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Overview of the Prudential Regulatory Framework for U.S. Banks: Basel III and the Dodd-Frank Act

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Summary

The Basel III international regulatory framework, which was produced in 2010 by the Basel Committee on Banking Supervision (BCBS) at the Bank for International Settlements, is the latest in a series of evolving agreements among central banks and bank supervisory authorities to promote standardized bank prudential regulation (e.g., capital and liquidity requirements, transparency, risk management) to improve resiliency during episodes of financial distress. Because prudential regulators are concerned that banks might domicile in countries with the most relaxed safety and soundness requirements, capital reserve requirements are internationally harmonized, which also reduces competitive disadvantages for some banks with competitors in other countries.

Capital serves as a cushion against unanticipated financial shocks (such as a sudden, unusually high occurrence of loan defaults), which can otherwise lead to insolvency. Holding sufficient amounts of liquid assets serves as a buffer against sudden reversals of cash flow. Hence, the Basel III regulatory reform package revises the definition of regulatory capital, increases capital requirements, and introduces new liquidity requirements for banking organizations. The quantitative requirements and phase-in schedules for Basel III were approved by the 27 member jurisdictions and 44 central banks and supervisory authorities on September 12, 2010, and endorsed by the G20 leaders on November 12, 2010. Basel III recommends that banks fully satisfy these enhanced requirements by 2019. The Basel agreements are not treaties; individual countries can make modifications to suit their specific needs and priorities when implementing national bank capital requirements.

In the United States, Congress mandated higher bank capital requirements as part of financial-sector reform in the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank Act; P.L. 111-203, 124 Stat.1376). Specifically, the Collins Amendment to the Dodd-Frank Act amends the definition of capital and establishes minimum capital and leverage requirements for banking subsidiaries, bank holding companies, and systemically important non-bank financial companies. In addition, the Dodd-Frank Act requires greater prudential requirements on larger banking institutions.

This report summarizes the higher capital and liquidity requirements for U.S. banks regulated for safety and soundness. Federal banking regulators announced the final rules for implementation of Basel II.5 on June 7, 2012, and for the implementation of Basel III on July 9, 2013. On April 8, 2014, federal regulators adopted the enhanced supplementary leverage ratio for bank holding companies with more than $700 billion of consolidated assets or $10 trillion in assets under custody as a covered bank holding company. On October 10, 2014, the federal banking agencies (i.e., Board of Governors of the Federal Reserve System, Office of the Comptroller of the Currency, Federal Deposit Insurance Corporation) announced a final rule to strengthen liquidity regulations for banks with $50 billion or more in assets. Additional requirements that have since been proposed or finalized particularly for the larger and more complex financial institutions are described in various appendices of this report. In addition, the 114th Congress is considering bills that would affect the banking system's prudential regulation, including S. 1484, the Financial Regulatory Improvement Act of 2015, which would affect bank capital regulation.

Greater prudential requirements for most U.S. banking firms may reduce the insolvency risk of the deposit insurance fund, which is maintained by the Federal Deposit Insurance Corporation (FDIC), because more bank equity shareholders would absorb financial losses. A systemic-risk event, however, refers to multiple institutions *simultaneously* experiencing financial distress. For example, higher bank capital reserves may absorb greater losses associated with the financial distress of an *individual* institution, but a systemic-risk event exhausts the capital reserves *of the*

industry, thus threatening the level of financial intermediation conducted by the banking system as a whole. Higher capital reserves in the banking industry are also incapable of buffering losses associated with financial activity that occurs outside of the banking system.

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Overview of Bank Prudential Regulation

Lending is inherently risky. Banks face *default risk* because their assets consist primarily of loans made to borrowers who may not always repay all of the principal and interest owed. In addition, banks face *funding risk* if they choose to *fund* their longer-term assets (i.e., customer loans) via a continuous series of shorter-term borrowings (e.g., recurring deposits).[1] In other words, banks typically provide longer-term (illiquid) customer loans by borrowing the funds via sequences of shorter-term (liquid) loans at relatively lower rates.[2] Profits are generated from the spread between the long-term rates lenders charge their customers and the successive sequences of shorter-term rates they pay for liquidity until the longer-term loans are repaid in full.

Banking firms constantly monitor and manage the default and funding risks retained on their balance sheets that could lead to financial distress. If borrowers default on their loans, then banks might be unable to repay their shorter-term loan obligations (i.e., liabilities) to depositors and other creditors (e.g., financial institutions). Some periods of uncertainty may even require banks to quickly sell longer-term assets for cash to avoid defaulting on their existing shorter-term borrowing obligations, particularly if they are unable to secure new sources of short-term funds. In addition, because bank portfolios typically consist of longer-term assets funded by shorter-term borrowings, sudden increases in shorter-term borrowing rates relative to longer-term rates can translate into diminished cash flows (i.e., the difference between long- and short-term interest rates).

Lenders also face *systemic risk*. Although economists have not arrived at a consensus definition, systemic risk may be viewed as an increase in correlation among individual default and funding risks, largely due to a sudden loss of confidence (panic) of financial market participants following a liquidity disruption or decline in asset prices.[3] Systemic risk, therefore, is typically a contagion event; liquidity and payment problems affecting one or a few financial firms may lead to growing pessimism that suddenly manifests itself in the form of a widespread run or asset market collapse by creditors or investors who attempt to recover all or some of their initial principal before their anticipated losses grow.[4] Financial panics have historically been rooted in the uncertainty pertaining to the repayment of obligations or the sudden collapse of asset values (e.g., real estate, stocks, financial securities) used to collateralize loan obligations.[5] For example, if a substantial amount of lending activity becomes dependent upon the expected future value of assets used to secure the loans—and the market values of such assets suddenly decline (i.e., an asset bubble

[1] Bank assets, which tend to consist primarily of long-term customer loans, may also consist of cash and other financial securities. Bank liabilities include but are not limited to customer deposits, federal funds, loans from the Federal Home Loan Bank (FHLB) System, and short-term loans obtained via repurchase agreements.

[2] Such short-term borrowing may occur in the form of paying interest on customer deposits or repaying loans obtained in the short-term money markets. The short-term money markets consist of repurchase agreements, commercial paper, and the international short-term market known as the London Interbank Offering Rate (LIBOR) market. U.S. banks may also acquire short-term loans by going to the federal funds market or borrowing from the FHLB System.

[3] In economics and finance, a theoretical framework links confidence in financial markets with profitability; thus, a disruption in profitability may result in a sudden and widespread loss of confidence among market participants and possibly a financial crisis. For more information, see Lance Taylor and Stephen A. O'Connell, "A Minsky Crisis," *Quarterly Journal of Economics*, vol. 100 (1985), pp. 871-885.

[4] See Sanjiv R. Das et al., "Correlated Default Risk," *Journal of Fixed Income*, vol. 16, no. 2 (September 2006), pp. 7-32.

[5] See Gertrude Tumpel-Gugerell, Member of the Executive Board of the European Central Bank, "Asset Price Bubbles: How They Build Up and How to Prevent Them?," speech at alumni event of the Faculty of Economics at University of Vienna, Vienna, May 3, 2011, at http://www.ecb.int/press/key/date/2011/html/sp110503.en.html.

bursts), then an escalation of actual and anticipated loan defaults can generate runs in an array of financial markets, debilitate subsequent lending activity, and translate into severe recessions and slower recoveries.

U.S. lending institutions that accept federally insured deposits are collectively referred to as insured depository institutions, and they must comply with *safety and soundness* regulatory requirements.[6] As part of safety and soundness regulation, banks are required to maintain sufficient capital reserves to buffer against losses associated with default (credit), funding (liquidity), and systemic-risk events.[7] A bank's capital is defined as the difference between its assets and liabilities. If a bank maintains sufficient capital, then defaults of a few assets are less likely to translate into a subsequent failure to repay its obligations. A capital buffer, therefore, protects bank creditors from loan defaults by bank customers as well as other sudden unfavorable macroeconomic events. A bank is considered solvent as long as it maintains capital above a minimum threshold level, and it is considered undercapitalized and faces the prospect of being shut down by its regulator should its capitalization fall below the threshold. Hence, bank regulators implement prudential requirements for banks that are designed to ensure that capital reserves grow proportionately with assets (lending portfolios) and accompanying financial risks.

The Basel Capital Accords

The Basel Committee on Banking Supervision's (BCBS's) work on the first Basel Capital Accord,[8] Basel I, provided an international consensus framework for bank safety and soundness regulation. Basel I's objective was to promote consistent safety and soundness standards while providing an equitable basis of competition for banking institutions in participating countries.[9] In other words, international regulators were concerned that banks might prefer to domicile in countries with the most relaxed safety and soundness requirements. Unless capital reserve requirements are internationally harmonized, variation in standards may also lead to competitive disadvantages for some banks with competitors in other countries. Basel I established the amount of capital (relative to assets) that financial institutions needed to maintain. Although the BCBS has no authority to compel member governments to adopt any specific standards, U.S. federal banking regulators generally adopt rules consistent with the Basel Accords. The first Basel Capital Accord was published in July 1988 and fully implemented in the United States by the end of 1992.

The safety and soundness regulatory framework for banking institutions that stems from the Basel Capital Accords includes the following components.

- The *Tier 1* capital component is made up of mainly common shareholders' equity (issued and fully paid), disclosed reserves, most retained earnings, and perpetual

[6] See CRS Report R41718, *Federal Deposit Insurance for Banks and Credit Unions*, by (name redacted).

[7] See Douglas J. Elliot, "A Primer on Bank Capital," The Brookings Institution, January 28, 2010, at http://www.brookings.edu/~/media/research/files/papers/2010/1/29%20capital%20elliott/0129_capital_primer_elliott.pdf.

[8] The name, Basel Accord, comes from Basel, Switzerland, the home of the Bank for International Settlements (BIS). In 1974, the BIS established the Basel Committee on Banking Supervision (BCBS), made up of representatives from the monetary authorities of 13 countries—Belgium, Canada, France, Germany, Italy, Japan, Luxembourg, the Netherlands, Spain, Sweden, Switzerland, the United Kingdom, and the United States—to determine and mitigate bank risk in light of different national systems of supervision and deposit insurance.

[9] See Roger W. Ferguson, Jr., "Capital Standards for Banks: The Evolving Basel Accord," *Federal Reserve Bulletin*, September 2003, pp. 395-405.

non-cumulative preferred stock. *Tier 1 capital risk-weighted asset ratios* are generally defined as Tier 1 capital (e.g., common shareholder equity) in the numerator and bank assets (typically weighted according to their likelihood of default) in the denominator. Banks must hold enough capital reserves to maintain the minimum required capital-asset ratios, which would reduce banks' vulnerability to *unanticipated* loan defaults.

- The *Tier 2* capital component, which includes allowances for loan and lease losses (ALLL), is set aside for *anticipated* (or estimated) loan losses. Loan loss provisioning refers to increasing the amount of ALLL when loan default risks increase; decreases are referred to as *charge-offs* that occur when it becomes apparent that loan(s) will not be repaid. ALLL is adjusted quarterly, and these loan loss reserve proceeds must come from current income earnings (as opposed to total assets).[10] When the ALLL of a bank exceeds 1.25% of its risk-weighted assets, the excess is not counted as part of its Tier 2 capital.
- *Stress testing*, as recommended by the BCBS, is conducted to determine whether a bank can withstand losses arising from a severe recession or systemic-risk event and still remain adequately capitalized.[11] Stress testing requirements, discussed in more detail in **Appendix C**, vary by bank size and type of lending activities.[12] Federal regulators require all U.S. banking institutions to analyze the potential impact of adverse economic conditions on their financial conditions or viability.

The second Basel Accord, Basel II, was developed in response to perceived shortcomings, in particular with the asset risk weighting system, discussed in more detail in **Appendix A**.[13] In the United States, Basel II was initially applied to only the 19 largest banking institutions.[14] On December 7, 2007, federal banking regulators published the final rule to implement Basel II, which became effective on April 1, 2008.[15] However, the date of expected compliance with some Basel II rules was delayed or waived after the global financial crisis that began in 2007.[16]

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[10] Tier 2 capital may also include items such as subordinated debt, limited-life preferred stock, and goodwill.

