United States Government Accountability Office

Report to the Chairman, Subcommittee on Financial Institutions and Consumer Credit, Committee on Financial Services, House of Representatives

November 2014

BANK CAPITAL REFORMS

Initial Effects of Basel III on Capital, Credit, and International Competitiveness

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GAO Highlights

Highlights of GAO-15-67, a report to the Chairman, Subcommittee on Financial Institutions and Consumer Credit, Committee on Financial Services, House of Representatives

Why GAO Did This Study

The 2007-2009 financial crisis revealed that many U.S. and international banks lacked capital of sufficient quality and quantity to absorb substantial losses. In 2010, the Basel Committee (the global standard-setter for prudential bank regulation) issued the Basel III framework—comprehensive reforms to strengthen global capital and liquidity standards with the goal of promoting a more resilient banking sector. In 2013, federal banking regulators adopted regulations to implement the Basel III-based capital standards in the United States, which generally apply to U.S. bank holding companies and banks and are being phased in through 2019. Some market participants have raised questions about the potential negative impact of the regulations on U.S. banks, including on their lending and competitiveness.

This report examines how (1) the U.S. Basel III regulations may affect U.S. banks, including smaller ones, and (2) implementation of Basel III by different countries and other jurisdictions may affect U.S. banking organizations' international competitiveness. To address the objectives, GAO analyzed data from financial filings; conducted legal and economic analysis; reviewed empirical studies, federal regulations, and agency documents; and interviewed regulators, U.S. and foreign banks, and industry associations.

GAO makes no recommendations in this report. GAO provided a draft of this report to the banking regulators for their review and comment and received technical comments, which were incorporated as appropriate.

View GAO-15-67. For more information, contact Lawrance Evans at (202) 512-8678 or evansl@gao.gov.

What GAO Found

Although the U.S. Basel III capital requirements may increase compliance costs, they likely will have a modest impact on lending activity as most banks may not need to raise additional capital to meet the minimum requirements. GAO's analyses of financial data for the first quarter of 2014 indicate the vast majority of bank holding companies and banks currently meet the new minimum capital ratios and capital conservation buffer (an additional capital requirement) at the fully phased-in levels required by 2019. GAO estimated that less than 10 percent of the bank holding companies collectively would need to raise less than $5 billion in total additional capital to cover the capital shortfall. Banks with a shortfall tended to be small, with less than $1 billion in assets. The empirical research GAO reviewed suggests that higher regulatory capital requirements will have a modest effect on the cost and availability of credit. Similarly, GAO's economic analysis indicates that raising the additional capital would lead to a modest decline in lending and a modest increase in loan rates. According to officials from the eight community banks GAO interviewed, they do not anticipate any difficulties meeting the capital requirements but expect to incur additional compliance costs. Officials from the 10 global systemically important banks that GAO interviewed said they have been incurring significant costs to comply with the new requirements, but three said that U.S. minimum capital ratios for Basel III tend not to be the binding capital constraint. Most of these bank officials said they expect the requirements to improve the resilience of the banking system.

Jurisdictional differences in the implementation of the Basel III capital standards have arisen, but their competitive effect on internationally active banks is unclear. Basel III serves, in part, to limit competitive disparities due to differences in capital standards, but there are limitations to full harmonization. For example, the Basel capital standards have no legal force; rather, members of the Basel Committee on Banking Supervision (Basel Committee) developed and agreed to the standards, with the expectation that each member will implement them. Thus, jurisdictions may adopt requirements more or less stringent than the minimum standards. Almost all Basel Committee members report having adopted rules to implement the Basel III capital requirements. To help promote a level regulatory playing field, the Basel Committee began conducting reviews in 2012 to assess whether each member's implementation meets the Basel III minimum standards and whether implementation produced consistent outcomes across jurisdictions. These reviews found the rules of the seven members it assessed to date to be generally compliant. However, the Basel Committee's other reviews identified some inconsistencies in how banks across different jurisdictions calculated their risk-weighted assets. As was the case with Basel II implementation, some banks and others are concerned about jurisdictional differences in the implementation of Basel III and their effect on competition. For example, some jurisdictions are subjecting certain of their banks to capital or leverage requirements above the Basel III minimums or exempting banks from certain capital requirements. Because Basel III's implementation is ongoing, the extent to which the differences collectively will affect competition among internationally active banks is unclear. In addition, other factors can affect the competitive position of internationally active banks, such as differences in accounting treatment, cost of capital, and tax rules across jurisdictions.

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Abbreviations

Basel Committee	Basel Committee on Banking Supervision
Call Reports	Consolidated Reports of Condition and Income
CCAR	Comprehensive Capital Analysis and Review
Collins Amendment	Section 171 (b) of the Dodd Frank Wall Street Reform and Consumer Protection Act of 2010
Dodd-Frank Act	Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010
FDIC	Federal Deposit Insurance Corporation
Federal Reserve	Board of Governors of the Federal Reserve System
EU	European Union
G-SIB	global systemically important banks
OCC	Office of the Comptroller of the Currency
RCAP	Regulatory Consistency Assessment Program
U.S. IHC	U.S. intermediate holding company
Y-9C	Consolidated Financial Statements for Holding Companies—Form FR Y-9C

U.S. GOVERNMENT ACCOUNTABILITY OFFICE
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November 20, 2014

The Honorable Shelley Moore Capito
Chairman
Subcommittee on Financial Institutions and Consumer Credit
Committee on Financial Services
House of Representatives

Dear Madam Chairman

The 2007-2009 financial crisis revealed that many banking organizations lacked capital of sufficient quality and quantity to absorb substantial losses.[1] Capital reassures an institution's depositors, creditors, and counterparties that unanticipated losses or decreased earnings will not impair the institution's ability to protect the savings of depositors, repay creditors, or fulfill their obligations to counterparties. Because of capital's role in absorbing losses, promoting confidence, and protecting depositors, federal banking regulations require banking organizations to maintain adequate capital, and regulators set minimum capital levels to help ensure that institutions do so.

In response to the crisis, banking regulators around the world moved to strengthen requirements for capital adequacy. In the United States, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank Act) introduced, among other things, new capital requirements for bank holding companies and savings and loan holding companies.[2] At the international level, in December 2010 the Basel

[1]Capital is a source of long-term funding, largely contributed by an institution's equity stockholders and its own returns in the form of retained earnings, which provides institutions with a cushion to absorb unexpected losses. In general, capital represents the share of an institution's assets with no obligation for repayment. Because capital generally does not have to be repaid, it can serve as a buffer against declines in asset values without subjecting an institution to default or insolvency. The strongest form of capital is common equity (or common stock), which carries no repayment obligation for principal or dividends, has the lowest payment priority in bankruptcy, and has no maturity date. In this report, we use banking organizations to refer to both banks and bank holding companies.

[2]Pub. L. No 111-203, § 171, 124 Stat. 1376, 1435 (2010). This section is also known as the Collins Amendment. A bank or thrift holding company owns or controls one or more banks or thrifts or owns or controls one or more bank or thrift holding companies. The company at the top of the ownership chain is commonly called the top-tier entity.

Committee on Banking Supervision (Basel Committee) issued the Basel III framework—a comprehensive set of reforms to strengthen global capital and liquidity standards—with the goal of promoting a more resilient banking sector.[3] The leaders of the Group of Twenty (presidents and heads of state) endorsed the Basel III framework. The framework has no legal force but was issued by the agreement of the Basel Committee members with the expectation that individual national authorities would implement the standards.

In 2013, the U.S. federal banking regulators adopted regulations to implement many aspects of the Basel III capital framework that apply to banks, savings associations, and top-tier U.S. bank and savings and loan holding companies (with certain exceptions).[4] In support of their regulations, the banking regulators cited analysis by the Basel Committee that suggested stronger capital standards will help reduce the likelihood of banking crises while yielding positive net economic benefits.[5] Although the regulations serve to strengthen the long-term quality and quantity of the capital base of the U.S. banking system, some banks, industry

[3]Basel Committee on Banking Supervision, *Basel III: A Global Regulatory Framework for More Resilient Bank and Banking Systems* (Basel, Switzerland: December 2010, revised June 2011). Established in 1974, the Basel Committee seeks to improve the quality of banking supervision worldwide, in part by developing broad supervisory standards. Its members represent central bank and regulatory officials from Argentina, Australia, Belgium, Brazil, Canada, China, France, Germany, Hong Kong, India, Indonesia, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, Russia, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States.

[4]For the Treasury's Office of Comptroller of the Currency and the Federal Reserve Board: Regulatory Capital Rules: Regulatory Capital, Implementation of Basel III, Capital Adequacy, Tradition 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; Final Rule, 78 Fed. Reg. 62018 (Oct. 11, 2013) and for the Federal Deposit Insurance Corporation: Regulatory Capital Rules: Regulatory Capital, Implementation of Basel III, Capital Adequacy, Tradition 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; Interim Final Rule, 78 Fed. Reg. 55340 (September 10, 2013). With minor changes, the Federal Deposit Insurance Corporation rule became a final rule in April 2014. *See* 79 Fed. Reg. 20754 (April 14, 2014).

[5]Macroeconomic Assessment Group of the Financial Stability Board and the Basel Committee on Banking Supervision, *Interim Report: Assessing the Macroeconomic Impact of the Transition to Stronger Capital and Liquid Requirements* (Basel, Switzerland: August 2010).

associations, and others have raised questions about their potential negative impact on U.S. banks, particularly smaller banks, and the economy. For example, some maintain that the regulations will reduce bank profitability, increase the cost or reduce the availability of credit, or place U.S. banks at a competitive disadvantage relative to foreign banks. You asked us to review issues related to the impact of the new capital requirements. This report examines how

- U.S. Basel III capital requirements may affect U.S. banking organizations, including smaller banking organizations, and
- implementation of Basel III capital and other standards by different countries or other jurisdictions may affect the ability of U.S. banking organizations to compete internationally.

For the first objective, we reviewed final and proposed regulations issued by the Board of Governors of the Federal Reserve System (Federal Reserve), Federal Deposit Insurance Corporation (FDIC), and Office of the Comptroller of the Currency (OCC) to implement the Basel III framework. We reviewed studies and other analysis on Basel III issued by regulators, law firms, consultants, and others, and annual reports and regulatory filings issued by publically traded bank holding companies. We analyzed data from the Consolidated Financial Statements for Holding Companies–Form FR Y-9C (Y-9C) and the Consolidated Reports of Condition and Income (Call Reports) for March 2014 to estimate which bank holding companies and depository institutions currently would meet the Basel III minimum capital ratios, how much capital they would need to raise (capital shortfall) to meet the requirements, and the change in funding costs for bank holding companies and depository institutions associated with the amount of capital they would need to meet the minimum capital requirements. To understand how higher capital requirements might affect the cost and availability of credit, we reviewed empirical studies issued in 2011–2014. We also used our estimates of the capital shortfall to estimate the short- and long-run changes in the cost of credit associated with bank holding companies and depository institutions raising capital to address that shortfall. We interviewed federal bank regulators and six associations representing U.S. or foreign banks (or both). We also judgmentally selected and interviewed 8 community banks (based on their total assets and geographic location) and 10 large, internationally active banks (based on their status as global systemically

important banks (G-SIB) and home country) to obtain their views on the impact of the U.S. Basel III requirements.[6]

For parts of our methodology involving analysis of computer-processed data, including the Y-9Cs and the Call Reports, we assessed the reliability of these data by reviewing relevant documentation and electronically testing the data for incorrect values and determined they were sufficiently reliable for the purposes of estimating the numbers of bank holding companies and depository institutions with capital ratios that met or exceeded the new Basel III minimum capital ratios, estimating the capital shortfall for those that did not, and estimating the impact on the cost and availability of credit of addressing the capital shortfall. For the second objective, we reviewed relevant proposed and final rules, examination manuals, and other documentation from FDIC, the Federal Reserve, and OCC; reports from the Basel Committee, including jurisdictional and thematic assessments of its Regulatory Consistency Assessment Program (RCAP); and prior GAO studies. We also reviewed studies and analysis issued by law firms and consultants on Basel III implementation differences across jurisdictions and potential competitive implications and interviewed the same stakeholders identified above (except for the community banks). For more detailed information about our scope and methodology, see appendix I.

We conducted this performance audit from December 2013 to November 2014 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

[6]In November 2013, the Financial Stability Board published its updated annual list of G-SIBs, which generally comprise the largest and most complex internationally active banks. There were 29 G-SIBs headquartered in 11 countries: 8 in the United States; 4 each in France and the United Kingdom; 3 in Japan; 2 each in China, Spain, and Switzerland; and 1 each in Germany, Italy, Netherlands, and Sweden.

Background

Federal Banking Regulators

Although depository institutions may have state or federal charters, all depository institutions (including banks, savings and loans, and thrifts) that have federal deposit insurance are supervised by a federal banking regulator. The federal banking regulators—which generally may issue regulations and take enforcement actions against institutions in their jurisdiction—are identified in table 1. These regulators issued the final regulations to implement the Basel III-based capital standards in the United States.

Table 1: Federal Banking Regulators and Their Basic Functions

Agency	Basic function
Office of the Comptroller of the Currency	Charters and supervises national banks and federally chartered savings associations.
Board of Governors of the Federal Reserve System	Supervises state-chartered banks that opt to be members of the Federal Reserve System, bank holding companies, savings and loan holding companies, the non-depository institution subsidiaries of those holding companies, and nonbank financial companies designated as systemically important financial institutions by the Financial Stability Oversight Council.
Federal Deposit Insurance Corporation	Supervises federally insured state-chartered banks that are not members of the Federal Reserve System, as well as federally insured, savings associations; insures the deposits of all banks and savings and loan associations that are approved for federal deposit insurance; resolves all failed insured banks and savings and loan associations and has been given the authority under Title II of the Dodd-Frank Act to resolve large bank holding companies and nonbank financial companies that are subject to supervision by the Federal Reserve and subject to enhanced prudential standards.

Source: GAO. | GAO-15-67

Holding companies that own or control a bank or thrift are subject to supervision by the Federal Reserve. The Bank Holding Company Act of 1956 and the Home Owners' Loan Act of 1933 set forth the regulatory frameworks for bank holding companies and savings and loan holding

companies, respectively.[7] The Dodd-Frank Act made the Federal Reserve the regulator of savings and loan holding companies.[8]

Basel Capital Accord Framework

Basel III is part of the Basel Committee's continuous effort to enhance the banking regulatory framework and builds on the previous accords (Basel I, II, and II.5).

Basel I. Adopted in 1988, the Basel Capital Accord (Basel I) aimed to measure capital adequacy (that is, whether a bank's capital is sufficient to support its activities) and establishes minimum capital standards for internationally active banks.[9] It consists of three basic elements:

- a target minimum total risk-based capital ratio (the ratio of regulatory capital, the numerator, to risk-weighted assets, the denominator) of 8 percent and tier 1 risk-based capital ratio of 4 percent,
- a definition of capital instruments to constitute the numerator of the capital-to-risk weighted assets ratio, and
- a system of risk weights for calculating the denominator of the ratio.

A bank's risk-based capital ratio is the ratio of its regulatory capital to risk-weighted assets. Regulatory capital is the numerator of the ratio and risk-

[7]Bank Holding Company Act of 1956, Pub. L. No. 84-511, 70 Stat. 133 (1956) (codified as amended at 12 U.S.C. §§ 1841-1852); Home Owners' Loan Act of 1933, Pub. L. No. 73-43, 48 Stat. 128 (1933) (codified as amended at 12 U.S.C. §§ 1461-1470). A bank holding company has control over a bank, or any company that is or becomes a bank holding company as defined in the Bank Holding Company Act. 12 U.S.C. § 1841(a)(1), (c). Savings and loan holding companies directly or indirectly control a savings association or that controls any other company that is a savings and loan holding company. 12 U.S.C. § 1467a(a)(1)(D).

[8]For a more detailed discussion of the regulatory framework for bank holding companies and savings and loan holding companies, see GAO, *Bank Holding Company Act: Characteristics and Regulation of Exempt Institutions and the Implications of Removing the Exemptions*, GAO-12-160 (Washington, D.C.: Jan. 19, 2012). The Dodd-Frank Act abolished the Office of Thrift Supervision, which had regulated and supervised federally chartered savings associations and savings and loan holding companies, among others, and transferred these responsibilities to OCC and the Federal Reserve, respectively.

[9]The framework is outlined in Basel Committee on Banking Supervision, *International Convergence of Capital Measurement and Capital Standards* (Basel, Switzerland: July 1988).

weighted assets constitute the denominator. In calculating a total risk-weighted asset figure, a bank's total value of each asset is multiplied by a percentage reflecting its risk level and this adjusted amount is added across all assets. At a high level, the standardized approach to calculating risk-weighted assets involves multiplying the amount of the asset or exposure by the standardized risk weight (percent) associated with that type of asset or exposure. For example, a $1 million mortgage with a 50 percent risk-weighting would generate a risk-weighted asset of $500,000. If a bank were trying to hold capital equal to 10 percent of its risk-weighted asset, then it would need $50,000 of capital to hold against this mortgage. Bank capital rules prescribe the standardized risk weights and reflect regulatory judgment about the riskiness of an asset type or exposure. Holding equity (or the numerator) constant, a higher standardized risk weight results in a higher risk-weighted asset amount, which gives rise to a lower risk-based capital ratio. Over time, bank regulators realized that Basel I was not providing a sufficiently accurate measure of capital adequacy because of the lack of risk sensitivity in its credit risk weightings, financial market innovations such as securitization and credit derivatives, and advancements in banks' risk measurement and risk management techniques. The accord was revised and enhanced multiple times after 1988 because of its shortcomings. For example, Basel I was amended in 1996 to take explicit account of market risk in trading accounts.[10]

Basel II. Adopted in June 2004, Basel II aimed to better align minimum capital standards with enhanced risk measurement and encourage banks to develop a more disciplined approach to risk management.[11] It consists of three pillars: minimum capital requirements, a supervisory review of an institution's internal assessment process and capital adequacy, and use of disclosures to strengthen market discipline as a complement to supervisory efforts. Basel II includes a **standardized approach** (which

[10]Market risk is the potential for loss resulting from movements in market prices, including interest rates, commodity and stock prices, and foreign exchange rates. Generally, under the market risk amendment, banks use internal models to estimate the 99th percentile of their market risk loss distribution over a 10-business-day horizon (in other words, a solvency standard designed to exceed trading losses for 99 of 100 10-business-day intervals).

