

Research Department
Federal Reserve
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Financial Futures for Banks

A topic generating a great deal of interest in banking circles these days is financial futures. Trade publications are turning out articles on this subject by the dozens, while seminars on hedging with financial futures are drawing hundreds of bankers. Everyone in the industry, it seems, is becoming aware of the potential benefits of using financial futures to manage interest rate risk and reduce earnings volatility. And although the number of banks participating in the financial futures markets is currently small, interest in using futures is becoming widespread within the industry.

This growing interest in financial futures is one manifestation of a more general concern about managing banks' exposure to interest rate risk. High and volatile interest rates of the past few years have made interest rate risk management an important determinant of a bank's profitability and even of its soundness over the longer run. As a result, bankers have sought to improve their ability both to measure their bank's exposure to interest rate risk and to manage such risk. This *Letter* examines the nature of interest rate risk in the banking industry as well as financial futures' potential for hedging that risk. Next week's *Letter* will look at some of the regulatory and accounting problems that arise in connection with banks' use of financial futures.

Interest rate risk

Banks have always been in the business of assuming interest rate risk along with the credit, or default, risks they assume in making loans. Historically, banks have performed a "maturity intermediation" function by borrowing short and lending long. In other words, bank assets on average have traditionally had a longer maturity than bank liabilities.

This may not always be the case now, however. In recent years, banks have attempted

to achieve a better overall match between the maturities (technically, the repricing periods) of their assets and liabilities. By making greater use of floating rate business and mortgage loan contracts, among other things, banks have been able to shorten the repricing period, or the length of time between interest rate adjustments, on their assets without necessarily changing the contractual maturity of those assets. Nonetheless, these efforts frequently do not yield a perfect match between the repricing periods of assets and liabilities. Thus, there may be instances in which some of a bank's assets have a shorter effective maturity than that of the liabilities funding those assets as well as vice versa. To the extent that a mismatch still exists, then a bank has assumed *interest rate risk*.

Interest rate risk is the risk that fluctuations in interest rates might cause the value of a bank's net worth to fall. Because a change in the level of interest rates will affect the present value of shorter-term instruments less than the present value of longer-term instruments, banks place their shareholder's equity at risk by mismatching. For example, a bank with an excess of long-term assets relative to long-term liabilities would experience a decline in its value if interest rates were to rise because, other things equal, the value of its assets would fall by more than the value of its liabilities. (Of course, such a decline in value is not likely to appear immediately as a decline in recorded capital since banks record assets and liabilities at book value. However, it will show up as a decline in the spread between a bank's yield on assets and its cost of funds. Such a deterioration in a bank's earnings potential is likely to be reflected in a lower market price for its shares.)

When interest rates were fairly stable and the yield curve was thought to be well-behaved, bankers generally regarded a

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strategy of actively mismatching the maturities of assets and liabilities as profitable. The risk of a serious deterioration in the value of bank shareholders' equity was perceived—perhaps incorrectly—as minimal. However, the accelerating inflation of the 1970s increased the variability of interest rates and made the shape of the yield curve less predictable. As a result, bankers became increasingly conscious of the impact the asset/liability mix of their bank's balance sheet had on earnings and share values, and they began to pay more attention to controlling exposure to interest rate risk.

Hedging with futures

Hedging with financial futures is one low-cost means of reducing exposure to interest rate risk that has attracted a lot of attention recently. Financial futures are contracts that are traded on organized exchanges obligating the buyer (seller) to take (make) delivery of a given financial instrument at a specified future date and price. All transactions in financial futures are cleared through the exchange clearinghouse, which acts as the opposite party to every transaction. Thus, a position in financial futures can be readily "closed out" without taking (or making) delivery of the specified securities simply by taking the opposite position with the clearinghouse before the contract delivery date. Positions in financial futures are held with small "good faith" margins and gains or losses from that position are posted to the margin account according to daily price movements.

Although contracts are available for a variety of financial instruments, bankers find the 90-day Treasury bill, the 90-day CD and the GNMA passthrough certificate contracts to be the most useful in hedging interest rate risk. Because the prices of these contracts generally move with changes in the prices of the underlying instrument, a position in futures can be used to offset a bank's spot position, thus leaving earnings largely unaffected by movements in market interest rates. Thus a bank that had an excess of long-term assets over liabilities could hedge against rising rates (i.e., falling security prices) by *selling* futures—that is, contracting to make delivery in the future. Should interest rates in fact rise, the decline in the value of the bank's assets relative to the value of its liabilities is likely to be offset by the rise in the value of the bank's futures position.

