

Moments in HISTORY

Policy Connections From the History
of the Federal Banking System

The History of Supervisory Expectations for Capital Adequacy: Part II (1984–2021)

**Roger Tufts, Supervision Risk and Analysis, OCC
and
Paul Moloney, Supervision Risk and Analysis, OCC**

In [“The History of Supervisory Expectations for Capital Adequacy Part I \(1863-1983\),”](#) we traced regulatory views on capital over the first 120 years of the Office of the Comptroller of the Currency (OCC) history. We concluded that article with the U.S. Circuit Court’s decision that the OCC had erroneously concluded that the capital of the First National Bank of Bellaire created an unsafe and unsound condition for the bank.¹ This court decision was considered a significant setback to the authority of the OCC, the Board of Governors of the Federal Reserve System (FRB), and the Federal Deposit Insurance Corporation (FDIC) to make determinations regarding a bank’s capital adequacy. The agencies’ examination staffs had previously made their subjective evaluations of capital adequacy based on a combination of capital ratios and their evaluation of other important factors affecting safety and soundness, such as the quality of assets, the effectiveness of management, and current and prospective earnings. The law would soon change to remove the ambiguity created by the Bellaire decision. In that same year, the International Lending Supervision Act of 1983 passed. Section 980 of the act clearly stated the authority of the banking agencies to set an explicit formula-based capital requirement.

Each appropriate Federal banking agency shall cause banking institutions to achieve and maintain adequate capital by establishing minimum levels of capital for such banking institutions and by using such other methods as the appropriate Federal banking agency deems appropriate. Each appropriate Federal banking agency shall have the authority to establish such minimum level of capital for a banking institution as the appropriate Federal banking agency, in its discretion, deems to be necessary or appropriate in light of the particular circumstances of the banking institution. Failure of a banking institution to maintain capital at or above its minimum level as established ... may be deemed by the appropriate Federal banking agency, in its discretion, to constitute an unsafe and unsound practice.²

¹ *First National Bank of Bellaire v. Comptroller of the Currency*, 697 F.2d 674 (5th Cir. 1983).

² International Lending and Supervision Act of 1983, Pub. L. No. 98-181, Title IX, 97 Stat. 1153 (1983).

To implement the International Lending and Supervision Act, the OCC published a Notice of Proposed Rulemaking for a minimum capital-to-assets ratio in the *Federal Register* on September 4, 1984. The final rule (12 CFR Part 3) was published in 1985 with an effective date of April 15, 1985.

U.S. Capital Ratios and the Subsequent Basel Accord: 1985 to 1992

The OCC's 1985 capital regulation was a relatively simple leverage ratio of capital divided by assets. The rule defined two types of capital. The first was primary capital, which included the familiar components of common stock, capital surplus, undivided profit, and perpetual preferred stock. Primary capital also included the allowance for loan and lease losses (ALLL). Intangible assets (with the exception of purchased mortgage servicing rights) were deducted from capital. Mandatory convertible debt was also included in primary capital, though it was limited to no more than 20 percent of the sum of the other components noted above. The second type was called secondary capital and included limited life preferred stock, as well as any amount of mandatory convertible debt that was not includable in primary capital. Because these elements of secondary capital were not viewed as having the same quality as the elements of primary capital, the rule limited the sum of secondary capital elements to be no larger than 50 percent of primary capital. Total capital was the sum of primary capital and secondary capital.

The denominator of the ratios, which was called adjusted total assets, was measured as the quarterly average of total assets, as reported in the call report, plus the ALLL and minus the intangible items deducted when calculating primary capital. The regulation specified two minimum thresholds. The minimum requirement for the primary capital-to-adjusted total assets ratio was 5.5 percent, and the total capital ratio requirement was 6 percent.

Resurrecting a Risk-Based Ratio

Though the regulation established minimum thresholds for primary and total capital as a percent of assets, only a few months later the OCC stated its intention to develop a risk-based measure. Acting Comptroller of the Currency H. Joe Selby testified that:

We view our recent capital regulation as an interim step toward a capital policy appropriate to a riskier environment. Since 1984, the OCC has been working to develop capital standards that would more formally recognize difference in overall risk ... Several foreign bank supervisors now include off-balance sheet activities in their capital ratios. We are concerned that proposals to further increase the capital-to-asset ratio, such as the FDIC's proposal to require a 9 percent capital ratio, are likely to be ineffective in strengthening the banking system and may further weaken it.³

The OCC, the FRB, and the FDIC would soon be in confidential bilateral discussions with the Bank of England and later with the Bank of Japan to develop the risk-based capital ratio. After the United States, the United Kingdom, and Japan had reached an agreement, their risk-weighting structure and definition of capital was offered to the Basel Committee on Banking Supervision (Basel Committee), where, in 1987, that structure became the starting point for the capital standard adopted later by the G-10 countries.⁴ This

³ *Hearings on Deposit Insurance Reform and Related Supervisory Issues—Part I, Before the Committee on Banking, Housing and Urban Affairs, 99th Cong. 73 (1985)* (statement of H. Joe Selby, Acting Comptroller of the Currency).