[11]See Basel Committee on Banking Supervision, *Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework* (Basel, Switzerland: June 2004).

does not rely on banks' internal models) and **advanced approaches** for measuring credit and operational risks. The advanced approaches generally are applied by large internationally active banks. The advanced approaches for credit risk and operational risk use parameters from a bank's internal systems as inputs into a formula that supervisors developed for calculating risk-based capital ratios. In addition, banks with significant trading assets (which banks use to hedge risks or speculate on price changes in markets for themselves or their customers) must calculate capital for market risk using internal models. The advanced approaches allow some bank holding companies to reduce capital from Basel I. Large internationally active U.S. bank holding companies have been implementing the first phase—known as the parallel run—of the Basel II advanced approaches.[12] As of February 21, 2014, eight advanced approaches bank holding companies had exited their parallel run, and the Federal Reserve and OCC jointly permitted them to use the advanced approaches to determine their risk-based capital requirements subject to the Collins Amendment floor. Banking organizations in most other industrialized countries are subject to the Basel II capital standards. In 2009, the Basel Committee issued **Basel II.5** to enhance the measurements of risks related to securitization and trading book exposures.[13]

Basel III. Adopted in 2010 and revised in 2011 and 2013, Basel III aims to improve the banking sector's ability to absorb shocks arising from

[12]Before the enactment of the Dodd-Frank Act, the four phases of the advanced approaches were (1) the parallel run—four consecutive quarters in which a bank meets the qualification requirements and is subject to Basel I, but simultaneously calculates its risk-based capital ratios under the advanced approaches; (2) the first transitional period—at least four consecutive quarters in which the bank computes its risk-based capital ratios using Basel I and the advanced approaches rule, and required risk-based capital must be at least 95 percent of the Basel I requirement; (3) the second transitional period—at least four consecutive quarters in which the bank computes its risk-based capital ratios using Basel I and the advanced approaches rule, and required risk-based capital must be at least 90 percent of the Basel I requirement; and (4) the third transitional period—at least four consecutive quarters in which the bank computes its risk-based capital ratios using Basel I and the advanced approaches rule, and required risk-based capital must be at least 85 percent of the Basel I requirement. In addition, section 171 of the Dodd-Frank Act (known as the Collins Amendment) has the effect of eliminating the transitional periods as they would apply in the United States and established a permanent capital floor.

[13]Revisions to the Basel II market risk framework, July 2009 (updated on Dec. 31, 2010, and in February 2011), and guidelines for computing capital for incremental risk in the trading book, issued in July 2009.

financial and economic stress, whatever the source; improve risk management and governance; and strengthen banks' transparency and disclosures. The reforms address bank-level, or micro-prudential, regulation to enhance the resilience of individual banking institutions in periods of stress and systemwide risks that can build up across the banking sector and the amplification of these risks over time. Basel III significantly changes the risk-based capital standards for banks and bank holding companies and introduces new leverage and liquidity standards.[14] Liquidity is a measure of the ability and ease with which assets can be converted to cash.[15] More specifically, the new standards include

- a new minimum common equity tier 1 capital requirement of 4.5 percent of risk-weighted assets (the capital needed to be regarded as a viable concern);
- a new capital conservation buffer of more than 2.5 percent of common equity tier 1 capital to provide a cushion to help companies remain above the 4.5 percent minimum during financial shocks and to avoid restrictions on distributions and discretionary bonus payments; and
- more stringent risk-weights on certain types of risky assets, particularly securitizations and derivatives.[16]

[14]See *Basel III: A Global Regulatory Framework*; and Basel Committee on Banking Supervision, *Basel III: International Framework for Liquidity Risk Measurement, Standards and Monitoring* (Basel, Switzerland: December 2010, revised June 2011).

[15]Liquid assets can be converted to cash quickly if needed to meet financial obligations; examples generally include cash, central bank reserves, and government debt. To remain viable, a bank must have enough liquid assets to meet its near-term obligations, such as withdrawals by depositors.

[16]A derivative is a financial contract the value of which derives from the values of one or more underlying assets, reference rates or indexes of assets' values or reference rates. Derivatives contracts include interest rate derivative contracts, exchange rate derivative contracts, equity derivative contracts, commodity derivative contracts, credit derivative contracts, and any other instrument that poses similar counterparty credit risks. A credit derivative is a financial contract executed under standard industry credit derivative documentation that allows one party (the protection purchaser) to transfer the credit risk of one or more exposures (reference exposure(s)) to another party (the protection provider) for a certain period of time. Securities financing transactions include a variety of secured transactions that have similar economic effects such as lending or borrowing securities and commodities, repurchase (repo) or reverse repurchase transactions, and buy-sell back or sell-buy back transactions. The main securities financing transactions are securities lending and repos.

Basel III defines capital more narrowly than the previous accords. The new common equity tier 1 capital measure is limited mainly to common equity, because common equity generally is the most loss-absorbing instrument during a crisis. Basel III also includes a leverage ratio and two liquidity ratios (see table 2).

U.S. Implementation of Basel III and Other Banking Reforms

In 2013, federal banking regulators adopted regulations to implement Basel III's minimum regulatory capital ratios, capital conservation buffer ratio, countercyclical capital buffer, and supplementary leverage ratio (as applicable to advanced approaches banking organizations).[17] These regulations apply to

- bank holding companies with assets of $500 million or more and all non-exempt savings and loan holding companies;
- national banks and federally chartered savings associations; and
- state-chartered banks (both non-member and member banks) and state savings associations.[18]

Certain savings and loan association holding companies with significant commercial or insurance underwriting activities or assets currently are exempt from the requirements of the U.S. Basel III capital regulation.[19]

[17]78 Fed. Reg. 62018 (Oct. 11, 2013) and 78 Fed. Reg. 55340 (Sept. 10, 2013). With minor changes, the September 2013 FDIC interim final rule became a final rule in April 2014. *See* 79 Fed. Reg. 20754 (Apr. 14, 2014). In May 2014, federal banking regulators proposed a rule to revise the supplementary leverage ratio to align more closely the calculation of total leverage exposure with international leverage ratio standards (79 Fed. Reg. 24596 (May 1, 2014)). In September 2014, the federal banking regulators issued the final rule. (79 Fed. Reg. 57725 (Sept. 26, 2014).

[18] The rule does not apply to bank holding companies with less than $500 million in assets that are not engaged in significant nonbanking activities; that do not conduct significant off-balance sheet activities; and do not have a material amount of debt or equity securities registered with the Securities and Exchange Commission. These small bank holding companies remain subject to the Federal Reserve's Small Bank Holding Company Policy Statement. *See* 12 C.F.R. part 225, appendix C. Section 171 of the Dodd-Frank Act provides an exemption from its requirements for bank holding companies subject to the Small Bank Holding Company Policy Statement. 12 U.S.C. § 5371(b)(5)(C).

[19]Exempt savings and loan holding companies include the following: grandfathered unitary savings and loan holding companies substantially engaged in commercial activities, and savings and loan holding companies that are insurance underwriting companies or are substantially engaged in insurance underwriting activities.

The U.S. Basel III capital regulation seeks to improve the overall resilience of the banking system by imposing more stringent regulatory capital and related requirements on banking organizations. While the Basel III framework was primarily directed at internationally active banks, federal banking regulators generally apply the U.S. Basel III capital regulations to all banking organizations—maintaining that this approach will lead to a more stable and resilient system for banking organizations of all sizes and risk profiles.

As shown in table 2, all banking organizations are subject to the standardized approach and minimum regulatory capital requirements, but advanced approaches banking organizations are also subject to additional requirements. Advanced approaches banks are defined as those with consolidated total assets of $250 billion or more or with consolidated total on-balance-sheet foreign exposure of $10 billion or more. The U.S. Basel III regulations generally provide until 2019 to phase in certain provisions in the regulatory capital requirements.[20] In addition to meeting the minimum regulatory capital ratios, banking organizations must meet the capital conservation buffer to avoid restrictions on capital distributions and discretionary bonus payments to executive officers. Advanced approaches banking organizations are subject to the countercyclical capital buffer, supplementary leverage ratio, and liquidity coverage ratio. Moreover, under section 171 of the Dodd-Frank Act, the Collins Amendment (discussed below) advanced approaches banking organizations will be required to calculate their risk-based capital ratios using both the standardized and advanced approaches methodologies and use the lower of each capital ratio to determine compliance with minimum capital requirements.

[20]The regulatory capital phase-in period for advanced approaches banking organizations began in January 2014. The phase-in period for standardized approach banking organizations will not begin until January 2015. The Basel framework includes implementation of certain provisions by 2019, but in certain transitional rules, the U.S. Basel III capital rules provide until 2021 for phasing in certain requirements, such as the percentage of nonqualifying capital instruments issued before September 12, 2010, that can be included in additional tier 1 or tier 2 capital.

Table 2: U.S. Basel III Requirements and Their Applicability to Standardized Approach and Advanced Approaches Banking Organizations

U.S Basel III requirement	Standardized approach banking organizations	Advanced approaches banking organizations
Minimum regulatory capital ratios	Yes	Yes
Common equity tier 1 capital ratio: common equity tier 1 capital ratio to total risk-weighted assets (4.5 percent)[a]		
Tier 1 capital ratio: tier 1 capital to total risk-weighted assets (6 percent)		
Total risk-based capital ratio: sum of tier 1 and tier 2 capital divided by total risk-weighted assets (8 percent)		
Capital conservation buffer	Yes	Yes
The buffer is composed entirely of common equity tier 1 capital (greater than 2.5 percent)[b]		
Countercyclical capital buffer	No	Yes
Set by regulator with respect to the loan book and other credit exposures in its jurisdiction and applied on a consolidated level on a weighted-average basis (0.0 percent to 2.5 percent)		
Leverage ratio	Yes	Yes
Ratio of tier 1 capital to average total consolidated assets in the balance sheet (4 percent)		
Supplementary leverage ratio	No	Yes
Tier 1 capital divided by total leverage exposure, which includes on-balance sheet exposures, derivative exposures, securities financing transaction exposures, and other off-balance sheet exposures (3 percent)[c]		
Liquidity coverage ratio	A less stringent modified ratio for bank holding companies and non-exempt savings and loan holding companies with assets of $50 billion or more	Yes
An amount of high-quality liquid assets that is no less than 100 percent of its total net cash outflows over a prospective 30 calendar-day period		
Net stable funding ratio	Not applicable	Not applicable
An amount of available stable funding relative to the amount of required stable funding[d]		

Source: GAO analysis of *Federal Register* releases.| GAO-15-67

[a]Common equity tier 1 capital includes in part common shares and retaining earnings. Tier 1 capital in part is the sum of common equity tier 1 capital and additional tier 1 (which can include non-cumulative perpetual preferred shares.

[b]A banking organization must maintain a capital conservation buffer of common equity tier 1 capital in an amount greater than 2.5 percent of total risk-weighted assets to avoid being subject to limitation on capital distributions and discretionary bonus payments to executive officers.

[c]In January 2014, the Basel Committee adopted revisions to the Basel III leverage ratio that included in the off-balance sheet items (1) the effective notational principal amount of credit derivatives or similar instruments through which a banking organization provides credit protection; (2) modifications to the measure of exposure for derivatives and repurchase transactions; and (3) revisions to the credit conversion factors for certain off-balance-sheet exposures. The federal banking regulators finalized revisions to the U.S. supplementary leverage ratio in September 2014. See, 79 Fed. Reg. 57725 (Sept. 26, 2014).

[d]On October 31, 2014, the Basel Committee issued the final standard for the net stable funding ratio. Available stable funding is defined as the portion of capital and liabilities expected to be reliable over the time horizon considered by the net stable funding ratio, which extends to 1 year. The amount of such stable funding required of a specific institution is a function of the liquidity characteristic and residual maturities of the various assets held by that institution as well as those of its off-balance-sheet exposures. The federal banking regulators have not drafted a proposed regulation to implement the net stable funding ratio.

In response to public comments about the potential implementation burden on small banking organizations, the federal banking regulators made several revisions to the proposed U.S. Basel III regulations to help minimize the regulatory burden on such organizations. These revisions include retaining the existing risk weights for residential mortgages; giving all standardized approach banking organizations the option to elect to retain the current treatment of accumulated other comprehensive income in their regulatory capital; and grandfathering the regulatory capital treatment of trust preferred securities issued by banking organizations (less than $15 billion in assets as of 2009) before May 19, 2010.[21]

In addition to the Basel III framework, U.S. banking regulators have implemented several other major financial reforms and supervisory practices covering banking organizations. They include the following:

- **Dodd-Frank stress tests.** Under the Dodd-Frank Act, banking organizations with consolidated assets of more than $10 billion must conduct and report on an annual company-run stress test. Nonbank financial companies supervised by the Federal Reserve and bank holding companies with more than $50 billion in consolidated assets must also conduct semi-annual stress tests. The act requires that the banking agencies issue regulations that establish methodologies for the conduct of the company-run stress-tests that provide for at least three different sets of economic conditions, establish the form and content of the report that the companies must submit to the regulators, and require companies to publish a summary of the results of the required stress tests. In October 2012, the Federal Reserve,

[21]Accumulated other comprehensive income generally includes accumulated unrealized gains and losses on certain assets and liabilities that have not been included in net income, yet are included in equity under U.S. generally accepted accounting principles. Trust preferred securities are cumulative preferred stock instruments issued by a special-purpose entity (usually in the form of a trust) established by a bank holding company. The bank holding company issues subordinated debt to the special-purpose entity which uses the bank holding company's interest payments on the debt to make payments to the preferred stock investors.

FDIC, and OCC issued final rules implementing the company-run stress test requirements. Community banks with less than $10 billion in total assets are not required or expected to conduct the types of stress testing specifically articulated in the regulations directed toward larger organizations.[22] For bank holding companies with $50 billion or more in assets and nonbank financial companies designated for supervision by the Federal Reserve, the Federal Reserve must conduct an annual supervisory stress test to evaluate whether the company has sufficient capital to absorb losses as a result of adverse economic conditions. The Federal Reserve must publish a summary of the supervisory stress test results.

- **Capital planning.** Pursuant to the Federal Reserve's capital plan rule and related supervisory process, the Federal Reserve assesses the internal capital planning process of each bank holding company with total consolidated assets of $50 billion or more and its ability to maintain sufficient capital to continue its operations under stressful conditions. Under the capital plan rule a bank holding company must submit an annual capital plan or planned capital distribution in which it demonstrates that it can maintain capital ratios above minimum regulatory requirements and a tier 1 common equity ratio greater than 5 percent under stressed economic and financial market conditions. The capital plan must include detailed descriptions of all planned capital actions: the company's internal processes for assessing capital adequacy; the policies governing capital actions such as common stock issuance, dividends, and share repurchases; and all planned capital actions over a 9-quarter planning horizon. If the Federal Reserve objects to its capital plan, a bank holding company may not make any capital distributions, unless approved in writing by the Federal Reserve.

- **Activity restrictions.** The final rule implementing Section 619 of the Dodd-Frank Act, commonly known as the Volcker rule, was adopted by the Federal Reserve, FDIC, OCC, and the Securities and Exchange Commission on December 10, 2013. The Volcker final rule prohibits insured depository institutions and companies affiliated with insured depository institutions, from engaging in short-term proprietary trading of certain securities, derivatives, commodity futures, and

[22]See https://www.fdic.gov/news/news/press/2012/pr12054a.pdf (guidance on stress testing expectation for community banks).

options on those instruments for their own accounts. The final rule also imposes limits on banking entities' investments in hedge funds or private equity funds, subject to certain exceptions.

- **Minimum capital requirements.** Section 171 (b) of the Dodd Frank Act (Collins Amendment) requires federal banking agencies to apply to, among others, U.S. depository institution holding companies and systemically significant nonbank financial companies, the minimum risk-based and leverage capital requirements that apply to insured depository institutions. The minimum requirements cannot be quantitatively lower than the capital requirements that were in effect when the Dodd-Frank Act was enacted.

U.S. Basel III Capital Requirements May Have a Limited Effect on Capital in the Short Term but Are Expected to Increase Compliance Costs

The vast majority of banks and bank holding companies already would likely be able to meet the new minimum capital requirements and capital conservation buffer at the fully phased-in levels required by 2019. We estimated that as of first quarter 2014 more than 90 percent of bank holding companies currently meet the new requirements and that those with insufficient capital would need to raise about $4 billion to 5 billion in capital to cover the capital shortfall and meet the requirements. Our analysis also suggests that most of the bank holding companies and depository institutions that did not hold sufficient capital to meet the Basel III minimums, plus the capital conservation buffer, are relatively small, with assets of less than $1 billion. The empirical findings from our literature review and analysis of the capital shortfall suggest that the higher capital requirements likely will have a modest effect on the cost and availability of credit. Some market participants we interviewed (eight community banks and 10 G-SIBs) generally expected the U.S. capital requirements to increase compliance costs but have a limited effect on the cost and availability of credit.

Analysis Suggests Most Bank Holding Companies and Depository Institutions Currently Would Meet New Minimum Regulatory Capital Requirements

Our analysis suggests that as of the first quarter of 2014, the majority of bank holding companies and depository institutions met U.S. Basel III minimum capital ratios, including the capital conservation buffer, at the fully phased-in levels required by 2019. Furthermore, the total amount of capital these institutions would need to meet Basel III ratios—the capital shortfall—is relatively modest. To estimate the extent to which bank holding companies and depository institutions already met the fully

phased-in Basel III minimum capital ratios, we analyzed balance sheet data for bank holding companies and depository institutions for the first quarter of 2014.[23] We estimated common equity tier 1 capital, tier 1 capital, total capital, and risk-weighted assets using calculations consistent with the regulations federal banking regulators adopted in 2013, which changed the formulas for calculating these amounts.[24] In addition, we report the estimates separately for the 16 advanced approaches bank holding companies (including their bank subsidiaries), which accounted for nearly 75 percent of the total assets held by top-tier U.S. bank holding companies but less than 2 percent of the number of all such holding companies (as of the first quarter of 2014).[25]

Basel III Minimum Capital Requirements

A majority of bank holding companies and depository institutions that we analyzed currently would meet each of the separate Basel III minimum capital requirements if the regulations took effect immediately without a phase-in period.[26] As shown in table 3, our analysis suggests that 953 of the 1,040 of the bank holding companies (over 92 percent) currently hold sufficient capital to meet the new minimum common equity tier 1 capital ratio, plus the capital conservation buffer. Similarly, 6,687 of the 6,794 depository institutions (about 98 percent) currently hold sufficient capital to meet the new minimum common equity tier 1 capital ratio, plus the capital conservation buffer. Our analysis also suggests that most of the bank holding companies and depository institutions that did not hold sufficient capital to meet the Basel III minimums, plus the capital conservation buffer, are relatively small, with assets of less than $1 billion.

[23]Because savings and loan holding companies currently are not subject to regulatory capital reporting requirements, we were unable to use regulatory reporting information to estimate capital and risk-weighted assets under the final regulation for some of these institutions.

[24]See appendix I for a detailed description of our methodology.

[25]We identified the advanced approaches banking organizations using Form 10-K filings and other publicly available information.

[26]For a more detailed analysis of the minimum Basel III capital ratios presented throughout this section, see appendix II.

