their regulatory capital structure in response to the new Basel III capital rules, which was one of their key targets. Taken together, our paper thus presents a unique and novel analysis of the effectiveness, both in terms of extent and timing, of this important element of post-global financial crisis banking regulation.

The Basel III reforms we study in this paper were endorsed at the international level by the Basel Committee on Banking Supervision (BCBS) in 2010. In June 2012, US banking regulators presented a proposal for the regulatory changes required to implement the Basel III framework for US banks. This release was the first time a detailed set of rules for

the implementation of Basel III as applicable to US banks was published and it forms the key event for our analysis. Importantly, while the BCBS framework targeted the largest and internationally most active financial institutions, the US proposed rules applied to banks with at least $500 million in total assets, extending coverage to include significantly smaller banks. A set of final rules was published in July 2013. For most banks, the new capital rules came into force in January 2015.

We analyze the effects of this regulatory change on bank capital ratios by exploiting the fact that banks were affected differentially by the new rules regarding the measurement of capital as well as risk-weighted assets depending on the composition of their balance sheets. This allows us to create a measure of the hypothetical decline in each bank's tier 1 capital ratio from the old rules to the new rules if these had already been applied to bank data from Q2 2012. We then ask the questions: How did banks react to the adjustment of their regulatory capital ratios because of the regulatory changes? For example, if banks experienced a decrease in their regulatory capital ratio, did they seek to "catch up" and restore their capital? How were such adjustments implemented on banks' balance sheets? When did banks make such adjustments relative to the announcement and implementation dates of the new regulations? Finally, we consider a set of channels driving the response.

We estimate these effects in a difference-in-differences model using a dataset constructed from the quarterly regulatory filings of US bank holding companies affected by the regulation. Our sample includes community and regional banks between $500 million and $50 billion in total assets and covers the period Q1 2010 to Q4 2014. Using an empirical model that allows a bank's response to the new regulation to depend on the size of its prior capital buffer, we find that the banks in our sample responded to the impact on their

regulatory capital ratios implied by the newly announced rules by moving their capital positions to counteract the effect. Specifically, we find that banks increased subsequent capital ratios by 0.26 percentage points for every 1 percentage point decline implied by the new capital rule proposals. In the full sample, the response is stronger for banks with smaller capital buffers at the time of the announcement of the reform proposals. We examine possible heterogeneity in these estimated effects by bank size, given that the US framework applies such a distinction in the regulatory treatment of regional banks larger than $10 billion in total assets relative to community banks below that size threshold. The effect we identify is stronger for regional banks than for community banks, and, unlike the community banks, stronger for those regional banks that had on average higher capital ratios compared to their peers in the period running up to the announcement. This suggests that regional banks with higher regulatory capital ratios appear to be more sensitive to changes in capital regulation that adversely affect them.

Importantly, our analysis of the timing of the response shows that US banks started adjusting their tier 1 capital ratios soon after the announcement of the proposed rules in 2012, when the new Basel III rules on regulatory capital ratios were not fully in force until early 2015, and in many cases even later than that. Banks could have continued with their existing regulatory capital policy for a substantial time following the announcement of the proposed rules in 2012. Instead, we find that they respond well before the full implementation of the new rules. This suggests that, in making decisions concerning their target levels of regulatory capital, banks respond to incentives beyond the direct constraint imposed by regulations in force. Our finding here also underlines the importance of announcements of future regulatory policy changes in driving bank behavior.

We then decompose the bank response to the new rules and show that both groups

of banks moved their tier 1 capital ratios by adjusting the numerator of the regulatory ratio, the amount of tier 1 capital they employed. The adjustment was driven by changes in income, specifically in loan loss provisions. Unlike Gropp et al. (2019) and Mésonnier and Monks (2015) who study the effect of capital regulation in the Eurozone, we do not find that banks in the US significantly reduced loan growth in response to the new Basel III rules.

Finally, we consider various channels through which capital requirements affect bank leverage. We find banks' asset and liability structures as well retained earnings help explain how strongly a given bank responds to the effect of the new rules. First, on the asset side, for banks with a greater share of business loans, the capital buffer is less prominent in explaining their capital response, consistent with the prediction of Allen, Carletti, and Marquez (2011) that greater exposure to monitoring-intensive lending leads to banks operating with more capital, and the minimum capital ratio would thus be less relevant to them. Second, on the liabilities side, banks in our sample with greater reliance on retail deposits responded less aggressively to the new rules than banks with fewer retail deposits. Third, our results indicate that banks with higher retained earnings exhibited a response that was less sensitive to the level of their capital buffer prior to the announcement of the new rules, suggesting a greater ability to adjust capital ratios compared to banks with lower earnings.

Our study is timely in light of the publication on July 27, 2023, of a proposed rule regarding the implementation of the final elements of Basel III, commonly referred to as "Basel III Endgame". The Basel III Endgame proposals have regulatory capital implications for US banks larger than USD 100 billion in total assets and are projected to be fully implemented by July 1, 2028.

2 Literature Context and Contribution

Our paper is part of a literature that studies the role of capital regulation in banking. More narrowly, the papers closest to ours estimate the effect of capital regulation. The key challenge in this area is to find suitable settings that generate a plausibly exogenous change in capital requirements to permit convincing identification of the effect of capital. One approach to addressing this challenge has been to study the effects of changes in capital requirements, such as the Basel III reforms, that are the focus of this paper. There are other papers that study these reforms. Berrospide and Edge (2016) focus on the effect that higher capital requirements have on bank lending, and they find a negative, albeit small, effect. Using the same estimates for the changes in capital requirements, Irani et al. (2021) find that banks whose capital ratios decreased more were more likely to sell shares of syndicated loans on their books than less affected banks, and that adverse exposure to the new regulation facilitated the rise of non-bank financing of syndicated loans.

In the European context, Gropp et al. (2019) and Mésonnier and Monks (2015) study the 2011 European Banking Authority capital exercise, which presented an unexpected announcement of increased capital requirements for large European banks. They find that banks for which the new requirements were binding reduced risk-weighted assets, reduced lending, and experienced slower loan growth compared to banks that had capital ratios exceeding the new target. In a follow-up paper, Gropp et al. (2023) provide evidence that banks met the higher capital requirements partly by exploiting discretion to inflate regulatory capital without accompanying increases in book equity.

Fraisse, Lé, and Thesmar (2020) use detailed loan-level data for firms and banks in France. They exploit the variation in capital requirements across firms and banks arising from the risk-based capital regulations in Basel II. Following Khwaja and Mian (2008) they

are able to control for loan demand (or supply) by comparing lending across banks to the same firm (or across firms by the same bank). They find relatively strong effects from higher capital requirements. An increase in capital requirements of 1 percentage point leads to a reduction in bank lending of 8 percent and a reduction in firm borrowing of 4 percent, suggesting limited substitution to other banks.

A small number of papers take advantage of time-varying capital regulations that exist in some jurisdictions. For example, Jiménez et al. (2017) study the effect of dynamic provisioning in Spain, which had been in place from before the 2007–2009 global financial crisis and which were changed via several adjustments and policy experiments over time. Using these experiments, the authors estimate the effect of changes in regulation on credit and the real economy, showing that countercyclical regulation can smooth credit supply cycles and, by releasing credit in bad times, improve borrower outcomes. Francis and Osborne (2012) exploit the variation across time in capital requirements for banks in the UK under Basel I. They find that banks respond to an increase in their capital requirement by increasing their internal capital target. The adjustment toward the new target tends to occur through changes in the composition of bank assets and by adjusting the amounts of lower quality tier 2 capital, which is cheaper to raise than higher quality tier 1 capital. Imbierowicz, Kragh, and Rangvid (2018) study the capital and lending response of banks to changes in capital and disclosure requirements for banks in Denmark. They find an asymmetric effect of changes to capital regulations: an increase in the bank capital requirement results in higher capital ratios through a reduction in asset risk, while a decrease in the requirement leads to more lending and leverage and lower capital. Auer, Matyunina, and Ongena (2022) show how targeted countercyclical capital regulation can have implications beyond the targeted sector. In their study of Swiss banks, an increase

in the countercyclical capital buffer applied to residential mortgages leads to increased growth in commercial lending.

Relatedly, the impact of stress tests has provided some insight into the effect of capital regulation on banks. In the US, the regulatory stress tests are used to set capital buffer requirements for large and complex institutions, which are applied on top of other capital ratio minimums. Berrospide and Edge (2024) study the effect on banks of having to meet new and higher capital buffers for the US CCAR stress tests. Their findings suggest that an increase in the required capital buffer results in lower loan growth for the affected large banks, but that firms borrowing from these banks can compensate by tapping other sources of credit. Other recent studies of the effects of stress tests include Doerr (2021), Kok et al. (2023), Shahhosseini (2020), Acharya, Berger, and Roman (2018) and Cortés et al. (2020).

Differently from these related papers, in our paper we focus on the bank response in terms of managing their capital ratios — the intended target of capital regulation. In addition, while our baseline results about an *overall* recapitalization in response to a negative shock is directionally consistent existing results, our paper offers additional insights results on the how and when of the bank response, which are different from previous work or new to the literature. First, as regards the *how*, we decompose the overall bank response to better understand what components of regulatory capital ratios explain the bank response. Here, our key finding that banks in the US responded to the Basel III regulations primarily through the earnings channel stands in contrast to the results of Gropp et al. (2019) and Mésonnier and Monks (2015), who find that Eurozone banks adjusted to an unexpected reduction in regulatory capital primarily by reducing risk-weighted assets. Second, our paper adds to the existing body of research by shedding light on the

"when" of banks' responses to capital regulation. The timing of banks' responses relative to the announcement of changes in capital regulation has been little studied in the literature. Arnould et al. (2020) consider the introduction of a capital relief policy and study whether and when UK banks pre-position their mortgage portfolios to take advantage of the policy's features. Their results suggest that banks did not respond to a discussion paper the regulator published in the earlier stages of the policy cycle but did so later after the publication of the policy statement. In our work, we explore when banks react to the new rules relative to the period in which the BCBS announced and finalized the international proposals, the announcement of proposed and final rules in the US and the eventual implementation. This allows us to show that there was no significant response to the release of the BCBS framework, which could have created an expectation of future changes to capital rules for US banks. Indeed, this is an assumption often implied in studies of the US Basel III reforms, such as Irani et al. (2021). We are able to test it directly.

3 The Implementation of Basel III in the US

The policy change we study in this paper is related to the adoption of the Basel III framework in the United States. In this section we give some background on both the Basel III framework as proposed by the BCBS and its US implementation. As the sequence and timing of events will be important in our analysis, we first present the timeline of changes and then proceed to describe the key changes we use in our analysis. Sources for the relevant press releases and legislation are provided in Appendix A.

3.1 Timeline

The Basel III reforms were designed to address perceived shortcomings in the pre-crisis framework, with the stated goal "*to improve the banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source, thus reducing the risk of spillover from the financial sector to the 'real economy'*" (BCBS, 2009). The reforms strengthened the resiliency of banks via an increase in the level and the quality of capital that banks are required to maintain, a revision of the risk-weighted capital framework, the introduction of a new leverage ratio to constrain bank leverage, a new liquidity coverage ratio and a net stable funding ratio, as well as new counter-cyclical capital buffers to limit pro-cyclicality. These changes aimed to stabilize the banking system throughout the economic cycle and lower the probability of systemic risk events.

The Basel III framework originated from the BCBS at the international level and was subsequently implemented in the United States. Starting the process, on 17 December 2009, the BCBS published a set of proposed reforms for consultation designed to strengthen capital and liquidity regulations, accepting comments until April 16, 2010. The new international framework was agreed on in outline on July 26, 2010, and fully published and endorsed by the BIS on September 12, 2010.

A couple of years after the initial BCBS releases, on June 12, 2012, the Office of the Comptroller of the Currency, the Federal Reserve System, and the Federal Deposit Insurance Corporation (jointly referred to as the US banking regulators) published a proposed regulations that would implement the Basel III capital and liquidity reforms for US banks. This announcement was the first time that banks in the US saw how exactly the regulators proposed to implement the Basel III framework in the US and how they might be affected by the new rules. Comments were accepted on the proposed regulations from banking

institutions until September 7, 2012. The proposed US rules released in June 2012 were finalized in July 2013 with some modifications in response to comments received during the consultation period.[2] The final version did not change the population of US banks to which the new Basel III regulations would be applied and the new rules came into force for most banks from January 2015.[3] Figure 1 shows the timeline of the main publications and announcements relevant to the Basel III framework.

It is instructive to note that contemporaneously there were others changes to bank regulation that overlapped with the Basel III reforms. For example, important for regional and large banks was the Dodd-Frank Act (DFA), which became effective on July 21, 2010. Section 165 of the DFA mandated stronger regulation and supervision of these bank holding companies, including requirements for risk-based capital and leverage, liquidity, stress testing, single-counterparty credit limits, and early remediation of financial weaknesses. While the Federal Reserve implementation of DFA imposed the most stringent changes on those holding companies greater than $50 billion in total assets, proposed rules in December of 2011 would require bank holding companies between $10 billion and $50 billion to complete annual internal stress-testing cycles beginning in the Fall of 2013. Relevant to our analysis, guidance published by the Federal Reserve in September 2013 suggested that the regional bank internal stress tests were not expected to incorporate the increased capital standards imposed by the US implementation of Basel III until the 2014 stress testing

[2]The key modifications in the final rules were to drop the changes to risk weights in the proposed rules for residential mortgages and to grandfather-in some existing tier 1 capital elements, namely, qualifying preferred stock and qualifying trust preferred securities, which were excluded in the proposed rules.

[3]The June 12 proposals initially suggested that some of the new capital rules would be phased-in beginning in January 2013. This statement was subsequently revised in November 2012, and it was announced that January 2013 would no longer be the binding date. The final rule released in July 2013 subsequently clarified that January 2015 would be the binding date for most banks. The largest and most complex bank holding companies were expected to comply one year earlier, by January 2014. No such institutions are included in our analysis.

cycle.

3.2 The Basel III Changes to US Bank Capital Regulation

The Basel III reforms included numerous changes that were implemented by the US banking regulators. We focus on a subset of these changes related to regulatory capital for banks, highlighting changes to the definition of regulatory capital and changes to risk weights which jointly implied a significant change in the way banks calculated their regulatory capital ratios.

