

New Capital Rule Signals Supervisory Shift

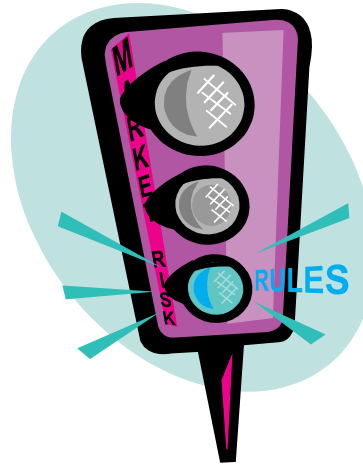
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THE INCREASED PROMINENCE of trading activities at many large banking companies has brought to the forefront the issue of bank exposure to market risk—the risk of loss from adverse movements in financial market prices, such as interest rates, exchange rates, commodity prices and equity prices. Consequently, banks are seeking ways to measure and manage the associated risks.

At the same time, bank supervisors in the United States and abroad are working to ensure that banks have established adequate internal controls and capital resources to address these risks. Chief among the steps taken by supervisors to date is the development of formal capital requirements for the market-risk exposures arising from banks' trading activities. The market-risk rule, which took effect in January 1998, is drawing considerable attention because it

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differs significantly in approach from the risk-based capital rules for credit risk. (Banks using the market-risk capital requirements to evaluate their trading-book positions are exempt from the original risk-based capital charges for credit-risk exposure on many of these positions.)

The market-risk standards assign a quantitative minimum capital charge to a bank based on the results from the bank's internal risk-measurement model. In addition, the new rule establishes a set of qualitative standards for measuring and managing market risk as a way of encouraging banks to incorporate the basic principles of sound risk management into their capital practices.

Banks face market risk from the full range of their business activities, but the capital standards focus largely on the exposure arising from the banks'

trading business. This focus reflects the idea that market risk is both a major component of trading-activity risks and a risk more visible and easily measured within the trading portfolio, where positions are marked-to-market daily.

The only U.S. banks and bank-holding companies subject to the market-risk requirements are those with significant amounts of trading activity, namely those with trading-account positions (assets plus liabilities) exceeding either \$1 billion or 10 percent of total assets. As of December 1997, 19 banks and 20 bank-holding companies met this criteria. The actual institutions subject to the capital charge may differ from this set because bank supervisors can opt to exclude or include companies for safety and soundness reasons.

The new rule is likely to only modestly impact the level of required capital for these institutions. Although data are scarce, a rough estimate suggests capital charges will increase in the range of 1.7 percent to 7.5 percent, based on information contained in bank-holding companies' annual reports. However, the fact that trading-account business is no longer subject to the original risk-based charges will offset those increases, perhaps significantly. In some

cases, the net impact of the market-risk capital charge could be a decline in the overall level of required capital.

Sorting Out the Risks

The quantitative capital requirements distinguish between general market risk and specific market risk. General market risk refers to changes in the general level of financial-market prices. Specific market risk focuses on losses from individual portfolio holdings, such as those incurred when securities held by a firm lose value after the security issuer’s credit quality is downgraded.

General market risk is capitalized based on the output of a bank’s internal value-at-risk model, calibrated to a common supervisory standard. A value-at-risk model produces an estimate of the maximum loss that a portfolio might experience over a given period of time for a certain level of statistical confidence. The maximum loss depends on the behavior—inferred from past experience—of underlying market prices, such as interest rates and exchange rates, that affect the portfolio (see “Enough Is Enough: A Timely Look at Financial-Soundness Measures,” page 28).

The parameters used by institutions to generate their own value-at-risk calculations tend to differ, making direct comparisons of risk exposures across institutions difficult. A sample of

EXHIBIT 1:
1996 Value-at-Risk Estimates for Selected U.S. Bank-Holding Companies

Company	Confidence Level	Average Daily Value-at-Risk Capital (\$ millions)
Bank America	97.5%	\$42.0
Banker’s Trust	99.0	39.0
Chase Manhattan	95.0	24.0
Citicorp	97.7	45.0
J.P. Morgan	95.0	21.0

Note: Value-at-risk parameters are drawn from the companies’ 1996 annual reports. Citicorp reported a confidence level of two standard deviations, which is equivalent to the 97.7th percentile.
Source: Federal Reserve Bank of New York

The banking industry has taken several different approaches to making value-at-risk calculations, particularly around the confidence interval chosen, as this sample of risk estimates indicates. To comply with the new market-risk rule, however, institutions must standardize their value-at-risk calculations to a 99-percent confidence level and a 10-day observation period.

value-at-risk estimates reported by large bank-holding companies (*Exhibit 1*) illustrates some of the divergence with respect to the confidence interval selected. The market-risk rule requires institutions to make value-at-risk calculations conform to a 99-percent confidence level and standardizes the holding period at 10 days.