For example, suppose a bank on last May 6 funded a \$10 million six-month bullet loan (principal and all interest due at maturity) with 90-day CDs and wanted to preserve a 300 basis point spread on the difference between the going CD rate of 8.31 percent and the loan rate of 11.31 percent. The bank was open to the risk that when the 90-day CDs matured on August 4 and had to be rolled over for another 90 days at a new rate, the CD rate could have risen, thus reducing its earnings spread over the six-month life of the loan. To protect itself against this risk, the bank could have sold ten CD futures contracts (which are traded in \$1 million lots) on May 6 for delivery in September, the contract delivery date closest to the roll-over date of its CDs. Using data on the actual closing price of the September CD futures contract that was quoted in the *Wall Street Journal* on May 6, 1983, the bank would have acquired its short position at the going price of 91.43, or a discount rate of 8.57 percent. It would then have closed out its position on August 4 when it issued the new CDs. According to the *Wall Street Journal*, the closing price of the September CD contract on August 6 was 89.84 for a discount

rate of 10.16 percent. The bank's profit on this transaction, then, would have been 159 basis points because, as interest rates rose and securities prices fell, the bank could, in essence, have met the terms of its original contract to deliver CDs at a price of 91.43 by purchasing those securities at 89.94, and then selling them at the higher price. Thus, while the CD rate had risen from 8.31 to 9.88 percent over that time, the bank would have still earned a spread of 301 basis points over the six-month term of the loan. Unhedged, the bank's spread would have averaged only 221 basis points.

Hedging with financial futures can be a very effective means of preserving a bank's earnings. Of course, not all futures hedges are likely to preserve a bank's spread so effectively. The effectiveness of the hedge will depend on the stability of the "basis," or the difference between the rate on the underlying instrument and the rate on the futures contract. In the example above, futures prices moved closely with changes in spot prices, but this is sometimes not the case. Nonetheless, financial futures have a number of advantages over some of the other alternatives open to banks for reducing interest rate risk primarily because transactions in futures are relatively costless to effect. The other alternatives available to banks—matching the repricing periods of assets and liabilities by offering only short-term or variable rate loans or selling unmatched assets (typically, mortgages) to outside investors—by contrast, may entail higher costs.

Thus, one advantage of hedging with financial futures is that unlike transactions which involve matching repricing periods of assets and liabilities, transactions in financial futures do not require costly credit evaluations either on the part of the bank or on the part of potential investors. Since the opposite party to every transaction in futures is the exchange clearinghouse, the risk of default to both the bank and the investor is diversified and is therefore much lower than if

those two parties were to deal directly with each other.

Moreover, hedging with financial futures may be more attractive than achieving the same level of risk exposure in the spot market because the cost of carry is lower. Futures positions can be held with small margins (\$2,000 can typically control a \$1 million CD futures contract) and payment for the entire market value of the contract is not required unless the position is left open until the contract delivery date. Spot market transactions, by contrast, involve immediate delivery and must be paid for with cash or financed.

Growing interest

Given the advantages of financial futures, it is no wonder that many bankers are investigating their use in hedging interest rate risk, even though to date, only a hundred or so banks (out of more than 14,000) have actually used them. Some of the reluctance to use futures has to do with a lack of trained personnel as well as a realization that while futures help to protect against downside risks, they also limit banks' ability to take advantage of beneficial movements in interest rates. The rather limited use of futures to date may also be due to the regulatory and accounting problems that arise in connection with the use of futures. These latter issues will be discussed in next week's *Letter*.

Barbara Bennett

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BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT
 (Dollar amounts in millions)

Selected Assets and Liabilities	Amount Outstanding	Change from	Change from			
			11/9/83	11/2/83	Dollar	Percent
Large Commercial Banks						
Loans (gross, adjusted) and investments*	163,936	586		1,699		1.0
Loans (gross, adjusted) — total#	143,912	639		2,171		1.5
Commercial and industrial	44,312	517	—	1,019	—	2.2
Real estate	57,414	24		180		0.3
Loans to individuals	24,971	0		1,569		6.7
Securities loans	2,974	— 66		762	—	34.4
U.S. Treasury securities*	7,543	— 49		903		13.6
Other securities*	12,479	— 4	—	1,375	—	9.9
Demand deposits — total#	41,471	—1,720		690		1.7
Demand deposits — adjusted	30,290	1,134		1,373		4.7
Savings deposits — total†	66,257	25		33,600		102.9
Time deposits — total#	69,123	452	—	30,911	—	30.9
Individuals, part. & corp.	63,551	410	—	26,264	—	29.2
(Large negotiable CD's)	16,856	— 34	—	19,811	—	54.0
Weekly Averages of Daily Figures	Week ended 11/9/83	Week ended 11/2/83	Comparable year-ago period			
Member Bank Reserve Position						
Excess Reserves (+)/Deficiency (—)	19	94		140		
Borrowings	224	7		39		
Net free reserves (+)/Net borrowed(—)	— 205	87		101		

* Excludes trading account securities.

Includes items not shown separately.

† Includes Money Market Deposit Accounts, Super-NOW accounts, and NOW accounts.

Editorial comments may be addressed to the editor (Gregory Tong) or to the author . . . Free copies of this and other Federal Reserve publications can be obtained by calling or writing the Public Information Section, Federal Reserve Bank of San Francisco, P.O. Box 7702, San Francisco 94120. Phone (415) 974-2246.