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PUBLIC INTEREST COMMENT

COMMENT ON REGULATORY CAPITAL RULE: TEMPORARY EXCLUSION OF U.S. TREASURY SECURITIES AND DEPOSITS AT FEDERAL RESERVE BANKS FROM THE SUPPLEMENTARY LEVERAGE RATIO FOR DEPOSITORY INSTITUTIONS

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Agency: Department of the Treasury, Office of the Comptroller of the Currency
Comment Period Opens: May 14, 2020
Comment Period Closes: July 16, 2020
Comment Submitted: July 16, 2020
Docket ID: OCC-2020-0013
RIN: 1557-AE85

Agency: Federal Reserve System
Comment Period Opens: May 14, 2020
Comment Period Closes: July 16, 2020
Comment Submitted: July 16, 2020
Docket Number: R-1718
RIN 7100-AF91

Agency: Federal Deposit Insurance Corporation
Comment Period Opens: May 14, 2020
Comment Period Closes: July 16, 2020
Comment Submitted: July 16, 2020
RIN 3064-AF44

I appreciate the opportunity to comment on the notice of proposed rulemaking for Regulatory Capital Rule: Temporary Exclusion of U.S. Treasury Securities and Deposits at Federal Reserve Banks from the Supplementary Leverage Ratio for Depository Institutions. I am a senior research fellow at the Mercatus Center, a university-based research center at George Mason University. My comments do not reflect the views of any affected party but do reflect my general concerns about the effectiveness of regulation and the associated burden and unintended consequences of regulation. I will briefly summarize the points I will make in response to Questions 1 and 2 posed in the notice of proposed rulemaking and then provide more detail supporting my responses.

The ideas presented in this document do not represent official positions of the Mercatus Center or George Mason University.

- Question 1 concerns the advantages and disadvantages of removing Treasuries and deposits at Federal Reserve banks from the total leverage exposure in the supplementary leverage ratio for depository institutions.

  Advantages: The potential advantage arises from not having to increase bank-subsidiary-level capital as a result of banks accommodating the extraordinary measures undertaken by the federal government in response to the COVID-19 pandemic and bank customer asset liquidations.

  Disadvantages: One disadvantage of the change arises from the fact that the exclusion turns the leverage ratio into yet another risk-based capital ratio, by effectively assigning Treasuries and deposits at Federal Reserve banks risk weights equal to zero. I will show using a simple model of a profit-maximizing bank that's subjected to both a leverage ratio and a risk-based capital ratio, that as one excludes more Treasuries and reserves from the denominator of the leverage ratio, the bank allocates more toward these assets and allocates less to loans. While that seems to be the aim of the rule change, since loans tend to have among the highest risk weights, the model shows how risk-based capital, rather than the non-risk-based leverage ratio, encourages the bank to substitute away from high-risk-weight assets, such as loans. As people in the United States eagerly await an eventual recovery, regulatory-capital-requirement-related disincentives to hold loans could factor into a slower COVID-19 pandemic recovery, if the largest banks shift their portfolios away from loans and other banks cannot step in to fill the void. The model also shows that excluding Treasuries and reserves from the leverage ratio makes the bank more leveraged.

Also, because I believe capital requirements at the bank subsidiary level work more effectively than at the holding company level in terms of protecting depositors and the deposit insurance fund, I view the potential harm here as greater than that arising from a similar, recently finalized interim final rule that applies at the holding company level.

- Question 2 concerns other assets that could be excluded. Adding more assets to the list of those excluded from the total leverage exposure will make the supplementary leverage ratio even more like the complex risk-based capital requirements—and therefore redundant. If the goal is to limit potential unintended consequences and to avoid creating regulatory redundancies, the net benefits of making fewer changes likely exceed the net benefits of making more changes.

CONCERNING QUESTION 1: CHANGES ARE UNDERSTANDABLE, REVERSING SOONER HAS POTENTIAL BENEFITS

Question 1 asks about the advantages and disadvantages of the proposed rule change and also about how long the changes should remain in place. The advantages of the changes arise simply as a matter of convenience: the changes may help avoid having to raise capital because banks have accommodated the extraordinary measures taken by the federal government in response to the COVID-19 pandemic as well as to customer asset liquidations.

