

# Economic Review



FEDERAL RESERVE BANK OF KANSAS CITY

May 1985

Interest Rate Risk Management  
At Tenth District Banks

The Role of Extended Credit  
In Federal Reserve Discount Policy

Supervision of Bank Foreign Lending

**May 1985, Vol. 70, No. 5**

The *Economic Review* (ISSN0161-2387) is published ten times a year by the Federal Reserve Bank of Kansas City. Subscriptions and additional copies are available without charge. Send requests to the address below. If any material is reproduced from this publication, please credit the source. Second class postage paid at Kansas City, Missouri. Postmaster: send address changes to *Economic Review*, Research Division, Federal Reserve Bank of Kansas City, 925 Grand, Kansas City, Missouri, 64198.

# Economic Review



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## Interest Rate Risk Management At Tenth District Banks 3

*By Karlyn Mitchell*

Small banks in the Tenth District are about as well hedged against rate risk as larger district banks. They have hedged mostly by offering short-term and floating rate loans. As financial markets become more competitive, they may begin to use additional techniques.

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Borrowing from the Federal Reserve has increased in recent years under the seasonal borrowing privilege and other extended credit programs. This borrowing helps prevent liquidity problems of individual institutions from weakening the financial structure. The Federal Reserve uses open market operations to counter any unwarranted impact of such borrowing on overall monetary and credit conditions.

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A more comprehensive system for supervising foreign lending of U.S. banks has been put in place since passage of the International Lending Supervision Act in 1983.



# Interest Rate Risk Management At Tenth District Banks

*By Karlyn Mitchell*

The higher level and volatility of interest rates since the mid-1970s have substantially complicated the management of financial portfolios for investors, borrowers, and institutions. Commercial banks have been particularly affected because financial intermediation—borrowing from savers and lending to borrowers—is still the main source of their profits. Higher interest rate levels increase the potential loss from poor portfolio management, while greater interest volatility increases the effort needed for successful management. Greater interest rate risk is largely responsible for the emergence of asset-liability management at commercial banks, a management strategy focused on controlling interest rate risk.

This article finds that most banks in the Tenth Federal Reserve District have been slow to adopt techniques for controlling interest rate risk. As a result, district banks remained

exposed to interest rate risk during the 1976-83 period, although their exposure was significantly reduced by the end of 1983. It is argued that bankers should strive to broaden their range of risk management techniques to be viable in the more competitive environment of the future. The article first discusses the problems interest rate risk pose for bank portfolio management and gives an overview of techniques that have been developed for hedging against interest rate risk. The article then examines the experience of Tenth District banks in applying these techniques.

## **Asset-liability management and interest rate risk**

Asset-liability management was developed in the mid-1970s as a means of maintaining bank performance in the face of high and volatile interest rates. The objective of asset-liability management—like the objective of asset management, which was in vogue during the 1940s and 1950s, and liability management, which was the fashion in the 1960s—is to

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maximize the wealth of bank shareholders while keeping risk at a level acceptable to shareholders. Operationally, asset-liability management reaches this objective by coordinating the functions that affect a bank's interest-bearing assets and liabilities, including liquidity management, investment management, loan management, and liability management. These functions need to be coordinated because high and fluctuating interest rates can drastically affect the net interest income earned from interest-bearing instruments, as well as the net value of the instruments.

Three steps are involved in the successful implementation of an asset-liability management program.<sup>1</sup> Bankers must first choose the length of the planning horizon. Then, they develop estimates of return and risk that might result from pursuing alternative programs during the planning horizon. Finally, they must choose the program most consistent with maximizing shareholder wealth at an acceptable level of risk.

The greatest pitfall to implementing asset-liability management lies in forecasting risks from alternative programs. Of these risks, interest rate risk is the most difficult to forecast.<sup>2</sup> Interest rate risk has two components. The first, referred to as income risk, is the risk of loss in net interest income from movements in borrowing and lending rates not being perfectly synchronized. The second, called investment risk, is the risk of loss in net worth

<sup>1</sup> For an overview discussion of asset-liability management, see John Haslem, "Bank Portfolio Management," *The Bankers' Magazine*, May-June 1982, pp. 92-97. For a more detailed discussion based on a study of 60 U.S. commercial banks, see Barrett Binder and Thomas Lindquist, *Asset-Liability Handbook*, Bank Administration Institute, Rolling Meadows, Illinois, 1982.

<sup>2</sup> Besides interest rate risk, bankers must consider credit risk and liquidity risk. Credit risk is the risk that a decline in the credit rating of borrowers will cause the quality of earning assets to decline. Liquidity risk is the risk that liquidation of assets to meet unexpected cash needs will result in a loss.

due to unexpected interest rate changes. Net worth is the difference in the market values of assets and nonequity liabilities.

An example helps distinguish between the two components of interest rate risk. Suppose a bank holds a single asset—a \$100, 10-percent three-year loan—financed primarily by a single liability—a \$90, 8-percent time deposit that matures in a year, at which time it will be rolled over at the then-current market rate. The rest of the loan is financed by bank stockholders, who have invested \$10. The 2-percentage point spread between lending and borrowing rates represents the cost of making the loan plus a return to risk bearing by stockholders. Case A in Table 1 shows the bank's income statement and balance sheet in current market terms at the end of the next two years. Interest rates are assumed to remain constant. In both years, the bank earns a net interest income of \$2.80 from the difference between the lending and borrowing rates. The bank's net worth remains constant.<sup>3</sup>

Case B illustrates the effect of an unexpected increase in interest rates sometime during the first year. Suppose lending and borrowing rates both increase by 1 1/2 percentage points, to 11 1/2 percent and 9 1/2 percent, respectively. Although the book values of the loan and time deposit remain unchanged, the

<sup>3</sup> The market value of the loan remains constant and equal to its maturity value because interest rates remain constant. After paying \$10 in interest at the end of the first year, the loan still promises to pay \$10 in interest at the end of the second year and \$110 in principal and interest at the end of the third year. The market value of the loan is \$100 at the end of the first year because, by the present value formula,

$$\$100 = \frac{\$10}{(1.1)} + \frac{\$110}{(1.1)^2}$$

The market value of the loan is \$100 at the end of the second year because

$$\$100 = \frac{\$110}{(1.1)}$$

**TABLE 1**  
**Year-end balance sheets and income statements**  
**for a hypothetical bank**

	<u>End of Year 1</u>	<u>End of Year 2</u>
<b>Case A</b>		
<b><u>Balance Sheet</u></b>		
Asset	\$100.00	\$100.00
Liability	90.00	90.00
Net worth	10.00	10.00
<b><u>Income Statement</u></b>		
Income	\$ 10.00	\$ 10.00
Expenses	<u>7.20</u>	<u>7.20</u>
Net interest income	2.80	2.80
<b>Case B</b>		
<b><u>Balance Sheet</u></b>		
Asset	\$ 97.45	\$ 98.65
Liability	90.00	90.00
Net worth	7.45	8.65
<b><u>Income Statement</u></b>		
Income	\$ 10.00	\$ 10.00
Expenses	<u>7.20</u>	<u>8.55</u>
Net interest income	2.80	1.45

market prices of those instruments fall so they can earn the new higher rates of return. The time deposit matures at the end of the first year, paying its face value of \$90, and a new, \$90, one-year deposit is issued paying 9 1/2 percent. Net interest income for the first year is the same as in Case A, because the lending and borrowing rates were fixed for the year. But net worth is lower, reflecting bank stockholders being part-owners of a less valuable asset. At the end of the second year, both net worth and net interest income are lower than in Case A.<sup>4</sup>

The effect of the unexpected interest rate increase on net worth and net interest income correspond to investment risk and income risk,

<sup>4</sup> The market value of the loan falls because it earns a lower rate of interest than the new higher loan rate. The market value of the loan is \$97.45 at the end of the first year because

$$\$97.45 = \frac{\$10}{(1.115)} + \frac{\$110}{(1.115)^2}$$

The market value of the loan is \$98.65 at the end of the second year because

$$\$98.65 = \frac{\$110}{(1.115)}$$

respectively. In the example, the bank's choice of assets and liabilities left stockholders exposed to both components of interest rate risk. A careful strategy of asset-liability management can reduce both components of risk.

To facilitate control of interest rate risk, measures have been developed to gauge a bank's exposure to interest rate risk. The two most popular measures are "gap" and "duration gap." Asset-liability management strategies have been developed to use these measures in controlling interest rate risk.

### *Gap management*

Gap management is used to insulate net interest income from income risk.<sup>5</sup> This technique uses gap to measure the exposure of net interest income to fluctuations in interest rates. Gap is defined in terms of rate-sensitive assets (RSA) and rate-sensitive liabilities (RSL), which are assets and liabilities that either mature or are repriced within the planning horizon used in asset-liability management. More precisely, gap is defined as rate-sensitive assets less rate-sensitive liabilities, as shown in the following equation.

$$(1) \text{ Gap} = \text{RSA} - \text{RSL}$$

Net interest income is fully insulated from interest rate risk when gap is set equal to zero. Suppose interest rates increase shortly after the start of a bank's one-month planning horizon. As risk-sensitive liabilities mature or are repriced, they are replaced with liabilities that carry the new, higher rates, thus increasing the bank's interest expenses and reducing net

<sup>5</sup> For a discussion of gap management, see Alden L. Toevs, "Gap Management: Managing Interest Rate Risk in Banks and Thrifts," Federal Reserve Bank of San Francisco *Economic Review*, Spring 1983.

interest income. But as risk-sensitive assets mature or are repriced, they are replaced with assets that earn the new higher rates, thus increasing the bank's interest income. With an initial gap of zero, the income-reducing effects approximately offset the income-increasing effects, leaving net interest income essentially unchanged. Net interest income is also insulated if interest rates fall unexpectedly after the start of the planning horizon, because the decline in interest expenses approximately offsets the decline in interest income.<sup>6</sup>

Gap management is subject to two major criticisms. One criticism is that managing gap as defined by Equation 1 is a crude means of hedging against interest rate risk. As all interest rates do not move together, even with a zero-gap position, changes in interest income and expenses may not be the same. Unequal changes may also result from assets and liabilities being repriced at different times within the planning horizon. The longer the planning horizon, the greater is the probability that unequal changes will occur. But with a shorter planning horizon, the bank's exposure to interest rate risk beyond the planning horizon is ignored.

More sophisticated gap management techniques have been developed in response to this first criticism. Instead of defining gap for a single short planning horizon, more sophisticated techniques define incremental gaps for nonoverlapping subperiods of a more extended horizon. For example, a banker may choose

<sup>6</sup> Gap management can also be used to increase net interest income, but with greater exposure to interest rate risk. If interest rates are expected to rise during the planning horizon, a positive gap position is taken. If expectations are correct and interest rates rise, net interest income improves because more assets than liabilities are repriced at the new higher rates. But if expectations are incorrect and interest rates fall, net interest income worsens because interest income falls relative to interest expense. To increase net income when interest rates are expected to fall during the planning horizon, a negative gap position is taken.

an extended planning horizon of a year and define incremental gaps for the first and second halves of the year. The first gap measures the difference between assets and liabilities maturing or able to be repriced in the first six months, while the second gap measures the difference between assets and liabilities maturing or repriceable in the second six months. Maximum insulation from interest rate risk is then achieved by setting all the incremental gaps to zero. In principle, extended horizons can be of any length and incremental gaps can be defined for any number of subperiods. The incremental gap approach insulates net interest margins better from interest rate risk by extending the planning horizon while making sure that the maturing and repricing dates for risk-sensitive assets and liabilities more nearly coincide.<sup>7</sup>

A second, more serious, criticism of gap management is that it insulates a bank from the income risk component of interest rate risk but not from the investment risk component. This is because gap management focuses on net interest income but ignores net worth. Even if gap management is used to stabilize net interest income, interest rate fluctuations will affect the market values of assets and liabilities that are not rate sensitive, increasing the volatility of net worth and, therefore, risk to shareholders.<sup>8</sup>

Nevertheless, gap management remains the most widely used technique for managing interest rate risk. Its strongest advantage may be the ease of its implementation, which allows gap management to be practiced by

medium and small banks as well as large banks.

### Duration gap management

Duration gap management is used to insulate net worth from investment risk.<sup>9</sup> This technique uses duration to measure the exposure of net worth to interest rate fluctuations. The duration of a financial instrument is similar to its term to maturity, both being a measure of time. But where term to maturity is the number of years until the instrument matures, duration is the number of years until the instrument earns its average payment, in present value terms.<sup>10</sup>

<sup>9</sup> For a thorough discussion of duration, see G. O. Bierwag, G. G. Kaufman, and A. Toevs, "Duration: Its Development and Use in Bond Portfolio Management," *Financial Analysts Journal*, July-August 1983, pp. 15-35; or G. G. Kaufman, "Measuring and Managing Interest Rate Risk: A Primer," Federal Reserve Bank of Chicago *Economic Perspectives*, January/February 1984, pp. 16-29.