Table 3: Estimated Numbers of Bank Holding Companies and Depository Institutions That Met Basel III Minimum Capital Ratios as of the First Quarter 2014, by Asset Size

		Bank holding companies					
Estimated capital ratio greater than or equal to Basel III minimum?		**$500 million-1 billion in assets**	**$1 billion-10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets, not advanced approaches**	**$50 billion or more in assets, advanced approaches**	**Total**
Common equity tier 1 capital ratio plus capital conservation buffer (7.0 percent)	No	60	25	2	0	0	**87**
	Yes	476	396	48	17	16	**953**
Tier 1 capital ratio plus capital conservation buffer (8.5 percent)	No	79	45	4	1	1	**130**
	Yes	457	376	46	16	15	**910**
Total capital ratio plus capital conservation buffer (10.5 percent)	No	88	51	4	0	0	**143**
	Yes	448	370	46	17	16	**897**
	Total	**536**	**421**	**50**	**17**	**16**	**1,040**
		Depository institutions					
Estimated capital ratio greater than or equal to Basel III minimum?		**Less than $1 billion in assets**	**$1 billion-10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets**	**Subsidiaries of advanced approaches holding companies**	**Total**
Common equity tier 1 capital ratio plus capital conservation buffer (7.0 percent)	No	103	4	0	0	0	**107**
	Yes	6,011	559	63	18	36	**6,687**
Tier 1 capital ratio plus capital conservation buffer (8.5 percent)	No	137	8	1	0	0	**146**
	Yes	5,977	555	62	18	36	**6,648**
Total capital ratio plus capital conservation buffer (10.5 percent)	No	218	16	2	0	0	**236**
	Yes	5,896	547	61	18	36	**6,558**
	Total	**6,114**	**563**	**63**	**18**	**36**	**6,794**

Source: GAO analysis of data from the Federal Financial Institutions Examination Council, the Federal Reserve Bank of Chicago, the U.S. Department of the Treasury, the Board of Governors of the Federal Reserve System, and the Organization of Economic Cooperation and Development. | GAO-15-67

Notes: For each bank holding company and depository institution, we estimated the amounts of common equity tier 1 capital, additional tier 1 capital, tier 1 capital, tier 2 capital, and total capital (collectively, capital) and risk-weighted assets using the calculations described in Schedule HC-R Parts I.B and II of the Y-9C along with the instructions to these parts of the Y-9C. The amounts of some balance sheet and income statement items used to calculate the amount of capital or the amount of risk-weighted assets cannot be observed for bank holding companies or depository institutions that are not subject to or do not elect to use the advanced approaches rule. We made assumptions about these unobservable amounts that are similar to assumptions the Federal Reserve made for a comparable analysis. We used our estimates of the amounts of capital and risk-weighted assets to estimate the ratios of common equity tier 1 capital to risk-weighted assets, tier 1 capital to risk-weighted assets, total capital to risk-weighted assets, and tier 1 capital to average assets for each bank holding company and depository institution. We then compared the estimated capital ratios to the Basel III minimum capital ratios, with and without the capital conservation buffer, and counted the numbers of bank holding companies and depository institutions with estimated capital ratios that met and did not meet the Basel III minimum capital ratios.

Regulatory Capital Shortfall

The capital shortfalls for individual bank holding companies and depository institutions that did not meet the Basel III minimum capital ratios appeared to be relatively modest in some cases but may be significant in others. For example, as shown in table 4, our analysis suggests that most bank holding companies that did not meet the new minimum common equity tier 1 capital ratio, plus the capital conservation buffer, would need to raise no more than $0.01 billion ($10 million) in additional common equity tier 1 capital—about 1.65 percent of assets—to meet the new requirements. However, at least one of these bank holding companies may need to raise at least $1.12 billion—about 3.39 percent of its assets. Similarly, most depository institutions that did not meet the new minimum common equity tier 1 capital ratio, plus the capital conservation buffer, would need to raise less than $0.01 billion in additional common equity tier 1 capital, or about 1.52 percent of total assets, to meet the new requirements. However, some of these depository institutions would need to raise capital in excess of 2.4 percent of their assets.

Table 4: Median of Estimated Additional Capital Needed to Meet Basel III Minimum Capital Ratios as of the First Quarter 2014, by Asset Size

		Bank holding companies					
Median estimated additional capital needed to meet Basel III minimum capital ratio for bank holding companies with estimated capital ratios less than Basel III minimum		**$500 million-1 billion in assets**	**$1 billion-10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets, not advanced approaches**	**$50 billion or more in assets, advanced approaches**	**All**
Common equity tier 1 capital plus capital conservation buffer	$ Billions	0.01	0.02	1.12	—-	—-	**0.01**
	% Assets	1.86	1.40	3.39	—-	—-	**1.65**
Tier 1 capital plus capital conservation buffer	$ Billions	0.01	0.01	0.15	0.01	0.02	**0.01**
	% Assets	1.53	0.63	0.93	0.01	0.01	**1.03**
Total capital plus capital conservation buffer	$ Billions	0.01	0.02	0.15	—-	—-	**0.01**
	% Assets	1.16	0.73	1.07	—-	—-	**1.00**
		Depository institutions					
Median estimated additional capital needed to meet Basel III minimum capital ratio for depository institutions with estimated capital ratios less than Basel III minimum		**Less than $1 billion in assets**	**$1 billion-10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets**	**Subsidiaries of advanced approaches holding companies**	**All**
Common equity tier 1 capital plus capital conservation buffer	$ Billions	<0.01	0.04	—-	—-	—-	**<0.01**
	% Assets	1.52	2.40	—-	—-	—-	**1.52**
Tier 1 capital plus capital conservation buffer	$ Billions	<0.01	0.02	0.18	—-	—-	**<0.01**
	% Assets	1.62	1.16	1.52	—-	—-	**1.60**
Total capital plus capital conservation buffer	$ Billions	<0.01	0.02	0.07	—-	—-	**<0.01**
	% Assets	1.23	0.83	0.22	—-	—-	**1.21**

Source: GAO analysis of data from the Federal Financial Institutions Examination Council, the Federal Reserve Bank of Chicago, the U.S. Department of the Treasury, the Board of Governors of the Federal Reserve System, and the Organization of Economic Cooperation and Development. | GAO-15-67

Notes: For each bank holding company and depository institution, we estimated the amounts of common equity tier 1 capital, additional tier 1 capital, tier 1 capital, tier 2 capital, and total capital (collectively, capital) and risk-weighted assets using the calculations described in Schedule HC-R Parts I.B and II of the Y-9C along with the instructions to these parts of the Y-9C. The amounts of some balance sheet and income statement items used to calculate the amount of capital or the amount of risk-weighted assets cannot be observed for bank holding companies or depository institutions that are not subject to or do not elect to use the advanced approaches rule. We made assumptions about these unobservable amounts that are similar to assumptions the Federal Reserve made for a comparable analysis. We used our estimates of the amounts of capital and risk-weighted assets to estimate the ratios of common equity tier 1 capital to risk-weighted assets, tier 1 capital to risk-weighted assets, total capital to risk-weighted assets, and tier 1 capital to average assets for each bank holding company and depository institution. We then compared the estimated capital ratios to the Basel III minimum capital ratios, with and without the capital conservation buffer. For each capital ratio, for bank holding companies and depository institutions with capital ratios less than the Basel III minimums, we calculated the amount of capital required to meet the Basel III minimum (the capital shortfall), both in billions of dollars and as a percentage of total assets.

Finally, as shown in table 5, our estimates of the total capital shortfall for all bank holding companies and depository institutions are relatively

modest. For example, bank holding companies that did not meet the Basel III minimum common equity tier 1 capital ratio, plus the capital conservation buffer, would need to raise about $4.73 billion in common equity tier 1 capital to eliminate the capital shortfall. This amount equals about 0.03 percent of the combined total assets of all the bank holding companies we analyzed. Similarly, depository institutions that did not meet the minimum common tier 1 capital ratio, plus the capital conservation buffer, would need to raise about $0.76 billion to eliminate the capital shortfall. This amount equals about 0.01 percent of the combined total assets of all depository institutions.

Table 5: Total Estimated Additional Capital Needed to Meet Basel III Minimum Requirements as of the First Quarter 2014, by Asset Size

		Bank holding companies					
Total estimated additional capital needed to meet Basel III minimum capital ratios for all bank holding companies combined		**$500 million-$1 billion in assets**	**$1 billion-10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets, not advanced approaches**	**$50 billion or more in assets, advanced approaches**	**Total**
Common equity tier 1 capital plus capital conservation buffer	$ Billions	1.00	1.48	2.24	0	0	**4.73**
	% Assets	0.28	0.13	0.22	0	0	**0.03**
Tier 1 capital plus capital conservation buffer	$ Billions	1.04	1.17	2.76	0.01	0.02	**5.00**
	% Assets	0.29	0.11	0.27	<0.01	<0.01	**0.03**
Total capital plus capital conservation buffer	$ Billions	1.04	1.25	3.13	0	0	**5.42**
	% Assets	0.29	0.11	0.31	0	0	**0.03**
		Depository institutions					
Total estimated additional capital needed to meet Basel III minimum capital ratios for all depository institutions combined		**Less than $1 billion in assets**	**$1 billion-10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets**	**Subsidiaries of advanced approaches holding companies**	**Total**
Common equity tier 1 capital plus capital conservation buffer	$ Billions	0.49	0.27	0	0	0	**0.76**
	% Assets	0.04	0.02	0	0	0	**0.01**
Tier 1 capital plus capital conservation buffer	$ Billions	0.66	0.21	0.18	0	0	**1.05**
	% Assets	0.05	0.01	0.01	0	0	**0.01**
Total capital plus capital conservation buffer	$ Billions	0.88	0.54	0.14	0	0	**1.57**
	% Assets	0.06	0.04	0.01	0	0	**0.01**

Source: GAO analysis of data from the Federal Financial Institutions Examination Council, the Federal Reserve Bank of Chicago, the U.S. Department of the Treasury, the Board of Governors of the Federal Reserve System, and the Organization of Economic Cooperation and Development. | GAO-15-67

Notes: For each bank holding company and depository institution, we estimated the amounts of common equity tier 1 capital, additional tier 1 capital, tier 1 capital, tier 2 capital, and total capital (collectively, capital) and risk-weighted assets using the calculations described in Schedule HC-R Parts I.B and II of the Y-9C along with the instructions to these parts of the Y-9C. The amounts of some balance sheet and income statement items used to calculate the amount of capital or the

amount of risk-weighted assets cannot be observed for bank holding companies or depository institutions that are not subject to or that do not elect to use the advanced approaches rule. We made assumptions about these unobservable amounts that are similar to assumptions the Federal Reserve made for a comparable analysis. We used our estimates of the amounts of capital and risk-weighted assets to estimate the ratios of common equity tier 1 capital to risk-weighted assets, tier 1 capital to risk-weighted assets, total capital to risk-weighted assets, and tier 1 capital to average assets for each bank holding company and depository institution. We then compared the estimated capital ratios to the Basel III minimum capital ratios, with and without the capital conservation buffer. For each capital ratio, we then calculated the total capital shortfall for all bank holding companies and depository institutions with insufficient capital in billions of dollars and as a percentage of the total assets of all the bank holding companies and depository institutions.

Our estimates of the numbers of bank holding companies and depository institutions with capital ratios exceeding Basel III minimums and the capital shortfall are subject to limitations. Most importantly, the amounts of some balance sheet and income statement items used to calculate the amount of capital or the amount of risk-weighted assets cannot be observed for bank holding companies or depository institutions not subject to the advanced approaches rule. We made assumptions about these unobservable amounts that are similar to assumptions the Federal Reserve made for a comparable analysis.[27] However, we cannot assess the extent to which our estimates overstate or understate the numbers of bank holding companies and depository institutions that already meet Basel III capital requirements or the capital shortfall. In addition, some bank holding companies and depository institutions may prefer to maintain a capital buffer in excess of the required minimum levels to satisfy investors or other market participants. Thus, our estimates may understate the number of bank holding companies and depository institutions that would need to raise capital and also may understate the amount of capital they would need to raise.

Funding and Other Costs

In addition, our analysis suggests that raising capital to cover the capital shortfall would have a modest effect on bank holding company and depository institution funding costs. Funding costs are determined by the prices of equity and debt financing sources and the amounts used of each. Because interest payments on debt are tax-deductible, a more leveraged capital structure reduces corporate taxes, lowering funding costs. Thus, an increase in the required amount of equity capital would

[27]For example, see, *Examining the Impact of the Proposed Rules to Implement Basel III Capital Standards*, Before the House Committee on Financial Services, Subcommittee on Financial Institutions and Consumer Credit and Subcommittee on Insurance, Housing, and Community Opportunity, 112th Congr., 2nd sess. (Nov. 29, 2012) (testimony of Michael S. Gibson, Director, Division of Banking Supervision and Regulation, Board of Governors of the Federal Reserve System).

increase a bank's cost of capital. The increased funding cost associated with a 1 percentage point increase in the capital ratio of a bank holding company or depository institution is approximately equal to the difference between the return on equity and the after-tax interest rate on debt, all else being equal.[28]

For bank holding companies and depository institutions that as of the first quarter of 2014 did not hold sufficient capital to meet the fully phased-in U.S. Basel III capital requirements, our estimates of the increase in funding cost associated with raising capital up to the minimum requirements are relatively modest.[29] As discussed above (see table 5), we estimated the amount of common equity tier 1 capital that the median capital-deficient bank holding company would need to raise to meet the minimum common equity tier 1 capital requirement, plus capital conservation buffer, to be about $10 million, or 1.65 percent of its total assets. As shown in table 6, the increase in funding cost associated with raising this amount of common equity tier 1 capital is about 0.13 percentage points, or about $13,000 for a bank holding company with $10 billion in assets.[30] Similarly, the increase in funding cost associated with raising the median amount of common equity tier 1 capital for a capital-deficient depository institution is about 0.11 percentage points, or about $11,000 for a depository institution with $10 billion in assets (based on the amount of such capital the median capital-deficient depository institution would need to raise to meet the minimum requirements).

[28]Funding costs are invariant to changes in the capital ratio if taxes are neutral; capital markets are frictionless, so there are no transactions costs, asset trade restrictions, or bankruptcy costs; access to credit markets is symmetric, so firms and investors can borrow or lend at the same rate; and firm financial policy reveals no information. Under these conditions, changes in the capital ratio lead to changes in equity returns that leave funding costs unchanged. However, we explicitly assume that taxes are not neutral. We also assume that returns on equity and interest rates on debt do not change when a bank holding company or depository institution increases its capital ratio. We note that this effect could be offset to some extent if the additional capital protection caused the risk-premiums demanded by an institution's investors to decline sufficiently.

[29]For additional details on the analyses, see appendix II.

[30]At the median return on equity and interest rate on debt for all bank holding companies in the first quarter of 2014 of about 8.3 percent and 0.6 percent, respectively, and assuming a corporate income tax rate of 35 percent, the change in funding cost associated with a 1.65 percentage point increase in the capital-to-assets ratio is about 0.13 percentage points.

Table 6: Estimated Changes in Funding Costs (in Percentage Points) Associated with Raising Capital Needed to Meet Basel III Minimum Requirements as of the First Quarter 2014, by Asset Size

	Bank holding companies					
Estimated change in funding costs from raising median estimated amount of capital needed to meet Basel III minimum capital ratio for bank holding companies with estimated capital ratio less than Basel III minimum	**$500 million-1 billion in assets**	**$1 billion-10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets, not advanced approaches**	**$50 billion or more in assets, advanced approaches**	**All**
Common equity tier 1 capital plus capital conservation buffer	0.14	0.12	0.27	—-	—-	**0.13**
Tier 1 capital plus capital conservation buffer	0.12	0.05	0.07	<0.01	<0.01	**0.08**
Total capital plus capital conservation buffer	0.09	0.06	0.08	—-	—-	**0.08**
	Depository institutions					
Estimated change in funding costs from raising median estimated amount of capital needed to meet Basel III minimum capital ratio for depository institutions with estimated capital ratio less than Basel III minimum	**Less than $1 billion in assets**	**$1 billion-10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets**	**Subsidiaries of advanced approaches holding companies**	**All**
Common equity tier 1 capital plus capital conservation buffer	0.11	0.19	—-	—-	—-	**0.11**
Tier 1 capital plus capital conservation buffer	0.11	0.09	0.12	—-	—-	**0.12**
Total capital plus capital conservation buffer	0.09	0.06	0.02	—-	—-	**0.09**

Source: GAO analysis of data from the Federal Financial Institutions Examination Council, the Federal Reserve Bank of Chicago, the U.S. Department of the Treasury, the Board of Governors of the Federal Reserve System, and the Organization of Economic Cooperation and Development. | GAO-15-67

Notes: We estimated the change in funding cost per dollar of assets associated with a 1 percentage point in the ratio of equity capital to assets by calculating the difference between return on equity and the after-tax interest rate on debt. We used the median return on equity (net income as a percentage of equity capital) and the median interest rate on debt (interest expense as a percentage of interest-bearing liabilities) for each group of bank holding companies and depository institutions for the first quarter of 2014. We assumed that the marginal corporate income tax rate equaled 35 percent. We found that funding costs increased by about 0.07-0.09 percentage points with a 1 percentage point increase in the ratio of capital to assets, or by about $0.07-0.09 per $100 of assets. For bank holding companies and depository institutions of different sizes and different status (as advanced approaches holding companies or subsidiaries of advanced approaches holding companies) and with capital ratios less than the Basel III minimums, we estimated the median change in funding cost associated with raising capital sufficient to meet Basel III minimums. We multiplied the median capital shortfall as a percentage of assets by the estimated change in funding cost associated with a 1 percentage point increase in the capital ratio.

Our estimates of the increase in funding costs associated with raising capital are subject to several limitations. First, as discussed above, our estimates of the capital shortfall are subject to limitations and may either overstate or understate the amount of capital that bank holding companies and depository institutions raise in response to the Basel III requirements. Because the increase in funding costs is related to the size of the capital shortfall, our estimates of the increase in funding costs also

may be either overstated or understated. In particular, some bank holding companies or depository institutions may maintain capital in excess of the minimum requirements (a capital buffer). The larger the capital buffer, the more funding costs would increase and the more our estimates would understate them. Our estimates also reflect the median amounts of capital required by bank holding companies and depository institutions we estimated would have insufficient capital to meet Basel III requirements and may not reflect the specific circumstances of an individual bank holding company or depository institution that may need to raise capital and may overstate or understate the change in its funding costs. Furthermore, our estimates reflect the median return on equity and interest rate on debt that prevailed in the first quarter of 2014, as well as our assumption of a corporate income tax rate of 35 percent. However, equity returns, debt interest rates, and tax rates may change, altering the relative prices of debt and equity and thus altering the change in funding costs associated with substituting equity for debt. Finally, our estimates assume that the return on equity will not change when a bank holding company or depository institution increases its capital ratio. However, increasing reliance on equity funding reduces the risks to investors, all else being equal. If a bank holding company or depository institution increased its ratio of capital to assets, then the return on its equity could fall as investors demanded less of a risk premium.

Although the U.S. Basel III capital requirements may have little impact on the capital level and structure of most banking organizations, their full impact remains uncertain. The capital regulations will be phased in over multiple years and Basel III is but one of a multitude of regulatory reforms affecting banking organizations. The higher regulatory capital ratios may increase the amount of capital banks hold (if they have to hold more capital than they otherwise would have held based on their assessment of economic risk), which could increase their funding costs. The increase in funding costs may result if holding higher capital meant that bank investors, were not willing to accept a lower return on equity. In addition, banking organizations will incur compliance costs, such as for additional staff training and expenses related to new systems or modification of existing systems for calculating regulatory capital ratios and for recordkeeping and reporting. For example, in the interim final rule, FDIC estimated that each bank with $175 million or less in total assets will incur $43,000 in direct compliance costs, which it concluded would represent a

significant burden for about 37 percent of these banks.[31] Of the advanced approaches banks, only one included any compliance cost information in its annual report, indicating it devoted thousands of staff hours to comply with Basel requirements.