Concerning disadvantages, in terms of financial stability, one view in the literature suggests that capital adequacy at the bank subsidiary level should remain the focus of efforts to regulate if

protecting depositors and the deposit insurance fund remains the goal.[1] Relative to the earlier proposed rule that applies to holding companies, changing bank-level capital requirements poses a greater risk to financial stability, since subsidiary-level capital requirements protect depositors and the deposit insurance fund, while holding company capital requirements may not. Congress in Section 616 of the Dodd-Frank Wall Street Reform and Consumer Protection Act recognized explicitly that the Federal Reserve relies on the "Source of Strength" doctrine, defined as the ability of a parent company to provide financial assistance in the event that an insured depository institution experiences distress. However, Congress did not authorize holding companies to recapitalize failing insured depository institutions, and historically, holding companies have not always backed failed subsidiaries.[2]

Furthermore, potential unintended consequences of the regulatory changes arise with the use of risk weights. In the appendix, I summarize a model of a profit-maximizing bank that chooses among loans, Treasuries, and reserves that is funded with deposits and equity capital.[3] The bank faces both a leverage ratio and a risk-based capital constraint.

Based on the model, figure 1 depicts the optimal shares for loans, Treasuries, and reserves on the asset side of the bank's balance sheet, as well as the share allocated to deposits, which serves as a model-based measure of leverage, as I exclude an increasing share of Treasuries and reserves from the leverage ratio. Under the pre-interim final-rule-type leverage ratio, Treasuries and reserves have a risk weight equal to one, such that they're included in the leverage ratio. Excluding an increasing share of Treasuries and reserves from the leverage ratio amounts to reducing the risk weights toward zero, which is effectively what the interim final rule does.

Figure 1 shows that as one decreases the de facto risk weights on Treasuries and reserves from one to zero, the bank allocates away from loans and toward Treasuries and reserves. Without the exclusions, the bank allocates 73.72 percent of the portfolio to loans, 16.57 percent to Treasuries and 9.71 percent to reserves; the bank also funds with 94 percent deposits and 6 percent equity. With Treasuries and reserves fully excluded, the bank allocates 67.81 percent of the portfolio to loans, 18.29 percent to Treasuries and 13.90 percent to reserves; the bank now funds with 95.93 percent deposits and only 4.07 percent equity, even though the ratio of equity to risk-weighted assets has not changed. Overall, these findings suggest that the rule change could distort bank allocations away from higher-risk-weighted assets, such as loans, and toward lower-risk-weighted assets, such as Treasuries and reserves, and the banks will become more leveraged.

The way the distortions work could have implications for the timing of the policy change. If and when a COVID-19 pandemic recovery occurs, the exclusions will tend to create disincentives for large banks to hold higher-risk-weighted assets. Since loans tend to fall in high-risk-weight

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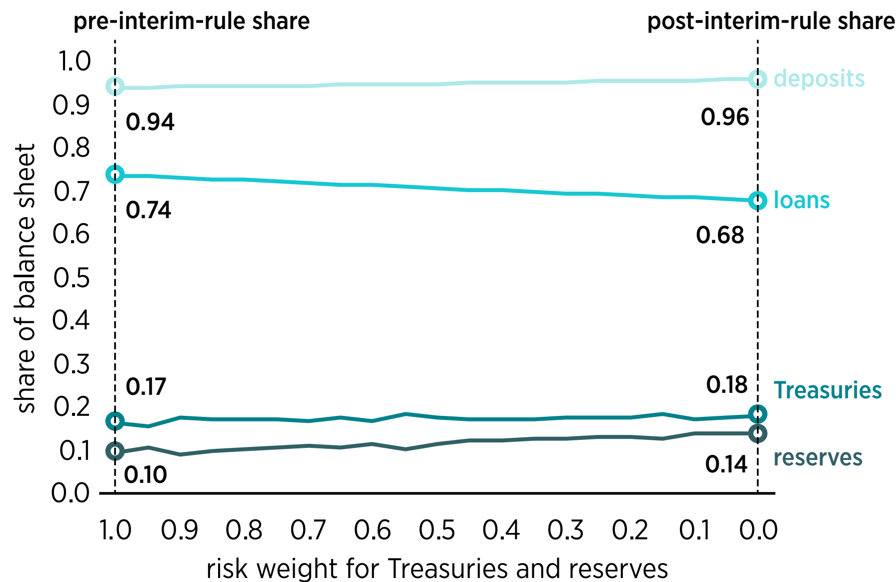
1. See, for instance, Fischer Black, Merton H. Miller, and Richard Posner, "An Approach to the Regulation of Bank Holding Companies," *Journal of Business* 51, no. 3 (1978): 379–412, especially pages 404–5. The authors suggest that effective regulation of bank holding companies would consist of ensuring that bank subsidiaries have sufficient capital. This approach offers a cost-effective way to protect depositors and the deposit insurance fund. They also argue that holding company capital requirements do not help foster those objectives. Paul Kupiec also identifies the problem with holding company regulatory capital, but he suggests a different approach: having subsidiaries issue more debt. Paul H. Kupiec, "Is Dodd Frank Orderly Liquidation Authority Necessary to Fix Too-Big-to-Fail?" (AEI Economic Policy Working Paper 2015-09, American Enterprise Institute, Washington, DC, October 22, 2015).
2. See the discussion in section 6 of Kupiec, "Is Dodd Frank Orderly Liquidation Authority Necessary to Fix Too-Big-to-Fail?"
3. The model is a variant of Donald Dutkowsky and David VanHoose's model. See Donald Dutkowsky and David VanHoose, "Interest on Reserves, Regime Shifts, and Bank Behavior," *Journal of Economics and Business* 91, issue C (2017): 1–15.