[11] See Basel Committee on Banking Supervision, *Amendment to the Capital Accord to Incorporate Market Risks*, January 1996, at http://www.bis.org/publ/bcbs24.pdf.

[12] Section 165(i)(2) of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank Act; P.L. 111-203) also mandated stress testing requirements for banks with $10 billion or more in assets, which are also discussed in **Appendix C**.

[13] See Secretariat of the Basel Committee on Banking Supervision, *The New Basel Capital Accord: An Explanatory Note*, Bank for International Settlements, Basel, Switzerland, January 2001, at http://www.bis.org/publ/bcbsca01.pdf.

[14] The U.S. federal banking regulatory agencies placed banking organizations with at least $250 billion of consolidated total assets or at least $10 billion of on-balance-sheet risk associated with foreign asset holdings under Basel II; these institutions were required to use the most advanced approaches of the Basel II framework to determine their credit risks. See U.S. Department of the Treasury, Office of the Comptroller of the Currency; Board of Governors of the Federal Reserve System; Federal Deposit Insurance Corporation; and U.S. Department of the Treasury, Office of Thrift Supervision, "Risk-Based Capital Standard: Advanced Capital Adequacy Framework—Basel II," 71 *Federal Register* 185, September 26, 2006.

[15] U.S. Department of the Treasury, Office of the Comptroller of the Currency; Board of Governors of the Federal Reserve System; Federal Deposit Insurance Corporation; and U.S. Department of the Treasury, Office of Thrift Supervision, "Risk-Based Capital Standard: Advanced Capital Adequacy Framework—Basel II," 72 *Federal Register* 235, December 7, 2007.

[16] See CRS Report R44185, *Federal Reserve: Emergency Lending*, by (name redacted). While providing guidance for Basel II adoption, federal regulators explained that banks could request compliance waivers. See the *Interagency Statement—U.S. Implementation of Basel II Advanced Approaches Framework*, at http://www.federalreserve.gov/
(continued...)

In response to the global financial crisis, Basel III was designed to address issues such as excessive leverage, inadequate and low quality capital, and insufficient liquidity buffers.[17] Pillar 1 of Basel III[18] modifies the regulatory capital and liquidity requirements established in Basel I and Basel II, requiring more and higher quality capital.[19] On September 12, 2010, the 27 member jurisdictions and 44 central banks and supervisory authorities approved the requirements and phase-in schedules for Basel III. Banks must comply with the Basel III enhanced requirements by 2019. On July 9, 2013, federal banking regulators issued a final rule (the Regulatory Capital Rule) to implement most of the Basel III recommendations.[20] Regulators have since adopted additional requirements on larger U.S. banking firms, discussed in **Appendix B**, **Appendix C**, and **Appendix D**.

Enhanced Safety and Soundness Requirements Under Dodd-Frank

The Regulatory Capital Rule also implements some provisions from the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank Act; P.L. 111-203) that addressed capital reserve requirements for banks. Some of the key statutory requirements from the Dodd-Frank Act are summarized below.

Removal of References to Credit Ratings

Section 939 of the Dodd-Frank Act requires that any regulatory references to credit ratings be removed to address concerns that flawed credit ratings may have contributed to the housing bubble.[21] Section 939A requires each federal agency to review all regulations that call for a creditworthiness assessment of security or money market instruments as well as any references to those regulations regarding credit ratings. Upon completion of the review, the agencies modified

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boarddocs/srletters/2008/SR0804a1.pdf.

[17] See Basel Committee on Banking Supervision, *The Basel Committee's Response to the Financial Crisis: Report to the G20*, Bank for International Settlements, October 2010, at http://www.bis.org/publ/bcbs179.pdf.

[18] Basel II introduced the concept of three regulatory pillars. Pillar 1 contains the methodology for calculating the minimum capital requirements for banks, among other requirements. Pillars 2 and 3 of Basel II were added to monitor the rise of unintended outcomes. The second pillar requires banks to maintain management mechanisms to conduct ongoing internal self-evaluation of their risk exposures and compliance with the minimum regulatory capital requirement. The third pillar facilitates market discipline and reporting. Specifically, pillar 3 addresses problems with operational risks, which include internal operation failures, such as poor accounting, legal and compliance failures, poor and fraudulent managers and traders, and security failures.

[19] See Basel Committee on Banking Supervision, *Strengthening the Resilience of the Banking Sector*, December 2009, at http://www.bis.org/publ/bcbs164.pdf. This document was an expanded and updated version of an earlier document entitled Basel Committee on Banking Supervision, *Enhancements to the Basel II Framework*, July 2009, at http://www.bis.org/publ/bcbs157.pdf.

[20] The Board of Governors of the Federal Reserve System and the Office of the Comptroller of the Currency adopted the final rule implementing Basel III on July 2, 2013; the Federal Deposit Insurance Company adopted the final rule on July 9, 2013. See "Regulatory Capital Rules: Regulatory Capital, Implementation of Basel III, Capital Adequacy, Transition Provisions, Prompt Corrective Action, Standardized Approach for Risk-weighted Assets, Market Discipline and Disclosure Requirements, Advanced Approaches Risk-Based Capital Rule, and Market Risk Capital Rule," at http://www.federalreserve.gov/bcreg20130702a.pdf.

[21] A credit rating is a third-party assessment of the future credit risk of a firm that has typically issued financial securities. See U.S. Congress, Senate Committee on Banking, Housing, and Urban Affairs, *Dodd-Frank Wall Street Reform: Conference Report Summary*, 111th Cong., 2nd sess., July 1, 2010, at http://banking.senate.gov/public/_files/070110_Dodd_Frank_Wall_Street_Reform_comprehensive_summary_Final.pdf; and U.S. Securities and Exchange Commission, "SEC Proposes Rule Amendments to Remove Credit Rating References in Investment Company Act Rules and Forms," press release, March 2, 2011, at http://www.sec.gov/news/press/2011/2011-59.htm.

all regulations removing any reference to or requirement for reliance on credit ratings. Regulators were required to find other appropriate standards by which to determine the financial risks of bank portfolio holdings. On June 26, 2012, the Office of the Comptroller of the Currency (OCC) amended the regulatory definition of *investment grade* for security holdings to include both the use of credit ratings and due diligence on the part of the bank to ensure that the issuer has adequate capital to meet its financial commitments.[22] On November 15, 2012, the Federal Reserve announced that firms under its supervision, including banks with $10 billion or less in assets, would be required to adopt the OCC regulatory definition of an investment grade security.[23]

Section 171: The Collins Amendment

The Collins Amendment of the Dodd-Frank Act provides for the development of consistent capital requirements for all insured depository institutions, depository institution holding companies, and systemically important nonbank financial companies.[24] Section 171(b) of the Collins Amendment requires that a bank holding company's capital requirements be no less stringent than the requirements applied to its depository subsidiary.[25] In addition, the minimum requirements cannot be quantitatively lower than the capital requirements that were in effect when the Dodd-Frank Act was enacted (July 2010). Hence, only the features of Basel I and Basel II that were implemented in the United States at that time, along with other requirements consistent with Section 38 of the Federal Depository Insurance Act, became a floor for future regulatory ratios.[26] Regulators may set higher (but never lower) ratio requirements than those established for insured depositories that were in effect at that time. On July 28, 2011, U.S. federal banking regulators announced the final rule implementing this requirement.[27] Bank holding companies with total consolidated assets of less than $1 billion are exempt from this requirement.[28]

The Collins Amendment also had the effect of excluding a class of securities from the definition of eligible Tier 1 capital for large bank holding companies and systemically important nonbanks.

[22] See Department of the Treasury, Office of the Comptroller of the Currency, "Alternatives to the Use of External Credit Ratings in the Regulations of the OCC," 77 *Federal Register* 35253, June 13, 2012.

[23] See Federal Reserve, "Investing in Securities without Reliance on Nationally Recognized Statistical Rating Organization Ratings," *Supervisory and Regulation Letters SR 12-15*, at https://www.federalreserve.gov/bankinforeg/srletters/sr1215.pdf.

[24] For more information on the regulation of systemically important firms, see CRS Report R42083, *Financial Stability Oversight Council: A Framework to Mitigate Systemic Risk*, by (name redacted) .

[25] P.L. 113-279, the Insurance Capital Standards Clarification Act of 2014, amends the Dodd-Frank Act to clarify the minimum risk-based capital requirements for a depository bank holding company with subsidiaries or nonbank entities primarily engage in providing insurance. Specifically, P.L. 113-279 clarifies that federal banking regulators are not required to subject insurance companies regulated by state insurance regulators or regulated foreign subsidiaries principally engaged in insurance to the same minimum risk-based capital requirements that apply to bank depositories.

[26] For more information on the Federal Deposit Insurance Act of 1950 (P.L. 81-797, 64 Stat. 873), see http://www.fdic.gov/regulations/laws/important/. See also Julie L. Stackhouse, "Prompt Corrective Action: What Does It Mean for a Bank's Liquidity?", *Federal Reserve Bank of St. Louis, Central Banker*, fall 2008, at http://www.stlouisfed.org/publications/cb/articles/?id=792.

[27] See Office of the Comptroller of the Currency, Treasury; Board of Governors of the Federal Reserve System; and the Federal Deposit Insurance Corporation, "Risk-Based Capital Standards: Advanced Capital Adequacy Framework—Basil II; Establishment of a Risk-Based Capital Floor," 76 *Federal Register* 37620-37629, June 28, 2011, at http://www.gpo.gov/fdsys/pkg/FR-2011-06-28/pdf/2011-15669.pdf.

[28] On December 18, 2014, P.L. 113-250 directed the Federal Reserve to revise its Small Bank Holding Company Policy to include non-complex small bank holding companies with total consolidated assets of less than $1 billion.

Trust preferred securities (TruPS) are hybrid instruments possessing characteristics typically associated with debt obligations even though issuers previously had been allowed to use these instruments to comply with a portion of their regulatory capital requirements.[29] Because TruPS were excluded from Tier 1 capital for insured depositories at the time of passage, the Collins Amendment effectively made this exclusion a requirement for bank holding companies, specifically those with $15 billion or more in total consolidated assets as of December 31, 2009.[30] Bank holding companies with $15 billion or more in consolidated assets had a three-year phase-out period that began on January 1, 2013; companies with less than $15 billion in assets were allowed a 10-year phase-out period that began on January 1, 2013.[31]

Highlights of the Final Rule Implementing Basel III and Various Dodd-Frank Requirements

The capital requirements adopted in the Regulatory Capital Rule included many but not all of the BCBS recommendations; the final rule included many but not all of the related safety and soundness provisions required by Dodd-Frank. Additional requirements of Basel III and Dodd-Frank were adopted at later times as discussed in the appendices, and this process is expected to be ongoing particularly as the BCBS makes revisions to the Basel framework.

The Regulatory Capital Rule provides guidance on the required risk-weighting methodology and capital-ratio levels, and it also incorporates the enhanced capital and liquidity requirements mandated by Dodd-Frank. The Regulatory Capital Rule applies to all banks and bank holding companies domiciled in the United States.[32] Banking institutions with less than $1 billion in total consolidated assets will not have to comply with the same prompt corrective action ratio requirements at the parent-company level (see **Table 1** and **Table 2**); both parent companies and subsidiaries must comply with the revised system of risk weights.[33] The Regulatory Capital Rule does not apply to all top-tier savings and loan holding companies domiciled in the United States,

[29] A bank holding (parent) company had been able to raise (Tier 1) capital proceeds by issuing trust preferred securities (TruPS) to its subsidiaries (via establishing a special purpose entity). The subsidiaries ultimately acted as preferred shareholders to the parent company and were entitled to receive cumulative dividends after five years. From the perspective of the parent company, TruPS were analogous to directly issued preferred stocks with the tax advantages of debt, thus a hybrid instrument. The treatment of TruPS issuances (by the parent company) as debt or preferred stock for accounting purposes raised safety and soundness concerns. The treatment of TruPS as debt would give the (depository) subsidiaries claims to any revenue-generating assets of the parent company if the parent were to default on its dividend payments. Alternatively, the treatment of TruPS as preferred equity shares of the parent company suggests that subsidiaries would suffer losses if the parent defaulted, possibly causing financial distress. For discussions of TruPS, see Federal Financial Institutions Examination Council, "Supplemental Instructions: Investments in Trust Preferred Securities," at http://www.fdic.gov/news/news/inactivefinancial/2002/fil0229a.html; and Federal Deposit Insurance Corporation, "Trust Preferred Securities and the Capital Strength of Banking Organizations," *Supervisory Insights*, Winter 2010, at http://www.fdic.gov/regulations/examinations/supervisory/insights/siwin10/trust.html.

