

When Is the Prime Rate Second Choice?

*by Brian C. Gendreau**

Not long ago, little controversy surrounded the prime rate convention. The prime rate was understood to be the rate banks charged on loans to their most creditworthy corporate customers. Other corporate borrowers paid a rate marked up over the prime. Though prime-related loans were generally floating-rate loans—such that borrowers' loan rates changed with the prime—the prime rate usually rose and fell gradually, giving customers a measure of stability in their borrowing costs.

Banks still post prime rates, and changes in the prime continue to be reported on national news-casts and greeted by bursts of trading activity in securities markets. But now the prime seems to change faster in response to market interest rate movements. Moreover, many loans are being made at rates below the prime. According to a Federal Reserve Board survey of the terms of all short-term business loans granted by 48 of the

nation's largest banks, in the first week of November, 1982, over 92 percent were at rates below the prime.

Consequently, many commentators now doubt that the prime is a useful benchmark loan rate. After the staff of the House Banking Committee studied lending practices at ten large banks in early 1981, Chairman Ferdinand St. Germain concluded that "the prime rate has been so often misused, abused, and tortured in recent years that the phrase now seems beyond repair." Secretary of the Treasury Donald Regan concurs that the prime rate no longer reflects loan costs accurately, and recently proposed creating in its stead a "watch rate" set at half a percentage point above the commercial paper rate—the interest rate firms pay on short-term notes sold in money markets. Why have bank lending practices changed? What kinds of loans are being made below prime? What does the prime rate mean today? The answers depend in part on the characteristics of the prime, and especially on the manner in which prime rate changes are determined.

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**THE PRIME:
A CURIOUSLY STICKY RATE**

Popular definitions of the prime rate usually distinguish it from other rates by the credit quality of the underlying loan. The prime rate also differs importantly from other interest rates, however, in the way it reacts to changes in credit market conditions. While rates on money market instruments such as Treasury bills and commercial paper change with trading throughout each day, the prime rate changes less frequently. In past years, when interest rates were more stable, the prime rate did not change for months or even years on end. Now the prime rate changes more often, but it still lags changes in market rates.

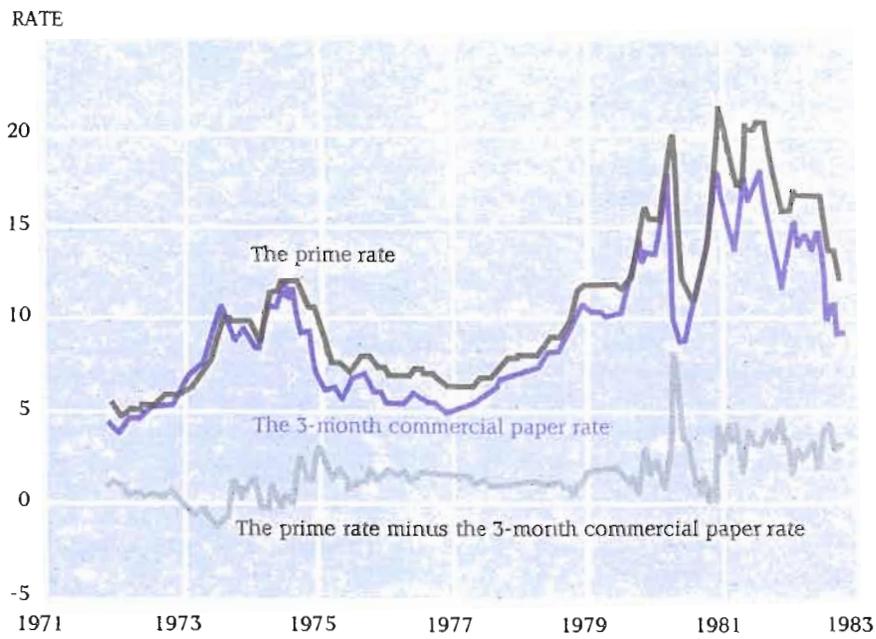
The stickiness in the prime rate is easily seen in Figure 1, which compares the movements of the prime rate, the 3-month commercial paper rate, and their difference from 1972 through 1982. The

prime rate adjusts fully to short-term interest rate movements, but only after a substantial lag. When short-term rates rise, the prime rate initially does not keep pace, and the spread between the prime and short-term rates narrows and occasionally becomes negative. Conversely, when interest rates fall, the prime rate lags behind, and the spread between the prime and market rates widens appreciably.

