

**FEDERAL RESERVE BANK
OF NEW YORK**

[Circular No. **10161**
March 27, 1987]

PROPOSED RISK-BASED CAPITAL FRAMEWORK

**Additional Proposal to Include Specific Procedures
for Incorporating Credit Risks from
Interest Rate and Exchange Rate Contracts**

Comment Invited by May 22

*To All Depository Institutions and Bank Holding Companies
in the Second Federal Reserve District, and Others Concerned:*

Following is the text of a statement issued by the Board of Governors of the Federal Reserve System:

The Federal Reserve Board has requested comment on a proposal to incorporate credit risks on off-balance sheet interest rate and exchange rate contracts (including interest rate swaps) into its proposed risk-based capital measure.

This proposal has been developed jointly with the Bank of England and is designed to be consistent with treatment of other off-balance sheet credit exposures in the overall U.S./U.K. agreement on primary capital and the assessment of capital adequacy, which was announced earlier this year.

Comments on this proposal should be received by the Board by May 22, 1987.

Enclosed — for depository institutions, bank holding companies, and branches and agencies of foreign banks in this District — is the complete text of the proposal, which supplements the Board's proposal sent to you with our Circular No. 10155, dated February 25, 1987, and which has been reprinted from the *Federal Register* of March 24, 1987. Copies of the enclosure will be furnished to others upon request directed to the Circulars Division of this Bank (Tel. No. 212-720-5215 or 5216). Comments on this proposal should be sent to the Board of Governors, as specified in the notice, by May 22, 1987; comments on the earlier proposal, sent to you with our Circular No. 10155, should be sent to the Board by May 13.

Questions regarding this proposal may be directed to Betsy B. White, Assistant Vice President (Tel. No. 212-720-5874), or Thomas M. Heffernan, Financial Analyst, Bank Analysis Department (Tel. No. 212-720-6715).

E. GERALD CORRIGAN,
President.

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March 24, 1987

PROPOSED RISK-BASED CAPITAL FRAMEWORK

**Additional Proposal to Include Specific Procedures
for Incorporating Credit Risks from
Interest Rate and Exchange Rate Contracts**

FEDERAL RESERVE SYSTEM**12 CFR Part 225****[Regulation Y: Docket No. R-0567]****Capital Maintenance; Revision to Capital Adequacy Guidelines****AGENCY:** Board of Governors of the Federal Reserve System.**ACTION:** Proposed rulemaking.

SUMMARY: On January 24, 1986, the Board proposed to amend its Guidelines for minimum and appropriate levels of capital for bank holding companies and state chartered banks that are members of the Federal Reserve System (contained in Appendix A to the Board's Regulation Y, 12 CFR Part 225) by adding a supplemental adjusted capital measure that the Board would consider in tandem with existing ratios of capital to total assets. On February 12, 1987, the Board announced that it was requesting comment on a revised version of its January 24, 1986 proposal, based, in part, on comments received by the Board on that earlier proposal and on extensive discussions with other federal banking agencies and the Bank of England that resulted in a joint U.S./U.K. proposal on primary capital and the assessment of capital adequacy. The Board's February 12, 1987 proposal included a risk-based capital measure (also known as a risk asset ratio) to be used in tandem with existing capital ratios. The revised proposal indicated that United States and United Kingdom authorities were committed to incorporating in the risk-based capital measure at the earliest

possible date credit risks resulting from interest rate swaps, forward foreign exchange contracts, and similar off-balance sheet interest rate and exchange rate contracts. The Board, in conjunction with the Bank of England, has now proposed specific procedures for incorporating these credit risks into its risk-based capital measure, and is seeking comment on these procedures. The text of the agreed proposal, which also has been issued for public comment in the United Kingdom by the Bank of England, is attached to this Federal Register Notice.

The Board's proposed method for incorporating credit risks from interest rate and exchange rate contracts in the risk-based capital measure is designed to be consistent with the treatment of other off-balance sheet credit risks in the previous agreement between the U.S. banking agencies and the Bank of England. Thus, the Board's proposal provides that principal amounts of such off-balance sheet items must be converted into on-balance sheet "credit equivalent" amounts before they can be assigned to the risk categories in the risk-based capital measure previously proposed for comment. The core of the current proposal is a methodology for calculating such credit equivalent amounts for interest rate and exchange rate contracts. The proposed credit equivalent amounts would be assigned to risk categories in the same way as balance sheet assets, that is, based on broad distinctions among types of obligors (counterparties) and, in some cases, the remaining maturity of the instrument and qualifying collateral.

The Board's proposal takes into

account only the credit risks associated with interest rate and exchange rate contracts. The proposal does not address interest rate risk or exchange rate risk. Thus, the Board's proposed risk-based capital measure, as amended by this proposal, continues to be focused primarily on credit risk. The current proposal represents an effort to address explicitly the major categories of off-balance sheet exposures that have grown rapidly in recent years, and to continue the process of coordinating with regulatory authorities of other countries to establish appropriate capital standards, in accordance with the International Lending Supervision Act of 1983 ("ILSA"), 12 U.S.C. 3901 et seq.

DATE: Comments must be received by May 22, 1987.

ADDRESS: All comments should refer to Docket No. R-0567, and should be mailed to William W. Wiles, Secretary, Board of Governors of the Federal Reserve System, 20th Street and Constitution Avenue, NW., Washington, DC 20551, or should be delivered to the Office of the Secretary, Room 2223, Eccles Building, 20th Street and Constitution Avenue, NW., between the hours of 9:00 a.m. and 5:00 p.m. weekdays. Comments may be inspected in Room 1119, Eccles Building, between 9:00 a.m. and 5:00 p.m. weekdays.

