January 16, 2024

Chief Counsel's Office
Attention: Comment Processing (Docket ID OCC–2023–0008)
Office of the Comptroller of the Currency
400 7th Street SW, Suite 3E-218
Washington DC 20219

Ann E. Misback, Secretary
Board of Governors of the Federal Reserve System
20th Street and Constitution Avenue NW
Washington DC 20551

James P. Sheesley, Assistant Executive Secretary
Attention: Comments/Legal OES (RIN 3064-AF29)
Federal Deposit Insurance Corporation
550 17th Street NW
Washington DC 20429

VIA EMAIL AND ELECTRONIC PORTAL

Re.: Docket No. R-1813, RIN 7100-AG64 - Regulatory Capital Rule: Large Banking Organizations and Banking Organizations with Significant Trading Activity

In the attached document the Committee on Capital Markets Regulation (the "Committee") presents the results of its original empirical study of the effects of the 2018 and 2020 modifications to U.S. bank capital and liquidity requirements on the lending activities of U.S. banks. Our results indicate that the banks covered by these reforms significantly increased lending in response.

The Committee offers these results to the Board of Governors of the Federal Reserve System, the Office of the Comptroller of the Currency, and the Federal Deposit Insurance Corporation in response to their proposed rule entitled "Regulatory Capital Rule: Large Banking Organizations and Banking Organizations with Significant Trading Activity" (the "Proposal")[1] and in addition to the Committee's separate comment letter on the Proposal dated January 16, 2024.

[1] OFFICE OF THE COMPTROLLER OF THE CURRENCY, TREASURY, BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, FEDERAL DEPOSIT INSURANCE CORPORATION, *Regulatory Capital Rule: Large Banking Organizations and Banking Organizations with Significant Trading Activity*, FED REG. Vol. 88. No. 179 (Sept. 18, 2023), https://www.federalregister.gov/documents/2023/09/18/2023-19200/regulatory-capital-rule-large-banking-organizations-and-banking-organizations-with-significant.

Thank you very much for your consideration of the Committee's position. Should you have any questions or concerns, please do not hesitate to contact the Committee's President, Professor Hal S. Scott (hscott@law.harvard.edu), or its Executive Director, John Gulliver (jgulliver@capmktsreg.org), at your convenience.

Respectfully submitted,

John L. Thornton
Co-CHAIR

Hal S. Scott
PRESIDENT

R. Glenn Hubbard
Co-CHAIR

THE 2018 & 2020 CAPITAL AND LIQUIDITY REFORMS AND BANK LENDING

In this original empirical study, the Committee on Capital Markets Regulation examined whether the 2018 and 2020 reforms that lowered certain U.S. bank capital and liquidity requirements affected the lending activities of U.S. banks. Our results indicate that U.S. banks covered by these reforms significantly increased lending in response.

More specifically, we conducted regression analyses of bank lending data and seven policy reforms that reduced capital and liquidity requirements that were initially enacted under Dodd Frank. Four of these reforms occurred in 2018 and three occurred in 2020 in response to the COVID crisis.

Our time-series analysis of the four 2018 reforms found that each reform increased lending by affected banks relative to prior periods:

- Raising the threshold for enhanced prudential regulation: **13% more lending by exempted banks relative to non-exempt banks during the 18 months after the policy change ($70 billion in additional loans).**
- Including municipal debt in the definition of "high quality liquid assets:" **5% more lending by banks with above-median exposure to municipal debt relative to banks with below-median exposure during the 15 months after the policy change ($77 billion in additional loans).**
- Lowering the risk weights for high volatility commercial real estate ("HVCRE"): **9% more lending by banks with above-median exposure to HVCRE relative to banks with below-median exposure over the 15 months after the policy change ($140 billion in additional loans).**
- Exempting community banks from risk-based capital requirements: **3% more lending by community banks relative to other banks during the 15 months after the policy change ($111 billion in additional loans).**

Because the unique conditions of 2020 make comparisons with prior periods potentially unreliable, we analyzed the three COVID-related reforms using a cross-sectional analysis of lending by all banks during 2020 and 2021. We found that the extent of a bank's lending during 2020 and 2021 was highly correlated with the degree to which a bank's capital or liquidity requirements were lessened by a specific reform and that these correlations were often stronger for smaller banks.

- Permitting banks to use liquidity buffers for lending.
- Excluding U.S. Treasuries and Fed deposits from the supplementary leverage ratio.
- Allowing banks to delay applying the "current expected credit loss" accounting standard.

These correlations indicate that the bank capital and liquidity reforms were successful in stimulating bank lending during severe economic distress.

Our analysis is in each case particular to the specific category or categories of bank that the relevant policy change affected. We find in each case that the policy change was successful in fostering lending among banks that had their capital or liquidity requirements lessened.

The relationship between capital and liquidity requirements and bank lending is a critical indicator for policymakers because prior empirical research has shown that bank lending increases economic growth. Prior studies have also shown that lending by small banks plays a unique role in supporting small businesses and that Dodd-Frank's increases to capital requirements reduced lending by small banks most severely. Our results thus provide important evidence for policymakers seeking to estimate the costs and benefits of future changes to capital and liquidity requirements by showing for the first time that moderating such requirements produces economic benefits through increased bank lending.

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I. INTRODUCTION

Banks are a pillar of the financial system. The stability of banks is thus crucial to the stability of the financial sector generally. Bank capital and liquidity requirements are an important tool that policymakers and regulators have at their disposal for the purpose of insulating the banking sector from potential distress, and thus protecting the financial sector, and therefore the broader economy, from a crisis.[2] Bank capital requirements are intended to do so in several ways. We provide four examples. First, requiring banks to hold a capital buffer that is proportionate to the value of the bank's assets can increase a bank's resilience to external shocks, such as a reduction in the value of the bank's loan assets, and thus reduce the probability that the bank will become insolvent. In such cases, a bank can rely on its capital buffer to continue to meet its liabilities and continue operating.[3] Second, capital can reduce the risks of interconnectedness between banks – that is, it can reduce the likelihood that a failure of one bank will lead to the failure of others by limiting the credit exposures of banks to one another.[4] Third, by requiring banks to source more of their funding from private capital suppliers that have an incentive to monitor the bank's risk taking activity, rather than from insured depositors, which generally do not monitor such activities as closely, capital requirements can reduce the likelihood of bank failure.[5] Finally, capital requirements can reduce correlation risk – that is, the risk that if several banks hold assets of a same or highly similar type (e.g., commercial real estate), then degradation in the value of those assets will affect the solvency of multiple banks at the same time, and thus threaten the stability of the banking system as a whole.[6]