⁴ For a detailed exposition on the Basel Committee's deliberations and papers, see Charles Goodhart, *The Basel Committee on Banking Supervision: A History of the Early Years, 1974–1997* (Cambridge: Cambridge University Press, 2011).

internationally agreed risk-based capital accord became known as Basel I. Basel I would be followed many years later by the Basel II and Basel III versions of the international accord. The OCC published its adoption of Basel I as a final risk-based capital regulation on January 27, 1989. The rule included a transition period of almost four years. By December 31, 1992, national banks were required to have a total capital-to-risk-weighted-assets ratio of at least 8 percent. Though the definition of the numerator of the Basel I risk-based ratio was generally similar to the definition of primary capital in the 1985 regulation, there were many differences in the denominator.

The denominator of the new risk-based capital ratio in large measure followed the credit risk elements of the design of the 1950s analyzing bank capital (ABC) ratio⁵ of the FRB. The denominator of the new risk-based capital ratio was calculated using specified risk-weights applied to asset categories; for example, zero percent for Treasury securities, 20 percent for the general obligation bonds of states and municipalities, 50 percent for most mortgages on 1- to 4-family residential properties, and 100 percent for most of the other assets on a bank's balance sheet. Because the Basel I requirement was a capital-to-risk-weighted-assets ratio equal to 8 percent, or \$8 for every \$100 in risk-weighted assets, these risk weights converted to capital requirements of zero for Treasuries, \$1.60 per \$100 for municipal bonds (equal to 8 percent times 20 percent times \$100), \$4 for every \$100 in residential mortgages (equal to 8 percent times 50 percent times \$100), and \$8 per \$100 in other loans (equal to 8 percent times \$100). Another innovative feature of the new risk-based requirement was the incorporation of off-balance sheet credit exposures into the denominator of the ratio. Examples of these off-balance sheet activities that create credit exposures that were previously uncapitalized include loan commitments, letters of credit, and the many forms of interest rate, foreign exchange, and commodity swap contracts.

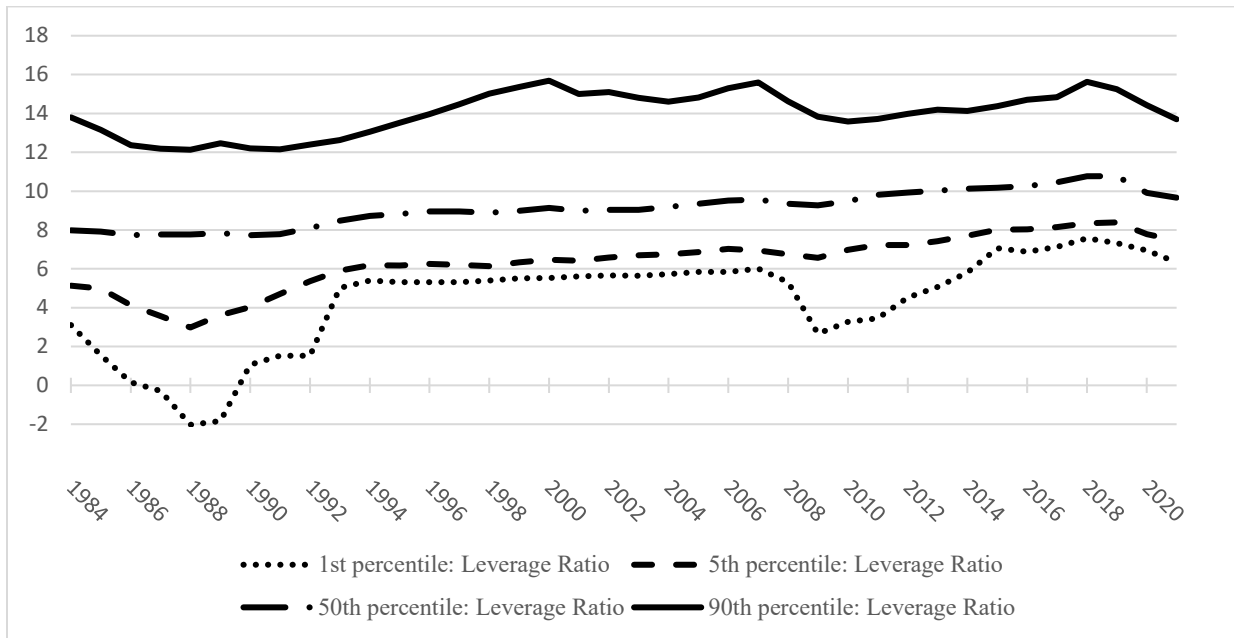
Retention of the leverage ratio

Figure 1 shows the 1st percentile, 5th percentile, the median, and the 90th percentile values of the non-risk-based capital-to-assets ratio (later referred to by regulators as the leverage ratio) for national banks over the period 1984 to 2021. The 1st percentile is the value of the capital ratio that only one in 100 banks do not exceed. Thus, these banks have capital ratios well below the ratios of other national banks. Similarly, one in 20 banks have ratios less than the 5th percentile value, while half the banks have ratios above the 50th percentile (i.e., the median). With respect to the 90th percentile, one in 10 banks have capital ratios greater than the values depicted by that line. The de facto minimum regulatory requirement for the leverage ratio was 5 percent.⁶ Figure 1 indicates that, in the banking crisis from the late-1980s through the early-1990s, a meaningful number of national banks did not meet the U.S. primary capital standard. The number of national bank failures reflected these weak capital ratios; from 1985 through 1993, 581 national banks failed. Figure 2 shows the number of bank failures from 1982 to 2020.

⁵ See [“The History of Supervisory Expectations for Capital Adequacy Part I \(1863-1983\)”](#) for a more complete description of the ABC ratio.