FOR FURTHER INFORMATION CONTACT: Patrick Parkinson, Manager, (202/452-3023), or Richard Spillenkothen, Deputy Associate Director (202/452-2594), Division of Banking Supervision and Regulation, Board of Governors; or James E. Scott, Senior Counsel (202/452-

3513), Legal Division, Board of Governors; or Betsy White, Assistant Vice President (212/720-5874), or Andrew Spindler, Vice President (212/720-5846), Federal Reserve Bank of New York. For the hearing-impaired *only*, Telecommunication Device for the Deaf, Earnestine Hill or Dorothea Thompson (202/452-3544), Board of Governors.

SUPPLEMENTARY INFORMATION:

Background: The Purpose of the Proposed Risk-Based Measure

On January 24, 1986, the Board proposed to amend its Guidelines for minimum and appropriate levels of capital for bank holding companies and state chartered banks that are members of the Federal Reserve System (contained in Appendix A to the Board's Regulation Y, 12 CFR Part 225) by adding a supplemental adjusted capital measure that the Board would consider in tandem with existing ratios of capital to total assets in assessing capital adequacy.

The Board's proposal of January 24, 1986 was in part an effort to meet the Board's previous concern, expressed in the Board's revised Capital Adequacy Guidelines of April 1985 (50 FR 18057), that the emphasis in the Guidelines on ratios based on the amount of a banking organization's total assets should not be interpreted to exclude considerations of risk. The Board had stated that it would assess the overall capital position of a banking organization by taking into account both the volume of an organization's assets exposed to risk and the volume and nature of its off-balance sheet risks.

On February 12, 1987, the Board proposed for public comment a revised proposal based, in part, on comments received by the Board on its January 24, 1986 proposal, and on a proposed agreement with the other federal banking agencies and the Bank of England (the "proposed U.S./U.K. agreement"). The Board's February 12, 1987 proposal included a risk-based capital measure (also known as a risk asset ratio) to be used in tandem with existing capital ratios. The proposed risk-based measure would be calculated as a ratio of primary capital to weighted risk assets. This proposal would establish weights to be assigned to principal amounts of assets and certain off-balance sheet items. The risk weights for off-balance sheet obligations would be determined using a two-step process. First, the face amount of such an obligation would be translated into an on-balance sheet "credit equivalent amount." Second, the resulting credit equivalent amount would be assigned to

one of the five risk categories used for on-balance sheet assets, based upon the type of obligor and, in some cases, the remaining maturity of the off-balance sheet item and qualifying collateral support.

The February 12, 1987 proposal indicated that United States and United Kingdom banking authorities were committed to incorporating in the risk-based capital measure at the earliest possible date credit risks resulting from interest rate swaps, forward foreign exchange contracts, and similar off-balance sheet interest rate and exchange rate contracts. The Board, in conjunction with the Bank of England, now proposes specific procedures for incorporating credit risks from such contracts into its revised risk-based capital measure, and is seeking comment concerning these proposed procedures.

The Board believes that its proposal to incorporate credit risks from interest rate and exchange rate contracts into its proposed risk-based capital measure would significantly enhance the usefulness of this measure as a tool for relating minimum capital requirements to the risk profiles of banking organizations. In particular, this proposal would further two of the Board's specific policy objectives set forth in its January 1986 proposal, namely, to address the rapid expansion of off-balance sheet exposures and to move capital adequacy policies in the United States more closely in line with those of other major industrial countries. With regard to the latter objective, the Board notes that this proposal has been issued for public comment in the United Kingdom by the Bank of England and that the basic methodology underlying this proposal has been developed jointly by representatives of the Bank of England, the Office of the Comptroller of the Currency ("OCC"), and the Federal Reserve. The OCC and the Federal Deposit Insurance Corporation ("FDIC") have not acted on this proposal. The OCC staff has indicated to Federal Reserve staff that the OCC does not intend to issue a separate proposal for public comment, but that it will review the comments received in response to the Board's proposal.

Proposed Credit Equivalent Amounts Risk Analysis

The cost to a banking organization of a counterparty default on an interest rate or exchange rate contract is the cost of replacing the cash flows specified by the contract. At the time a contract is initiated, it can be replaced virtually costlessly, since the interest rates or

exchange rates embodied in the contract reflect those prevailing in the market. But as time passes and market rates change, the market value of the cash flows that the banking organization is entitled to receive under the contract terms often will exceed the market value of the cash flows it is obligated to pay. If the counterparty were to default in such circumstances, the banking organization would have to pay a premium to replace, or re-establish, the cash flows specified by the original contract.

For example, suppose a banking organization enters into a U.S. dollar-denominated fixed/floating interest rate swap with a face amount (notional principal amount) of \$10 million and an original maturity of 7 years. Under the contract the banking organization agrees to make semi-annual floating interest payments based on the prevailing six-month London interbank offered rate (LIBOR) in exchange for semi-annual fixed interest payments of 9 percent per annum. Both the fixed and floating payments would be calculated on the basis of a \$10 million principal amount (the notional value), but no actual exchange of principal would occur. At the time the contract is initiated, it could be replaced costlessly by entering into an identical swap with a second counterparty at the prevailing 9 percent coupon rate. But one year later, market interest rates could have fallen considerably, implying substantial replacement costs. For example, if the prevailing coupon rate for a U.S. dollar fixed/floating interest rate swap for 6 years (the remaining maturity of the original swap) were then 7 percent, the banking organization would have to pay nearly \$1 million to replace the original net payment stream of 9 percent less LIBOR.

