

in three-month Treasury bills carries a risk weight of zero, the balance sheet underlying the 2003 PSAF shows that the priced services risk-based capital ratio is nearly 33 percent for both measures.<sup>18</sup> A change in investment strategy that includes investments with greater risk requires establishing a minimum risk-based total capital ratio within which to make investment decisions. As a result, the Board proposes to establish a minimum risk-adjusted total capital ratio that maintains the ratio of total capital to risk-adjusted assets at a level equal to or greater than that maintained by the fifty largest BHCs. Between 1997 and 2002 the average risk-adjusted total capital ratio for these institutions has remained near 12 percent. Because only tangible equity is imputed to priced services, the target ratio for the priced-services' risk-adjusted assets to tier one capital would be 12 percent, well above the average ratio of eight percent maintained by the entities in the BHC model. The Board requests comment on whether this target ratio adequately limits imputed investment credit risk. The Board also requests comment on whether the target ratio should be 10 percent, the minimum required by the FDIC for a well capitalized institution.

### C. Implementation Methods

The Board requests comment on alternative methods to impute clearing balance income based on the proposed conceptual framework. The first method involves constructing a specific portfolio of hypothetical investments, tracking its yield, and ascribing the income to the priced-services activities. The second method imputes an investment yield expressed as a constant spread over the cost of clearing balances, without specifying an underlying portfolio.

#### 1. Constructing a Hypothetical Portfolio

To construct a hypothetical portfolio, the Reserve Banks would select from the investment options described above that are available to correspondent banks.

Selecting the investments and the proportions of the clearing balances assigned to each investment requires an allocation method that avoids any projections of future economic conditions or interest rate environments to address concerns that such forecasts would be viewed as a market signal of future monetary policy actions. The Board proposes an allocation method that optimizes the portfolio yield within the current and proposed risk management framework criteria. This

allocation would be based on the historical performance of the available investment instruments and applied to the upcoming year.

To avoid the administrative complexities of incorporating realized capital gains and losses on an imaginary portfolio in the imputed investment results, any investment with a fixed term, such as corporate bonds, would be held to maturity.<sup>19</sup> In addition, the Board proposes that adjustments to the portfolio allocation maintain the appropriate investment balance to optimize return; however, the amount invested in any one instrument could only decrease by the amount of the investment maturing that period, or increase by the amount of additional balances available for investment.<sup>20</sup>

Hypothetical Portfolio Example. The data in table 2 illustrate the results of two hypothetical investment portfolios, both of which meet the proposed risk-management framework but have different return and volatility profiles.<sup>21</sup> In both cases, the 1993 portfolios were selected from BHC-allowable investments to maximize return using actual yield data from 1983 through 1992. The portfolios were rebalanced each subsequent year to optimize the return based on the yield data from the previous ten years.<sup>22</sup> That is, for 2002 the portfolio yield reflects the actual 2002 yields of assets chosen based on each investment's performance from 1992 through 2001. Many variations on the frequency of portfolio adjustment and the length of the period from which to base yield data used in selecting the portfolio are possible and finance theory does not provide clear guidance on the optimal approach. The rolling ten-year portfolios performed as well as or better than other alternatives examined. For simplicity and comparability, all variables, other than the portfolio mix,

yield, and federal funds rates, are held constant in the models for all years.<sup>23</sup>

TABLE 2.—10 YEAR YIELD (1993–2002)

	A	B
Average spread over federal funds .....	54	35
Standard deviation .....	98	29
Average NICB (millions) ...	\$65.0	\$48.3
NICB standard deviation (millions) .....	\$87.9	\$22.2

Example A shows the results of selecting an appropriate portfolio within the risk parameters using ten-year historical yield data. The investments in portfolio A were chosen to optimize the return without placing any constraints on volatility. The imputed return on the portfolio yields a spread over federal funds of 54 basis points. The composition of portfolio A varies over the ten year period, based on the optimum investment mix using the previous ten years' yield data. Over this time, it maintains a fairly consistent asset mix composed of primarily federal funds, Government National Mortgage Association (GNMA) mutual funds, money market mutual funds, and commercial paper. Hypothetical portfolio A, however, has a standard deviation of 98 basis points. The standard deviation for hypothetical portfolio A demonstrates greater volatility than the Reserve Banks experience with the current three-month Treasury-bill investment, which has a standard deviation of 28 basis points. Because the standard deviation for portfolio A, driven by changes in the yield, equates to approximately \$88 million in NICB, variability in the NICB could range from net income of approximately \$153 million to a net cost of approximately \$23 million in two-thirds of the years in which the selected portfolio is held.

Example B shows the results of selecting an appropriate portfolio based on the same criteria used for portfolio A but constraining the volatility in the model to approximately what is currently experienced with Treasury bill investments. The imputed return is an average yield spread over federal funds of 35 basis points, and has approximately the same volatility as currently experienced with three-month Treasury-bill investments. Over the ten-year period, the portfolio consists primarily of federal funds, commercial paper, money market mutual funds, and

<sup>19</sup> This results in a ladder approach to determining the average yield. For an investment in five-year corporate bonds, for example, the average yield would incorporate the yield from bonds purchased in increments over the preceding five years.

<sup>20</sup> To facilitate public verification of imputed portfolio income, the Board would publish the portfolio components and imputed investment income on its public website.

<sup>21</sup> For Tables 2 and 3, the following simplifying assumptions apply: (1) All clearing balance amounts are held constant throughout the analysis period, (2) total clearing balances are \$10.5 billion, (3) investable balances are \$9 billion, and (4) balances eligible for earnings credits are \$8.6 billion.

<sup>22</sup> A ten-year period was selected for illustration purposes because the data are available and the period includes a variety of interest rate environments.

<sup>23</sup> For these reasons, the model results vary from the actual results experienced by Federal Reserve priced services.