

An Update on Emerging Issues in Banking

Basel and the Evolution of Capital Regulation: Moving Forward, Looking Back

January 14, 2003

How much capital is enough? How bank regulators have answered this question during the post World War II period has been shaped by two contending strands of thought. The approach that held sway prior to 1980 relied largely on the exercise of banker and supervisory judgment, and resisted simple numerical definitions of capital adequacy on the grounds that each bank faces a multitude of unique risks. Since 1980, bank supervisors, stimulated in part by legislation arising out of banking crises, have placed much more emphasis on precisely defined numerical minimum capital standards.

The new Basel capital accord (henceforth "Basel II") combines these approaches in ways that mark a significant shift in the philosophy of capital regulation and the supervision of large banks.¹ While numerical minimum capital requirements remain, they are embedded deep within Basel II's mathematical structure, a structure that places much more emphasis on the range of capital that may be required given the specific risks faced by each bank.

This paper, the first in an FDIC series exploring Basel II, traces the broad history of post World War II views of bank capital adequacy, and places the new accord against that historical context. Our purpose in placing the accord in historical context is to give an appreciation of how and why the current regulatory capital regime came into being, and an understanding of the changes in bank risk profiles and banking market structure that are providing the momentum for Basel II. This review also demonstrates the significant ways the proposed capital framework represents a philosophical departure from past practice.

The Purpose and History of Bank Capital Adequacy Regulation

Broadly speaking, a bank can finance its operations in two ways, either with borrowed money or with funds provided by its owners. Borrowings (including deposits) generate contractual liabilities, which, if not paid when due, can cause the bank to fail. In contrast, the owners' investments can gain or lose value without causing the bank to default on its obligations. Thus, other things being equal, the greater the proportion of a bank's operations that are financed with capital funds contributed by its owners, the more likely the bank will be able to continue to pay its obligations during periods of economic adversity. This simple reasoning is the basis for the longstanding emphasis bank supervisors have placed on capital adequacy as a key element of bank safety and soundness.

Despite these safety-and-soundness benefits, requiring banks to hold more capital has costs. Requiring a bank to be financed with a greater percentage of capital in effect restricts the amount of borrowing it can support with a given amount of capital, thereby ultimately restricting its capacity to lend. Capital rules imposed on banks can thereby have broader macroeconomic effects on the availability of credit. Restricting the bank's ability to borrow also reduces the opportunity for its shareholders to use financial leverage and the tax advantages of debt financing to increase return-on-equity (ROE). In a competitive marketplace, if bank ROEs are artificially depressed, capital will migrate to other financial service providers or

other industries.

These costs and benefits of changes in bank capital are compelling but hard to quantify. Because the stakes--bank safety-and-soundness, broad credit availability, and the ability of banks to compete--are so high, it is not surprising that regulatory and supervisory philosophies towards capital adequacy have evolved over the years along with the general economic climate and perceptions of banking industry health.

Prior to the 1980s, bank supervisors in the United States did not impose specific numerical capital adequacy standards.² Instead, supervisors applied informal and subjective measures tailored to the circumstances of individual institutions. In assessing capital adequacy, regulators stressed factors such as managerial capability and loan portfolio quality, and largely downplayed capital ratios. Supervisors did try to make use of a variety of capital adequacy measures as early as 1864, when the National Banking Act set static minimum capital requirements based on the population of each bank's service area, but most early attempts at quantifying the notion of capital adequacy were controversial and unsuccessful. In the 1930s and 1940s, state and federal regulators began to look at the ratios of capital-to-total deposits and capital-to-total assets, but both were dismissed as ineffective tests of true capital adequacy.³ Various studies of ways to adjust assets for risk and create capital-to-risk-assets ratios were undertaken in the 1950s, but none were universally accepted at that time.⁴

Indeed, it was widely held that rigid adherence to fixed capital ratios would preclude the more comprehensive analysis thought necessary to weigh the myriad of factors affecting a bank's ability to sustain losses. For example, the American Bankers Association's 1954 Statement of Principles explicitly rejected the use of numerical formulas for determining capital adequacy in favor of supervisory judgment. Charles Van Horn, the Regional Administrator of National Banks for the Second Region, Office of the Comptroller of the Currency reiterated this emphasis on regulatory discretion in a 1972 speech by noting that "the traditional capital-to-risk-assets and capital-to-total-deposit ratios are no longer relied upon because such arbitrary formulas do not always take into account important factors."⁵ In 1978 the FDIC Manual of Examination Policies instructed examiners that "...capital ratios...are but a first approximation of a bank's ability to withstand adversity. A low capital ratio by itself is no more conclusive of a bank's weakness than a high ratio is of its invulnerability."

These statements exemplify a judgment-based, subjective, bank-by-bank approach to assessing capital adequacy. Indeed, during the post World War II period through the early 1970s, there was little reason to question the efficacy of this judgment-based approach. Dollar-weighted average capital ratios for the banking industry ranged between 5 and 8 percent but more importantly, bank failures were few in number and the banking industry was generally considered strong.

In the 1970s the U.S. economy performed poorly and the banking industry began to show signs of weakness. A new term, "stagflation," was coined to describe the combination of economic stagnation and high inflation that characterized much of that decade. The failures of Franklin National Bank (1974), and the First Pennsylvania Bank (1980) were evidence that even relatively large banks were not invulnerable.

By the turn of the decade, extraordinarily high inflation and interest rates had

severely weakened large numbers of savings and loans and FDIC-insured savings banks. On the economic front, soaring interest rates and a spike in oil prices instigated a worldwide recession in 1981. The incidence of bank failures began to increase, partly as a result of worsening economic conditions and partly as a result of an increase in bank risk profiles.