A fundamental premise underlying the treatment of off-balance sheet credit risks in the proposed U.S./U.K. agreement and the Board's February 12, 1987 risk-based capital proposal is that capital support is required not only for current exposure to losses, but also for potential future exposure (potential exposure) to losses. This premise underlies the treatment of all off-balance sheet credit risks covered by the overall framework, but is most evident in the treatment of loan commitments. Capital support is required for both the principal amount of loans extended under the commitment (the current exposure) and a portion of the unused principal amount of the commitment (the potential exposure).

Accordingly, in this proposal the credit equivalent amount, to be

incorporated into the proposed U.S./U.K. risk-based capital ratio, of an interest rate or exchange rate contract would be calculated as the sum of the current replacement cost and a measure of potential future increases in replacement costs. The current replacement cost would be measured by the mark-to-market value (positive or negative) of the contract.¹ Potential future increases in replacement costs would be calculated using credit conversion factors that are based on statistical analyses by the staffs of the Bank of England, the Office of the Comptroller of the Currency, and the Federal Reserve.²

These credit conversion factors for potential future increases in replacement costs were derived by estimating the potential volatility of interest rates and exchange rates and analyzing the implications of movements in these rates for the replacement costs of various interest rate and exchange rate contracts. This analysis produced probability distributions of potential replacement costs over the remaining life of matched pairs of such contracts.³ Potential future exposure was then defined in terms of confidence limits for (or percentiles of) these distributions. This analysis suggests that credit conversion factors for potential exposure should lie within the ranges shown in the attached Table 1. The conversion factors at the lower ends of the ranges shown in Table 1 generally correspond to confidence

limits of 65 to 85 percent, while conversion factors at the upper ends of the ranges generally correspond to confidence limits of 90 to 95 percent. As discussed in greater detail below, the Board will carefully evaluate public comments on the competitive implications of these proposed conversion factors before reaching final decisions on the appropriate factors.

TABLE 1.—POTENTIAL CREDIT EXPOSURE, PROPOSED CONVERSION FACTORS,¹ INTEREST RATE AND FOREIGN EXCHANGE RATE CONTRACTS

[Percentage of notional principal amount]

Remaining maturity	Interest rate ² contracts	Exchange rate ³ contracts (per cent)
Less than one year:		
Less than three days...	0	0
Three days to one month.....	0	1-2
One month to three months.....	0	2-4
Three months to one year	0	4-8
One year or longer.....	(⁴)	(⁵)

¹ The authorities will carefully review these proposed credit conversion factors in light of public comments on the implications to pricing and competition.

² Interest rate contracts include single-currency interest rate swaps forward rate agreements, interest rate options purchased (except those purchased on exchanges), and similar instruments. However, no potential credit exposure would be calculated for single-currency floating/floating interest rate swaps; the credit exposure on these contracts would be evaluated solely on the basis of their mark-to-market value.

³ Exchange rate contracts include cross-currency interest rate swaps, forward foreign exchange contracts, and foreign exchange options purchased (except those purchased on exchanges), and similar instruments.

⁴ ($\frac{1}{2}$ to 1 pct.) per complete year remaining to maturity.

⁵ (5 to 10 pct.) + (1 to 2 pct.) per complete year remaining to maturity.

Potential exposure on a contract would be determined by multiplying the notional principal amount by the proposed credit conversion factor.⁴ The credit equivalent amount for a contract would then be obtained by adding the potential exposure estimate to the current mark-to-market value.⁵ The resulting credit equivalent amount then would be slotted into one of the risk categories in the risk asset ratio based on the identity of the counterparty to the interest rate or exchange rate contract, and in some cases on the maturity of the contract or the presence of certain collateral or guarantees, as described in the Board's February 12, 1987 proposal. Table 2 provides examples of the calculation of credit equivalent amounts for several types of interest rate and exchange rate contracts.⁶

TABLE 2.—CALCULATION OF CREDIT EQUIVALENT AMOUNTS, INTEREST RATE AND FOREIGN EXCHANGE RATE RELATED TRANSACTIONS

Type of contract (remaining maturity)	Notional principal (dollars)	×	Potential exposure conversion factor ¹	=	Potential exposure (dollars)	+	Current exposure (dollars) ²	=	Credit equivalent (dollars)
	(1)		(2)		(3)		(4)		(5)
(1) 120-day forward foreign exchange	5,000,000		0.4		200,000		100,000		300,000
(2) 120-day forward foreign exchange	6,000,000		.04		240,000		-120,000		120,000
(3) 3-year single-current fixed/floating interest rate swap	10,000,000		.015		150,000		200,000		350,000
(4) 3-year single-currency fixed/floating interest rate swap	10,000,000		.015		150,000		-250,000		0
(5) 7-year cross-currency floating/floating interest rate swap	20,000,000		.12		2,400,000		-1,300,000		1,100,000

¹ The mark-to-market value is the present value of the net payment stream specified by the contract, calculated on the basis of current market interest rates and exchange rates. Negative mark-to-market values are taken into account in the calculation of credit equivalent amounts not because a banking organization could benefit from a default, but because negative current exposure implies less potential future exposure. Mark-to-market values would include the value of interest that has accrued but has not been received.

² The methodology upon which the statistical analyses are based is described in detail in a technical working paper entitled "Potential Credit Exposure on Interest Rate and Foreign Exchange

Rate Related Instruments." This paper is available upon request from the Board's Freedom of Information Office (202/452-3684).

³ A matched pair is a pair of contracts with identical terms, with the banking organization the buyer of one of the contracts and the seller of the other. The Board believes that estimates based on matched pairs provide a more accurate representation of credit exposure on a portfolio of interest rate and exchange rate contracts than estimates based on single contracts. Because banking organizations often act as intermediaries between end-users of contracts, a large share of their portfolio often consists of matched—or nearly matched—pairs.