[30] The original provision was modified in the conference committee. The revised provision is now included as Section 171 of Dodd-Frank, which, on May 19, 2010, exempted mutual holding companies and adjusted the compliance dates for covered institutions. See H.Rept. 111-517 to accompany H.R. 4173.

[31] U.S. federal regulators will allow institutions to temporarily include existing TruPS in Tier 2 capital until such instruments are replaced with new capital instruments that satisfy the eligibility criteria of the Basel III final rule.

[32] Subsidiaries of foreign banking firms operating in the United States had to comply by July 15, 2015.

[33] These banks are subject to the Federal Reserve's Small Bank Holding Company Policy Statement; see "Capital Adequacy Guidelines for Bank Holding Companies; Small Bank Holding Company Policy Statement; Definition of a Qualifying Small Bank Holding Company," at http://www.federalreserve.gov/newsevents/press/bcreg/20060227a.htm.

particularly those substantially engaged in insurance underwriting or non-financial activities.[34] Some banking institutions covered by the Basel III final rule will face even more stringent requirements. For example, *advanced approaches* banks, defined as institutions with at least $250 billion in consolidated assets or on-balance sheet foreign exposures of at least $10 billion, must comply with additional safety and soundness requirements, particularly in the form of a countercyclical capital buffer and a supplementary leverage ratio (see **Table 1** and **Table 2**).

Title 1 of Dodd-Frank created enhanced safety and soundness requirements for banks with $50 billion or more in assets as well as systemically important financial institutions (SIFIs) that the Financial Stability Oversight Council (FSOC) determines could pose a threat to financial stability.[35] In addition, the Financial Stability Board (FSB) was established by the G-20 nations in April 2009 to assess vulnerabilities to the global financial system.[36] The FSB and the BCBS determine which institutions should be designated as global systemically important banks (G-SIBs). Consequently, advanced approaches banks that are SIFIs and G-SIBs must comply with additional capitalization requirements. The Federal Reserve System established the Large Institution Supervision Coordinating Committee (LISCC) in 2010 to coordinate the oversight of the large banking institutions.[37]

The next two sections discuss changes to the definition of eligible capital and highlight some of the new risk-weighting and prompt corrective action ratio requirements stemming from the Regulatory Capital Rule. **Appendix C** discusses the increase in stress testing requirements for all U.S. banks, which are likely to result in banks holding levels of required capital that exceed the minimum ratio compliance thresholds. **Appendix D** discusses the total loss absorbing capacity (TLAC) requirement for G-SIBs.

Stricter Definition of Capital

Pillar I of Basel III incorporates a minimum common equity tier 1 capital (CET1) ratio requirement, which becomes a requisite for satisfying the Tier 1 capital requirement. The BCBS determined that Tier 1 capital must consist predominantly of common equity and retained earnings in order to raise the quality, consistency, and transparency of regulatory capital. The financial crisis demonstrated that the resources to cushion against credit losses and write-downs came out of retained earnings, which is a part of a bank's tangible equity base. Hence, the definitions of the Tier 1 capital ratio and the CET1 ratio are now more closely defined.[38]

[34] A multi-tiered Savings & Loan Holding Company (SLHC) is composed of multiple companies or affiliates, and the top-tier refers to the parent or holding company that owns a savings bank or association. SLHCs that have more than 25% of consolidated assets derived from insurance underwriting activities (are subject to state insurance regulation) or have 50% or more of their revenues derived from non-financial activities are temporarily exempted from the Regulatory Capital Rule while the Fed further evaluates the appropriateness of this regulatory capital framework for these institutions.

[35] For more information on the safety and soundness provisions of Dodd-Frank that apply specifically to systemically important financial institutions (SIFIs), see CRS Report R42150, *Systemically Important or "Too Big to Fail" Financial Institutions*, by (name redacted)

[36] See CRS Insight IN10388, *Designation of Global 'Too Big To Fail' Firms*, by (name redacted) and (name redacted).

[37] See Board of Governors of the Federal Reserve System, *Governance Structure of the Large Institution Supervision Coordinating Committee (LISCC) Supervisory Program*, Supervision and Regulation Letters SR 15-7, Washington, DC, April 17, 2015, at http://www.federalreserve.gov/bankinforeg/srletters/sr1507.htm. See "Large Institution Supervision Coordinating Committee," at http://www.federalreserve.gov/bankinforeg/large-institution-supervision.htm. See Board of Governors of the Federal Reserve System, *Capital Plans*, December 1, 2011, at http://www.gpo.gov/fdsys/pkg/FR-2011-12-01/pdf/2011-30665.pdf.

[38] The tangible common equity ratio is defined as the ratio of a bank's common equity divided by its tangible assets.

Mortgage servicing rights, deferred tax assets, and holdings in other financial institutions may also be included in Tier 1 because they are considered very liquid and can be sold to offset unexpected losses; but these assets may not collectively exceed more than 15% of a bank's Tier 1 capital. This requirement limits dilution of the amount of common tangible equity in Tier 1 capital.

The final rule requires most elements of accumulated other comprehensive income (AOCI) to be included in Tier 1 regulatory capital. AOCI refers to gains or losses not yet realized (on assets available for sale), but the rationale to include these elements in Tier 1 capital is to capture a more accurate assessment of a bank's loss absorption capacity if its assets had to be sold.[39] For example, temporary movements in interest rates may cause the market value of securities to fluctuate. When interest rates fall, loans become more valuable especially if borrowers choose not to refinance into ones with lower interest rates; conversely, the market values of existing loans fall when interest rates increase. Because interest rate fluctuations translate into fluctuations of bank assets (securities) values, inclusion of unrealized gains and losses in Tier 1 capital would likely add volatility to bank capital ratios, arguably reflecting more frequent movements in market interest rates rather than changes in borrowers' default risks. Such volatility could increase the difficulty to gauge how much to lend and remain in compliance during periods of interest rate uncertainty, which may be particularly problematic for small banks with limited ability to use derivative instruments to hedge interest rate risks. Consequently, the U.S. federal banking regulators allowed banks that were *not* subject to the advanced approaches rules a one-time opportunity to opt out of the AOCI requirement.[40]

Default (Credit) Risk Ratio Requirements

Before discussing some of the ratio requirements, it may be useful to review the two-step process for determining the proper capitalization levels. First, the asset (the loan) is multiplied by a *risk weight* that is designed to capture the riskiness of the borrower. Second, the risk-weighted asset (or the product of the original asset multiplied by the risk weight) is multiplied by the *prompt corrective action ratio* or required capital ratio charge, which is designed to ensure that lending institutions have a capital reserve to buffer against the credit risk of the borrower.[41] For example, suppose a borrower receives a $100,000 mortgage loan. According to the Basel III final rule, if the mortgage meets certain requirements, then it would be assigned a 50% risk weight, and the value of the risk-weighted asset would be $50,000. For the bank to be *adequately capitalized*, it would need to hold total risk-based capital in the amount of $4,000 (8% prompt corrective action capital charge *$50,000) on this loan; to be *well-capitalized*, it would need to hold total risk-based capital in the amount of $5,000 (10% prompt corrective action capital charge *$50,000).

[39] The Financial Accounting Standard Board (FASB) has also issued new accounting rules on the reporting of accumulated other comprehensive income (AOCI), which includes gains and losses excluded from net income, to increase transparency. See Financial Accounting Standards Board, "FASB Issues Accounting Standards Update on Reporting Amounts Reclassified Out of Accumulated Other Comprehensive Income," press release, February 2, 2013, at http://www.fasb.org/cs/ContentServer?pagename=FASB%2FFASBContent_C%2FNewsPage&cid=1176160678750.

[40] See "Expanded Community Bank Guide to the New Capital Rule for FDIC-Supervised Banks," at https://www.fdic.gov/regulations/capital/capital/Community_Bank_Guide_Expanded.pdf. For more information about Call Reports and financial reporting requirements of thrifts, see "Reports of Condition & Income Forms and User Guides," at http://www2.fdic.gov/Call_TFR_Rpts/index.asp.

[41] If a bank fails to maintain capital levels consistent with the required regulatory capital ratios, then its regulator can take prompt corrective action, which may include penalties or additional requirements until its balance sheet is brought back into compliance.

This example has only one loan, but the entire asset side of a bank's balance sheet is typically risk weighted and then summed prior to applying the prompt corrective capital charges.

Revised Risk-Weighting Requirements

All banks regardless of size are required to follow the same risk-weighting guidelines. Federal regulators have implemented a system that assigns risk weights to all types of asset holdings (or exposures) based upon various categories of loans, issuers (of financial securities), and borrower underwriting requirements (see the box below). All bank assets (loans) would be multiplied by the assigned risk weight, and the sum of the risk-weighted assets would then be multiplied by a minimum capital percentage to determine how much capital a bank must hold. An overview of issues related to asset risk weighting appears in **Appendix A**.

Notable Asset Risk-Weighting Requirements Under the Regulatory Capital Rule

- Exposures to the U.S. government, including securities issued by the Federal Reserve and federal government agencies, will continue to be assigned a 0% risk weight.
- Residential mortgage exposures will continue to be assigned a 20% risk weight if they are insured by the Federal Housing Administration or the U.S. Department of Veterans Affairs; a 50% risk weight for prudently underwritten first liens; and a 100% risk weight for all other exposures, including when a borrower has both first and second liens.[42]
- Exposures to the direct obligations of the government-sponsored enterprises (e.g., Fannie Mae, Freddie Mac, Federal Home Loan Banks, Farmer Mac) will continue to receive a 20% risk weight; a risk weight of 100% will be assigned to holdings of their preferred stock.
- Consumer loans (e.g., credit cards, automobile loans) continue to receive a risk weight of 100%.
- Public Sector Entities (PSEs; i.e., state, local authority, or other government subdivision below the level of a sovereign, which would include U.S. states and municipalities) are assigned two risk weights. For a general obligation, which is defined as a bond backed by the full faith and credit of a PSE, the assigned risk weight is 20%. For a revenue exposure, which the PSE has committed to repay with revenues from a project rather than general tax funds, the assigned risk weight is 50%.
- Exposures to foreign sovereigns and banks will be assigned risk weights depending upon whether the entity (1) is a member of the Organization for Economic Co-operation and Development (OECD) and (2) has a country risk classification (CRC) assigned by the OECD. The weights range from 0% to 150% for issuances by foreign sovereigns and from 20% to 150% for issuances by foreign banks. (A weight of 150% will immediately be assigned to a foreign exposure upon the occurrence of a sovereign default during the previous five years.)
- Exposures to the Bank for International Settlements, the European Central Bank, the European Commission, the International Monetary Fund, and a broad range of multilateral development banks receive a risk weight of 0%.
- Commercial real estate (CRE) exposures risk weights remain at 100%. A particular subset of CRE, however, known as high-volatility commercial real estate (HVCRE), will be assigned a risk weight of 150%.[43]
- Various off-balance-sheet exposures that are not securitization exposures (e.g., loan guarantees, repurchase agreements, securities lending and borrowing transactions) receive a 100% risk weight.
- The outstanding balance of non-performing loans (except for non-performing one- to four-family residential mortgage loans) must receive a 150% risk weight.