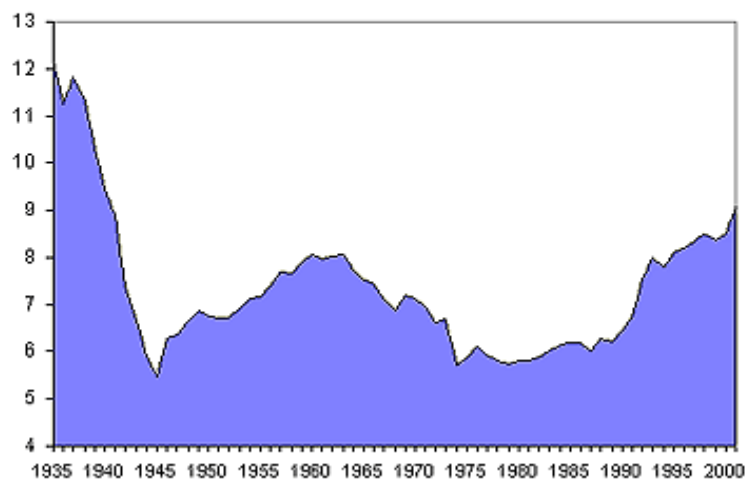
Against this backdrop, the trend in bank capital was cause for concern. As Chart 1 illustrates, the banking industry's dollar-weighted capital-to-assets ratio was consistently below 6 percent between 1977 and 1982. The decline in capital ratios was most pronounced at large banks: in 1982, the equity-capital-to-assets ratio at the largest bank holding companies reached a low of 4 percent.⁶ Chart 2 shows the subsequent increase in bank failures.

The convergence of macroeconomic weakness, more bank failures and diminishing bank capital triggered a regulatory response in 1981 when, for the first time, the federal banking agencies introduced explicit numerical regulatory capital requirements. The standards adopted employed a leverage ratio of primary capital (which consisted mainly of equity and loan loss reserves) to average total assets. The guidelines settled upon by the various agencies were similar in most respects, but each regulator had a different view as to what exactly constituted bank capital. The Federal Reserve Board and the Office of the Comptroller of the Currency announced a minimum primary capital adequacy ratio of 6 percent for community banks and 5 percent for larger regional institutions. The FDIC established a threshold capital-to-assets ratio of 6 percent and a minimum ratio of 5 percent. Over the next decade, regulators worked to converge upon a uniform measure.

Chart 1

**Bank Capital Levels Fall Through the 1960s and 70s, But
Basel Accord of 1988 Coincides With Reversal of Trend
(FDIC-Insured Commercial Banks)**

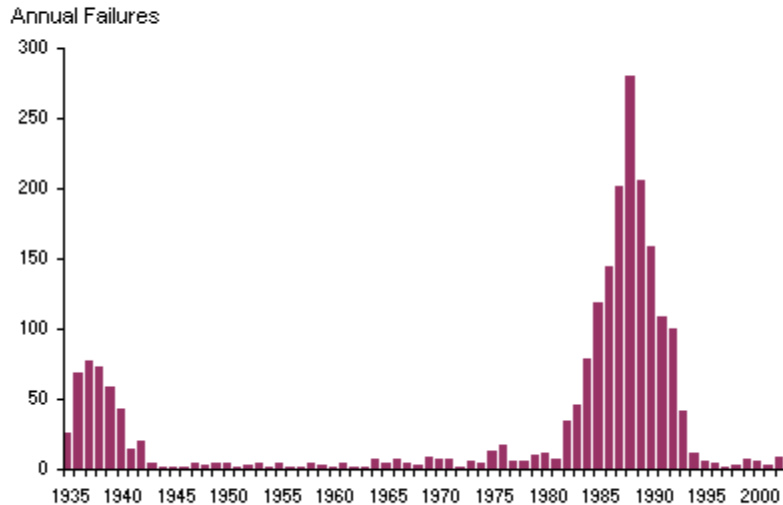
Equity Capital as a Percent of
Total Assets at Year-End



Source: FDIC Historical Statistics on Banking

Chart 2

**Annual Failures of FDIC-Insured Commercial Banks
Remain Well Below Crisis Levels**



Source: FDIC Historical Statistics on Banking

Congress furthered the development of explicit and uniform regulatory capital standards when it passed the International Lending and Supervision Act of 1983 (ILSA), directing the federal banking agencies to issue regulations addressing capital adequacy.⁷ ILSA was a direct response to the international debt crisis and its impact on the U.S. banking system. Up to that point, large institutions had engaged in substantial international lending without the benefit of a comprehensive regulatory capital program.

ILSA provided the impetus for a common definition of regulatory capital and final uniform capital requirements in 1985. The minimum primary capital ratio for large banking organizations increased from 5 percent to 5.5 percent of adjusted total assets, while community banks' capital requirements fell from 6 percent to 5.5 percent. Banks with less than 3 percent of primary-capital-to-total assets were declared to be operating in an unsafe and unsound condition and were required to comply with applicable enforcement actions. The principles of the 1985 interagency regulations addressed the importance of capital to serve as a cushion to absorb losses, provide and maintain public confidence, and support prudent growth. It also stressed the importance of a comprehensive risk assessment, including off-balance-sheet risks, in identifying whether additional capital is needed to supplement the regulatory minimum capital ratios, and emphasized the need for international convergence of capital standards in maintaining a level playing field. These same principles resonate in today's attempts to develop a more effective capital adequacy framework.

By 1986, regulators were concerned that the primary capital ratio failed to differentiate among risks and did not provide an accurate measure of the risk exposures associated with innovative and expanding banking activities, most notably off-balance-sheet activities at larger institutions. Regulators began studying the risk-based capital frameworks of other countries; France, the UK and West

Germany had implemented risk-based capital standards in 1979, 1980 and 1985, respectively. The agencies also revisited the earlier studies of risk-based capital ratios. A proposal by the Federal Reserve Bank of New York, for example, assigned assets to one of six categories depending on credit risk, interest rate risk and liquidity risk factors.

The regulators agreed that the definition of capital adequacy needed to be better tailored to bank risk-taking in order to address two major trends in the banking industry. First, banks were moving away from safer, but lower yielding, liquid assets. At the same time, they were increasing their off-balance-sheet activities, whose risks were not accounted for by the then-extant capital ratios. The regulators wanted a new "risk asset ratio" to serve as a supplemental adjusted capital ratio to be used in tandem with existing ratios of capital-to-total-assets, in the hopes that this would allow the capital framework to explicitly and systematically respond to individual banking organizations' risk profiles and account for a wider range of risky practices.