The stickiness in the prime rate can be traced to a corresponding stickiness in banks' cost of attracting new funds from so-called *core deposits*—demand deposits and those time deposits subject to binding interest rate ceilings. Since Congress prohibited the payment of interest on demand deposits and authorized the Federal Reserve to limit the rates paid on time deposits in the Banking Act of 1933, banks have competed for core deposits by paying implicit interest in the form of services provided

FIGURE 1

**THE PRIME RATE RESPONDS SLOWLY
TO CHANGES IN MARKET INTEREST RATES**



below cost. These services, which are provided on core deposits to this day, include check clearing, gifts, the convenience of a multitude of bank branches, extended hours, credit lines, and, for firms, payroll and cash management systems (see NONRATE COMPETITION AND THE PRIME).

Banks Adjust Implicit Deposit Rates Slowly. . . . When interest rates are low and stable, banks have little difficulty in attracting core deposits by paying implicit interest. But when interest rates move higher and become more variable, bank deposit and loan pricing becomes more complicated. The problem is that implicit interest payments cannot be changed quickly in response to interest rate movements. It takes time to build new branches, to run or pull advertising campaigns, to mail out notices of changes in service charges (and to decide to do these things). Banks cannot hope to match frequent fluctuations in short-term interest rates with costly, cumbersome changes in services. Nonetheless, banks that fail to adjust their implicit interest payments to meet a permanent change in market rates risk losing customers.

Unable to change services quickly, yet compelled by competition to match eventually a sustained change in market rates, banks have little choice but to adjust implicit interest payments

gradually to changes in market interest rates. Economists' estimates of the implicit interest rates paid by banks are consistent with this kind of rate setting behavior. Two estimated implicit interest rate series are presented in Figure 2 (p. 16). These estimates show that implicit rates respond to changes in market rates, but do not adjust on a one-to-one basis with changes in current period, short-term interest rates.¹

... Making the Prime Rate Sticky. In seeking to maximize profits, banks adjust their loan rates to reflect changes in their costs in raising new funds. As long as some of these funds are obtained by paying implicit interest on core deposits, banks' costs in attracting additional funds will change only gradually in response to market rate movements. Since loans are priced as a markup over