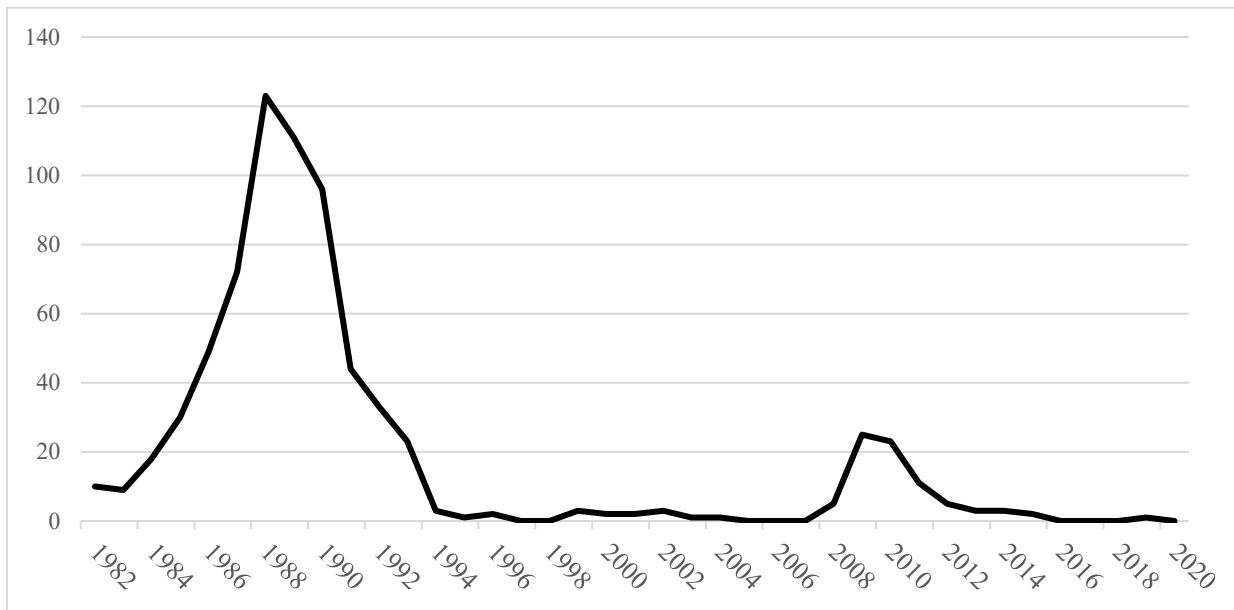
⁶ Under the Prompt Corrective Action (PCA) regulation (12 CFR 6), mandated by the Federal Deposit Insurance Corporation Improvement Act of 1991, a bank faces increasingly stringent constraints if its capital measures fall below specified thresholds. The following were the thresholds needed to be considered well capitalized in 1991: 5 percent for the leverage ratio, 6 percent for the tier 1 risk-based ratio, and 10 percent for the total risk-based capital ratio. Later, the banking agencies expanded these requirements to be a well-capitalized bank to include another capital ratio and the thresholds increased.

Figure 1: Percentiles of the Distribution of National Bank Leverage Ratios (%)