Regulators from the U.S. and around the world continued to consider the most practical methods of capturing the various risks associated with banking, and in 1988, the central bank governors of the Group of Ten (G-10) countries adopted the Basel Capital Accord.⁸ This risk-based capital framework remains in effect today. It provides systematic procedures for factoring both on and off-balance-sheet risks into the supervisory assessment of capital adequacy, reducing disincentives to holding liquid, low risk assets, and fostering coordination among supervisory authorities from major industrialized countries. Under the 1988 Accord, as implemented in the U.S., assets and off-balance-sheet items are "risk-weighted" based on their perceived credit risk using four broad categories. Most claims are risk-weighted at 100 percent, although residential mortgages are weighted at 50 percent, claims on or guarantees provided by qualifying banks and other entities (in the U.S. this category includes most notably the government-sponsored enterprises such as Fannie Mae and Freddie Mac) are weighted at 20 percent, and very low risk assets, such as those guaranteed by qualifying governments, are weighted at 0 percent. This forces banks to hold more capital if they choose riskier assets, and does not penalize them for holding less risky portfolios. Institutions subject to the Accord are required to maintain a minimum ratio of regulatory capital-to-total risk-weighted assets of at least 8 percent. In addition to the risk-based capital requirements, all U.S. institutions must comply with minimum leverage ratio requirements of Tier 1 capital-to-average total consolidated on-balance-sheet assets.⁹

Further, U.S. depository institutions are subject to Prompt Corrective Action (PCA) regulations under which institutions are classified into categories based on their regulatory capital ratios. The minimum leverage ratio for strong institutions is 3 percent, and is 4 percent for other banks. As directed by the Federal Deposit Insurance Corporation Improvement Act of 1991, enacted at the height of the U.S. banking crisis, institutions with the highest capital ratios (i.e., at least 10 percent total risk-based, at least 6 percent Tier 1 risk-based, and at least 5 percent leverage) are categorized as "well capitalized," while institutions with lower capital ratios are assigned lower capital categories. Institutions that are less than well capitalized have restrictions or conditions on certain activities and may also be subject to mandatory or discretionary supervisory actions.

These PCA requirements are unique to U.S. banks and reflect Congressional intent to reduce the cost of bank failures and limit opportunities for bank supervisors to

practice forbearance towards thinly capitalized institutions. In terms of the two strands of thought discussed in this paper, the one emphasizing judgment-based assessment of capital adequacy and the other emphasizing the importance of clear-cut minimum capital requirements, the PCA requirements are the strongest and most definitive statement to date in favor of clear-cut minimums.

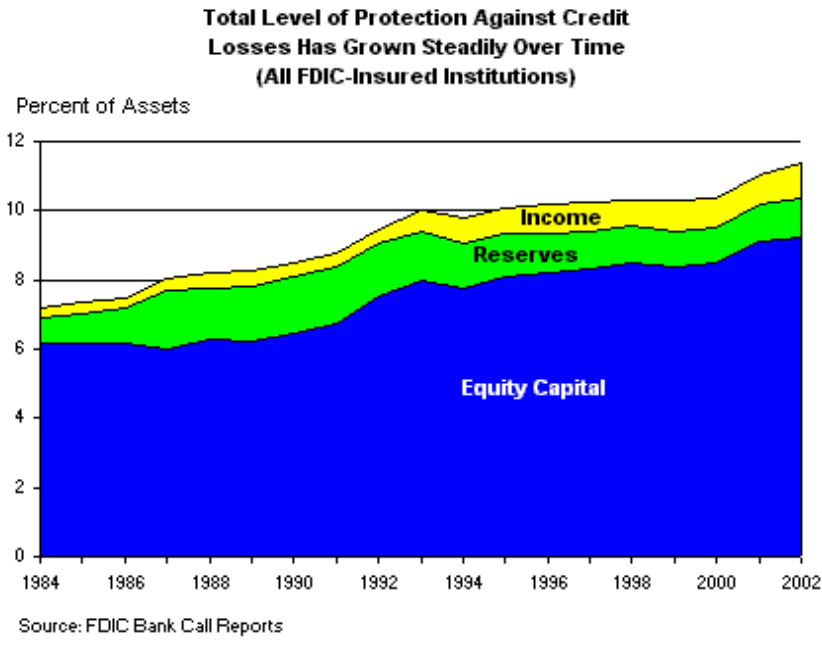
Why the Need for a New Accord?

In many ways, the 1988 Accord has been highly successful. Although the 1988 Accord was developed for large, internationally active institutions, the agencies have broadly supported the consistent application of the risk-based capital standards across all banking organizations regardless of size, structure, complexity or risk profile. The four broad credit risk categories, while imperfect, have been viewed as a significant improvement over the previous domestic capital regime that failed to formally incorporate credit-sensitivity and dissuaded banks from holding low risk assets.

This risk-based capital regulation has proven to be a stabilizing force in the international banking system. Measured on-balance-sheet capital ratios have risen since the Accord's provisions took effect in 1992 without any evident contraction in credit availability as a result. Chart 1 shows that the industry average equity-capital-to-asset ratio reached 8 percent in 1993; it had not been that high since 1963. Since the implementation of the Basel Accord, banks have seen increases not only in equity capital, but also in reserves and income, further strengthening banks' total level of protection from credit losses (Chart 3).

The upward trend in capital ratios since the early 1990s is probably not entirely attributable to the effects of capital regulation. Many bankers doubtless remember the crisis years of the 1980s and early 1990s and, by holding capital well in excess of regulatory requirements, wish to avoid the sanctions that can be imposed during times of adversity not only by the regulators, but by creditors, ratings agencies, and shareholders.

Chart 3



There is, nevertheless, little doubt that capital regulation has had a significant impact on overall bank capital levels. One piece of evidence relates to the percentage of banks meeting the "well capitalized" test. Between 1990 and 1992, the percentage of U.S. banks that were well capitalized increased from 86 percent to 96 percent despite an economic recession and weak banking conditions. Banks' compliance with capital standards has generally been consistent, deteriorating only marginally in recent years. In 2001, 97 percent of FDIC-insured institutions remained well capitalized.

Concurrent with the strengthening of banks' capital positions was a marked decline in bank failures, as shown in Chart 2. Annual bank failures hit a high of 280 in 1988, but had dropped to only 3 in 1998. There were fewer than 10 commercial bank failures each year between 1995 and 2001.