Notes: In light of Section 939A of Dodd-Frank, U.S. implementation of Basel II.5 and Basel III do not depend on credit ratings. The ratings-based approach to securitization exposures (that was allowed under Basel I) has been replaced with the *simplified supervisory formula approach* (SSFA). Under SSFA, the risk weight is determined by the applicable credit risk as well as the hierarchy position of the securitization exposure in the payment structure.[44]

[42] In light of the Qualified Mortgage Rule, the treatment of residential mortgage exposures did not change. For information on the Qualified Mortgage Rule, see CRS Report R43081, *The Ability-to-Repay Rule: Possible Effects of the Qualified Mortgage Definition on Credit Availability and Other Selected Issues*, by (name redacted) .

[43] HVCRE is defined as the acquisition, development, or construction of real property with the following exemptions: (continued...)

Revisions to Prompt Corrective Action Ratio Requirements

After the assets are risk weighted, banks must apply *prompt corrective action* (PCA) capital ratio charges to determine the appropriate amount of capital to maintain. Under the prompt corrective action supervisory framework, regulators examine whether banks meet the requirements to be considered *well-capitalized, adequately capitalized, undercapitalized, significantly undercapitalized*, and *critically undercapitalized*.[45] If a bank receives a PCA notice from its primary regulator, then the level of scrutiny, restrictions, and penalties may increase as the financial health of the firm deteriorates. A significantly or critically undercapitalized bank may be considered insolvent by its primary regulator (chartering authority and examiner), which would subsequently appoint the Federal Deposit Insurance Corporation (FDIC) as the receiver of the failed institution. An overview of the ratios as applied to banks is presented below.

Risk-Weighted PCA Capital Ratio Requirements

The total risk-weighted capital ratios, defined as total (Tier 1 and Tier 2) capital divided by total risk-weighted assets, must meet the following requirements.

- The BCBS established a minimum *common equity tier 1 capital (CET1)* requirement of 4.5%, which was adopted by U.S. federal banking regulators. The regulators also set *additional Tier 1* capital instruments (e.g., mortgage servicing rights, deferred tax assets) at 1.5% and Tier 2 capital requirements at 2.0%. The sum of the Tier 1 capital and Tier 2 capital ratios may be referred to as the *minimum total capital ratio*.
- The BCBS established a *capital conservation buffer* to encourage banks to build capital buffers outside periods of financial stress that can be drawn down should their assets deteriorate, thus improving their resiliency to unanticipated losses. On September 12, 2010, the BCBS agreed to set the capital conservation buffer at 2.5% of risk-weighted assets. This buffer must consist mostly of common tangible equity. According to Basel III, regulators should forbid banks from distributing earnings, dividend payments, and salary bonus payments when banks have fallen below their capital conservation buffers.
- Lending can grow disproportionately when economic activity is expanding and contract when economic activity is contracting, thus feeding and exacerbating the business cycle. On September 12, 2010, the BCBS established a *countercyclical buffer* that would equal between 0% and 2.5% of a bank's total risk-weighted assets and consist of common equity or other fully loss absorbing capital. The buffer would grow during economic expansions and decrease during contractions. Although the BCBS allowed national regulatory authorities to determine when a countercyclical buffer requirement would be necessary,

(...continued)

one- to four-family residential properties, certain community development projects, the purchase or development of agricultural land, or CRE projects in which the borrower satisfies additional qualifying requirements.

[44] For example, some junior securitization risk exposures may be assigned a risk weight of 1,250%, meaning that $1 of this particular type of risk exposure would call for a bank to hold at least $1 of equity capital. For example, U.S. banks would calculate ($1 junior securitization risk exposure)*(1,250%)*(8% capital charge to be *adequately capitalized*), which equals $1 equity capital requirement.

[45] FDIC, *Risk Management Manual of Examination Policies*, "Capital," April 2015, p. 2.1-8, see the table summarizing the PCA (Prompt Corrective Action) categories, at https://www.fdic.gov/regulations/safety/manual/section2-1.pdf.

Section 616(c) of Dodd-Frank requires U.S. bank regulators to maintain a countercyclical buffer. The Federal Reserve established the countercyclical buffer initially at 0% under Regulation Q for the advanced approaches banking institutions. The 2.5 percentage points could be the maximum amount in effect when the countercyclical buffer is fully phased-in. Banks that fail to meet the buffer would face restrictions on capital distributions and the payment of discretionary bonuses.[46]

Table 1 shows the BCBS requirements and PCA requirements established by the federal banking regulators for U.S. banks to be *adequately capitalized* and *well-capitalized*.

Table 1. Basel III and Prompt Corrective Action (PCA) Risk-Based Capital Requirements for U.S. Depository Banks

(by January 1, 2019; in percentages)

Risk-Based Ratios	Basel III Pillar 1 Requirements and PCA Adequately Capitalized	PCA Well-Capitalized
Minimum CET1 (Tier 1 Capital)	4.5	6.5
Additional Tier 1 Capital Instruments	1.5	1.5
Tier 2 Capital	2.0	2.0
Minimum Conservation Buffer[a]	2.5	2.5
Total Risk-Based Capital Requirements: All Bank Depositories (Sum of Tier 1 Capital, Tier 2 Capital, and Conservation Buffer)	10.5	12.5
Additional Requirements for Advanced Approaches Banks		
Minimum Countercyclical Buffer[b]	0-2.5	0-2.5
Total Risk-Based Capital Requirements: Advanced Approaches Banks	10.5-13.0	12.5-15.0
G-SIB Charge (as designated by FSB)		1.0-4.5[c]

Source: Regulatory Capital Rules and G-SIB Surcharge Rule.

a. Banks must maintain a conservation buffer *greater than* 2.5% to avoid restrictions on dividends and discretionary bonus payments.

b. The maximum amount of 2.5% could be required when the countercyclical buffer is fully phased-in.

c. The total PCA charge for risk-weighted assets would be in the range of 13.5%-19.5% for the eight U.S. G-SIBs to be well-capitalized. See G-SIB Surcharge Rule.

In the earlier risk weighting example, a $100,000 mortgage loan was assigned a 50% risk weight that resulted in a risk-weighted asset equal to $50,000. Next, the PCA total risk-weighted capital charge of 12.5% to be well-capitalized would be applied ($50,000*12.5%), resulting in a capital buffer of $6,250. Advanced approaches banks would receive a capital charge in the range of 12.5%-15%, which includes the countercyclical buffer, resulting in a capital buffer in the range of $6,250-$7,500.

[46] See Federal Reserve Board, "Regulatory Capital Rules: The Federal Reserve Board's Framework for Implementing the U.S. Basel III Countercyclical Capital Buffer," press release, December 21, 2015, at https://www.federalreserve.gov/newsevents/press/bcreg/20151221b.htm.

The G-SIBs will have additional loss absorbency or capital requirements.[47] The BCBS recommended that an institution determined to be globally systemically important hold an additional 1% to 2.5% of capital in the form of common equity against their risk-weighted assets. On July 20, 2015, the Federal Reserve announced the final rule (the G-SIB Surcharge Rule) that established the methodology that designated G-SIBs must use to calculate their capital surcharges, which may range from 1.0% to 4.5% of each firm's total risk-weighted assets.[48]

Unweighted PCA Leverage Ratio Requirements

In contrast to the risk-weighted capital ratio requirements, the leverage ratio is defined as Tier 1 capital divided by the average total on-balance sheet assets. An unweighted-ratio requirement may be important at times when financial risks suddenly rise above what the assigned risk weight can feasibly capture. The leverage-ratio requirements for U.S. banks appear below.

Table 2. Basel III and PCA Unweighted-Leverage Requirements for U.S. Depository Banks

(by January 1, 2019; in percentages)

Leverage Ratio and Surcharges	Basel III Pillar I Requirements and PCA Adequately Capitalized	PCA Well-Capitalized	
All Depository Banks			
Leverage Ratio	4.0	5.0	
Additional Requirements (Surcharges) For Advanced Approaches Banks			
		Parent Holding Company	Subsidiaries
Supplemental Leverage Ratio		3.0	3.0
G-SIBs			
Enhanced Supplemental Leverage Ratio		2.0	2.0
G-SIB Charge			1.0
Total G-SIB Surcharges		5.0	6.0

Source: See Regulatory Capital Rules, G-SIB Surcharge Rule, and Enhanced Supplemental Leverage Rule.

On April 8, 2014, the federal banking regulators issued a final rule (the Enhanced Supplemental Leverage Ratio) that would add an additional capital buffer of at least 2% to the current supplementary leverage ratio of 3% for bank holding (parent) companies with more than $700 billion in total consolidated assets or $10 trillion in total assets, thus raising the total supplementary leverage ratio requirement to a 5% minimum.[49] The enhanced supplementary

[47] See Basel Committee on Banking Supervision, *Global Systemically Important Banks: Updated Assessment Methodology and the Higher Loss Absorbency Requirement*, Bank for International Settlements, July 2013, at http://www.bis.org/publ/bcbs255.pdf.

[48] Board of Governors of the Federal Reserve System, *Calibrating the GSIB Surcharge*, Washington, DC, July 20, 2015, at http://www.federalreserve.gov/aboutthefed/boardmeetings/gsib-methodology-paper-20150720.pdf.

[49] See Board of Governors of the Federal Reserve System, Federal Deposit Insurance Company, Office of the Comptroller of the Currency, "Agencies Adopt Enhanced Supplementary Leverage Ratio Final Rule and Issue Supplemental Leverage Ratio Notice of proposed Rulemaking," press release, April 8, 2014, at http://www.federalreserve.gov/newsevents/press/bcreg/20140408a.htm.

leverage ratio would function similar to the capital conservation buffer. The depository subsidiaries of the eight largest SIFIs must maintain a 6% ratio (which would exceed the 5% minimum) to be considered well-capitalized and avoid restrictions on bonuses. The rule becomes effective on January 1, 2018.[50]

Liquidity Ratio Requirements

The BCBS issued liquidity requirements to accompany the higher capital requirements because both capital and liquidity levels may become inextricably linked during periods of financial and economic stress. One definition of liquidity is the ability to sell an asset immediately for its original face or book value without incurring losses or significant transaction fees.[51] As previously explained, bank portfolios may consist of illiquid assets (longer-term loans) that are funded by liabilities (shorter-term borrowings), which must be renewed continuously until the longer-term customer loans are fully repaid. Periodic episodes of uncertainty may result in short-term rates rising relative to long-term rates, which can translate into distress for financial institutions. For example, institutions holding large amounts of illiquid assets may suddenly find themselves competing with other financial institutions to borrow shorter-term liquid assets, thus driving up short-term rates and increasing funding risks. During a period of uncertainty, a bank may liquidate some of its asset security holdings; but if other banks simultaneously make similar financial decisions, the market for such securities may consist of many sellers and few willing buyers. These scenarios show that, even if a bank has sufficient capital reserves to still be considered solvent, the scarcity of liquid funds would result in problems repaying short-term funding obligations. Hence, in addition to having sufficient capital to absorb some loan defaults (credit risk), banks need sufficient amounts of liquidity to buffer against unanticipated reversals in cash flow that could result in asset "fire sales," a phenomenon that occurred in 2007 and into 2008.[52] The BCBS, therefore, introduced two new liquidity risk ratio requirements to improve resilience to liquidity stress.[53]

First, on September 12, 2010, the BCBS established the 30-day *liquidity coverage ratio (LCR)* requirement to promote resilience to sudden temporary disruptions in liquidity. The numerator of the LCR consists of the total amount of a bank's stock of *high-quality liquid assets* (HQLA; generally government securities and cash), and the denominator measures net cash outflows over a 30-day time period. By 2019, a bank must hold an equal (or greater) amount of HQLA relative to its amount of net cash outflow over a 30-day period.[54]

On October 10, 2014, the federal banking agencies announced a final rule to implement the BCBS's LCR, calling for depository banking institutions with $50 billion or more in assets to

[50] Section 165 of Dodd-Frank has a leverage buffer requirement, but this requirement differs from the leverage ratio requirement discussed in this section. Dodd-Frank requires bank holding companies with $50 billion or more in assets and nonbank financial companies supervised by the Federal Reserve designated as SIFIs to maintain a debt-to-equity ratio of no more than 15-to-1.