⁴ The notional principal amount, or value, is a reference amount of money used to calculate interest payment streams. Principal amounts generally are not exchanged in single-currency interest rate swaps, but generally are exchanged in foreign exchange contracts (including cross-currency interest rate swaps).

⁵ If this sum is negative, the credit equivalent amount would be set equal to zero, because a banking organization would not necessarily profit from the bankruptcy of a counterparty.

⁶ For illustrative purposes only, these examples use the credit conversion factors at the lower ends of the ranges shown in Table 1.

TABLE 2.—CALCULATION OF CREDIT EQUIVALENT AMOUNTS, INTEREST RATE AND FOREIGN EXCHANGE RATE RELATED TRANSACTIONS—Continued

Type of contract (remaining maturity)	Notional principal (dollars)	×	Potential exposure conversion factor ¹	=	Potential exposure (dollars)	+	Current exposure (dollars) ²	=	Credit equivalent (dollars)
	(1)		(2)		(3)		(4)		(5)
Total.....	51,000,000								1,870,000

¹ For illustrative purposes only, these examples use credit conversion factors at the lower end of the ranges shown in Table 1.

² These numbers are purely illustrative.

Any credit conversion factors that the Board initially adopts will need to be re-examined and possibly revised on a periodic basis, perhaps annually. Estimates of potential future credit exposure necessarily rely on estimates of the future volatility of market rates. The proposed approach relies on past rate volatility as a guide to future rate volatility, but future volatility could differ substantially from past volatility.

Instruments Covered by the Board's Proposal

The proposed credit conversion factors for interest rate contracts would apply to single-currency interest rate swaps, forward rate agreements, over-the-counter interest rate options purchased, and similar instruments. The proposed credit conversion factors for foreign exchange contracts would apply to cross-currency swaps (including cross-currency interest rate swaps), forward foreign exchange contracts, over-the-counter foreign currency options purchased, and similar instruments, such as forward gold contracts. No potential future credit exposure would be calculated for interest rate contracts with a remaining maturity of less than a year or for any single-currency floating/floating interest rate swaps (so-called basis swaps). For these contracts, the credit equivalent amount would equal the current exposure or zero, whichever is larger.

Interest rate and foreign exchange contracts, such as futures contracts, that are traded on organized exchanges and are subject to daily marking-to-market and payment of variation margin would be excluded from the coverage of the proposal. Daily payment of variation margin generally limits replacement costs on futures contracts to a very small fraction of the notional principal amounts. Similarly, because the replacement costs arising from spot foreign exchange contracts are estimated to be quite small, such contracts would be excluded from the coverage of the proposal.

Avoidance of Potential Double Counting of Credit Exposures

In some cases, credit exposures arising from interest rate and exchange rate contracts addressed by this proposal may already be reflected in part on a banking organization's balance sheet. In such cases, credit exposures may need to be excluded from balance sheet assets in calculating the banking organization's risk-based capital ratio, in order to avoid double counting. The Board intends to design reporting systems for foreign exchange and interest rate swap contracts that would avoid such possible double counting. For example, for purposes of calculating the risk-based capital measure, current counterparty credit exposures (mark-to-market values) on forward foreign exchange contracts would be excluded from balance sheet assets.

Collateral and Guarantees

The Board's proposal does not recognize the existence of collateral and guarantees in calculating credit equivalent amounts. However, consistent with the Board's February 12, 1987 proposal, the risk weights assigned to credit equivalent amounts of interest rate and exchange rate contracts would be affected by the existence of three types of collateral: Domestic national government debt, cash on deposit in the lending institution, and debt of U.S. government agencies and U.S. government-sponsored agencies. The February 12, 1987 proposal also takes into account guarantees by the U.S. government or its agencies, but not guarantees in the form of privately-issued standby letters of credit.

Netting Arrangements

Market participants have been developing arrangements under which multiple interest rate or foreign exchange rate contracts with the same counterparty could be consolidated within a single master agreement and translated into a single contract with the counterparty. Such arrangements would require amounts receivable from and

payable to a counterparty to be netted, resulting in a single stream of payments between counterparties. The Board recognizes that such arrangements may in certain circumstances reduce credit risk and wishes to encourage their further development and implementation. If market participants were to develop such standardized master agreements with general, market-wide application, and if there were unambiguous legal opinions that such agreements reduce credit risk and would be recognized by the relevant judicial authorities, the proposal might be modified to treat multiple contracts with a single counterparty that were created within the terms of such a master agreement as a single net contract.

De Minimis Exception

The Board's proposed agreement with the Bank of England would allow it the discretion to decide whether some classes of banking organizations should be exempted on *de minimis* grounds. For two reasons, the Board believes that coverage by this proposal should be limited strictly through provision of a *de minimis* exception. First, because the risk asset ratio currently does not incorporate measures of interest rate or exchange rate risk, this proposal could discourage the use of interest rate and exchange rate contracts for hedging. To address this concern, a *de minimis* exception could be structured so that banking organizations that use these contracts exclusively for hedging their own interest rate and exchange rate risks generally would be exempted from the proposal. Second, although the Board has attempted to keep this proposal simple, it arguably is more complex than the rest of the risk asset framework. A *de minimis* exception would limit the associated computational and reporting burdens, primarily to very large, sophisticated banking organizations that act as intermediaries in the markets for interest rate and exchange rate contracts. These organizations would probably have the least difficulty with

compliance. For those organizations receiving an exemption from the proposal, the credit risks involved in holding interest rate and exchange rate contracts would continue to be assessed during the examination process.