categories, the rule change could mean that larger banks may be less willing to expand loan holdings, which could limit their contribution to bank lending during an eventual recovery. That does not mean they will not be able to contribute to an eventual recovery, as large banks offer many other services aside from lending, which can also have value during a recovery.

FIGURE 1. BANK ALLOCATIONS TO TREASURIES, RESERVES, LOANS AND DEPOSITS



Source: Author's calculations.

CONCERNING QUESTION 2: THE NET BENEFITS OF MAKING FEWER CHANGES MAY OUTWEIGH THE NET BENEFITS OF MAKING MORE CHANGES

Question 2 concerns whether other assets could be excluded from the total leverage exposure. Doing so, however, would make the supplementary leverage ratio more like the complex risk-based capital requirements and, as the analysis in the previous section suggests, therefore redundant. Risk-based capital requirements are complex, and they may have unintended consequences. Limiting the proposed number of changes to the supplementary leverage ratio will allow regulators to better manage any unintended consequences that might arise.

CONCLUSION

Overall, I conclude that the temporary changes may be convenient for regulated entities from a regulatory compliance perspective. However, I am concerned about the financial instability risks posed by turning the supplementary leverage ratio into a simple risk-based capital requirement, which could allow bank subsidiaries to operate with less capital relative to total assets. The changes may also contribute to a delayed recovery if the depository institutions that take advantage of the rule change have disincentives to hold loans owing to the exclusion of Treasuries and reserves from the supplementary leverage ratio and if other depository institutions do not step in to fill the gap.

APPENDIX

In this appendix, I present the results of a simple model that shows how risk-based capital ratios, rather than non-risk-based capital ratios, distort bank asset allocations.[4] The model predicts that the more Treasuries and reserves get excluded from the leverage ratio, the more the bank switches from higher-risk-weighted assets, such as loans, toward lower-risk-weighted assets, such as Treasuries and reserves. The model also shows how excluding assets from the leverage ratio makes the bank more leveraged.

PROBLEM TO GENERATE FIGURE 1

In this model, the bank chooses the share of assets allocated to loans (w_L), the share of assets allocated to Treasury securities (w_T), and lastly to reserves (w_R). Since March 26, 2020,[5] the Federal Reserve has eliminated reserve requirements, so the model has only reserves, making no distinction between required and excess reserves. The bank funds those investments with deposits (w_D) and equity (w_E), each expressed as a fraction of total assets.

The bank maximizes profits (which are defined as revenues minus funding and quadratic administrative costs) subject to a balance sheet constraint, a funding constraint, a leverage ratio constraint, and a risk-based capital constraint:

$$\max \Pi = w_L r_L + w_T r_T + w_R r_R - w_D r_D - w_E r_E - {}^{1}\!/_{2}\,(\alpha w_L^2 + \tau w_T^2 + \phi w_R^2 + \delta w_D^2 + \varepsilon w_E^2)$$
$$s.t.\, w_L + w_T + w_R \leq 1$$
$$w_D + w_E = 1$$
$$\kappa_{LEV}(1 - (1 - \theta_T)w_T - (1 - \theta_R)w_R) \leq w_E$$
$$\kappa_{RBC}(\omega_L w_L + \omega_T w_T + \omega_R w_R) \leq w_E$$