Source: OCC Integrated Bank Information System

Figure 2: Number of Failed National Banks, 1982–2020

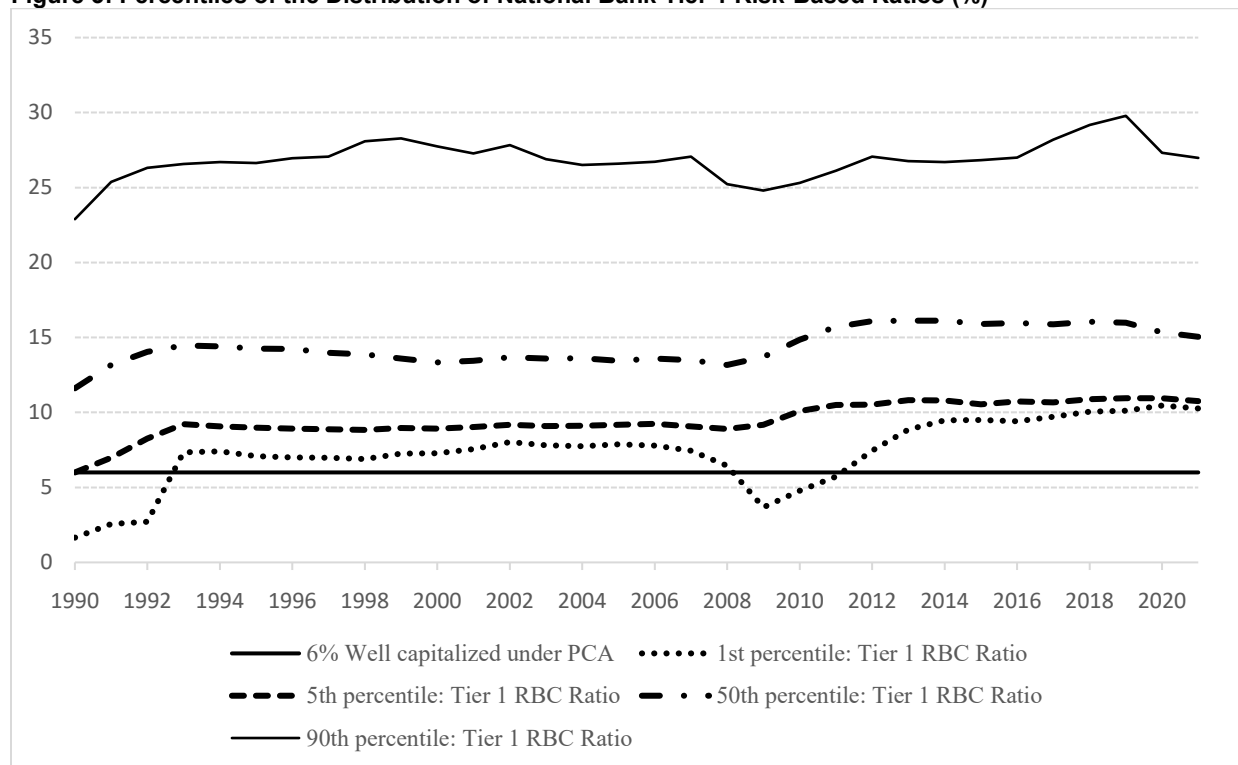


Source: FDIC

In 1988, 123 national banks, or 2.8 percent of the entire population of 4,353 national banks, failed. This is the same year that the Basel Committee, with the OCC and FRB as advocates, announced the original

Basel I.⁷ Figure 3 shows the distribution of national bank tier 1 risk-based ratios.⁸ Over the four-year U.S. transition period, the tier 1 risk-based ratios of the weakest banks rose, such that by 1993, the 1st percentile value had risen to 7.34 percent, a full percentage point higher than the prompt corrective action (PCA) well capitalized threshold of 6 percent, depicted by the horizontal line at 6 percent.

Figure 3: Percentiles of the Distribution of National Bank Tier 1 Risk-Based Ratios (%)



Source: OCC Integrated Bank Information System

Risk-Based Capital: Before the Financial Crisis

As shown in Figures 1 and 3, for the 15 years after 1992, national bank Basel I capital ratios remained robust. Though the PCA regulation specified a tier 1 risk-based threshold of 6 percent for a bank to be considered well capitalized, only one in every 100 national banks had a tier 1 risk-based ratio below 7 percent. Thus, a large majority of banks comfortably met the regulatory requirements. Reflective of these benign times, bank failures averaged just over one per year until 2008.

Space constraints make it impossible to adequately explain the evolution since 1988 of the Basel Committee's or the U.S. agencies' risk-based capital requirements. That formidable task has been

⁷ Basel Committee on Banking Supervision, *International Convergence of Capital Measurement and Capital Standards*, (July 1988).

⁸ Though the definition of tier 1 has evolved over the 30-year history of regulatory capital requirements, the essential components have continued to include common stock and related surplus plus retained earnings. Adjustments, which have evolved over the years, are made to the sum of these element based on various accounting measures of unrealized gains and losses, the volume of certain intangible assets, and for instruments that have debt-like characteristics.

addressed by others.⁹ We only note that, in the first decade of the Basel I Accord, many modifications and interpretations were developed to address perceived weaknesses. Examples include the measurement of the credit risk in swap contracts; the treatment of assets that were sold from a bank's balance sheet via securitization, but for which a nontrivial element of credit risk was retained; the treatment of the allowance for loan and lease losses; and interpretations regarding the risk-weight to assign to unique on- and off-balance sheet credit exposures. Notably, one of the most significant changes to the risk-based capital requirement calculation under Basel I was the 1996 change to permit a bank to use its own internal model of the market risk in its trading account to assign the regulatory capital requirement. Prior to this change, trading book assets were risk-weighted like all other on-balance-sheet assets. Trading liabilities were not risk-weighted, nor was there a capital requirement for interest rate risk or foreign exchange rate risk in the trading account.

In hindsight, we can cite the market risk amendment as the catalyst for the later acceptance of two fundamental changes in the mindset of the banking supervisors who developed the original internationally agreed-upon regulatory capital standards. First, the market risk amendment expanded the scope of the capital requirement to include more than just the credit risk of a bank's portfolio. Interest rate risk, foreign exchange rate risk, commodity risk and equity risk were brought under the purview of the capital framework.¹⁰ Second, the amendment recognized that, if the risk measure was to incorporate the important diversification and correlation effects, these intricacies required a more sophisticated approach. Thus, though subject to supervisory approval and adherence to specified calibration parameters, the market risk capital requirement would nonetheless be measured using a bank's internally developed proprietary model of risk. The importance of this developing deference by regulators to internal models would become clear over the subsequent decade.

In June 1999, the Basel Committee published its first consultative paper that hinted at the possible use of a bank's internal credit ratings in determining capital requirements for credit risk, stating the following:

For some sophisticated banks, the Committee believes that an internal ratings-based approach could form the basis for setting capital charges, subject to supervisory approval and adherence to quantitative and qualitative guidelines. The Committee will (in consultation with the industry) be examining these issues, and will seek to develop an alternative approach based on internal ratings.¹¹

After two additional consultative papers and five years of analysis, discussion, consultation, and compromise, the "International Convergence of Capital Measurement and Capital Standards: A Revised Framework" (Basel II) was published in June 2004. The internal ratings-based approach in Basel II allowed banks, subject to supervisory approval, to use their estimates of four required inputs into an equation that produced the credit exposure's capital requirement. The inputs were (1) the probability that the counterparty will default on the obligation, (2) the loss borne by the bank in the event that default

⁹ Daniel Tarullo, *Banking on Basel: The Future of International Financial Regulation* (Washington, D.C.: Peterson Institute, 2008), and Anat Admati, and Martin Hellwig, *The Bankers' New Clothes* (Princeton: Princeton University Press, 2013).