Organizations entitled to the *de minimis* exception would be identified on the basis of the notional principal amounts of interest rate swaps and foreign exchange contracts held by banking organizations on each quarter-end reporting date. Banking organizations whose estimated credit equivalent amounts of interest rate and exchange rate contracts were small relative to their primary capital would be exempted. This screening would be conducted by Federal Reserve staff, and organizations exempted from the proposal would not be sent reporting forms and instructions. Although specific selection criteria have yet to be determined, the alternatives under consideration currently would limit application of this proposal to about 20 U.S. bank holding companies, all of which have total assets exceeding \$5 billion, and about 10 state-chartered member banks, all of which have total assets of \$5 billion or more or are controlled by a foreign banking organization of such size.

Issues for Further Consideration

Since the issuance of the Board's supplemental adjusted capital proposal on January 24, 1986, the Board has received public comments on the proposal and the concept of a risk-based capital measure in general. In its revised proposal of February 12, 1987, the Board sought comment in a number of specific areas that had not been addressed by the January 24, 1986 proposal or the comments on that proposal. In addition to the Board's request for comments in the areas described in the February 12, 1987 proposal, the Board is now seeking comments in several additional areas specifically related to the incorporation of credit risks stemming from interest rate and exchange rate contracts.

Implications for Pricing and Competition

Current capital adequacy guidelines do not take explicit account of the credit risks associated with interest rate and exchange rate contracts. Thus, this proposal would achieve one of the major objectives of the risk-based capital proposal, that is, to address explicitly the major categories of off-balance sheet exposures that have grown rapidly in recent years. However, the capital support that would be likely to be required by this proposal probably would exceed the levels of capital

currently allocated to these activities by many U.S. and U.K. banking organizations. Many market participants recognize the need to provide capital support for current exposure on these contracts and generally accept the mark-to-market value as the appropriate measure of current exposure, but views of market participants differ as to the need for, or the appropriate level of, capital support for potential future exposure. Consequently, the establishment of explicit supervisory capital requirements by U.S. banking regulators and the Bank of England could affect the pricing of interest rate and exchange rate contracts and the competitive position of U.S. and U.K. banking organizations as providers of such contracts.

In developing this proposal, the Board has been sensitive to the implications for pricing and competition. Indeed, the joint development and issuance of this proposal with the Bank of England reflects the recognition of the need to achieve more consistent capital standards for internationally active financial organizations so as to minimize competitive inequities. This proposal is intended to assure adequate capital support for the credit risks inherent in interest rate and exchange rate contracts, without unnecessarily affecting the ability of U.S. banking organizations to price such contracts competitively. The Board recognizes, however, that the determination of adequate capital involves a degree of judgment and that the impact of capital requirements on pricing and competition is difficult to determine with precision.

As noted above, consistency with the proposed U.S./U.K. risk-based capital framework clearly requires that potential future credit exposures on such contracts receive capital support. The overall framework provides little guidance, however, on how large the potential exposure estimates should be. Although the estimates incorporated in this proposal are based on an objective model of the replacement costs of the contracts, the choice of confidence limits that the estimates should satisfy is necessarily subjective.

In light of the uncertainty concerning the market impact of the proposal and the appropriate level of capital support for potential exposure, the Board is seeking specific public comment on the implications of the credit conversion factors for potential exposure under this proposal for the pricing of interest rate and exchange rate contracts and the competitive position of U.S. banking organizations as providers of such contracts. In this regard, how do

banking organizations currently factor credit risks into the pricing of interest rate and exchange rate contracts? Is primary capital explicitly allocated to support potential losses on interest rate and exchange rate contracts? If so, what methodologies are used to estimate potential credit exposures and determine the appropriate capital support? Aside from the cost of capital, what other costs do banking organizations attempt to cover in pricing interest rate and exchange rate contracts? What are the magnitudes of these other costs?

The Board intends to review carefully the proposed credit conversion factors in response to the comments received and to make every effort to avoid affecting pricing and competition unnecessarily.

Mark-to-Market Values

The proposal provides that current exposure on a contract would be measured by the mark-to-market value of the contract, that is, the value at current market interest rates and exchange rates of the net payments specified by the contract. Are there widely-accepted procedures for marking-to-market interest rate swaps, forward foreign exchange contracts, and other interest rate and exchange rate contracts? If so, what are the accepted procedures? If divergent practices exist, should the Board establish guidelines for marking-to-market interest rate and exchange rate contracts? If so, what should be the content of such guidelines?

Tradeoff Between Precision and Complexity

The proposed credit conversion factors for potential future credit exposure provide only limited recognition of differences in credit exposures across different types of interest rate and exchange rate contracts. More precise estimates of potential exposure could be achieved by establishing different credit conversion factors for different types of interest rate and exchange rate contracts, but the Board concluded that the resulting increase in precision would not justify the substantial increase in complexity that would result. Of course, this is a matter of judgment, and market participants might be willing to accept greater complexity to achieve greater precision and avoid pricing distortions. In particular, if the use of a *de minimis* exception effectively restricts the application of the proposal to large, sophisticated banking organizations, greater complexity may be acceptable.

Should the Board establish different credit conversion factors for interest rate options purchased, forward rate agreements, and single-currency interest rate swaps? Should different conversion factors be established for exchange rate options purchased, forward foreign exchange contracts, and cross-currency interest rate swaps? Should the currency or currencies to which a contract is indexed be taken into consideration?

Regulatory Flexibility Act Analysis

Implementation of this proposal would impose additional recordkeeping, computational, and reporting burdens on the banking organizations covered by the proposal. The Board believes that these burdens would not be unreasonable. The only data required to calculate the credit equivalent amount of a contract are the notional principal value, the remaining maturity, and the mark-to-market value of the contract. All of this information should be available in well-designed management information systems used to measure and control the credit risks associated with such contracts. The additional calculations that would be required are relatively straightforward; although the largest banking organizations have thousands of these contracts, the calculations could be automated. Finally, the information actually reported could be limited to as few as four items—the aggregate credit equivalent amounts to be slotted in the 10, 25, 50 and 100 percent risk categories.