Empirical Research Indicates U.S. Basel III Capital Requirements Are Expected to Have a Modest Effect on the Cost and Availability of Credit

We discuss below our review of empirical studies and our quantitative analysis the effects of Basel III requirements on the cost and availability of credit.

Empirical Studies We Reviewed Indicate Higher Regulatory Capital Requirements Negatively Affect the Cost and Availability of Credit

Some banks and others generally maintain that equity is more expensive than debt; thus, higher capital requirements will raise their funding costs. If this were the case, banks might charge higher prices for loans, depending on market competition (which could result in less borrowing); reduce certain lending; or exit certain lines of business if the return on capital was insufficient. In contrast, two non-empirical studies maintain that higher capital costs will not increase bank funding costs, because the increase in capital will make banks safer and cause investors to accept a lower return.[32]

We reviewed 11 studies—published from 2011 through 2014—that empirically examine the effects of higher capital requirements on banks (or lenders), including on cost of capital and the cost and availability of credit.[33] To identify relevant empirical studies, we conducted searches of two databases, (ProQuest and EconLit) and identified and selected

[31]For purposes of the interim final rule, FDIC defined significant burden as an estimated cost greater than 2.5 percent of total non-interest expense or 5 percent of annual salaries and employee benefits.

[32]Anat R. Admati, Peter M. DeMarzo, Martin F. Hellwig, and Paul C. Pfleiderer, "Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity Is Not Expensive," Stanford University working paper 161 (Oct. 22, 2013) and Douglas J. Elliott, "The Practical Incentive Effects of Different Approaches to Capital Requirements." Brookings Institution paper (Nov. 15, 2013).

[33]See the bibliography for the empirical studies we reviewed that focused on the cost and availability of credit in terms of three outcomes—the cost of capital to banks, the interest rate paid by borrowers, and the quantity of loans originated by banks.

economic studies from peer-reviewed journals and working papers from governmental institutions that were published from 2011 through 2014. We used search terms for selecting the studies, such as interest rate spread, credit availability, cost of capital, and partial equilibrium. The results of the studies generally indicate that higher capital ratios—both tier 1 capital and common equity tier 1 capital ratios—in the United States will result in a modest increase in the cost of capital for banks and loan rates for borrowers and a modest decrease in the quantity of loans for banks. However, the studies also noted that capital requirements are one of several policies that can affect the cost and availability of credit. Some of the studies analyze the effect of capital requirements in other countries, which helps put the estimated effect of Basel III in the United States into a broader perspective.

Bank funding cost. Two studies examining the effect of higher capital requirements on the capital costs of banks generally found that raising capital requirements will increase the capital costs of banks.[34] One of the studies estimated that increasing the common equity tier 1 capital ratio by 1.3 percentage point would increase the cost of capital for large banks in the United States by 0.13 percentage point.[35] The study covered eight countries, and the estimates ranged from 0.00 percentage points (Canada) to 0.26 percentage points (Japan).[36] The other study estimated that a 10 percentage point increase in the tier 1 ratio would increase the cost of capital in the United States between 0.60 and 0.90 percentage points.[37] These results generally are consistent with our analysis, in which we estimated that the increase in funding cost associated with a 1 percentage point increase in the ratio of capital to assets was from about 0.07 to 0.09 percentage points as of the first quarter of 2014 (see app. II).

[34]Malcolm Baker and Jeffery Wurgler, "Do Strict Capital Requirements Raise the Cost of Capital? Banking Regulation and the Low Risk Anomaly," National Bureau of Economic Research working paper (May 2013) 24, 26-27 and Thomas F. Cosimano and Dalia S. Hakura, "Bank Behavior in Responses to Basel II: A Cross-Country Analysis" International Monetary Fund working paper (May 2011), 30.

[35]Cosimano and Hakura, 31.

[36]The eight countries are Canada, Denmark, Germany, Ireland, Japan, Sweden, United Kingdom, and the United States. The overall estimate for all eight countries was 0.12 percentage points.

[37]Baker and Wurgler, 26.

Cost of borrowing. Nine studies examining the effect of higher capital requirements on loan rates had results ranging from no effect to an increase in loan rates.[38] The studies generated estimates of the effect of higher capital requirements on borrower costs, with some covering multiple countries in North and South America, Europe, or Asia. [39] Two studies covering the United States estimated that a 1 percentage point increase in capital requirements would increase bank lending rates by a 0.12 percentage point and 0.21 percentage point, respectively.[40] The other two studies that covered the United States estimated that a 1.3 and 2.0 percentage point increase in capital requirements would increase bank lending rates by a 0.17 percentage point and 0.51 percentage point, respectively.[41] In comparison, the studies covering other countries estimated that a 1 percentage point increase in capital requirements would increase bank lending rates around 0.04 to 0.25 percentage points (and a 1.3 percentage point increase would increase bank lending rates from 0.0 to 0.34 percentage points).[42]

[38]Baker and Wurgler, 26; and Cosimano and Hakura, 30. Also see Dean Corbae and Pablo D'Erasmo, "Capital Requirements in a Quantitative Model of Banking Industry Dynamics," Federal Reserve Bank of Philadelphia working paper 14-13 (April 2014), 44; Alfredo, Martın-Oliver, Sonia Ruano, and Vicente Salas-Fumas, "Banks' Equity Capital Frictions, Capital Ratios, and Interest Rates: Evidence from Spanish Banks," *International Journal of Central Banking*, vol. 9, no. 1 (March 2013), 213-214; Matthieu Darracq Paries, Christoffer Kok Sørensen, and Diego Rodriguez-Palenzuela, "Macroeconomic Propagation under Different Regulatory Regimes: Evidence from an Estimated DSGE Model for the Euro Area," *International Journal of Central Banking*, vol. 7, no. 4 (December 2011), 81; Scott Roger and Francis Vitek, "The Global Macroeconomic Costs of Raising Bank Capital Adequacy Requirements," International Monetary Fund working paper 12-44 (February 2012), 7; Patrick Slovik and Boris Cournède, "Macroeconomic Impact of Basel III," Organisation for Economic Co-operation and Development, Economics Department working paper 844 (Feb. 14, 2011), 8; Barbara Šutorova and Petr Teply, "The Impact of Basel III on Lending Rates of EU Banks," *Czech Journal of Economics and Finance*, vol. 63, no. 3 (2013), 239; and Meilan Yan, Maximilian J.B. Hall, and Paul Turner, "A Cost-Benefit Analysis of Basel III: Some Evidence from the UK," *International Review of Financial Analysis*, vol. 25 (December 2012), 79. All the studies above produce quantitative estimates, but one study also reports an increase in the costs to the borrower without reporting a quantitative estimate—see Paries, Sørensen, and Rodriguez-Palenzuela.

[39]Estimates on lending rates include interest rates and interest rate spreads.

[40]Roger and Vitek, 7, and Slovik and Cournède, 8.

[41]Cosimano and Hakura, 30, and Corbae and D'Erasmo, 44.

[42]Countries with the lowest estimates include Canada and several European nations. Asian countries such as Japan, Korea, and Australia had estimates that tend to be higher.

Quantity of loans. Four of the studies examining the effect of higher regulatory capital requirements on the availability of credit found that higher requirements would reduce the quantity of loans supplied, but the estimated effect varied across the studies.[43] As bank lending rates increase, some of the studies generally expect the demand for loans to be less, thereby reducing the quantity of loans made by banks. Two of the studies covered the United States and estimated that a 1.3 percentage point increase in common equity tier 1 capital or 2.0 percentage point increase in tier 1 capital ratio—will decrease the quantity of loans by 2.97 percent and 8.71 percent, respectively.[44] In comparison, one of the studies also covered countries in Asia, Europe, and North America and estimated that a 1.3 percentage point increase in regulatory capital requirements will decrease the quantity of loans in these countries, but the estimates vary across countries—ranging from a 0.16 percent decline to a 32.61 percent decline.[45]

Raising the Amount of the Capital Shortfall under U.S. Basel III Regulations Likely Would Have a Modest Effect on the Cost and Availability of Credit

Like the studies we reviewed, our analysis suggests that raising capital to cover the capital shortfall would have a modest effect on the cost and availability of credit in both the short and the long run. As discussed previously, the total amount of capital that bank holding companies and depository institutions would need to raise to cover the capital shortfall and meet the new minimum capital ratios would be small relative to total assets, likely less than 1 percent. In addition, most bank holding companies and depository institutions do not appear to need to raise capital to meet minimum requirements. For those that do, the amount of capital they need to raise appears to be small relative to total assets in some cases but could be large in others. To assess the short-run impact on the cost and availability of credit for bank holding companies or depository institutions raising capital to meet minimum requirements, we used (1) estimates of changes in loan volumes and loan spreads associated with changes in capital from our prior work and (2) our

[43]Cèline, Gauthier, Alfred Lehar, and Moez Souissi. "Macroprudential Capital Requirements and Systemic Risk" *Journal of Financial Intermediation*, vol. 21, no. 4 (October 2012). Corbae and D'Erasmo; Cosimano and Hakura; and Paries, Sørensen, and Rodriguez-Palenzuela. One study did not produce an empirical estimate, but constructs a quantitative model that suggests that the quantity of loans would decrease (Paries, Sørensen, and Rodriguez-Palenzuela).

[44]Cosimano and Hakura, 30 and Corbae and D'Erasmo, 44.

[45]Cosimano and Hakura, 30.

estimates of the capital shortfall described above.[46] To assess the long-run impact, we used an existing loan pricing model.[47]

The short-run impact of meeting the new capital requirements on the cost and availability of credit likely would be small. In prior work, we estimated that a 1 percentage point increase in the ratio of capital to assets is associated with a short-run increase in loan spreads of about 0.16 percentage points and a short-run decline in loan volume growth of about 1.2 percentage points. Our analysis of the capital shortfall suggests that bank holding companies would need to increase total capital by about 0.03 percent of total assets to meet the new minimum total capital ratio plus the capital conservation buffer. If bank holding companies raised the capital to cover the shortfall in a single quarter, these estimates suggest that covering the capital shortfall would lead to an increase in loan spreads of less than 0.01 percentage points and a decline in loan volume growth of less than 1 percentage point.

Our estimates also suggest that the long-run impact of meeting the new capital requirements on the cost and availability of credit also likely would be small. To assess the potential impact on loan rates, we used an existing loan pricing model that captures key determinants of loan rates in the long run, including funding costs, credit spreads, and administrative costs. As discussed above, funding costs for bank holding companies and depository institutions that increase equity capital to meet Basel III minimum capital ratios could increase. Bank holding companies and depository institutions can respond to changes in their funding costs in several ways, including raising loan rates, shifting lending activity to

[46]In our prior work we designed and used an econometric model to estimate the effect of a change in capital levels on key credit market variables. The model is a version of existing vector autoregression models found in the macroeconomic and monetary literature extended to include a banking sector. The econometric approach has specific limitations but is considered a reasonable alternative to other types of models, including more sophisticated models. Our model includes four variables that capture supply, demand, output, and prices that comprise the "macroeconomy." We extend the model to include the using of various proxies for loan volumes, bank capital, loan spreads, and information on lending standards to capture the banking sector. See GAO, *Dodd-Frank Act: Hybrid Capital Instruments and Small Institution Access to Capital*, GAO-12-237 (Washington, D.C.: Jan. 18, 2012).

[47]The loan pricing model we used is described in Douglas Elliott, *A Primer on Bank Capital* (Washington, D.C.: The Brookings Institution, January 2010). We used a modified version of this model in prior work; see GAO-12-237. For information on the loan pricing model, see appendix II.

lower-risk borrowers, and increasing efficiency. If bank holding companies and depository institutions that have to raise capital covered their increased funding costs solely by increasing their lending rates, our estimates of the funding cost changes are indicative of the amounts by which lending rates at these institutions would increase—generally less than 0.3 percentage points. However, some factors may cause lending rates to increase by less than this amount. The extent to which bank holding companies and depository institutions can raise lending rates is limited by the amount of competition they face from other lenders—including lenders that already hold sufficient capital—as well as other factors. Thus, bank holding companies and depository institutions that need to raise capital may cover their increased funding costs by other means in addition to, or instead of, raising lending rates. For example, they could increase lending to lower risk borrowers and reduce lending to higher risk borrowers in order to reduce credit spreads, or they could reduce salaries or employ fewer people to lower administrative costs. In this case, lending rates would increase by less than the amount that funding costs increase.

Our estimates of the impact of meeting the new capital requirements on the cost and availability of credit are subject to limitations and should be interpreted with caution. As discussed, our estimates of capital shortfall and the increase in funding costs associated with raising capital to eliminate the shortfall are subject to important limitations that could lead us to overstate or understate them. Because the change in lending rates is related to both the capital shortfall and the associated increase in funding costs, it too may be overstated or understated. For example, if bank holding companies or depository institutions maintain a capital buffer in excess of the minimum amount of capital required, then the increase in lending rates likely will be greater than our estimates of the increase. In addition, past macroeconomic and credit market conditions heavily influence the methodology we used to estimate the short-run response of loan spreads and loan volume growth to changes in the ratio of capital to assets, so the estimates may not apply to future periods if macroeconomic and credit market conditions were significantly different. Furthermore, the model we used to estimate the long-run response of loan rates to changes in the ratio of capital to assets may not reflect all of the determinants of loan rates.

Some Market Participants Generally Expect U.S. Capital Requirements to Increase Compliance Costs but Have a Limited Effect on the Cost and Availability of Credit

Although their views are not indicative of the banking industry as a whole, bank officials we interviewed generally expected that they would be able to meet new capital requirements, their compliance costs would increase, and effects of the requirements on credit would not be large. According to officials from all eight community banks we interviewed, they did not anticipate any difficulties in meeting the U.S. Basel III capital requirements but expect to incur additional compliance costs. Because we interviewed a relatively small number of community banks, compared with the overall population of banks with assets of less than $10 billion, we cannot generalize the responses. All the officials said their banks were well capitalized in excess of Basel III capital ratio requirements and they did not anticipate having to raise any additional capital or take additional actions to meet the heightened capital requirements. At the same time, the community bank officials generally told us that they have been incurring additional compliance costs because of the new requirements, but none could quantify the costs. For example, five officials said that they will need to update their information technology systems or purchase software to comply with enhanced reporting and recordkeeping requirements. Two told us that they consulted (or expect to consult) with accountants, attorneys, or both to understand the Basel III capital requirements and the implications for their banks. Additionally, six told us that their staffs have been devoting more of their time to comply with the new capital requirements, but none said they have hired or planned to hire additional staff. Finally, four officials told us that several revisions the federal banking regulators made to the regulations—particularly those involving the risk weights for residential mortgages, accumulated other comprehensive income, and trust preferred securities—helped to minimize their regulatory burden. Similarly, officials from an industry association told us that community banks fared well under the capital regulations, which addressed most of the concerns raised by the association about the proposed regulations.

Consistent with the findings from our review of the literature and analysis of the capital shortfall, the officials from some community banks told us that they generally expected the U.S. Basel III capital requirements to have a limited effect on the cost and availability of credit. Specifically, four said they did not expect the new requirements to hamper their ability to lend to their customers. However, several said that the higher capital requirements for high-volatility commercial real estate might reduce their lending in this area. Three officials told us that they expect tighter underwriting standards to make it more difficult and expensive for marginal customers to borrow, but five expected loan prices to increase.

Officials from two banks mentioned that competition from other institutions, such as credit unions, could affect loan pricing.

Officials from the 10 U.S. and foreign G-SIBs (large, internationally active banks) that we interviewed told us that the U.S. Basel III's minimum capital requirements generally tended not to act as binding capital constraints on them. Instead, three of the banks told us that U.S. G-SIBs are subject to stress-testing under Comprehensive Capital Analysis and Review (CCAR) by the Federal Reserve, and the capital requirements under CCAR typically are higher than the minimum Basel III requirements.[48] To be able to pay dividends to shareholders, the G-SIBs must meet the capital requirements set under CCAR. In addition, officials from four U.S. G-SIBs said that the supplementary leverage ratio would be more onerous or costly with which to comply than the risk-based capital requirements.

The officials from all the U.S. G-SIBs we interviewed said that they have expended significant resources in terms of staff and money to implement and comply with the U.S. Basel III capital requirements. For example, they said that they have had to hire additional staff and develop new technology and infrastructure to comply with the regulations. Three told us that under the Collins Amendment they have had to calculate a total of six capital ratios—three using the advanced approaches and three using the standardized approach—which is significantly burdensome. But none of the U.S. G-SIBs could provide us with a precise estimate of their compliance costs, in part because Basel III implementation has been done in conjunction with other regulatory reforms, such as the Dodd-Frank Act, and in part because staffs from many departments were involved in implementation. However, several officials told us the costs have been running into the millions of dollars and included significant staff hours.

According to officials from the 10 G-SIBs, the Basel III capital requirements are expected to have a mixed effect on their lending and lines of business. Four of the G-SIBs generally told us they expected the high-capital requirements to affect lending—namely by reducing the availability of credit or increasing costs for borrowers (or both). More

[48]The Federal Reserve's program, Comprehensive Capital Analysis and Review, implements its capital plan rule.

specifically, two G-SIBs said the capital requirements will have some effect on the mortgage market, but one also noted that other factors may have a greater effect on the market (because it is a highly competitive market). Two officials told us that the U.S. Basel III regulations may cause mortgage servicing assets to move from the banking sector to the non-banking sector.[49] In particular, one said that 25 percent of all U.S. mortgage servicing rights assets have moved outside of the banking sector because of the new regulatory capital requirements. In addition, the G-SIBs said that they generally expected the new leverage and liquidity requirements, along with the capital requirements, to reduce certain of their business activities, particularly their derivatives and short-term securities financing transactions.

Officials from a number of the community banks and G-SIBs told us that they expect the U.S. Basel III capital regulation to improve the resiliency of the U.S. banking system. Specifically, officials from two community banks said that they expected the capital regulations to improve the safety and soundness of the banking system, but three community banks questioned the appropriateness of the regulations for small banks. Officials from nine of the G-SIBs said the regulations generally would make the U.S. banking system safer, because higher capital and liquidity reduce risks to the banking system. At the same time, some said that the capital regulation could create other vulnerabilities that made the financial system less stable—for example, by shifting the risk outside of regulated banks or by reducing the willingness of banks to hold risky assets during times of market stress.

The Basel Committee Is Taking Steps to Identify Basel III Implementation Inconsistencies

Differences in regulatory capital requirements across jurisdictions could affect competition between internationally active banks. For example, higher capital costs driven by higher regulatory capital requirements could result in a competitive disadvantage for banks that compete for similar customers with banks subject to lower capital requirements. As have the previous Basel accords, Basel III serves, in part, to limit competitive advantages or disadvantages due to such differences. For example, one of the two fundamental objectives of the initial Basel accord was that standards should be fair and applied with a high degree of consistency to

[49]Mortgage servicing asset is the right of a bank to service a mortgage loan or a portfolio of loans for another bank's account. The cost associated with acquiring these rights may be capitalized under certain circumstances.

banks in different countries with a view to diminishing an existing source of competitive inequality among international banks. As specified in its charter, the Basel Committee's activities include monitoring the implementation of Basel standards in member countries to help ensure their timely, consistent, and effective implementation and contribute to a level playing field among internationally active banks. At the same time, there are limitations to full harmonization. As was the case with the implementation of Basel II, some market participants or observers have raised concerns about regulatory differences in the implementation of Basel III between jurisdictions and their possible competitive effects.