[51] Economists have various definitions of liquidity rather than a single consensus definition.

[52] See David Greenlaw et al., "Leveraged Losses: Lessons from the Mortgage Market Meltdown," Proceedings of the U.S. Monetary Policy Forum, 2008, at http://research.chicagobooth.edu/igm/docs/USMPF_FINAL_Print.pdf.

[53] This regulatory action may also be considered *macroprudential* in nature because it would act to alleviate funding pressures that could affect the entire financial system and result in a systemic-risk event. See CRS Report R40417, *Macroprudential Oversight: Monitoring Systemic Risk in the Financial System*, by (name redacted).

[54] See Basel Committee on Banking Supervision, *Basel III: The Liquidity Coverage Ratio and Liquidity Risk Monitoring Tools*, Bank for International Settlements, January 2013, at http://www.bis.org/publ/bcbs238.pdf.

hold more HQLA in their portfolios.[55] The final rule defines the qualifying liquid assets over various ranges (i.e., level 1, level 2A, and level 2B), with level 1 being the most liquid, followed by level 2A and then level 2B as least liquid.[56]

Second, the BCBS also established the *net stable funding ratio (NSFR)* to encourage banks to rely upon medium- and longer-term funding of their longer-term loans as opposed to relying primarily upon short-term funding. The NSFR will also be a liquidity management tool designed to vary the lengths of time that sequences of short-term borrowings would need to be rolled over, thereby reducing the need to acquire large amounts of short-term funding all at once.[57] The NSFR approach to relieving liquidity pressures, however, may result in narrower lending spreads for banks or greater reliance on equity financing, both resulting in higher funding costs. The NSFR will not be introduced as a minimum requirement in Basel III until 2018.[58] On May 3, 2016, federal banking regulators announced a proposed rule to establish the NSFR requirement.[59]

Some Implications of Greater Prudential Capital and Liquidity Standards

Higher capital requirements and stress testing requirements (discussed in **Appendix C**) may result in a larger cushion to absorb unexpected losses and reduce the vulnerability of banking institutions to insolvency (i.e., failure). Higher liquidity requirements may reduce vulnerability to sudden reversals in cash flow. Furthermore, under circumstances when a bank failure is unavoidable, higher capital may reduce the size of claims or perhaps the need to draw from the FDIC's deposit insurance fund, thus avoiding possible taxpayer losses.[60] The benefits of higher capital and liquidity requirements, nonetheless, still have associated costs. In addition, the extent

[55] See Board of Governors of the Federal Reserve System, "Federal Reserve Board proposes rule to strengthen Liquidity Positions of Large Financial Institutions," press release, October 24, 2013, at http://www.federalreserve.gov/newsevents/press/bcreg/20131024a.htm; and CRS In Focus IF10208, *The Liquidity Coverage Ratio and the Net Stable Funding Ratio*, by (name redacted)

[56] See U.S. Department of Treasury, OCC, the Federal Reserve System, and the FDIC, "Liquidity Coverage Ratio: Liquidity Risk Measurement Standards," 79 *Federal Register* 197, October 10, 2014, pp. 61440-61541, at http://www.gpo.gov/fdsys/pkg/FR-2014-10-10/pdf/2014-22520.pdf.

[57] The numerator of the Net Stable Funding Ratio (NSFR) would be computed using banks' "available stable funding" (ASF) sources in the numerator divided by assets that "require stable funding" (RSF) in the denominator. The ASF in the numerator would be calculated as the sum of a bank's liabilities and capital using ASF weights. Bank capital would receive a 100% ASF weight; consumer deposits liabilities would receive 70% ASF weight; and shorter-term liabilities would receive lower or 0% ASF weights. In other words, ASF sources with longer maturities would be assigned higher weights than those with shorter maturities. The RSF in the denominator would be calculated as the sum of the bank's assets using RSF weights. Cash assets do not require funding and would receive a 0% RSF weight. Loans that mature in less than a year require funding and would receive an 85% RSF; loans that take a year or longer to mature would receive a 100% RSF. In other words, assets that require stable funding receive higher weights the longer they must be funded. The NSFR cannot be lower than 100%. Hence, a bank must either increase its capital reserves if it chooses to fund longer-term consumer loans with sequences of shorter-term loans, or it must diversify the maturities of its own shorter-term borrowings to maintain a NSFR of 100%.

[58] See Basel Committee on Banking Supervision, *Basel III: The Net Stable Funding Ratio*, Bank for International Settlements, October 2104, at http://www.bis.org/bcbs/publ/d295.pdf.

[59] See Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, and Office of the Comptroller of the Currency, "Agencies Propose Net Stable Funding Ratio Rule," press release, May 3, 2016, at http://www.federalreserve.gov/newsevents/press/bcreg/20160503a.htm.

[60] See CRS Report R41718, *Federal Deposit Insurance for Banks and Credit Unions*, by (name redacted).

that capitalization levels are informative about the resiliency of banks to systemic-risk events is ambiguous.

Funding loans via the short-term interbank loan markets is typically cheaper than funding them with shareholder equity. A bank typically must pay its shareholders a greater return than it would to short-term creditors because (1) its return on equity must be competitive with that of other publicly traded firms; and (2) shareholders require greater compensation for their willingness to shoulder greater default risk. A bank may attempt to meet increased capital requirements by placing the higher cost burdens on its customers (i.e., borrowers) rather than on existing shareholders. For example, to avoid raising new capital and diluting shareholder equity by reducing portfolio assets (i.e., loans), a bank may sell some existing assets or reduce future lending.[61] A bank could also pass its higher funding costs on to borrowers by increasing lending rates, fees, or both. Hence, a bank must decide how to distribute the costs of higher capital requirements between its shareholders and customers. The distribution of those costs may dampen credit expansion and slow the pace of economic recovery.

Bank capital levels are *procyclical*, meaning that they rise during healthy economic periods when there are fewer defaults, and decline during financial downturns when defaults increase.[62] Procyclical implies that bank capital levels may be a lagging indicator of distress rather than a predictor of resiliency to a systemic event.[63] Ironically, excessive lending activity may arise when banking institutions grow overconfident (1) as a result of being well-capitalized and (2) as optimism grows with the exceptional performance of an asset used as collateral for loans.[64] A rise in the pace of aggregate lending activity (especially as lenders' credit risk exposures grow more correlated with the performance of a particular financial market) may arguably serve as a better indicator of vulnerability to a systemic-risk event than bank capital levels.[65]

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[61] If a bank curtails lending to remain in or move toward compliance, it may also discourage (new) depositors to maintain proper balance sheet ratios. See Eric Dash and Nelson D. Schwartz, "In Cautious Times, Banks Flooded With Cash," *New York Times*, October 24, 2011, http://www.nytimes.com/2011/10/25/business/banks-flooded-with-cash-they-cant-profitably-use.html?pagewanted=all; Paul Davis, "In Cash Glut, Banks Try to Discourage New Deposits," *American Banker*, July 2010, http://www.americanbanker.com/bulletins/-1023018-1.html.

[62] Countercyclical capital buffers may increase the capacity of banks to absorb losses associated with an unexpected rise in defaults or encourage them to increase the cost of credit, which may dampen the demand for credit during economic boom periods. In 2008, however, Spain experienced a property bubble and subsequent banking crisis despite the requirement of countercyclical capital buffers for Spanish banks. For more information, see Gabriel Jimenez et al., *Macroprudential Policy, Countercyclical Bank Capital Buffers and Credit Supply: Evidence from the Spanish Dynamic Provisioning Experiments*, Barcelona Graduate School of Economics, Working Paper no. 628, April 2012, at http://research.barcelonagse.eu/tmp/working_papers/628.pdf; and CRS Report R42377, *The Eurozone Crisis: Overview and Issues for Congress*, coordinated by (name redacted) .

[63] For a discussion of the limitations of stress testing as early warning devices, see Claudio Borio, Mathias Drehmann, and Kostas Tsatsaronis, *Stress-Testing Macro Stress-Testing: Does It Live Up to Expectations*, Bank for International Settlements, Working Paper no. 369, January 2012, at http://www.bis.org/publ/work369.htm.

[64] See Franklin Allen and Douglas Gale, "Bubbles, Crisis, and Policy," *Oxford Review of Economic Policy*, vol. 15, no. 3 (1999) at http://finance.wharton.upenn.edu/~allenf/download/Vita/bubbles.pdf. For a discussion about overconfidence in the performance of mortgage assets stemming from overconfidence in rising house values, see Christopher L. Foote and Paul S. Willen, "The Subprime Mortgage Crisis," in *The New Palgrave Dictionary of Economics Online*, eds. Steven N. Durlauf and Lawrence E. Blume, Online Edition ed. (Palgrave Macmillan, 2011). In the recent banking crisis, institutions that experience large losses held high concentrations of or were exposure to mortgage securities prior to the downturn in the housing market. See David Greenlaw et al., "Leveraged Losses: Lessons from the Mortgage Market Meltdown," Proceedings of the U.S. Monetary Policy Forum, 2008, at http://research.chicagobooth.edu/igm/docs/USMPF_FINAL_Print.pdf.

[65] See Gov. Ben S. Bernanke, "Asset-Price 'Bubbles" and Monetary Policy,' Remarks before the New York Chapter of the National Association for Business Economics, New York, NY, October 15, 2002, at http://www.federalreserve.gov/boarddocs/speeches/2002/20021015/default.htm; and U.S. Department of the Treasury, Office of the Comptroller of the (continued...)

In addition to the benefits of liquidity-risk ratio requirements discussed in the previous section, there are associated costs that are difficult to measure. For example, as banks substitute away from higher-yielding, illiquid loans and hold more lower-yielding, liquid assets, they may not be taking on a sufficient amount of risk (i.e., providing credit in the form of illiquid loans) necessary to spur economic growth.[66] The U.S. banking system arguably may not need to hold large amounts of liquid assets because the Federal Reserve functions as the lender of last resort when liquidity shortages arise.[67] In addition to the costs associated with potential dampening effects on economic growth, the entire banking system could become *more* susceptible to a systemic-risk crisis should its large concentration of liquid (U.S. Treasury) securities suddenly experience an increase in credit risk. If the banking system holds large amounts of highly liquid U.S. Treasury securities, such could also lead to a reduced supply of liquid securities available to other financial and nonfinancial entities.[68] Hence, although the federal banking regulators recognize that liquidity-risk management is a practical tool for banking system stability, a substantial increase in risk-free asset holdings by the largest banks might introduce new challenges to financial stability.

Expanding safety and soundness requirements should increase the capacity of an *individual* banking institution to withstand losses associated with its various financial risks. By comparison, a systemic-risk event typically involves *multiple* financial institutions that *simultaneously* experience financial distress. Systemic-risk events may emerge from numerous sources, including the following.[69]

- A missed payment or liquidity disruption by a financial institution that causes a widespread loss of confidence (or panic) about the likelihood of repayment, thus generating a contagion or "flight-to-quality" run from like institutions (even if they lack a certain degree of interconnectedness).
- A missed payment or disruption of critical function by a financial institution that causes distress for other financial institutions to meet their financial obligations when a certain degree of interconnectedness exists.[70]

(...continued)

Currency, "Concentrations of Credit, Comptroller's Handbook," December 2011, at http://www.occ.gov/publications/publications-by-type/comptrollers-handbook/Concentration-HB-Final.pdf.

[66] See Basel Committee on Banking Supervision, *Basel III: International Framework for Liquidity Risk Measurement, Standards and Monitoring*, Bank for International Settlements, December 2010, at http://www.bis.org/publ/bcbs188.pdf.

[67] For a wider discussion of issues related to this topic, see Gov. Jeremy C. Stein, "Liquidity Regulation and Central Banking," at the "Finding the Right Balance" 2013 Credit Markets Symposium sponsored by the Federal Reserve Bank of Richmond, Charlotte, NC, April 19, 2013, at http://www.federalreserve.gov/newsevents/speech/stein20130419a.htm. Despite moral hazard incentives often times associated with banking institutions, few banks were initially willing to borrow from the federal government during the liquidity shortage associated with the Great Recession. See Renee Courtois Haltom, "Stigma and the Discount Window," *Federal Reserve Bank of Richmond Region Focus*, 2011, at https://www.richmondfed.org/~/media/richmondfedorg/publications/research/region_focus/2011/q1/pdf/federal_reserve.pdf; and Mark Landler and Eric Dash, "Drama Behind a $250 Billion Banking Deal," *Wall Street Journal*, October 14, 2008, at http://www.nytimes.com/2008/10/15/business/economy/15bailout.html?_r=0.