At a headline level, with respect to capital regulation, the Basel III framework both increased minimum regulatory capital ratios and tightened the definition of capital measures to ensure they were truly loss absorbing. The framework introduced a new measure of regulatory capital effectively decomposing tier 1 capital into common equity tier 1 (CET1), composed largely of common stock and earnings, and additional tier 1 capital, containing additional capital instruments such as noncumulative preferred stock excluded from common equity tier 1. The minimum common equity tier 1 capital ratio was set at 4.5 percent of RWA, and the minimum tier 1 capital ratio increased from 4 percent to 6 percent. In addition, the Basel III framework introduced a series of buffers above these minimum ratios, intended to act as an early warning system, that require banks to cut back on dividend payouts and certain bonus payments if bank capital falls below the minimum buffer. These buffers include the capital conservation buffer (CCB) of 2.5 percent and the G-SIB surcharge for the largest, most systemically important banks.

Beyond these top-level changes, Basel III also made several adjustments under the hood to the way capital is computed. These include deductions to be applied to regulatory capital balances prior to computation of the CET1 ratio. Significant investments in

the common shares of unconsolidated financial institutions, mortgage servicing rights and deferred tax assets that arise from temporary differences were each subject to a 10 percent threshold with respect to CET1 recognition.[4] The sum of balances across the three asset types remaining (after applying deductions from the 10 percent threshold rule) that is greater than 15 percent of a bank's CET1 must also be deducted from CET1. Finally, after both threshold deductions are applied, any remaining amount of the three asset types that remain on a bank's balance sheet would be assigned a risk weight of 250 percent. The threshold deductions in effect assign a proportion of high-quality capital on a bank's balance sheet to holdings of these three asset types beyond the thresholds, and the increased risk weighting in addition penalizes a bank's capital ratios in treating the holdings not deducted as high-risk assets. In addition to narrowing the definition of regulatory capital and deductions, the new proposed rules under Basel III also adjusted existing risk weights for various asset classes to better capture their associated risks. In contrast to the changes to the headline minimum capital ratios which affected all banks equally, the changes to the calculation of regulatory capital and risk weighted assets affected banks differentially depending on the composition of their balance sheet. We exploit this variation in our estimation of the bank response to the new rules.

4 Data and Estimation

We analyze bank responses to the Basel III regulations using the quarterly financial statements for US bank and financial holding companies reported on the Federal Reserve Form FR Y-9C "Consolidated Financial Statements for Holding Companies" (FR Y-9C) for the

[4]For example, a bank would be required to compute 10 percent of its CET1 balances and amounts in excess of the 10 percent threshold for each of the three asset types would be deducted from CET1.

period Q1 2010 to Q4 2014.[5] We refer to the institutions in this data set simply as "banks." The FR Y-9C form contains, among other items, the bank's balance sheet and income statement as well as regulatory ratios. Our sample covers banks ranging from $500 million to $50 billion in total assets during the sample period. Within that sample, we distinguish between "community" banks with total assets below $10 billion and "regional" banks with total assets above $10 billion. We exclude banks with total assets greater than $50 billion from our analysis. This is because the group of the largest and most systemically important US banks was subject to enhanced supervision, including stress testing under the Federal Reserve implementation of the DFA of 2010, which was introduced and in force during our sample period.[6] These new requirements and resulting pressures on bank capital likely posed the primary regulatory capital constraint on these larger banks, and we therefore exclude them from our sample.

For our main analysis we use a balanced panel and require banks to meet the size threshold and have no missing data for our main variables during all quarters of our sample period. This allows us to sidestep issues associated with bank entry and exit, for example, due to failure, during the sample period. Furthermore, to avoid duplication we remove banks that are subsidiaries of another bank holding company in our sample. In total, we end up with a sample of 669 banks, of which 632 are community banks and 37 are regional banks. Table 3 show summary statistics for the panel variables of the banks in our sample. Figure 2 shows the mean tier 1 capital ratios over time, separately for community and regional banks. The tier 1 capital ratio shown here is calculated under the pre-Basel III regulatory framework and reported in the banks regulatory Y-9C forms. The chart shows

[5] We end the sample in 2014 due to the structural changes in the reporting of regulatory data that followed the implementation of the Basel III rules we study.

[6] Hirtle and Lehnert (2015) provide an overview and detailed description of the post-crisis US stress testing regime including the specific requirements it imposed on affected banks.

that community banks on average increased their regulator tier 1 capital ratios throughout the sample period, from about 13 percent to about 15 percent. The larger regional banks on average held their tier 1 capital ratio constant throughout the sample period at around 14 percent.

For each bank in our sample, we then compute what impact the new Basel III capital regulation as proposed in June 2012 would have had on banks at the time. We do this by calculating by how much the measured tier 1 capital ratios would have declined under the new rules if they had already been in force in Q2 2012, the time the proposed rules were published. The greater this decline in tier 1 capital for a given bank, the stronger the effect of the new rules on the bank's regulatory tier 1 capital ratio. For example, if a bank reported a tier 1 capital ratio of 14 percent in its regulatory filings for Q2 2012, but under the Basel III rules that bank's tier 1 capital ratio would have been only 12 percent (taking as given the bank's balance sheet for the quarter), then the hypothetical decline is 2 percentage points. If that bank had a target to operate with a tier 1 capital ratio of 14 percent, then to remain at the target under the new rules, the bank would have had to adjust its balance sheet, increasing capital, or reducing RWA.

To compute the decline measure we first take the tier 1 capital ratio reported in the Y-9C form for Q2 2012. We then apply a series of adjustments reflecting the main differences between the existing capital rules and the proposed rules under Basel III in the way tier 1 capital as well as risk-weighted assets are computed for the tier 1 capital ratio using as inputs the bank's balance sheet as of Q2 2012. These adjustments follow the approach Federal Reserve staff used in preparing estimates of the new proposed regulations in support of congressional testimony and are described in supporting documents (Board of Governors of the Federal Reserve System, 2012, Attachment A) that is also used in Berrospide

and Edge (2016) and Irani et al. (2021).

The result of this calculation for the banks in our sample is presented in Figure 3. The figure shows a scatter plot of the implied decline in the tier 1 ratio that each bank in our sample would have incurred under the new rule proposed in Q2 2012. In our sample, the average tier 1 ratio decline is about 2.2 percentage points. There is significant variation around this mean (standard deviation: 1.7 percentage points, see Table 4), including some banks for which applying the new rules would result in a negative decline, that is, an increase in their tier 1 capital ratio.

We exploit this variation in the effect that the proposed Basel III rules would have had on tier 1 capital ratios in Q2 2012 to study the effect of the publication of the regulations. Our estimation framework is a difference-in-differences model where the decline in a bank's tier 1 capital ratio under the proposed regulation acts as continuous treatment variable. The identifying assumptions in these estimations are as follows: First, the proposed US implementation of Basel III should contain new information, that is, not be fully anticipated by the affected banks, for example, due to the fact that the BCBS had already published its framework of rules in December 2009, prior to the US announcement. If banks had expected the changes prior to the US announcement, then we could see capital ratio adjustments begin prior announcement date so that our estimates would underestimate the effect of the shock. Second, the capital declines resulting from the US rule proposals should not vary systematically within the population of banks. For example, if the rule proposals primarily targeted banks that held a relatively large share of mortgages and these banks behaved differently for reasons other than the Basel III regulations, this would undermine our identification. Both of these assumptions are related to the standard parallel trends assumption associated with difference-in-differences regression frameworks.

In our case, this means that outcome variables for banks with different levels of exposure to the Basel III capital regulations would have moved in parallel absent the release of the proposed regulation. [7] We scrutinize this assumption in section 5.3, and we find evidence of parallel trends for the period prior to the announcement of the proposed rules.

Our baseline panel specification with both bank (index i) and quarter (index t) fixed effects is shown in equation 1.

$$\begin{aligned} & \alpha_i + \alpha_t + \beta X_{i,t} \\ \text{T1RatioProp}_{i,t} = & + \gamma_1 \Delta_{i,t}^{\text{After}\times\text{T1RatioDecline}} \\ & + \epsilon_{i,t} \end{aligned} \tag{1}$$

The variable $\Delta_{i,t}^{\text{After}\times\text{T1RatioDecline}}$ captures the extent to which banks were affected by the new rules. It is equal to the decline in tier 1 capital ratio due to the new regulations as shown in Figure 3 for all quarters following the publication of the Basel III proposed rules and zero for all quarters prior. Our main impact variable is thus a continuous measure, allowing us to estimate bank's response to an additional percentage point implied decline in the measured tier 1 capital ratio. In alternative specifications reported in the Internet Appendix, we replace the continuous decline measure with an indicator variable, $Q_{4\text{th}}(\text{T1RatioDecline})$, indicating whether a bank is in the top, that is, the fourth quartile in terms of the effect of the Basel III capital regulation on its capital ratio.

Throughout our analysis we consider Q2 2012 as the last pre-treatment quarter, recog-

[7] Acemoglu, Autor, and Lyle (2004) present an early application of this approach. Callaway, Goodman-Bacon, and Sant'Anna (2021) discuss the additional potential issues that arise in difference-in-differences models that involve continuous treatment variables and the stronger assumptions required for causal inference. As we show in our Internet Appendix, our results are robust to using a specification that replaces the continuous measure with an indicator variable that flags banks with a decline in the top quartile of the distribution.

nizing that banks might have responded somewhat between the publication of the new rules on 12 June 2012 and the quarter-end on 30 June 2012. To the extent that banks already responded during the brief time between the release of the proposed rules and the quarter-end, our approach would be conservative, biasing our results toward zero, that is, not finding an effect. The parameter of interest in this specification is γ_1 which captures the effect that the decline in tier 1 capital ratios had on the left-hand side variable in the quarters after the proposed regulation had been released. Our main outcome variable is *T1RatioProp*, the tier 1 capital ratio calculated under the incoming regulations as per the 2012 proposed rules, which allows us to capture adjustments bank make to adhere to the new set of rules.

Given that the bank's internal capital target is an important factor banks face in addition to the regulatory requirements, we also interact our main effect of interest with a cross-sectional measure of banks' average capital buffers during the pre-treatment period. Based on theory, we expect banks that hold relatively less capital to respond more aggressively when exposed to a tightening in regulations. This is because for such banks any change that brings them closer to a regulatory constraint will likely prompt a quick response to avoid the repercussions of violating the constraint. Furfine (2001) writes a structural model where the costs of recapitalization increase as the bank approaches the regulatory minimum, suggesting a preference for a positive capital buffer, that is, maintaining a regulatory capital ratio that exceeds the minimum requirement. Lindquist (2004) finds empirical evidence that banks hold excess capital as insurance against failure to meet capital requirements, credit-risk and losses, and that loan-loss provisioning may act as an alternative to building capital. Berger et al. (2008) show empirically that a bank's capital adequacy influences the speed at which it adjusts to a target capital ratio, so that poorly

capitalized banks recapitalize quicker in response to a change.

An alternative approach would be to use a single measure of banks' distance from the regulatory minimum given the regulatory shock as our treatment variable. However, doing so would complicate interpretation of our parameter estimates given that the bank response will depend both on the regulatory shock and the banks' internal target for capital. Our approach in decomposing bank capital buffers from the size of the regulatory shock allows for a more flexible model specification that improves our identification problem. As a result, we more accurately identify the effect of the regulatory shock conditional on heterogeneous bank preferences for a capital buffer at the expense of estimating additional parameters.

To capture the effect of a bank's distance from regulatory constraints, we thus estimate a model which extends equation 1 by adding an interaction with a standardized measure of a bank's average capital buffer over the four quarters prior to the release of the new rules. We take this approach because it allows us to separately control variation in bank preferences for capital buffers in addition to the impact of the new rule proposals. The variable is labelled $(z(\textit{CapBuffer}))$ and has zero mean and standard deviation of one.

$$\begin{aligned} \text{T1RatioProp} = & \alpha_i + \alpha_t + \beta X_{i,t} \\ & + \gamma_1 \Delta_{i,t}^{\text{After}\times\text{T1RatioDecline}} \\ & + \gamma_2 \Delta_{i,t}^{\text{After}\times\text{z(CapBuffer)}} \\ & + \gamma_3 \Delta_{i,t}^{\text{After}\times\text{T1RatioDecline}\times\text{z(CapBuffer)}} \\ & + \epsilon_{i,t} \end{aligned} \tag{2}$$

In the model as shown in Equation 2, the coefficient γ_1 once more captures the main aver-

age effect of the decline in the tier 1 capital ratio, while γ_3 measures how the main effect varies with banks' capital buffers.

Throughout our analysis, we cluster standard errors at the level of the unit being treated, that is, at the level of the individual bank.

5 Results

5.1 Bank Response to Basel III Capital Rules

We first examine the effect of the proposed rules on the path of regulatory capital. How did banks that received a negative adjustment to their measured tier 1 capital ratios adjust their regulatory capital positions after the publication of the new rules? For this we estimate equations 1 and 2 with banks' tier 1 capital ratio across time as the dependent variable.

The regression results are shown in Table 5. Overall, we find that banks in our sample responded to the Basel III induced decline in their measured tier 1 capital ratios from the proposed new rules by increasing their capital ratios subsequent to the announcement. In our specification including the capital buffer interaction (column (2)), a bank that experienced a negative one percentage point impact increased its capital relative to a bank that experienced a zero impact by about 0.26 percentage points on average across the quarters following the publication of the 2012 proposed rules. As the negative coefficient on the triple interaction $After \times T1RatioDecline \times z(CapBuffer)$ shows, this effect is stronger for banks that have lower capital buffers going into the release of the new proposed rules: for a bank with a capital buffer one standard deviation lower than the mean, the effect increases to about 0.58 percentage points for every 1 percentage point impact from the new rules. This means that a bank with tier 1 capital ratio of about 8.2 percent would

increase its capital ratio by about 0.58 percentage points for every 1 percentage point decline caused by the new rules. In the simpler model without the capital buffer interaction terms, the effect is weaker by about half (column (1)), highlighting the importance of the capital buffer in explaining the banks' response to the new, tighter rules, consistent with the predictions in Furfine (2001) and the findings in Lindquist (2004) and Berger et al. (2008).