Liquidity requirements are intended to reduce the risk that a bank will be unable to meet a sudden increase in deposit withdrawals (a "bank run") by requiring banks to maintain minimum amounts of assets of sufficient liquidity to be used to meet a significant increase in demand by bank depositors for the return of their deposited funds and the withdrawals of other short-term creditors.[7]

However, by restricting a bank's capital structure and by requiring banks to hold minimum quantities of liquid assets, such as government securities, capital and liquidity requirements impose potential costs on banks individually and on the financial system and broader economy. One potential cost is that capital and liquidity requirements can compel banks to reduce their lending activity. Lending activity is an important determinant of economic growth and suboptimal lending activity can slow economic growth. The potential adverse effects of higher capital on bank lending are well attested in the existing empirical literature, as we detail below. It is therefore important for policymakers to understand the effect these requirements have on lending activity so they can

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[2] Anjan V. Thakor, *Bank Capital and Financial Stability: An Economic Trade-Off or a Faustian Bargain*, 6 ANNUAL REVIEW OF FINANCIAL ECONOMICS 185 (2014), https://www.annualreviews.org/doi/abs/10.1146/annurev-financial-110613-034531.

[3] Testimony of Hal S. Scott Before the Committee on Banking, Housing, and Urban Affairs, United States Senate (Jun. 7, 2016), https://www.capmktsreg.org/wp-content/uploads/2016/10/HSS_Written_Testimony-SBC-6-7-16.pdf.

[4] *Id.*

[5] *Id.*

[6] HAL S. SCOTT, CONNECTEDNESS AND CONTAGION, *Capital Requirements: Basel III Framework*, https://covid-19.mitpress.mit.edu/pub/a8zvrr6j/release/1.

[7] Scott *supra* note 3.

set capital and liquidity requirements at an appropriate level that minimizes risks to financial stability without unduly restricting lending.

In 2010, the Dodd-Frank Act ("Dodd-Frank") substantially increased capital requirements for U.S. banks and created new requirements that U.S. banks hold minimum amounts of highly liquid assets consisting primarily of government securities. These requirements were enacted in response to concerns that surfaced during the 2008 financial crisis that inadequate capital and liquidity had jeopardized the solvency of major banking institutions. These heightened requirements included:

- *Stress testing*: Dodd-Frank subjected all banks with more than $50 billion in total assets to annual stress tests the results of which required banks to carry additional capital buffers or face restrictions on share distributions and executive compensation.

- *Liquidity coverage ratio*: As part of the newly imposed liquidity requirements, Dodd-Frank required all banks to maintain a minimum "liquidity coverage ratio" ("LCR"). The LCR requires certain large banks to hold "high quality liquid assets" ("HQLA") such as Treasury securities and Fed deposits at least equal to the bank's 30-day "net cash outflow," which is an estimate of a severe deposit outflow occurring over a 30-day period.

The effect of these requirements was to cause banks to substantially increase their capital levels and their holdings of government debt. As of 2010, banks' average tier 1 capital ratio was 11.52% and aggregate holdings of government securities was approximately $776 billion. By 2017, these figures had increased to 13.96% and $2.4 trillion.[8]

In May 2018, Congress enacted the Economic Growth, Regulatory Relief, and Consumer Protection Act (the "2018 Act"). The 2018 Act made several changes that moderated Dodd Frank's capital and liquidity requirements in response to concerns that the capital and liquidity requirements for certain U.S. banks were too high. In 2020, Congress temporarily scaled back other capital and liquidity requirements in response to the COVID crisis. We describe these reforms in greater detail in the Analysis section below.

Our study sought to assess empirically whether these reductions in bank capital and liquidity requirements that occurred in 2018 and 2020 produced an effect on bank lending activities.

[8] FEDERAL RESERVE ECONOMIC DATA, *Assets: Securities Held Outright: U.S. Treasury Securities: Wednesday Level*, (Dec. 13, 2023), https://fred.stlouisfed.org/series/TREAST.

II. EXISTING EMPIRICAL LITERATURE

The existence of a causal relationship between lower capital requirements and increased bank lending during the 2018-2021 period is consistent with the findings of prior empirical research in this area, which indicate that there is a strong link between bank capital requirements and bank lending. More specifically, there is a significant body of empirical research that has demonstrated, throughout various jurisdictions and timeframes, that heightening bank capital requirements tends to reduce bank lending activity and economic activity more generally. We summarize a sample of this research here.

A 2017 study by the Federal Reserve concludes that a 1 percentage point increase in capital ratios could reduce the level of long-run GDP growth by 7.4 basis points as result of higher lending spreads that reduce bank lending activity.[9] Baker (2015) [10] found that increases in bank capital can increase banks' cost of capital, which has in turn been associated with reduced lending activity.[11]

As part of a study by the Bank for International Settlements, seventeen national banking regulators independently developed forecasting models to estimate the effect of a one percentage point increase in bank capital requirements on GDP in their home jurisdictions.[12] The modelling indicated that banks respond to higher capital requirements by increasing the interest rates they charge to borrowers and/or reducing the amount of credit that they offer, thus reducing credit supply and limiting GDP growth. The median result of the models indicated that a one percentage point increase in capital ratios implemented over eight years caused GDP to fall by 0.15% below its baseline path.

Another set of studies analyzes the relationship between the extent of lending activity by UK banks and changes in the capital requirements imposed by the UK banking regulator (FSA) from approximately 1990 through the mid-2010s. The studies consistently find that higher capital requirements are associated with lower lending activity.

Bridges (2014)[13] analyzed lending activity by UK banks from 1990-2011 against capital requirements over the same period. The analysis concludes that bank lending declined on average following an increase in capital requirements. Noss (2014)[14] analyzed the effect of changes in

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[9] Simon Firestone et al., *An Empirical Economic Assessment of the Costs and Benefits of Bank Capital in the US*, BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM, Finance and Economics Discussion Series 2017-034 (2017), https://www.federalreserve.gov/econres/feds/files/2017034pap.pdf.

[10] *See, e.g.*, Anna Kovner & Peter Van Tassel, *Evaluating Regulatory Reform: Banks' Cost of Capital and Lending* (2019), https://www.fdic.gov/analysis/cfr/bank-research-conference/annual-19th/papers/27-kovner.pdf.