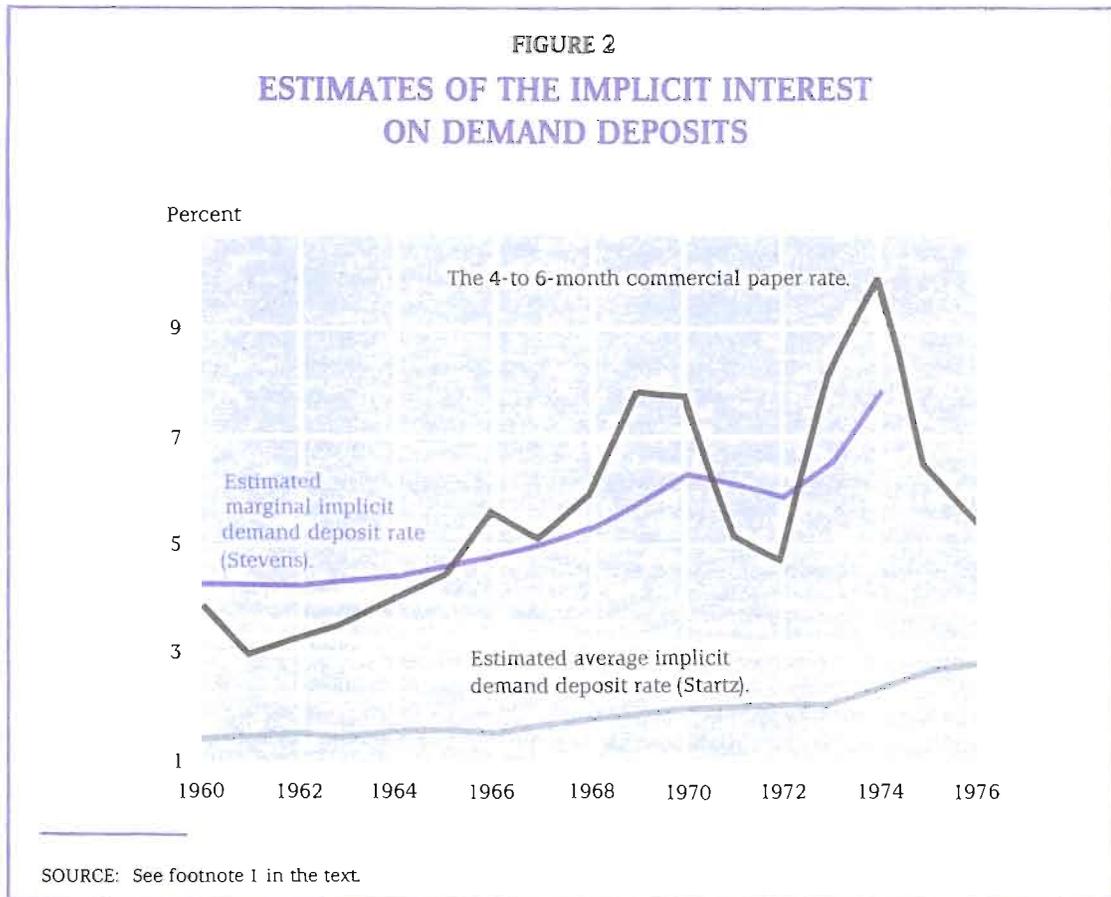
¹ See Richard Startz, "Implicit Interest on Demand Deposits," *Journal of Monetary Economics* 5 (1979), pp. 515-534, and Edward J. Stevens, "Measuring the Service Return on Demand Deposits," Federal Reserve Bank of Cleveland Working Paper No. 7601 (December, 1976). Startz's series is an estimate of the average implicit interest rate paid on all demand deposits, and is available through 1976. Stevens' series is an estimate of the implicit rates paid to attract extra (marginal) demand deposits, calculated under the assumption of perfect competition, and is available through 1974.

NONRATE COMPETITION AND THE PRIME

An industry-wide prime rate first emerged in 1934, shortly after Congress prohibited the payment of interest on demand deposits. Banks, having suffered three consecutive years of losses (in the aggregate) by 1934, welcomed the legal restrictions against deposit rate competition and began to compete for deposits by paying implicit interest in services, as they do to this day. The timing of the inception of the prime rate suggests that the prime is closely connected to nonrate deposit competition. But why would banks prefer nonrate to rate competition? And how is the prime linked to nonrate competition?

When banks engage in interest rate competition for deposits, they must pay the competitive rate on all deposits. This rate is highly visible, and can be compared with other banks' rates with ease. In contrast, with nonrate competition customers must undertake a costly search among banks to find the best loan and deposit service bundles. Once interest rate competition is prohibited, banks can take advantage of the imperfect information customers have about each other's services to reduce services below the competitive level. Moreover, by competing for deposits with services banks are able to reduce their costs by offering less in services to customers who are relatively insensitive to the return on their deposits than to more return-sensitive customers.