Columns (3) and (4) of Table 5 repeat the analysis with a set of time-varying controls including log total assets, return on assets, the lagged change in charge-offs and the share of loans over total assets for the bank. The addition of the controls increases the predictive power of the model, and while the effect of *T1RatioDecline* by itself is estimated as weaker, the interaction term with $z(CapBuffer)$ remains largely unaffected. This suggests that the effect we identify has explanatory power over and above several other commonly used variables in explaining bank capital decisions.

5.2 Differences between Community and Regional Banks

Our full sample includes banks between $500 million and $50 billion. This covers a wide spectrum of very different banks, from neighborhood banks operating in small towns to large institutions with national footprints. To investigate potential differences in the response to the newly proposed rules between larger and smaller banks, we adopt a distinction between community and regional banks commonly used in US bank regulation. Community banks are those with total assets up to $10 billion while banks above this threshold are regional banks. Allowing our effects to vary between community and regional banks allows for structural differences in the way regulators treat these groups, as

well as difference in balance sheet composition and business models.[8] Of the 669 banks in our sample, 632 are community banks and 37 are regional banks. We then analyze the difference between these two groups of banks in two ways. First, we add an indicator variable for regional banks as an interaction term to our main specification. Second, we estimate our model separately on two subsamples, one consisting only of community banks and one only of regional banks.

Table 6 presents the results of the exercise using an indicator variable for regional banks. Column (1) shows the coefficients for the model with capital buffer interaction from equation 2, including interaction terms with the regional bank indicator to help uncover differences between the size groups. Column (2) repeats the specification while adding the same set of controls (coefficients omitted) as in Table 5. Overall, the results indicate that regional banks respond more strongly than community banks to a given decline in measured tier 1 capital from the proposed rules and that for regional banks the effect of the capital buffer interaction is significantly different.

These general insights regarding differences between community and regional banks are verified in the subsample analysis reported in Table 7, which shows the main specifications separately for each size group. Overall, the response of community bank mirrors that of the full sample as shown in Table 5, reflecting the large share of the sample banks that fall into that size group. Comparing coefficients for the baseline model with *T1RatioDecline* and capital buffer interaction across community banks (column (1)) and regional banks (column (2)), we see that the latter group responds to a one percentage point decline in

[8]For example, Federal Reserve Board of Governors supervisory guidance from 2008 notes that supervision of regional bank holding companies was tailored to the characteristics and risk profiles of those institutions relative to community bank holding companies (See attachment A.2 of https://www.federalreserve.gov/boarddocs/srletters/2008/sr0809.htm). The asset size thresholds applied by regulators have been adjusted periodically. We apply the classification that was in force during our sample period.

tier 1 capital from the proposed rules by increasing capital ratios by about 0.42 percentage points on average following publication. This effect is almost twice as strong as that for community banks (coefficient of 0.25). The larger effect may be due to the greater supervisory attention paid to regional banks under Basel III relative to community banks, such as the introduction of internal stress test results, which began near the end of our sample period. The regional banks would then have a stronger incentive to maintain their capital above regulatory minimums than community banks.

Additionally, it is noteworthy that among the regional banks in our sample the role of the capital buffer in explaining the effect of the Basel III regulations is reversed: Banks that with greater capital buffers before the release of the new regulations responded more strongly than those that were less capitalized, indicated by the statistically significant positive coefficient on the capital buffer interaction term ($After \times T1RatioDecline \times z(CapBuffer)$) in columns (2) and (4). The estimates imply that a regional bank with a one standard deviation greater capital buffer responded about one-and-half times as strongly to the Basel III induced decline in tier capital than a bank at the mean. For community banks the coefficient on this interaction is negative.

This result for the regional banks in our sample rejects the hypothesis that changes to minimum capital regulation are more important for those banks that operate near the minimum. Instead, those regional banks with the largest buffers above minimum capital requirements respond more strongly to changes affecting their measured capital levels. Such behavior is consistent with a desire to protect the benefits that flow to well capitalized banks, such as better access to wholesale funding markets (Pérignon, Thesmar, and Vuillemey, 2018) or incentives arising from credit market competition (Allen, Carletti, and Marquez, 2011). The difference in sign between the community and regional banks in our

sample could then be due to such mechanisms being less important to community banks, for example, because they rely less on wholesale funding markets than regional banks or are less exposed to credit market competition.

Overall, the different responses of regional banks and community banks might also be due to the greater supervisory attention paid to regional banks under Basel III, such as regulatory review of internal stress test results, which began near the end of our sample period. They thus had a stronger incentive to consistently maintain a relatively larger capital buffer.

5.3 Timing

Having established the presence of a bank response to the new proposed rules, we next ask the question when banks adjusted their capital to the new regulations. Figure 4 decomposes the main effect reported in Table 5 by breaking up and plotting the coefficients of column (4) quarter-by-quarter. The figure shows that prior to the release of the proposed rules in Q2 2012 there was no difference in the estimated treatment impact between banks with greater and lesser exposure to the Basel III impact variable. In contrast, the coefficient plot in Figure 4 shows a growing gap in the tier 1 ratio of banks with different declines in regulatory tier 1 capital ratios from the proposed Basel III rules after their publication at the end of Q2 2012. The coefficients increase up to around 0.2 by Q3 2013 after which they remain roughly at this level until the end of the sample. We find very similar patterns when replicating the analysis on the subsamples of community and regional banks (Figures 5 and 6). The path of the tier 1 ratios adjustments we observe is consistent with a model in which bank set a new tier 1 ratio target based on the new proposed rules after their publication and then adjust to that new target over the next four to five quarters,

similar to the partial adjustment model proposed in Flannery and Rangan (2006).

The patterns exhibited in this analysis are noteworthy in highlighting that the banks in our sample (i) did respond relatively quickly following the release of the proposed rules released in Q2 2012 and (ii) did not noticeably respond at two other important points of the implementation timeline. First, the release of the BCBS framework in 2010 did not trigger a strong response by the banks in our sample, while the release of the proposed rules in 2012 did. This is consistent with perceptions that the BCBS Basel III framework was targeted at the largest, most systemically important, and internationally active banks. The banks in our sample between $0.5 million and $50 billion do not fall in that category and as such they might have been surprised when the US implementation of Basel III did extend coverage to smaller banks. Second, looking ahead from 2012, the quarterly coefficients do not increase further after roughly Q2 2013 which suggests that the release of the final rule on Basel III implementation did not trigger a significant response by the banks in our sample over and above the adjustments already made in response to the earlier proposed rule. Finally, taken together our results imply that the response we estimate to the proposed rules takes place well before the implementation date of the newly announced regulations, which was not before 2015. Banks started adjusting to the future framework much earlier than strictly necessary.

5.4 Decomposition

We next turn to the question how banks implemented the adjustment to the new capital rules we highlighted in the previous sections. To this effect we conduct a decomposition of the bank response into various elements of the balance sheet. Conceptually, banks can adjust their regulatory capital ratios in two main ways: by changing the amount of capital

and by changing the amount of risk-weighted assets. Furthermore, each of these two main components has their own set of underlying sub-components. For the numerator, one way that the amount of regulatory capital can be increased via retained earnings, that is, net income less dividends paid. Alternatively, banks could issue new equity to raise capital levels directly. Then, net income itself can be decomposed into pre-provision net revenue and provisions.

Table 8 shows the results of estimating the model with capital buffer interaction for these components of the regulatory tier 1 ratio. Panel A presents a decomposition of the numerator of the tier 1 ratio, tier 1 capital, and Panel B of the denominator, risk-weighted assets (RWA). In Panel A, all variables are normalized by total assets. In Panel B, variables in columns (2) to (4) present growth rates.

For the banks in our sample, we find that the tier 1 ratio response documented above works primarily through the numerator, that is, tier 1 capital (panel A, column (1)). Within tier 1 capital, the main driver of adjustment is income, driven by changes to provisions (panel A, columns (4) to (5)), suggesting that banks actively manage their income streams to bring the tier 1 capital ratio to its desired level. We also observe an increase in dividends and a decline in equity issued, which, while statistically significant, point in the direction of decreasing rather than increasing tier 1 capital.

The finding that banks prefer to uses earnings rather than issuing equity or freezing dividends is consistent with the pecking order theory Myers and Majluf (1984). In that theory, management would prefer to use external financing such as raising equity or reducing dividends only if the price of equity is higher than internal information justifies. Anticipating such behavior, investors punish banks that indeed do issue equity, making equity a costly form of finance. Our results suggest that when responding to unexpected

capital shocks, banks' reactions are in line with that prediction.

The use of retained earnings by banks to adjust capital ratios fits in with the longer-run analysis in Cohen and Scatigna (2016), although they suggest that for their sample period directly after the global financial crisis banks preferred to reduce dividend payouts to bring up retained earnings. More specifically on the use of provisions, earlier research has shown that banks had incentives to reduce provisions under the earlier Basel I regime beginning in 1990 and did so to bring up regulatory capital (see Beatty and Liao (2014) for a review of the literature).

Panel A suggests that banks reduce provisions to manage their earnings. We note that this finding does not imply that banks necessarily become riskier. If a bank has lower provisions because of an improvement in the quality of its loans, then the bank arguably has become safer. If loan quality remains unchanged or even deteriorates together with lower provisions, then the bank as a whole has become riskier. As we directly observe neither the quality of the underlying loan portfolio nor the overall pool of loan loss reserves assigned to it, we cannot distinguish between the two interpretations.

Moving to the denominator of the capital ratio, our data suggest that there is no overall response in terms of the denominator of the capital ratio, RWA (panel B, column (1)), although we find that total assets for banks that experienced a stronger negative decline in their tier 1 capital ratio grew both total assets and securities holdings faster than their peers (panel B, columns (2) and (4)).

The prominence of adjustments to the numerator of the tier 1 capital ratio in the response of US banks to the Basel III reforms stands in contrast to the findings reported for European banks. Studying the 2011 European Banking Authority capital exercise, Gropp et al. (2019) and Mésonnier and Monks (2015) find that banks for which the new require-

ments were binding adjusted the denominator of the regulatory capital ratio by reducing risk-weighted assets and lending and slowing overall loan growth. We show that in the US, the bank response to the incoming Basel III capital regulations appears to have mostly occurred in the numerator, thereby avoiding some of the potential harm to the real economy of reduced bank lending.

5.5 Asset, Liabilities, and Earnings Channels

Having established the timing and composition of the way banks in our sample respond to the new capital rules in Basel III, we turn to the question which channels drive the response of the banks. More specifically, we ask what other factors aside from and in addition to the capital buffer explain which banks respond more or less strongly to the publication of the proposed rules. We consider three different perspectives: (i) bank asset composition, (ii) bank funding composition, and (iii) bank earnings position. In each case we are guided by theory in selecting measures that may help explain the response of banks to the new capital rules.

The bank asset channel asks the question what kind of assets affect the strength of bank responses to the new capital regulation. We build on the literature relating bank risk and capital ratios. Allen, Carletti, and Marquez (2011) develop a theory model based on monitoring and show that banks' lending activities can lead them to operate with capital levels greater than the required minimum. Furlong and Keeley (1989) derive a model showing that a value-maximizing bank would decrease asset risk as capital increases. Hirtle et al. (2016) find that projections of capital declines in a stress test are largest for banks with higher asset or revenue risk in the period after the great financial crisis, suggesting banks more exposed to risk tend to operate with higher capital ratios.

Table 9 presents the results of adding an interaction of bank asset composition to our main model. The estimated coefficients then yield insights as to how the measure of bank asset risk affects bank response to the tighter capital regulation. We consider two cross-sectional measures, both of which are four-quarter averages measured just prior to the release of the new rules, standardized to be zero mean, standard deviation of one: the share of loans of total assets ($z(Loans)$) and the share of (risky) business loans of total assets ($z(BusLoans)$). Berger et al. (2008) argue that business loans are costly to replace, so that corporate borrowers have a preference for relatively higher capitalized lenders. We find that across our sample, the measure of business loans helps explain the effect of the capital buffer measure on the bank response to the new capital rules. For banks with a below mean share of business loans, the capital buffer effect is stronger than for those with a greater share of business loans, suggesting that as the loan portfolio increases in risk, the capital buffer motive that we find across the full sample, is less important. This finding is consistent with the prediction of Allen, Carletti, and Marquez (2011) that banks with more monitoring intensive lending will tend to operate with capital ratios above the regulatory minimum. The level of capital requirements, and by implication changes to the requirements, will be less important to such banks. The overall share of loans, $z(Loans)$, does not show a significant effect, suggesting that it is the composition of the loan book, rather than overall loan volume, that drives the effect we document.

We next turn to the bank funding channel. Theory predicts that banks relying relatively more on deposits, and specifically low-cost retail deposits, experience less pressure to maintain capital ratios much above the required minimum (Allen, Carletti, and Marquez, 2011). Such banks can build on a stable funding basis and may be shielded from some of the capital pressures that banks with lower deposit funding are exposed to. In

the empirical literature, results are mixed. While Lindquist (2004) suggests that banks are willing to invest in building up excess capital buffers as a sign of solvency in order to attract uninsured deposits and money market funding sources, Berger et al. (2008) find that banks' target capital ratios increase with the reliance of the bank on retail deposits as a share of total liabilities.

Table 10 considers two measures of deposit funding prior to the release of the new rules, both again as four-quarter averages over Q3 2011 to Q2 2012, standardized: (i) the share of total deposits to total liabilities (z(TotalDep)) and (ii) the (narrower) share of retail deposits to total liabilities (z(RetailDep)). We find that it is the narrower, more specific measure of retail deposits that influences the bank response: Banks with greater access to retail deposits both respond less aggressively to the new rules overall and have a less prominent capital buffer channel (columns (2) and (4)). That is, banks with a greater share of retail deposits both respond less strongly to the new rules, and it is less important for them how close they are to the regulatory minimum. The effect works through retail deposits specifically, as the broader total deposits measure has no statistically significant effect.

Finally, we investigate the role of bank earnings in explaining the bank response to new capital regulations. For income, banks with relatively larger retained earnings would be expected to maintain higher capital ratios. In the pecking order theory of capital, firms prefer to rely on internal financing to external financing for potential future needs (Myers and Majluf, 1984), implying that banks may choose to retain earnings to maintain a target capital level. Table 11 presents our findings considering both the flow of earnings, namely returns on average assets ($z(ROAA)$), and the stock of retained earnings ($z(RetEarnings)$).[9]

[9]Both variables are averaged over the four quarters prior to the new regulation and standardized.