[11] Malcolm Baker & Jeffrey Wurgler, *Do Strict Capital Requirement Raise the Cost of Capital? Bank Regulation, Capital Structure, and the Low Risk Anomaly*, American Economic Review: Papers and Proceedings 105 no. 5 2015) 315-320, https://dash.harvard.edu/bitstream/handle/1/16388336/baker-m%2cwurgler_do-strict-capital-requirements_AERPP%20v7.pdf?sequence=1&isAllowed=y.

[12] BANK FOR INTERNATIONAL SETTLEMENTS, *Assessing the Macroeconomic Impact of the Transition to Stronger Capital and Liquidity requirements* (2010), https://www.bis.org/publ/othp12.pdf.

[13] Jonathan Bridges et al., *The Impact of Capital Requirements on Bank Lending*, The Bank of England Working Paper No. 48 (2014), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2388773.

[14] Joseph Noss & Priscilla Toffano, *Estimating the Impact of Changes in Aggregate Bank Capital Requirements During an Upswing* Bank of England Working Paper No. 494 (2014), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2420428.

capital requirements applied to UK-resident banks on lending by studying the historic aggregate capital ratio of the UK banking system against a set of macro-financial variables. The study concludes that an increase of 15 bps in the aggregate capital ratio of the UK banking system is associated with a median reduction of around 1.4% in the level of lending after 16 quarters. Aiyar (2014)[15] compared individual UK banks' minimum risk-based capital requirements as set by the FSA throughout the 1990s and 2000s against lending activity by those banks and concluded that higher capital requirements reduced the supply of lending substantially for both small and large banks. De-Ramon (2016)[16] analyzed changes in UK capital requirements from 1989 through 2013 and lending activity by UK banks and found that a one percentage point increase in capital requirements lowered annual loan growth by 12 bps.

Several studies have analyzed the effect of Basel III capital and liquidity regulations on lending activity in various jurisdictions. Naceur (2020)[17] analyzed the effect of the Basel III capital and liquidity regulation on bank lending in the United States and Europe from 2008 through 2015. The study concludes that increasing the required capital ratio had a statistically significant negative impact on the extent of bank lending to retail borrowers.

Other studies have demonstrated specifically that the heightening of capital requirements under Dodd-Frank resulted in lower levels of lending by U.S. banks, particularly loans by community banks and loans to small businesses. Greene & Lux (2015) find, among other things, that since 2010, around the time of the passage of the Dodd-Frank, (i) the rate of decline of community banks' share of U.S. commercial banking assets doubled, (ii) community banks' share of several key lending markets declined, and (iii) small business lending volume by banks of all sizes has declined generally.[18] Acharya (2017)[19] found that the introduction of stress testing for U.S. banks with assets over $100 billion caused such banks to reduce their lending. The reduction in lending was most pronounced for high-risk corporate borrowers, and commercial real estate, credit card, and small business borrowers, which are higher risk generally.[20]

There is however a complete lack of empirical analysis of the effect of the moderation of capital requirements in 2018 and 2020 on lending activities, and the effect of liquidity requirements on lending generally. Furthermore, although the studies we discuss above show that increasing capital requirements reduces bank lending, we have not identified any study that confirms that the inverse of this relationship is true – that is, reducing capital requirements increases bank lending. Our analysis thus builds on the existing literature by examining whether a causal relationship is

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[15] Shekhar S. Aiyar et al., *How Does Credit Supply Respond to Monetary Policy and Bank Minimum Capital Requirements?* Bank of England Working Paper No. 508 (Sept. 2014), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2494187.

[16] Sebastian de-Ramon et al., *Bank Capital Requirements and Balance Sheet Management Practices: Has the Relationship Changed after the Crisis*, Bank of England Working Paper No. 635 (Dec. 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2885244.

[17] Sami Ben Naceur & Caroline Roulet, *Basel III and Bank-Lending: Evidence from the United States and Europe*, IMF Working Paper No. 17/245, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3116204.

[18] Marshall Lux & Robert Greene, *The State and Fate of Community Banking* (2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2913096.

[19] Viral V. Acharya et al., *Lending Implications of U.S Bank Stress Tests: Costs or Benefits?* JOURNAL OF FINANCIAL INTERMEDIATION (2017), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2972919.

[20] *Id.*

evidenced with respect to the relaxation of capital requirements and any higher levels of bank lending that ensued, and whether an equivalent relationship exists with respect to relaxed liquidity requirements.

III. DESCRIPTION OF METHODOLOGY

To assess whether the reductions to capital and liquidity requirements that occurred in 2018 and 2020 affected banks' lending activities, we first identified seven specific policy changes that we wished to test: four that occurred pursuant to the 2018 Act and three that occurred in 2020 in response to the COVID crisis. We then applied regression analysis methodologies that are consistent with prior empirical studies of the relationship between capital requirements and bank lending to assess whether these policy changes caused the banks affected by them to change their lending activities.

Our analysis is in each case particular to the specific category or categories of bank that the relevant policy change affected. We find in each case that the policy change was successful in fostering lending among banks that had their capital or liquidity requirements lessened.

The 2018 Reforms

To analyze the 2018 changes, we used a "difference in differences" ("DID") methodology. A DID methodology compares a treatment group consisting of banks that the policy change affected, or affected to a greater extent, to a control group consisting of banks that the policy change did not affect or affected to a lesser extent. This is a common model for empirical research of the effects of bank policy changes. Each DID model first measures the difference in average lending between banks in the control and treatment groups during the 1-to-2-year period immediately before the policy change. It then measures the difference in average lending between the control and treatment group during a 1-to-2-year period immediately after the policy change and observes whether the difference between the two groups became lesser or greater after the policy change.

Constructing the model in this way allows us to identify the effects of a policy change even when bank lending may have increased or decreased for reasons unrelated to the policy change. For example, if banks in the treatment group had on average $10 billion in loans outstanding before their capital requirements were lowered but only $9 billion in loans outstanding after their capital requirements were lowered, simply observing the decrease in the treatment group's outstanding loans might suggest that the policy change had a negative effect on bank lending.

However, if we also observe that banks in the control group had on average $20 billion in loans outstanding before the policy change but only $15 billion on average after the change, it reveals that the extent to which the control group engaged in more lending than the treatment group became smaller after the policy change. This suggests that another factor (*e.g.*, deteriorating economic circumstances) caused lending by both the control and treatment group banks to decrease following the change. It suggests also that reducing the capital requirements of the treatment group banks actually insulated them from the full negative effect of this factor and caused them to engage in more lending than they would have absent the lowering of their capital requirements.