The prime rate is connected with nonrate deposit competition because many bank depositors are also borrowers. The most effective way to pay implicit interest to depositor-borrower customers is through loan rate concessions. Widespread loan rate concessions, however, would have wiped out the benefits of nonrate competition provided by deposit rate ceilings. Hence banks attempted to preserve nonrate competition by adopting a uniform rate for loans to their best customers—the prime rate—that served as a floor rate for industry-wide loan pricing.



these costs, loan rates will also change gradually.²

In the process of adjusting their loan rates, banks use the prime rate as an industry-wide pricing guide. Because there is no objective indicator of when bank costs have changed permanently, banks are likely to disagree over when the prime rate should change. But once a large money center

bank has signaled its judgment that a given level of interest rates will be sustained by changing its prime rate, and other banks have ratified that change, a new guideline exists for loan pricing.

WHY IS THE PRIME RATE CONVENTION CHANGING?

Throughout the post-war period, the critical ingredient in banks' slow deposit and loan rate adjustment was their ability to attract core deposits when market rates were rising relative to implicit interest rates, and to retain loan customers when money market rates were falling relative to the prime rate. Though banks could not adjust services quickly to short-term interest rate fluctuations, they did attempt to attract deposits by offering a stable level of services that was attractive, on average, over the interest rate cycle. In some

²An added benefit to banks in making loan rates more in tandem with their costs of raising new funds from all sources is that by following such a strategy bank earnings will be unaffected by interest rate movements. Slow loan and deposit rate adjustment, moreover, is consistent with empirical evidence that, on the whole, bank profits are not very responsive to changes in market interest rates. See Mark J. Flannery, "How Do Changes in Market Interest Rates Affect Bank Profits?" this *Business Review* (September-October, 1980) pp. 13-22.

periods—particularly when interest rates were rising—implicit interest rates on core deposits fell below short-term market rates. But in periods of falling interest rates, implicit interest payments remained high relative to short-term money market returns.³ Similarly, because the stickiness in implicit deposit rates was reflected in the prime, banks gave prime borrowers rates that were competitive with market rates, on average, over the interest rate cycle: borrowers' relatively high bank loan rates in periods of falling market rates were followed by comparatively low loan rates in periods of rising market rates.

When interest rates were low and stable, banks' strategy of competing for customers by offering deposit and loan products that were attractive on average relative to market rates was successful. Temporarily uncompetitive rates relative to market rates on bank deposits or loans were likely to be offset by more than competitive rates in the future, and the differences were not large enough to induce customers to search for more attractive rates in money markets.

Volatile Interest Rates Brought Competition From Money Markets. As interest rate swings became sharper and wider in the 1970s, however, more and more customers became dissatisfied with the slow rate adjustment on core deposits and on prime-related loans. Increasingly, customers bypassed banks to borrow and lend directly in money markets.

On the deposit side, customers shifted out of core deposits into money market instruments, such as commercial paper, with each big swing in short-term market rates above the implicit deposit rate. These shifts can be seen in Figure 3 (p. 18), where the ratio of commercial paper to demand deposits outstanding together with the spread between the 4-to-6 month commercial paper rate and estimates of the implicit rate paid on demand deposits have been graphed from 1960 to 1976.

³Twice in the 1970s money market rates fell below passbook savings account rates. Because banks also paid implicit interest on savings deposits, these deposits must have been quite attractive to customers in these periods. For an analysis reconciling temporarily high core deposit costs with bank profit maximization, see Mark J. Flannery, "Retail Bank Deposits as Quasi-Fixed Factors of Production," *American Economic Review*, 72, (June 1982), pp. 527-536.

Initially, most of these shifts were by corporations. The rapid growth of money market mutual funds after the mid-1970s, however, facilitated households' shifts out of core deposits by opening the money markets to small investors previously unable to buy large denomination financial instruments. Once investors overcame costs involved in placing their funds in money markets, they never went back to holding as much of their assets in the form of core deposits, as reflected in the steady decline in the share of core deposits among large bank liabilities visible in Figure 4 (p. 19).