We find that both the retained earnings measures and, to a lesser extent, the returns on average assets measure show a statistically significant negative effect on the strength of the capital buffer. This result implies that the response of a bank with earnings above the mean will be more sensitive to level of the capital buffer prior to the announcement of the new rules, which is consistent with high-earning banks having a greater ability to adjust their tier 1 capital ratio compared to banks with lower earnings.

6 Conclusion

We have studied the response of US banks to changes to the capital regulations introduced by the adoption of Basel III. Our key results show a strong response by the banks in our sample to the new rules announced in 2012: banks that were more adversely impacted by the proposed rules and experienced a greater decline in their regulatory tier 1 ratios increased capital ratios following the announcement relative to their peers. Overall, the tighter capital rules of Basel III as implemented by the US regulators appear to have had the desired effect: banks that were more exposed to the new rules took steps to bring up their regulatory capital ratios.

In the cross section of banks in our sample, we see a stronger response for regional banks compared to community banks. Furthermore, among regional banks the response is stronger for those institutions with higher capital buffers prior to the announcement of the new rules. These findings suggest that banks in the different size groups may be driven by different motivations in making their decisions about how much capital to hold above regulatory minimums. As regards the question how banks achieve an adjustment to their regulatory capital ratios, our evidence points toward income management, via provisions,

as being the main adjustment channel.

Importantly, our analysis of the timing of the response shows that US banks started adjusting their tier 1 capital ratios soon after the announcement of the proposed rules in 2012. The new ways of computing regulatory capital ratios under Basel III were not fully in force until early 2015, and in many cases even later than that. Thus, our findings emphasize the importance of the announcement of regulatory changes for the affected banks. Banks could have continued with their existing regulatory capital policy for a substantial time following the announcement of the proposed rules in 2012. Instead, we find that they respond well before the full implementation of the new rules. This suggests that, in making decisions concerning their target levels of regulatory capital, banks respond to incentives beyond the direct constraint imposed by regulations in force. Such incentives might include discipline imposed by capital markets, which care about whether a bank is well-positioned under the incoming regulations well before they take effect.

The early, pre-emptive response by banks to announced regulation not yet in force has implications for regulators and policy makers. An early response following just the announcement of future regulation can be useful as it might provide some of the intended benefits of the new regulatory regime even before it is fully in force. However, the quick response also suggests limits to the ability of regulators to manage the timing of the impact of new regulations, for example, when using a phase-in period.

Our paper leaves several questions to be addressed by future research. It would be instructive to compare our results to other instances of regulatory change, for example, in light of the recently published Basel III endgame proposals, or across different international regulatory frameworks. Moreover, we exclude large banks from our analysis due to the additional effects imposed by the DFA on those institutions. An analysis that success-

fully decomposes the capital impacts of DFA-related enhanced prudential standards and Basel III could inform policy makers on the individual impact of the different elements that were at work in these contemporaneous policy changes.

References

Acemoglu, **Daron**, **David H. Autor**, and **David Lyle** (2004). "Women, War, and Wages: The Effect of Female Labor Supply on the Wage Structure at Midcentury." *Journal of Political Economy* 112.3 (June 1, 2004), pp. 497–551. DOI: 10.1086/383100.

Acharya, **Viral V.**, **Allen N. Berger**, and **Raluca A. Roman** (2018). "Lending Implications of U.S. Bank Stress Tests: Costs or Benefits?" *Journal of Financial Intermediation* 34 (Apr. 2018), pp. 58–90. DOI: 10.1016/j.jfi.2018.01.004.

Aiyar, **Shekhar**, **Charles W. Calomiris**, **John Hooley**, **Yevgeniya Korniyenko**, and **Tomasz Wieladek** (2014). "The International Transmission of Bank Capital Requirements: Evidence from the UK." *Journal of Financial Economics* 113.3 (Sept. 1, 2014), pp. 368–382. DOI: 10.1016/j.jfineco.2014.05.003.

Allen, **Franklin**, **Elena Carletti**, and **Robert Marquez** (2011). "Credit Market Competition and Capital Regulation." *The Review of Financial Studies* 24.4 (Apr. 1, 2011), pp. 983–1018. DOI: 10.1093/rfs/hhp089.

Arnould, **Guillaume**, **Benjamin Guin**, **Steven R. G. Ongena**, and **Paolo Siciliani** (2020). "(When) Do Banks React to Anticipated Capital Reliefs?" *SSRN Electronic Journal*. DOI: 10.2139/ssrn.3733513.

Auer, **Raphael**, **Alexandra Matyunina**, and **Steven Ongena** (2022). "The Countercyclical Capital Buffer and the Composition of Bank Lending." *Journal of Financial Intermediation* (Feb. 2022), p. 100965. DOI: 10.1016/j.jfi.2022.100965.

Basel Committee on Banking Supervision (2009). *International Framework for Liquidity Risk Measurement, Standards and Monitoring*. Dec. 2009.

Beatty, **Anne** and **Scott Liao** (2014). "Financial Accounting in the Banking Industry: A Review of the Empirical Literature." *Journal of Accounting and Economics*. 2013 Conference Issue 58.2 (Nov. 1, 2014), pp. 339–383. DOI: 10.1016/j.jacceco.2014.08.009.

Berger, **Allen N.**, **Robert DeYoung**, **Mark J. Flannery**, **David Lee**, and **Özde Öztekin** (2008). "How Do Large Banking Organizations Manage Their Capital Ratios?" *Journal of Financial Services Research* 34.2-3, pp. 123–149. DOI: 10.1007/s10693-008-0044-5.

Berrospide, **Jose M.** and **Rochelle M. Edge** (2016). *The Effects of Bank Capital Requirements on Bank Lending: What Can We Learn from the Post-Crisis Regulatory Reforms?* Working Paper, Federal Reserve Board, Dec. 2016.

Berrospide, **Jose M.** and **Rochelle M. Edge** (2024). "Bank Capital Buffers and Lending, Firm Financing and Spending: What Can We Learn from Five Years of Stress Test Results?" *Journal of Financial Intermediation* 57 (Jan. 2024), p. 101061. DOI: 10.1016/j.jfi.2023.101061.

Board of Governors of the Federal Reserve System (2012). *Testimony by Michael S. Gibson, Director, Division of Banking Supervision and Regulation, on Basel III*. Board of Governors of the Federal Reserve System, Nov. 14, 2012.

Callaway, **Brantly**, **Andrew Goodman-Bacon**, and **Pedro H. C. Sant'Anna** (2021). "Difference-in-Differences with a Continuous Treatment." July 9, 2021. arXiv: 2107.02637 [econ].

Cohen, **Benjamin H.** and **Michela Scatigna** (2016). "Banks and Capital Requirements: Channels of Adjustment." *Journal of Banking & Finance* 69 (Aug. 2016), S56–S69. DOI: 10.1016/j.jbankfin.2015.09.022.

Cortés, **Kristle R.**, **Yuliya Demyanyk**, **Lei Li**, **Elena Loutskina**, and **Philip E. Strahan** (2020). "Stress Tests and Small Business Lending." *Journal of Financial Economics* 136.1 (Apr. 2020), pp. 260–279. DOI: 10.1016/j.jfineco.2019.08.008.

Doerr, **Sebastian** (2021). "Stress Tests, Entrepreneurship, and Innovation." *Review of Finance* 25.5 (Oct. 7, 2021), pp. 1609–1637. DOI: 10.1093/rof/rfab007.

Flannery, **Mark J** and **Kasturi P Rangan** (2006). "Partial Adjustment toward Target Capital Structures." *Journal of Financial Economics*, p. 38. DOI: 10.1016/j.jfineco.2005.03.004.

Fraisse, **Henri**, **Mathias Lé**, and **David Thesmar** (2020). "The Real Effects of Bank Capital Requirements." *Management Science* 66.1 (Jan. 2020), pp. 5–23. DOI: 10.1287/mnsc.2018.3222.

Francis, **William B.** and **Matthew Osborne** (2012). "Capital Requirements and Bank Behavior in the Uk: Are There Lessons for International Capital Standards?" *Journal of Banking & Finance*. Perspectives on International and Corporate Finance 36.3 (Mar. 1, 2012), pp. 803–816. DOI: 10.1016/j.jbankfin.2011.09.011.

Furfine, **Craig** (2001). "Bank Portfolio Allocation: The Impact of Capital Requirements, Regulatory Monitoring, and Economic Conditions." *Journal of Financial Services Research* 20.1 (Sept. 1, 2001), pp. 33–56. DOI: 10.1023/A:1011147609099.

Furlong, **Frederick T.** and **Michael C. Keeley** (1989). "Capital Regulation and Bank Risk-Taking: A Note." *Journal of Banking & Finance* 13.6 (Dec. 1, 1989), pp. 883–891. DOI: 10.1016/0378-4266(89)90008-3.

Gropp, **Reint**, **Thomas Mosk**, **Steven Ongena**, **Ines Simac**, and **Carlo Wix** (2023). "Supranational Rules, National Discretion: Increasing versus Inflating Regulatory Bank Capital?" *Journal of Financial and Quantitative Analysis* (Mar. 10, 2023), pp. 1–33. DOI: 10.1017/S002210902300025X.

Gropp, **Reint**, **Thomas Mosk**, **Steven Ongena**, and **Carlo Wix** (2019). "Banks Response to Higher Capital Requirements: Evidence from a Quasi-Natural Experiment." *The Review of Financial Studies* 32.1 (Jan. 1, 2019), pp. 266–299. DOI: 10.1093/rfs/hhy052.

Hirtle, **Beverly**, **Anna Kovner**, **James Vickery**, and **Meru Bhanot** (2016). "Assessing Financial Stability: The Capital and Loss Assessment under Stress Scenarios (Class) Model." *Journal of Banking & Finance* 69 (Aug. 2016), S35–S55. DOI: 10.1016/j.jbankfin.2015.09.021.

Hirtle, **Beverly** and **Andreas Lehnert** (2015). "Supervisory Stress Tests." *Annual Review of Financial Economics* 7.1 (Dec. 7, 2015), pp. 339–355. DOI: 10.1146/annurev-financial-111914-042040.

Imbierowicz, **Björn**, **Jonas Kragh**, and **Jesper Rangvid** (2018). "Time-Varying Capital Requirements and Disclosure Rules: Effects on Capitalization and Lending Decisions." *Journal of Money, Credit and Banking* 50.4 (June 2018), pp. 573–602. DOI: 10.1111/jmcb.12506.

Irani, **Rustom M**, **Rajkamal Iyer**, **Ralf R Meisenzahl**, and **José-Luis Peydró** (2021). "The Rise of Shadow Banking: Evidence from Capital Regulation." *The Review of Financial Studies* 34.5 (Apr. 16, 2021), pp. 2181–2235. DOI: 10.1093/rfs/hhaa106.

Jiménez, **Gabriel**, **Steven Ongena**, **José-Luis Peydró**, and **Jesús Saurina** (2017). "Macroprudential Policy, Countercyclical Bank Capital Buffers, and Credit Supply: Evidence from the Spanish Dynamic Provisioning Experiments." *Journal of Political Economy* 125.6 (Aug. 7, 2017), pp. 2126–2177. DOI: 10.1086/694289.

Khwaja, **Asim Ijaz** and **Atif Mian** (2008). "Tracing the Impact of Bank Liquidity Shocks: Evidence from an Emerging Market." *American Economic Review* 98.4 (Aug. 2008), pp. 1413–1442. DOI: 10.1257/aer.98.4.1413.

Kok, **Christoffer**, **Carola Müller**, **Steven Ongena**, and **Cosimo Pancaro** (2023). "The Disciplining Effect of Supervisory Scrutiny in the EU-wide Stress Test." *Journal of Financial Intermediation* 53 (Jan. 2023), p. 101015. DOI: 10.1016/j.jfi.2022.101015.

Lindquist, **Kjersti-Gro** (2004). "Banks' Buffer Capital: How Important Is Risk." *Journal of International Money and Finance* 23.3 (Apr. 2004), pp. 493–513. DOI: 10.1016/j.jimonfin.2004.01.006.

Mésonnier, **Jean-Stéphane** and **Allen Monks** (2015). "Did the EBA Capital Exercise Cause a Credit Crunch in the Euro Area?" *International Journal of Central Banking* 11.3 (June 2015), pp. 75–117.

Myers, **Stewart C.** and **Nicholas S. Majluf** (1984). "Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have." *Journal of Financial Economics* 13.2 (June 1984), pp. 187–221. DOI: 10.1016/0304-405X(84)90023-0.

Pérignon, **Christophe**, **David Thesmar**, and **Guillaume Vuillemey** (2018). "Wholesale Funding Dry-Ups: Wholesale Funding Dry-Ups." *The Journal of Finance* 73.2 (Apr. 2018), pp. 575–617. DOI: 10.1111/jofi.12592.

Shahhosseini, **Mehrnoush** (2020). *Capital Requirements and Banks' Behavior: Evidence from Bank Stress Tests*. Nov. 19, 2020, p. 47.

Appendix

A List of Relevant Press Releases and Publications by the BCBS and US Regulators

This table provides links to key publications by the BCBC on Basel III and by the US banking regulators regarding the implementation of Basel III and the Dodd-Frank Act 2010.

