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The shorter the average maturity of an
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A rough measure of a commercial bank’s
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Commercial banks traditionally have been interest-rate sensitive (IRs) because asset/liability mismatches have been large and because short-term interest rates are more volatile than long-term interest rates. The sensitivity of both the interest margin and the level of net interest income to changes in market rates has often been used as a measure of interest-rate risk.1

1. Interest-rate risk is not eliminated by these adjustments; it is shifted to borrowers.

Although various adjustment strategies are possible, the easiest, and hence most probable, reaction to rate volatility is to adjust asset/liability maturity structures.2

2. The dominant problem is the last. Losses from futures hedging and the precision of forecasts and price quotations are not considered. Moreover, gains can be deferred. For a discussion of this topic, see Michael G. Lown, "A New Foundation for Risk-sensitive Banking Accounting Reform," American Banker, December 16, 1980.

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Commercial banks traditionally have been liability-sensitive (RSAs have exceeded RSLs), although asset/liability positions have varied among banks and even at the same bank over the interest-rate cycle. In the past decade, commercial banks have relied increasingly on short-term, interest-sensitive liabilities as permanent sources of funds, a trend that accelerated with the introduction of six-month money market certificates in mid-1977. By deliberately decreasing the proportion of RSAs in their portfolios, banks typically have attempted to lock in high yields in periods in which interest rates were expected to decline and, when interest rates increased unexpectedly, margins were squeezed as bank interest expense rose faster than interest income.

Such behavior was not necessarily a problem in the past, when rates were relatively stable and the relationship between short-term and long-term rates was more predictable. As long as interest-rate-sensitivity levels were in margins that were positive on average, this strategy may have been profit-maximizing and worth the risk. Because it is more difficult for asset-sensitive institutions to adjust to a unfavorable environment, and because short-term rates have remained above long-term rates for extended periods, penalties for inappropriate portfolio composition are more probable and will be more severe.

Banks may alter their behavior in many ways to mitigate rate-generated, adverse impacts on margins. On the asset side, banks might attempt to reduce the volume of term loans in their portfolios and/or increase the proportion of long-term loans bearing floating vs. fixed rates of interest. They can adjust securities, the composition of portfolios in a similar manner. On the liability side, banks might attempt to increase the proportion of their liabilities bearing fixed rates and/or extend liability maturities and so achieve a closer match between RSAs and RSLs.

Other margin-preserving options exist. Banks could react to greater perceived rate risk due to asset/liability mismatch by widening the margin between their lending rates and expected cost of funds. Alternatively, banks might choose to hedge perceived rate risks stemming from RSA-RSL imbalances through the use of the interest-rate futures market.

Although various adjustment strategies are possible, the easiest, and hence most probable, reaction to rate volatility is that asset and pricing changes. The other adjustments noted previously are generally more difficult. Liability ad- justments are constrained by the preferences of suppliers of funds for rate-sensitive instruments. Bank utilization of the interest-rate futures market trend to be limited by the difficulty of effectively integrating futures trading operations with traditional asset-liability management, the market for bank-liability futures, and the required accounting treatment of futures hedges, which can produce unacceptable fluctuations in reported net income. In contrast, the asset adjustments noted earlier would decrease bank exposure to interest-rate fluctuations, while permitting banks to retain operational flexibility.

Raising lending rates relative to funding costs is also feasible, because all competing financial intermediaries face similar rate-related risks.4

Evidence of Changes in Long-Term Lending

Changes in long-term commercial and industrial loan pricing behavior are an indicator whether banks have adjusted their loan-pricing behavior in response to volatile interest rates. Subtle evidence on these adjustments can be drawn from quarterly surveys of the terms of bank lending conducted by the Federal Reserve Board. These surveys of the lending terms of a representative sample of 340 commercial banks are completed during the first business week of February, May, August, and November of each year. Because interest rates have been particularly volatile since the third quarter of 1979, changes in long-term lending are measured from two quarterly surveys following August 1979. To compare the average terms reported in the first three quarterly surveys conducted in 1979. Selected aspects of long-term lending practices are presented in Table 1, both for all sample banks and for two size classes so that differential adjustments may be discerned.

All Sample Banks

The survey data for all banks generally indicate that the expected loan adjustments have been occurring over the past several quarters. The volume of long-term loans was below the 1979 three-quarter average in two subsequent quarters. Further, the proportion of floating-rate term loans fell below the 1979 reference point beginning in May 1980. The proportion of long-term loans at floating rates was considerably higher than the 1979 three-quarter average in all subsequent quarters. The average maturity of all types of loans showed little change during this period, and the reference point average in all subsequent surveys. There are two possible explanations of why the maturity shortening was not greater. First, the sharp increase in floating-rate loans may have effectively shortened long-term loan maturities and thus served to prolong maturity.

In looking at the average maturities of floating-rate and fixed-rate loans, it was found that the average maturity of floating-rate loans was higher than the reference point level in all subsequent surveys. The average maturity of fixed-rate loans, however, exhibited the expected sharp decrease. Second, and a large and increasing proportion of loans were made under commitments in 1979 and 1980, and so loan term ad- justments to changes in current eco- nomic conditions may have been some- what constrained.