Under the market-risk rule, a bank must recalculate its value-at-risk capital each day using at least one year of historical price data. The capital charge for general market risk is equal to the average of value-at-risk estimates over the previous 60 trading days (approximately one-quarter of the trading year) multiplied by a scaling factor,

generally equal to three. The aim of the scaling factor is largely to ensure that banks hold sufficient capital to withstand prolonged or severe adverse movements in market rates and prices that the historical data may not capture.

To account for market risks unique to each company, the specific risk associated with the debt and equity positions of a bank’s trading portfolio carry an additional capital charge. If a bank’s internal model does not incorporate specific risk factors, then a set of standardized charges is added to the capital required for general market risk. Model-based specific risk estimates are subject to a scaling factor of four until market practice evolves and banks can

demonstrate that they adequately address the specific perils of **idiosyncratic risk** and event risk.

To guard against bank models that systematically underestimate risk exposures, the market-risk rule provides for **backtesting** to ensure that a higher scaling factor is applied in such cases. The backtesting process confirms the accuracy of a bank's model by comparing its value-at-risk estimates with the bank's subsequent trading outcomes. The procedure involves a statistical test based on the number of times during the past year that one-day trading losses exceeded one-day, 99th-percentile value-at-risk estimates. For instance, an accurate model will produce value-at-risk estimates that, on average, underestimate actual trading losses only 1 percent of the time. Banks experiencing five or more episodes of higher-than-predicted losses during a year must switch to a higher scaling factor.

Constrained by certain practicalities, bank regulators rely on a one-day holding period for backtesting purposes instead of the 10-day time frame used to calculate banks' value-at-risk estimates. Basing backtesting estimates on a 10-day standard requires a considerable amount of historical data to generate a series of independent 10-day profit-and-loss figures that would prove statistically powerful enough to distinguish between accurate and inaccurate value-at-

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risk models. A year's worth of 10-day observations produces only 26 data points, whereas a year's worth of one-day observations provides more than 250 points.

Debating the Merits

At least two aspects of the market-risk calculation have created some controversy. First, the 10-day holding period has been criticized as too long and, therefore, overly conservative, because many positions in a bank's trading portfolio could be liquidated in fewer than 10 days. However, the 10-day standard was chosen to address the risks posed by **options** and other positions with nonlinear price characteristics. The longer holding period allows for larger market-price movements that can reveal risk exposures embedded in options. This is because the

price sensitivity of options does not move proportionately with changes in underlying market prices.

Second, the scaling factor has come under criticism. Some have argued that if a bank can demonstrate convincingly that its model is accurate, then the resulting unscaled value-at-risk estimate should suffice. However, the purpose of the scaling factor is to produce the degree of capital coverage for market risk sufficient to reduce the chance of trading-book losses capable of undermining the bank's solvency. By itself, even a perfectly measured 10-day, 99th percentile value-at-risk figure may not provide enough coverage to serve as a prudent capital standard. An unscaled value-at-risk standard implies that a bank is expected to incur trading-portfolio losses that exceed its required capital in one 10-day period out of 100, or about once every four years. An environment in which banks deplete their market-risk capital so frequently could be highly unstable, particularly if such events happen to many banks at the same time (a possibility if banks adopt similar trading strategies).

Unscaled value-at-risk estimates pose another problem when they are based only on recent historical market movements. The data may not incorporate the possibility of severe market events. Actual observations of extreme events

are few, greatly complicating the task of verifying that any model is accurately measuring the probability of these occurrences. By contrast, the scaling factor is simple, is easy to implement and provides a cushion against severe market events. It does not require banks to make—or supervisors to evaluate—complex calculations intended to model rare or as yet unobserved events such as **market breaks** or **unanticipated regime shifts**.

On the Quality Front

As the first regulatory capital requirement to incorporate qualitative standards in a significant way, the market-risk rule addresses quality-related issues on several fronts. Specifically, banks are required to:

- demonstrate that their risk-measurement systems are conceptually sound;
- incorporate the risk estimates modeled internally as a central tenet of the institution's risk-management system. For example, a bank could rely on value-at-risk reports generated daily by the model to assess current strategy or to set its internal risk-limit structure;
- conduct periodic **stress tests** of the institution's portfolio to gauge the impact of extreme market conditions;
- open the institution's risk-management and risk-measurement processes to review by internal or external auditors.

Shifting to a New Paradigm

From a quantitative standpoint, the replacement of broad, uniform regulatory formulas with self-generated but independently validated assessments of risk should produce regulatory capital charges that align more closely with banks' actual risk exposures. Achieving this closer alignment is important not only for determining the risks an institution faces at a particular moment in time, but also for tracing the evolution of risk over time. By standardizing parameters for internal value-at-risk estimates, the new rule also will improve the consistency of risk comparisons over time and across institutions, particularly if banks choose to make the results of their backtests publicly available to the financial markets.

By holding the banks to qualitative as well as quantitative standards, the new regulatory framework is consistent with an ongoing shift in supervisory interest from risk measurement to a more comprehensive evaluation of banks' overall risk management. **SMM**