Date	Title & Link
BCBS announcements of Basel III framework	
17 Dec 2009	Press release on consultation package "Strengthening the resilience of the banking sector" (https://www.bis.org/publ/bcbs164.htm)
26 Jul 2010	Press release on outline agreement "The Group of Governors and Heads of Supervision reach broad agreement on Basel Committee capital and liquidity reform package" (https://www.bis.org/press/p100726.htm)
12 Sep 2010	Press release on framework announcement "Group of Governors and Heads of Supervision announces higher global minimum capital standards" (https://www.bis.org/press/p100912.htm)
US banking regulators' publications on Basel III implementation	
12 Jun 2012	Press release on proposed rule "Federal Reserve Board invites comment on three proposed rules intended to help ensure banks maintain strong capital positions" (https://www.federalreserve.gov/newsevents/pressreleases/bcreg20120607a.htm)
02 Jul 2013	Press release on final rule "Federal Reserve Board approves final rule to help ensure banks maintain strong capital positions" (https://www.federalreserve.gov/newsevents/pressreleases/bcreg20130702a.htm)
US banking regulators' publications on Dodd Frank Act 2010 implementation	
20 Dec 2011	Press release on DFA proposed rule "Federal Reserve Board proposes steps to strengthen regulation and supervision of large bank holding companies and systemically important nonbank financial firms" (https://www.federalreserve.gov/newsevents/pressreleases/bcreg20111220a.htm)
18 Feb 2014	Press release on DFA final rule "Federal Reserve Board approves final rule strengthening supervision and regulation of large U.S. bank holding companies and foreign banking organizations" (https://www.federalreserve.gov/newsevents/pressreleases/bcreg20140218a.htm)

B Variable Definitions

Table 1: Definitions of Panel Variables

This table presents the definition of the panel variables used in the analysis and their derivation from the FR Y-9C forms. Flow measures are reported in FR Y-9C as cumulative sums for the current year and were converted to quarterly flows.

Variable	Definition	FR Y-9C fields / formula
Log Total Assets	Natural logarithm of total assets	Log (BHCK2170)
Log Loans	Natural logarithm of total loans	Log (BHCK2122)
Log Securities	Natural logarithm of total securities	Log (BHCK1754 + BHCK1773)
ROAA	Return on average assets computed as net income divided by average total assets	BHCK4340 / BHCK3368
Loans	Total loans normalized by total assets	BHCK2122 / BHCK2170
T1Ratio	Tier 1 capital ratio under pre-Basel III capital framework as ratio of tier 1 capital and risk-weighted assets	BHCK8274 / BHCKA223
T1RatioProp	Tier 1 capital ratio computed under the new regulations in the 2012 proposed rules	Computed from Y-9C data according to Attachment A, Board of Governors of the Federal Reserve System (2012)
T1CapitalProp	Tier 1 capital computed under the new regulations in the 2012 proposed rules normalized by total assets	Computed from Y-9C data according to Attachment A, Board of Governors of the Federal Reserve System (2012), then divided by BCHK2170
RWAProp	Risk-weighted assets computed under the new regulations in the 2012 proposed rules normalized by total assets	Computed from Y-9C data according to Attachment A, Board of Governors of the Federal Reserve System (2012), then divided by BCHK2170
Dividends	Dividends normalized by total assets	(BHCK4598 + BHCK4460) / BCHK2170
EquityIssued	Equity issued normalized by total assets	(BHCK3577 + BHCK3578 + BHCK3579 + BHCK3580 + BHCK4782 − BHCK4783) / BCHK2170
Income	Total net income normalized by total assets	BHCK4340 / BCHK2170
ChargeOffs	Change in charge-offs normalized by total assets	BHCKC079 / BCHK2170
Provisions	Change in provisions normalized by total assets	BHCK4230 / BCHK2170

Table 2: Definitions of Bank Level Variables

This table presents the definition of the bank level variables used in the analysis and their derivation from the FR Y-9C forms. Bank level variables reflect values measured in Q2 2012. Flow measures are reported in FR Y-9C as cumulative sums for the current year and were converted to quarterly flows.

Variable	**Definition**	**FR Y-9C fields / formula**
T1RatioDecline	Difference between T1RatioProp and the T1Ratio as reported in Y-9C	T1RatioProp − T1Ratio
CapBuffer	Capital Buffer defined as tier 1 capital ratio reported in Y-9C less minimum requirement of 4 percent	(T1Ratio − 0.04)
Loans	Total loans normalized by total assets	BHCK2122 / BHCK2170
BusLoans	Total (risky) business loans, consisting of C&I lending and non-owner occupied CRE lending, normalized by total assets	(BHCK1763 + BHCK1764 + BHDM1460 + BHCKF161 + BHCKF158 + BHCKF159) / BCHK2170
TotalDep	Total deposits normalized by total assets	(BHDM6631 + BHFN6631 + BHDM6636 + BHFN6636) / BCHK2170
RetailDep	Total retail deposits normalized by total assets	(BHCB3187 + BHOD3187 + BHCB2389 + BHOD2389 + BHCB6648 + BHOD6648 − BHDMA243 − BHDMA164) / BCHK2170
RetEarnings	Retained earnings normalized by total assets	BHCK3247 / BCHK2170
ROAA	Return on average assets computed as net income divided by average total assets	BHCK4340 / BHCK3368

C Figures

Figure 1: Timeline of Basel III Capital Regulation in the US

This figure presents a timeline showing the publication dates of the main frameworks and regulations regarding the implementation of Basel III in the US.

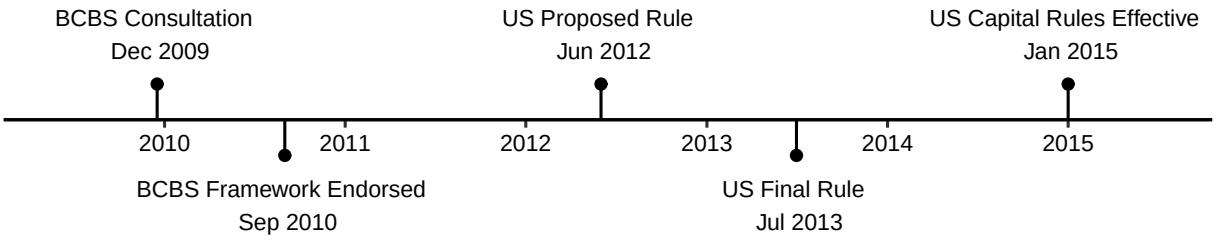
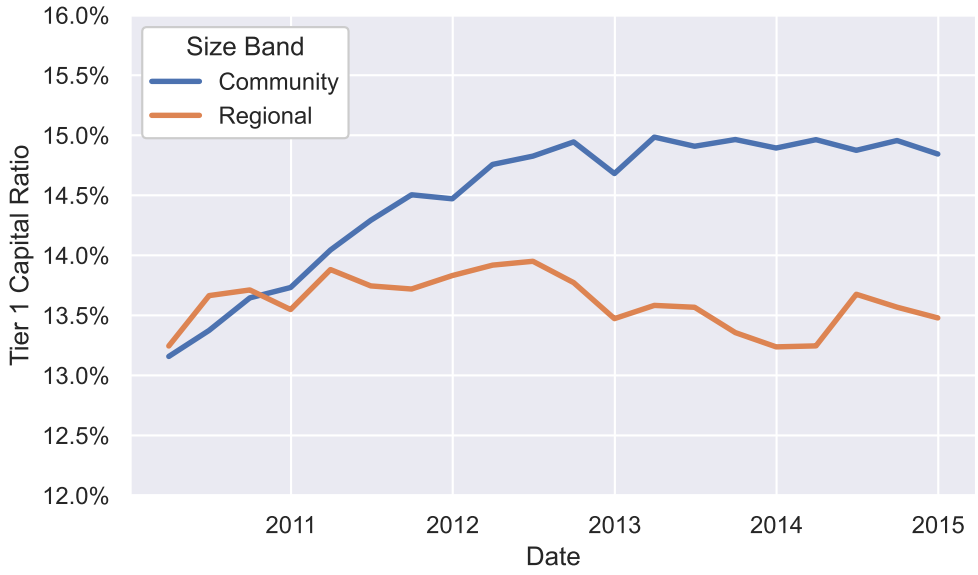


Figure 2: Time Series of Tier 1 Capital Ratios

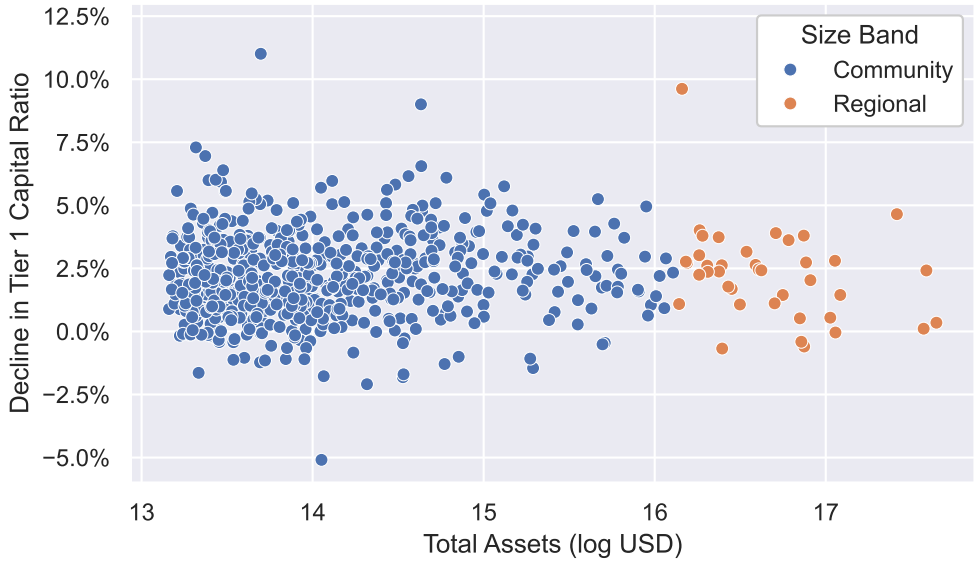
This chart shows the mean tier 1 capital ratio by quarter for community and regional banks during the sample period.



Source: FR Y-9C.

Figure 3: Distribution of Tier 1 Capital Ratio Decline

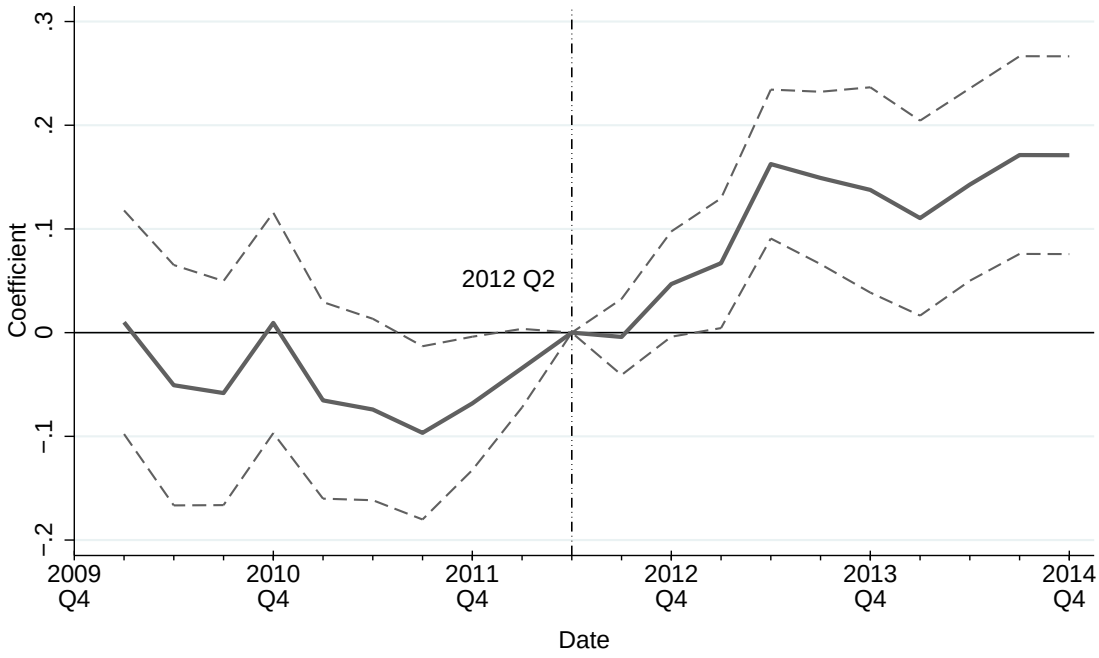
This scatter plots shows for each bank the value of *T1RatioDecline*, the difference in the tier 1 capital ratio when computed under the new proposed rules and the tier 1 capital ratio reported in form Y-9C, both for Q2 2012.



Source: FR Y-9C.

Figure 4: Timing of Bank Response to Tier 1 Capital Ratio Decline

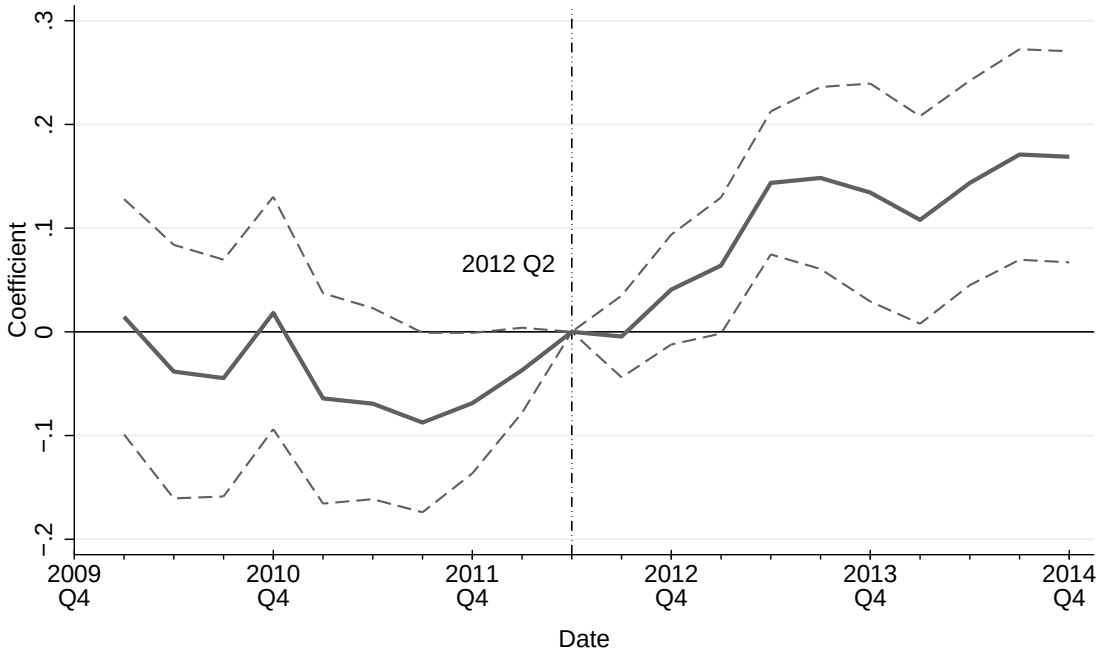
This chart plots coefficient estimates and 90 percent confidence intervals for the interaction of individual quarter fixed effects and the decline in tier 1 ratio from the panel regression in equation 2 replacing *After* with a set of quarter indicator variables.