Most Member Jurisdictions Have Implemented Basel III Capital Requirements, but Committee Assessments Found Some Inconsistencies

According to the Basel Committee's October 2014 progress report, 25 of its 28 members reported having regulations in effect to implement Basel III's higher capital requirements (see table 7).[50] However, three Basel Committee members reported they had not yet implemented all the Basel III capital requirements, namely the conservation and countercyclical buffers. In September 2014, U.S. regulators finalized their liquidity coverage ratio regulation, but it will not take effect until January 2015. In addition to the risk-based capital standards, the Basel Committee monitors implementation of the additional loss absorbency requirements for G-SIBs and domestic systemically important banks, liquidity coverage ratio, and leverage ratio.[51] Basel Committee members generally reported that they have not yet adopted regulations to implement these requirements.

[50]The progress report is based on data self-reported by individual jurisdictions and is not subject to verification by the Basel Committee. Basel Committee on Banking Supervision, *Seventh progress report on adoption of the Basel regulatory framework* (Basel, Switzerland: October 2014).

[51]In the United States, the Basel III leverage ratio is referred to as the supplementary leverage ratio.

Table 7: Implementation Status of the Basel III Capital Framework as Reported by Members of the Basel Committee, as of October 2014

Jurisdiction	Risk-based capital	G-SIBs and Domestic Systemically Important Banks	Liquidity coverage ratio	Leverage ratio
Argentina	Completed	In progress	In progress	In progress
Australia	Completed	In progress	Completed	In progress
Brazil	Completed	Not started	In progress	In progress
Canada	Completed	In progress	In progress	In progress
China	Completed	In progress	Completed	In progress
Hong Kong Special Administrative Region	Completed	In progress	In progress	Not started
India	Completed	In progress	In progress	In progress
Indonesia	Completed	In progress	In progress	In progress
Japan	In progress	In progress	In progress	Not started
Korea	Completed	In progress	In progress	Not started
Mexico	In progress	Not started	Not started	Not started
Russia	In progress	Completed	In progress	In progress
Saudi Arabia	Completed	In progress	Completed	In progress
Singapore	Completed	In progress	In progress	In progress
South Africa	Completed	In progress	In progress	In progress
Switzerland	Completed	Completed	In progress	In progress
Turkey	Completed	Not started	In progress	In progress
United States	Completed	Not started	In progress	Completed
European Union[a]	Completed[b]	In progress	In progress	In progress
Belgium	Completed	In progress	In progress	In progress
France	Completed	In progress	In progress	In progress
Germany	Completed	In progress	In progress	In progress
Italy	Completed	In progress	In progress	In progress
Luxembourg	Completed	In progress	In progress	In progress
Netherlands	Completed	In progress	In progress	In progress
Spain	Completed	In progress	In progress	In progress
Sweden	Completed	In progress	In progress	In progress
United Kingdom	In progress	In progress	In progress	In progress

Source: Basel Committee on Banking Supervision. | GAO-15-67

Notes: “Not started” means that no draft law, regulation or other official document has been made public to detail the planned content of the domestic regulatory rules. “In process” means that a draft law, regulation, or other official document is already publicly available or that the domestic legal or regulatory framework has been finalized and approved but still is not applicable to banks. “Completed” means that the domestic legal and regulatory framework already applies to banks.

[a]The European Commission is an observer on the Basel Committee.

[b]The European Union adopted the Capital Requirements Regulation and Directive IV to implement Basel III. The Capital Requirements Regulation includes Basel III's capital, leverage, and liquidity requirements; is binding on all European Union member states; and does not need to be transposed by European Union member states into national law. The Capital Requirements Directive includes Basel III's capital conservation and countercyclical buffers and has to be transposed by European Union member states into national law.

The Basel Committee's assessments of Basel III implementation found that the jurisdictions reviewed to date have adopted rules generally consistent with the Basel III standards but identified some inconsistencies in regulator-approved bank models across countries.[52] According to the Basel Committee, public confidence in prudential ratios, resiliency of banks, and a level regulatory playing field for internationally active banks cannot be achieved without consistency in the adoption and implementation of the Basel standards. Recognizing the importance of Basel III's implementation, the Basel Committee established its Regulatory Consistency Assessment Program (RCAP) in 2012.[53] RCAP assessments are designed as peer reviews undertaken by technical experts from member jurisdictions and are done on a jurisdictional and thematic basis.

Jurisdictional RCAP Assessment

The Basel Committee has completed seven jurisdictional assessments and generally found the jurisdictions compliant; additionally, the committee reviewed European Union (EU) and U.S. draft regulations but did not assign an overall compliance grade, because the rules still were in draft form at the time of the review. Jurisdictional assessments review the extent to which national Basel III regulations in each member jurisdiction align with the Basel III minimum requirements. They examine the consistency and completeness of the adopted standards, including the prudential significance of any deviations in the standards. According to the Basel Committee, the assessments help highlight the current and potential impact of any gaps in the regulatory regime, and help member jurisdictions undertake reforms needed to strengthen their regulatory regimes. Each member jurisdiction has agreed to undergo an RCAP assessment, and the Basel Committee has given priority to jurisdictions in

[52]Regulator-approved bank models are internal models that banks use to determine risk-weighting of assets.

[53]RCAP assessments of capital regulations cover Basel II, 2.5, and III. The International Monetary Fund also monitors and assesses the stability of the financial system through its Financial Sector Assessment Program. These assessments also assess country compliance with the Basel Committee's core principles for effective banking supervision, and are viewed by the Basel Committee as complementary to its RCAP work.

which G-SIBs are domiciled.[54] Currently, RCAP assessments focus on the Basel III risk-based capital standards, but will be expanded to cover the Basel standards relating to liquidity, leverage, and systemically important banks.

The Basel Committee has completed jurisdictional assessments of the final Basel III regulations adopted by Australia, Brazil, Canada, China, Japan, Singapore, and Switzerland and generally found them to be "compliant." Each RCAP uses four grades (compliant, largely compliant, materially noncompliant, and noncompliant) to provide an overall assessment of the compliance of the member jurisdiction's regulations with Basel III.[55] RCAPs also assess and grade a jurisdiction's regulations for compliance with 20 key components of the Basel III standards: for example, standardized approach and advanced approaches for credit and market risk, capital buffers, supervisory review process, and disclosures.[56] In their RCAPs, each of the seven jurisdictions received one or more largely compliant grades for their compliance with a specific key component, but none received a grade below largely compliant. In addition, the China and Switzerland RCAPs identified examples in which the two jurisdictions adopted regulations more stringent than the Basel III

[54]Jurisdictional RCAPs are completed using a 15-step general process within three general phases, and the Basel Committee has a goal of completing RCAPs within 6 months of beginning the process. For more information, see Basel Committee on Banking Supervision, *Basel III Regulatory Consistency Assessment Programme (RCAP)* (Basel, Switzerland: October 2013).

[55]A domestic regulatory framework is considered compliant with Basel III if all minimum provisions of the relevant Basel standard have been satisfied and no material differences are identified that would give rise to prudential concerns or provide a competitive advantage to internationally active banks. A domestic regulatory framework is considered largely compliant with Basel III if only minor provisions of the relevant Basel standards have not been satisfied and if differences that have only a limited impact on financial stability or the international-level playing field have been identified. A domestic regulatory framework is considered materially non-compliant with Basel III if key provisions of relevant Basel standards have not been satisfied or if differences that could materially affect financial stability or the international level playing field have been identified. A domestic regulatory framework is considered noncompliant with Basel III if the relevant Basel standards have not been adopted or if differences that could severely affect financial stability or the international playing field have been identified.

[56]Assessment grades and overall grades are separate but completed in a similar manner. Assessment grades are assigned using a three-step approach according to the materiality of identified deviations. The materiality of quantifiable gaps is measured in terms of the current and potential impact on risk-based capital ratios and risk-weighted assets.

minimum standards.[57] For example, China and Switzerland adopted certain regulatory capital requirements that are more stringent than the minimums set in Basel III. According to the Basel Committee, the RCAPs identified no areas to be consistently above the Basel minimums, suggesting the Basel capital standards generally are not calibrated too low in the collective judgment of the implementing authorities.

The Basel Committee also conducted jurisdictional RCAP assessments of proposed Basel III rules for the European Union and the United States, but did not assign them an overall assessment grade because of the draft nature of the rules.[58] The RCAP assessments found both proposed approaches generally complied with the vast majority of Basel III's key components. However, the assessments also found certain components of the proposals to be materially noncompliant. Specifically, the EU RCAP noted that the proposed approach fell substantially short of the Basel framework in the definition of capital and the internal ratings-based approach for credit risk. The U.S. RCAP noted that the grade was mainly due to the proposed implementation of an alternative approach to replace Basel use of external credit ratings. The European Commission expressed concerns about RCAP's preliminary findings—including that the assessment did not take into account that the EU is a single jurisdiction that applies Basel III to all its banks and investment firms, which necessitates that national regulators employ a certain level of proportionality in applying the rules. U.S. agencies noted that the Dodd-Frank Act prohibits the use of credit ratings for setting capital charges for securitization exposures, resulting in a deviation from the Basel III standards. They also noted that their evidence suggests that the deviation's impact will not be material and therefore believe that their approach is largely compliant rather than materially non-compliant. The United States and EU are currently undergoing RCAP assessments based on their final Basel IIII regulations.

[57]See Basel Committee on Banking Supervision, *Regulatory Consistency Assessment Programme (RCAP): Assessment of Basel III regulations - China* (Basel, Switzerland: September 2013); and Basel Committee on Banking Supervision, *Regulatory Consistency Assessment Programme (RCAP): Assessment of Basel III regulations - Switzerland* (Basel, Switzerland, June 2013).

[58]See Basel Committee on Banking Supervision, Basel III Regulatory Consistency Assessment (Level 2), preliminary report - European Union (Basel, Switzerland: October 2012); and Basel Committee on Banking Supervision, Basel III Regulatory Consistency Assessment (Level 2), preliminary report - United States of America (Basel, Switzerland: October 2012).

In a September 2013 speech, the Basel Committee's Secretary General acknowledged the limitations of RCAP assessments, recognizing that the committee has no enforcement power beyond the power of peer pressure and public disclosure.[59] However, the Secretary General noted that RCAPs are a strong demonstration of the Basel Committee's commitment to international consistency and, where this cannot be perfectly achieved, to greater transparency. The Secretary General further noted that if an individual jurisdiction departed from Basel III standards, the nature and materiality of that divergence ought to be well understood. If a bank did not operate under regulations consistent with Basel standards, any difference should be much more transparent when it reported a "Basel ratio." According to the Secretary General, in that way markets can have something of a policing role, offsetting regulatory differences in their assessment of banks' financial ratios.

Thematic RCAP Assessments

The Basel Committee conducted three thematic RCAP assessments and found considerable variation across banks in the average risk-weighted assets for market risk in the trading book and credit risk in the banking book.[60] Thematic assessments review regulatory outcomes to ensure that the regulatory capital ratios calculated by banks are consistent across banks and jurisdictions and predominantly reflect differences in risk rather than in bank and supervisory practices. The Basel Committee initially focused its thematic assessments on analyzing how banks were risk-weighting their assets, because differences in the application of the Basel

[59]Wayne Byres, Secretary General, Basel Committee on Banking Supervision, "Global Consistency in Financial Regulation: Is the glass half full, half empty, or just more transparent?" speech to the RiskMinds Risk and Regulation Forum, Nice, France (Sept. 10, 2013).

[60]Basel Committee on Banking Supervision, *Regulatory Consistency Assessment Programme (RCAP): Analysis of risk-weighted Assets for Credit Risk in the Banking Book* (Basel, Switzerland: July 2013), *Regulatory Consistency Assessment Programme (RCAP): Second report on risk-weighted assets for market risk in the trading book* (Basel, Switzerland: December 2013); and *Regulatory Consistency Assessment Programme (RCAP): Analysis of Risk-weighted Assets for Market Risk* (Basel, Switzerland: January 2013; revised February 2013). The trading book refers to securities that a bank would not hold to maturity and for which it accounts at current market value. The banking book refers to securities a bank plans to hold to maturity at their original book value. If the bank decides to sell the securities, it then moves the securities to the trading book, where they are given fair market value accounting treatment. Average risk-weighted assets include, for example, the three wholesale assets classes covered by the hypothetical portfolio exercise (sovereign, bank, and corporate) that account on average for about 40 percent of participating banks' total credit risk-weighted assets.

standards can lead to variations in the amount of capital banks have to hold. In that regard, the objective of the assessments generally has been to obtain a preliminary estimate of the potential for variation in risk-weighted assets across banks and highlight aspects of the Basel standards that contribute to this variation.

More specifically, the RCAP examining risk-weighted assets in the banking book found that most of the variation in calculation of risk-weighted assets could be explained by broad differences in the risk composition of banks' assets, reflecting differences in risk preferences as intended under the Basel III framework. But the RCAP also found differences in bank and supervisory practices drove a material amount of the variation.[61] Similarly, the RCAPs examining risk-weighted assets in the trading book found considerable variation in the calculation of risk-weighted assets for market risk across banks.[62] Supervisory decisions applied to all banks in a jurisdiction or to individual banks were deemed to be a sizeable driver of the variation, but the variation also was due to the choice of models banks used to calculate regulatory capital. According to the Basel Committee Chairman, national supervisors and banks have been using the assessments to take action where needed. Moreover, in February 2014, the Financial Stability Board reported that by the November 2014 G20 summit, the Basel Committee will prepare a plan to address excessive variability in risk-weighted asset calculations that can

[61]The RCAP examining credit risk in the banking book found that some outlier banks use different risk-weighting that could cause variation of as much as 2 percentage points from the benchmark portfolio (or 20 percent in relative terms) in either direction. More than 100 major banks participated in the RCAP analysis. Non-G-SIBs were included when the host countries of those banks did not have any G-SIBs, and the significance of the bank's trading activity relative to their domestic peers.

[62]The thematic RCAPs analyzing market risk were divided into two phases. Phase 1 employed a hypothetical test portfolio exercise (in which groups of banks were given a hypothetical portfolio consisting primarily of simple long and short positions and asked to assign risk-weights using their internal models) and found a substantial difference between the bank reporting the lowest risk-weights and the bank reporting the highest. Phase 2 found similar results with another hypothetical test portfolio exercise, which expanded the analysis to cover additional types of portfolios of assets a bank might hold. Fifteen banks participated in Phase 1, most of which were G-SIBs. Non-G-SIBs were included if the host countries of those banks did not have any G-SIBs and the significance of the bank's trading activity relative to their domestic peers. Seventeen banks (primarily G-SIBs) participated in Phase 2, and several non-G-SIBs were included as necessary.

be implemented to improve consistency and comparability in bank capital ratios.[63]

U.S. Basel III Capital Rules Generally Apply to U.S. and Foreign Banking Entities and Help Provide a Level Regulatory Playing Field in the U.S. Market

U.S. Basel III capital regulations generally apply to both U.S. banking organizations and their foreign banking counterparts operating in the United States, helping to provide a level regulatory playing field in the U.S. market. In general, U.S. regulation of foreign banks is guided by the principle of national treatment and equality of competitive opportunity, which generally means that foreign banking entities operating in the United States should be treated no less favorably than similarly situated U.S. banking organizations and should generally be subject to the same restrictions and obligations in the United States as those that apply to the domestic operations of U.S. banking organizations.[64]

Foreign banking organizations (such as foreign parent banks) have structured their U.S. banking operations in a number of ways.[65] For example, some conduct U.S. banking activities directly through branches or agencies, while others own U.S. banks directly. Most foreign banking organizations operate through branches and agencies, because as

[63]Mark Carney, Chairman, Financial Stability Board, "Financial Reforms–Progress and Challenges," letter of February 17, 2014, to the G20 Finance Ministers and Central Bank Governors.

[64]Several laws enacted since 1978 have shaped the regulation of foreign-owned intermediate holding companies and other foreign-owned banking operations. The International Banking Act of 1978 (Pub. L. No. 95-369, 92 Stat. 607 (1978)) is the primary federal statute regulating foreign bank operations in the United States. In passing the act, Congress adopted a policy of "national treatment," the goal of which is to allow foreign banks to operate in the United States without incurring either significant advantage or disadvantage compared with U.S. banks. For additional information, see GAO, *Bank Capital Requirements: Potential Effects of New Changes on Foreign Holding Companies and U.S. Banks Abroad*, GAO-12-235 (Washington, D.C.: Jan. 17, 2012). In March 2014, the Federal Reserve issued a final rule requiring certain foreign banking organizations to set up a U.S. intermediate holding company to act as a top tier U.S. company for the foreign banking organization's subsidiaries in the United States. The requirement will be generally effective in July 2016.

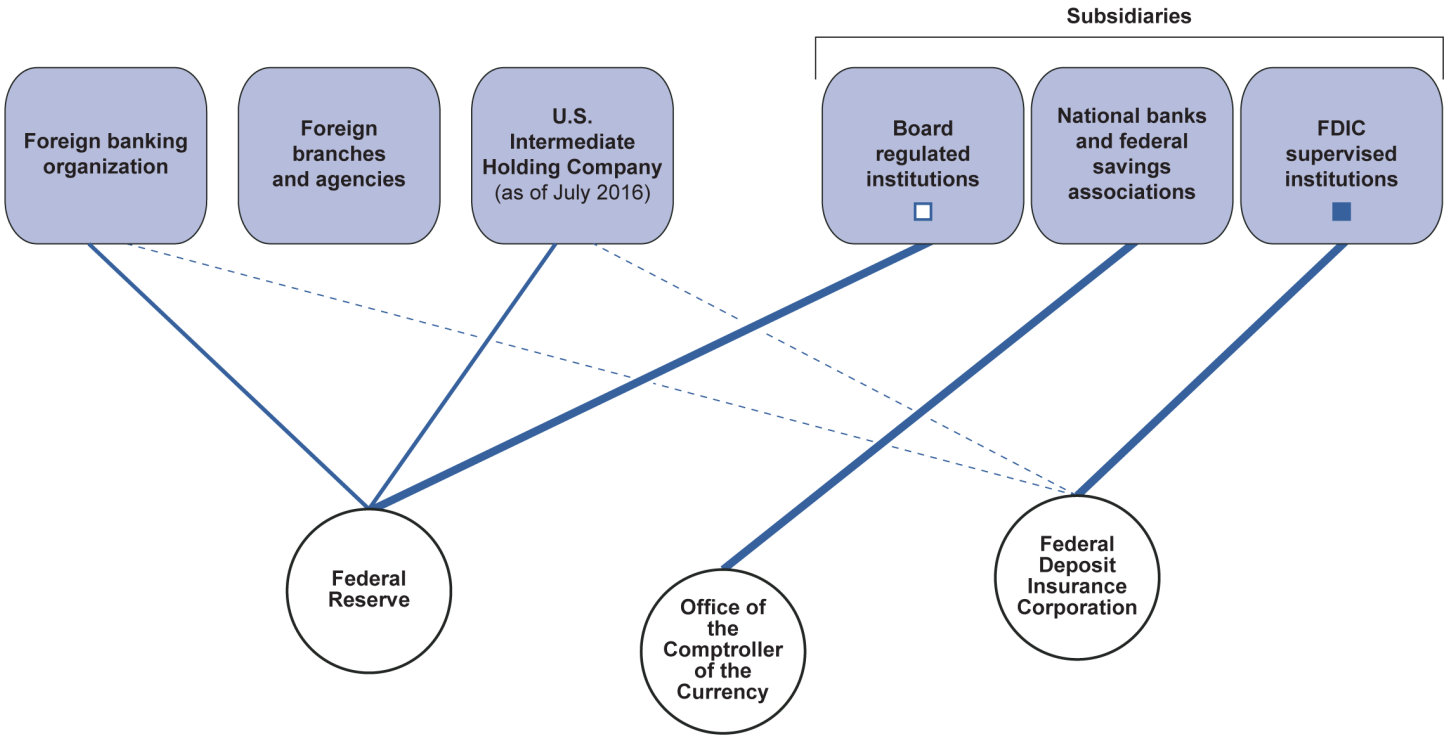
[65]A foreign banking organization is a foreign bank that operates a branch, agency, or commercial lending company subsidiary in the United States, or controls a bank in the United States or controlled an Edge corporation acquired after March 5, 1987, and any company of which the foreign bank is a subsidiary, provided that if the top-tier foreign banking organization is incorporated in or organized under the laws of any State, the foreign banking organization shall not be treated as a foreign banking organization for enhanced prudential standards purposes.

extensions of the foreign banking organizations, they do not have to be separately capitalized and can conduct a wide range of banking operations. Federal Reserve officials told us that they expect the U.S. Intermediate Holding Company provisions discussed below to reduce the variety of operations of foreign banking organizations in the United States.