Given that bank safety and soundness is influenced by a myriad of factors of which capital regulation is only one, how can we assess the influence of the current capital regime on financial stability? It seems fair to say that the relative scarcity of bank failures despite a severe U.S. corporate recession in 2001 and the subsequent sluggish recovery has to be attributed in part to banks' strong capital levels, and at least some credit should go to the capital regime that has been in place in the U.S. throughout the 1990s, namely the 1988 Basel accord operating in conjunction with Prompt Corrective Action.

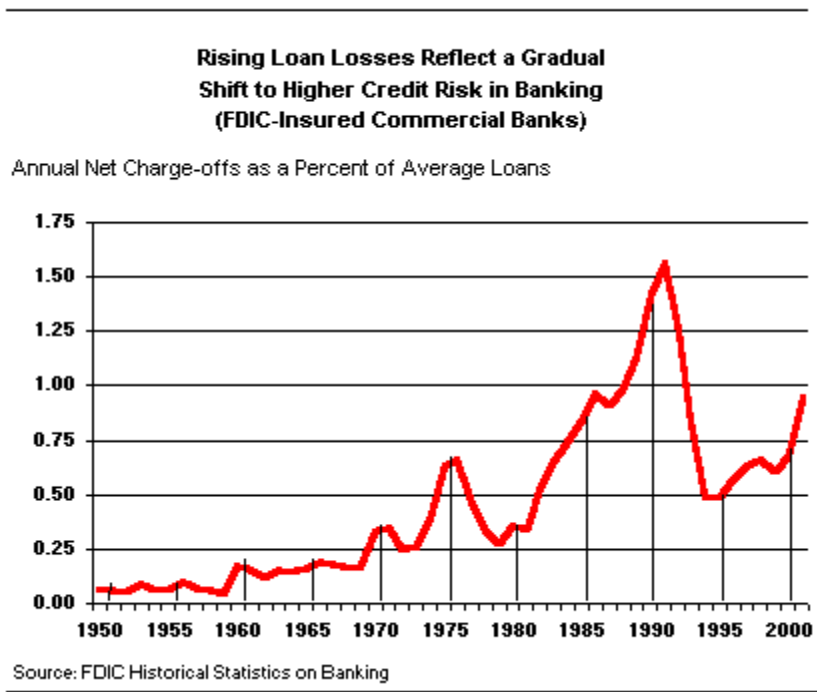
The Basel Capital Accord has also helped enhance global competitive equality. Because the Accord was an international agreement, no one G-10 country had to place its institutions at a competitive disadvantage by imposing strict capital standards that would not be adhered to by foreign banks. In addition, since governments did not have to fear the potentially harmful consequences of unilateral action, banks and bank customers around the world were able to benefit from

uniform capital standards.

Despite all of these positives, certain limitations of the 1988 Accord have become both more apparent and more important over time. Although the 1988 Accord is more risk-sensitive than earlier capital guidelines, it is nevertheless a blunt instrument with respect to credit-risk differentiation and allows securitizing banks significant latitude for capital arbitrage. Moreover, the increasing size and complexity of the largest banks has made it more important for bank supervisors to enhance their ability to enforce capital adequacy by harnessing two key tools, market discipline and the risk metrics employed by banks themselves.

Developing a more risk-sensitive capital framework is important in part because risks in commercial banking have grown in important ways. First, as shown in Chart 4, credit risks appear to have gradually trended higher over time. Annual net chargeoffs as a percent of average loans held by FDIC-insured commercial banks have gradually become higher and more volatile since 1950. Moreover, this measure tends to understate the true degree of credit risk in bank portfolios to the extent that loans have dramatically increased as a percent of total assets, from 23 percent in 1950 to 61 percent in 2000. Although the current risk-based capital regulations are meant to reduce disincentives to holding higher quality credits, banks' asset mix has trended towards loans and away from low-risk securities, as depicted in Chart 5. Banks' holdings of cash and U.S. government and agency securities have remained relatively constant at between 20 percent and 30 percent of total assets since 1970, and have only recently declined to 18 percent. At the same time, the notional value of derivatives contracts held by banks has climbed from \$7 trillion in 1990 to \$45 trillion in 2001.

Chart 4



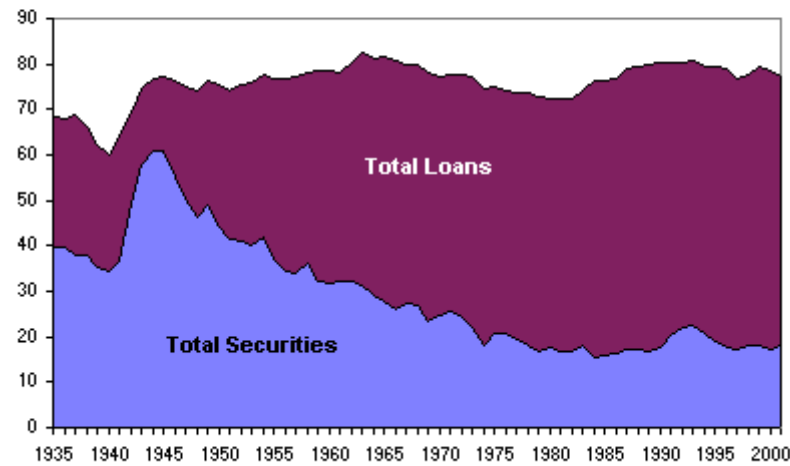
Important structural changes in the banking industry since the 1988 Accord was implemented have also raised the stakes for bank supervisors who must understand the risks in these institutions. As shown in Chart 6, consolidation over

the past decade has left a much greater proportion of industry deposits in the control of just a handful of extremely large banks. Between 1990 and 2000, there were about 4,500 bank mergers involving more than \$4 trillion in assets. These mergers left the top 50 banking companies in control of over 55 percent of the industry's domestic deposits in 2001, up from 36 percent in 1990. The top 5 companies alone held more than 21 percent of all domestic deposits in 2001; they had held just over 8 percent of deposits in 1990.