Source: FR Y-9C.

Figure 5: Timing of Bank Response to Tier 1 Capital Ratio Decline — Community Bank Sample

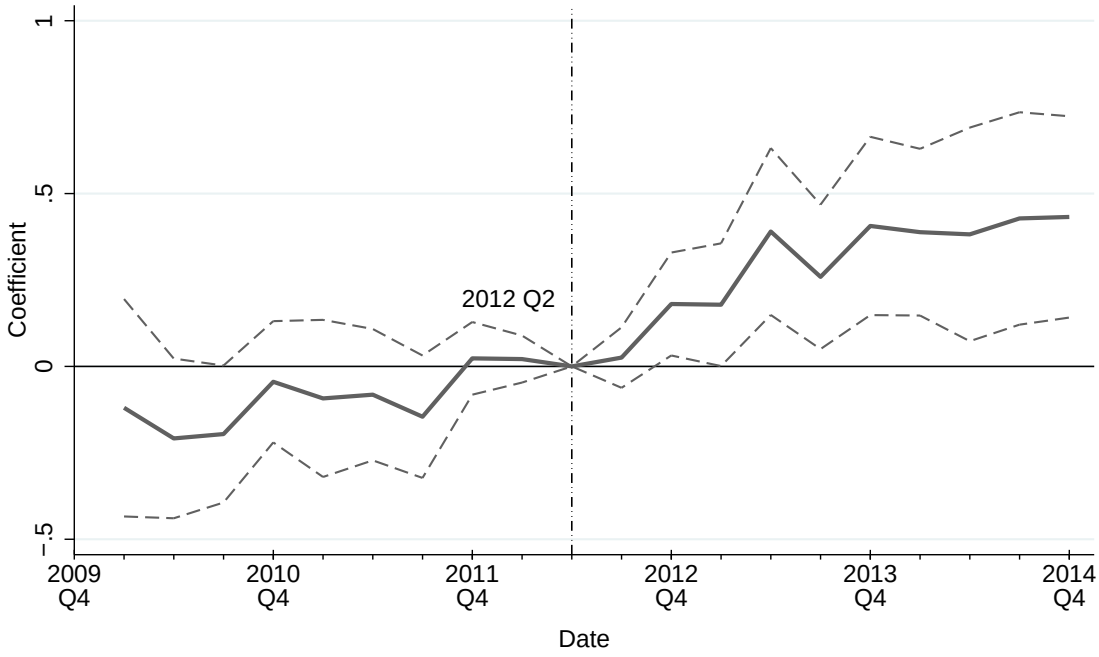
This chart plots coefficient estimates and 90 percent confidence intervals for the interaction of individual quarter fixed effects and the decline in tier 1 ratio from the panel regression in equation 2 replacing *After* with a set of quarter indicator variables. Sample restricted to Community banks only.



Source: FR Y-9C.

Figure 6: Timing of Bank Response to Tier 1 Capital Ratio Decline — Regional Bank Sample

This chart plots coefficient estimates and 90 percent confidence intervals for the interaction of individual quarter fixed effects and the decline in tier 1 ratio from the panel regression in equation 2 replacing *After* with a set of quarter indicator variables. Sample restricted to Regional banks only.



Source: FR Y-9C.

D Tables

Table 3: Summary Statistics — Panel Variables

This table shows summary statistics for the panel variables in the data.

	Full Sample					
	Obs	Mean	SD	10th	Median	90th
After	13380	0.500	0.500	0	0.500	1
Log TotalAssets	13380	14.19	0.902	13.33	13.91	15.59
Log Loans	13380	13.72	0.921	12.83	13.46	15.12
Log Securities	13380	12.52	1.158	11.26	12.44	14.07
ROAA	13380	0.00774	0.0168	0.000503	0.00805	0.0154
Loans	13380	0.642	0.125	0.482	0.655	0.788
T1RatioProp	13380	0.121	0.0612	0.0748	0.112	0.171
T1CapitalProp	13380	0.0881	0.0329	0.0587	0.0850	0.117
RWAProp	13380	0.755	0.118	0.611	0.764	0.895
Dividends	13380	0.000727	0.00259	0	0.000353	0.00162
EquityIssued	13380	0.000325	0.00461	-0.000109	0	0.000336
Income	13380	0.00188	0.00397	0.000127	0.00199	0.00379
ChargeOffs	13380	0.00137	0.00244	0.0000718	0.000637	0.00325
Provisions	13380	0.00112	0.00235	0	0.000538	0.00265

Table 4: Summary Statistics — Bank Level Variables

This table shows summary statistics for the bank-level variables used in the analysis. *T1RatioDecline* is the value for Q2 2012. All other measures are four-quarter averages of the underlying variable measured in Q2 2012.

	Mean	SD
T1RatioDecline	0.022	(0.017)
CapBuffer	0.106	(0.062)
Loans	0.629	(0.122)
BusLoans	0.435	(0.146)
TotalDep	0.897	(0.080)
RetailDep	0.616	(0.131)
RetEarnings	0.052	(0.054)
ROAA	0.007	(0.012)
Observations	669	

Table 5: Effect of Tier 1 Ratio Decline from Basel III Proposed Rules

This table shows results of a regression of the tier 1 ratio computed under the new proposed rules on quarter and bank fixed effects and interaction terms of *After*, *T1RatioDecline*, and $z(\textit{CapBuffer})$. $z(\textit{CapBuffer})$ is the four-quarter average of *CapBuffer* in Q2 2012, standardized to be mean zero and standard deviation of one. Additional controls are *Log TotalAssets*, *ROAA*, *Lagged ChargeOffs*, and *Loans*. Standard errors in parentheses. Standard errors are clustered at the bank level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Dependent variable: T1RatioProp

	(1)	(2)	(3)	(4)
After×T1RatioDecline	0.113	0.261***	0.0511	0.161**
	(0.106)	(0.0780)	(0.0939)	(0.0666)
After×z(CapBuffer)		0.00980		0.0120*
		(0.00746)		(0.00672)
After×T1RatioDecline×z(CapBuffer)		-0.318*		-0.301*
		(0.181)		(0.165)
Log TotalAssets			-0.0378***	-0.0411***
			(0.00878)	(0.00726)
ROAA			0.157***	0.169***
			(0.0302)	(0.0276)
Lagged ChargeOffs			-0.908***	-0.942***
			(0.222)	(0.209)
Loans			-0.151***	-0.150***
			(0.0183)	(0.0175)
Observations	13380	13380	13347	13347
Adjusted R^2	0.0894	0.127	0.244	0.287
Quarter and Bank FE	Yes	Yes	Yes	Yes
Additional Controls	No	No	Yes	Yes

Table 6: Effect of Tier 1 Ratio Decline from Basel III Proposed Rules — Size Interaction

This table shows results of a regression of the tier 1 ratio computed under the new proposed rules on quarter and bank fixed effects and interaction terms of *After*, *T1RatioDecline*, $z(CapBuffer)$, and *Regional*. $z(CapBuffer)$ is the four-quarter average of *CapBuffer* in Q2 2012, standardized to be mean zero and standard deviation of one. *Regional* is an indicator variable for whether a bank is a regional bank with total assets between $10 billion and $50 billion. While the empirical model is estimated with all level and interaction terms, the table only shows estimates for interactions of the main variable of interest, *T1RatioDecline*. Additional controls are *Log TotalAssets*, *ROAA*, *Lagged ChargeOffs*, and *Loans*. Standard errors in parentheses. Standard errors are clustered at the bank level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Dependent variable: T1RatioProp

	(1)	(2)
After×T1RatioDecline	0.251***	0.155**
	(0.0824)	(0.0702)
After×T1RatioDecline×z(CapBuffer)	-0.324*	-0.308*
	(0.183)	(0.167)
After×Regional×T1RatioDecline	0.196	0.134
	(0.147)	(0.128)
After×Regional×T1RatioDecline×z(CapBuffer)	0.635***	0.646***
	(0.213)	(0.201)
Observations	13380	13347
Adjusted R^2	0.130	0.289
Quarter FE	Yes	Yes
Additional Controls	No	Yes

Table 7: Effect of Tier 1 Ratio Decline from Basel III Proposed Rules by Size Group

This table shows results of a regression of the tier 1 ratio computed under the new proposed rules on quarter and bank fixed effects and interaction terms of *After*, *T1RatioDecline*, and $z(CapBuffer)$. $z(CapBuffer)$ is the four-quarter average of *CapBuffer* in Q2 2012, standardized to be mean zero and standard deviation of one. Columns (1) and (3) report results for a sample of community banks with total assets between $500 million and $10 billion. Columns (2) and (4) report results for a sample of regional banks with total assets between $10 billion and $50 billion. While the empirical model is estimated with all level and interaction terms, the table only shows estimates for interactions of the main variable of interest, *T1RatioDecline*. Additional controls are *Log TotalAssets*, *ROAA*, *Lagged ChargeOffs*, and *Loans*. Standard errors in parentheses. Standard errors are clustered at the bank level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Dependent variable: T1RatioProp

	(1)	(2)	(3)	(4)
After×T1RatioDecline	0.249***	0.419***	0.151**	0.340***
	(0.0825)	(0.130)	(0.0703)	(0.113)
After×T1RatioDecline×z(CapBuffer)	-0.331*	0.139***	-0.315*	0.160***
	(0.187)	(0.0502)	(0.171)	(0.0529)
Observations	12640	740	12607	740
Adjusted R^2	0.132	0.107	0.290	0.281
Quarter and Bank FE	Yes	Yes	Yes	Yes
Additional Controls	No	No	Yes	Yes
Sample	Community	Regional	Community	Regional

Table 8: Decomposition of Effect of Tier 1 Ratio Decline

This table shows results of a regression of various components of the tier 1 ratio on quarter and bank fixed effects and interaction terms of *After*, *T1RatioDecline*, and $z(CapBuffer)$. $z(CapBuffer)$ is the four-quarter average of *CapBuffer*, measured in Q2 2012, and standardized to be mean zero and standard deviation of one. *Panel A* shows components of the numerator, tier 1 capital. *Panel B* shows components of the denominator, risk weighted assets. *T1CapitalProp* is tier 1 capital computed under the new proposed rules as a share of total assets. *Dividends*, *EquityIssued*, *Income*, *Provisions*, and *ChargeOffs* are all reported as share of total assets. *RWAProp* is risk weighted assets computed under the new proposed rules as a share of total assets. Δ *Log TotalAssets*, Δ *Log Loans*, and Δ *Log Securities* are changes in the natural logarithm of the underlying variable and equivalent to growth rates. While the empirical model is estimated with all level and interaction terms, the table only shows estimates for interactions of the main variable of interest, *T1RatioDecline*. Standard errors in parentheses. Standard errors are clustered at the bank level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Panel A: Tier 1 Capital Elements

	(1) T1CapitalProp	(2) Dividends	(3) EquityIssued	(4) Income	(5) Provisions
After×T1RatioDecline	0.178***	0.00266*	-0.00861**	0.0159***	-0.0148***
	(0.0388)	(0.00157)	(0.00435)	(0.00612)	(0.00439)
After×T1RatioDecline×z(CapBuffer)	-0.0669	-0.00534*	0.000182	-0.00140	0.000219
	(0.0512)	(0.00304)	(0.00231)	(0.00451)	(0.00294)
Observations	13380	13380	13380	13380	13380
Adjusted R^2	0.106	0.00852	0.00159	0.0488	0.155
Quarter and Bank FE	Yes	Yes	Yes	Yes	Yes
Additional Controls	No	No	No	No	No

Panel B: Bank Asset Composition

	(1) RWAProp	(2) Δ Log TotalAssets	(3) Δ Log Loans	(4) Δ Log Securities
After×T1RatioDecline	-0.194	0.152***	0.0483	0.398**
	(0.164)	(0.0466)	(0.0627)	(0.154)
After×T1RatioDecline×z(CapBuffer)	0.236*	-0.0153	0.0321	-0.149*
	(0.139)	(0.0304)	(0.0501)	(0.0758)
Observations	13380	13349	13349	13349
Adjusted R^2	0.133	0.0268	0.0861	0.0164
Quarter and Bank FE	Yes	Yes	Yes	Yes
Additional Controls	No	No	No	No

Table 9: Bank Asset Channel

This table shows results of a regression of the tier 1 ratio computed under the new proposed rules on quarter and bank fixed effects and interaction terms of *After*, *T1RatioDecline*, $z(CapBuffer)$, and one of $z(Loans)$ or $z(BusLoans)$. $z(CapBuffer)$, $z(Loans)$, and $z(BusLoans)$ are four-quarter averages of the underlying variable, measured in Q2 2012, and standardized to be mean zero and standard deviation of one. *Loans* is total loans as a share of total assets. *BusLoans* is business loans as a share of total assets. Columns (1) and (3) report results for $z(Loans)$. Columns (2) and (4) report results for $z(BusLoans)$. While the empirical model is estimated with all level and interaction terms, the table only shows estimates for interactions of the main variable of interest, *T1RatioDecline*. Additional controls are *Log TotalAssets*, *ROAA*, *Lagged ChargeOffs*, and *Loans*. Standard errors in parentheses. Standard errors are clustered at the bank level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Dependent variable: T1RatioProp

	(1)	(2)	(3)	(4)
After×T1RatioDecline	0.198**	0.311***	0.0731	0.215***
	(0.0806)	(0.0785)	(0.0713)	(0.0704)
After×T1RatioDecline×z(CapBuffer)	-0.342*	-0.297*	-0.352**	-0.290*
	(0.177)	(0.171)	(0.163)	(0.158)
After×T1RatioDecline×z(Loans)	-0.237**		-0.281***	
	(0.108)		(0.0952)	
After×T1RatioDecline×z(CapBuffer)×z(Loans)	0.0281		0.0278	
	(0.0660)		(0.0613)	
After×T1RatioDecline×z(BusLoans)		-0.142		-0.180**
		(0.0866)		(0.0757)
After×T1RatioDecline×z(CapBuffer)×z(BusLoans)		0.245***		0.212***
		(0.0825)		(0.0773)
Observations	13380	13380	13347	13347
Adjusted R^2	0.170	0.160	0.327	0.311
Quarter and Bank FE	Yes	Yes	Yes	Yes
Additional Controls	No	No	Yes	Yes