The Federal Reserve, OCC, and FDIC supervise and regulate the U.S. banking operations of foreign banking entities. The Federal Reserve is responsible for the overall supervision and regulation of the foreign banking organizations in the United States. Branches and agencies are licensed and subject to supervision by OCC or state banking agencies. Subsidiary banks of foreign banking organizations are chartered by OCC or state banking agencies, and supervised by OCC, FDIC, or the Federal Reserve or state banking agencies. Although subsidiaries that are required to abide by U.S. Basel III capital regulations may be owned or controlled by the foreign banking organization, they are separate legal entities.

As shown in figure 1, Basel III capital regulations of FDIC, the Federal Reserve, and OCC generally apply to U.S. and foreign banking entities, except for foreign branches and agencies. However, some regulatory differences could arise—for example, if the subsidiaries of foreign banking entities that are required to abide by U.S. Basel III capital regulations are independent or will be required to form a U.S. intermediate holding company.

Figure 1: Applicability of U.S. Basel III Capital Regulations to Different Types of Foreign Banking Entities



Source: GAO. | GAO-15-67

Foreign banking organizations. The Federal Reserve requires foreign banking organizations with U.S. banking operations with total consolidated assets of $50 billion or more to be subject to the international Basel III capital requirements as established in their home

country.[66] These banks must certify to the Federal Reserve that they meet capital adequacy standards on a consolidated basis established by their home-country supervisor that are consistent with Basel III standards. If the home-country supervisor has not established capital adequacy standards consistent with Basel III, the foreign banking organization must demonstrate to the Federal Reserve that it would meet or exceed capital adequacy standards on a consolidated basis that are consistent with Basel III were it subject to that standard.[67] If a foreign banking organization fails to satisfy the Basel III requirements, the Federal Reserve may impose requirements, conditions, or restrictions, including risk-based or leverage capital requirements, on the activities or business operations of the U.S. operations of the foreign banking organization. None of FDIC's Basel III capital rules are applicable to foreign banking organizations.

Branches and agencies. Branches and agencies of foreign banking organizations are not subject to U.S. Basel III capital requirements because foreign banking organizations may operate through branches and agencies in the United States on the basis of their home-country capital standards. According to OCC, because federal branches and agencies have no segregated capital base and are only part of a foreign banking organization's earnings stream, measurement of capital at risk is not meaningful for them.[68]

[66]Federal Reserve regulations state that foreign banking organization with less than $50 billion in total consolidated assets are not subject to U.S. Basel III risk-based and leverage capital standards. Enhanced Prudential Standards for Bank Holding Companies and Foreign Banking Organizations. 79 Fed. Reg. 17240, 17245 (March 27, 2014).

[67]79 Fed. Reg. 17240, 17325, 17330 (March 27, 2014); 12 C.F.R. § 252.143(a)(2) and 12 C.F.R. § 252.154(a)(2).

[68]Nonetheless, pursuant to its regulations predating the U.S. implementation of Basel III and discretion, OCC requires federal branches and agencies to maintain certain levels of cash-equivalent deposits to protect depositors, safeguard the public interest, and maintain a sound financial condition. Cash-equivalent deposits include investment securities eligible for investment by national banks, U.S.-dollar-denominated deposits payable in the United States, and certificates of deposit payable in the United States. 12 C.F.R. § 28.15. FDIC rules require a foreign bank that has an insured branch to pledge assets to help protect the Deposit Insurance Fund. 12 C.F.R. § 347.209(a). Furthermore, FDIC rules provide the methodology for calculating the amount of assets to be pledged, which generally is a certain percentage of an insured branch's liabilities. 12 C.F. R. § 347.209(b).

U.S. intermediate holding companies. In March 2014, the Federal Reserve finalized a rule to require larger foreign banking organizations based overseas and having material U.S. operations to establish a U.S. intermediate holding company (U.S. IHC) for consolidated supervision of their U.S. subsidiaries.[69] According to the Federal Reserve, the requirement facilitates a level playing field between foreign and U.S. banking organizations operating in the United States, in furtherance of national treatment and competitive equity. Under the rule, U.S. IHCs would be subject to Basel III capital requirements substantially similar to those for U.S. bank holding companies. However, those U.S. IHCs that are advanced approaches banking organizations may choose to calculate their risk-weighted assets according to the standardized or advanced approaches risk-based capital rules.[70] Conversely, U.S. bank holding companies that meet the asset threshold are automatically treated as advanced approaches banking organizations and must abide by the risk-based capital rule calculation requirements. FDIC officials told us that the agency will not regulate U.S. IHCs under FDIC's Basel III capital rules,

[69]79 Fed. Reg. 17240 (March 27, 2014). A U.S. intermediate holding company is a top tier U.S. holding company that must be created by July 1, 2016, by a foreign banking organization with $50 billion or more in U.S. nonbranch assets on July 1, 2015. By July 1, 2016, the U.S. intermediate holding company must hold the foreign banking organization's ownership interests in any U.S. bank holding company subsidiary, any depository institution subsidiary, and in U.S. subsidiaries representing 90 percent of the foreign banking organization's assets not held by the bank holding company or depository institution. But the foreign banking organization has until July 1, 2017, to transfer its ownership interests in any residual U.S. subsidiaries to the U.S. intermediate holding company. The foreign banking organizations that meet the $50 billion threshold after July 1, 2015, must establish the U.S. intermediate holding company beginning on the first day of the ninth quarter after it meets or exceeds the asset threshold unless granted an extension by the Federal Reserve. A foreign banking organization also can designate an existing subsidiary that meets certain requirements as its U.S. intermediate holding company. A U.S. intermediate holding company is required by the Federal Reserve to hold a foreign banking organization's entire ownership interest in any U.S. subsidiaries, with certain exemptions. A foreign banking organization can request permission to structure the U.S. intermediate holding company in different formations with Federal Reserve approval. A U.S. intermediate holding company must be organized under the law of the United States or any state or the District of Columbia and be governed by a board of directors or managers elected or appointed in a manner equivalent to a company chartered as a corporation under U.S. law. The final rule states that the U.S. intermediate holding company provides for consistent application of capital, and other, prudential requirements across the U.S. non-branch operations of the foreign banking organization and a single nexus for risk management of those U.S. non-branch operations.

[70]U.S. IHCs that are advanced approaches are those with $250 billion or more in consolidated assets or $10 billion or more in total foreign on-balance-sheet exposure.

because U.S. IHCs are subject to the Federal Reserve's Basel III capital rules.[71]

Subsidiaries. Subsidiaries regulated under U.S. Basel III capital regulations, regardless of whether they are subsidiaries of foreign banking organizations or domestic subsidiaries, must abide by substantially similar rules.[72] The Federal Reserve requires subsidiaries—including any Federal Reserve-regulated institution such as state member banks and top-tier bank holding companies—subject to its supervision to comply with the U.S. Basel III capital regulations. Exceptions include small bank holding companies and foreign-owned U.S. bank holding companies relying on a capital exemption (until it is eliminated).[73] OCC requires subsidiary institutions that fall within the defined entities subject to OCC's Basel III capital rules to comply with the rules, regardless of whether they are a subsidiary of a foreign banking entity. Similarly, FDIC requires subsidiary institutions that fall within the defined entities subject to Basel III capital rules to comply with those rules, regardless of whether they are a subsidiary of a foreign banking entity.

[71]In the final rule creating U.S. intermediate holding companies, the Federal Reserve stated that U.S. intermediate holding companies will have a range of functionally regulated subsidiaries, including broker-dealers, insurance companies, and insured depository institutions. It further states the final rule imposes rules on the U.S. intermediate holding company and not on functionally regulated subsidiaries of the foreign banking organization, in the same way that those rules are applied to domestic bank holding companies. 79 Fed. Reg. 17240, 17277.

[72]This includes subsidiaries regulated under U.S. Basel III capital regulations whether or not those subsidiaries will be located within a U.S. intermediate holding company.

[73]Following the Gramm-Leach-Bliley Act, in January 2001, the Federal Reserve issued Supervision and Regulation Letter 01-1, which states that as a general matter a U.S. bank holding company that is owned and controlled by a foreign bank that is a financial holding company that the Federal Reserve determined to be well-capitalized and well-managed will not be required to comply with the Federal Reserve's capital adequacy guidelines. The Dodd-Frank Act eliminated the capital exemption that the Federal Reserve provided to certain foreign-owned intermediate holding companies. The act requires that after a 5-year phase-in period after enactment of the act, these companies must satisfy the capital requirements of a subsidiary.

Market Participants and Observers Have Identified Some Basel III Implementation Differences between Jurisdictions but the Competitive Effects Are Unclear

Although the Basel capital standards serve to harmonize capital regulations internationally, there are limitations to full harmonization. The Basel capital standards have no legal force; rather, the Basel Committee members developed and agreed to the standards, with the expectation that each member will implement them.[74] According to the Basel Committee, it encourages convergence towards common standards and monitors their implementation, but does not attempt detailed harmonization of members' supervisory approaches. The standards are minimum requirements, and members may adopt more stringent standards. Moreover, as jurisdictions amend their laws or regulations (or both) to implement the Basel III standards, they will need to fit the standards within their existing legal framework, regulatory system, or industry structure. As the Basel capital standards periodically have been revised and implemented, regulators, banks, and others have raised concerns about regulatory differences between jurisdictions and their possible competitive effects. For example, in 2007 and 2008, we reported on such concerns arising from the U.S. implementation of Basel II.[75]

Importantly, internationally active banks can be subject not only to their home-country Basel III regulations but also their host-country Basel III regulations, such as through their foreign subsidiaries. As a result, such banks may need to create systems that take into account different regulatory regimes and approaches. However, according to four G-SIBs we spoke with, all transactions completed by an internationally active bank are consolidated ultimately at the parent company for capital purposes. In turn, the parent company must calculate its capital ratios based on its home-country's capital regulations. If Basel III regulations are more stringent in the United States than in other countries, internationally active U.S. banks could be required to hold higher levels of regulatory capital than their foreign counterparts, and banks and some law firms have noted that this could potentially put internationally active U.S. banks at a competitive disadvantage. However, regulators and some

[74]Under their charter, Basel Committee members commit to implement and apply the Basel standards in their domestic jurisdictions within the pre-defined timeframe established by the Basel Committee.

[75]See GAO, *Risk-Based Capital: New Basel II Rules Reduced Certain Competitive Concerns, but Bank Regulators Should Address Remaining Uncertainties*, GAO-08-953 (Washington, D.C.: Sept. 12, 2008) and *Risk-Based Capital: Bank Regulators Need to Improve Transparency and Overcome Impediments to Finalizing the Proposed Basel II Framework*, GAO-07-253 (Washington, D.C.: Feb. 15, 2007).

academics have noted that enhanced capital requirements could decrease systemic risk in the banking system or increase investor confidence, potentially providing banks holding relatively more capital with a competitive advantage.

Although Basel III implementation is ongoing and will not be completed for years, some banks, regulators, and law firms (in publications we reviewed) have identified a number of implementation differences between jurisdictions that may create competitive disparities. Many of these differences have resulted from jurisdictions imposing more stringent requirements than the Basel III minimum standards, which could put their banking organizations at a competitive disadvantage.[76] Basel III's implementation is a multistep process that includes the adoption of the standards by jurisdictions through changes in law or regulations, compliance with the law or regulations by market participants, and the oversight and supervision of the laws or regulations by national regulators. To date, differences initially identified by market participants and observers have focused on the different ways that jurisdictions have adopted the standards in their regulations, including the following:

- **Additional capital buffers:** The Swiss Financial Market Supervisory Authority designed its capital regulations to impose a variable progressive capital buffer of up to 6 percent of risk-weighted assets on two Swiss G-SIBs. The overall higher capital requirements reflect the regulator's prudential philosophy that Switzerland's capital adequacy regulations should go beyond the international minimum standards. As UBS reported in its 2013 annual report, this requirement could harm Swiss banks when they compete against peer financial institutions subject to more lenient regulation. Similarly, the Bank of England's Prudential Regulation Authority plans to implement a firm-specific buffer that could require certain banks to hold regulatory capital above the Basel III framework's minimum standards.

- **Credit valuation adjustment:** Basel III included a new capital charge (the credit valuation adjustment) under which a bank must hold additional capital when entering into an over-the-counter derivatives transaction not cleared through a central counterparty. According to market participants we interviewed and law firm documents, the EU

[76]Raising capital standards above minimum requirements is sometimes described as "super-equivalence" or "gold plating."

has diverged from Basel III (and the U.S. adoption of Basel III) by exempting transactions from the capital charge where such transactions are between EU-based banks and a nonfinancial corporate, sovereign, or for a limited period, pension fund. According to officials from three G-SIBs we interviewed, the exemption enables European banks to price derivative transactions to such counterparties more favorably than their non-EU competitors. Officials from one of the banks told us that the price difference could be a key factor in determining if customers transacted with U.S. versus European banks, but price was not necessarily the only factor that customers considered.

- **Enhanced supplementary leverage ratio:** U.S. banking regulators established a minimum supplementary leverage ratio of 3 percent for advanced approaches banks, consistent with Basel III. However, the regulators established an enhanced supplementary leverage ratio for top-tier bank holding companies with more than $700 billion in total consolidated assets or more than $10 trillion in assets under custody and in their subsidiary depository institutions. This enhanced ratio raised the standards above the Basel III minimum standards. Under the final rule, such subsidiary insured depository institutions must maintain an enhanced supplementary ratio of at least 6 percent to be well capitalized under the prompt corrective action framework, and the bank holding companies must maintain a buffer of more than 2 percent above the minimum supplementary leverage ratio requirement of 3 percent to avoid restrictions on capital distributions and discretionary bonus payments.[77] According to an industry association and bank we interviewed, the leverage requirement will disadvantage such U.S. banking organizations by requiring them to maintain higher capital than their competitors in other jurisdictions. However, U.S. banking regulators view a strong regulatory capital base as a competitive strength for banking organizations, rather than a competitive weakness.

- **Collins Amendment:** In the U.S. Basel III capital regulations, federal banking regulators implemented section 171 of the Dodd-Frank Act (the Collins Amendment) which requires advanced approaches banking organizations to calculate their risk-based capital ratios under

[77]Prompt Corrective Action requires regulators to classify banks into one of five capital categories and take increasingly severe actions as a bank's capital deteriorates.

both the advanced approaches and the standardized approach (minimum risk-based capital requirements), among other capital requirements. The banks then must use the lower of each capital ratio to determine compliance with minimum capital requirements. According to a law firm's analysis, the rule eliminates capital relief that large U.S. banks might otherwise obtain using their internal models under the advanced approaches and may provide certain internationally active foreign banks with a competitive advantage. Additionally, officials from three U.S. G-SIBs generally told us that the Collins Amendment could require them to hold more regulatory capital than their foreign competitors and put them at a competitive disadvantage.

- **Liquidity coverage ratio:** Basel III includes the liquidity coverage ratio as an internationally harmonized quantitative liquidity standard, with the goal of promoting the short-term resilience of the liquidity risk profile of internationally active banking organizations. Although at the time we spoke with the G-SIBs, U.S. banking regulators had not finalized their proposed rule implementing Basel III's liquidity coverage ratio, officials from four G-SIBs said the proposed rule included requirements more stringent than the Basel III liquidity standards, including a narrower range of assets that qualified as high-quality liquid assets and a faster assumed rate of outflows for wholesale funding. They said the rule, as proposed, would require them to hold more liquid assets than their foreign competitors, which would be more costly for them. The U.S. banking regulators noted in the proposed rule and final rule that there were modifications to Basel III's liquidity coverage ratio to reflect characteristics and risks of specific aspects of the U.S. market. For instance, the proposed and final rules both recognized the strong liquidity positions U.S. banking organizations already achieved and discussed the need to maintain that improved liquidity through the use of shorter transition periods than mandated in Basel III. The proposed and final rule also differed from Basel III in the method for calculating total net cash outflows; regulators described the difference as necessary because the change would allow companies to better capture their own liquidity risk.

In addition to differences in Basel III regulations between jurisdictions, officials from two G-SIBs noted potential inconsistencies in the oversight and supervision of Basel III regulations. For example, such officials said that U.S. regulators have been more rigorous in their review and approval of internal models used by advanced approaches banks for calculating their risk weights under Basel II, as demonstrated by the long time it has taken these banks to pass their parallel run under the Basel II regulations.

In contrast, banks in the EU, Canada, and Japan had begun implementing Basel II in 2008. At that time, the EU implementation of Basel II ahead of the United States raised competitive concerns because of the potential for EU banks to be required to hold less regulatory capital to support the same level of assets. Basel Committee and other studies indicated that U.S. banks tended to be subject to higher risk weights than EU banks, in part due to their use of the Basel I and Basel II frameworks, respectively.[78] At the same time, comparing risk weights across banks is difficult, in part because of differences in business mix, accounting rules, off-balance sheet assets, and approaches for calculating risk-weighted assets.