Chart 5

**Bank Asset Mix Has Trended Toward
Loans and Away From Low-risk Securities
(FDIC-Insured Commercial Banks)**

Total Loans and Securities as a
Percent of Total Assets at Year-End

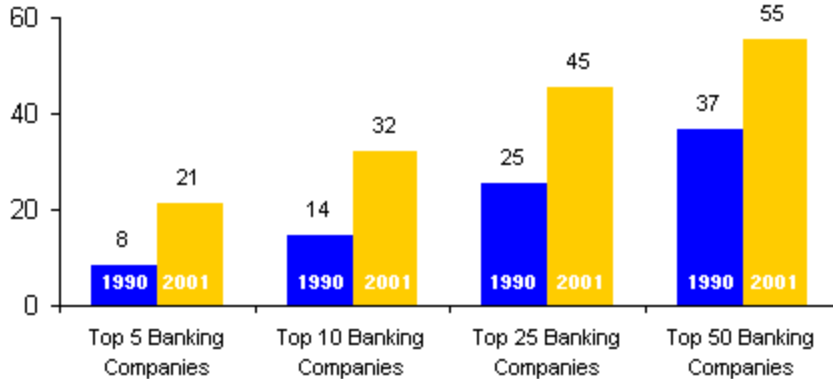


Source: FDIC Historical Statistics on Banking

Chart 6

Rapid Industry Consolidation Creates New Challenges for Bank Supervisors

Percent of Banking Industry Domestic Deposits Held, By Group and Year



Source: FDIC Bank Call Reports

The challenges involved in measuring and managing risks at these large complex institutions has led bank supervisors to seek ways to supplement traditional examination techniques. The tools that supervisors have embraced--greater emphasis on market discipline and greater use of banks' internal risk measurements--are not part of the current accord but are part of the proposed new accord.

Market participants--creditors, shareholders and analysts--can be key allies of the regulators by penalizing institutions that perform poorly or take excessive risks. For market discipline to be effective, however, market participants must be adequately informed about the risks these banks are taking, and hence the important role played by financial transparency in Basel II.

Another important tool that plays a critical role in helping the regulators understand the risks in the largest banks is the risk-related information generated by the banks themselves. The larger the bank, the less practical an intensive supervisory review of the loan portfolio may become. Loan review and various forms of transaction testing for these institutions is more likely to focus on testing the integrity of their internal risk ratings and systems for quantifying risk exposure. The use of banks' internal risk measures to set capital requirements is not new: under the Market Risk Amendment to the 1988 Basel Accord, qualifying banks already use internal models to help set their capital requirements for market risk. Basel II's proposed use of internal risk measures to set capital requirements for credit risk, however, is new. While this approach would be a significant departure from current regulatory practice, it is nevertheless an evolutionary change that flows logically from developments in the measurement of risk at large institutions.

The New Basel Capital Accord

The proposed revisions to the 1988 Accord comprise three mutually reinforcing "pillars." The first pillar sets out the explicit regulatory capital charges, while the

second and third pillars deal with supervision and market discipline, respectively. This section can provide no more than a hint of how Basel II works. Other papers in this series (and the extensive material available on the website of the Bank for International Settlements) will provide more information.

Under Basel II, the definition of capital remains unchanged. Banks will have explicit Pillar 1 capital charges against market risk, operational risk and credit risk, and may be subject to other capital charges under Pillar 2 based on supervisory discretion. The Pillar 1 capital charges for market risk are unchanged from the current approach. The charge for operational risk is new, controversial and beyond the scope of this paper. The charge for credit risk remains 8 percent of risk-weighted assets, but the risk weights used to compute those risk-weighted assets are drastically different; an overview of how this works is provided below.

The first option for measuring credit risk is the standardized approach. While similar to the 1988 Accord in that it applies a standardized set of risk weightings to different asset categories, Basel II will include more risk buckets to provide enhanced risk sensitivity, and will rely on external ratings agencies to help determine risk.

The second option, the internal ratings based (IRB) approach, is a more fundamental shift in capital regulation that allows banks themselves to estimate the amount of capital needed to support their unique set of risks. Only banks that demonstrate the ability to conduct the necessary credit risk analysis will meet the eligibility standards for participation in the IRB approach. Banks may choose between the "foundation" or "advanced" IRB approaches, which differ in the extent to which banks supply the inputs used in calculating the capital charge. Table 1 outlines the range of minimum capital charges for some sample credit quality buckets under Basel II in comparison to the fixed regulatory standards of past capital frameworks.

Previous capital regulations, including the 1988 Basel Accord, required banks to hold the same amount of capital for many commercial loans, regardless of the risk of the borrower. For example, current capital standards dictate that a \$100 commercial loan with a AAA credit rating, the safest rating, would necessitate the same \$8 capital charge as a \$100 loan with a riskier B credit rating. Under the proposed regime, credit rating would be vitally important in determining capital charges. For the sample credit quality buckets listed in Table 1, capital requirements range from as low as \$0.37 per \$100 for AAA equivalent loans to as high as \$41.65 per \$100 for B equivalent loans.¹⁰

The table illustrates that capital requirements may increase for some banks that hold risky assets but may decrease significantly for banks that hold safer portfolios and are able to implement rigorous programs to quantify and monitor risks. The table also illustrates how widely capital requirements could vary, even within a given credit rating band, depending on a bank's estimates of a number of risk-related parameters (the details will be explained in a subsequent paper).

<p style="text-align: center;">Table 1 Under Basel II, Capital Requirements Will Vary Much More With the Risk of the Borrower</p>
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Minimum Capital Required for a \$100 Commercial Loan of Quality:^a

Capital Standards in Place 1981 - Present			
	AAA Credit Risk	BBB-Credit Risk	B Credit Risk
Prior to 1981	Judgmental	Judgmental	Judgmental
1981 - 1988 (Prior to risk-based framework)	\$5.00	\$5.00	\$5.00
1988 - Present (Risk-based standards of Basel Accord)	\$8.00	\$8.00	\$8.00

Proposed Basel II Standards			
	AAA Credit Risk	BBB-Credit Risk	B Credit Risk
Proposed Basel II Standardized ^b	\$1.81	\$8.21	\$12.21
Proposed Basel II Foundation IRB ^c	\$1.41	\$5.01	\$18.53
Proposed Basel II Advanced IRB ^d	\$0.37 to \$4.45	\$1.01 to \$14.13	\$3.97 to \$41.65

Notes:

^a Quality refers to one-year default probabilities corresponding to the historical average for the given credit rating. These capital charge calculations do not reflect the U.S. Prompt Corrective Action standards that currently include a leverage requirement of four percent of on-balance-sheet assets for a bank to be considered adequately capitalized. For U.S. banks, the average risk-based capital charge can not fall below four percent.