<sup>10</sup> More precisely, the duration (D) of a financial instrument is defined by the formula:

$$D = \frac{\sum_t t PV_t}{P}$$

$$PV_t = \frac{C_t}{(1+r)^t}$$

where

- $\sum_t$  = summation sign
- t = number of years from the present
- $PV_t$  = present value of a payment,  $C_t$ , scheduled t years from the present
- P = price of the instrument ( $P = \sum PV_t$ )
- r = interest rate used to discount payments

Mathematically, duration is a weighted sum of the present value of payments made by a financial instrument. The present value of each payment,  $PV_t$ , is multiplied by a weight, t, equal to the number of years from the present that the payment is received. The weighted sum,  $\sum t PV_t$ , is then divided by the price or present value of the instrument, P. The dimension of the resulting quotient is years from the present. Duration is the number of years from the present that an instrument earns its average payment, in present value terms. The duration of an instrument is usually less than its term to maturity, the number of years from the present that an instrument makes its final payment.

<sup>7</sup> For a further discussion of more sophisticated gap models, see Toevs.

<sup>8</sup> This criticism has also been raised by Donald G. Simonson and George H. Hempel, "Improving Gap Management for Controlling Interest Rate Risk," *Journal of Bank Research*, Summer 1982.

To illustrate, consider the \$100, 10-percent three-year loan used in Case A, Table 1. At the start of the first year, the bank expects to receive \$10 at the end of the first year, \$10 at the end of the second year, and \$110 (principal plus interest) at the end of the third year. The loan's duration is 2.7 years because, in a theoretical sense, the bank receives its average payment in 2.7 years.<sup>11</sup>

Duration is important because it relates to the interest sensitivity of financial instrument prices. When interest rates change unexpectedly, the prices of financial instruments change. How much prices change is loosely related to the terms to maturity of the instruments. For example, an unexpected interest rate increase causes the price of a short-term financial instrument to fall slightly and the price of a long-term financial instrument to fall sharply. There is no simple relationship between interest rate change, price change, and term to maturity. But there is a simple relationship between interest rate change, price change, and duration. The percentage change in the price of an instrument is equal to the negative of duration multiplied by the unexpected interest rate change, as shown in the following equation.<sup>12</sup>

$$(2) \left( \frac{\text{percent change in}}{\text{financial instrument}} \right) = \left( \frac{\text{price}}{\text{price}} \right) = (-\text{duration}) \times \left( \frac{\text{unexpected}}{\text{interest rate}} \right) \left( \frac{\text{change}}{\text{change}} \right)$$

<sup>11</sup> The duration of the loan is computed by using the formula in footnote 10. Specifically,

$$2.7 = \frac{(1)(10) + (2)(10) + (3)(110)}{(1.1) + (1.1)^2 + (1.1)^3} \div 100$$

<sup>12</sup> Equation 2, which holds for small interest rate changes, is an approximation of a more complicated relationship.

The equation also shows that the greater an instrument's duration, the larger the impact of a given change in interest rates on the instrument's price.

Duration is useful to bankers because it can be used to calculate the interest sensitivity of a bank's net worth. Net worth, the market value of assets minus the market value of liabilities, changes when interest rates change unexpectedly because the market values of assets and liabilities change. Since the effect of unexpected interest rate changes on financial instrument prices is related to duration, the effect of unexpected interest rate changes on net worth is related to the durations of the assets and liabilities held by the bank. If the durations of the assets and liabilities are approximately equal, an unexpected interest rate increase reduces the market value of assets and liabilities by about the same amount and leaves net worth essentially unchanged. Similarly, an unexpected decrease in interest rates increases the market value of assets and liabilities but leaves net worth relatively unchanged. Hence, net worth is insensitive to unexpected interest rate changes when the durations of bank assets and liabilities are approximately equal.

The interest sensitivity of net worth increases as the difference between asset and liability durations increases. Suppose a bank holds assets with relatively short durations and liabilities with relatively long durations. According to Equation 2, the effect of an unexpected interest rate change on financial instrument price increases with duration. Thus, an unexpected interest rate increase causes a slight decline in the market value of assets and a large decline in the market value of liabilities, causing net worth to increase. Conversely, net worth decreases if interest rates decline unexpectedly because the market value of assets rises slightly but the market

value of liabilities rises sharply. By the same logic, it is clear that a bank holding assets with relatively long durations and liabilities with relatively short durations sees net worth increase with an unexpected decline in interest rates and decline with an unexpected increase in interest rates.

By managing “duration gap”—essentially the duration of bank assets minus the duration of bank liabilities—bankers control the interest sensitivity of bank net worth. Bankers can immunize net worth completely against unexpected interest rate changes by choosing a duration gap of zero.<sup>13</sup>

<sup>13</sup> More precisely, the duration gap (DG) is defined as:

$$DG = D_a - D_l [L/A]$$

where

$D_a$  = duration of the asset side of the balance sheet

$D_l$  = duration of the liability side of the balance sheet

$A$  = the market value of bank assets

$L$  = the market value of bank liabilities, excluding net worth.

The equation defines the duration gap as the duration of bank assets minus the duration of bank liabilities multiplied by a fraction. The fraction is the value of liabilities as a percentage of the value of assets.

A simple linear relationship exists between unexpected interest rate change, net worth change, and duration gap. In particular,

$$\frac{\Delta NW}{NW} = (-DG) (\Delta r)$$

where

$\Delta NW/NW$  = percent change in net worth

$\Delta r$  = unexpected interest rate change

The equation says that the percentage change in net worth equals the negative of duration gap multiplied by the unexpected interest rate change. The equation also says that a given change in interest rates has a larger impact on net worth the larger the duration gap.

Duration management can also be used to increase shareholders' net worth, but with greater exposure to investment risk. If interest rates are expected to rise, a negative duration gap position is taken by reducing the duration of assets relative to liabilities. If expectations are correct and interest rates rise, the market

The major criticism of duration gap management is the difficulty of its implementation. Detailed information on maturity dates, interest rates, and payment schedules is required for all of a bank's instruments. And additional information and computations are necessary if an instrument, such as a mortgage, can be prepaid, or if an instrument, such as a variable-rate loan, can be repriced. Furthermore, there is no agreement on how to compute the durations of deposits that can be withdrawn with little or no notice. Regardless of how deposits are handled, the difficulty of computing duration requires the use of computers. These considerations appear to make the application of duration analysis infeasible for all but fairly large banks.

### *Gap or duration gap: which one?*

A bank that maintains a zero gap may have a nonzero duration gap while another that maintains a zero duration gap may have a nonzero gap. Which of the gaps is the more important? This is like asking which is the more important component of interest rate risk, income risk or investment risk.

The answer depends partly on the preferences of bank stockholders. As pointed out earlier, the fundamental objective of any bank management strategy is to maximize the wealth of bank stockholders while keeping risk at a level acceptable to stockholders. If the bank is privately owned by a few long-term stockholders that prefer a steady income, stockholders may put more emphasis on controlling income risk and less on investment

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value of liabilities falls more than the market value of assets, thereby increasing net worth. But if expectations are incorrect and interest rates fall, net worth declines because the market value of liabilities rises more than the market value of assets. To increase net worth if interest rates are expected to fall, a positive duration gap position is taken.

risk. In contrast, if the bank's shares are widely traded and ownership is dispersed among a large number of short-term stockholders, stockholders will probably prefer a management strategy that maintains the value of their shares and, therefore, puts more emphasis on controlling investment risk than income risk. While the importance of income risk versus investment risk depends on the preference of stockholders, in general, the strategy that gives primary emphasis to controlling investment risk is preferable because such a strategy stabilizes net worth and, thus, is more likely to maximize the wealth of bank stockholders.

### *Instruments for controlling interest rate risk*

Gap and duration gap management are strategies for controlling interest rate risk by controlling a measure of risk, either gap or duration gap. To implement these strategies, bankers manage the composition of bank assets and liabilities to achieve the desired gap or duration gap. New instruments have been developed in recent years to facilitate the control of interest rate risk by increasing the flexibility of balance sheets, especially on the asset side. Two instruments that warrant particular attention are floating-rate loans and financial futures.

Although not a recent invention, floating-rate loans were not widely used until the dramatic increase in the level and volatility of interest rates in the mid-1960s.<sup>14</sup> With floating-rate loans, the rate borrowers pay is readjusted periodically to keep it in line with current market rates. By replacing the traditional fixed-interest rate with a floating rate, an oth-

<sup>14</sup> See Randall C. Merris, "Business Loans at Large Commercial Banks: Policies and Practices," Federal Reserve Bank of Chicago *Economic Perspectives*, November/December 1979, pp. 15-23.

erwise rate-insensitive asset is converted to a rate-sensitive asset. This conversion is especially useful for a bank with a large number of rate-sensitive liabilities that wants to pursue a gap management strategy but cannot reduce the term to maturity of its loans.

When assets and liabilities cannot be restructured to achieve a zero gap or a zero duration gap, financial futures become a useful tool.<sup>15</sup> A financial futures contract is an agreement between two parties to exchange cash for an interest-bearing financial instrument on a future date at a price determined when the agreement was made. Under current institutional arrangements, the parties can agree to exchange assets as far as two years in the future. Exchanges, or "deliveries," occur four times a year, in the third week of March, June, September, and December. There are currently futures markets for seven kinds of financial instruments.<sup>16</sup>

Financial futures insulate a bank from interest rate changes by offsetting a potential loss (gain) of net interest income or net worth with a potential gain (loss) from futures trading. By agreeing on a price in advance, both parties to a financial futures contract wager a bet on interest rate movements between the agreement date and the delivery date. This gambling aspect of futures markets allows bankers to reduce interest rate risk. For example, if a

<sup>15</sup> For a further discussion of financial futures markets, see M. T. Belongia and G. J. Santoni, "Hedging Interest Rate Risk with Financial Futures: Some Basic Principles," Federal Reserve Bank of St. Louis *Review*, October 1984, pp. 15-25; and Mark Drabentstott and Anne McDonley, "Futures Markets: A Primer for Financial Institutions," Federal Reserve Bank of Kansas City *Economic Review*, November 1984, pp. 17-33.

<sup>16</sup> Financial futures markets exist for three-month Treasury bills, one-year Treasury bills, four-year Treasury notes, long-term Treasury bonds, commercial paper, three-month certificates of deposit, and 8-percent GNMA certificates. Bankers hedging against interest rate risk usually trade in the three-month Treasury bill market because of its larger volume.

bank's net interest income or net worth is susceptible to loss from a rise in interest rates (and gain from a fall), bankers would take a futures position that produces a gain if interest rates rise (and a loss if they fall). Since the gain (loss) from the futures position offsets the loss (gain) in net interest income or net worth, the bank is insulated from interest rate risk.

To see the benefits of financial futures, consider the situation faced by the bank in the Table 1 example on December 1, 30 days before the end of the first year. With the loan maturing in 25 months and the time deposit maturing in one month, the bank faces a negative gap and a positive duration gap. An interest rate increase before the end of the year would raise interest expenses and lower net interest income. It would also lower net worth by lowering the market value of assets relative to liabilities. To hedge, the bank might bet for an interest rate increase by selling a \$90 three-month Treasury bill futures contract for delivery in the third week of December. The contract commits the bank to deliver three-month Treasury bills with a face value of \$90 in exchange for a price set when the sale was made. If interest rates increase before the third week in December, the bank can purchase the Treasury bills needed to fulfill the contract at a price less than the contract price because the interest rate increase reduces the price of new Treasury bills. The profit from the futures contract offsets the loss in higher interest expenses when the time deposit is rolled over, as well as the loss in net worth.

Despite the usefulness of financial futures in reducing interest rate risk, only a few large banks use financial futures. There are several reasons. Successful hedging requires continuous reassessment of a bank's exposure to interest rate risk, a requirement that imposes heavy informational needs. Successful hedging also requires extensive monitoring and

forecasting of financial market developments and, thus, specialized personnel. Bankers at many medium and small banks apparently feel that gap or duration gap management insulate their banks adequately from interest rate changes. Finally, regulations and accounting requirements tend to discourage use of financial futures.<sup>17</sup>

### **Empirical evidence on interest rate risk management at Tenth District banks**

While much has been written on the management of interest rate risk, few studies have examined how well banks manage this risk.<sup>18</sup> The few that have generally show that net interest margins at large banks are affected little by interest rate changes while net interest margins at small banks rise and fall with interest rates. These results have been used to argue that large banks are well hedged against interest rate risk and that small banks have benefited from a small exposure. Only one of these studies examines, however, interest rate risk since the sharp increase in the level and

<sup>17</sup> For bankers' views of financial futures, see the recent surveys by Mark Drabentstott and Anne McDonley, "The Impact of Financial Futures on Agricultural Banks," Federal Reserve Bank of Kansas City *Economic Review*, May 1982; Donald Koch, Delores Steinhauer, and Pamela Whigham, "Financial Futures as a Risk Management Tool for Banks and S&Ls," Federal Reserve Bank of Atlanta *Economic Review*, September 1982; and James Booth, Richard Smith, and Richard Stolz, "Use of Interest Rate Futures by Financial Institutions," *Journal of Bank Research*, Spring 1984, pp. 15-20.