¹⁰ Years later, the Basel Committee would add operational risk to the list of risks requiring an explicit capital allocation.

¹¹ Basel Committee on Banking Supervision, *A New Capital Adequacy Framework* (June 1999), p. 5.

occurs, (3) the size of the exposure at the time of default, should default occur, and (4) the maturity of the credit exposure.¹²

All the portfolio-specific formulas' calculated amounts of required capital were added to form the total sum of risk-weighted assets for credit risk under the internal ratings-based approach. Basel II included two other important modifications. First, external credit ratings (for example, those of S&P, Moody's, and Fitch) were permitted to be used in assigning the risk-weighted asset amounts to securitization exposures. Second, an additional operational risk capital requirement would, in the United States, be calculated using an internal model, where operational risk was defined as, "the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events ... includes legal risk, but excludes strategic and reputational risk."¹³

The U.S. banking agencies published their final rule implementing Basel II on December 7, 2007. It required only the largest banks, those with assets exceeding \$250 billion or banks with foreign exposures exceeding \$10 billion, to adopt the internal ratings-based approach for credit risk and the advanced measurement approach for operational risk.

Recognizing the complexity of Basel II and the difficulties that banks would face in obtaining regulatory approval to calculate their capital requirements using the advanced modeling approaches for credit, market and operational risk, the U.S. agencies included a substantial transition period. The largest banks were required to have a plan in place within six months of the December 2007 rule. That plan needed to set a start date for a three-year period during which the calculation of risk-weighted assets under the advanced approaches would run concurrently with the Basel I approach, which became known as the standardized approach in subsequent U.S. rulemakings. The start date for the largest banks to begin the parallel run was to be no later than April 2011. In the first year of a bank's three-year period of parallel run, its measure of risk-weighted assets using Basel II was constrained to be no lower than 95 percent of the measure of risk-weighted assets under the new standardized approach; no lower than 90 percent in the second year; and no lower than 85 percent in the third transition year. Though the largest banks had already started their transitions to Basel II, the financial crisis of 2008 did much to alter the view among U.S. regulators that the banks' models of risk provided useful measures that could be the basis for setting prudent regulatory capital requirements.¹⁴

Risk-Based Capital: After the Financial Crisis

Basel III

The environment and regulatory mindset greatly changed with the 2008 financial crisis, when over 500 banks failed in the United States. The crisis led to a rethinking of the definition of capital and the way that

¹² We are omitting much of the detail included in Basel II, such as the specifications for different exposure types, e.g., retail portfolios versus corporate exposures.

¹³ Basel Committee on Banking Supervision, *International Convergence of Capital Measurement and Capital Standards* (June 2004), paragraph 644.

¹⁴ In June 2011, the agencies adopted a final rule that established a floor for the risk-based capital requirements applicable to the largest, internationally active banking organizations. A bank operating under the advanced approaches risk-based rules is required to meet the higher of (1) the minimum requirements under the standardized approach, and (2) the minimum requirements under the advanced approaches. In addition, the Internal Ratings-Based approaches of Basel II had fallen so far out of favor among the U.S. agencies that, as this article is written in October 2022, the agencies are considering substantially modifying or abandoning those approaches.

the Basel II standards were implemented. The U.S. supervisors followed the Basel Committee's lead in implementing the revisions in what became known as Basel III.¹⁵ The U.S. final rule that implemented Basel III tightened the criteria for instruments to be recognized as capital. In addition, new regulatory ratios were implemented, including a common equity tier 1 to risk-weighted assets ratio (CET1) and a supplementary leverage ratio (SLR). Banks were now required to:

Comply with the following minimum capital ratios: (i) A new requirement for a ratio of common equity tier 1 capital to risk-weighted assets ... of 4.5 percent; (ii) a ratio of tier 1 capital to risk-weighted assets ... of 6 percent, increased from 4 percent; (iii) a ratio of total capital to risk-weighted assets ... of 8 percent; (iv) a ratio of tier 1 capital to average total consolidated assets ... of 4 percent; and (v) for advanced approaches banking organizations only, an additional requirement that the ratio of tier 1 capital to total leverage exposure ... be at least 3 percent.¹⁶

Requirement (i) tightened the numerator by removing certain instruments that had previously been included in tier 1 capital. Though limited in the proportion of tier 1 capital, these instruments, with their debt-like characteristics, were found during the crisis to not be as strong a buffer against losses as the conventional components of capital. By 2022, as a practical matter, common equity tier 1 capital and tier 1 capital at the largest banks were nearly equal, with the formerly differentiating elements having been phased out. Requirement (ii) increased the tier 1 to risk-weighted assets minimum ratio by 50 percent. Requirement (iii) left the numeric threshold unchanged. However, other changes in Basel III changed the value of the denominator via changes to the asset risk-weighting scheme. Requirement (iv) had no effect, since all U.S. banks, as a practical matter, were previously required to have a 4 percent ratio. The new requirement (v) is referred to as the supplementary leverage ratio (SLR), which applied only to the largest U.S. banks.