^b All Basel II capital calculations (Standardized and IRB) include an operational risk charge. For this table, the operational risk charge is determined by using the Basic Indicator Approach where the capital charge is equal to 15% of the institution's average gross income over the previous three years. As a proxy for average gross income, this table uses the current industry average return-on-assets (1.41%) multiplied by the amount of the loan (\$100) for an estimated operational risk charge of \$.21 (15% of \$1.41).

^c Figures are for an unsecured credit with an assumed loss given default (LGD) of 45%. The one year probability of default (PD) for each credit is as follows: AAA (.03%), BBB- (.35%), B (8.38%). All calculations performed using the QIS-3 Spreadsheets with maturity of 2.5 years.

^d Calculations reflect representative lower and upper bounds for capital to be held in support of the \$100 loan. Lower bound reflects an LGD of 10% (high recovery) with a one-year maturity loan. Upper bound reflects an LGD of 90% and a five-year maturity loan.

Source: FDIC staff calculations based upon "Quantitative Impact Study 3 Technical Guidance"; Basel Committee on Banking Supervision (October 2002), available at www.bis.org.

It is important to note that Basel II will include an operational risk charge in addition to the credit risk charges, and an example of how this might affect marginal capital charges under the standardized approach is included in Table 1. While the impact of any operational risk charges on the capital requirements for credit risk is difficult to ascertain in advance, the basic picture presented by the table is unaffected: capital requirements for credit risk will be both more risk-sensitive and more flexible. The remaining pillars focus on maintaining an effective supervisory review process and making better use of market disciplinary forces. Under Pillar 2, supervisors are charged with reviewing banks' internal assessments of their own capital allocation and adequacy, and may intervene when banks' approaches are deemed insufficient. Supervisors will also examine banks' overall risk management practices and internal controls. The third pillar is intended to make banks' risk and capital positions more transparent so that market discipline can reinforce other capital regulatory efforts. Banks will be encouraged to make all of the public information disclosures that market participants need to monitor banking institutions.

Overall, the practices outlined in Basel II represent several important departures from the traditional philosophy of bank capital regulation. For the first time, the very largest banks will be operating under a completely different set of formal capital regulations than will other, smaller banks. This formal bifurcation of capital regulation has the potential to affect the terms of competition among banks of various sizes. The nature of these long-term competitive effects is uncertain, but deserves serious consideration.

Second, Basel II's proposals rely on banks' own internal risk estimates to set capital requirements for credit exposures. Compared to traditional regulatory formulas that define required capital in terms of percentages of pre-specified and well-defined asset categories, Basel II's new approach is a conceptual leap. Implementing Basel II will necessitate that participating banks maintain a sophisticated quantitative and operational risk management infrastructure to ensure the integrity of their internal risk estimates.

For regulators, evaluating the integrity of internal ratings to the level of detail contemplated under Basel II will be a significant step beyond the traditional supervisory loan grades of pass, special mention, substandard, doubtful and loss. Substantial regulatory efforts to develop new examination procedures for the largest banks is thus an important byproduct of Basel II.

Finally, the proposed new Basel Capital Accord will elevate the importance of human judgment in the process of capital regulation. The aura of quantitative sophistication of the new Accord makes it easy to lose sight of the fact that required capital will be set based on human estimates of unknown quantities. The judgment of banks in forming these estimates, and of supervisors in validating the assumptions, will come together and the result will be the supervisory capital requirement. In this way, the proposals for the new Accord are reminiscent of earlier regulatory practices; before the imposition of numerical capital requirements in 1981, capital regulation was also based on judgment, albeit without the degree of sophistication embodied in Basel II.

Conclusion

The proposed new Basel Capital Accord marks a new stage in the evolution of regulatory capital requirements and in the philosophy of supervision of large banks. The ramifications of the changes will likely reach far beyond the community of large banking institutions, and thus deserve the attention of a variety of constituencies. Despite the public availability of documents on the website of the Bank for International Settlements, though, the workings of Basel II are not widely understood outside of an extremely small subset of bank regulators and technical experts at large banks.

The FDIC believes that the proposed changes to the existing Accord should be made accessible to a wider community of bankers, academics, policymakers and regulators than has heretofore been the case. Accordingly, the FDIC will publish a series of papers over the coming year discussing various aspects of the new Accord. These papers will be designed to inform interested parties and stimulate debate on the key issues that remain unresolved as the design of Basel II progresses.

¹ The first Basel Committee consultative document, *A New Capital Adequacy Framework*, was issued on June 3, 1999, and the second consultative document, *The New Basel Capital Accord*, was issued in January 2001. The documents are available through the website for the Bank for International Settlements at www.bis.org.

² Norton, Joseph Jude, *Devising International Bank Supervisory Standards*, International Banking and Finance Law, vol. 3, pp. 46-49 (1995).

³ Ryon, Sandra L., *History of Bank Capital Adequacy Analysis*, FDIC Working Paper No. 69-4, FDIC Division of Economic Research (1969).

⁴ In 1952, different capital-to-risk assets ratios were proposed in separate studies by a committee of the New York State Bankers Association, the Illinois Bankers Association, and the Federal Reserve Bank of New York. The Board of Governors of the Federal Reserve developed a "Form for Analyzing Bank Capital" in 1956.

⁵ Norton, *supra* n.2 at 49.

⁶ Horvitz, Paul M. "More is Better as Capital Requirements Go," *The American Banker*, April 24, 1986: 4.

⁷ "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." Capital Adequacy, 12 U.S.C.A. 3907(a).

⁸ "International Convergence of Capital Measurement," issued in July 1988, describes the framework. The 1988 Accord was developed by the supervisory authorities on the Basel Supervisors Committee, comprising representatives from Belgium, Canada, France, Germany, Italy, Japan, Netherlands, Sweden, Switzerland, the UK and the US.