<sup>18</sup> Empirical studies of interest rate risk management include S. J. Maisel and R. Jacobson, "Interest Rate Changes and Commercial Bank Revenues and Costs," *Journal of Financial and Quantitative Analysis*, November 1978, pp. 687-700; Mark J. Flannery, "Market Interest Rates and Commercial Bank Profitability: An Empirical Investigation," *Journal of Finance*, December 1981, pp. 1085-1101; Mark J. Flannery, "Interest Rate and Bank Profitability: Additional Evidence," *Journal of Money, Credit, and Banking*, August 1983, pp. 355-362; and G. A. Hanweck and T. E. Kilcollin, "Bank Profitability and Interest Rate Risk," *Journal of Economics and Business*, February 1984, pp. 77-84.

volatility of interest rates in the mid-1970s, and none have tried to distinguish between the components of interest rate risk.

This section presents evidence on interest rate risk management at Tenth District banks during the 1976-83 period. The most direct way to examine interest rate risk management would be to examine banks' gaps and duration gaps. The data needed to compute these variables are unavailable for the 1976-83 period, but an analysis of income statement data and balance sheet composition reveals much about banks' exposure to interest rate risk.

*Interest income, interest expense, and net interest margins*

Chart 1 presents interest income and expense data for all Tenth District banks since 1976. The upper panel plots gross interest income and gross interest expense as a proportion of average assets, together with their difference—net interest margin.<sup>19</sup> The lower panel plots the federal funds rate, which serves as a proxy for the level of market interest rates, and the standard deviation of the federal funds rate, which gauges interest rate volatility.<sup>20</sup> The chart shows that both gross interest income and gross interest expense closely followed movements in the level and volatility of interest rates. While net interest margin was fairly stable by comparison, it

<sup>19</sup> Average assets is the average of assets outstanding at the beginning and end of the year. Gross interest income includes taxable equivalent interest from state and local obligations.

<sup>20</sup> For each year, the standard deviation of the Treasury bill rate was computed from 52 weekly observations of the rate using the formula

$$SD = \left[ \frac{1}{51} \sum_{i=1}^{52} (r_i - \bar{r})^2 \right]^{1/2}$$

where  $\bar{r}$  is the average Treasury bill rate for the year.

nevertheless followed movements in interest rates. This suggests that district banks maintained positive gaps and negative duration gaps and, therefore, incurred some exposure to interest rate risk.

A disaggregation of district data shows differences in the stability of net interest margins at banks of different sizes. Table 2 reports net

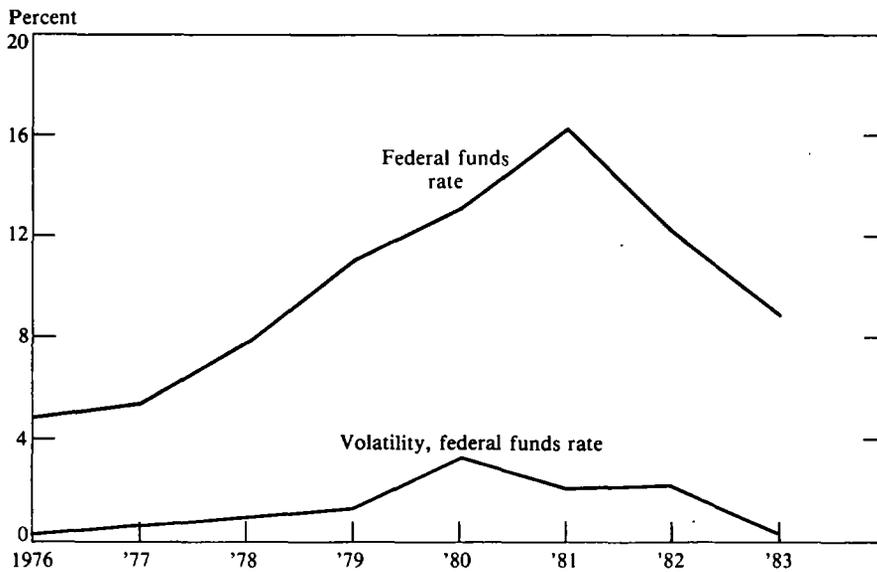
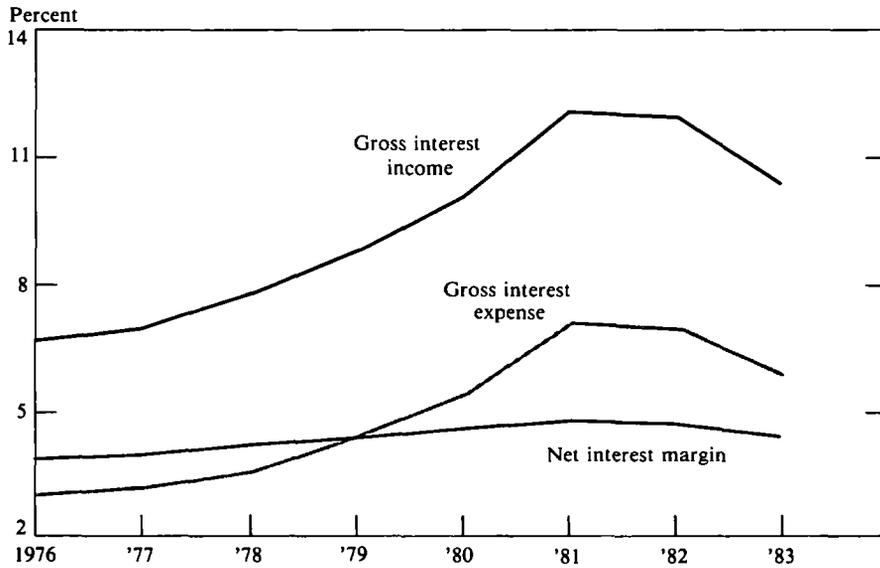
**TABLE 2**  
**Net interest margins,**  
**Tenth District banks, 1976-83**

Year	Bank Size	
	Small	Large
1976	4.19	3.24
1977	4.28	3.47
1978	4.54	3.62
1979	4.72	3.68
1980	5.02	3.80
1981	5.18	3.93
1982	5.20	3.83
1983	4.85	3.55

Note: Net interest margins are expressed as a percentage of average assets, the average of assets outstanding at the beginning and end of the year. Net interest margins include taxable equivalent interest from state and local obligations.

interest margins for banks of two sizes: those with more than \$300 million in assets and those with less than \$300 million in assets. The table shows that net interest margin was somewhat more stable at the larger banks, with a difference between the high and low values of only 0.7 percentage points. At the smaller banks, net interest margin had a 1.0 percentage point range. While other factors could account for the differences in the behavior of net interest margins at small and large district banks, an important factor was probably differences in interest rate risk management practices. Judging from net interest margins, large banks appear to have had a smaller

**CHART 1**  
**Interest Income, expenses, and net margin**  
**Tenth District banks, 1976-83**



exposure to interest rate risk than small banks. Differences in interest rate risk management practices can be detected by analyzing the composition of district bank balance sheets.

### *Balance sheet composition*

The average composition of district bank balance sheets during the 1976-83 period is reported in Table 3. Large and small banks show significant differences in balance sheet composition during this period. Large banks appear to have had significantly more rate-sensitive, short-duration assets and liabilities than small banks. This inference is based on differences in loan and deposit compositions and differences in the use of federal funds.

Available loan data allow a crude comparison of the rate-sensitivity and duration of loans at large and small district banks. Table 3 presents a breakdown of loans into long,

**TABLE 3**  
**Average composition of balance sheets,**  
**Tenth District banks, 1976-83**  
**(percent)**

	Bank Size	
	Small	Large
Assets	100.0	100.0
Loans	53.2	47.7
Long-term	13.7	9.0
Medium-term	24.3	13.6
Short-term	15.2	25.1
Securities	27.5	15.3
Fed funds	5.3	12.9
Other	14.0	24.0
Liabilities and capital	100.0	100.0
Deposits	87.9	74.7
Rate-insensitive	58.9	48.0
Small floating-rate	16.1	5.1
Large-time	12.9	21.6
Fed funds	1.9	15.5
Other	2.1	3.5
Capital	8.1	5.9

medium, and short-term categories.<sup>21</sup> Long-term loans are loans with long durations and negligible interest rate-sensitivity. Medium-term loans have shorter durations and are somewhat more rate-sensitive. Short-term loans not only have very short durations, they also often carry floating rates, which makes them among the most rate-sensitive of assets. The table shows that large banks held a significantly higher proportion of their assets in short-term loans than small banks (25.1 percent versus 15.2 percent) and a somewhat smaller proportion of their assets in long-term loans (9.0 percent versus 13.7 percent). Thus, large banks apparently held more rate-sensitive, short-duration loans than small banks.

An analysis of deposit composition allows a comparison of the rate-sensitivity of deposits at large and small district banks. Table 3 presents a breakdown of deposits into rate-insensitive, small floating-rate, and large-time categories. Rate-insensitive deposits are primarily accounts with legal deposit rate ceilings, including traditional demand deposits, NOW accounts, and passbook savings accounts. By virtue of their binding deposit rate ceilings, these accounts are essentially rate-insensitive.<sup>22</sup> Small floating-rate deposits are more rate-sensitive. These deposits, most notably the six-month money market certificate, pay market-related rates and are held by households. Most rate-sensitive are large time deposits, which include large certificates of

<sup>21</sup> The long-term loan category consists of real estate loans. The medium-term category consists of consumer loans and agricultural loans. Commercial and industrial loans and loans to other financial institutions compose the short-term loan category.

<sup>22</sup> Although deposit rate ceilings usually prevent banks from paying depositors market-related rates, banks make up for this deficiency by offering depositors such services as free or below-cost checking, 24-hour automated teller machines, conveniently located branches, and the like. Even when account is taken of these "implicit interest" payments, however, deposits subject to ceilings are essentially rate-insensitive.

deposit (CD's). Held almost exclusively by businesses, CD's usually have original maturities of three months or less. The table shows that large banks held substantially more of their liabilities as large time deposits than small banks (21.6 percent versus 12.9 percent) and significantly less as rate-insensitive deposits (48.0 percent versus 58.9 percent). Thus, large banks apparently held significantly more rate-sensitive liabilities than small banks.

Differences in the relative use of federal funds also suggest that large banks had more rate-sensitive, short-duration assets and liabilities than small banks. Federal funds (overnight loans from one bank to another) are among the shortest term instruments available to banks. Table 3 shows that large banks held a larger share of assets in federal funds than small banks (12.9 percent versus 5.3 percent) and held a much larger proportion of liabilities in federal funds (15.5 percent versus 1.9 percent).

#### *Evidence of exposure to interest rate risk, 1976-83*

Financial statement data show that net interest margins were more stable at large district banks than small banks and that large district banks held more short-duration, rate-sensitive assets and liabilities than small banks. But these differences do not constitute differences in exposure to interest rate risk. Exposure to the income risk component of interest rate risk is gauged by gap (the difference between rate-sensitive assets and liabilities) while exposure to the investment risk component is gauged by duration gap (roughly equal to the difference between asset and liability durations). Nevertheless, financial statement data suggest that small banks were probably more prone to both income and investment risk than large banks.

Regarding exposure to income risk, small banks were probably more risk-prone than large banks, but risk-bearing was probably rewarded adequately by higher profits. Both large and small banks held more rate-sensitive assets than liabilities, as evidenced by the tendency for net interest margins to follow interest rates. The low rate-sensitivity of bank liabilities reflects the effect of deposit rate ceilings, which prevented deposit costs from following market rates closely. Liabilities were especially rate-insensitive at small banks, where regulated deposits made up more of total assets. Even with deposit ceilings, banks could have completely eliminated their exposure to income risk by balancing their holdings of regulated deposits and rate-insensitive assets.<sup>23</sup> But with interest rates well above deposit ceilings, the profits available by maintaining a nonzero gap exposure made such risk-bearing preferable to bank shareholders.

Regarding exposure to investment risk, small banks were probably also more risk-prone than large banks. This was because they probably had larger duration gaps. For both small and large banks, the durations of individual liabilities were either nearly zero—in the case of federal funds, large time deposits, and most small floating-rate time deposits—or undefined—in the case of rate-insensitive deposits and small floating-rate non-time deposits. A case can be made that the duration of these deposits should be defined as zero, since the value of these deposits is essentially insensitive to interest rate changes.<sup>24</sup> When

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<sup>23</sup> This is essentially how savings and loan associations operated until the partial phaseout of deposit rate ceilings. While income risk is reduced by using regulated deposits to finance long-term fixed-rate assets, liquidity risk is increased because regulated deposits are payable either on demand or with little delay.

<sup>24</sup> To be convinced of this argument, one need only consider the recent plight of the thrift industry. For decades, savings and loan associations accepted savings deposits and lent the funds as

**TABLE 4**  
**Rate-sensitive assets and liabilities**  
**as a proportion of total assets,**  
**Tenth District banks, December 31, 1983**  
 (percent)

	Bank Size	
	Small	Large
Rate-sensitive assets	54.8	49.8
Loans	39.1	34.6
Securities	9.5	5.0
Other assets	6.2	10.2
Rate-sensitive liabilities	53.4	52.2
Deposits	51.5	38.4
Other liabilities	1.9	13.8
Gap	1.4	-2.4

this view is taken, liability duration becomes almost equally short at small and large banks, and exposure to investment risk depends solely on asset duration. Since Table 3 suggests that large banks held assets of shorter durations than small banks, large banks were apparently less exposed to investment risk than small banks, at least during the 1976-83 period.