[68] See Joe Adler, "Wave of New Regulations Stokes Fears of Treasuries Shortage," *American Banker*, August 8, 2013, at http://www.americanbanker.com/issues/178_153/wave-of-new-regulations-stokes-fears-of-treasuries-shortage-1061210-1.html.

[69] See Board of Governors of the Federal Reserve System, "Speech by Governor Daniel K. Tarullo: Regulating Systemic Risk," press release, March 21, 2011, at http://www.federalreserve.gov/newsevents/speech/tarullo20110331a.htm.

[70] For an example of a payments and settlement function performed by a banking institution that became disrupted, see Arthur J. Rolnick, Bruce D. Smith, and Warren E. Weber, "The Suffolk Bank and the Panic of 1837," *Federal Reserve*
(continued...)

- A sudden asset price decline that simultaneously affects the balance sheets of financial institutions holding identical or similar assets. For example, numerous financial institutions held mortgage-related assets at a particular point in time when the performance of those asset classes suddenly deteriorated.

If an outbreak of disturbing financial news occurs, higher capital requirements would translate into greater probabilities of loss for equity shareholders (as opposed to short-term creditors, particularly those with deposit insurance). There is no guarantee, however, that higher capitalization levels of *individual* financial institutions would prevent impulsive flight-to-quality panics from occurring in one or more financial markets, which might still have destabilizing effects on the *entire* banking system that might be considered (at the time) well-capitalized.

Prudential requirements for the banking system may become less effective at mitigating financial risks when a significant amount of lending occurs outside the regulated banking system. Prior to the recent financial crisis, many loans were originated by nonbank (nondepository) institutions and nonbank subsidiaries of bank holding companies; some nonbanks and securitizers that held mortgage loans were not subject to bank safety and soundness requirements. Furthermore, large complex financial institutions sponsored financial conduits that allowed mortgages to be financed off the balance sheets of supervised banks.[71] When large amounts of lending activity occur in parts of the financial system that are not regulated for safety and soundness, raising prudential requirements for depository institutions would not necessarily address the rise in the various types of financial risks in the economy. Conversely, if nonbank lending activities substantially decline, then overall lending activity may become more contingent on (or sensitive to) changes in bank prudential requirements.[72] The Dodd-Frank Act included provisions pertaining to the regulation of nonbank financial activities.[73]

(...continued)

Bank of Minneapolis Quarterly Review, Spring 2000, at https://www.minneapolisfed.org/research/qr/qr2421.pdf.

[71] See Peter J. Elmer, "Conduits: Their Structure and Risk," *FDIC Banking Review*, vol. 12, no. 3 (December 1999), pp. 27-40. The proliferation of off-balance-sheet activities arguably could have been used as an indicator that credit availability was growing at a rate faster than the capital buffers of the banking firms that sponsored such conduits. See Thomas M. Hoenig and Charles S. Morris, *Restructuring the Banking System to Improve Safety and Soundness*, Federal Reserve Bank of Kansas City, May 2011, at http://www.kansascityfed.org/publicat/speeches/Restructuring-the-Banking-System-05-24-11.pdf. For more information on the supervision of Large Complex Banking Organizations, see Lisa M. DeFerrari and David E. Palmer, "Supervision of Large Complex Banking Organizations," *Federal Reserve Bulletin*, February 2001, pp. 47-57, at http://www.federalreserve.gov/pubs/bulletin/2001/0201lead.pdf.

[72] The Federal Reserve attributes an observed tightening of credit to the disappearance of private-label mortgage securitizations, which may have been able to fund creditworthy borrowers who did not satisfy underwriting criteria set by Fannie Mae, Freddie Mac, or the Federal Housing Administration. See Chairman Ben S. Bernanke, "Housing Markets in Transition," Speech at the 2012 National Association of Homebuilders International Builders' Show, Orlando, FL, February 10, 2012, at http://www.federalreserve.gov/newsevents/speech/bernanke20110210a.htm. Section 171 of Dodd-Frank, which requires the same minimum-leverage and risk-based capital requirements that apply to federally insured depository institutions to apply to bank holding companies and systemically significant nonbank financial companies, may reduce the funding advantages previously enjoyed by some nonbanks relative to the banking sector, thus increasing the sensitivity of credit availability to changes in capital requirements.

[73] See CRS Report R41350, *The Dodd-Frank Wall Street Reform and Consumer Protection Act: Background and Summary*, coordinated by (name redacted)

Legislative Developments

The 114th Congress is considering bills that would affect the prudential regulation of the banking system. Some of the bills that have been marked up in the various committees of jurisdiction include the following.[74]

- H.R. 1408, the Mortgage Servicing Asset Capital Requirements Act of 2015, which would direct the federal banking regulators to jointly study what capital requirements may be appropriate for mortgage servicing assets, passed the House as amended on July 14, 2015.
- H.R. 1309, the Systemic Risk Designation Improvement Act of 2015, which would require the determination of a SIFI designation to be based upon specific measurements established by BCBS, was ordered to be reported to the House on November 4, 2015. The bill would remove the $50 billion asset threshold under which bank holding companies are automatically subject to enhanced prudential regulation by the Federal Reserve, as mandated by the Dodd-Frank Act. Banks designated as G-SIBs by the Financial Stability Board would automatically be subject to enhanced prudential regulation. For firms that are not G-SIBs, FSOC would have the authority to designate them as systemically important, and thus subject to enhanced prudential regulation, under the designation process currently used for nonbank SIFIs.
- S. 1484, the Financial Regulatory Improvement Act of 2015, was reported without amendment to the Senate on June 2, 2015. The bill has numerous provisions that would affect the prudential regulation of banks, including similar language to the bills mentioned above.
- H.R. 3791, To raise the consolidated assets threshold under the small bank holding company policy statement, and for other purposes, would direct the Federal Reserve to revise the Small Holding Company Policy Statement to raise its consolidated asset threshold from $1 billion to $5 billion, and subsequently exempt the covered institutions from the leverage and risk-based capital requirements of the Dodd-Frank Act. H.R. 3791 passed the House as amended on April 14, 2016.

[74] For more information about these and other bills, see CRS Report R44035, *"Regulatory Relief" for Banking: Selected Legislation in the 114th Congress*, coordinated by (name redacted) .

Appendix A. Asset-Risk Weighting System

Capital-adequacy regulation requires banks to hold enough reserves to maintain minimum capital-asset ratios, which are generally defined as bank capital (e.g., common shareholder equity) in the numerator and bank assets in the denominator. Basel I introduced a risk-weighting system that weights (or multiplies) the assets in the denominator of the capital-asset ratio by a factor that attempts to capture the relative credit or default risk of bank assets.[75] The risk-weighting system arguably correlates lower credit risk with liquidity, as it typically assigns lower weights to more liquid assets and higher weights to less liquid assets. For example, cash and U.S. Treasury securities, which are liquid and considered to have zero default risk, receive a risk weight of 0%. These asset holdings would have no effect on a bank's portfolio capital-asset ratio. In contrast, loans with higher risk weights reduce the overall portfolio capital-asset ratio by increasing the size of the denominator. A bank holding a loan that is assigned 100% risk weight would be required to hold 8% of the value of that asset as capital. Should a bank decide to hold less cash and increase its holdings of higher yielding, less liquid loans, then its capital reserves must also increase for its capital-asset ratio to remain intact. Conversely, when capital-asset ratios are low, academic research has found that some banks will substitute toward low risk-weighted asset categories to restore the ratio.[76] The composition of a bank's asset portfolio, therefore, may be influenced by the fixed-risk weights assigned to the various assets.

The Basel I weighting system arguably did not sufficiently differentiate among the degrees of risk. To illustrate, Basel I places the same capital charge on all commercial loans regardless of the differences in credit (or default) risk. In other words, a bank would be required to hold the same percentage of capital against two commercial loans regardless if one were of relatively higher credit quality. Furthermore, the weighting system is unable to capture offsetting risk exposures. The capital surcharge is the same even though holding the loan with lower default risk may compensate for holding the higher-risk loan. Hence, banks arguably have an incentive to make higher-risk loans with potentially higher yields as opposed to lower-risk loans with lower yields.

Another concern regarding the Basel I weighting system is that banks would be incentivized to hold government securities (e.g., U.S. Treasuries) rather than extend loans in which credit shortages may exist, particularly during economic downturns. Government securities of the Organization for Economic Co-operation and Development (OECD)-member nations receive a risk weight of 0%. For example, suppose capital-asset ratios fall below regulatory threshold levels during recessions after an increase in borrowers' loan defaults. If banks previously had the incentive to hold lower quality loans during an expansionary economic period, they may decide to hold more OECD country sovereign debt rather than make new loans during recessionary periods to keep capital-asset ratios in compliance. These actions may further curtail lending to segments where more severe credit shortages may exist, such as in non-OECD emerging market economies or in the private sector when entering the recovery phase of a business cycle.[77] Hence,

[75] See "Minimum Capital Requirements" at http://www.bis.org/publ/bcbs128b.pdf; "Risk Weighting Assets" at http://www.fdic.gov/regulations/resources/directors_college/sfcb/capital.pdf or http://www.ots.treas.gov/_files/422020.pdf.

[76] See Patricia Jackson, coordinator, *Capital Requirements and Bank Behaviour: The Impact of the Basle Accord*, Bank for International Settlements, Basle Committee on Banking Supervision Working Papers, Basle, Switzerland, April 1999, pp. 1-59, at http://www.bis.org/publ/bcbs_wp1.pdf.

[77] See Bryan J. Balin, *Basel I, Basel II, and Emerging Markets: A Nontechnical Analysis*, The Johns Hopkins University School of Advanced International Studies, Washington, DC, May 2008, at http://www.policyarchive.org/handle/10207/bitstreams/11484.pdf. For more information about OECD, see http://www.oecd.org/home/0,2987,en_2649_201185_1_1_1_1_1,00.html.

the Basel I weighting system that relies on fixed weights results in "procyclical" capital requirements, which means they may incentivize excessive risk taking during expansions and discourage credit availability during economic downturns.[78] A bank's risk exposure may also be *understated* should the default risk of OECD country sovereign (debt) securities increase.[79]

Basel II revised the weighting system to allow for more risk differentiation, specifically by adding more risk-weight categories. Because fixed weights do not vary when financial risks change, Basel II also proposed using external credit assessments or ratings to determine the appropriate risk weight assignment.[80] For example, suppose a Nationally Recognized Statistical Rating Organization (NRSRO) gave its highest investment-grade rating to a security that still receives a 100% risk weight under Basel I. The highly rated security could receive a 20% risk weight under Basel II, which arguably better reflects the high credit quality. Because Dodd-Frank prohibits the use of NRSRO credit ratings, the Basel III final rule incorporated a more extensive risk-weighting system that allows for more risk differentiation than Basel I. Despite the greater array of risk weights to differentiate among the degrees of risk, the risk-weighting system would still provide procyclical lending incentives for the banking system (in terms of the types of assets to hold in portfolio during different phases of the business cycle as previously discussed).

[78] Jose L. Fillat and Judit Montoriol-Garriga, *Addressing the Pro-cyclicality of Capital Requirements with a Dynamic Loan Loss Provision System*, Federal Reserve Bank of Boston, Working Paper no. QAU10-4, September 15, 2010, at http://www.bostonfed.org/bankinfo/qau/wp/2010/qau1004.pdf.

[79] See CRS Report R41167, *Greece's Debt Crisis: Overview, Policy Responses, and Implications*, coordinated by (name redacted) .