Table 10: Bank Funding Channel

This table shows results of a regression of the tier 1 ratio computed under the new proposed rules on quarter and bank fixed effects and interaction terms of *After*, *T1RatioDecline*, $z(CapBuffer)$, and one of $z(TotalDep)$ or $z(RetailDep)$. $z(CapBuffer)$, $z(TotalDep)$, and $z(RetailDep)$ are four-quarter averages of the underlying variable, measured in Q2 2012, and standardized to be mean zero and standard deviation of one. *TotalDep* is total deposits as a share of total assets. *RetailDep* is retail deposits as a share of total assets. Columns (1) and (3) report results for $z(TotalDep)$. Columns (2) and (4) report results for $z(RetailDep)$. While the empirical model is estimated with all level and interaction terms, the table only shows estimates for interactions of the main variable of interest, *T1RatioDecline*. Additional controls are *Log TotalAssets*, *ROAA*, *Lagged ChargeOffs*, and *Loans*. Standard errors in parentheses. Standard errors are clustered at the bank level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Dependent variable: T1RatioProp

	(1)	(2)	(3)	(4)
After×T1RatioDecline	0.194***	0.266***	0.0930	0.176**
	(0.0688)	(0.0754)	(0.0596)	(0.0689)
After×T1RatioDecline×z(CapBuffer)	-0.0908	0.0694	-0.0918	0.0418
	(0.181)	(0.156)	(0.164)	(0.143)
After×T1RatioDecline×z(TotalDep)	0.0499		0.00861	
	(0.114)		(0.0902)	
After×T1RatioDecline×z(CapBuffer)×z(TotalDep)	-0.0132		-0.00594	
	(0.0649)		(0.0550)	
After×T1RatioDecline×z(RetailDep)		-0.267**		-0.249**
		(0.105)		(0.0989)
After×T1RatioDecline×z(CapBuffer)×z(RetailDep)		0.329***		0.294***
		(0.0909)		(0.0844)
Observations	13380	13380	13347	13347
Adjusted R^2	0.176	0.188	0.329	0.335
Quarter and Bank FE	Yes	Yes	Yes	Yes
Additional Controls	No	No	Yes	Yes

Table 11: Bank Earnings Channel

This table shows results of a regression of the tier 1 ratio computed under the new proposed rules on quarter and bank fixed effects and interaction terms of *After*, *T1RatioDecline*, $z(CapBuffer)$, and one of $z(RetEarnings)$ or $z(ROAA)$. $z(CapBuffer)$, $z(RetEarnings)$, and $z(ROAA)$ are four-quarter averages of the underlying variable, measured in Q2 2012, and standardized to be mean zero and standard deviation of one. *RetEarnings* is retained earnings as a share of total assets. *ROAA* is return on average assets. Columns (1) and (3) report results for $z(RetEarnings)$. Columns (2) and (4) report results for $z(ROAA)$. While the empirical model is estimated with all level and interaction terms, the table only shows estimates for interactions of the main variable of interest, *T1RatioDecline*. Additional controls are *Log TotalAssets*, *Lagged ChargeOffs*, and *Loans*. Standard errors in parentheses. Standard errors are clustered at the bank level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Dependent variable: T1RatioProp

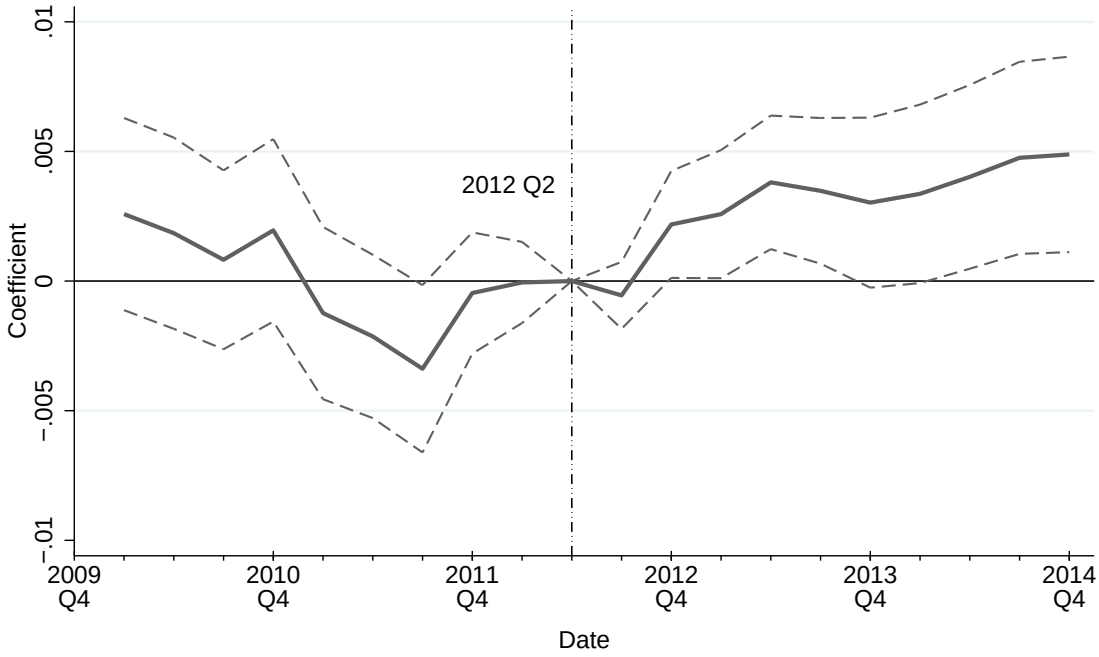
	(1)	(2)	(3)	(4)
After×T1RatioDecline	0.279***	0.307***	0.197***	0.239***
	(0.0789)	(0.0772)	(0.0702)	(0.0615)
After×T1RatioDecline×z(CapBuffer)	-0.119	-0.123	-0.127	-0.112
	(0.180)	(0.134)	(0.164)	(0.117)
After×T1RatioDecline×z(RetEarnings)	0.00162		0.00931	
	(0.121)		(0.113)	
After×T1RatioDecline×z(CapBuffer)×z(RetEarnings)	-0.0913**		-0.0838**	
	(0.0378)		(0.0356)	
After×T1RatioDecline×z(ROAA)		0.0670		0.0642
		(0.0961)		(0.0927)
After×T1RatioDecline×z(CapBuffer)×z(ROAA)		-0.0648		-0.0805**
		(0.0441)		(0.0389)
Observations	13380	13380	13347	13347
Adjusted R^2	0.179	0.204	0.307	0.358
Quarter and Bank FE	Yes	Yes	Yes	Yes
Additional Controls	No	No	Yes	Yes

Internet Appendix

IA-A Figures

Figure 7: Timing of Bank Response to Top Quartile Tier 1 Capital Ratio Decline

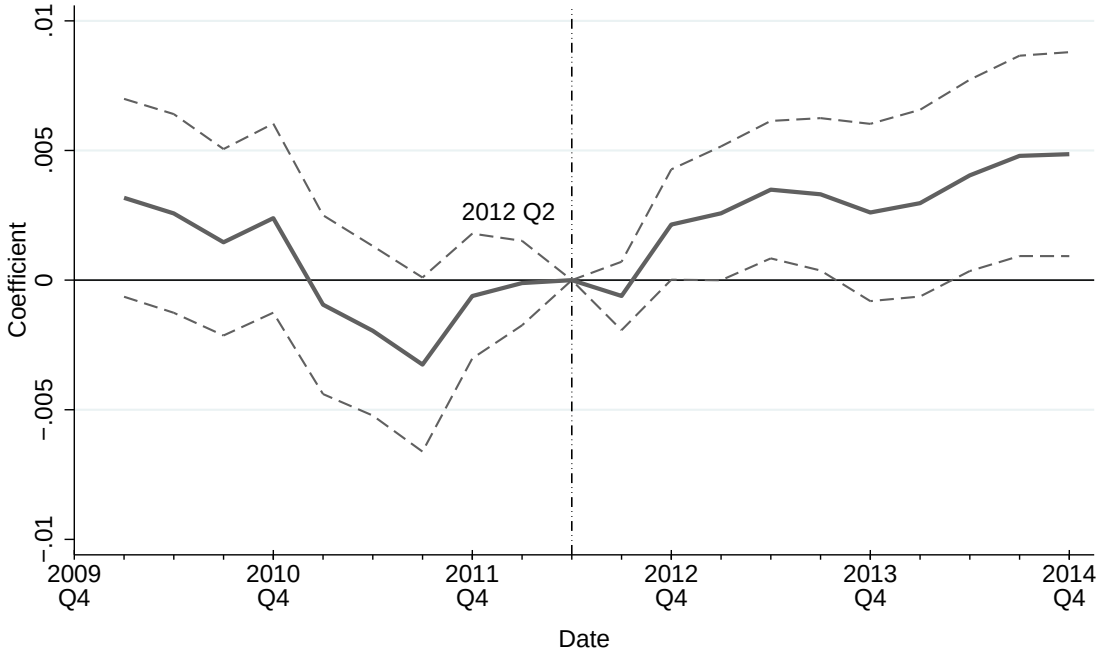
This chart plots the coefficient estimates and 90 percent confidence intervals for the interaction of individual quarter fixed effects and a top quartile indicator for the decline in tier 1 ratio from the panel regression in equation 2 replacing *After* with a set of quarter indicator variables.



Source: FR Y-9C.

Figure 8: Timing of Bank Response to Top Quartile Tier 1 Capital Ratio Decline — Community Bank Sample

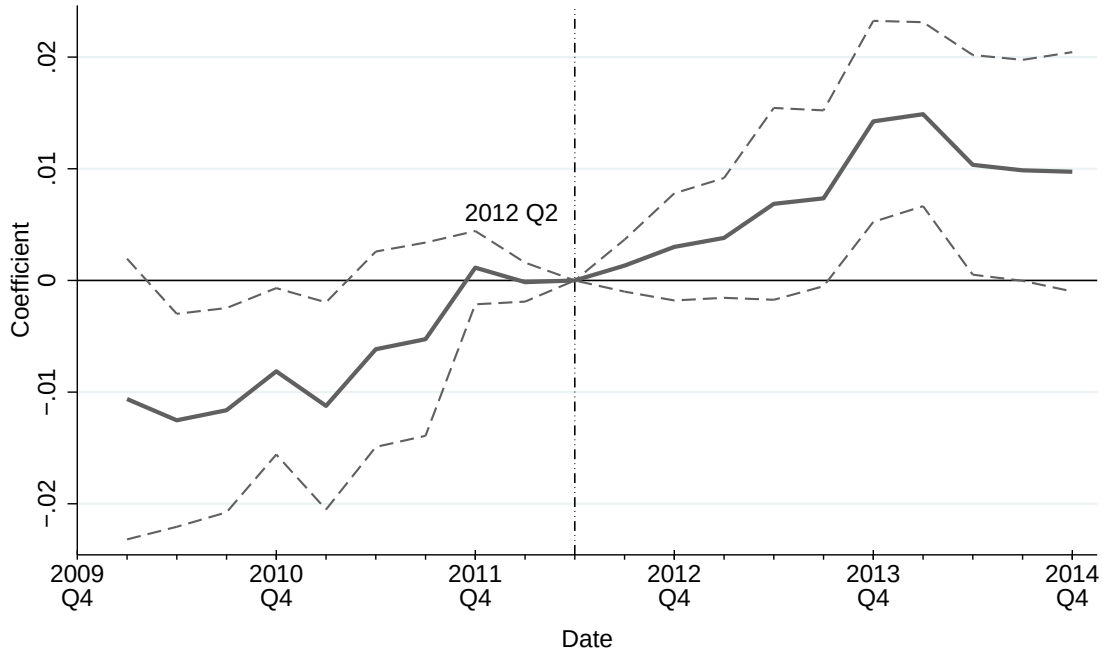
This chart plots coefficient estimates and 90 percent confidence intervals for the interaction of individual quarter fixed effects and the decline in tier 1 ratio from the panel regression in equation 2 replacing *After* with a set of quarter indicator variables. Sample restricted to Community banks only.



Source: FR Y-9C.

Figure 9: Timing of Bank Response to Top Quartile Tier 1 Capital Ratio Decline — Regional Bank Sample

This chart plots coefficient estimates and 90 percent confidence intervals for the interaction of individual quarter fixed effects and the decline in tier 1 ratio from the panel regression in equation 2 replacing *After* with a set of quarter indicator variables. Sample restricted to Regional banks only.



Source: FR Y-9C.