*Gap at Tenth District banks*

While small banks in the district were more exposed to interest rate risk than large banks during the 1976-83 period, the situation had improved by the end of 1983. Table 4 presents data on rate-sensitive assets, rate-sensitive liabilities, and gap at district banks at the end of 1983, the first year these data were available. Rate-sensitive instruments are defined here as

long-term fixed-rate mortgages. When interest rates rose sharply beginning in the mid-1970s, the market value of these mortgages fell sharply while the market value of savings deposits remained relatively unaffected. The decline in net worth caused many S&L's to fail.

instruments carrying floating rates or maturing in the next 12 months. All amounts are expressed as a proportion of total assets.

Table 4 shows that both large and small banks held gap positions very close to zero at the end of 1983. The table also shows that about half of all assets and liabilities were rate-sensitive at both large and small banks. The high degree of rate-sensitivity in small bank balance sheets at the end of 1983 contrasts sharply with the 1976-83 evidence from financial statement data and suggests that substantial changes have been made at small banks in the district.

Tables 5 and 6 document changes in the characteristics of bank assets and liabilities to help explain how small district banks achieved a near-zero gap position by the end of 1983. Table 5 shows rate-sensitive deposits as a proportion of total liabilities at large and small banks for the 1976-83 period. The table shows that between 1976 and 1983 the proportion of rate-sensitive deposits increased sharply at

**TABLE 5**  
**Rate-sensitive deposits**  
**as a proportion of bank liabilities,**  
**Tenth District banks, 1976-83**  
 (percent)

Year	Bank Size	
	Small	Large
1976	11.4	17.7
1977	11.2	18.2
1978	14.7	22.5
1979	25.2	23.9
1980	32.8	26.8
1981	36.1	29.6
1982	36.0	30.6
1983	51.5	38.4

Note: Rate-sensitive deposits include large-denomination time deposits, six-month money market certificates, small time deposits not subject to interest ceilings, Super NOW's, and MMDA's.

both large and small banks, increasing from 18 percent at large banks to 38 percent and from 11 percent at small banks to 51 percent.

Perhaps the most important factor increasing rate-sensitive liabilities was the partial phaseout of deposit rate ceilings. Table 5 shows that rate-sensitive deposits began increasing at all district banks after the introduction of six-month money market certificates in the summer of 1978. Rate-sensitive deposits surged again in 1983 after the introduction of Super NOW's and money market deposit accounts. The partial phaseout of deposit rate ceilings had more effect on small

banks because they hold more small time and savings deposits, precisely the deposits that were deregulated during this period.

Since data on loan characteristics at district banks are not available for the 1976-83 period, Table 6 presents data on the characteristics of certain categories of loans from a national sample of banks. Specifically, the data are on the rate-sensitivity and average term to maturity of business and farm loans. The table shows that large U.S. banks reduced their floating-rate loans and the average maturity of loans. This move probably had little effect on the rate-sensitivity of large bank

**TABLE 6**  
**Loans at large and small U.S. banks**

	Commerical and Industrial Loans*			
	Large banks		Small banks	
	Percent with Floating Rates	Months to Maturity	Percent with Floating Rates	Months to Maturity
1977	66.4	10.3	38.2	9.2
1978	63.6	11.3	49.8	7.8
1979	65.3	9.5	37.1	10.7
1980	52.7	8.9	42.1	8.3
1981	38.9	7.2	52.1	9.3
1982	29.6	5.2	45.5	7.6
1983	33.3	5.1	46.7	9.6

	Farm Loans†			
	Large Banks		Small Banks	
	Percent with Floating Rates	Months to Maturity	Percent with Floating Rates	Months to Maturity
1977	78.4	7.1	8.2	9.0
1978	80.7	7.1	10.4	8.1
1979	70.6	5.7	11.4	7.4
1980	74.6	6.5	8.4	7.3
1981	80.0	5.3	15.6	6.2
1982	65.6	6.0	26.4	6.6
1983	77.7	6.1	28.9	9.6

\* Based on a survey of about 340 banks.

† Based on a survey of about 250 banks.

Source: *Survey of Terms of Bank Lending*, Statistical Release E.2, Board of Governors of the Federal Reserve System

assets but made large banks less susceptible to investment risk by reducing asset duration. Small U.S. banks slightly increased the proportion of business loans carrying floating rates, but there was no trend in the average maturity of business loans. More significantly, Table 6 shows that, until the current farm crisis, small banks slightly reduced the average maturity of farm loans and sharply increased the proportion of floating-rate farm loans, thereby increasing the rate-sensitivity of farm loans. Since roughly 30 percent of small Tenth District banks hold 50 percent or more of their total loans as farm loans, the changing characteristics of farm loans probably increased the rate-sensitivity of bank assets at small district banks.

Two factors probably accounted for the increase in rate-sensitive assets at small district banks. One was the partial phaseout of deposit rate ceilings. Without changes in the rate-sensitivity of assets, the greater rate-sensitivity of bank liabilities created the potential for large negative gaps. By reducing the average maturity of assets and holding more floating-rate assets, small banks reduced income risk.

The other factor was the growing volatility of interest rates (Chart 1). As noted earlier, small banks were likely exposed to some investment risk from their positive duration gaps during the 1976-83 period. With positive duration gaps, the stability of net worth requires relatively stable interest rates. The increase in interest rate volatility beginning in the mid-1970s likely increased fluctuations in the net worth of small banks and provided an incentive for them to reduce asset duration. Since decreasing asset duration usually increases the rate-sensitivity of assets, growing interest rate volatility was a probable factor in the increase in rate-sensitive assets at small district banks.

### *Managing interest rate risk in the future*

Although small district banks as a group had successfully insulated themselves against income risk by the end of 1983, these banks should give more emphasis to managing interest rate risk in the future. As deregulation of financial markets continues, greater competition among depository institutions and the ongoing phaseout of deposit rate ceilings will force small banks to pay more attention to interest rate risk.

Greater competition among depository institutions should intensify management of interest rate risk by shifting bank shareholders' wealth maximizing-risk minimizing possibilities. Small district banks have traditionally been more profitable than large district banks, maybe due to their often having more control over lending and borrowing rates. Because of the greater profitability of these banks, small bank shareholders may have been fairly unconcerned about potential losses from interest rate risk.<sup>25</sup> But increased competition reduces control over lending and borrowing rates by forcing banks to offer competitive rates. With smaller profits, banks are less able to absorb losses from unexpected movements in interest rates that are not favorable to them. Increased competition also forces banks to tailor loan and deposit characteristics to the needs of customers. This response affects the duration and rate-sensitivity of assets and liabilities and may expose banks to interest rate

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<sup>25</sup> A different explanation of greater profitability of small banks is that larger profits are needed to compensate banks' shareholders for risk-bearing because small banks tend to be less well-diversified than large banks and are, therefore, riskier. While this explanation is at least partially correct, evidence suggests that small banks generally fail to maximize shareholder wealth for a given level of risk. See J. C. Francis, "Portfolio Analysis of Asset and Liability Management in Small-, Medium-, and Large-sized Banks," *Journal of Monetary Economics*, July 1978, pp. 459-480.

risk. Greater attention to interest rate risk management will be needed in the more competitive environment to maintain risk at a level acceptable to shareholders.

The continuing shift toward ceiling-free deposits should also lead to changes in interest rate risk management at small district banks. As noted earlier, small banks probably increased their rate-sensitive assets in response to the loosening of deposit rate ceilings in order to reduce income risk. Table 6 shows that the rate-sensitivity of assets was increased partly by changing the characteristics of loans. Further shifting toward ceiling-free deposits would likely lead to further loan changes.

Changing loan characteristics to increase rate-sensitive assets has two serious disadvantages. First, this strategy substitutes credit risk for interest rate risk by shifting interest rate risk to bank borrowers. Credit risk is the risk of decline in loan quality caused by a decline in a borrower's credit rating. Short-term and floating-rate loans increase credit risk by forcing banks' borrowers, who typically have few rate-sensitive assets, into a negative gap position. If interest rates rise unexpectedly, the interest rate on the loan increases and the return on borrowers' assets may not be enough to cover the higher interest payments, increasing the likelihood of default. Hence, even though floating-rate loans reduce the interest rate risk of banks, they increase credit risk.

The second disadvantage to changing loan characteristics to increase rate-sensitive assets is that the change reduces the amount of financial intermediation banks perform. An important function of financial intermediaries is to facilitate medium and long-term capital investment by borrowing short term from savers and lending longer term to investors at steady rates. This is particularly true of small banks, whose business customers may lack access to other forms of finance. Although they borrow

short term, banks can lend longer term because they borrow from a large number of savers. When banks lend short term to increase their rate-sensitive assets, however, they cease to perform an important function of intermediation. This ultimately impairs medium and long-term capital investment.

In view of the disadvantages of changes in loan characteristics as the primary means of controlling interest rate risk, small district banks may wish to consider other risk management techniques. Shorter term securities could be used to increase rate-sensitive assets and reduce asset duration. Also, more use could be made of financial futures to hedge nonzero gap and duration gaps against interest rate risk.

## Summary and Conclusion

This article has examined how Tenth District banks have coped with interest rate risk, a growing problem for banks since the mid-1970s. The first section reviewed techniques for hedging interest rate risk, including gap management, duration gap management, and financial futures. The second section reviewed the experience of Tenth District banks in applying these techniques. During the 1976-83 period, district banks were generally exposed to both the income and investment risk components of interest rate risk. Large district banks apparently managed their interest rate risk more vigorously than small district banks. By the end of 1983, small and large district banks were about equally well insulated from income risk. To reduce income risk, small banks have relied primarily on increasing the rate-sensitivity of loans. As the financial environment becomes more competitive and less regulated, however, small banks will probably be forced to use other techniques in managing their interest rate risk.

# The Role of Extended Credit In Federal Reserve Discount Policy

*By Gordon H. Sellon, Jr.*

Most borrowing at the Federal Reserve's discount window has traditionally been done by commercial banks in the form of short-term adjustment credit. In recent years, however, important changes have taken place in discount policy. One change is that access to the discount window has been broadened under the Monetary Control Act of 1980 to include all depository institutions subject to Federal Reserve reserve requirements. Another change is that seasonal and other extended credit programs have been developed to assist institutions in meeting longer term liquidity needs.

With the advent of financial deregulation and such problems as the farm credit crisis, borrowing under the extended credit programs has increased sharply in recent years. During 1984, for example, a sizable increase in extended credit was associated with the financial difficulties of Continental Illinois. More recently, the Federal Reserve has played a role in providing short-term liquidity to certain

thrift institutions in Ohio and Maryland and has revised its seasonal credit program to assist small agricultural lenders.

Broadly speaking, the Federal Reserve has responsibilities in maintaining the stability of the financial system and using monetary policy to promote noninflationary economic growth. In this framework, extended credit borrowing performs a valuable role by preventing the liquidity problems of individual financial institutions from weakening the structure of the financial system. At the same time, however, reserves provided to institutions under this program could complicate monetary policy. To the extent that liquidity problems occur during a period of monetary restraint, for example, reserves provided under the extended credit program may need to be offset by appropriate policy actions.

This article examines the role of extended credit borrowing and its implications for monetary policy. The first section of the article provides an overview of the discount window and outlines key features of the various borrowing programs. The second section

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documents the increased importance of extended credit borrowing. The final section examines the Federal Reserve's treatment of extended credit borrowing in implementing monetary policy.

### **An overview of the discount window**

Before discussing the various borrowing programs in detail, it is useful to consider some broad issues relating to the eligibility of institutions to use the discount window, the mechanics of borrowing, and the costs of borrowing.

#### *General information*

Before passage of the Monetary Control Act of 1980, only commercial banks that were members of the Federal Reserve System had regular access to the discount window. In conjunction with the extension of reserve requirements to all depository institutions under this act, Congress required that all institutions subject to Federal Reserve reserve requirements have access to the discount window. In practice, institutions with access to such special industry lenders as the Federal Home Loan Bank System, credit union centrals, and the Central Liquidity Facility of the National Credit Union Administration are expected to use those sources before relying on Federal Reserve discount window facilities.

Use of the discount window is subject to Regulation A of the Board of Governors of the Federal Reserve System. This regulation sets forth administrative principles defining appropriate reasons for borrowing, the types of borrowing programs available, and the terms of borrowing. Institutions borrow from the regional Federal Reserve banks subject to uniform guidelines established at the regional banks.

Discount window borrowing generally takes the form of an advance of funds from the Federal Reserve to the borrowing institution. The loan must be fully collateralized to the satisfaction of the reserve bank. Satisfactory collateral generally includes U.S. government and federal agency securities, and, if of acceptable quality, mortgage notes covering one-to-four-family residences, state and local government securities, and business, consumer, and other customer notes.<sup>1</sup>

Institutions borrowing at the discount window are charged an interest rate based on the type of borrowing undertaken. The structure of discount rates is established by the boards of directors of the regional Federal Reserve banks subject to approval by the Board of Governors.