While differences exist in the implementation of Basel III between jurisdictions, the extent to which these differences collectively will affect competition among internationally active banks is unclear. As shown in table 7 above, Basel Committee member jurisdictions have not finished adopting regulations to implement Basel III capital, leverage, and liquidity standards. Moreover, the identified implementation differences cover multiple jurisdictions and apply to different aspects of Basel III, confounding their potential effect on competition. According to officials from two G-SIBs, it is very difficult or impossible to measure quantitatively the effect of such differences on competition. In addition to regulatory capital requirements, other factors can affect the competitive position of internationally active banks, such as differences in accounting treatment, cost of capital, tax rules, and other regulations from one country to another. For example, the spread or fee that banks charge for a financial product is a function not only of their regulatory capital requirements but also their cost of capital, which is driven by a variety of factors, and tax rates. Additionally, officials from three G-SIBs told us the Dodd-Frank Act and other reforms could affect the extent to which Basel III can help provide a level playing field. For example, they said that their minimum regulatory capital ratios effectively are set under the annual CCAR, which has resulted in regulatory capital ratios higher than the Basel III minimum

[78]See, for example, Vanessa Le Leslé and Sofiya Avramova, *Revisiting Risk-Weighted Assets: Why Do RWAs Differ Across Countries and What Can Be Done About It?*, IMF Working Paper, WP/12/90 (March 2012).

ratios. They also said that the EU has been adopting similar stress tests for EU banks.[79]

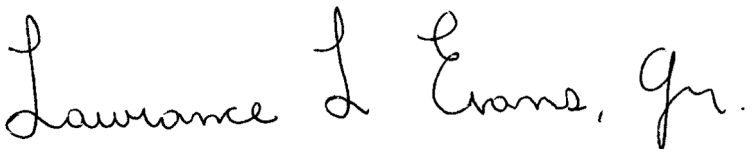
Agency Comments

We provided a draft of this report to FDIC, Federal Reserve, and OCC for their review and comment. FDIC, the Federal Reserve, and OCC provided technical comments that we incorporated as appropriate.

We are sending copies of this report to the appropriate congressional committees and the Chairman of FDIC, Chairman of the Federal Reserve, and Comptroller of OCC. This report will also be available at no charge on our website at http://www.gao.gov.

If you or your staff have any questions about this report, please contact me at (202) 512-8678 or evansl@gao.gov. Contact points for our Office of Congressional Relations and Public Affairs may be found on the last page of this report. Key contributors to this report are listed in appendix III.

Sincerely yours,



Lawrance L. Evans, Jr.
Director, Financial Markets and
Community Investment

[79]As noted above, the Bank of England's Prudential Regulation Authority plans to implement a firm-specific buffer that could require certain banks to hold regulatory capital above the Basel III minimum requirements. According to a consultation paper, the Prudential Regulation Authority will set the buffers based on a range of factors including firm-specific stress test results.

Appendix I: Objectives, Scope, and Methodology

This report examines how (1) U.S. Basel III capital may affect U.S. banking organizations, including smaller banking organizations, and (2) implementation of Basel III's capital and other standards by different jurisdictions may affect the ability of U.S. banking organizations to compete internationally.

To assess how the U.S. Basel III capital regulation may impact U.S. banking organizations, including smaller organizations, we used data from the Consolidated Financial Statements for Holding Companies–Form FR Y-9C (Y-9C) and from the Consolidated Reports of Condition and Income (Call Reports) as of March 31, 2014, to estimate (1) the number of bank holding companies and depository institutions with capital ratios greater than or equal to Basel III minimum capital ratios; (2) the amount of capital bank holding companies and depository institutions would need to meet the U.S. Basel III minimum capital requirements; and (3) the change in funding costs for bank holding companies and depository institutions associated with the amount of capital they would need to meet the minimum capital requirements. We assessed the reliability of the data from the Y-9Cs and Call Reports for these purposes by reviewing relevant documentation and by electronically testing the data for missing or incorrect values and for outliers. For more information on our methodology, our results, and the limitations of our analysis, see appendix II.

To understand how the higher capital requirements might affect the cost and availability of credit in terms of three outcomes—the cost of capital to banks, the interest rate paid by borrowers, and the quantity of loans by banks, we conducted a literature survey of recent economic studies that examined the effect of higher capital requirements on these three outcomes. To identify relevant empirical studies, we conducted searches of two databases, (ProQuest and EconLit) and identified and selected economic studies from peer-reviewed journals and working papers from governmental institutions that were published from 2011 through 2014. We used search terms for selecting the studies, such as interest rate spread, credit availability, cost of capital, and partial equilibrium. For articles with abstracts, two team members independently reviewed each abstract to determine if the article addressed the previously identified topics and appeared to contain empirical data. If both reviewers agreed that the article was relevant, it was saved for further review. When reviewers disagreed, a third team member reviewed the abstract and made the final decision. The selected studies then were evaluated to determine if the methods were appropriate or sufficiently rigorous. A GAO economist performed a secondary review and confirmed that the methods

met our criteria for methodological quality and were sufficiently rigorous to assess estimates of the cost and availability of capital. Based on our selection criteria, we identified 11 studies. One analyst then performed an in-depth review of the findings and summarized the research in a data collection instrument that captured the title, authors, outcomes of interest and key findings. A GAO economist performed a secondary review and confirmed our reported understanding of the findings. For a complete list of the studies, see the Bibliography.

To assess the short-run impact on the cost and availability of credit of bank holding companies or depository institutions raising capital, we used estimates of changes in loan volumes and loan spreads associated with changes in capital from our prior work together with our estimates of the capital shortfall described above.[1] To assess the long-run impact, we used an existing loan pricing model together with our estimates of the changes in funding costs described above.[2]

In addition, we judgmentally selected eight community banks based on their total assets and geographic locations and interviewed them to obtain their views on the impact of the U.S. Basel III capital regulations on their compliance costs and credit availability. We defined a community bank as a subsidiary bank with $10 billion or less in assets as of December 31, 2013. Although no commonly accepted definition of a community bank exists, this size-based definition has been used by the Board of Governors of the Federal Reserve System (Federal Reserve). Using the SNL database, we developed a list of 5,849 subsidiary banks with assets of less than $10 billon. We then placed the community banks into one of the following four asset categories: (1) $1 to less than $500 million, (2) $500 million to less than $1billion, (3) $1 billion to less than $5 billion, and (4) $5 billion to less than $10 billion. Based on the U.S. Census classification, we further placed the community banks into one of the following four regions (1) East, (2) Midwest, (3) South, and (4) West. Within the categories of region and asset size, we randomly selected 10 banks. We assumed that a sample with a mix of different bank sizes and

[1]The GAO model is a version of existing vector autoregression models found in the macroeconomic and monetary literature extended to include a banking sector. For fuller description of the model and limitations see GAO-12-237.

[2]The loan pricing model we used is described in Douglas J. Elliott, *A Primer on Bank Capital*. We used a modified version of this model in prior work; see GAO-12-237.

geographic areas would provide a wide range of views and experiences. Nonetheless, the information collected from this sample of banks cannot be generalized to the larger population of all community banks. To ensure that we captured the views of banks that are most prevalent in this population (banks with smaller asset sizes) as well those from asset categories that have a larger share of total assets (banks with larger asset sizes), we attempted to select at least four banks from the lower two asset categories and four banks from the upper two asset categories. We also attempted to include in our sample at least two from each region while allowing for an additional bank in two regions with a larger number of community banks. In three cases, we were unable to make contact with the sampled bank, so we randomly selected a substitute from the same region and asset category. One bank merged with another, but we retained the merged bank for our sample since it was in the same region and asset category as the bank we originally selected. In two cases, we were unable to make contact with or gain the participation from the originally selected banks or with multiple numbers of randomly selected substitute banks. As a result, the final sample consists of eight banks with only one bank in the East.

To determine the extent to which jurisdictional differences in implementation of Basel III's standards may affect how various U.S. banking organizations compete, we judgmentally selected and interviewed 10 global systemically important banks (G-SIBs) operating in the United States, European Union, and Japan to obtain their views on the competitive differences resulting from implementation of the Basel III framework across jurisdictions. To better understand the connection between international competition and jurisdictional differences in implementation we reviewed law firm legal briefs and client documents, the academic literature on the role capital plays in bank competition, publicly available consulting firm documents, and annual reports and filings issued by publicly trading banking organizations. We also reviewed prior GAO reports and studies on competition issued by the banking regulators to examine historical connections between the regulatory environment an entity faces and its ability to compete internationally. We reviewed the European Union's *Capital Requirements Directive IV* and the United Kingdom's Prudential Regulation Authority Consultation Paper: *Strengthening capital standards: implementing CRD IV* (August 2013).

For both objectives, we reviewed banking regulations for the U.S. Basel III capital standards, the supplementary leverage ratio, enhanced supplementary leverage ratio and the liquidity coverage ratio. We also reviewed prior GAO reports, studies on the Basel III framework and

regulatory reform issued by Federal Deposit Insurance Corporation, Federal Reserve, and Office of the Comptroller of the Currency, and law firms, and annual reports and filings issued by publicly traded banking organizations. We also interviewed officials from six industry associations representing U.S. or foreign banks (or both) operating in the United States.

We conducted this performance audit from December 2013 to November 2014 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Appendix II: GAO Analyses of Basel III Minimum Capital Ratios, Capital Shortfall, and Funding Costs

To assess how the U.S. Basel III capital regulation may impact U.S. banking organizations, including smaller organizations, we used data from the Consolidated Financial Statements for Holding Companies—Form FR Y-9C (Y-9Cs) and from the Consolidated Reports of Condition and Income (Call Reports) as of March 31, 2014, to estimate (1) the number of bank holding companies and depository institutions with capital ratios that are greater than or equal to Basel III minimum capital ratios; (2) the amount of capital bank holding companies and depository institutions would need to take actions to meet the U.S. Basel III minimum capital requirements; and (3) the change in funding costs for bank holding companies and depository institutions associated with the amount of capital they would need to meet the minimum capital standards. We assessed the reliability of the data from the Y-9Cs and Call Reports for these purposes by reviewing relevant documentation and electronically testing the data for missing or incorrect values and outliers. We discussed the results of our analyses in the report's body, but we presented only those estimates that combined the minimum capital ratios with the capital conservation buffer. The tables below present our results in more detail.

To estimate the number of holding companies and depository institutions with capital ratios that are greater than or equal to Basel III minimum capital ratios, we estimated the amounts of common equity tier 1 capital, additional tier 1 capital, tier 1 capital, tier 2 capital, and total capital (collectively, capital) and risk-weighted assets using the calculations described in Schedule HC-R Parts I.B and II of the Y-9C along with the instructions to these parts of the Y-9C. The amounts of some balance sheet and income statement items used to calculate the amount of capital or the amount of risk-weighted assets cannot be observed for bank holding companies or depository institutions that are not subject to, or that do not elect to use, the advanced approaches rule. We made assumptions about these unobservable amounts that are similar to assumptions made by the Federal Reserve Board and for a comparable analysis. We separated bank holding companies and depository institutions into groups based on their size measured in total assets and on their status as an advanced approaches holding company (for bank holding companies) or a subsidiary of an advanced approaches holding company (for depository institutions). The groups of bank holding companies we analyzed are those with

- $500 million to less than $1 billion in assets,
- $1 billion to less than $10 billion in assets,
- $10 billion to less than $50 billion in assets,

- $50 billion or more in assets but not using the advanced approaches framework, and
- $50 billion or more in assets and using the advanced approaches.

The groups of depository institutions we analyzed are those with

- less than $1 billion in assets,
- $1 billion to less than $10 billion in assets,
- $10 billion to less than $50 billion in assets,
- $50 billion or more in assets, and
- those that are subsidiaries of advanced approaches holding companies (regardless of their size).

We used our estimates of the amounts of capital and risk-weighted assets to estimate the ratios of common equity tier 1 capital to risk-weighted assets, tier 1 capital to risk-weighted assets, total capital to risk-weighted assets, and tier 1 capital to average assets for each bank holding company and depository institution. We then compared the estimated capital ratios to the Basel III minimum capital ratios, both with and without the capital conservation buffer, and counted the numbers of bank holding companies and depository institutions with estimated capital ratios that met and did not meet the Basel III minimum capital ratios.

To estimate the amount of capital bank holding companies and depository institutions would need to raise to meet U.S. Basel III capital requirements, we calculated the amount of capital required to meet the U.S. Basel III minimum (the capital shortfall), in billions of dollars and as a percentage of total assets for each capital ratio, for bank holding companies and depository institutions with capital ratios less than the Basel III minimums. For each capital ratio, we then calculated the median capital shortfall for bank holding companies and depository institutions with insufficient capital relative to the Basel III minimums. For each capital ratio, we also calculated the total capital shortfall for all bank holding companies and depository institutions with insufficient capital in billions of dollars and as a percentage of the total assets of all bank holding companies and depository institutions we analyzed.

To estimate the change in funding costs for bank holding companies and depository institutions that need to raise capital, we first estimated the change in funding cost per dollar of assets associated with a 1 percentage point increase in the ratio of equity capital to assets by

calculating the difference between return on equity and the after-tax interest rate on debt. We used the median return on equity (net income as a percentage of equity capital) and the median interest rate on debt (interest expense as a percentage of interest-bearing liabilities) for each group of bank holding companies and depository institutions for the first quarter of 2014, and we assumed that the marginal corporate income tax rate equaled 35 percent. For bank holding companies and depository institutions of different sizes and different status (as advanced approaches holding companies or subsidiaries of advanced approaches holding companies) and with capital ratios less than the Basel III minimums, we estimated the median change in funding cost associated with raising capital sufficient to meet the Basel III minimums by multiplying the median capital shortfall as a percentage of assets by the estimated change in funding cost.

Our estimates of the numbers of bank holding companies and depository institutions with capital ratios exceeding Basel III minimums and of the capital shortfall are subject to limitations. Most importantly, the amounts of some balance sheet and income statement items used to calculate the amount of capital or the amount of risk-weighted assets cannot be observed for bank holding companies or depository institutions that are not subject to or that do not elect to use the advanced approaches rule. We made assumptions about these unobservable amounts that are similar to assumptions the Board of Governors of the Federal Reserve System made for a comparable analysis.[1] However, we cannot assess the extent to which our estimates overstate or understate the numbers of bank holding companies and depository institutions that already met Basel III capital standards or the capital shortfall. In addition, some bank holding companies and depository institutions may want to maintain a capital in excess of the regulatory minimum levels to satisfy investors or other market participants. In this case, our estimates likely understate the number of bank holding companies and depository institutions that will raise capital and also understate the amount of capital raised.

Our estimates of the increase in funding costs associated with raising capital also are subject to several limitations. First, as we discuss above, our estimates of the capital shortfall are subject to limitations and may

[1]See Michael S. Gibson, testimony before the Subcommittee on Financial Institutions and Consumer Credit and Subcommittee on Insurance, Housing, and Community Opportunity (Nov. 29, 2012).

overstate or understate the amount of capital that bank holding companies and depository institutions raise in response to the new Basel III standards. Because the increase in funding costs is related to the size of the capital shortfall, our estimates of the increase may be overstated or understated. In particular, some bank holding companies or depository institutions may maintain capital in excess of the minimum requirements (a capital buffer). The larger the capital buffer, the more funding costs will increase and the more our estimates will understate them. In addition, our estimates reflect the median amounts of capital required by bank holding companies and depository institutions we estimated to have insufficient capital to meet Basel III standards, may not reflect the specific circumstances of an individual bank holding company or depository institution that may need to raise capital, and may overstate or understate the change in its funding cost. Furthermore, our estimates reflect the median return on equity and interest rate on debt that prevailed in the first quarter of 2014, as well as our assumption of a corporate income tax rate of 35 percent. However, equity returns, debt interest rates, and tax rates may change, altering the relative prices of debt and equity and thus altering the change in funding costs associated with substituting equity for debt. Finally, our estimates assume that the return on equity will not change when a bank holding company or depository institution increases its capital ratio. However, increasing reliance on equity funding reduces the risks to investors, all else being equal. If a bank holding company or depository institution increased its ratio of capital to assets, then the return on its equity could fall as investors demanded less of a risk premium.

Analysis of Basel III Minimum Capital Ratios

We used our estimates of the amounts of capital and risk-weighted assets to estimate the ratios of common equity tier 1 capital to risk-weighted assets, tier 1 capital to risk-weighted assets, total capital to risk-weighted assets, and tier 1 capital to average assets for each bank holding company and depository institution. We then compared the estimated capital ratios to the Basel III minimum capital ratios, with and without the capital conservation buffer, and counted the numbers of bank holding companies and depository institutions with estimated capital ratios that met and did not meet the Basel III minimum capital ratios. Our estimates are presented in table 8.

Table 8: Estimated Number of Bank Holding Companies and Depository Institutions That Met Basel III Minimum Capital Ratios by Size and Advanced Approaches Status, as of the First Quarter 2014

		Bank holding companies					
Estimated capital ratio greater than or equal to Basel III minimum?		**$500 million-1 billion in assets**	**$1 billion-10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets, not advanced approaches**	**$50B or more in assets, advanced approaches**	**Total**
Common equity tier 1 capital ratio (4.5 percent)	No	29	7	1	0	0	**37**
	Yes	507	414	49	17	16	**1,003**
Common equity tier 1 capital ratio plus capital conservation buffer (7.0 percent)	No	60	25	2	0	0	**87**
	Yes	476	396	48	17	16	**953**
Tier 1 capital ratio (6 percent)	No	33	9	2	0	0	**44**
	Yes	503	412	48	17	16	**996**
Tier 1 capital ratio plus capital conservation buffer (8.5 percent)	No	79	45	4	1	1	**130**
	Yes	457	376	46	16	15	**910**
Total capital ratio (8 percent)	No	27	5	1	0	0	**33**
	Yes	509	416	49	17	16	**1,007**
Total capital ratio plus capital conservation buffer (10.5 percent)	No	88	51	4	0	0	**143**
	Yes	448	370	46	17	16	**897**
Tier 1 leverage ratio (4 percent)	No	28	7	2	0	0	**37**
	Yes	508	414	48	17	16	**1,003**
Total number of bank holding companies		**536**	**421**	**50**	**17**	**16**	**1,040**

		Depository institutions					
Estimated capital ratio greater than or equal to Basel III minimum?		**Less than $1 billion in assets**	**$1 billion-10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets**	**Subsidiaries of advanced approaches holding companies**	**Total**
Common equity tier 1 capital ratio (4.5 percent)	No	44	2	0	0	0	**46**
	Yes	6,070	561	63	18	36	**6,748**
Common equity tier 1 capital ratio plus capital conservation buffer (7.0 percent)	No	103	4	0	0	0	**107**
	Yes	6,011	559	63	18	36	**6,687**
Tier 1 capital ratio (6 percent)	No	61	1	0	0	0	**62**
	Yes	6,053	562	63	18	36	**6,732**
Tier 1 capital ratio plus capital conservation buffer (8.5 percent)	No	137	8	1	0	0	**146**
	Yes	5,977	555	62	18	36	**6,648**
Total capital ratio (8 percent)	No	84	3	0	0	0	**87**
	Yes	6,030	560	63	18	36	**6,707**

Total capital ratio plus capital conservation buffer (10.5 percent)	No	218	16	2	0	0	**236**
	Yes	5,896	547	61	18	36	**6,558**
Tier 1 leverage ratio (4 percent)	No	54	1	0	0	0	**55**
	Yes	6,060	562	63	18	36	**6,739**
Total number of depository institutions		**6,114**	**563**	**63**	**18**	**36**	**6,794**

Source: GAO analysis of data from the Federal Financial Institutions Examination Council, the Federal Reserve Bank of Chicago, the U.S. Department of the Treasury, the Board of Governors of the Federal Reserve System, and the Organization of Economic Cooperation and Development. | GAO-15-67

Notes: For each bank holding company and depository institution, we estimated the amounts of common equity tier 1 capital, additional tier 1 capital, tier 1 capital, tier 2 capital, and total capital (collectively, capital) and risk-weighted assets using the calculations described in Schedule HC-R Parts I.B and II of the Y-9C along with the instructions to these parts of the Y-9C. The amounts of some balance sheet and income statement items used to calculate the amount of capital or the amount of risk-weighted assets cannot be observed for bank holding companies or depository institutions that are not subject to or do not elect to use the advanced approaches rule. We made assumptions about these unobservable amounts that are similar to Federal Reserve Board assumptions for a comparable analysis. We used our estimates of the amounts of capital and risk-weighted assets to estimate the ratios of common equity tier 1 capital to risk-weighted assets, tier 1 capital to risk-weighted assets, total capital to risk-weighted assets, and tier 1 capital to average assets for each bank holding company and depository institution. We then compared the estimated capital ratios to the Basel III minimum capital ratios, with and without the capital conservation buffer, and counted the numbers of bank holding companies and depository institutions with estimated capital ratios that met and did not meet the Basel III minimum capital ratios.