Table A1 defines the parameters and variables used in the subsequent analysis. The funding constraint, $w_D + w_E = 1$, provides the breakdown between deposit and equity funding. The risk-based capital constraint, $\kappa_{RBC}(\omega_L w_L + \omega_T w_T + \omega_R w_R) \leq w_E$, indicates that the bank must fund with at least κ_{RBC} of its risk-weighted assets with equity. The leverage ratio constraint, $\kappa_{LEV}(1 - (1 - \theta_T)w_T - (1 - \theta_R)w_R) \leq w_E$, indicates that the bank must fund with at least κ_{LEV} of its total assets with equity. The parameters θ_T and θ_R are de facto risk weights that I use to illustrate the effects of excluding Treasuries and reserves from the leverage ratio. For simplicity, I assume throughout that $\theta_T = \theta_R$. When Treasuries and reserves are included, the risk weights equal one, and the constraint simplifies to the basic leverage ratio. Excluding Treasuries and reserves effectively implies that these assets get assigned a risk weight of less than one and not less than zero. I assume that loan holdings are more costly to administer than Treasuries or reserves ($\alpha > \tau > \phi$), and I assume that the equity funding cost parameter equals that for deposits, or $\varepsilon = \delta$. In terms of remaining parameters, $\kappa_{LEV} = 0.06$, defined as equity to total assets, denotes the minimum leverage ratio for a well-capitalized depository institution under Prompt Corrective Action (PCA) regulations; and $\kappa_{RBC} = 0.06$, defined as equity relative to risk-weighted assets, denotes the minimum risk-based capital ratio, where ω_L, ω_T, and ω_R represent the risk weights for loans, Treasury securities, and excess reserves used to calculate risk-weighted assets.

4. Kupiec, “Is Dodd Frank Orderly Liquidation Authority Necessary to Fix Too-Big-to-Fail?”
5. “Reserve Requirements,” Board of Governors of the Federal Reserve System, last updated March 20, 2020, https://www.federalreserve.gov/monetarypolicy/reservereq.htm.

TABLE A1. VARIABLE AND PARAMETER DEFINITIONS

Variables	Parameters
loan share: w_L	interest rate on loans: r_L = 0.0378
Treasuries share: w_T	return on Treasuries: r_T = 0.0016
reserves share: w_R	interest rate on reserves: r_R = 0.001
deposits share: w_D	interest rate on deposits: r_D = 0.0004
equity share: w_E	return on equity: r_E = 0.06
balance sheet Lagrange multiplier: λ	administrative cost parameter for loans: α = 0.05
leverage ratio Lagrange multiplier: μ_{LEV}	administrative cost parameter for Treasuries: τ = 0.004
risk-based capital ratio Lagrange multiplier: μ_{RBC}	administrative cost parameter for reserves: ϕ = 0.001
	administrative cost parameter for deposits: δ = 0.01
	administrative cost parameter for equity: ε = 0.01
	risk weight for loans: ω_L = 1
	risk weights for Treasuries: ω_T = 0, $\theta_T = [0,1]$
	risk weights for reserves: ω_R = 0, $\theta_R = [0,1]$
	supplementary leverage ratio for a well capitalized depository institution under (pca) regulations : κ_{LEV} = 0.06
	Tier 1 risk-based capital ratio : κ_{RBC} = 0.06

By substituting the funding constraint into the two capital constraints you can simplify the problem and write the Lagrangian as follows:

$$\begin{aligned}\mathcal{L} = w_L r_L + w_T r_T + w_R r_R - w_D r_D - (1 - w_D) r_E - {}^1\!/_2\,(\alpha w_L^2 + \tau w_T^2 + \phi w_R^2 + \delta w_D^2 + \varepsilon w_E^2) \\ + \lambda(1 - w_L - w_T - w_R) + \mu_{LEV}\big(1 - w_D - \kappa_{LEV}(1 - (1 - \theta_T) w_T - (1 - \theta_R) w_R)\big) \\ + \mu_{RBC}\big(1 - w_D - \kappa_{RBC}(\omega_L w_L + \omega_T w_T + \omega_R w_R)\big)\end{aligned}$$

The Kuhn-Tucker first order necessary conditions for the model include the following:

1. $r_L - \alpha w_L - \lambda - \mu_{RBC}\kappa_{RBC}\omega_L \leq 0$

1′. $w_L[r_L - \alpha w_L - \lambda - \mu_{RBC}\kappa_{RBC}\omega_L] = 0$

2. $r_T - \tau w_T - \lambda + \mu_{LEV}\kappa_{LEV}(1 - \theta_T) - \mu_{RBC}\kappa_{RBC}\omega_T \leq 0$

2′. $w_T[r_T - \tau w_T - \lambda + \mu_{LEV}\kappa_{LEV}(1 - \theta_T) - \mu_{RBC}\kappa_{RBC}\omega_T] = 0$

3. $r_R - \phi w_R - \lambda + \mu_{LEV}\kappa_{LEV}(1 - \theta_R) - \mu_{RBC}\kappa_{RBC}\omega_R \leq 0$