#### *Types of borrowing*

Discount window borrowing is divided into two main categories: adjustment credit and extended credit. Extended credit is further subdivided into seasonal extended credit and other extended credit. Each of the three classes will be discussed in turn.

*Adjustment credit.* Historically, most discount window borrowing has taken the form of adjustment credit. This type of credit is designed to meet the short-run liquidity needs of individual depository institutions. For example, an institution experiencing an unexpected outflow of deposits, an unexpected increase in credit demands, or an unusual event such as a computer malfunction may have a temporary need for reserves. Adjustment credit performs an important function by permitting affected institutions to meet their

<sup>1</sup> Borrowing can also be done in the form of a discount rather than an advance. See *The Federal Reserve System Purposes and Functions*, Board of Governors of the Federal Reserve System, Washington, D.C., 1984, p. 59.

liquidity needs with minimum disruption to financial markets and market interest rates.

The amount of adjustment credit is regulated through administrative guidelines and by changes in the discount rate. Institutions that borrow under the adjustment credit program are monitored according to several criteria. There is a basic prohibition against the use of the discount window as a substitute for higher cost methods of reserve adjustment. There are also restrictions relating to the size of the institution borrowing, the amounts borrowed, the maturity of borrowing, and the frequency of borrowing. Generally speaking, larger institutions with better access to national money markets are expected to borrow relatively smaller amounts, less frequently, and for briefer periods than smaller institutions.<sup>2</sup>

The amount of adjustment borrowing is also related to the basic discount rate charged on this type of borrowing. An increase in the discount rate relative to market rates is intended to discourage use of the discount window relative to other methods of reserve adjustment. The current discount rate on adjustment borrowing is shown in Table 1.<sup>3</sup>

*Seasonal extended credit.* A seasonal borrowing privilege was instituted in 1973 as a result of Federal Reserve System studies indicating that many small banks did not have access to national money markets on the same terms as larger banks. To the extent that these small institutions experienced a strong sea-

**TABLE 1**  
**Discount rates for types**  
**of borrowing as of May 20, 1985**  
**(percent)**

<u>Type</u>	<u>Discount Rate</u>
Adjustment	7 1/2
Regular seasonal	7 1/2
Temporary seasonal	8
Other extended credit	
First 60 days	7 1/2
Next 90 days	8 1/2
After 150 days	9 1/2

Source: *Federal Reserve Bulletin*

sonal pattern to their loan and deposit flows they tended to acquire an inefficiently large amount of low-yielding but highly liquid assets during off-peak periods to meet peak seasonal needs. The seasonal credit program was designed to give these institutions access to discount window funds on an extended basis that would enable them to meet the loan needs of their community.<sup>4</sup>

The seasonal credit program differs from adjustment credit in several respects. First, seasonal credit is typically extended for longer periods than adjustment credit. To participate in the seasonal program, an institution is expected to have a seasonal need for funds that persists for at least four weeks. Borrowing under the seasonal program can be outstanding for up to nine months. In contrast, most adjustment borrowing is on an overnight basis or within a reserve maintenance period. Second, seasonal borrowing normally is lim-

<sup>2</sup> For a more detailed discussion of borrowing guidelines, see *Operations of the Federal Reserve Discount Window Under the Monetary Control Act of 1980*, Federal Reserve Bank of Kansas City, 1982.

<sup>3</sup> In addition to the basic discount rate, a surcharge may also be applied to borrowing. A surcharge was in effect on large banks that borrowed frequently for certain periods in 1980 and 1981. For a discussion of the surcharge see Gordon H. Sellon, Jr. and Diane Seibert, "The Discount Rate: Experience Under Reserve Targeting," *Economic Review*, Federal Reserve Bank of Kansas City, September-October 1982, pp. 3-18.

<sup>4</sup> Recent discussions of the seasonal borrowing program can be found in John E. Yorke and Charlotte Herman, "Seasonal Borrowing Privilege: Profile of the Tenth Federal Reserve District," *Economic Review*, Federal Reserve Bank of Kansas City, September-October 1982, pp. 19-26, and Emanuel Melichar, "The Federal Reserve Seasonal Borrowing Privilege," in *Future Sources of Loanable Funds for Agricultural Banks*, Federal Reserve Bank of Kansas City, 1980.

ited to small institutions with deposits of less than \$500 million. Third, to qualify for the seasonal program, an institution's projected seasonal need for funds must exceed a certain percentage of its average deposits in the preceding calendar year.<sup>5</sup> This deductible is the amount of its seasonal need for funds that an institution must fund on its own, without resorting to the discount window.<sup>6</sup>

Recently, in the context of a worsening farm credit crisis, the Board of Governors made two changes in the seasonal program to ensure availability of credit to small agricultural lenders. First, the regular seasonal borrowing program was modified to lower the deductible amount, that is, the amount of a seasonal need that must be funded by the institution.<sup>7</sup> Second, the Board announced a temporary simplified seasonal program aimed at small agricultural lenders that do not currently participate in the regular seasonal borrowing program. These changes allow smaller institutions to obtain a greater portion of their seasonal need for funds from the Federal Reserve

and make it easier for institutions to make use of the programs.<sup>8</sup>

Different discount rates are charged under the regular seasonal program and the temporary program. Institutions that borrow under the regular seasonal program are charged the basic discount rate on adjustment borrowing. Those that borrow under the temporary program are charged, at present, a rate that is one-half percent above the basic rate. Under the temporary program, this rate may change for new loans but is fixed for the maturity of outstanding loans. Current discount rates on the seasonal programs are shown in Table 1.

*Other extended credit.* This category of discount window borrowing is designed to assist institutions experiencing serious liquidity problems that are expected to persist for an extended period of time. Borrowing under this program typically occurs in two situations. The first case is that of an institution adversely affected by unanticipated economic events or unsound management decisions. For example, an institution with a heavy concentration of loans in a particular sector, such as energy or agriculture, could be seriously affected by an economic downturn in these sectors. With reduced profitability of such a loan portfolio, the reduction in earnings could cause a serious erosion in the institution's capital. Borrowing under the extended credit program may provide needed interim financing to allow the institution to restructure its loan portfolio or replace current management or to allow regulators to merge or close the institution.

The category of other extended credit is also designed to meet the intent of Congress as expressed in the Monetary Control Act to pro-

<sup>5</sup> For example, consider an institution with a seasonal need of \$1 million and \$5 million in deposits in the prior year. If this institution were subject to a 5 percent deductible amount, it would be expected to fund \$250,000 of its seasonal need from its own resources and would have a maximum seasonal borrowing privilege of \$750,000. For more details see John E. Yorke and Charlotte Herman, "Seasonal Borrowing Privilege," p. 20.

<sup>6</sup> When the seasonal borrowing privilege was established in 1973, the minimum period for borrowing was set at eight weeks. The program was targeted at institutions with less than \$250 million of deposits and all banks were subject to a 5 percent deductible. The program was revised in 1976 to shorten the maximum borrowing period to four weeks, raise the deposit size of eligible institutions to \$500 million, and replace the constant deductible percentage with a graduated scale based on deposit size of the bank.

<sup>7</sup> The deductible amount was reduced from 4 to 2 percent for the first \$100 million in deposits and from 7 to 6 percent for the second \$100 million in deposits. The rate remains at 10 percent for deposits over \$200 million.

<sup>8</sup> For more detail on these programs, see Mark Drabentstott and Marvin Duncan, "Farm Credit Problems: The Policy Choices," *Economic Review*, Federal Reserve Bank of Kansas City, March 1985, p. 12.

vide assistance to depository institutions particularly affected by financial disintermediation. For example, thrift institutions with asset portfolios consisting primarily of low-yielding, fixed-rate mortgage loans may be put under a serious liquidity strain when they are forced to pay higher market rates to maintain their deposit bases. Borrowing under the extended credit program may be an appropriate method of easing these liquidity strains pending a reduction in market rates or a longer term adjustment of asset portfolios.

Since the other extended credit program is designed to provide a flexible response to a variety of individual situations, guidelines are somewhat different from those for the adjustment and seasonal programs. Whether the problems of an institution can be corrected on a timely basis and what local or national consequences might result from the failure of an institution enter the decision as to the availability and terms of credit.<sup>9</sup>

Institutions borrowing under the other extended credit program pay a discount rate that varies with the maturity of the borrowing. For the first 60 days, an institution pays the basic discount rate charged on adjustment and seasonal credit. Beyond 60 days, institutions pay a higher rate, as illustrated in Table 1. Additionally, for loans outstanding for more than 150 days, a Federal Reserve bank may charge a flexible rate that takes into account rates on market sources of funds. This flexible rate must be set at least one percentage point above the basic rate.<sup>10</sup>

<sup>9</sup> A more detailed discussion of these issues can be found in *The Federal Reserve System Purposes and Functions*, pp. 62-63.

<sup>10</sup> Where credit provided to a particular depository institution is anticipated to be outstanding for an unusually prolonged period and in relatively large amounts, the time period in which each rate under this structure is applied may be shortened.

## The growth of extended credit

In recent years, the seasonal and other extended credit programs have become a more important source of funds for institutions experiencing longer term liquidity needs. This section documents the growing significance of these programs and identifies some of the factors underlying this trend. The following section explores the relationship of extended credit borrowing and monetary policy.

The increased importance of seasonal and other extended credit is illustrated in Table 2, which shows total discount window borrowing and the three types of borrowing for the period 1974-84. As seen in the table, the amounts of the two categories of extended borrowing have generally increased since 1980 and both types reached record levels in 1984. This behavior contrasts sharply with the low levels of extended borrowing in the 1975-79 period. The relative importance of extended borrowing in recent years is illustrated even more clearly in Chart 1, which shows the two categories of extended credit as a percentage of total borrowing. As can be seen, extended credit rose from a low of 11 percent of total discount window borrowing in 1979 to a high of 77 percent in 1984.

The behavior of the different types of borrowing can potentially be explained both by economic factors, such as interest rates, and by institutional factors such as legislative and regulatory changes. Most research on discount window borrowing has focused on adjustment borrowing. Studies generally find that adjustment borrowing is sensitive to the spread between the federal funds rate and the discount rate. When the funds rate is above the discount rate so that the spread is positive, institutions typically increase their borrowing. For example, 1974 and 1979-81 were characterized by large positive values of the spread.

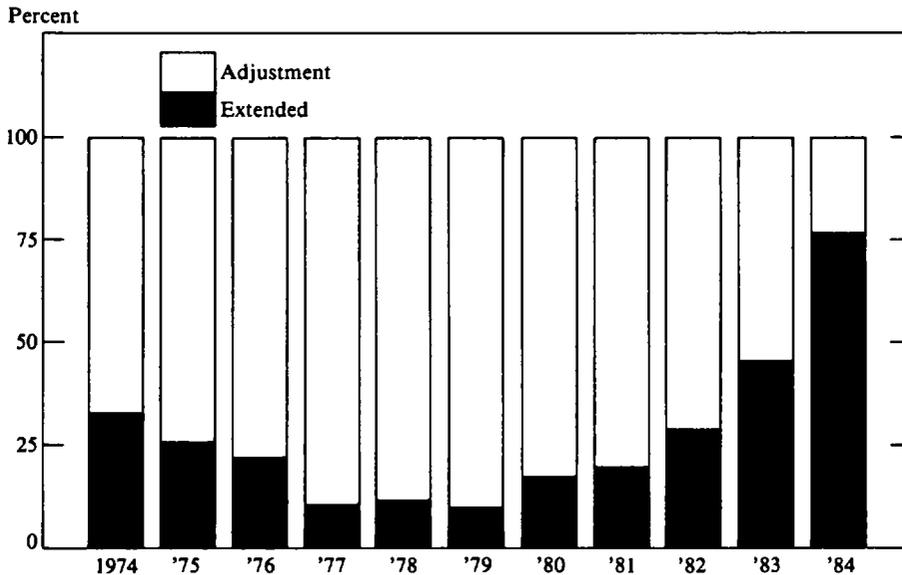
**TABLE 2**  
**Discount window borrowing**  
**by type, 1974-84**  
 (annual averages of daily figures, millions of dollars)

<u>Year</u>	<u>Total</u>	<u>Adjustment Credit</u>	<u>Seasonal Credit</u>	<u>Other Extended Credit</u>
1974	2,050	1,358	85	606
1975	195	144	24	28
1976	84	64	18	2
1977	461	405	56	0
1978	871	750	121	0
1979	1,339	1,187	151	*
1980	1,416	1,153	72	191
1981	1,361	1,073	183	105
1982	1,052	746	136	170
1983	1,039	554	112	373
1984	3,730	854	209	2,666

\*Less than \$500,000

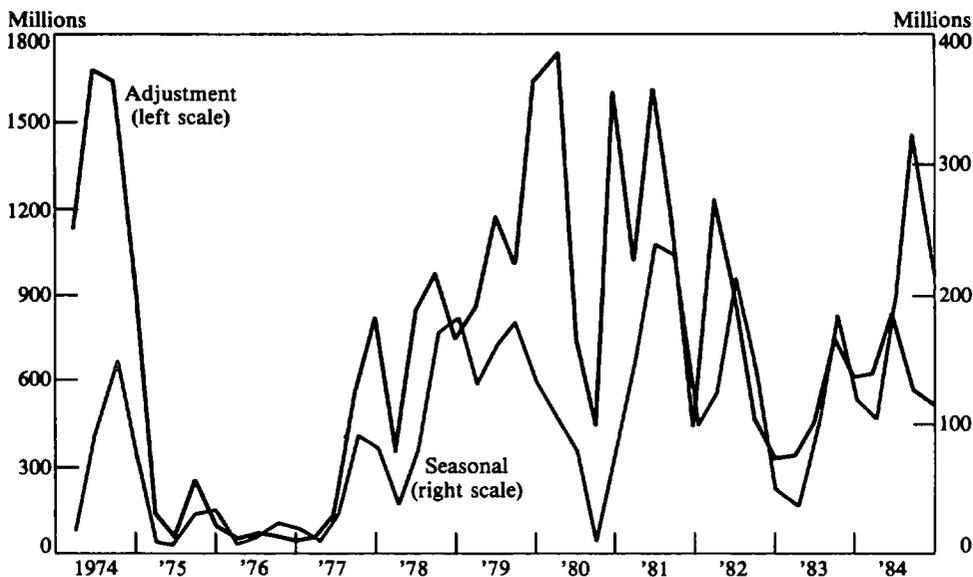
Source: *The Federal Reserve System Purposes and Functions*, Board of Governors, 1984, and  
*Federal Reserve Bulletin*

**CHART 1**  
**Extended credit as a percentage of total borrowing**



Source: *Federal Reserve Bulletin*

**CHART 2**  
**Adjustment and seasonal borrowing**  
 (quarterly averages of daily figures in millions of dollars)



Source: *Federal Reserve Bulletin*

As shown in Table 2, in these years adjustment borrowing exceeded \$1 billion. In contrast, in 1975-76, the funds rate was generally below the discount rate so that the spread was negative. And, as shown in Table 2, adjustment borrowing declined to frictional levels in these years.