For the SLR requirement, the denominator used a more expansive definition of exposure. Though called total leverage exposure, the definition belied the common understanding of leverage. The Basel III regulation defined total leverage exposure as:

The sum of the following: (1) the balance sheet carrying value of all the bank's on-balance sheet assets, less amounts deducted from tier 1 capital ... (2) The potential future credit exposure amount for each derivative contract to which the bank is a counterparty ... (3) 10 percent of the notional amount of unconditional cancellable commitments made ... and; (4) The notional amount of all other off-balance sheet exposures...¹⁷

Off-balance sheet items, components (2), (3), and (4), are included in the SLR denominator, which differs from the denominator of the tier 1 leverage ratio in which off-balance sheet items are excluded. In addition, because the largest share of the market for interest rate and foreign exchange swaps resides with the largest banks, component (2) contributed meaningfully to those banks' SLR denominators. Similarly, with respect to component (3), the application of a 10 percent factor to the undrawn portion of credit card lines was a significant policy change for certain U.S. banks that had large portfolios of credit card accounts. These undrawn lines had not previously been included in either the leverage or the risk-based ratios. This feature created a relative disadvantage for the largest U.S. banks, since credit cards are more

¹⁵ Basel Committee on Banking Supervision, *Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems* (December 2010, revised June 2011).

¹⁶ Regulatory Capital Rules, 78 Federal Register 62021–62022 (October 11, 2013).

¹⁷ *Ibid.*, 62169.

widely used in the United States than in Europe. Finally, component (4) of the new denominator included not just loan commitments, but also financial guarantees and trade-related letters of credit, the market for which is also dominated by the largest U.S. banks.

In the United States, the Basel III modifications were implemented in a 2013 final rule. Among the many changes, this rule introduced a capital conservation buffer (CCB). Specifically, to avoid limitations on capital distributions, including dividend payments and certain discretionary bonus payments, a bank must hold a buffer composed of common equity tier 1 capital above its minimum risk-based capital requirements. The OCC, FDIC, and FRB explained their motivation for the CCB as follows:

During the recent financial crisis, some banking organizations continued to pay dividends and substantial discretionary bonuses even as their financial condition weakened... To encourage better capital preservation ... and to enhance the resilience of the banking system, the rule limit(s) capital distributions and discretionary bonus payments for banking organizations that do not hold a specified amount of common equity tier 1 capital in addition to the amount of regulatory capital necessary to meet the minimum risk-based capital requirements.¹⁸

The CCB applies to all banks and the add-on is 2.5 percentage points to the adequately capitalized risk-based ratios.

In May 2014, yet another capital ratio was applied to the U.S. global systemically important banks (G-SIBs).^{19, 20} The so-called enhanced SLR (eSLR) operates through the U.S. PCA regulation for U.S. G-SIB depository institution subsidiaries. The eSLR rule set a threshold of 6 percent for a U.S. G-SIB depository institution subsidiary to be considered well capitalized.

Table 1 below summarizes the current capital requirements for the specified categories of large banks and their bank holding companies (BHCs). The table reflects a 2019 final rule that established four categories of large banks, based primarily on asset size and other risk indicators of the BHCs for determining the regulatory capital and liquidity requirements for banking organizations with \$100 billion or more in total consolidated assets. The categories are:

- Category I, U.S. G-SIBs;
- Category II, at least \$700 billion in assets or \$75 billion in cross-jurisdictional activity;
- Category III, at least \$250 billion in assets or \$75 billion in non-bank assets, short-term wholesale funding, or off-balance sheet exposures;
- Category IV, at least \$100 billion in assets.

¹⁸ Ibid., 62033.

¹⁹ In 2022, the following holding companies and their subsidiary banks have the G-SIB designation: Bank of America Corp., The Bank of New York Mellon Corp., Citigroup Inc., The Goldman Sachs Group, JPMorgan Chase & Co., Morgan Stanley, State Street Corp., and Wells Fargo & Co. In addition to asset size, there are specified thresholds for cross-jurisdictional activity (for Category II), and short-term wholesale funding and off-balance sheet exposures (for Category III).

²⁰ Regulatory Capital Rules, 79 Federal Register 24528 – 24541 (May 1, 2014).

Table 1a: Current capital requirements (in percent) for banks and holding companies with \$100 billion or more in total consolidated assets, required capital ratios that use risk-weighted assets²¹ in the denominator

Regulatory Capital Ratio	Bank category I, II and III	Bank category IV	BHC category I	BHC category II and III	BHC category IV
Common Equity Tier 1 Capital Ratio	4.5	4.5	4.5	4.5	4.5
Tier 1 Capital Ratio	6.0	6.0	6.0	6.0	6.0
Total Capital Ratio	8.0	8.0	8.0	8.0	8.0
Capital Conservation Buffer (or Stress Capital Buffer ²²)	2.5	2.5	≥ 2.5	≥ 2.5	≥ 2.5
Global Systemically Important Bank	n/a	n/a	1.0 to 4.5	n/a	n/a
Counter Cyclical Capital Buffer (currently = 0)	0 to 2.5	n/a	0 to 2.5	0 to 2.5	n/a

Table 1b: Current capital requirements (in percent) for banks and holding companies with \$100 billion or more in total consolidated assets, required leverage ratios that use average total assets or total exposure in the denominator

Regulatory Capital Ratio	Bank category I	Bank category II and III	Bank category IV	BHC category I	BHC category II and III	BHC category IV
Leverage Ratio	4.0	4.0	4.0	4.0	4.0	4.0
SLR	3.0	3.0	n/a	3.0	3.0	n/a
Enhanced SLR ²³	6.0	n/a	n/a	5.0	n/a	n/a