3′. $w_R[r_R - \phi w_R - \lambda + \mu_{LEV}\kappa_{LEV}(1 - \theta_R) - \mu_{RBC}\kappa_{RBC}\omega_R] = 0$

4. $r_E - r_D - \delta w_D + \varepsilon(1 - w_D) - \mu_{LEV} - \mu_{RBC} \leq 0$

4′. $w_D[r_E - r_D - \delta w_D + \varepsilon(1 - w_D) - \mu_{LEV} - \mu_{RBC}] = 0$

5. $1 - w_L - w_T - w_R \geq 0$

5′. $\lambda[1 - w_L - w_T - w_R] = 0$

6. $1 - w_D - \kappa_{LEV}(1 - (1 - \theta_T)w_T - (1 - \theta_R)w_R) \geq 0$

6′. $\mu_{LEV}[1 - w_D - \kappa_{LEV}(1 - (1 - \theta_T)w_T - (1 - \theta_R)w_R)] = 0$

7. $1 - w_D - \kappa_{RBC}(\omega_L w_L + \omega_T w_T + \omega_R w_R) \geq 0$

7′. $\mu_{RBC}[1 - w_D - \kappa_{RBC}(\omega_L w_L + \omega_T w_T + \omega_R w_R)] = 0$

Equations 1–3 in the list define the tradeoffs from holding the three asset classes against costs. Equation 4 defines the tradeoff between funding with deposits versus funding with capital. I assume interior solutions for equations 1–4. For the balance sheet constraint, I assume that equation 5 binds such that it holds with equality. For equations 6 and 7, since banks tend to fund with more than the minimum amount of capital, I assume that the constraints do not bind.

OBTAINING SOLUTIONS

Given the number of choice variables and multipliers, I use the Augmented Lagrange Minimization Algorithm to obtain numerical solutions.[6] The parameters in the model summarized in table A1 come from work by Donald Dutkowsky and David VanHoose when possible. They assume $\alpha = 0.05$ and that the cost parameter for reserves $\phi = 0.001$. They assume the cost parameter is low but higher than reserves at $\tau = 0.004$. I assume lower costs for deposits than Dutkowsky and VanHoose, $\delta = 0.01$, since with significantly higher values the costs tend to exceed revenues, thereby generating negative profits. I also assume the equity and deposits cost parameters are equal. For the risk weights I assume that for loans, $\omega_L = 1$, and that for reserves and Treasuries, $\omega_T = \omega_Q = 0$. For the return on reserves, I use the April 2020 rate, $r_R = 0.001$.[7] Following Dutkowsky and VanHoose, I assume $r_D = 0.0004$. For loan rates, I compute use the April 2020 monthly average daily prime rate, $r_L = 0.0378$.[8] For the return on Treasuries, I use the April 30, 2020 rate on 1 year Treasuries, $r_T = 0.0016$.[9] For the return on equity, I assume $r_E = 0.06$. I assume κ_{LEV} equals the value for the supplementary leverage ratio for a well-capitalized depository institution, equal to 0.06, and that κ_{RBC} equals the Tier 1 risk-based capital ratio value of 0.06. Using these parameters, figure 1 shows how the optimal portfolio shares vary as the minimum leverage ratio excludes an increasing share of Treasuries and reserves, by varying the de facto leverage ratio risk weights θ_T and θ_R from 1 to 0.

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6. After choosing starting values for the choice variables, the method makes use of a penalty term in the Lagrangean to get close to the optimal choices and then uses the multipliers to converge toward the optimal values. I use the Alabama package for R to solve the nonlinear optimization problems. "Alabama: Constrained Nonlinear Optimization," The R Project for Statistical Computing, March 6, 2015, https://CRAN.R-project.org/package=alabama.
7. The rate of interest on reserves in April 2020 equaled 0.001. Federal Reserve Bank of Philadelphia, "Interest Rate on Required Reserves" (dataset), accessed May 18, 2020, https://fred.stlouisfed.org/series/IORR.
8. The monthly average daily prime rate in April 2020 equaled 0.0378. Federal Reserve Bank of Philadelphia, "Bank Prime Loan Rate" (dataset), accessed May 18, 2020, https://fred.stlouisfed.org/series/MPRIME.
9. The April 30, 2020 1 year Treasury rate equals 0.0016. US Department of the Treasury, "Daily Treasury Yield Curve Rates" (dataset), accessed May 18, 2020, https://www.treasury.gov/resource-center/data-chart-center/interest-rates/pages/TextView.aspx?data=yieldYear&year=2020.