Seasonal borrowing appears to depend on both economic factors, such as interest rates and on the institutional framework of the seasonal credit program. Over the course of the business cycle, seasonal borrowing behaves very much like adjustment borrowing. This relationship is apparent in Chart 2. Both seasonal and adjustment borrowing were low in such years as 1975-76 when the spread between the funds rate and the discount rate was frequently negative. In contrast, both types of borrowing were higher in such years

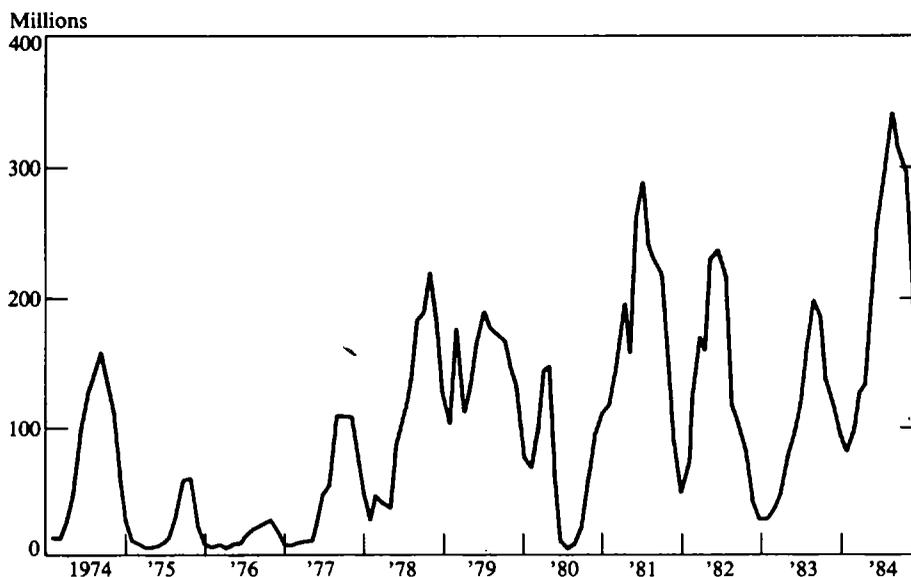
as 1979 and 1981, when the funds rate generally exceeded the discount rate.<sup>11</sup>

At the same time, however, there are institutional features specific to the seasonal borrowing program. Under this program, borrowing by institutions is expected to mirror their seasonal need for funds, rising to a peak and then diminishing.<sup>12</sup> This behavior imparts a pronounced "seasonal" pattern to seasonal borrowing. Thus, seasonal borrowing is generally low in the first quarter of the year, rises

<sup>11</sup> While both seasonal and adjustment borrowings are sensitive to the spread, the elasticity of seasonal borrowing with respect to the spread is considerably smaller than that for adjustment borrowing.

<sup>12</sup> See "Report of a System Committee," in *Reappraisal of the Federal Reserve Discount Mechanism*, Board of Governors of the Federal Reserve System, 1971, p. 17.

**CHART 3**  
**Seasonal borrowing**  
 (monthly averages of daily figures in millions of dollars)



Source: *Federal Reserve Bulletin*

to a peak in the third quarter, and then declines again in the fourth quarter.<sup>13</sup> This pattern is apparent in the monthly data for seasonal borrowing shown in Chart 3. Moreover, the chart indicates that the pattern has become more pronounced since 1980.<sup>14</sup>

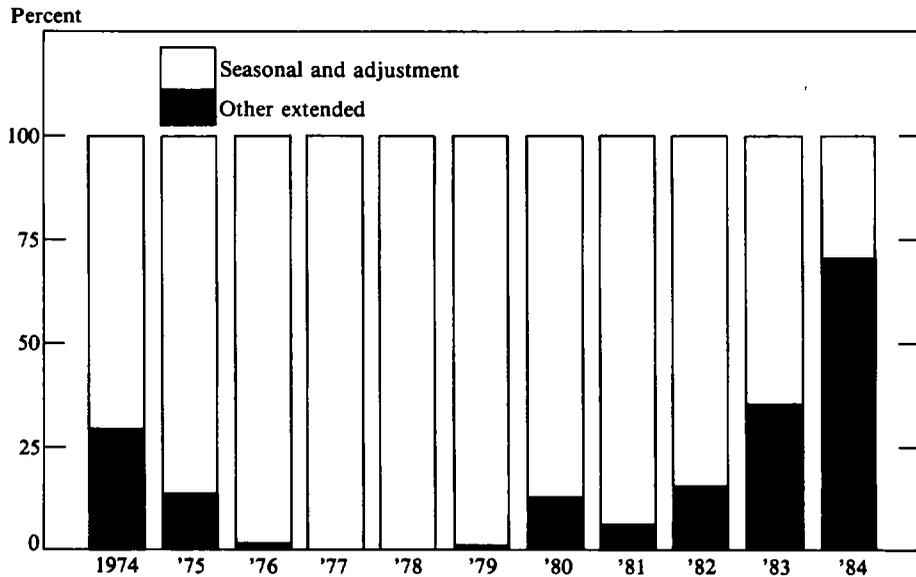
Institutional and economic factors are more difficult to disentangle in the case of other

extended credit. Much of other extended credit borrowing can best be described as episodic and, thus, difficult to capture in an economic model. In Chart 4, for example, the large amount of other extended borrowing in 1974 was primarily associated with the financial difficulties of Franklin National Bank. Little borrowing occurred under this program in 1977-79. The subsequent increase in other extended credit borrowing after 1979 was due to a variety of factors. Part of the increase was due to the extension of discount window privileges to nonmember institutions as mandated by the Monetary Control Act of 1980. Another part of the increase in other extended borrowing was related to economic declines in the energy, agricultural, and other sectors of the economy. Still another factor was poor judgment on the part of the management of several

<sup>13</sup> This aggregate pattern to seasonal borrowing masks distinct differences in the patterns in different Federal Reserve districts. See, for example, Melichar, *op. cit.*, pp. 130-131.

<sup>14</sup> The behavior of seasonal borrowing post 1980 could be due to the Monetary Control Act or to the behavior of interest rates. Post 1980, increases in interest rates during the year have tended to occur at the same time that seasonal borrowing would normally be expected to increase. Similarly, in several years after 1980, decreases in interest rates have tended to occur when seasonal borrowing would normally be expected to taper off. Thus, it may be difficult to distinguish economic and institutional factors affecting seasonal borrowing.

**CHART 4**  
**Other extended credit as a percentage of total borrowing**



Source: *Federal Reserve Bulletin*

large financial institutions with regard to loan quality and interest rate forecasts.

Clearly these recent events are not unrelated to one another or to the behavior of interest rates. The years 1974 and post-1979 have been characterized by relatively high levels of nominal interest rates. This high level of rates has contributed directly to the liquidity problems of some financial institutions and accelerated the process of financial innovation and deregulation. However, the connections among interest rates, deregulation, and extended borrowing are not easy to distinguish as witnessed by the large increase in extended borrowing in 1984. Even though interest rates were lower in 1984 than in 1980-82, the increase in extended borrowing in 1984 is clearly a lagged response to the liquidity strains created in prior years.

### **Extended credit and monetary policy**

Generally speaking, the Federal Reserve has broad responsibilities both in maintaining the stability of the financial system and in using monetary policy to promote noninflationary economic growth. This section examines the relationship of extended credit borrowing to these two goals and describes how the Federal Reserve incorporates extended credit into its monetary policy decisions.

Discount window borrowing can play a valuable role in promoting financial stability by keeping the liquidity problems of individual financial institutions from weakening the structure of the financial system. Unlike the Federal Reserve's use of open market operations which provides reserves to the entire financial system, the discount window pro-

vides reserves to individual institutions with the greatest liquidity needs. The availability of the discount window allows the Federal Reserve to pursue broad monetary objectives without having to worry about cushioning the impact of policy on individual institutions.

Historically, adjustment credit has played an important role in cushioning financial markets and interest rates from temporary reserve adjustment problems of individual institutions.<sup>15</sup> More recently, the extended credit program has enabled the Federal Reserve to prevent longer term and more serious liquidity problems of individual institutions from spilling over into financial markets.

Despite this important function of the discount window, however, there are clearly situations in which borrowing could compromise monetary policy goals. Reserves provided to individual institutions through the discount window augment the total supply of reserves to depository institutions. These reserves provide the basis for deposit and credit expansion. Thus, for example, to the extent that liquidity problems of individual institutions occur during a period of monetary restraint, discount window borrowing could potentially lessen the degree of restraint.<sup>16</sup>

<sup>15</sup> See Gordon H. Sellon, Jr., "The Role of the Discount Rate in Monetary Policy," *Economic Review*, Federal Reserve Bank of Kansas City, June 1980, pp. 3-15, for a discussion of how the discount window cushions the money market from various financial disturbances.

<sup>16</sup> The impact of borrowing on reserve growth and interest rates depends importantly on the type of operating procedure used by the Federal Reserve. Under an interest rate targeting procedure, the effects of unexpected changes in discount window borrowing on interest rates are automatically offset by open market operations. Under a nonborrowed reserve or borrowed reserve operating procedure, however, unexpected changes in borrowing will have an impact on interest rates and reserves unless a decision is made to alter open market operations. The discussion in this section assumes a nonborrowed or borrowed reserve operating procedure.

The Federal Reserve can reconcile the goals of providing liquidity to selected institutions while maintaining a desired degree of monetary restraint by coordinating discount policy and open market operations. By selling securities in the open market to drain reserves at the same time that additional credit is advanced through the discount window, the Federal Reserve is able to provide reserves to institutions most in need of liquidity without changing the total amount of reserves in the financial system and without altering the stance of monetary policy.

In practice, the Federal Reserve treats other extended credit differently in conducting monetary policy. Borrowing under the other extended credit programs is generally offset by open market operations. Thus, for example, the extended credit borrowing by Continental Illinois in 1984 was offset by the open market sale of securities. That is, reserves provided through the discount window were offset by an equal reduction in reserves through open market operations. In this way, the Federal Reserve prevented this borrowing from affecting the overall level of interest rates and the degree of monetary restraint.

Despite its classification as extended credit, seasonal borrowing is generally treated like adjustment credit in conducting monetary policy. That is, unexpected increases or decreases in the amount of seasonal borrowing are not routinely offset by open market operations. As a result, these changes in seasonal borrowing generally affect market interest rates and reserve availability.

Seasonal borrowing is treated differently from other extended credit for two reasons. First, until recently, seasonal borrowing has been a small fraction of total borrowing. Thus, as a practical matter, unexpected variation in the amount of seasonal borrowing

would probably be expected to have only minor effects on interest rates and reserve availability. Second, as discussed in the preceding section, both seasonal and adjustment borrowing are interest sensitive and they both behave similarly over the course of the business cycle.

The treatment of seasonal borrowing may need to be reexamined, however, in light of recent developments. Seasonal borrowing increased unexpectedly sharply in 1984. If this increase is maintained, seasonal borrowing could have a larger impact on interest rates and reserve availability in the future. In addition, if substantial amounts of borrowing occur under the recently revised seasonal program, seasonal borrowing could behave more like other extended credit than like adjustment credit. If this occurs, some part of seasonal borrowing might appropriately be offset in conducting monetary policy.

