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(ii) The credit risk capital charge for the credit derivative contract calculated pursuant to paragraph (d) of this section is still applied.

(4) *Capital charge reduction in certain other cases.* The credit risk capital charge for an asset hedged with a credit derivative in accordance with paragraph (i)(1) of this section shall equal the sum of the credit risk capital charges for the hedged and unhedged portion of the asset provided that:

(i) The remaining maturity for the credit derivative is less than the remaining maturity for the hedged asset and either:

(A) The asset referenced in the credit derivative is identical to the hedged asset; or

(B) The asset referenced in the credit derivative is different from the hedged asset, but only if the asset referenced in the credit derivative and the hedged asset have been issued by the same obligor, the asset referenced in the credit derivative ranks *pari passu* to or more junior than the hedged asset and has the same maturity as the hedged asset, and cross-default clauses apply; and

(ii) The credit risk capital charge for the unhedged portion of the asset equals:

(A) The credit risk capital charge for the hedged asset, calculated as the book value of the hedged asset multiplied by the hedged asset's credit risk percentage requirement assigned pursuant to paragraph (e)(2) of this section where the appropriate credit rating is that for the hedged asset and the appropriate maturity is the remaining maturity of the hedged asset; minus

(B) The credit risk capital charge for the hedged asset, calculated as the book value of the hedged asset multiplied by the hedged asset's credit risk percentage requirement assigned pursuant to paragraph (e)(2) of this section where the appropriate credit rating is that for the hedged asset but the appropriate maturity is deemed to be the remaining maturity of the credit derivative; and

(iii) The credit risk capital charge for the hedged portion of the asset is equal to the credit risk capital charge for the credit derivative, calculated in accordance with paragraph (d) of this section.

(j) *Zero Credit risk capital charge for certain derivative contracts.* The credit risk capital charge for the following derivative contracts shall be zero:

(1) A foreign exchange rate contract with an original maturity of 14 calendar days or less (gold contracts do not qualify for this exception); and

(2) A derivative contract that is traded on an organized exchange requiring the daily payment of any variations in the market value of the contract.

(k) *Date of calculations.* Unless otherwise directed by the Finance Board, each Bank shall perform all calculations required by this section using the assets, off-balance sheet items, and derivative contracts held by the Bank, and, if applicable, the values or credit ratings of such assets, items, or derivatives as of the close of business of the last business day of the month for which the credit risk capital charge is being calculated.

[66 FR 8310, Jan. 30, 2001, as amended at 66 FR 54108, Oct. 26, 2001]

§932.5 Market risk capital requirement.

(a) *General requirement.* (1) Each Bank's market risk capital requirement shall equal the sum of:

(i) The market value of the Bank's portfolio at risk from movements in interest rates, foreign exchange rates, commodity prices, and equity prices that could occur during periods of market stress, where the market value of the Bank's portfolio at risk is determined using an internal market risk model that fulfills the requirements of paragraph (b) of this section and that has been approved by the Finance Board; and

(ii) The amount, if any, by which the Bank's current market value of total capital is less than 85 percent of the Bank's book value of total capital, where:

(A) The current market value of the total capital is calculated by the Bank using the internal market risk model approved by the Finance Board under paragraph (d) of this section; and

(B) The book value of total capital is the same as the amount of total capital reported by the Bank to the Finance Board under §932.7 of this part.

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(2) A Bank may substitute an internal cash flow model to derive a market risk capital requirement in place of that calculated using an internal market risk model under paragraph (a)(1) of this section, provided that:

(i) The Bank obtains Finance Board approval of the internal cash flow model and of the assumptions to be applied to the model; and

(ii) The Bank demonstrates to the Finance Board that the internal cash flow model subjects the Bank's assets and liabilities, off-balance sheet items and derivative contracts, including related options, to a comparable degree of stress for such factors as will be required for an internal market risk model.

(b) *Measurement of market value at risk under a Bank's internal market risk model.* (1) Except as provided under paragraph (a)(2) of this section, each Bank shall use an internal market risk model that estimates the market value of the Bank's assets and liabilities, off-balance sheet items, and derivative contracts, including any related options, and measures the market value of the Bank's portfolio at risk of its assets and liabilities, off-balance sheet items, and derivative contracts, including related options, from all sources of the Bank's market risks, except that the Bank's model need only incorporate those risks that are material.

(2) The Bank's internal market risk model may use any generally accepted measurement technique, such as variance-covariance models, historical simulations, or Monte Carlo simulations, for estimating the market value of the Bank's portfolio at risk, provided that any measurement technique used must cover the Bank's material risks.

(3) The measures of the market value of the Bank's portfolio at risk shall include the risks arising from the non-linear price characteristics of options and the sensitivity of the market value of options to changes in the volatility of the options' underlying rates or prices.