The "before" and "after" periods are intended to be of sufficient length to capture a representative sample of lending activities before and after each policy change and the resulting sample sizes are consistent with prior empirical research of the effects of bank policy changes. Furthermore, to avoid any overlap with the COVID crisis, our after periods generally end as of December 31, 2019. In each case we divide the before and after periods based on the date a change was enacted into

law, even if aspects of the change were not implemented until a later date, as it is well attested in the empirical literature that banks begin to respond to impending changes to capital requirements when the change is announced, even before the implementation date.[21]

The DID model then tests whether any change in the differences between the lending activities of banks that underwent the policy change and those that did not can be attributed to the policy change. It does so by controlling for underlying differences in lending activities of specific banks that persist over time ("bank fixed effects") and recurring yearly/quarterly cycles in lending activities ("time fixed effects"). The model thereby cancels out the effect of any such difference and measures only those differences that cannot be explained by these fixed effects. The DID model thereby reduces the probability that any differences in lending we observe are attributable to a cause other than the policy change.

Two of the 2018 policy changes, raising the threshold for enhanced prudential regulation and the exemption of community banks from risk-based capital requirements – were categorical. In other words, they exempted an entire category of banks from a set of requirements while other banks remained subject to those requirements. In these cases, the treatment group consisted of banks that the policy change exempted, and the control group consisted of banks that the policy change did not exempt.

However, the other two 2018 policy changes – the inclusion of municipal loans in high-quality liquid assets, and the lowering of risk weights for high-volatility commercial real estate exposures – applied across all banks. Therefore, we could not construct control and treatment groups that consisted solely of those banks that were affected by the change and those that were not. We therefore assigned banks to the control and treatment groups based on the comparative extent to which the change lowered the bank's capital or liquidity requirements. We estimated this by measuring the percentage of the bank's total assets that consisted of the assets that benefited from more lenient capital or liquidity requirements. We placed banks with above-median exposure to the relevant assets in the treatment groups and banks with below-median exposure to these assets in the control group.

The 2020 Reforms

In the case of the three 2020 policy changes, the DID methodology is potentially unreliable. This is because a DID methodology relies on comparing banks' lending activities during the period before a policy change with the period after the policy change. Although the DID methodology can control for cyclical or recurring differences in lending activities that are unrelated to the policy change, the acute economic distress that characterized 2020 was not a recurring or cyclical event. It was instead an unpredictable and isolated set of circumstances that made 2020 unique from prior and succeeding periods, such that comparing banks' lending activities in 2020 with prior or subsequent periods may be unreliable. Therefore, to test the 2020 changes, we instead applied a

[21] *See, e.g.*, Jose-Victor Rios-Rull et al., *Banking Dynamics, Market Discipline and Capital Regulations* (2020), https://www.sas.upenn.edu/~vr0j/papers/tvypap-SWP2.pdf; Jihad Dagher, et al., *Benefits and Costs of Bank Capital* IMF Staff Discussion Notes No. 2016/004 11 (2016), https://www.imf.org/en/Publications/Staff-Discussion-Notes/Issues/2016/12/31/Benefits-and-Costs-of-Bank-Capital-43710.

cross-sectional analysis, which is another methodology commonly used in bank policy research when time-series comparisons using DID methodologies are potentially unreliable.

Each cross-sectional analysis looks solely at banks' lending activities during 2020 following the relevant policy change. It seeks to determine if and to what extent each bank's lending activities during that period were lesser or greater as a result of the reduction of the bank's capital or liquidity requirements. Two of the three 2020 policy changes lowered capital or liquidity requirements with respect to a specific category of asset. We therefore estimated the extent to which each such change lowered a bank's capital or liquidity requirements based on the percentage of the bank's total assets that consisted of the asset class that benefited from the more lenient capital or liquidity treatment.

Each of these two analyses produces a single number (a "correlation coefficient") that indicates how much a bank's lending activities can be explained by (i.e., are correlated with) the reduction of its capital or liquidity requirements pursuant to the policy change. A result of 0 indicates that the policy change had no effect on a bank's lending activities. A negative number indicates that the reduction had a negative effect on a bank's lending activities. A positive number indicates that the reduction had a positive effect on a bank's lending activities, with a higher number indicating a stronger effect.

One of the 2020 policy changes consisted of an election that allowed banks to delay applying an accounting standard that potentially increased their capital requirements. In this case, the change was categorical, and we therefore compared the lending activities of banks that made the election with banks that did not. However, unlike the DID methodology, this comparison was with respect to a single time period.

In the case of each 2020 change, we conducted a cross-sectional analysis of all banks as well as three size-based subcategories of bank: banks with over $250 billion in assets, banks with between $100 billion and $250 billion in assets (regional banks), and banks with less than $100 billion in assets (community banks). We did this to assess whether any policy change had particularly pronounced effects on banks of a particular size.

IV. ANALYSIS

We first examine the effect on bank lending of four reforms under the 2018 Act and then examine three reforms enacted in 2020 in response to the COVID crisis.

A. The 2018 Act Changes

1. Raising the threshold for enhanced prudential regulation.

The 2018 Act raised the threshold at which a bank is subject to the "enhanced prudential regulation" ("EPR") regime created by Dodd Frank.

Exempting a bank from EPR lowers the bank's capital and liquidity requirements. In the case of capital, being subject to EPR entails that the bank must undergo annual stress tests that establish "capital buffers" that are in addition to a bank's minimum capital ratios. A bank that does not satisfy its capital buffers becomes subject to restrictions on executive compensation and corporate distributions. In practice, banks always seek to avoid these restrictions by maintaining capital sufficient to satisfy their stress test-determined buffers. Exempting a bank from annual stress testing means that the bank does not need to maintain capital buffers and the bank's required capital is effectively lower. In the case of liquidity, only banks subject to EPR are subject to Dodd-Frank's liquidity requirements, which require certain banks to maintain minimum levels of liquid assets.[22] Banks that ceased to be subject to EPR were thereafter exempt from those liquidity requirements.