[80] See Basel Committee on Banking Supervision, *Part 2: The First Pillar—Minimum Capital Requirements*, Bank for International Settlements, at http://www.bis.org/publ/bcbs128b.pdf.

Appendix B. Basel II.5 and the Fundamental Review of the Trading Book

In response to the 2007-2009 global financial crisis, the Basel Committee on Bank Supervision (BCBS) issued what is referred to as Basel II.5 as an amendment to Basel II.[81] Basel II.5 is designed to better capture credit risk in the "trading book" of a bank. The trading book refers to securities that a bank would *not* hold to maturity and would also be accounted for at current market value. A security held to maturity is accounted for in the "banking book" at its original book value, unless the bank decides to sell it; if so, it then moves over to the trading book, where it is given fair market value accounting treatment. Distinguishing between assets that should be held in the trading and banking books is not always easy, thus making it difficult to determine the proper accounting and risk-weighting treatment.[82] Nonetheless, Basel II.5 is intended to prevent strategic but inappropriate placement of securities in the book that would provide the most favorable accounting treatment at a particular point in time, potentially resulting in a bank having an insufficient amount of (regulatory) capital to absorb any financial losses. U.S. federal banking regulators issued proposed rules on the adoption of Basel II.5 revisions in the United States on January 11, 2011;[83] these were amended and re-proposed on December 7, 2011.[84] The final rule adopting Basel II.5, also known as the market capital risk rule, was issued by the regulators on June 7, 2012.[85] The final market capital rule that implements Basel II.5 applies to the trading books of banks with aggregated trading assets and trading liabilities equal to 10% or more of quarter-end total assets or $1 billion or more.

On January 31, 2014, the BCBS announced a proposal to review the market capital risk rule.[86] On January 11, 2016, the BCBS announced a revised framework that includes the following requirements.[87]

- The definition of the boundary between assets held in the banking book versus those held in the trading book would include a daily accounting (mark-to-market) treatment of trading book assets among other requirements.[88] In addition, banks'

[81] See Basel Committee on Bank Supervision (BCBS), *Revisions to the Basel II Market Risk Framework*, Bank for International Settlements, March 2009, at http://www.bis.org/publ/bcbs148.pdf and Basel Committee on Bank Supervision, *Guidelines for Computing Capital for Incremental Risk in the Trading Book*, at http://www.bis.org/publ/bcbs149.pdf.

[82] See BCBS, *Trading Book Survey: A Summary of Responses*, Bank for International Settlements, April 2005, at http://www.bis.org/publ/bcbs112.pdf.

[83] See Office of the Comptroller of the Currency (OCC), Treasury; Board of Governors of the Federal Reserve; and Federal Deposit Insurance Corporation (FDIC), "Risk-Based Capital Guidelines: Market Risk," 76 *Federal Register*, January 11, 2011, at http://www.gpo.gov/fdsys/pkg/FR-2011-01-11/pdf/2010-32189.pdf.

[84] See OCC, Treasury; Board of Governors of the Federal Reserve; FDIC, "Risk-Based Capital Guidelines: Market Risk; Alternatives to Credit Ratings for Debt and Securitization Positions," December 7, 2011, at http://www.federalreserve.gov/newsevents/press/bcreg/bcreg20111207a1.pdf.

[85] See Federal Reserve Board, press release, June 7, 2012, at http://www.federalreserve.gov/newsevents/press/bcreg/20120607b.htm.

[86] See BCBS, *Fundamental Review of the Trading Book: A Revised Market Framework*, Bank for International Settlements, Consultative Document, January 31, 2014, at http://www.bis.org/publ/bcbs265.pdf.

[87] See Bank for International Settlements, "Revised Market Risk Framework and Work Programme for Basel Committee is Endorsed by its Governing Body," press release, January 11, 2016, at https://www.bis.org/press/p160111.htm; and BCBS, *Minimum Capital Requirements for Market Risk*, Bank for International Settlements, January 2016, at https://www.bis.org/bcbs/publ/d352.pdf.

[88] The ability to price an asset daily is easier the more liquid the asset. Daily pricing of a relatively *less* liquid asset may (continued...)

regulators would determine whether a bank has provided sufficient evidence that an asset has met all the criteria necessary to be placed in the trading book. Furthermore, restrictions would be placed on a bank's ability to move assets between the trading and banking books after having initially given the asset a designation, thereby decreasing the possibility of regulatory arbitrage.

- The BCBS provides a standardized methodology that most banks should use (as opposed to its own internal model) to calculate their regulatory capital requirements for the trading book.
- Instead of using the standardized methodology, certain large or internationally active banks may receive approval from their regulators if they prefer using their own internal model (advanced approaches) to calculate their regulatory capital requirements. The BCBS establishes an approval process for regulators. Internal models must incorporate a new risk measure, Estimated Shortfall (ES), which would replace the Value-at-Risk (VaR) metric.[89] The precision of internal models would also be evaluated by comparing predicted to actual asset performance.
- The BCBS provides guidance on the valuation procedures for illiquid assets held in portfolio regardless if they are placed in the trading or the banking book. In addition, the BCBS provides guidance on accounting methodologies, market liquidity assumptions, and the establishment of procedures for banks to use when determining whether current liquidity positions need re-adjusting.

The market capital risk rule could possibly lead to a reduction of assets that banks place in their trading books, particularly if it results in a material increase in total market risk capital requirements.[90] The effect of these rules on trading activity, however, as in the case with the Volcker Rule, is likely to be unclear given the difficulty to assess changes in market liquidity levels particularly for assets that already tend to trade infrequently.[91] As of this writing, there was no information available as to when the revised market capital risk rule for U.S. banking firms would be proposed and finalized by federal regulators.

(...continued)

serve as evidence that one or more willing buyers exist and, therefore, adds authenticity to a bank's stated intention to sell it. Assets that are relatively more liquid are typically assigned lower risk weights, thus reducing the incentive for strategic placement in the inappropriate book.

[89] The Value-at-Risk (VaR) metric is designed to estimate the probability that an extreme event would occur; the Estimated Shortfall (ES) is designed to estimate the expected amount of loss given the occurrence of all possible extreme events. For more information, see Tobias Voigt, "FRTB: Replacing VaR with Expected Shortfall in Market Risk," CAPCO BLOG, October 6, 2015, at http://www.capco.com/insights/capco-blog/frtb-replacing-var-with-expected-shortfall-in-market-risk.

[90] John Heltman, "Basel Committee Sets Tougher Standards for Bank Trading Books," *American Banker*, January 14, 2016, at http://www.americanbanker.com/news/law-regulation/basel-committee-sets-tougher-standards-for-bank-trading-books-1078824-1.html?utm_medium=email&ET=americanbanker:e5913633:652542a:&utm_source=newsletter&utm_campaign=regulation%20reform-jan%2014%202016&st=email&eid=fa754b7e6d7dbe520deab93f7207de1b.

[91] See CRS Report R43440, *The Volcker Rule: A Legal Analysis*, by (name redacted) and (name redacted) ; and CRS Report R41298, *The "Volcker Rule": Proposals to Limit "Speculative" Proprietary Trading by Banks*, by (name redacted) and (name redacted) .

Appendix C. Stress Testing Requirements

A bank stress test is a diagnostic tool used to judge a bank's or financial institution's ability to weather adverse macroeconomic and financial conditions.[92] Stress tests are conducted to determine whether banking institutions can remain adequately capitalized and, therefore, solvent under specific adverse economic scenarios, such as heightened rates of unemployment, an economic slowdown or a recession, or failure of other banking or financial institutions. Such events could result in widespread borrower defaults, the inability to obtain short-term funding; thus depleting a bank's Tier 1 capital. Stress test scenarios are designed to alert a bank's management and regulators to potential balance sheet weaknesses, possibly related to insufficient diversification of its portfolio of asset holdings, during an unfavorable economic or financial scenario. Passing a stress test may require banking institutions to make financial risk adjustments to their asset portfolios and to maintain capital levels in excess of the capital ratios requirements discussed earlier in this report.

The BCBS recommended that banks adopt rigorous and comprehensive stress testing programs.[93] In addition, Section 165(i)(2) of the Dodd-Frank Act requires bank holding companies and nonbank financial corporations with consolidated assets of more than $10 billion to conduct and report on self-imposed semi-annual stress tests. In October 2012, the Office of the Comptroller of the Currency, the Federal Deposit Insurance Corporation, and the Federal Reserve separately announced final rules requiring national banks and federal savings associations with total consolidated assets of $10 billion or more to conduct annual stress tests.[94] The final rules, issued directly to banking institutions from their primary federal banking regulator, require all banking institutions to analyze the potential impact of adverse economic conditions on their financial conditions or viability.

The Dodd-Frank Act Stress Tests (DFAST) for Midsize Banking Organizations

On March 5, 2014, the federal banking regulators issued final guidance on stress testing for firms with assets between $10 billion and $50 billion.[95] The final rules largely include, for institutions with $10 billion to $50 billion in consolidated assets, stress testing requirements (e.g., economic scenarios) as well as deadlines for reporting (to the primary regulator) and making financial disclosures (to the public). These stress tests are referred to as the Dodd-Frank Act Stress Tests (DFAST). A comparison of the stress testing requirements for midsize banks relative to the largest banking institutions appears in the next section.

[92] Stress testing is also a practice used in medicine, nuclear diagnostics, pharmacology, and computer and network systems among others.

[93] See Basel Committee on Banking Supervision, *Principles for Sound Stress Testing Practices and Supervision*, Bank for International Settlements, May 2009, at http://www.bis.org/publ/bcbs155.pdf.

[94] See Department of the Treasury, Office of the Comptroller of the Currency (OCC), "Annual Stress Test," 77 *Federal Register* 195, October 9, 2012; Board of Governors of the Federal Reserve System, "Annual Company-Run Stress Test Requirements for Banking Organizations with Total Consolidated Assets over $10 Billion Other Than Covered Companies," 77 *Federal Register* 198, October 12, 2012; and Federal Insurance Deposit Corporation (FDIC), "Annual Stress Test," 77 *Federal Register* 199, October 15, 2012.

[95] See Board of Governors of the Federal Reserve System, FDIC, OCC, press release, March 4, 2014, at http://www.federalreserve.gov/newsevents/press/bcreg/20140305a.htm.

From SCAP to CCAR: Testing of Large Banking Organizations

In February 2009, the Federal Reserve announced the Supervisory Capital Allocation Program (SCAP) for bank holding companies with assets exceeding $100 billion. Under the SCAP, the Federal Reserve conducted a stress test for the 19 largest U.S. bank holding companies, which included an estimation of their revenues, losses, and reserve requirements under two adverse economic scenarios.[96] The SCAP program conducted stress tests for 2009 and 2010.

Sections 165 and 166 of the Dodd-Frank Act require enhanced prudential standards on bank holding companies with total consolidated assets of $50 billion or more and nonbank financial companies determined by the Financial Stability Oversight Council (FSOC) to be systemically important. In November 2011, the Federal Reserve subsequently introduced the Comprehensive Capital Assessment Review (CCAR) program that annually evaluates the capital planning process of institutions with more than $50 billion in assets.[97] The SCAP stress testing now continues under the CCAR program.

Compliance with the Dodd-Frank Act requires the largest banking institutions to be subject to the DFASTs and additional stress-testing requirements. For example, both midsize and larger institutions are subject to regulatory-issued stress tests; large banks, however, must create additional stress-test scenarios designed to address their idiosyncratic portfolio risks. Because large banks have multiple stress tests, their submissions occur in January and July; midsize banks' stress test submissions occur in March. Large banks must maintain a 5% Tier 1 common ratio after the stress test, but this requirement does not apply to midsize banks.[98]

Stress Testing of Small Institutions

Federal banking regulators require all U.S. banks to conduct some form of stress testing for market risks.[99] Although community banks are not subject to Section 165 of the Dodd-Frank Act,[100] they are still required to assess their ability to withstand an adverse macroeconomic scenario.[101] Stress tests for community banks may be tailored to address financial risks considered to be more imminent (by regulators). For example, community banks could be required to

[96] See Board of Governors of the Federal Reserve System, *The Supervisory Capital Assessment Program: Design and Implementation*, April 24, 2009, at http://www.federalreserve.gov/bankinforeg/bcreg20090424a1.pdf.