(4) The Bank's internal market risk model shall use interest rate and market price scenarios for estimating the market value of the Bank's portfolio at risk, but at a minimum:

(i) The Bank's internal market risk model shall provide an estimate of the market value of the Bank's portfolio at risk such that the probability of a loss greater than that estimated shall be no more than one percent;

(ii) The Bank's internal market risk model shall incorporate scenarios that reflect changes in interest rates, interest rate volatility, and shape of the yield curve, and changes in market prices, equivalent to those that have been observed over 120-business day periods of market stress. For interest rates, the relevant historical observations should be drawn from the period that starts at the end of the previous month and goes back to the beginning of 1978;

(iii) The total number of, and specific historical observations identified by the Bank as, stress scenarios shall be:

(A) Satisfactory to the Finance Board;

(B) Representative of the periods of the greatest potential market stress given the Bank's portfolio, and

(C) Comprehensive given the modeling capabilities available to the Bank; and

(iv) The measure of the market value of the Bank's portfolio at risk may incorporate empirical correlations among interest rates.

(5) For any consolidated obligations denominated in a currency other than U.S. Dollars or linked to equity or commodity prices, each Bank shall, in addition to fulfilling the criteria of paragraph (b)(4) of this section, calculate an estimate of the market value of its portfolio at risk due to the material foreign exchange, equity price or commodity price risk, such that, at a minimum:

(i) The probability of a loss greater than that estimated shall not exceed one percent;

(ii) The scenarios reflect changes in foreign exchange, equity, or commodity market prices that have been observed over 120-business day periods of market stress, as determined using historical data that is from an appropriate period; and

(iii) The total number of, and specific historical observations identified by the Bank as, stress scenarios shall be:

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(A) Satisfactory to the Finance Board;

(B) Representative of the periods of greatest potential stress given the Bank's portfolio; and

(C) Comprehensive given the modeling capabilities available to the Bank; and

(iv) The measure of the market value of the Bank's portfolio at risk may incorporate empirical correlations within or among foreign exchange rates, equity prices, or commodity prices.

(c) *Independent validation of Bank internal market risk model or internal cash flow model.* (1) Each Bank shall conduct an independent validation of its internal market risk model or internal cash flow model within the Bank that is carried out by personnel not reporting to the business line responsible for conducting business transactions for the Bank. Alternatively, the Bank may obtain independent validation by an outside party qualified to make such determinations. Validations shall be done on an annual basis, or more frequently as required by the Finance Board.

(2) The results of such independent validations shall be reviewed by the Bank's board of directors and provided promptly to the Finance Board.

(d) *Finance Board approval of Bank internal market risk model or internal cash flow model.* Each Bank shall obtain Finance Board approval of an internal market risk model or an internal cash flow model, including subsequent material adjustments to the model made by the Bank, prior to the use of any model. Each Bank shall make such adjustments to its model as may be directed by the Finance Board.

(e) *Date of calculations.* Unless otherwise directed by the Finance Board, each Bank shall perform any calculations or estimates required under this section using the assets and liabilities, off-balance sheet items, and derivative contracts held by the Bank, and if applicable, the values of any such holdings, as of the close of business of the last business day of the month for which the market risk capital requirement is being calculated.

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§ 932.6 Operations risk capital requirement.

(a) *General requirement.* Except as authorized under paragraph (b) of this section, each Bank's operations risk capital requirement shall at all times equal 30 percent of the sum of the Bank's credit risk capital requirement and market risk capital requirement.

(b) *Alternative requirements.* With the approval of the Finance Board, each Bank may have an operations risk capital requirement equal to less than 30 percent but no less than 10 percent of the sum of the Bank's credit risk capital requirement and market risk capital requirement if:

(1) The Bank provides an alternative methodology for assessing and quantifying an operations risk capital requirement; or

(2) The Bank obtains insurance to cover operations risk from an insurer rated at least the second highest investment grade credit rating by an NRSRO.

§ 932.7 Reporting requirements.

Each Bank shall report to the Finance Board by the 15th business day of each month its risk-based capital requirement by component amounts, and its actual total capital amount and permanent capital amount, calculated as of the close of business of the last business day of the preceding month, or more frequently, as may be required by the Finance Board.

§ 932.8 Minimum liquidity requirements.

In addition to meeting the deposit liquidity requirements contained in § 965.3 of this chapter, each Bank shall hold contingency liquidity in an amount sufficient to enable the Bank to meet its liquidity needs, which shall, at a minimum, cover five business days of inability to access the consolidated obligation debt markets. An asset that has been pledged under a repurchase agreement cannot be used to satisfy minimum liquidity requirements.