Risk-based capital requirements

The first three rows of Table 1a show the fundamental risk-based capital requirements. The capital ratio minimums are the same for banks and their holding companies in each category: 4.5 percent for the common equity tier 1 capital ratio, 6.0 percent for the tier 1 capital ratio, and 8.0 percent for the total capital ratio. However, to avoid constraints on capital distributions, the capital conservation buffer (or the stress capital buffer for BHCs of more than \$100 billion in total assets) is added to the minimums. Therefore, the first three rows of Table 1a. show the three distinct risk-based capital requirements, and each requirement is increased by the Capital Conservation Buffer amount shown in the fourth row. Thus, the overall effective risk-based requirements are the sum of the fourth row of Table 1a. plus each of the first three rows, resulting in 7.0 percent, 8.5 percent, and 10.5 percent capital ratios, respectively. Also, for category I BHCs, the company-specific G-SIB surcharges apply as well, which are necessary due to their systemic importance and the risks that they pose to the financial system. One more additional risk-weighted assets add-on that would apply to category I, II, and III banks is the countercyclical capital

²¹ Category I and II banking organizations' risk-weighted assets are the higher of the standardized approaches and advanced approaches.

²² BHCs with more than \$100 billion in total assets are subject to a stress capital buffer (SCB). BHCs with assets between \$100 billion and \$250 billion are subject to the supervisory stress test requirements on a two-year cycle, while those with assets greater than \$250 billion are on a 1-year cycle. The FRB describes the SCB as an add-on that is determined by a forward-looking quantitative evaluation of bank capital in a recession.

²³ The PCA regulation requires an eSLR threshold of 6 percent for a bank to be considered well capitalized.

buffer,²⁴ which was included in the 2013 final rule. However, to date, this additional capital buffer parameter has been set to zero each year in the United States.

Leverage-based capital requirements

In addition to the three risk-based capital ratios, category I, II, and III banks are required to hold tier 1 capital as a proportion of two different measures of leverage. The first row of Table 1b. shows that tier 1 capital divided by average total assets must equal 4 percent. However, as noted above, under the separate PCA regulation, to meet the standard of being well capitalized, banks must maintain a 5 percent leverage ratio. The second row of Table 1b. shows an SLR requirement of 3 percent. However, as shown in the last row of Table 1b., the largest banks, i.e., those in category I, are subject to an enhanced supplementary leverage ratio of 6 percent to be well capitalized under PCA. Although holding companies are not subject to PCA, the FRB established an additional supplementary leverage ratio buffer of 2 percentage points for category I BHCs. This buffer, added to the 3 percent SLR requirement, results in a de facto minimum SLR threshold of 5 percent for the U.S. G-SIB holding companies.

Summarizing, to avoid limitations on capital distributions, most banks (i.e., non-category I banks) are required to meet a: 7 percent common equity tier 1 ratio; 8.5 percent tier 1 capital ratio; 10.5 percent total capital ratio. Additionally, these banks are required to meet a 5 percent leverage ratio to be considered well capitalized under PCA. In contrast, the category I banks face higher minimum thresholds. For bank holding companies, the stress capital buffer replaces the capital conservation buffer that is applicable to banks. In addition, the G-SIB surcharge is an additional add-on that only applies to bank holding companies. The countercyclical capital buffer applies only to the category I, II, and III banking organizations, but is currently set to zero. With reference to the common equity tier 1 ratio, the largest BHCs have a requirement equal to the 4.5 percent minimum, which applies to all banks, plus an SCB of at least 2.5 percent plus a G-SIB surcharge that ranges from 1 percent to 3.5 percent in 2022. For example, the October 2021 to October 2022 SCB and G-SIB requirements (as a percent of risk-weighted assets) for the four largest BHCs are: JPMorgan Chase (3.2 percent for SCB, 3.5 percent for G-SIB surcharge); Citibank (3.0 percent for SCB, 3.0 percent for G-SIB surcharge); Wells (3.1 percent for SCB, 2.0 percent for G-SIB surcharge) and Bank of America (2.5 percent for SCB, 2.5 percent for G-SIB surcharge). Thus, the current all-in minimum common equity tier 1 requirements for the four largest U.S. BHCs are JPMorgan Chase (11.2 percent); Citibank (10.5 percent); Wells (9.6 percent); and Bank of America (9.5 percent). These are substantially higher than the 7 percent common equity tier 1 requirement applied to smaller banks.

Simple alternative methodology to measure capital adequacy for qualifying community banking organizations

Another outgrowth of the financial crisis was a plethora of modifications to the capital regulations mandated by the 2010 Dodd-Frank Act²⁵ and the 2018 Economic Growth, Regulatory Relief, and Consumer Protection Act.²⁶ One of the most significant changes was that the Economic Growth, Regulatory Relief, and Consumer Protection Act required the banking agencies to adopt a simple measure of capital adequacy for less-complex banks and holding companies with assets less than \$10 billion.

²⁴ If the agencies determine that U.S. financial markets are experiencing an increase in system-wide risk, the countercyclical capital buffer allows the agencies to increase capital requirements by up to 2.5 percentage points for large banks.

²⁵ Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 124 Stat. 1376 (2010).

²⁶ Economic Growth, Regulatory Relief, and Consumer Protection Act, Pub. L. 115-174, 132 Stat. 1296 (2018).

Qualifying community banking organizations that elect to use the community bank leverage ratio framework and that maintain a leverage ratio greater than 9 percent will be considered to have satisfied the generally applicable risk-based and leverage capital requirements and, if applicable, will be considered to have met the well capitalized ratio requirements of PCA.