The 2018 Act raised the EPR threshold in two stages: (1) from $50 billion to $100 billion in total assets effective May 24, 2018, and (2) from $100 billion to $250 billion in total assets effective November 30, 2019.[23] However, even after the second stage, the 2018 Act still allowed the Fed to subject individual banks with between $100 billion and $250 billion in total assets to EPR on a case-by-case basis if the Fed determines that doing so is "appropriate to prevent or mitigate risks to the financial stability of the United States [or] to promote the safety and soundness of . . . bank holding companies."[24] In each case, the asset threshold applies at the holding company level, meaning that if a bank is owned by a parent company that also operates other non-bank subsidiaries, it is the assets of the entire holding structure, not just the assets of the bank, that determines whether EPR applies.

To test empirically whether exempting a bank from EPR caused the bank to increase its lending activities, we compared the lending activities of a treatment group consisting of banks that the 2018 Act exempted from EPR with the lending activities of a control group consisting of larger banks that the 2018 Act did not exempt from EPR.

We tested each stage of the increased threshold separately. To test the first stage, the treatment group consisted of banks belonging to holding companies with total assets between $50 billion and $100 billion, for which the legislative exemption from EPR became effective as of May 24, 2018, and the control group consisted of banks belonging to holding companies with total assets

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[22] The Economic Growth, Regulatory Relief, and Consumer Protection Act [the "2018 Act"] § 401(a)(4), https://www.congress.gov/115/bills/s2155/BILLS-115s2155enr.pdf.
[23] *Id.* at § 401(a).
[24] *Id.*

between $100 billion and $150 billion, which were not exempted in the first stage. We assigned banks to the control and treatment groups based on the total assets of their holding companies as of the last quarter during the four-quarter period before the rule change.

We compared average loans outstanding in the control group and the treatment group during the period preceding the exemption (September 30, 2016, through March 31, 2018 (the "before" period)) and after the exemption (June 30, 2018, through December 31, 2019 (the "after" period)). The before period ends on March 31 rather than the exact date of the policy change (May 24) and the after period begins the next following quarter because data on bank lending are available only quarterly.

We then applied a DID regression equation that controlled for bank and time fixed effects to assess whether average loans outstanding among the treatment group for the after period was higher than would otherwise be expected and whether any such additional lending was attributable to the policy change.

Result: **Exempting banks with between $50 billion and $100 billion in assets from EPR caused exempt banks to increase their lending activities by 12.95% relative to banks with between $100 billion and $150 billion in assets during the 18 months following the change.**

As shown in Table 1A below, during the before period, when banks in both categories were subject to EPR, banks in the control group had on average $18.087 billion more in loans outstanding than banks in the treatment group. For the after period, when banks in the treatment group were exempted from EPR, this difference shrank to $484 million. The smaller difference was attributable to an increase of $10.425 billion in average loans outstanding for the treatment group and a reduction of $7.178 billion in average loans outstanding for the control group.

We then applied a DID regression equation to these figures to determine the extent to which the higher lending by the treatment group in the after period was attributable to the exemption of the treatment group from EPR. The results of this equation indicate that average loans outstanding for the treatment group during the after period was 12.95% higher than it otherwise would have been absent the exemption of the treatment group from EPR. This result is statistically significant at the 1% level.

A 12.95% increase in lending translates to an additional $70.4 billion in additional loans outstanding in aggregate for the entire treatment group throughout the 18-month after period. This is because the average total loans outstanding for the treatment group for the before period was $41.824 billion. The DID regression indicates that this figure was increased by 12.95% as a result of the policy change, which is equal to $5.416 billion in additional loans per bank. The treatment group consisted of 13 banks, which when multiplied by $5.416 billion totals $70.4 billion.

Table 1A

Average total loans outstanding (millions):			
	Control (non-exempt banks)	Treated (exempted banks)	Difference between control and treatment groups:
Before policy change (Sept. 30, 2016 – Mar. 31, 2018)	$ 59,911	$ 41,824	$ (18,087)
After policy change (June 30, 2018 – Dec. 31, 2019)	$ 52,733	$ 52,249	$ (484)
Increase/decrease from pre- to post-period	$ (7,178)	$ 10,425	$ 17,603
DID regression result:	**12.95%** (1% statistical significance)		
Additional loans attributable to policy change:	**$70.4 billion**		

To test the second stage of the exemption, the treatment group consisted of banks belonging to holding companies with total assets between $100 billion and $250 billion, which were exempted from automatic EPR as of November 30, 2019, and the control group consisted of banks belonging to holding companies with total assets between $250 billion and $450 billion, which remained non-exempt.

The before period extends from September 30, 2017, through November 30, 2019. In this case, because the policy change occurred on November 30, 2019, the after period by necessity extends into 2020, and ends as of December 31, 2021.

Result: **Exempting banks with between $100 billion and $250 billion in assets from EPR caused exempt banks to increase their lending activities by 5.92% relative to non-exempt banks with between $250 billion and $450 billion in asset during the 24 months following the change.**

As shown in Table 1B below, during the before period, when banks in both categories were subject to EPR, banks in the treatment group had on average $24.23 billion more in loans outstanding than banks in the control group. For the after period, when banks in the treatment group were exempted from EPR, both the treatment and control group engaged in more lending, but the treatment group increased its activities to a greater extent, such that the difference between the two groups increased to $25.79 billion.

We then applied a DID regression equation to these figures to determine the extent to which the higher lending by the treatment group in the after period was attributable to the exemption of the treatment group from EPR. The results of this equation indicate that average loans outstanding for the treatment group during the after period was 5.92% higher than it otherwise would have been absent the exemption of the treatment group from EPR. Due to the smaller sample size, this result is statistically significant at the 10% level (rather than the 1% level).

A 5.92% increase in lending translates to an additional $45.3 billion in additional loans outstanding throughout the 24-month after period for the treatment group. This is because the average total loans outstanding for the treatment group for the before period was $85.043 billion. The DID regression indicates that this figure was increased by 5.92% as a result of the policy change, which is equal to $5.494 billion in additional loans per bank. The treatment group consisted of 9 banks, which when multiplied by $5.035 billion totals $45.3 billion.

The smaller relative increase in lending resulting from the second stage of the exemption could be attributable to the fact that the treatment group here remained subject to EPR on a case-by-case basis even following the policy change, as explained above.