List of Subjects in 12 CFR Part 225

Banks, Banking, Capital adequacy, Federal Reserve System, Holding companies, Reporting and recordkeeping requirements, State member banks.

PART 225—BANK HOLDING COMPANIES AND CHANGE IN BANK CONTROL

1. The authority citation for Part 225 continues to read as follows:

Authority: 12 U.S.C. 1817(j)(13), 1818, 1843(c)(8), 1844(b), 3106, 3108, 3907, 3909.

2. The Board's proposed rulemaking of February 12, 1987, 52 FR 5119, which proposed certain revisions to the Board's Appendix A to Regulation Y, 12 CFR 225 Appendix A, is amended by deleting references in that proposed rulemaking indicating that credit conversion factors for converting certain off-balance sheet items to on-balance sheet credit equivalent amounts were not being established at that time for interest rate swaps and other interest rate and exchange rate contracts. As set

forth below, the Board is now proposing a method for converting principal amounts of such interest rate and exchange rate contracts to on-balance sheet credit equivalent amounts. References in the Board's rulemaking of February 12, 1987 to the method by which the face amounts of off-balance sheet items are converted to credit equivalent amounts are amended to apply only to off-balance sheet items other than interest rate and exchange rate contracts. A separate method is specified below for calculation of on-balance sheet credit equivalent amounts of interest rate and exchange rate contracts. Following calculation of the credit equivalent amount of an interest rate or exchange rate contract, such amount is assigned to the appropriate risk category in accordance with the methods specified in the Board's rulemaking of February 12, 1987.

3. The Board's proposed rulemaking of February 12, 1987 is amended to add, following the text of the Board's proposed amendment to Appendix A of Regulation Y, the following language:

"Interest rate and exchange rate contracts are converted to on-balance sheet credit equivalent amounts by the methods described below, and are then incorporated into the risk-based capital measure set forth in the Board's February 12, 1987 proposal in accordance with the methods for such incorporation set forth in that proposal.

The credit equivalent amount of an interest rate or exchange rate contract is calculated as the sum of the current exposure—the mark-to-market value of the contract (positive or negative)—and an estimate of potential future exposure. If this sum is negative, the credit equivalent amount is set equal to zero. Potential future exposure is calculated by multiplying the principal amount (or notional principal amount)¹² by a specified credit conversion factor.

Specific credit conversion factors for potential exposure have not yet been determined; rather, ranges for the factors are indicated in Table 1. Credit conversion factors for potential credit exposure from interest rate contracts are zero for interest rate contracts with remaining maturity of less than one year, and one-half to one percent per complete year for interest rate contracts with remaining maturity of one year or more. Credit conversion factors for

potential credit exposure from exchange rate contracts are zero for exchange rate contracts with remaining maturity of less than three days; one to two percent for contracts with remaining maturity of from three days to less than one month; two to four percent for contracts with remaining maturity of from one month to less than three months remaining maturity; four to eight percent for contracts with remaining maturity of from three months to less than one year; and five to ten percent, plus one to two percent per complete year, for contracts with remaining maturity of one year or more.

TABLE 1.—POTENTIAL CREDIT EXPOSURE

[Proposed Conversion Factors,¹ Interest Rate and Foreign Exchange Rate Contracts (Percentage of notional principal amount)]

Remaining maturity	Interest rate ² contracts	Exchange rate ³ contracts (percent)
Less than one year:		
Less than three days	0	0
Three days to one month.....	0	1-2
One month to three months ..	0	2-4
Three months to one year.....	0	4-8
One year or longer	(⁴)	(⁵)

¹ The authorities will carefully review these proposed credit conversion factors in light of public comments on the implications for pricing and competition.

² Interest rate contracts include single-currency interest rate swaps, forward rate agreements, interest rate options purchased (except those purchased on exchanges), and similar instruments. However, no potential credit exposure would be calculated for single-currency floating/floating interest rate swaps; the credit exposure on these contracts would be evaluated solely on the basis of their mark-to-market value.

³ Exchange rate contracts include cross-currency interest rate swaps, forward foreign exchange contracts, and foreign exchange options purchased (except those purchased on exchanges), and similar instruments.

⁴ (½ to 1 pct.) per complete year remaining to maturity.

⁵ (5 to 10 pct.) + (1 to 2 pct.) per complete year remaining to maturity.

Interest rate contracts include single-currency interest rate swaps, forward rate agreements, over-the-counter interest rate options purchased, and similar instruments. Exchange rate contracts include cross-currency interest

¹² The notional principal amount, or value, is the reference amount of money used to calculate interest payment streams. Principal amounts generally are not exchanged in single-currency interest-rate swaps, but generally are exchanged in foreign exchange contracts (including cross-currency interest rate swaps).

rate swaps, forward foreign exchange contracts, over-the-counter foreign currency options purchased, and similar instruments. Interest rate and exchange rate contracts, such as futures contracts, that are traded on organized exchanges and are subject to daily marking-to-market and payment of variation margin are excluded from the risk asset ratio. Spot foreign exchange transactions also are excluded from the risk asset ratio."

Board of Governors of the Federal Reserve System, March 17, 1987.

William W. Wiles,

Secretary of the Board.

Attachment—Agreed Proposal; Credit Equivalent Amounts for Interest Rate and Foreign Exchange Rate Related Instruments

I. Background

On January 8, 1987, the Board of Governors of the Federal Reserve System, the Office of the Comptroller of the Currency, the Federal Deposit Insurance Corporation, and the Bank of England published a joint proposal on primary capital and the assessment of capital adequacy.¹ The proposal established a general framework for measuring primary capital and relating minimum capital requirements to the risk profiles of banking organizations.