Table 2 shows the number and proportion of state and national banks that, at year-end 2021, have availed themselves of this option. Over 90 percent of all banks (92 percent of national banks and 95 percent of state-chartered banks) meet the criteria for being less than \$10 billion in assets and non-complex. In addition, two-thirds of all banks have leverage ratios greater than 9 percent. More than half of all banks that are eligible have opted to use the community bank leverage ratio framework in 2021: 326 of 682 national banks and 1,423 of 2,537 state-chartered banks. Overall, 32 percent of national banks and 37 percent of state-chartered banks no longer report their risk-based capital ratios and their capital adequacy is not determined by the risk-based ratios.²⁷

Table 2: National Banks and State Chartered Banks Eligible for the Community Bank Leverage Ratio Framework (Year-end 2021)

CBLR eligibility	National banks count	National banks % of total	State chartered banks count	State chartered banks % of total
Total Count	1,016	100%	3,832	100%
Assets < \$10 billion and Non-Complex	939	92	3,630	95
Leverage Ratio greater than 9 percent	682	67	2,537	66
Banks in CBLR at Year-end 2021	326	32	1,423	37

Source: OCC Integrated Bank Information System

Conclusion

We are confident that the age-old problem of determining bank capital adequacy will continue to be debated by bankers, regulators, academicians, Congress, and the Basel Committee for many years to come. As we have described in this two-part series, over the nearly 160 years of the OCC’s history, there have been several approaches to evaluating capital adequacy. First was the minimum dollar level of capital to earn a national bank charter. This was followed by guidance in the form of a capital-to-deposits ratio. Next came the FRB ABC and the OCC’s risk-assets ratios. Innovative interpretations of what constituted capital originated with the FDIC and the OCC. Then, in the 1980s, came the first enforceable leverage ratio requirement in the Code of Federal Regulations (CFR). Finally, the past 30 years brought the sophistication, greater risk sensitivity, and complexity of the international risk-based and leverage capital ratios.

Consider the following observation: simple but instructive. If a regulation’s importance were to be measured by the length, history of change, and continual need for subtle interpretations, then the banking

²⁷ Also, in 2020, the agencies issued an interim final rule that temporarily lowered the community bank leverage ratio requirement from 9 percent to 8 percent, consistent with section 4012 of the Coronavirus Aid, Relief, and Economic Security Act (CARES Act). The temporary relief measures affecting the community bank leverage ratio framework expired on December 31, 2021. Beginning on January 1, 2022, the community bank leverage ratio requirement reverted to greater than 9 percent as established under the 2019 final rule.

agencies' capital regulations reign supreme.²⁸ In the 1970s, prior to the first capital regulation, the Comptroller's Handbook devoted only one page of instructions to examiners. In the 1950s, the FRB's ABC ratio required a 2-page worksheet. In 1985, the OCC's first regulatory capital ratio required only eight pages in the CFR. By 2021, the capital regulation comprised 232 pages. The regulations had the practical effect of requiring additional specialists at each of the U.S. banking agencies, banks, and the regulatory authorities of the countries that follow this worldwide standard.

In 2008, during the financial crisis, it became clear that the internationally agreed-upon risk-based capital standards—for 35 years the principal purpose of the Basel Committee—was not the Holy Grail for evaluating capital adequacy. Carter Golembe, arguably the foremost expert in the history of bank regulatory policy, wrote in his autobiography that:

Economic history textbooks often find it convenient to mark changes by the significant statutes enacted by the U.S. Congress ... Change comes often from still another source. I refer to the never-ending search by regulators for their 'Holy Grail'—a simple formula or ratio that will encompass all that is needed to eliminate messy, hands-on supervision by tough, experienced examiners. In the 1960s and 1970s, it was thought that interest rate ceilings were the ideal answer, but in 1980 the market forced Congress to terminate the ceilings ... Later the focus of regulators turned to capital ratios, which they received power to regulate in 1983. As has been demonstrated early in the first decade of the 21st century, capital ratios by themselves are not a sure-fire guarantee of a bank's health and well-being.²⁹

We think the inescapable conclusion of this long history of the regulators' approach to evaluating capital adequacy is that "messy, hands-on supervision" through on-site examinations remains of paramount importance. Over 200 pages in the Code of Federal Regulations is not the singular answer.

Finally, Hugh McCulloch, the first Comptroller of the Currency, followed his admonition regarding well-managed banks having real capital with concluding paragraphs that emphasized:

The eyes of the people are turned to the national banks. The indications are strong that if they are well managed, they will furnish the country with its bank-note circulation. It is of the last importance, then, that they should be so managed.³⁰

Though written nearly 160 years ago, what continues today is the overarching imperative for competent and honorable managers of banks that the public trusts will correctly allocate credit through the intermediation of depositors' funds placed in their institutions. The maintenance of a sound system of banks requiring the oversight of skilled examiners exhibiting sound judgement continues today, as it certainly will for many years to follow.

²⁸ See Tarullo, footnote 9, p. 29.

²⁹ Carter H. Golembe, *But I Never Made a Loan: My Career in Banking—The Early Years*, (Bloomington: iUniverse, 2009), p. 118.

³⁰ Hugh McCulloch, *Men and Measures of Half a Century* (1888), p. 198. In effect, McCulloch's phrase "furnish the country with bank-note circulation" meant the creation of bank loans.