Table 1B

Average total loans outstanding (millions):			
	Control (non-exempt banks)	Treated (exempted banks)	Difference between control and treatment groups:
Before policy change (Sept. 30, 2017 – November 30, 2019)	$ 60,810	$ 85,043	$ 24,233
After policy change (Dec. 31, 2019 – Dec. 31, 2021)	$ 67,019	$ 92,809	$ 25,790
Increase/decrease from pre- to post-period	$ 6,209	$ 7,766	$ 1,557
DID regression result:	**5.92%** (10% statistical significance)		
Additional loans attributable to policy change:	**$ 45.3 billion**		

2. *Changing the liquidity treatment of municipal debt*

The 2018 Act expanded the definition of "high quality liquid assets" ("HQLA") to include municipal debt, effective August 31, 2018.[25] Including an asset in the definition of HQLA means

[25] *Id.* at § 403.

that a bank's exposure to that asset counts towards its satisfaction of the liquidity coverage ratio ("LCR"). Expanding the definition of HQLA to include municipal debt thus makes it easier for banks to comply with the LCR if they hold municipal debt.

To test whether the inclusion of municipal debt in the definition of HQLA caused banks to increase their lending activities we created a control group consisting of banks with below-median exposure to municipal debt and a treatment group consisting of banks with above-median exposure to municipal debt. As explained in the Description of Methodology above, constructing the control and treatment groups in this way is necessary when the policy change is not categorical – that is, it applies across all banks rather than exempting a specific subset of banks from a previous requirement.

We then applied a DID regression equation that controlled for bank and time fixed effects to assess whether average loans outstanding among the treatment group for the after period was higher than would otherwise be expected and whether any such additional lending was attributable to the policy change.

Result: **Including municipal debt in the definition of HQLA caused banks with above-median exposure to municipal debt to increase their lending activities by 4.80% relative to banks with below-median exposure to municipal debt during the 15 months following the policy change.**

As shown in Table 2 below, after municipal debt was included in the HQLA, both the control and treatment groups engaged in more lending, but the increase among the treatment group banks was substantially greater, such that the difference between the two groups became greater. The DID regression equation indicates that 4.80% of the higher average loans outstanding among the treatment group in the 15-month after period was attributable to the policy change. The result is statistically significant at the 1% level.

This translates to $76.8 billion in additional loans during the after period for the treatment group. This is because the average total loans outstanding for the treatment group for the before period was $38.111 billion. The DID regression indicates that this figure was increased by 4.8% as a result of the policy change, which is equal to $1.829 billion in additional loans per bank. The treatment group consisted of 42 banks, which when multiplied by $1.829 billion totals $76.8 billion.

Table 2

Average total loans outstanding (millions):			
	Control (below-median municipal debt exposure)	Treated (above-median municipal debt exposure)	Difference between control and treatment groups:
Before policy change (Mar. 31, 2017 – Aug. 31, 2018)	$20,442	$38,111	$17,669
After policy change (Sept. 30, 2018 – Dec. 31, 2019)	$21,746	$43,445	$21,699
Increase/decrease from pre- to post-period	$1,304	$5,334	$4,030
DID regression result:	**4.80%** (1% statistical significance)		
Additional loans attributable to policy change:	**$76.8 billion**		

3. Narrowing the definition of high-volatility commercial real estate exposure

In general, if a bank lends money to finance the purchase of real property and the repayment of the loan is dependent on future income or sales proceeds from the real property, the loan is classified as a "high-volatility commercial real estate exposure" ("HVCRE exposure").[26] HVCRE exposures are subject to a higher risk weight, and thus require more capital, than other loan assets that a bank holds. The 2018 Act narrowed the definition of HVCRE exposure to require that the loan be made "primarily" for the purpose of financing the purchase of real property, thus excluding multipurpose loans.[27] Such loans were therefore no longer subject to the higher risk weight for HVCRE exposure and thus required relatively less capital. [28]

Like the change to the definition of HQLA, the effect of narrowing the definition HVCRE exposure on a bank's capital requirements was not categorical but was instead linked to the extent of the bank's HVCRE exposure. We therefore categorized banks into treatment and control groups based on whether the bank's HVCRE exposures as a percentage of its total assets was greater or lesser than the median exposure to such banks among the sample.

We then applied a DID regression equation that controlled for bank and time fixed effects to assess whether average loans outstanding among the treatment group for the after period was higher than

[26] 12 CFR § 324.2.
[27] High Volatility Commercial Real Estate: Final Rule, OCC Bulletin 2019-64 (Dec. 13, 2019), https://www.occ.gov/news-issuances/bulletins/2019/bulletin-2019-64.html.
[28] *Id.* at § 214.

would otherwise be expected and whether any such additional lending was attributable to the policy change.

Result: **Narrowing the definition of HVCRE exposure caused banks with above-median exposure to such assets to increase their lending activities by 8.83% relative to banks with below-median exposure to such assets over the 15 months after the change.**

As shown in Table 3 below, after the definition of HVCRE exposure was narrowed, both the control and treatment groups engaged in more lending, but the increase among the treatment group banks was substantially greater, such that the difference between the two groups became greater. The DID regression equation indicates that 8.83% of the higher average loans outstanding among the treatment group in the 15-month after period was attributable to the policy change. This result was statistically significant at the 1% level.

This translates to $139.7 billion in additional loans for the treatment group during the after period. This is because the average total loans outstanding for the treatment group for the before period was $38.595 billion. The DID regression indicates that this figure was increased by 8.83% as a result of the policy change, which is equal to $3.407 billion in additional loans per bank. The treatment group consisted of 41 banks, which when multiplied by $3.407 billion totals $139.7 billion.

Table 3

Average total loans outstanding (millions):			
	Control (below median exposure to high-volatility real estate)	Treated (above median exposure to high-volatility real estate)	Difference between control and treatment groups:
Before policy change (Mar. 31, 2017 – Aug. 31, 2018)	$22,756	$38,595	$15,839
After policy change (Sept. 30, 2018 – Dec. 31, 2019)	$23,123	$46,046	$22,923
Increase/decrease from pre- to post-period	$367	$7,451	$7,084
DID regression result:	**8.83%** (1% statistical significance)		
Additional loans attributable to policy change:	**$ 139.7 billion**		

4. Exempting community banks from risk-weighted capital requirements.

The 2018 Act permitted certain banks with less than $10 billion in assets ("community banks") to opt out of the risk-weighted minimum capital ratios, and instead to comply with a "community bank leverage ratio" ("CBLR") of 9%.[29] This change was not ultimately implemented until the beginning of 2020. However, it is well attested in the empirical literature that banks begin to respond to impending changes to capital requirements when the change is announced, even before the effectiveness date. We therefore divide our before and after periods based on the date the change was enacted into law.