Large vs. Small Banks

The volume of long-term loans at large responding banks was above the reference point level in all subsequent quarters, while the opposite was true for smaller banks. Although the proportion of long-term loans at large banks did not sharply decrease at large banks after the third quarter of 1979, it was below the reference point level by May 1980. At smaller banks this proportion generally was below the reference level in the sub- sequent quarters.

Comparative developments may reflect the relatively greater utilization of floating-rate loans at large banks. While the propor- tion of floating-rate loans changed similarly and predictably at both classes of banks (increasing and remaining above the reference point level in all subsequent periods), the proportion at larger banks was substantially above that at smaller banks in all periods.

There are also obvious differences in changes in average maturities. Average ma- turities at large banks rose after August 1979 to levels above those at smaller banks. This is generally true for both floating-rate and, surprisingly, fixed-rate loans. At smaller banks, average maturities fell below refer- ence point levels in November 1979 and remained below these levels in all subse- quent periods. This was true for both rate classes of loans, although the adjustment was much sharper for fixed-rate loans as expected.
margin impact produced by a given change in rates will be directly related to the size of the RSA-RSL mismatch in each of the two size classes so that differential adjustments are more easily and, surprisingly, fixed-rate loans. At smaller banks, average maturities fell below reference point levels in all subsequent quarters, while profit margins at large banks were relatively greater utilization of floating-rate and fixed-rate loans. In comparing the average maturities of floating-rate and fixed-rate loans, it was found that the average maturity of floating-rate loans was higher than the reference point level in all subsequent surveys. The average maturity of fixed-rate loans, however, exhibited the expected sharp decrease. Second, and a large increase in proportion of loans were made under commitments in 1979 and 1980, and so loan term adjustments to changes in current economic conditions may have been somewhat constrained.

### Large vs. Small Banks

The volume of long-term loans at large responding banks was above the reference point level in all subsequent quarters, while the opposite was true for smaller banks. All things considered, the data in Table 1 do not clearly indicate whether banks have adjusted their loan-pricing behavior in response to volatile interest rates. Suggestive evidence on these adjustments can be drawn from quarterly surveys of the terms of bank lending conducted by the Federal Reserve Board. These surveys of the lending terms of a representa
tive sample of 340 commercial banks are compared during the first business week of February, May, August, and November of each year. Because interest rates have been particularly volatile since the third quarter of 1979, the results of the first three quarterly surveys following August 1979 are compared with the average terms reported in the first three quarterly surveys conducted in 1979. Selected aspects of long-term lending practices are presented in table 3, both for all sample banks and for two size classes so that differential adjustments may be discerned.

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<table>
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The data suggest that banks altered at least the loan portion of their asset port- folios over the 1979-80 period. The most notable changes were the decrease in proportion of long-term loans beginning in February 1980, the shortened average loan maturities, and the increased use of the floating-rate convention on term loans.

The adjustment in lending behavior was most marked when market rates were highest and sharply rising, particularly in February 1980. In addition to booking more term loans at floating rates, long-term loan volume fell absolutely and relative to total loans, and loan maturities on both fixed- and floating-rate loans were sharply reduced.

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Banks also may attempt to offset per- ceived interest-rate risks by increasing rates on long-term commercial loans relative to expected funding costs. Suggestive evidence drawn from the surveys of terms of lending appears in charts 1 through 3. Chart 1 shows changes in the ex ante spread between the average rate on all term loans and a measure of the expected cost of funds for all sample banks, large banks, and small banks over the 1979-80 interval.6 The spreads calculated are rough approximations to expected or ex ante target bank-lending margins and should not be construed as represent- ing the actual margins realized. The funds cost proxy was the ex-month CD rate average over the survey month and two previous months.

Changes in the ex ante spread between the average rate on term loans above the prime relative to the same measure of funds for all banks, large banks, and small banks over the same interval. Changes in the spread between the average rate on loans made at rates above the prime and the average prime rate for all sample banks, large banks, and small banks over the 1979-80 period are shown in chart 3. Ex ante spreads generally widened after August 1979, except during the first quarter of 1980 (see charts 1 and 2). This appeared to be true particularly for loans at rates above the prime-loans presumably made to smaller, marginal borrowers and hence entailing more risk. Similar spread changes were evidenced at both large and small banks. Small banks have attempted to widen spreads on riskier loans at rates above the prime, as shown in charts 2 and 3. Generally 80 percent or more of all term loans were at rates above the prime (see table 1).

Conclusions
In summary, commercial banks altered both their long-term lending and loan pricing practices over the 1979-80 interval in a manner suggesting an adjustment re- quired to offset interest-rate risks stemming from asset-liability mismatch. Sufficient evidence has not been collected to determine whether these adjustments have effectively insulated margins at banks.7 Small banks exhib- ited more marked adjustments. This might reflect differences in initial asset-liability mismatch, goals or preferences for risk, access to other risk reduction techniques, competitive pressures, or other reasons.

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1. There is some evidence that they did not. A recent article in American Banker reported that net income of the top 100 banks in the United States grew 21 percent in 1980, vs. 6 percent of increase since 1976. The impact of interest rates on margins was cited as the culprit. See Teresa Carson, "Bank Earnings Show Smallest Gain since 1976; Interest Margins Cited," American Banker, January 26, 1981.

Gary Whalen is an economist at the Federal Re- serve Bank of Cleveland.

The views stated herein are those of the author and not necessarily those of the Federal Reserve Bank of Cleveland or of the Board of Governors of the Federal Reserve System.

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