⁹ In general terms, Tier 1 capital includes common stockholder's equity, qualifying noncumulative perpetual stock (for bank holding companies it also includes limited amounts of cumulative perpetual preferred stock), and minority interests in the equity accounts of consolidated subsidiaries.

¹⁰ See the notes to Chart 8 for calculation details.

**Chart 1. Bank Capital Levels Fall Through the 1960s and 70s,
But Accord of 1988 Coincides with a Reversal of Trend
(FDIC-Insured Commercial Banks)**

Year	No. of Institutions	Total Securities	Loans & Leases	Total Assets	Equity Capital	Percent of Assets		
						Securities	Loans	Capital
1934	14,137	18,172	14,614	46,448	6,152	39.1	31.5	13.2
1935	14,123	20,116	14,719	50,926	6,210	39.5	28.9	12.2
1936	13,969	22,307	15,965	56,210	6,329	39.7	28.4	11.3
1937	13,795	20,476	16,750	54,212	6,404	37.8	30.9	11.8
1938	13,657	21,451	16,024	56,800	6,435	37.8	28.2	11.3
1939	13,534	22,428	16,866	63,147	6,524	35.5	26.7	10.3
1940	13,438	24,163	18,398	70,720	6,673	34.2	26.0	9.4
1941	13,427	28,032	21,262	76,827	6,842	36.5	27.7	8.9
1942	13,347	47,344	18,907	95,459	7,056	49.6	19.8	7.4
1943	13,274	64,678	18,843	112,246	7,454	57.6	16.8	6.6
1944	13,268	82,053	21,355	134,613	7,944	61.0	15.9	5.9
1945	13,302	96,066	25,769	157,582	8,631	61.0	16.4	5.5
1946	13,359	81,469	30,740	147,365	9,254	55.3	20.9	6.3
1947	13,403	76,712	37,592	152,773	9,707	50.2	24.6	6.4
1948	13,419	70,339	42,388	152,163	10,139	46.2	27.9	6.7
1949	13,436	75,824	43,047	155,319	10,628	48.8	27.7	6.8
1950	13,446	73,198	52,482	166,792	11,261	43.9	31.5	6.8
1951	13,455	73,673	58,184	177,449	11,905	41.5	32.8	6.7
1952	13,439	76,280	64,728	186,682	12,560	40.9	34.7	6.7
1953	13,432	76,851	68,227	191,062	13,243	40.2	35.7	6.9
1954	13,323	84,142	71,412	200,589	14,255	41.9	35.6	7.1
1955	13,237	77,240	83,628	209,145	14,980	36.9	40.0	7.2
1956	13,218	73,947	91,705	216,146	15,992	34.2	42.4	7.4
1957	13,165	75,330	95,577	221,534	17,059	34.0	43.1	7.7
1958	13,124	86,056	100,087	237,474	18,164	36.2	42.1	7.7
1959	13,114	78,582	112,867	243,422	19,206	32.3	46.4	7.9
1960	13,126	81,020	119,878	256,322	20,635	31.6	46.8	8.1
1961	13,115	89,662	127,414	277,374	22,101	32.3	45.9	8.0
1962	13,124	94,912	142,718	295,983	23,732	32.1	48.2	8.0
1963	13,291	97,472	158,928	311,790	25,193	31.3	51.0	8.1
1964	13,493	100,960	178,649	345,130	26,627	29.3	51.8	7.7

1965	13,547	103,651	203,061	375,394	28,252	27.6	54.1	7.5
1966	13,541	104,286	220,332	402,946	29,963	25.9	54.7	7.4
1967	13,517	123,264	237,518	450,713	32,022	27.3	52.7	7.1
1968	13,488	135,242	264,671	500,238	34,518	27.0	52.9	6.9
1969	13,473	122,019	286,752	524,665	37,687	23.3	54.7	7.2
1970	13,511	141,370	298,190	570,167	40,590	24.8	52.3	7.1
1971	13,612	163,681	328,226	633,573	44,062	25.8	51.8	7.0
1972	13,733	178,459	388,902	730,903	48,387	24.4	53.2	6.6
1973	13,976	179,401	455,197	820,515	54,957	21.9	55.5	6.7
1974	14,228	188,807	583,871	1,037,338	59,221	18.2	56.3	5.7
1975	14,384	225,639	590,111	1,086,409	63,854	20.8	54.3	5.9
1976	14,411	246,132	633,031	1,182,390	72,248	20.8	53.5	6.1
1977	14,412	257,261	729,723	1,339,392	79,280	19.2	54.5	5.9
1978	14,391	269,290	840,972	1,508,331	87,418	17.9	55.8	5.8
1979	14,364	284,146	944,809	1,692,080	97,242	16.8	55.8	5.8
1980	14,435	325,015	1,016,476	1,855,695	107,599	17.5	54.8	5.8
1981	14,408	339,674	1,131,312	2,029,151	118,241	16.7	55.8	5.8
1982	14,446	367,008	1,224,405	2,193,867	128,698	16.7	55.8	5.9
1983	14,460	424,198	1,316,854	2,341,955	140,459	18.1	56.2	6.0
1984	14,482	385,540	1,527,536	2,508,749	154,091	15.4	60.9	6.1
1985	14,407	439,407	1,648,697	2,730,672	169,118	16.1	60.4	6.2
1986	14,199	484,865	1,772,681	2,940,699	182,144	16.5	60.3	6.2
1987	13,703	520,713	1,844,380	2,999,949	180,651	17.4	61.5	6.0
1988	13,123	535,995	1,948,148	3,130,796	196,545	17.1	62.2	6.3
1989	12,709	558,639	2,073,326	3,299,362	204,823	16.9	62.8	6.2
1990	12,343	604,622	2,123,919	3,389,490	218,616	17.8	62.7	6.5
1991	11,921	691,385	2,064,049	3,430,682	231,699	20.2	60.2	6.8
1992	11,462	772,939	2,040,753	3,505,663	263,403	22.0	58.2	7.5
1993	10,958	836,710	2,156,483	3,706,165	296,491	22.6	58.2	8.0
1994	10,451	823,024	2,364,557	4,010,517	312,084	20.5	59.0	7.8
1995	9,940	810,872	2,608,816	4,312,676	349,571	18.8	60.5	8.1
1996	9,527	800,647	2,816,587	4,578,325	375,244	17.5	61.5	8.2
1997	9,142	871,868	2,975,215	5,014,841	417,706	17.4	59.3	8.3
1998	8,773	979,855	3,242,404	5,442,416	462,042	18.0	59.6	8.5
1999	8,579	1,046,530	3,495,332	5,735,079	479,610	18.2	60.9	8.4
2000	8,315	1,078,983	3,822,428	6,244,467	530,542	17.3	61.2	8.5
2001	8,080	1,171,924	3,892,583	6,551,650	593,883	17.9	59.4	9.1