A central element of this framework was a ratio of primary capital to weighted risk assets. The proposal established weights to be applied to the principal amounts of assets and selected off-balance sheet items to calculate total weighted risk assets. In the case of the off-balance sheet obligations, risk weights would be determined by a two-step process. First, the notional principal amount would be translated into a balance sheet equivalent credit exposure. Second, the resulting "credit equivalent amount" would be assigned one of five risk weights in the same way that weights are assigned to balance sheet assets, that is, based on broad distinctions among types of obligors (counterparties) and, in some cases, the remaining maturity of the obligation and qualifying collateral or guarantees.

The proposal indicated that risk weights would be applied to interest rate and foreign exchange rate related off-balance sheet instruments, but procedures for converting notional principal amounts into balance sheet equivalents had not yet been established. This paper proposes an agreed approach to calculating credit equivalent amounts for such instruments, which is designed to be consistent with the relatively simple structure of the overall risk asset framework.

II. Scope

(a) Instruments

The instruments that would be included in the computation of total weighted risk assets are the following:

- (i) Single-currency interest rate swaps;
- (ii) Forward rate agreements;
- (iii) Over-the-counter interest rate options purchased;
- (iv) Cross-currency swaps (including cross-currency interest rate swaps);
- (v) Forward foreign exchange contracts;
- (vi) Over-the-counter foreign currency options purchased; and
- (vii) Any other instruments of a similar nature that give rise to similar credit risks (e.g. forward gold contracts, which would be treated as foreign exchange instruments).

The following types of interest rate and foreign exchange rate related instruments would be excluded:

- (i) Spot foreign exchange contracts; and
- (ii) Instruments traded on futures and options exchanges that require daily marking-to-market and payment of variation margin.

(b) Banking Organizations

All banking organizations should expect that the credit risks inherent in interest rate and exchange rate instruments and the management systems used to monitor and control those risks will be reviewed and assessed as part of the process of routine supervision and examination.

The regulatory authorities in each country would, however, retain the discretion to decide whether some classes of banking organizations they supervise should be exempted from the coverage of this proposal on *de minimis* grounds.

III. Calculation of Credit Equivalent Amounts

(a) Overview

Credit equivalent amounts would be calculated for each individual contract of the types described in II(a) above. For each contract, the credit equivalent amount would be measured as the sum of (i) the mark-to-market value (positive or negative) of the contract on the reporting date (the "current exposure"); and (ii) an estimate of the potential future credit exposure over the remaining life of the instrument (the "potential exposure"). Current exposure and potential exposure are further defined and explained below.

In general, if this sum is negative, the credit equivalent amount would be set equal to zero, because the bankruptcy of a counterparty would not necessarily relieve the banking organization of its obligation to make payments stipulated by the contract, that is, the banking organization would not necessarily realize a profit. However, as described below, under certain conditions negative credit equivalent amounts could be netted against positive credit equivalent amounts to the same counterparty (See section IV(c) on Netting Arrangements).

(b) Current Exposure

The current exposure on a contract is simply the mark-to-market value on the reporting date. The mark-to-market value is the amount that the banking organization would have to pay to replace the net payment stream specified by the contract if the counterparty were to default. Negative mark-to-market values would be taken into account in the calculation of credit equivalent amounts, not because the banking organization could benefit from a default, but

because the negative mark-to-market value reduces the likelihood that credit exposure will arise over the remaining life of the contract.

The mark-to-market value would include the value of interest that has accrued but has not been received. U.S. banking organizations would measure mark-to-market values in dollars and U.K. banking organizations in sterling, regardless of the currency or currencies specified in the contract.

(c) Potential Exposure

Potential exposure represents the additional exposure that may arise over the remaining life of the contract as a result of fluctuations in interest rates or exchange rates. Such changes may increase the market value of the contract in the future and, therefore, the cost of replacing it if the counterparty subsequently defaults. Thus, the contract entails a commitment by the banking organization to assume additional credit exposure in the future. This commitment requires capital support beyond what is necessary to support the current credit exposure on the reporting date.

The potential credit exposure associated with the commitment created by a contract of the type covered by this proposal is proportional to the notional principal amount, but the ratio of potential exposure to notional principal (the "credit conversion factor" for potential exposure) varies considerably across contracts, depending on the remaining maturity of the contract and the volatility of the interest rates and/or foreign exchange rates to which the contract is indexed, among other factors.

The staffs of the Bank of England, the Office of the Comptroller of the Currency, and the Federal Reserve have developed statistical models of potential exposure for a variety of interest rate and exchange rate contracts.² On the basis of this work, the ranges of credit conversion factors set out in Table 1 are proposed. Potential exposure on a contract would be determined by multiplying the notional principal amount by the proposed conversion factor.

TABLE 1.—POTENTIAL CREDIT EXPOSURE—PROPOSED CONVERSION FACTORS¹ INTEREST RATE AND FOREIGN EXCHANGE RATE CONTRACTS

(Percentage of Notional principal amount)

Remaining maturity	Interest rate ² contracts	Exchange rate ³ contracts
Less than one year:		
Less than three days.	0.....0.	

¹ Agreed Proposal of the United States Federal Banking Supervisory Authorities and the Bank of England on Primary Capital and Capital Adequacy Assessment.

² The methodology employed is described in a technical working paper entitled "Potential Credit Exposure on Interest Rate and Foreign Exchange Related Instruments," which is available upon request.