[97] See "Stress Tests and Capital Planning, Comprehensive Capital Analysis and Review," at http://www.federalreserve.gov/bankinforeg/ccar.htm; and Tim P. Clark and Lisa H. Ryu, *CCAR and Stress Testing as Complementary Supervisory Tools*, Board of Governors of the Federal Reserve System, at http://www.federalreserve.gov/bankinforeg/ccar-and-stress-testing-as-complementary-supervisory-tools.htm.

[98] For more differences between the Dodd-Frank Act Stress Tests (DFAST) and Capital Assessment Review (CCAR), see Charyn Faenza, *DFAST & CCAR: One Size Does Not Fit All*, Institute for Advanced Analytics and F.N.B. Corporation, 2014, at http://analytics.ncsu.edu/sesug/2014/AD-12.pdf.

[99] See Board of Governors of the Federal Reserve System, FDIC, OCC, "Statement of Clarify Supervisory Expectations for Stress Testing by Community Banks," press release, May 14, 2012, at http://www.federalreserve.gov/newsevents/press/bcreg/bcreg20120514b1.pdf.

[100] Community banks have traditionally been considered small banks having assets of $1 billion that meet the lending needs of a circumscribed geographic area; that definition, however, may currently be too narrow. See FDIC, *FDIC Community Banking Study*, December 2012, at https://www.fdic.gov/regulations/resources/cbi/report/cbi-full.pdf.

[101] See FDIC, "Stress Testing Credit Risk at Community Banks," *Supervisory Insights*, Summer 2012, at https://www.fdic.gov/regulations/examinations/supervisory/insights/sisum12/stress.html; and Department of Treasury, Office of the Comptroller of the Currency, "Community Bank Stress Testing," *OCC Bulletin 2012-33*, October 18, 2012, at http://www.occ.gov/news-issuances/bulletins/2012/bulletin-2012-33.html.

demonstrate their ability to obtain additional funding under stressed situations or could be asked to demonstrate their resiliency to changing interest rates.

Community banks are typically required to conduct portfolio stress tests when their portfolios begin to reflect significant concentrations in a very narrow range of credit exposures. For example, U.S. federal banking regulators, concerned about relaxed underwriting standards in commercial real estate (CRE), increased supervisory guidance for banks with significant concentrations in CRE.[102] Community banks, which typically engage in CRE lending, are generally considered vulnerable to loan defaults and possible failure if CRE prices suddenly collapse. Given that CRE losses can be substantial and federal regulators may not be familiar with the default and funding risks unique to a particular geographic area,[103] the guidance requires a bank to submit a plan to its regulator regarding its risk management practices if any of the following conditions hold:

- total construction and land development loans was equal to or more than 100% of its total capital reserve;
- total construction, land development, other land and loans secured by multifamily and nonfarm nonresidential property was equal to or greater than 300% of its total capital; or
- the CRE loan portfolio had increased by 50% or more in the span of 36 months.

The risk management plan must outline the bank's plan to reduce or manage its high level of commercial real estate concentrations. The guidance states its intent to encourage institutions to develop risk management practices and levels of capital levels "commensurate with the level and nature of their commercial real estate concentrations" rather than limit CRE lending by banks. Nevertheless, the federal regulators may require banks with unacceptable risk management plans to raise additional capital.

[102] See OCC, Board of Governors of the Federal Reserve System, FDIC, "Federal Banking Agencies Issue Final Guidance on Concentrations in Commercial Real Estate Lending," press release, December 6, 2006, at http://www.federalreserve.gov/newsevents/press/bcreg/20061206a.htm.

[103] See Jose A. Lopez, *Concentrations in Commercial Real Estate Lending*, Federal Reserve Bank of San Francisco, Economic Letter 2007-01, San Francisco, CA, January 5, 2007, http://www.frbsf.org/publications/economics/letter/2007/el2007-01.html.

Appendix D. Total Loss Absorbing Capacity Holding Requirements

This appendix discusses the total loss absorbing capacity (TLAC) proposal for the eight largest U.S. banking institutions.[104] Title II of the Dodd-Frank Act provides the FDIC with resolution authority over large, complex financial firms that, in the event of a failure, might trigger adverse effects on the U.S. financial system. By increasing the loss-absorbing capacity of the parent company of a global systemically important bank (G-SIB) institution, TLAC requirements are designed to diminish the risk of contagion that could negatively impact the financial health of numerous subsidiaries should the parent company experience an insolvency event. The Financial Stability Board (FSB) issued a proposal on November 10, 2014, that introduced a general international framework on TLAC standards designed to insure that a G-SIB would have loss absorbing capacity in the event of its failure and the ability to recapitalize a successor parent company.[105] On October 30, 2015, the Federal Reserve announced a proposed rule that would enhance the ability of the largest banks (specifically the parent companies with depository subsidiaries) operating in the United States to resolve themselves without government assistance should they become insolvent; the comment period ended on February 1, 2016.[106] In November 2015, the Basel Committee on Banking Supervision (BCBS) also released a consultative document pertaining to G-SIBs having sufficient loss absorbing and recapitalization capacity.[107]

The TLAC requirements are designed to quickly capitalize a *clean holding company*, a bridge company that would act as a successor to the former (insolvent) parent company, in a manner that causes little or no disruption to the activities of the pre-existing subsidiaries. TLAC requirements would consist of existing capital (i.e., equity) holding requirements as well as long-term debt issuances, which are described in depth in the proposed rule.[108] Covered G-SIB bank holding or parent companies would be required to issue long-term debt instruments for investors to purchase with a one-year minimum maturity.[109] In addition, the purchasers of long-term debt instruments theoretically should be resilient to a systemic risk panic or run because they must be *third party*

[104] In addition to the eight largest domestic banking firms, the total loss absorbing capacity (TLAC) requirements would also apply to four foreign banking organizations operating in the United States.

[105] See Financial Stability Board, "FSB Consults on Proposal for a Common International Standard on Total Loss-Absorbency Capacity (TLAC) for Global Systemic Banks," press release, November 10, 2014, at http://www.fsb.org/wp-content/uploads/TLAC-Press-release.pdf.

[106] See Federal Reserve Board, press release, October 30, 2015, at http://www.federalreserve.gov/newsevents/press/bcreg/20151030a.htm; and Federal Reserve System, "Total Loss-Absorbing Capacity, Long-Term Debt, and Clean Holding Company Requirements for Systemically Important U.S. Bank Holding Companies and Intermediate Holding Companies of Systemically Important Foreign Banking Organizations; Regulatory Capital Deduction for Investments in Certain Unsecured Debt of Systemically Important U.S. Bank Holding Companies; Proposed Rule," 80 *Federal Register*, November 30, 2015, at https://www.gpo.gov/fdsys/pkg/FR-2015-11-30/pdf/2015-29740.pdf.

[107] See Basel Committee on Banking Supervision, *Consultative Document: TLAC Holdings*, Bank for International Settlements, November 2015, at http://www.bis.org/bcbs/publ/d342.pdf.

[108] See Federal Reserve System, "Total Loss-Absorbing Capacity, Long-Term Debt, and Clean Holding Company Requirements for Systemically Important U.S. Bank Holding Companies and Intermediate Holding Companies of Systemically Important Foreign Banking Organizations; Regulatory Capital Deduction for Investments in Certain Unsecured Debt of Systemically Important U.S. Bank Holding Companies; Proposed Rule," 80 *Federal Register*, November 30, 2015, at https://www.gpo.gov/fdsys/pkg/FR-2015-11-30/pdf/2015-29740.pdf.

[109] According to the Federal Reserve proposed rule, the minimum (external) TLAC level would be computed as the greater of 18% of a global systemically important bank's (G-SIB's) risk-weighted assets and 9.5% of its total leverage ratio, and the proposal includes additional long-term debt requirements for domestic G-SIBs. Additional (internal) TLAC requirements would apply to foreign G-SIBs with domestic subsidiaries.

investors, meaning that they cannot have any affiliation with the parent company or its subsidiaries. The parent company would also be prohibited from entering into derivative contracts with any third party investors. If a financial event were to result in the insolvency of a parent company, the long-term debt issuances would automatically convert into equity holdings in a clean holding company for the investors. The performing assets from the insolvent parent company would also transfer to the clean holding company. Because third party TLAC investors would absorb losses arising from the insolvency of the parent company, the likelihood that taxpayer funds would be needed to recapitalize a G-SIB is reduced. The failure of an existing G-SIB parent company to comply with TLAC requirements would result in restrictions on its ability to pay dividends to equity shareholders as well as on discretionary bonuses paid to executives; these restrictions parallel those associated with the failure to meet the capital conservation buffer requirements.

The Federal Reserve's proposed rule would require eligible TLAC instruments to have *plain vanilla* features that are easy to value and, therefore, more transparent. Instruments with plain vanilla features do not have characteristics similar to derivatives instruments or structured notes. Formal derivative contractual arrangements allow for the purchase or sale of financial assets after an event such as a change in interest rates, collateral values, inflation, or various other macroeconomic or financial variables.[110] Depending upon the definition implemented in the final rule, the ability for investors to *accelerate* or trigger payment of the TLAC long-term debt instruments prior to maturity for reasons other than insolvency or payment default of the parent company may be restricted.[111] Currently, long-term bank instruments may have acceleration features that can be used to provide liquidity to investors. Although facilitating the resolution of a failed entity may occur faster if regulators can easily value the assets and liabilities, the willingness of investors to purchase plain vanilla instruments with liquidation restrictions arguably might be less appealing.[112]

The TLAC requirement may effectively mitigate one type of a systemic-risk panic but not necessarily all types of systemic-risk panics. If a single bank parent became insolvent, the TLAC requirements may reduce the likelihood of runs by shareholders on other subsidiaries or similar bank parent companies. In contrast, suppose the market price of a financial asset collapses, and current holders are unable to sell or liquidate the asset due to a lack of willing buyers. Holders of a collapsed asset are likely to see balance sheet losses, similar to the 2008 experience, and such

[110] Many financial assets have the characteristics of derivatives even though they are not formally classified as derivatives by the International Swaps and Derivatives Association, Inc. For example, mortgage loans are instruments that have embedded derivative features. If borrowers were to obtain fixed rate mortgages and never paid them in full ahead of schedule or never defaulted, then mortgages would be easy to value. If, however, borrowers have the option to pay their loans early (assuming no prepayment penalties) or the option to default, these costs associated with these potential contingencies are estimated and subtracted from the present value of the loan, thus increasing the difficulty to price the asset. These features are known as the optionality of the loan, similar in manner to derivative options in which the buyer can exercise under circumstances when it becomes more profitable. See Robert Brooks and Benton E. Gup, "Embedded Options Impact on Interest Rate Risk and Capital Adequacy," *The Journal of Applied Business Research*, vol. 15, no. 4 (Fall 1999), at http://www.cluteinstitute.com/ojs/index.php/JABR/article/viewFile/5657/5736; and "About ISDA," at http://www2.isda.org/about-isda/.

[111] See Committee on Capital Markets Regulation, *Comment Letter: Total Loss-Absorbing Capacity, Long-Term Debt, and Clean Holding Company Requirements for Systemically Important U.S. Bank Holding Companies and Intermediate Holding Companies of Systemically Important Foreign Banking Organizations and Related Requirements (the Proposed Rule)*, Cambridge, MA, February 3, 2016, at https://www.federalreserve.gov/SECRS/2016/March/20160318/R-1523/R-1523_020316_130200_416680246698_1.pdf.

[112] The Federal Reserve may consider grandfathering outstanding long-term bank debt issuances that already contain acceleration clauses.

losses may be large and pervasive enough to cause multiple bank insolvencies. Under this scenario, multiple G-SIB parents might have to *simultaneously* convert to clean holding companies. Hence, it is unclear whether multiple TLAC conversions would add or reduce the level of uncertainty likely to exist if numerous TLAC (and non-TLAC) banking firms were to simultaneously experience distress, which frequently occurs during banking crises.

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