Source: FDIC Historical Statistics on Banking

Chart 2
Annual Failures of FDIC-Insured Commercial Banks
Remain Well Below Crisis Levels

Year	Failed Institutions
1934	9
1935	26
1936	69
1937	77
1938	73
1939	59
1940	43
1941	15
1942	20
1943	5
1944	2
1945	1
1946	1
1947	5
1948	3
1949	5
1950	4
1951	2
1952	3
1953	4
1954	2
1955	5
1956	2
1957	2
1958	4
1959	3
1960	1
1961	5
1962	1
1963	2
1964	7
1965	5
1966	7
1967	4
1968	3
1969	9
1970	7
1971	7

1972	2
1973	6
1974	4
1975	13
1976	17
1977	6
1978	6
1979	10
1980	11
1981	7
1982	35
1983	46
1984	79
1985	118
1986	144
1987	201
1988	280
1989	206
1990	159
1991	108
1992	100
1993	42
1994	11
1995	6
1996	5
1997	1
1998	3
1999	7
2000	6
2001	3
2002	9

Source: FDIC Historical Statistics on Banking

Chart 3
Total Level of Protection Against Credit Losses
Has Grown Steadily Over Time
(All FDIC-Insured Institutions)

Year	Equity Capital	Reserves	Income
1984	6.1	0.7	0.3
1985	6.2	0.8	0.3
1986	6.2	1.0	0.3
1987	6.0	1.7	0.4
1988	6.3	1.5	0.4
1989	6.2	1.6	0.4
1990	6.4	1.6	0.4
1991	6.8	1.6	0.4
1992	7.5	1.5	0.4
1993	8.0	1.4	0.6
1994	7.8	1.3	0.7
1995	8.1	1.2	0.7
1996	8.2	1.2	0.8
1997	8.3	1.1	0.8
1998	8.5	1.1	0.8
1999	8.4	1.0	0.9
2000	8.5	1.0	0.9
2001	9.1	1.1	0.8
2002	9.2	1.1	1.0

Source: FDIC Bank Call Reports

Chart 4
Rising Loan Losses Reflect a Gradual
Shift to Higher Credit Risk in Banking
(FDIC-Insured Commercial Banks)

Year	Annual Net Charge-offs as a Percent of Average Total Assets
1950	0.06
1951	0.06
1952	0.06
1953	0.09
1954	0.06
1955	0.06
1956	0.11
1957	0.08
1958	0.06
1959	0.05
1960	0.18
1961	0.15
1962	0.12
1963	0.16
1964	0.15
1965	0.17
1966	0.19
1967	0.19
1968	0.16
1969	0.18
1970	0.34
1971	0.35
1972	0.25
1973	0.27
1974	0.40
1975	0.64
1976	0.67
1977	0.48
1978	0.34
1979	0.28
1980	0.36
1981	0.34
1982	0.55
1983	0.66
1984	0.76
1985	0.83

1986	0.97
1987	0.91
1988	0.98
1989	1.14
1990	1.42
1991	1.57
1992	1.25
1993	0.83
1994	0.50
1995	0.49
1996	0.57
1997	0.63
1998	0.67
1999	0.60
2000	0.68
2001	0.95

Source: FDIC Historical Statistics on Banking

Chart 5
Bank Asset Mix Has Trended Toward
Loans and Away From Low-risk Securities
(FDIC-Insured Commercial Banks)

Percent of Assets		
Year	Securities	Loans
1934	39.1	31.5
1935	39.5	28.9
1936	39.7	28.4
1937	37.8	30.9
1938	37.8	28.2
1939	35.5	26.7
1940	34.2	26.0
1941	36.5	27.7
1942	49.6	19.8
1943	57.6	16.8
1944	61.0	15.9
1945	61.0	16.4
1946	55.3	20.9
1947	50.2	24.6
1948	46.2	27.9
1949	48.8	27.7
1950	43.9	31.5
1951	41.5	32.8
1952	40.9	34.7
1953	40.2	35.7
1954	41.9	35.6
1955	36.9	40.0
1956	34.2	42.4
1957	34.0	43.1
1958	36.2	42.1
1959	32.3	46.4
1960	31.6	46.8
1961	32.3	45.9
1962	32.1	48.2
1963	31.3	51.0
1964	29.3	51.8
1965	27.6	54.1
1966	25.9	54.7
1967	27.3	52.7
1968	27.0	52.9
1969	23.3	54.7
1970	24.8	52.3

1971	25.8	51.8
1972	24.4	53.2
1973	21.9	55.5
1974	18.2	56.3
1975	20.8	54.3
1976	20.8	53.5
1977	19.2	54.5
1978	17.9	55.8
1979	16.8	55.8
1980	17.5	54.8
1981	16.7	55.8
1982	16.7	55.8
1983	18.1	56.2
1984	15.4	60.9
1985	16.1	60.4
1986	16.5	60.3
1987	17.4	61.5
1988	17.1	62.2
1989	16.9	62.8
1990	17.8	62.7
1991	20.2	60.2
1992	22.0	58.2
1993	22.6	58.2
1994	20.5	59.0
1995	18.8	60.5
1996	17.5	61.5
1997	17.4	59.3
1998	18.0	59.6
1999	18.2	60.9
2000	17.3	61.2
2001	17.9	59.4

Source: FDIC Historical Statistics on Banking

Chart 6
Rapid Industry Consolidation Creates
New Challenges for Bank Supervisors

Banking Companies				
Year	Top 5	Top 10	Top 25	Top 50
1990	8.44	14.41	25.47	36.5
2001	21.08	32.08	45.25	55.49

Source: FDIC Bank Call Reports