TABLE 1.—POTENTIAL CREDIT EXPOSURE—PROPOSED CONVERSION FACTORS¹ INTEREST RATE AND FOREIGN EXCHANGE RATE CONTRACTS—Continued

[Percentage of Notional principal amount]

Remaining maturity	Interest rate ² contracts	Exchange rate ³ contracts
Three days to one month.	0	1 to 2%.
One month to three months.	0	2 to 4%.
Three months to one year.	0	4 to 8%.
One year or longer.	(½ to 1%) per complete year remaining to maturity.	(5 to 10%) + (1 to 2%) per complete year to maturity.

¹ The authorities will carefully review these proposed credit conversion factors in light of public comments on the implications for pricing and competition.

² Interest rate contracts include single-currency interest rate swaps, forward rate agreements, interest rate options purchased (except those purchased on exchanges), and similar instruments. However, no potential credit exposure would be calculated for single-currency floating/floating interest rate swaps; the credit exposure on these contracts would be evaluated solely on the basis of their mark-to-market value.

³ Exchange rate contracts include cross-currency interest rate swaps, forward foreign exchange contracts, and foreign exchange options purchased (except those purchased on exchanges), and similar instruments.

In considering appropriate conversion factors, the U.S. and U.K. authorities have been conscious of a trade-off between two important objectives. On the one hand, the authorities are determined to require adequate capital support for potential future exposure. On the other hand, the authorities are concerned that overly stringent capital requirements might unnecessarily affect the ability of U.S. and U.K. banking organizations

to price interest rate and exchange rate contracts competitively. Consequently, the authorities will carefully consider public comments on the implications of the proposal for pricing and competition before reaching final decisions on appropriate credit conversion factors.

(d) Examples

Table 2 provides examples of how credit equivalent amounts for several types of interest rate and foreign exchange rate contracts would be calculated. In each case, three pieces of information are needed to calculate the credit equivalent amount: The current mark-to-market value, the notional principal, and the remaining maturity of the contract. Once the credit equivalent amounts have been calculated, they are allocated to the appropriate risk category on the basis of the type of obligor and, in some cases, the remaining maturity of the contract or the presence of certain types of collateral or guarantees (collateral and guarantees are discussed in section IV(b) below).

TABLE 2.—CALCULATION OF CREDIT EQUIVALENT AMOUNTS, INTEREST RATE AND FOREIGN EXCHANGE RATE RELATED TRANSACTIONS

Type of contract (remaining maturity)	Notional principal (dollars)	×	Potential exposure conversion factor ¹	=	Potential exposure (dollars)	+	Current exposure (dollars) ²	=	Credit equivalent (dollars)
	(1)		(2)		(3)		(4)		(5)
(1) 120-day forward foreign exchange	5,000,000		0.04		200,000		100,000		300,000
(2) 120-day forward foreign exchange	6,000,000		.04		240,000		-120,000		120,000
(3) 3-year single-currency fixed/floating interest rate swap	10,000,000		.015		150,000		200,000		350,000
(4) 3-year single-currency fixed/floating interest rate swap	10,000,000		.015		150,000		-250,000		0
(5) 7-year cross-currency floating/floating interest rate swap	20,000,000		.12		2,400,000		-1,300,000		1,100,000
Total	51,000,000								1,870,000

¹ For illustrative purposes only, these examples use credit conversion factors at the lower end of the ranges shown in Table 1.

² These numbers are purely illustrative.

IV. Additional Issues

(a) Accounting

In certain cases, credit exposures arising from the off-balance sheet instruments covered by this proposal may already be reflected, in part, on the balance sheet. To avoid double counting such exposures in the assessment of capital adequacy and, perhaps, assigning inappropriate risk weights, counterparty credit exposures arising from the types of instruments covered by this proposal may need to be excluded from balance sheet assets in calculating banking organizations' total weighted risk assets and risk asset ratios. The supervisory authorities will address this issue in designing reporting

systems. The following examples have been identified.

U.S. banking organizations generally record current counterparty credit exposures (mark-to-market values) on forward foreign exchange contracts on the balance sheet. In addition, some U.S. banking organizations also include certain counterparty credit exposures that arise from interest rate swaps and options purchased on the balance sheet. Similarly, generally accepted accounting practice in the United Kingdom is to mark to market unmatured forward foreign exchange contracts and other off-balance sheet foreign exchange and interest rate contracts and record these amounts on the balance sheet, typically as either sundry debtors or sundry creditors.

(b) Collateral and Guarantees

The existence of collateral and guarantees would not be recognized in calculating credit equivalent amounts. In some cases, however, it would be reflected in the assignment of risk weights, just as in the case of balance sheet assets. Specifically, the joint U.S./U.K. agreement on the assessment of capital adequacy explicitly recognizes three types of collateral: Domestic national government debt, cash on deposit in the lending institution, and (for the United States only) debt of U.S. government agencies and U.S. government-sponsored agencies. In this context, the collateral would need to have value equal to the full credit equivalent amount—current plus potential exposure. The

only guarantees recognized are those extended by the domestic national government or (for the United States only) by domestic national government agencies. Thus, guarantees in the form of standby letters of credit or surety bonds issued by insurance companies would *not* affect the assignment of risk weights to any credit exposures, including those covered by this proposal.

(c) Netting Arrangements

Market participants have been developing arrangements under which multiple interest rate or foreign exchange rate contracts with the same counterparty could be consolidated within a single master agreement and translated into a single contract with the counterparty. Such arrangements would require amounts receivable from and payable to a counterparty to be netted, resulting in a single stream of payments between counterparties. The U.S. regulatory authorities and the Bank of England recognize that such arrangements may in certain circumstances reduce credit risk and wish to encourage their further development and implementation. If market participants were to develop such standardized master agreements with general, market-wide application, and if there were unambiguous legal opinions that such agreements reduce credit risk and would be recognized by the relevant judicial authorities, the proposal might be modified to treat multiple contracts with a single counterparty that were created within the terms of such a master agreement as a single net contract.

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