Like the modification to the EPR thresholds, this policy change was categorical, in that it exempted an entire category of banks from a previous requirement. Our treatment group thus consisted of community banks, and our control group consisted of all larger banks.

Result: **Permitting community banks to elect out of risk-based capital requirements caused them to increase their lending activities by 2.90% relative to non-community banks over the 15 months following the policy change.**

As shown in Table 4 below, after community banks were permitted to opt out of the risk-based capital requirements, both community and non-community banks engaged in more lending, but the increase among control group banks was greater. This may be due to the fact that conditions during the after period were less favorable for community banks generally. However, even though the increase among community banks was smaller than among non-community banks, once the DID regression equation controls for bank- and time-fixed effects, it indicates that lending among community banks was 2.9% higher during the 15-month after period than it would have been absent the policy change. This result is also statistically significant at the 1% level. This result suggests that the policy change of exempting community banks from risk-based capital requirements helped to insulate community banks from adverse lending conditions.

This translates to $110.9 billion in additional loans for the treatment group during the after period. This is because the average total loans outstanding for the treatment group for the before period was $827 million. The DID regression indicates that this figure was increased by 2.9% as a result of the policy change, which is equal to $22.44 million in additional loans per community bank. The treatment group consisted of 4,944 banks, which when multiplied by $22.44 million totals $110.9 billion.

[29] Id. at § 201; FEDERAL DEPOSIT INSURANCE CORPORATION, *Community Bank Leverage Ratio Framework* FIL-66-2019 (Nov. 4, 2019), https://www.fdic.gov/news/financial-institution-letters/2019/fil19066.html.

Table 4

Average total loans outstanding (millions):			
	Control (non-community banks)	Treated (community banks)	Difference between control and treatment groups:
Before policy change (Sept. 30, 2016 – June 30, 2018)	$5,265	$774	$(4,491)
After policy change (Sept. 30, 2018 – Dec. 31, 2019)	$5,695	$827	$(4,868)
Increase/decrease from pre- to post-period	$430	$53	$(376)
DID regression result:	**2.90%** (1% statistical significance)		
Additional loans attributable to policy change:	**$110.9 billion**		

B. COVID Changes

1. Permitting banks to use their liquidity buffers for lending.

Liquidity buffers are composed of a fraction, the denominator of which increases as the bank's total assets increase. Thus, under normal circumstances, a bank's liquidity requirements, including its required liquidity buffers, increase with each additional loan that the bank makes. In May 2020, to encourage banks to continue lending to small businesses during the COVID crisis, the federal banking agencies temporarily neutralized the effect of lending to small businesses on a bank's liquidity buffers.[30] This meant that any additional loans that a bank made to small businesses would not increase the bank's required liquidity buffers for as long as the measure remained in effect. The measure continued in effect until December 31, 2021.

To test whether allowing banks to use their liquidity buffers to lend was successful in stimulating bank lending, we conducted a cross sectional regression analysis of all banks that sought to determine whether a bank's lending activities during the effectiveness of the policy change were correlated with the extent to which a bank's liquidity requirements were lessened by the policy change. Directly measuring the extent of such reductions was not feasible, particularly because each bank reports its liquidity ratios separately and individually, and our sample included over 5,000 individual banks. However, the value of each bank's HQLA can be inferred from its call

[30] Liquidity Coverage Ratio Rule: Treatment of Certain Emergency Facilities (May 6, 2020), https://www.federalregister.gov/documents/2020/05/06/2020-09716/liquidity-coverage-ratio-rule-treatment-of-certain-emergency-facilities.

report data, which are more easily aggregated and analyzed. We therefore approximated the extent to which a bank's liquidity requirements were lessened by looking at the percentage of each bank's assets that consisted of HQLA (i.e., the category of assets that go to satisfying a bank's minimum liquidity ratios). The rationale for doing so is that a bank with more HQLA as a percentage of its total assets likely faces more stringent liquidity requirements (hence the necessity of holding more HQLA). As such, neutralizing the effect of additional lending on a bank's liquidity buffers is likely to be of greater relevance to a bank's liquidity requirements if the bank already allocates a significant percentage of its balance sheet to holding HQLA.

Result: **From March 30, 2020, through December 31, 2021, the extent of a bank's HQLA holdings had a significant positive correlation with the extent of a bank's lending activities.**

As shown in Table 5 below, following the enactment of the policy change through the end of 2021, the extent of a bank's lending activities had a significant positive correlation with the percentage of its assets consisting of HQLA. As explained in the Description of Methodology above, the strength of a positive correlation is indicated by how close the correlation coefficient is to 1. The correlation coefficient for all banks was 0.9615. This suggests that the policy change was highly effective at alleviating the burden of higher liquidity requirements on bank lending.

There were also significant positive correlations between levels of HQLA when looking at community banks, regional banks, and largers individually, indicating that the policy change was successful in stimulating lending among banks generally as well as among larger and smaller banks specifically.

Each of these results is statistically significant at the 1% level.

Table 5

Analysis period: Mar. 31, 2020 – December 31, 2021			
Sample: Banks subject to liquidity coverage ratio			
Explanatory variable: High-quality liquid assets as a percentage of total assets			
Correlation between explanatory variable and lending activities (1% statistical significance):			
All banks	Community banks	Regional banks	Over $250 billion in assets
0.9615	**0.9346**	**0.7023**	**0.7949**

2. *Excluding U.S. Treasuries and Fed deposits from the supplementary leverage ratio calculation.*

Dodd Frank required all banks with more than $10 billion in assets to comply with a "supplementary leverage ratio" ("SLR") of 3% in addition to the standard leverage ratio. The numerator of the SLR is a bank's tier 1 capital. The denominator includes all of the bank's assets as well as certain off-balance sheet exposures. Thus, any increase in the value of the bank's assets requires that the bank hold additional tier 1 capital to satisfy the SLR and any decrease in the value of the bank's assets permits the bank to hold less tier 1 capital.

In 2020, the federal banking agencies temporarily modified the calculation of the SLR to exclude from the denominator U.S. Treasuries and Fed deposits through March 31, 2021. This change effectively reduced the required tier 1 capital for banks subject to the SLR by approximately 2% on aggregate.