## **Summary**

In recent years an increasing amount of discount window borrowing has occurred under programs for seasonal and other extended credit. This article has described the various borrowing programs and documented the increased role of extended credit borrowing. While discount window borrowing provides necessary liquidity to individual financial institutions and thus promotes the stability of the financial system, this borrowing also has monetary policy implications. Generally speaking, monetary policy instruments are used to offset the impact of borrowing under the other extended credit program to keep this borrowing from having an impact on interest rates and reserve availability. In contrast, borrowing under the seasonal program is not offset. Thus, unexpected changes in seasonal borrowing have an impact on interest rates and reserve availability.

# Supervision of Bank Foreign Lending

*By John E. Young*

Foreign lending by U.S. commercial banks increased greatly in size and geographical scope from the mid-1970s to the early 1980s as U.S. banks recycled dollars from oil-exporting to oil-importing nations. While extensive U.S. bank lending helped oil-importing countries maintain economic growth, global recession and high international interest rates made it difficult for them to service their foreign debt in the early 1980s. The culmination of these difficulties led, in turn, to the international debt crisis in late 1982.

The 1982 debt crisis raised numerous questions about whether foreign lending by U.S. banks was effectively supervised. Subsequently, U.S. bank supervisory agencies developed a more comprehensive system for supervising bank foreign lending. The system was mandated in late 1983 by the International Lending Supervision Act (ILSA).

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This article describes the principal features of the current system for supervising bank foreign lending, with the focus primarily on the ILSA. The first section provides a brief background on bank foreign lending supervision before the ILSA. The second section discusses principal provisions and objectives of the ILSA. The final section describes other regulatory actions affecting bank foreign lending supervision.

## **Background on bank foreign lending supervision**

Three federal agencies—the Federal Deposit Insurance Corporation (FDIC), the Comptroller of the Currency, and the Federal Reserve System—supervise banking activities in the United States, including bank lending. The supervision and regulation of banks help ensure monetary stability, promote an efficient and competitive financial system, and protect consumers and depositors. In the strictest sense, banking regulation refers to the framework of laws and rules under which banks

operate, and supervision refers to the monitoring of financial conditions at banks and to the enforcement of banking regulations and policies.<sup>1</sup> Disclosure refers to information banks are required to make available to the public. Disclosure is intended to promote market discipline. Market discipline refers to the limitations placed on a bank's lending behavior by investors. Investors may impose market discipline by withholding or withdrawing their deposits, demanding a higher yield on their uninsured deposits, or paying a lower price for bank debt and bank stock.

Though bank lending has been supervised for some time, only recently has foreign lending been supervised separately from domestic lending. Separate supervision of bank foreign lending began after the 1973-74 oil embargo. With the embargo and the associated sharp increase in oil prices, lesser developed countries (LDC's) that imported oil began to borrow heavily from banks in industrial countries to finance their rising oil-import bills.<sup>2</sup> Following this rapid buildup of LDC debt, congressional hearings were held in 1977 to discuss bank foreign lending and its supervision. Changes were subsequently made in the supervision of bank foreign lending. Bank supervisors developed a country exposure lending survey and initiated a uniform system for the examination of country risk.

Developed jointly by the three federal bank supervisors, the country exposure lending survey was implemented in 1977. This survey allows collection of information on U.S. bank

foreign lending. The aggregated information is made available to the public. The survey is also used by bank supervisors in the uniform system for the examination of country risk.

The uniform system for the examination of country risk was developed by the bank supervisors and introduced in 1979. The system is administered by the InterAgency Country Exposure Review Committee (ICERC), which consists of members from the FDIC, the Comptroller, and the Federal Reserve System.

The uniform system was designed to improve the supervision of bank foreign lending. The primary objectives of the system are to encourage diversification of foreign lending and to develop uniform practices for examining country risk. Country (transfer) risk refers to the economic, legal, political, and social conditions within a country that may prevent its domestic borrowers from repaying foreign creditors. These conditions include social or political unrest, government repudiation of external debt, nationalization, exchange controls, and an inability to obtain foreign exchange. Country risk is what distinguishes foreign lending from domestic lending and gives rise to the need for separate examination procedures for foreign loans.

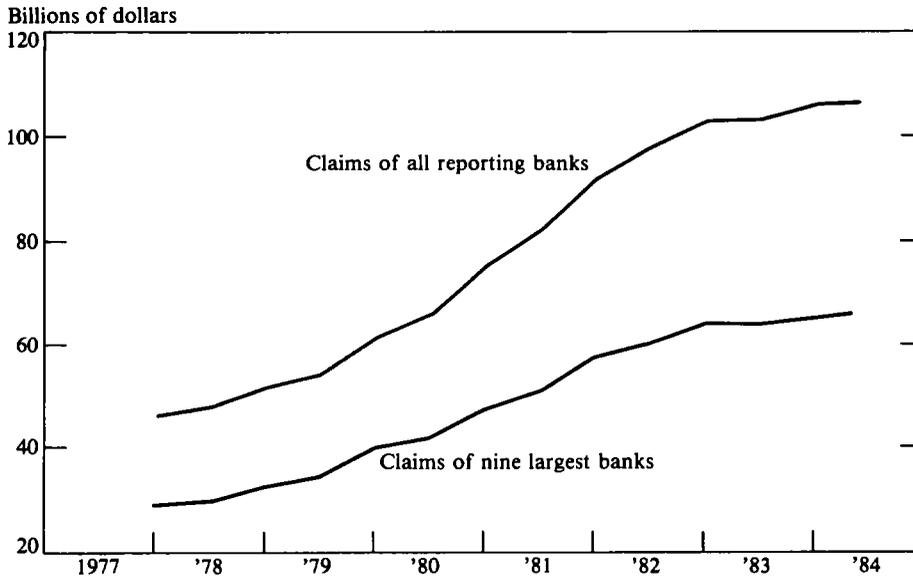
The uniform system and the country exposure lending survey were partially ineffective prior to the ILSA. The survey provided no mechanism for market discipline, since it provided investors with no bank-specific foreign lending data. The uniform system was advisory only, with no mechanism for ensuring that examiners' comments and recommendations were acted on. Although the system brought uniformity to the examination of country risk, it was generally unsuccessful in bringing about greater diversification in foreign lending. In mid-1982, for example, about three years after the uniform system was adopted, loans from the nine largest U.S.

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<sup>1</sup> For more discussion of the objectives of bank supervision, see Kenneth Spong, *Banking Regulation: Its Purpose, Implementation, and Effects*, Federal Reserve Bank of Kansas City, January 1983, pp. 5-10.

<sup>2</sup> For a discussion of the origins of the international debt problem, see William R. Cline, *International Debt and the Stability of the World Economy*, Institute for International Economics, September 1983, pp. 21-31.

**CHART 1**  
**U.S. bank claims on non-oil exporting LDC's\***



\*Includes Mexico

Source: Country Exposure Lending Survey, Federal Financial Institutions Examination Council

banks to Argentina, Brazil, and Mexico amounted to 137 percent of their capital, compared with 114 percent in early 1979.<sup>3</sup> Exposure of all reporting U.S. banks to the three countries increased from 12 percent of their total foreign loans in June 1979 to 15 percent in June 1982.

### The International Lending Supervision Act

Following the sharp increase in oil prices in 1979-80, non-oil exporting LDC's increased their borrowings from U.S. banks. Chart 1 traces the increase. Chart 2 shows that, as a percentage of bank capital, claims on non-oil

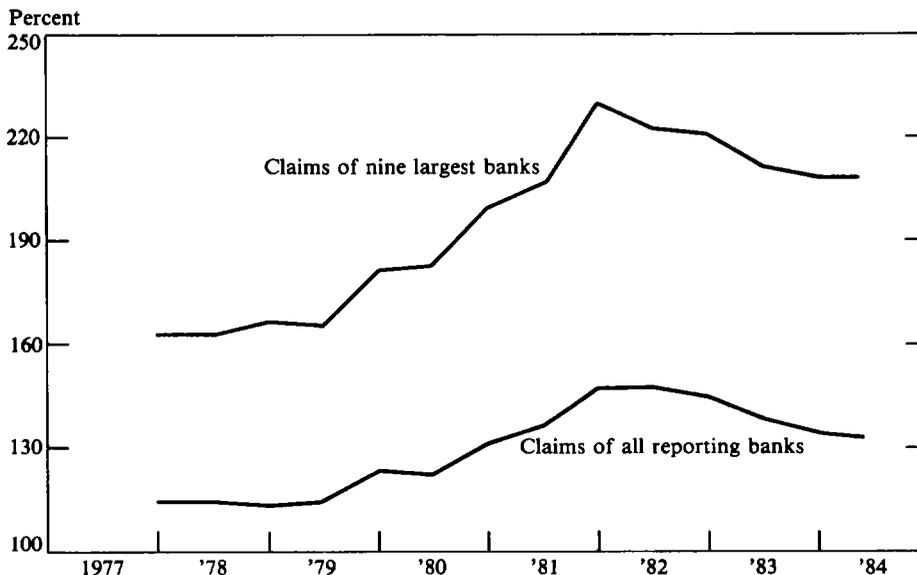
exporting LDC's were substantial, especially for the nine largest U.S. banks.

This heavy borrowing along with the sharp rise in international interest rates placed a heavy debt servicing burden on non-oil exporting LDC's. The burden was made worse by the recession in industrial countries in 1981-82 because it lowered their demand for LDC exports. By August 1982, the debt servicing burden on Mexico was too great and the Mexican government announced it could not meet payments due on its debt to banks. Soon after, when Argentina and Brazil were unable to meet payments due on their debts, the international debt situation moved from the problem stage to the crisis stage.

Following these developments, Congress in late 1983 passed the ILSA in conjunction with legislation allowing for increased U.S. partici-

<sup>3</sup> Richard Dale, Brookings Institute. Hearings, Committee on Banking, Finance and Urban Affairs, House of Representatives, "International Financial Markets and Related Matters," February 2, 8, and 9, 1983, p. 388.

**CHART 2**  
**U.S. bank claims on non-oil exporting LDC's**  
**as a percentage of capital\***



\*Includes Mexico

Source: Country Exposure Lending Survey, Federal Financial Institutions Examination Council

pation in the International Monetary Fund. The general objectives of the ILSA are to encourage the diversification of risk and the maintenance of financial strength adequate to deal with unexpected contingencies.<sup>4</sup> The law directs bank supervisors and banks to take steps to strengthen existing programs on bank foreign lending supervision.<sup>5</sup> Several provisions of the law are discussed below.

<sup>4</sup> Paul Volcker, *Federal Reserve Bulletin*, Board of Governors of the Federal Reserve System, April 1983, p. 277.

<sup>5</sup> The Federal Reserve has jurisdiction over state chartered banks that are members of the Federal Reserve System, bank holding companies, and Edge and Agreement Corporations engaged in banking. The Comptroller has jurisdiction over banks with national charters, and the FDIC has jurisdiction over state chartered banks that are not members of the Federal Reserve System.

*The country exposure lending survey*

This provision of the ILSA, implemented in February 1984, calls for continuation of the country exposure lending survey, but with some changes. The survey is now conducted quarterly and covers banks with a foreign office and more than \$30 million in outstanding foreign loans. The survey collects information similar to the information collected before the ILSA. This includes bank claims on individual countries, the type of borrowers, and the maturity distribution of those claims. The survey data are published quarterly by the Federal Financial Institutions Examination Council (FFIEC). Table 1 gives an example of information in the survey.

Pursuant to the ILSA, the country exposure lending survey contains a special public dis-

**TABLE 1**  
**Amounts owed to U.S. banks by selected foreign borrowers, September 1984**  
(in millions of dollars)

Country	Total Claims	Claims on			Maturity Distribution of Claims		
		Banks	Public Borrowers	Private Nonbank Borrowers	1 Year And Under	Over 1 to 5 Years	Over 5 Years
Argentina	8,229.2	1,884.4	4,075.0	2,269.8	5,739.8	2,159.3	330.1
Brazil	23,621.0	8,529.3	11,096.3	3,995.3	8,579.1	8,596.5	6,445.3
Mexico	26,570.8	4,438.1	13,376.3	8,756.2	8,355.4	12,225.1	5,990.2

Source: Country Exposure Lending Survey, Federal Financial Institutions Examination Council

closure supplement in which banks list claims on a country when the claims exceed 1 percent of the bank's assets or 20 percent of its capital. The type of borrower is also identified and maturity distribution is given. A bank is required to list countries where claims are between 0.75 percent and 1.0 percent of the bank's assets or 15 percent to 20 percent of capital, along with the aggregate claims on these countries.

The survey supplement is available to the public on request. This supplement provides investors with bank-specific data on foreign lending that had not been generally available. By segmenting the geographical distribution of bank foreign lending exposure, the supplement allows investors to make judgments about bank exposure to country risk as economic and political conditions in debtor countries change. It also allows investors to pressure bank management through market discipline when bank exposure to country risk becomes excessive.

#### *Strengthened examination procedures for country risk*

Another provision strengthens the uniform system for the examination of country risk. The system, still administered by the ICERC, was

modified to improve the identification of troubled foreign loans and increase bank management's awareness of exposure to country risk.