IA-B Tables

Table 12: Effect of Top Quartile Tier 1 Ratio Decline from Basel III Proposed Rule

This table shows results of a regression of the tier 1 ratio computed under the new proposed rules on quarter and bank fixed effects and interaction terms of *After*, $Q_{4th}(\textit{T1RatioDecline})$, and $z(\textit{CapBuffer})$. $Q_{4th}(\textit{T1RatioDecline})$ denotes an indicator variable for the fourth quartile of the tier 1 ratio decline measure. $z(\textit{CapBuffer})$ is the four-quarter average of *CapBuffer* in Q2 2012, standardized to be mean zero and standard deviation of one. Additional controls are *Log TotalAssets*, *ROAA*, *Lagged ChargeOffs*, and *Loans*. Standard errors in parentheses. Standard errors are clustered at the bank level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Dependent variable: T1RatioProp

	(1)	(2)	(3)	(4)
After×$Q_{4\text{th}}$(T1RatioDecline)	0.00619*	0.00847***	0.00228	0.00319
	(0.00329)	(0.00256)	(0.00283)	(0.00210)
After×z(CapBuffer)		0.00882		0.0111**
		(0.00574)		(0.00512)
After×$Q_{4\text{th}}$(T1RatioDecline)×z(CapBuffer)		-0.0215**		-0.0203***
		(0.00883)		(0.00778)
Log TotalAssets			-0.0378***	-0.0423***
			(0.00870)	(0.00724)
ROAA			0.156***	0.173***
			(0.0300)	(0.0260)
Lagged ChargeOffs			-0.905***	-0.910***
			(0.221)	(0.195)
Loans			-0.151***	-0.145***
			(0.0188)	(0.0158)
Observations	13380	13380	13347	13347
Adjusted R^2	0.0915	0.151	0.244	0.305
Quarter and Bank FE	Yes	Yes	Yes	Yes
Additional Controls	No	No	Yes	Yes

Table 13: Effect of Top Quartile Tier 1 Ratio Decline from Basel III Proposed Rules — Size Interaction

This table shows results of a regression of the tier 1 ratio computed under the new proposed rules on quarter and bank fixed effects and interaction terms of *After*, Q_{4th}(*T1RatioDecline*), z(*CapBuffer*), and *Regional*. Q_{4th}(*T1RatioDecline*) denotes an indicator variable for the fourth quartile of the tier 1 ratio decline measure. z(*CapBuffer*) is the four-quarter average of *CapBuffer* in Q2 2012, standardized to be mean zero and standard deviation of one. *Regional* is an indicator variable for whether a bank is a regional bank with total assets between $10 billion and $50 billion. While the empirical model is estimated with all level and interaction terms, the table only shows estimates for interactions of the main variable of interest, Q_{4th}(*T1RatioDecline*). Additional controls are *Log TotalAssets*, *ROAA*, *Lagged ChargeOffs*, and *Loans*. Standard errors in parentheses. Standard errors are clustered at the bank level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Dependent variable: T1RatioProp

	(1)	(2)
After×Q_{4th}(T1RatioDecline)	0.00792***	0.00286
	(0.00267)	(0.00220)
After×Q_{4th}(T1RatioDecline)×z(CapBuffer)	-0.0219**	-0.0205***
	(0.00887)	(0.00784)
After×Q_{4th}(T1RatioDecline)×Regional	0.0126**	0.00927*
	(0.00542)	(0.00508)
After×Q_{4th}(T1RatioDecline)×Regional×z(CapBuffer)	0.0391**	0.0263*
	(0.0163)	(0.0159)
Observations	13380	13347
Adjusted R^2	0.154	0.307
Quarter FE	Yes	Yes
Additional Controls	No	Yes

Table 14: Effect of Top Quartile Tier 1 Ratio Decline from Basel III Proposed Rules by Size Group

This table shows results of a regression of the tier 1 ratio computed under the new proposed rules on quarter and bank fixed effects and interaction terms of *After*, $Q_{4th}(T1RatioDecline)$, and $z(CapBuffer)$. $Q_{4th}(T1RatioDecline)$ denotes an indicator variable for the fourth quartile of the tier 1 ratio decline measure. $z(CapBuffer)$ is the four-quarter average of *CapBuffer* in Q2 2012, standardized to be mean zero and standard deviation of one. Columns (1) and (3) report results for a sample of community banks with total assets between $500 million and $10 billion. Columns (2) and (4) report results for a sample of regional banks with total assets between $10 billion and $50 billion. While the empirical model is estimated with all level and interaction terms, the table only shows estimates for interactions of the main variable of interest, $Q_{4th}(T1RatioDecline)$. Additional controls are *Log TotalAssets*, *ROAA*, *Lagged ChargeOffs*, and *Loans*. Standard errors in parentheses. Standard errors are clustered at the bank level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Dependent variable: T1RatioProp

	(1)	(2)	(3)	(4)
After$\times Q_{4th}$(T1RatioDecline)	0.00780***	0.0190***	0.00268	0.0131***
	(0.00268)	(0.00428)	(0.00220)	(0.00367)
After$\times Q_{4th}$(T1RatioDecline)$\times$z(CapBuffer)	-0.0224**	0.00769	-0.0210***	0.00298
	(0.00908)	(0.00628)	(0.00800)	(0.00675)
Observations	12640	740	12607	740
Adjusted R^2	0.156	0.108	0.309	0.240
Quarter and Bank FE	Yes	Yes	Yes	Yes
Additional Controls	No	No	Yes	Yes
Sample	Community	Regional	Community	Regional

Table 15: Decomposition of Effect of Top Quartile Tier 1 Ratio Decline

This table shows results of a regression of various components of the tier 1 ratio on quarter and bank fixed effects and interaction terms of *After*, $Q_{4th}(T1RatioDecline)$, and $z(CapBuffer)$. $Q_{4th}(T1RatioDecline)$ denotes an indicator variable for the fourth quartile of the tier 1 ratio decline measure. $z(CapBuffer)$ is the four-quarter average of *CapBuffer*, measured in Q2 2012, and standardized to be mean zero and standard deviation of one. *Panel A* shows components of the numerator, tier 1 capital. *Panel B* shows components of the denominator, risk weighted assets. *T1CapitalProp* is tier 1 capital computed under the new proposed rules as a share of total assets. *Dividends*, *EquityIssued*, *Income*, *Provisions*, and *ChargeOffs* are all reported as share of total assets. *RWAProp* is risk weighted assets computed under the new proposed rules as a share of total assets. Δ *Log TotalAssets*, Δ *Log Loans*, and Δ *Log Securities* are changes in the natural logarithm of the underlying variable and equivalent to growth rates. While the empirical model is estimated with all level and interaction terms, the table only shows estimates for interactions of the main variable of interest, $Q_{4th}(T1RatioDecline)$. Standard errors in parentheses. Standard errors are clustered at the bank level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Panel A: Tier 1 Capital Elements

	(1) T1CapitalProp	(2) Dividends	(3) EquityIssued	(4) Income	(5) Provisions
After×Q_{4th}(T1RatioDecline)	0.00610***	0.0000327	-0.000158	0.000735***	-0.000688***
	(0.00152)	(0.0000563)	(0.000181)	(0.000241)	(0.000154)
After×Q_{4th}(T1RatioDecline)×z(CapBuffer)	-0.00307	-0.000381**	-0.0000763	0.0000611	-0.0000539
	(0.00251)	(0.000149)	(0.000182)	(0.000291)	(0.000182)
Observations	13380	13380	13380	13380	13380
Adjusted R^2	0.106	0.00919	0.00143	0.0498	0.157
Quarter and Bank FE	Yes	Yes	Yes	Yes	Yes
Additional Controls	No	No	No	No	No

Panel B: Bank Asset Composition

	(1) RWAProp	(2) Δ Log TotalAssets	(3) Δ Log Loans	(4) Δ Log Securities
After×Q_{4th}(T1RatioDecline)	-0.0140**	0.00486***	0.00370	0.00796
	(0.00544)	(0.00181)	(0.00232)	(0.00577)
After×Q_{4th}(T1RatioDecline)×z(CapBuffer)	0.0198**	0.000972	0.00376	-0.00412
	(0.00852)	(0.00168)	(0.00234)	(0.00406)
Observations	13380	13349	13349	13349
Adjusted R^2	0.143	0.0267	0.0866	0.0160
Quarter and Bank FE	Yes	Yes	Yes	Yes
Additional Controls	No	No	No	No

Table 16: Top Quartile Model — Bank Asset Channel

This table shows results of a regression of the tier 1 ratio computed under the new proposed rules on quarter and bank fixed effects and interaction terms of *After*, Q_{4th}(*T1RatioDecline*), z(*CapBuffer*), and one of z(*Loans*) or z(*BusLoans*). Q_{4th}(*T1RatioDecline*) denotes an indicator variable for the fourth quartile of the tier 1 ratio decline measure. z(*CapBuffer*), z(*Loans*), and z(*BusLoans*) are four-quarter averages of the underlying variable, measured in Q2 2012, and standardized to be mean zero and standard deviation of one. *Loans* is total loans as a share of total assets. *BusLoans* is business loans as a share of total assets. Columns (1) and (3) report results for z(*Loans*). Columns (2) and (4) report results for z(*BusLoans*). While the empirical model is estimated with all level and interaction terms, the table only shows estimates for interactions of the main variable of interest, Q_{4th}(*T1RatioDecline*). Additional controls are *Log TotalAssets*, *ROAA*, *Lagged ChargeOffs*, and *Loans*. Standard errors in parentheses. Standard errors are clustered at the bank level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Dependent variable: T1RatioProp

	(1)	(2)	(3)	(4)
After×Q_{4th}(T1RatioDecline)	0.0110***	0.00973***	0.00555**	0.00447**
	(0.00263)	(0.00253)	(0.00221)	(0.00213)
After×Q_{4th}(T1RatioDecline)×z(CapBuffer)	-0.0206***	-0.0168*	-0.0200***	-0.0166**
	(0.00723)	(0.00912)	(0.00648)	(0.00797)
After×Q_{4th}(T1RatioDecline)×z(Loans)	-0.0120***		-0.0121***	
	(0.00374)		(0.00322)	
After×Q_{4th}(T1RatioDecline)×z(CapBuffer)×z(Loans)	0.00336		0.00306	
	(0.00285)		(0.00267)	
After×Q_{4th}(T1RatioDecline)×z(BusLoans)		-0.00251		-0.00397*
		(0.00259)		(0.00223)
After×Q_{4th}(T1RatioDecline)×z(CapBuffer)×z(BusLoans)		0.0110***		0.00926***
		(0.00386)		(0.00335)
Observations	13380	13380	13347	13347
Adjusted R^2	0.198	0.179	0.346	0.325
Quarter and Bank FE	Yes	Yes	Yes	Yes
Additional Controls	No	No	Yes	Yes

Table 17: Top Quartile Model — Bank Funding Channel

This table shows results of a regression of the tier 1 ratio computed under the new proposed rules on quarter and bank fixed effects and interaction terms of *After*, Q_{4th}(*T1RatioDecline*), z(*CapBuffer*), and one of z(*TotalDep*) or z(*RetailDep*). Q_{4th}(*T1RatioDecline*) denotes an indicator variable for the fourth quartile of the tier 1 ratio decline measure. z(*CapBuffer*), z(*TotalDep*), and z(*RetailDep*) are four-quarter averages of the underlying variable, measured in Q2 2012, and standardized to be mean zero and standard deviation of one. *TotalDep* is total deposits as a share of total assets. *RetailDep* is retail deposits as a share of total assets. Columns (1) and (3) report results for z(*TotalDep*). Columns (2) and (4) report results for z(*RetailDep*). While the empirical model is estimated with all level and interaction terms, the table only shows estimates for interactions of the main variable of interest, Q_{4th}(*T1RatioDecline*). Additional controls are *Log TotalAssets*, *ROAA*, *Lagged ChargeOffs*, and *Loans*. Standard errors in parentheses. Standard errors are clustered at the bank level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Dependent variable: T1RatioProp

	(1)	(2)	(3)	(4)
After×Q_{4th}(T1RatioDecline)	0.00750***	0.00991***	0.00204	0.00480**
	(0.00235)	(0.00242)	(0.00196)	(0.00202)
After×Q_{4th}(T1RatioDecline)×z(CapBuffer)	-0.0105	-0.00512	-0.0101	-0.00545
	(0.0107)	(0.00937)	(0.00915)	(0.00800)
After×Q_{4th}(T1RatioDecline)×z(TotalDep)	-0.00592		-0.00725**	
	(0.00461)		(0.00337)	
After×Q_{4th}(T1RatioDecline)×z(CapBuffer)×z(TotalDep)	0.000351		0.000581	
	(0.00415)		(0.00358)	
After×Q_{4th}(T1RatioDecline)×z(RetailDep)		-0.00626**		-0.00618**
		(0.00318)		(0.00281)
After×Q_{4th}(T1RatioDecline)×z(CapBuffer)×z(RetailDep)		0.0152***		0.0138***
		(0.00351)		(0.00309)
Observations	13380	13380	13347	13347
Adjusted R^2	0.188	0.214	0.339	0.356
Quarter and Bank FE	Yes	Yes	Yes	Yes
Additional Controls	No	No	Yes	Yes

Table 18: Top Quartile Model — Bank Earnings Channel

This table shows results of a regression of the tier 1 ratio computed under the new proposed rules on quarter and bank fixed effects and interaction terms of *After*, Q_{4th}(*T1RatioDecline*), z(*CapBuffer*), and one of z(*RetEarnings*) or z(*ROAA*). Q_{4th}(*T1RatioDecline*) denotes an indicator variable for the fourth quartile of the tier 1 ratio decline measure. z(*CapBuffer*), z(*RetEarnings*), and z(*ROAA*) are four-quarter averages of the underlying variable, measured in Q2 2012, and standardized to be mean zero and standard deviation of one. *RetEarnings* is retained earnings as a share of total assets. *ROAA* is return on average assets. Columns (1) and (3) report results for z(*RetEarnings*). Columns (2) and (4) report results for z(*ROAA*). While the empirical model is estimated with all level and interaction terms, the table only shows estimates for interactions of the main variable of interest, Q_{4th}(*T1RatioDecline*). Additional controls are *Log TotalAssets*, *Lagged ChargeOffs*, and *Loans*. Standard errors in parentheses. Standard errors are clustered at the bank level. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Dependent variable: T1RatioProp

	(1)	(2)	(3)	(4)
After×Q_{4th}(T1RatioDecline)	0.0101***	0.0123***	0.00531***	0.00744***
	(0.00247)	(0.00262)	(0.00203)	(0.00198)
After×Q_{4th}(T1RatioDecline)×z(CapBuffer)	-0.0128	-0.0111	-0.0127	-0.00918
	(0.0102)	(0.00734)	(0.00896)	(0.00615)
After×Q_{4th}(T1RatioDecline)×z(RetEarnings)	0.000431		0.000433	
	(0.00367)		(0.00336)	
After×Q_{4th}(T1RatioDecline)×z(CapBuffer)×z(RetEarnings)	-0.00400*		-0.00372*	
	(0.00227)		(0.00196)	
After×Q_{4th}(T1RatioDecline)×z(ROAA)		0.00432		0.00319
		(0.00554)		(0.00509)
After×Q_{4th}(T1RatioDecline)×z(CapBuffer)×z(ROAA)		-0.00798		-0.00560
		(0.00826)		(0.00716)
Observations	13380	13380	13347	13347
Adjusted R^2	0.182	0.216	0.311	0.359
Quarter and Bank FE	Yes	Yes	Yes	Yes
Additional Controls	No	No	Yes	Yes