The extent to which this change lowered the capital requirements for an individual bank depended on the percentage of the bank's assets that consisted of Treasury securities or Fed deposits. If a bank had comparatively little exposure to such assets, excluding them from the SLR calculation would have comparatively little effect on its required tier 1 capital. For banks with comparatively greater exposure to such assets, their exclusion from the SLR resulted in a greater reduction to the bank's required tier 1 capital. The explanatory variable for our cross-sectional analysis was therefore the value of each bank's holdings of Treasury securities and Fed deposits as a percentage of its total assets. As in the case of each of the above analyses, the independent variable was total loans outstanding for each quarter during the analysis period.

Result: **From March 30, 2020, through December 31, 2021, the extent of a bank's U.S. Treasuries and Fed deposit holdings had a significant positive correlation with the extent of its lending activities.**

As shown in Table 6 below, a bank's exposure to the asset classes that were excluded from the SLR calculation had a positive correlation (0.5248) with the extent of the bank's lending activities during the analysis period.

There were also positive correlations among each subcategory of bank that we examined: regional banks (0.4266), and banks with over $250 billion in assets (0.0849).

Each of these results is statistically significant at the 1% level.

Table 6

Analysis period: Mar. 31, 2020 – December 31, 2021			
Sample: Banks subject to the supplementary leverage ratio			
Explanatory variable: Treasury securities and Fed deposits as a percentage of total assets			
Correlation between explanatory variable and lending activities:			
All banks	Community banks	Regional banks	Over $250 billion in assets
0.5248	**N/A**	**0.4266**	**0.0849**

3. Delaying the effect of the "current expected credit loss" accounting standard.

On March 27, 2020, federal banking agencies announced that they were allowing banks to defer for two years the effect of the "current expected credit loss" ("CECL") accounting methodology on the bank's required capital.[31]

The CECL methodology requires banks to estimate the amount of future losses with respect to their loan assets (e.g., instances where a loan is not repaid) and recognize the full amount of those losses currently. These losses then increase the amount of a bank's credit risk for purposes of calculating its capital requirements. Under the previous "incurred loss" methodology, a bank must only recognize loan losses as they are incurred. The CECL methodology is therefore likely to increase a bank's required capital by increasing its calculation of credit risk.[32] Adopting CECL has a bigger effect on the capital requirements of banks with larger expected credit losses.

Federal banking agencies indicated that the purpose of allowing banks to delay the effect of CECL on banks' required capital was to "allow banking organizations to better focus on supporting lending to creditworthy households and businesses" during the COVID crisis.[33]

To assess whether this change was successful in fostering bank lending, we conducted a cross-sectional analysis of 260 banks subject to the CECL methodology and divided them into two group: one consisting of banks that made the election to delay adopting CECL and one consisting of banks that did make the election.

Result: **From March 30, 2020, through December 31, 2021, a bank's election to delay the application of the CECL methodology was associated with more extensive lending activities.**

Unlike the analyses of the other two 2020 changes, these results are not expressed in correlation coefficients, but are rather multipliers that show how much additional lending, in percentage terms, was associated with making the CECL election. As shown in Table 7 below, from March 31, 2020, through December 31, 2021, a bank's decision to delay the effectiveness of the CECL methodology was associated with a significant increase in lending activities. This positive relationship was also observed among regional banks and community banks specifically. There was insufficient data available to determine the correlation for banks with over $250 billion in assets specifically.

Each result is statistically significant at a 1% level.

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[31] OFFICE OF THE COMPTROLLER OF THE CURRENCY, TREASURY; THE BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM; AND THE FEDERAL DEPOSIT INSURANCE CORPORATION, *Regulatory Capital Rule: Revised Transition of the Current Expected Credit Losses Methodology for Allowances* (Mar. 31, 2020), https://www.federalregister.gov/documents/2020/03/31/2020-06770/regulatory-capital-rule-revised-transition-of-the-current-expected-credit-losses-methodology-for.

[32] *Id.*

[33] *Id.*

Table 7

Analysis period: Mar. 31, 2020 – December 31, 2021			
Sample: Banks subject to CECL methodology			
Explanatory variable: Whether or not the bank elected to delay the application of the CECL methodology.			
Correlation between explanatory variable and lending activity:			
All banks	Community banks	Regional banks	Over $250 billion in assets
1.1604	**0.5984**	**1.1218**	N/A

V. CONCLUSION

The results of our analysis provide strong empirical evidence that each of seven reforms that occurred in 2018 and 2020 and reduced U.S. bank capital and liquidity requirements resulted in increased lending by U.S. banks. In particular, our results indicate that each of four policy changes that were enacted in 2018 and that lowered U.S. banks' capital and liquidity requirements resulted in significantly greater amounts of lending by affected banks relative to non-affected banks for the 15-18 months following the enactment of the change. These were (1) raising the threshold for enhanced prudential regulation, (2) including municipal debt in high-quality liquid assets, (3) narrowing the definition of high-volatility commercial real estate, and (4) permitting community banks to comply with the community bank leverage ratio in lieu of risk-based capital requirements.

All of the results except one were statistically significant at the 1% level. One of the results, the increase in the asset threshold for enhanced prudential regulation from $100 billion to $250 billion, was statistically significant at the 10% level only, due to the smaller sample size available.

We then examined three changes that occurred in 2020 in response to the COVID crisis and that also lowered bank capital or liquidity requirements: (1) permitting banks to use their liquidity buffers to lend, (2) excluding Treasury securities and Fed deposits from the calculation of the supplementary leverage ratio, and (3) delaying the effect of the "current expected credit loss" accounting standard.

Identifying the effect of these policy changes on lending presented a unique challenge because the extreme economic conditions that prevailed in 2020 made comparisons with prior periods potentially unreliable. We therefore were required to apply a cross-sectional analysis that approximated the extent to which each policy change lowered individual banks' capital or liquidity requirements and examined whether banks that experienced more significant reductions to their capital or liquidity requirements engaged in more lending. We found that in the case of each of the three 2020 changes, a greater reduction to a bank's capital or liquidity requirements was strongly associated with additional lending by that bank. Each of these results was also statistically significant at the 1% level.

Our results are consistent with the significant body of existing empirical research that has demonstrated across various timeframes and jurisdictions that increasing capital requirements results in reduced bank lending. Our results also build on this existing research by confirming that lowering liquidity requirements also increases bank lending. Moreover, whereas prior research has shown only that instances of raising capital requirements resulted in reduced lending, our results confirm that an instance where capital requirements were lowered resulted in increased bank lending.