Under the strengthened system that went into effect in December 1983, examiners continue to draw on information from the country exposure lending survey and to list and comment on banks' foreign exposures in bank examination reports. The purpose is to increase bank management's awareness of country risk and, possibly, effect a change in lending policy. Examiners also continue to evaluate banks' internal systems for managing exposure to country risk. As was the practice prior to the ILSA, the ICERC classifies loans adversely affected by country risk, which in turn affects the bank's overall asset quality rating.

Three categories are currently used to classify loans that have been adversely affected by country risk. These categories are "loss," "value-impaired," and "substandard." Foreign loans classified as loss are considered uncollectible. A foreign loan is classified as value-impaired when the quality of the loan has been impaired by a protracted inability of the borrower to make payments on the loan and there is no definite prospect for the orderly restoration of debt service in the near future. A foreign loan is classified as sub-

standard when the borrower has not been complying with its debt service obligations as evidenced by arrearages or forced restructurings. In addition, the category of "other transfer risk problems" is used to highlight loans that are judged to be adversely affected by country risk problems, but not affected seriously enough to be classified as substandard. Loans in this category are considered by examiners as a judgmental factor in their general assessment of a bank's asset quality and the adequacy of its reserves and capital.

As a follow-up to examinations, bank examiners still discuss country risk problems and foreign loan concentrations with members of the boards of directors of banks involved in heavy foreign lending. Such discussions are intended to heighten the awareness of country risk and encourage prudent foreign lending.

### *Reserves*

Pursuant to the reserves provision of the ILSA, a special reserve called an Allocated Transfer Risk Reserve (ATRR) is established for foreign loans classified as value-impaired.

Bank supervisors jointly decide at least once a year what foreign loans are subject to risks that warrant establishing an ATRR. They also determine the size of the ATRR, and whether a previously established ATRR should be increased or decreased due to a change in the quality of the loan. Although the amount of the ATRR may be adjusted at the supervisors' discretion, it is normally 10 percent of the loan principal in the first year it is classified as value-impaired and 15 percent in subsequent years. Instead of establishing an ATRR, banks can write down (reduce the book value of) the loan by an amount equal to the ATRR.

The objective of establishing ATRR's is to strengthen banks by requiring them to carry reserves sufficient to offset possible foreign

loan losses. Since ATRR's are not counted as capital for supervisory purposes, a bank is in a better position to absorb a foreign loan loss without reducing its stated capital.

### *Foreign loan fees*

The fees provision of the ILSA deals with how banks can treat the fees they receive for originating and restructuring foreign loans. Under the provision, fees banks receive in excess of the administrative costs of originating or restructuring a foreign loan must be deferred and amortized over the effective life of the loan. Until the implementation of the provision in April and June 1984, banks often took these fees into income immediately.

One reason for requiring banks to defer a part of their restructuring fees is to avoid excessive debt servicing burdens on debtor countries. With a typical restructuring fee of 1 percent of the loan principal, borrowers expected to pay the entire fee immediately could incur a sizable increase in their debt servicing burden. The banks involved in the 1982 restructuring of Mexico's debt, for example, received roughly \$200 million in fee income.<sup>6</sup>

A second reason for the fees provision is to remove an artificial incentive to foreign lending. By taking the whole loan fee into income immediately, banks could boost their current earnings. As a result, there was an incentive to originate or restructure foreign loans. The purpose of the fees provision is not to discourage foreign lending but to discourage foreign lending undertaken for the purpose of boosting banks' current income.<sup>7</sup>

<sup>6</sup> Hearings, Committee on Banking, Finance and Urban Affairs, House of Representatives, "International Financial Markets and Related Matters," February 2, 8, and 9, 1983, pp. 163-164.

<sup>7</sup> William Isaac, Federal Deposit Insurance Corporation. Hearings, Committee on Banking, Finance and Urban Affairs, House

### *International coordination of supervision*

This provision, which became effective with passage of the ILSA, directed the bank supervisors to review the laws, regulations, and examination and supervisory procedures covering foreign lending in major industrial countries.<sup>8</sup> The bank supervisors were then to consult with their counterparts in these countries to promote international coordination of bank foreign lending supervision.

There are two reasons for this provision. First, if U.S. banks are more regulated in their foreign lending than banks in other industrial countries, they may be at a competitive disadvantage. Second, lack of similar supervision of foreign lending by other countries could undermine the effectiveness of the ILSA in promoting the safety and soundness of the U.S. banking system. If bank foreign lending in other countries is not properly supervised and excessive foreign lending follows, it could lead to additional international debt problems. This could jeopardize the foreign loans of U.S. banks and, consequently, the safety and soundness of the U.S. banking system.

### *Capital requirements*

The capital requirements provision of the ILSA gives the bank supervisors authority to establish and enforce minimum capital requirements for banks. This provision represents a subtle but important change. Until the ILSA, the regulation of bank capital lacked uniformity and stringency. Regulators issued capital guidelines

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of Representatives, "International Financial Markets and Related Matters," April 20-21, 1983, p. 219.

<sup>8</sup> The major industrial countries are Belgium, Luxembourg, Canada, France, Germany, Italy, Japan, Sweden, United Kingdom, and the Netherlands.

but it was not clear that they had enforcement power.<sup>9</sup>

The ILSA directs bank supervisors to make sure that a bank's capital position is adequate to accommodate the risks of large country exposure and foreign loan restructuring. Banks with large concentrations of loans in particular countries are expected to maintain higher capital ratios than well-diversified banks.

### **Additional elements of foreign lending supervision**

In addition to steps taken under the ILSA, other regulatory actions by bank supervisors and the Securities and Exchange Commission (SEC) are related to bank foreign lending. These actions are aimed at stricter accounting treatment of nonaccrual foreign loans and increased disclosure of foreign lending.

### *SEC disclosure requirements*

The SEC helps protect investors by requiring the disclosure of material information. Disclosure allows investors to make more informed investment decisions. More than 760 bank holding companies (BHC's)—with subsidiaries including the 100 largest banks—are subject to SEC disclosure provisions.<sup>10</sup>

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<sup>9</sup> Under those capital guidelines, existing since December 1981, the FDIC, Comptroller of the Currency, and the Federal Reserve System set minimum capital requirements for banks under their respective jurisdictions. However, these capital guidelines varied to some extent across bank size and supervisory agency. Although supervisory agencies could issue cease and desist orders when banks failed to comply with capital guidelines, they rarely did and there was uncertainty about supervisors' authority to enforce their guidelines. For collaboration of this point, see Karlyn Mitchell, "Capital Adequacy at Commercial Banks," *Economic Review*, Federal Reserve Bank of Kansas City, September/October 1984, pp. 19-20.

<sup>10</sup> See John S.R. Shad, Securities and Exchange Commission. Hearings, Committee on Banking, Finance and Urban Affairs, House of Representatives, "International Bank Lending," April 20-21, 1983, p. 350.

In 1976, the SEC imposed requirements on certain BHC's that they disclose information on their foreign lending activities.<sup>11</sup> The information must include a breakdown of aggregate foreign loans outstanding into the following categories: government and official institutions, commercial and industrial entities, banks and other financial institutions, and others. The amount of foreign assets, as well as foreign revenue and income, is also disclosed for each significant geographical area in which the BHC does business, such as Europe or Latin America. Yields on average foreign assets and the allowance for foreign loan losses are also disclosed.<sup>12</sup>

With the Latin American debt crisis of 1982, it became apparent that loans to countries with liquidity problems might involve unusual risks and uncertainties for banks. Consequently, the SEC established additional disclosure requirements in 1982, 1983, and 1984. Under these recent disclosure requirements, BHC's must disclose exposures to foreign countries that amount to more than 1 percent of their assets. BHC's with foreign country exposures that equal 0.75 percent to 1.0 percent of their assets must disclose the names of the countries and the aggregate exposure to the countries.<sup>13</sup> BHC's with loans outstanding to borrowers in a foreign country

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<sup>11</sup> A BHC is required to disclose information on its foreign lending activity if over each of the past two years: 1) the pre-tax income associated with foreign banking operations exceeded 10 percent of total pre-tax income, or 2) the assets associated with foreign banking operations exceeded 10 percent of total assets.

<sup>12</sup> *SEC Docket*, Vol. 10, September 16, 1976, pp. 316-321. See also John S.R. Shad, Securities and Exchange Commission. Hearings, Committee on Banking, Finance and Urban Affairs, House of Representatives, "International Bank Lending," April 20-21, 1983, p. 344.

<sup>13</sup> *Washington Financial Reports*, "SEC Revises Disclosure Requirements on BHCs' Foreign, Nonperforming Loans," Vol. 41, August 15, 1983, pp. 286-287. Preliminary research suggests that these SEC foreign loan disclosure requirements do pro-

that exceed 1 percent of their assets must disclose information on loan restructuring.<sup>14</sup> BHC's must also disclose the amounts in their ATRR.<sup>15</sup>

### *Nonaccrual loan rule*

In June 1984, amid growing concern over Argentine debt, the Comptroller of the Currency and the Board of Governors of the Federal Reserve System sent a joint statement to banks clarifying their policy regarding loans classified as nonaccrual. Generally, a nonaccrual loan is one on which the borrower has fallen behind on principal or interest payments. Before this clarification, some banks classified loans as nonaccrual only if the interest or principal payments were more than 90 days overdue on the day the bank was filing its income statement. Consequently, some banks would record uncollected interest as income, even on loans that had been on nonaccrual status and were clearly not performing according to the terms of the contract. As a result, there was an overstatement of earnings on these banks' income statements.

The policy was clarified to make sure that banks correctly followed established procedures for classifying loans as nonaccrual. Under the clarification of policy, a loan is to be placed on nonaccrual status the day that interest or principal payments become 90 days past due. When this happens, any interest

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mote market discipline. See Steven C. Kyle and Jeffrey D. Sachs, "Developing Country Debt and the Market Value of Large Commercial Banks," *NBER working paper 1470*, September 1984, p. 7. See also Jeremy A. Gluck, "The Impact of LDC Loan Exposure on U.S. Commercial Bank Stock Prices and Borrowing Rates," mimeo, Federal Reserve Bank of New York, October 1984.

<sup>14</sup> *SEC Docket*, Vol. 27, February 4, 1983, pp. 63-64.

<sup>15</sup> *Washington Financial Reports*, "SEC Staff Says Risk Reserve for Banks May Not Satisfy Federal Securities Laws," Vol. 42, February 13, 1984, p. 301.

accrued but not actually collected must be subtracted from income and any additional interest will be counted as income only when interest payments are actually received. A loan remains classified as nonaccrual until all interest and principal payments are brought up to date.<sup>16</sup>

This policy had an immediate and substantial effect on bank earnings. The policy became effective in the third quarter of 1984, however, many banks chose to apply it in the second quarter. For example, the largest U.S. lender to Argentina classified \$638 million of its Argentine loans as nonaccrual during the second quarter of 1984. As a result, the lender had a net loss of \$21.4 million that quarter. Another large bank placed many of its Argentine loans on nonaccrual status during that quarter and suffered a \$3.1 million loss.<sup>17</sup> By the fourth quarter of 1984, the big banks had placed 40 to 60 percent of their Argentine loans on nonaccrual status.<sup>18</sup>

## Conclusion

Supervision of bank foreign lending has evolved substantially over the past decade. Early efforts to supervise foreign lending—such as the original country exposure lending survey and the uniform system for the examination of country risk—did not prevent exces-

sive foreign lending because they did not provide mechanisms for forcing banks to behave more prudently.

Recent supervisory measures are designed to use both regulatory power and market pressure through disclosure to promote prudence. By empowering bank supervisors to require special reserves and minimum capital, the ILSA encourages banks to scrutinize their foreign lending programs and, thereby, strengthens the banking system against foreign loan losses. The ILSA promotes market discipline by requiring banks to disclose detailed data on foreign lending through the country exposure lending survey. The SEC disclosure requirements also promote market discipline by providing investors with material information. More prudent accounting practices, which also may promote market discipline, are promoted by recent changes in the treatment of foreign loan fees and nonaccrual foreign loans.

Steps taken pursuant to the ILSA and other recent regulatory steps come at a time when bank foreign lending has already curtailed due to the international debt crisis of 1982. It is unclear, therefore, what effect these steps have had on bank foreign lending. It is clear, however, that the current system of supervising bank foreign lending has evolved in a manner designed to help ensure the safety and soundness of the U.S. banking system.

<sup>16</sup> *Washington Financial Reports*, "Banks May Take Hit on Foreign Loans After Interest Accrual Loans Clarified," Vol. 46, June 25, 1984, pp. 1065-1066.

<sup>17</sup> Suzanna Andrews, "Accounting for LDC Debt," *Institutional Investor*, August 1984, p. 193.

<sup>18</sup> Dan Hertzberg and S. Karene Witcher, "Republic New York, RepublicBank Put Argentine Loans on Non-Accrual Status," *Wall Street Journal*, January 17, 1985, p. 2.





Economic Review  
Federal Reserve Bank of Kansas City  
Kansas City, Missouri 64198  
May 1985, Vol. 70, No. 5