Analysis of Capital Shortfall

For bank holding companies and depository institutions with capital ratios less than the Basel III minimums, we calculated the amount of capital required to meet the Basel III minimums (the capital shortfall), both in billions of dollars and as a percentage of total assets. For each capital ratio, we then calculated the median capital shortfall for bank holding companies and depository institutions with insufficient capital relative to the Basel III minimums. Our estimates are presented in table 9.

Table 9: Median Estimated Additional Capital Needed to Meet Basel III Minimum Capital Ratios by Size and Advanced Approaches Status, as of the First Quarter 2014

		Bank holding companies					
Median estimated additional capital needed to meet Basel III minimum capital ratio for bank holding companies with estimated capital ratio less than Basel III minimum		**$500 million-1 billion in assets**	**$1 billion -10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets, not advanced approaches**	**$50 billion or more in assets, advanced approaches**	**All**
Common equity tier 1 capital	$ Billions	0.01	0.05	1.59	—-	—-	**0.02**
	% Assets	3.42	2.85	4.48	—-	—-	**3.22**
Common equity tier 1 capital plus capital conservation buffer	$ Billions	0.01	0.02	1.12	—-	—-	**0.01**
	% Assets	1.86	1.40	3.39	—-	—-	**1.65**
Tier 1 capital	$ Billions	0.01	0.02	0.97	—-	—-	**0.01**
	% Assets	2.24	0.72	2.76	—-	—-	**1.21**
Tier 1 capital plus capital conservation buffer	$ Billions	0.01	0.01	0.15	0.01	0.02	**0.01**
	% Assets	1.53	0.63	0.93	0.01	0.01	**1.03**
Total capital	$ Billions	0.01	0.03	2.20	—-	—-	**0.01**
	% Assets	2.46	1.28	6.21	—-	—-	**2.17**
Total capital plus capital conservation buffer	$ Billions	0.01	0.02	0.15	—-	—-	**0.01**
	% Assets	1.16	0.73	1.07	—-	—-	**1.00**
Tier 1 capital for leverage ratio	$ Billions	0.01	0.00	0.99	—-	—-	**0.01**
	% Assets	2.46	0.36	2.79	—-	—-	**1.49**
		Depository institutions					
Median estimated additional capital needed to meet Basel III minimum capital ratio for depository institutions with estimated capital ratio less than Basel III minimum		**Less than $1 billion in assets**	**$1 billion-10 billion in assets**	**$10 billion -50 billion in assets**	**$50 billion or more in assets**	**Subsidiaries of advanced approaches holding companies**	**All**
Common equity tier 1 capital	$ Billions	<0.01	0.11	—-	—-	—-	**<0.01**
	% Assets	1.16	4.36	—-	—-	—-	**1.21**
Common equity tier 1 capital plus capital conservation buffer	$ Billions	<0.01	0.04	—-	—-	—-	**<0.01**
	% Assets	1.52	2.40	—-	—-	—-	**1.52**
Tier 1 capital	$ Billions	<0.01	0.02	—-	—-	—-	**<0.01**
	% Assets	1.44	1.51	—-	—-	—-	**1.44**
Tier 1 capital plus capital conservation buffer	$ Billions	<0.01	0.02	0.18	—-	—-	**<0.01**
	% Assets	1.62	1.16	1.52	—-	—-	**1.60**
Total capital	$ Billions	<0.01	0.02	—-	—-	—-	**<0.01**
	% Assets	1.39	1.94	—-	—-	—-	**1.42**
Total capital plus capital conservation buffer	$ Billions	<0.01	0.02	0.07	—-	—-	**<0.01**
	% Assets	1.23	0.83	0.22	—-	—-	**1.21**

Tier 1 capital for leverage ratio	$ Billions	<0.01	0.02	—-	—-	—-	**<0.01**
	% Assets	1.23	2.18	—-	—-	—-	**1.29**

Source: GAO analysis of data from the Federal Financial Institutions Examination Council, the Federal Reserve Bank of Chicago, the U.S. Department of the Treasury, the Board of Governors of the Federal Reserve System, and the Organization of Economic Cooperation and Development. | GAO-15-67

Notes: For each bank holding company and depository institution, we estimated the amounts of common equity tier 1 capital, additional tier 1 capital, tier 1 capital, tier 2 capital, and total capital (collectively, capital) and risk-weighted assets using the calculations described in Schedule HC-R Parts I.B and II of the Y-9C along with the instructions to these parts of the Y-9C. The amounts of some balance sheet and income statement items used to calculate the amount of capital or the amount of risk-weighted assets cannot be observed for bank holding companies or depository institutions that are not subject to or do not elect to use the advanced approaches rule. We made assumptions about these unobservable amounts that are similar to assumptions the Federal Reserve made for a comparable analysis. We used our estimates of the amounts of capital and risk-weighted assets to estimate the ratios of common equity tier 1 capital to risk-weighted assets, tier 1 capital to risk-weighted assets, total capital to risk-weighted assets, and tier 1 capital to average assets for each bank holding company and depository institution. We then compared the estimated capital ratios to the Basel III minimum capital ratios, with and without the capital conservation buffer. For each capital ratio, for bank holding companies and depository institutions with capital ratios less than the Basel III minimums, we calculated the amount of capital required to meet the Basel III minimum (the capital shortfall), both in billions of dollars and as a percentage of total assets.

For each capital ratio, we also calculated the total capital shortfall for all bank holding companies and depository institutions with insufficient capital in billions of dollars and as a percentage of the total assets of all the bank holding companies and depository institutions we analyzed. Our estimates are presented in table 10.

Table 10: Total Estimated Additional Capital Needed to Meet Basel III Minimum Standards by Size and Advanced Approaches Status, as of the First Quarter 2014

		Bank holding companies					
Total estimated additional capital needed to meet Basel III minimum capital ratio for all bank holding companies combined		**$500 million-1 billion in assets**	**$1 billion-10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets, not advanced approaches**	**$50 billion or more in assets, advanced approaches**	**Total**
Common equity tier 1 capital	$ Billions	0.56	0.72	1.59	0	0	**2.86**
	% Assets	0.16	0.06	0.16	0	0	**0.02**
Common equity tier 1 capital plus capital conservation buffer	$ Billions	1.00	1.48	2.24	0	0	**4.73**
	% Assets	0.28	0.13	0.22	0	0	**0.03**
Tier 1 capital	$ Billions	0.48	0.28	1.93	0	0	**2.69**
	% Assets	0.13	0.02	0.19	0	0	**0.02**
Tier 1 capital plus capital conservation buffer	$ Billions	1.04	1.17	2.76	0.01	0.02	**5.00**
	% Assets	0.29	0.11	0.27	<0.01	<0.01	**0.03**
Total capital	$ Billions	0.43	0.20	2.20	0	0	**2.84**
	% Assets	0.12	0.02	0.22	0	0	**0.02**
Total capital plus capital conservation buffer	$ Billions	1.04	1.25	3.13	0	0	**5.42**
	% Assets	0.29	0.11	0.31	0	0	**0.03**
Tier 1 capital for leverage Ratio	$ Billions	0.40	0.20	1.97	0	0	**2.57**
	% Assets	0.11	0.02	0.19	0	0	**0.02**

		Depository institutions					
Total estimated additional capital needed to meet Basel III minimum capital ratio for all depository institutions combined		**Less than $1 billion in assets**	**$1 billion-10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets**	**Subsidiaries of advanced approaches holding companies**	**Total**
Common equity tier 1 capital	$ Billions	0.18	0.22	0	0	0	**0.40**
	% Assets	0.01	0.02	0	0	0	**<0.01**
Common equity tier 1 capital plus capital conservation buffer	$ Billions	0.49	0.27	0	0	0	**0.76**
	% Assets	0.04	0.02	0	0	0	**0.01**
Tier 1 capital	$ Billions	0.24	0.02	0	0	0	**0.26**
	% Assets	0.02	<0.01	0	0	0	**<0.01**
Tier 1 capital plus capital conservation buffer	$ Billions	0.66	0.21	0.18	0	0	**1.05**
	% Assets	0.05	0.01	0.01	0	0	**0.01**
Total capital	$ Billions	0.34	0.22	0	0	0	**0.56**
	% Assets	0.02	0.01	0	0	0	**<0.01**
Total capital plus capital conservation buffer	$ Billions	0.88	0.54	0.14	0	0	**1.57**
	% Assets	0.06	0.04	0.01	0	0	**0.01**

Tier 1 capital for leverage ratio	$ Billions	0.18	0.02	0	0	0	**0.21**
	% Assets	0.01	<0.01	0	0	0	**<0.01**

Source: GAO analysis of data from the Federal Financial Institutions Examination Council, the Federal Reserve Bank of Chicago, the U.S. Department of the Treasury, the Board of Governors of the Federal Reserve System, and the Organization of Economic Cooperation and Development. | GAO-15-67

Notes: For each bank holding company and depository institution, we estimated the amounts of common equity tier 1 capital, additional tier 1 capital, tier 1 capital, tier 2 capital, and total capital (collectively, capital) and risk-weighted assets using the calculations described in Schedule HC-R Parts I.B and II of the Y-9C along with the instructions to these parts of the Y-9C. The amounts of some balance sheet and income statement items used to calculate the amount of capital or the amount of risk-weighted assets cannot be observed for bank holding companies or depository institutions that are not subject to or do not elect to use the advanced approaches rule. We made assumptions about these unobservable amounts that are similar to assumptions the Federal Reserve made for a comparable analysis. We used our estimates of the amounts of capital and risk-weighted assets to estimate the ratios of common equity tier 1 capital to risk-weighted assets, tier 1 capital to risk-weighted assets, total capital to risk-weighted assets, and tier 1 capital to average assets for each bank holding company and depository institution. We then compared the estimated capital ratios to the Basel III minimum capital ratios, with and without the capital conservation buffer. For each capital ratio, we then calculated the total capital shortfall for all bank holding companies and depository institutions with insufficient capital in billions of dollars and as a percentage of the total assets of all bank holding companies and depository institutions.

Analysis of Funding Cost Associated with the Capital Shortfall

For bank holding companies and depository institutions of different sizes and different status as advanced approaches holding companies or subsidiaries of advanced approaches holding companies, we estimated the change in funding cost per dollar of assets associated with a 1 percentage point increase in the ratio of equity capital to assets. Funding costs are determined by the prices of equity and debt financing sources and the amounts used of each. Because interest payments on debt are tax-deductible, a more leveraged capital structure reduces corporate taxes, lowering funding costs. Thus, an increase in the required amount of equity capital would increase a bank's cost of capital. The increased funding cost associated with a 1 percentage point increase in the capital ratio of a bank holding company or depository institution is approximately equal to the difference between the return on equity and the after-tax interest rate on debt, all else being equal.[2] We used the median return on equity (net income as a percentage of equity capital) and the median

[2]Funding costs are invariant to changes in the capital ratio if taxes are neutral; firms have no transactions costs, asset trade restrictions, or bankruptcy costs; firms and investors can borrow or lend at the same rate; and firms reveal no information in financial policy. Under these conditions, changes in the capital ratio lead to changes in equity returns that leave funding costs unchanged. However, we explicitly assume that taxes are not neutral. We also assume that returns on equity and interest rates on debt do not change when a bank holding company or depository institution increases its capital ratio. We note that this effect could be offset to some extent if the additional capital protection caused the risk-premiums demanded by an institution's investors to decline sufficiently.

interest rate on debt (interest expense as a percentage of interest-bearing liabilities) for each group of bank holding companies and depository institutions for the first quarter of 2014, and we assumed that the marginal corporate income tax rate is equal to 35 percent. Our estimates are presented in table 11.

Table 11: Median Return on Equity, Median Interest Rate on Debt, and Estimated Change in Funding Costs Associated with1 Percentage Point Increase in Equity Capital Ratio by Size and Advanced Approaches Status, as of the First Quarter 2014

	Bank holding companies					
	$500 million-1 billion in assets	**$1billion-10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets, not advanced approaches**	**$50 billion or more in assets, advanced approaches**	**All**
Median return on equity for all bank holding companies (%)	8.13	8.57	8.11	7.89	9.16	**8.30**
Median interest rate on debt for all bank holding companies (%)	0.64	0.54	0.43	0.47	0.56	**0.60**
Corporate income tax rate (%)	35	35	35	35	35	**35**
Estimated change in funding cost associated with a 1 percentage point increase in ratio of equity capital to assets (percentage points)	0.08	0.08	0.08	0.08	0.09	**0.08**
	Depository institutions					
	Less than $1 billion in assets	**$1billion-10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets**	**Subsidiaries of advanced approaches holding companies**	**All**
Median return on equity for all depository institutions (%)	7.45	8.19	7.98	8.24	8.20	**7.56**
Median interest rate on debt for depository institutions (%)	0.58	0.49	0.42	0.36	0.22	**0.57**
Corporate income tax rate (%)	35	35	35	35	35	**35**
Estimated change in funding cost associated with a 1 percentage point increase in ratio of equity capital to assets (percentage points)	0.07	0.08	0.08	0.08	0.08	**0.07**

Source: GAO analysis of data from the Federal Reserve Bank of Chicago and the Federal Financial Institutions Examination Council. | GAO-15-67

Notes: We estimated the change in funding cost per dollar of assets associated with a 1 percentage point in the ratio of equity capital to assets by calculating the difference between return on equity and the after-tax interest rate on debt. We used the median return on equity (net income as a percentage of equity capital) and the median interest rate on debt (interest expense as a percentage of interest-bearing liabilities) for each group of bank holding companies and depository institutions for the first quarter of 2014, and we assumed that the marginal corporate income tax rate equaled 35 percent.

For bank holding companies and depository institutions of different sizes and different status as advanced approaches holding companies or subsidiaries of advanced approaches holding companies and with capital ratios less than the Basel III minimums, we estimated the median change in funding cost associated with raising capital sufficient to meet the Basel III minimums by multiplying the median capital shortfall as a percentage of assets by the estimated change in funding cost. Our estimates are presented in table 12.

Table 12: Estimated Changes in Funding Costs Associated with Raising Capital Needed to Meet Basel III Minimum Standards by Size, as of the First Quarter 2014 (Percentage Points)

	Bank holding companies					
Estimated change in funding costs from raising median estimated capital needed to meet Basel III minimum capital ratio for bank holding companies with estimated capital ratio less than Basel III minimum	**$500 million-1 billion in assets**	**$1 billion-10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets, not advanced approaches**	**$50 billion or more in assets, advanced approaches**	**All**
Common equity tier 1 capital	0.26	0.23	0.35	—-	—-	**0.26**
Common equity tier 1 capital plus capital conservation buffer	0.14	0.12	0.27	—-	—-	**0.13**
Tier 1 capital	0.17	0.06	0.22	—-	—-	**0.10**
Tier 1 capital plus capital conservation buffer	0.12	0.05	0.07	<0.01	<0.01	**0.08**
Total capital	0.19	0.11	0.49	—-	—-	**0.17**
Total capital plus capital conservation buffer	0.09	0.06	0.08	—-	—-	**0.08**
Tier 1 capital for leverage ratio	0.19	0.03	0.22	—-	—-	**0.12**
	Depository institutions					
Estimated change in funding costs from raising median estimated capital needed to meet Basel III minimum capital ratio for depository institutions with estimated capital ratio less than Basel III minimum	**Less than $1 billion in assets**	**$1 billion-10 billion in assets**	**$10 billion-50 billion in assets**	**$50 billion or more in assets**	**Subsidiaries of advanced approaches holding companies**	**All**
Common equity tier 1 capital	0.08	0.34	—-	—-	—-	**0.09**
Common equity tier 1 capital plus capital conservation buffer	0.11	0.19	—-	—-	—-	**0.11**
Tier 1 capital	0.10	0.12	—-	—-	—-	**0.10**
Tier 1 capital plus capital conservation buffer	0.11	0.09	0.12	—-	—-	**0.12**
Total capital	0.10	0.15	—-	—-	—-	**0.10**

Total capital plus capital conservation buffer	0.09	0.06	0.02	—-	—-	0.09
Tier 1 capital for leverage ratio	0.09	0.17	—-	—-	—-	0.09

Source: GAO analysis of data from the Federal Financial Institutions Examination Council, the Federal Reserve Bank of Chicago, the U.S. Department of the Treasury, the Board of Governors of the Federal Reserve System, and the Organization of Economic Cooperation and Development. | GAO-15-67

Notes: We estimated the change in funding cost per dollar of assets associated with a 1 percentage point in the ratio of equity capital to assets by calculating the difference between return on equity and the after-tax interest rate on debt. We used the median return on equity (net income as a percentage of equity capital) and the median interest rate on debt (interest expense as a percentage of interest-bearing liabilities) for each group of bank holding companies and depository institutions for the first quarter of 2014, and we assumed that the marginal corporate income tax rate equaled 35 percent. We found that funding costs increase by about 0.07-0.09 percentage points with a 1 percentage point increase in the ratio of capital to assets, or by about $0.07-0.09 per $100 of assets. For bank holding companies and depository institutions of different sizes and different status (as advanced approaches holding companies or subsidiaries of advanced approaches holding companies) and with capital ratios less than the Basel III minimums, we estimated the median change in funding cost associated with raising capital sufficient to meet the Basel III minimums by multiplying the median capital shortfall as a percentage of assets by the estimated change in funding cost associated with a 1 percentage point increase in the capital ratio.

Appendix III: GAO Contact and Staff Acknowledgments

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Staff Acknowledgments

In addition to the contact name above, Richard Tsuhara (Assistant Director), Nancy Eibeck (Analyst-in-Charge), Jessica Artis, Chloe F. Brown, Pamela R. Davidson, Donald P. Hirasuna, Courtney L. LaFountain, Jon D. Menaster, Marc W. Molino, Barbara M. Roesmann, and Jessica M. Sandler made significant contributions to this report.

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