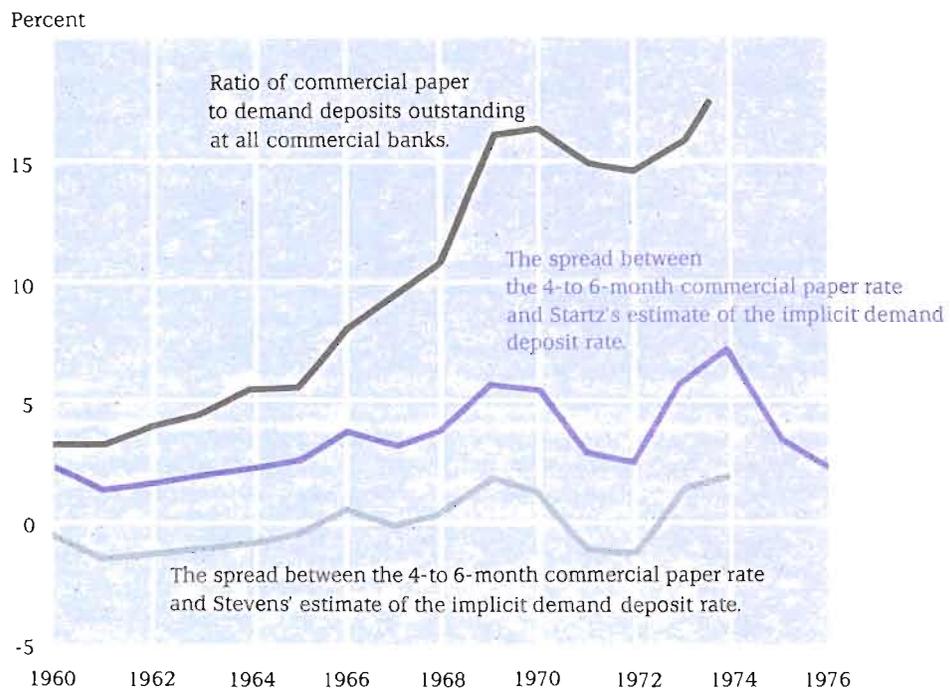
On the loan side, the spreads between the sluggish prime and the commercial paper rate widened to several hundred basis points during declines in market rates in the 1970s and 1980s, motivating large firms to incur the startup costs necessary to tap the money markets. About 500 new companies began to issue commercial paper in the years after 1974, boosting the amount of paper outstanding in that market from \$50 billion in 1974 to almost \$180 billion by mid-year 1982.⁴

Banks Responded By Moving Towards Market Rate Pricing. To replace the core deposits that could no longer be relied upon as their principal source of loanable funds, banks issued liabilities carrying market rates of interest such as domestic and Eurodollar certificates of deposit (CD's), money market certificates, and federal funds. By 1981, large banks were raising more than half their funds from interest-sensitive liabilities. As banks attracted fewer funds from the core deposits that were responsible for the sluggishness in deposit costs, they changed their loan rates faster in response to fluctuations in market interest rates. The average lag in the response of the prime rate to money market rates fell markedly between 1970 and 1982, from over 8 weeks in the early 1970s to slightly over 4 weeks in the 1979-1982 period (see the TECHNICAL APPENDIX, p. 22).

In addition to speeding up the pace of prime rate changes, banks hastened their move towards market rate loan pricing by offering loans tied to money market rates to customers with the ability to draw on the commercial paper market. These new loans—called money market loans—are

⁴See Evelyn M. Hurley, "The Commercial Paper Market Since the Mid-Seventies," *Federal Reserve Bulletin* (June 1982).

FIGURE 3
FAVORABLE RETURNS HAVE ENCOURAGED THE GROWTH OF COMMERCIAL PAPER RELATIVE TO DEMAND DEPOSITS



SOURCE: See footnote 1 in the text.

typically for short maturities (one month or less), and are matched by the bank to the size, rate, and maturity of a specific liability. A bank may, for example, issue a 30-day CD and use the funds to make a 30-day loan to a customer at a fixed rate over the CD rate. By matching the loan to a specific liability with the same maturity, bank earnings on the transaction are unaffected by interest rate fluctuations over the life of the loan. When the loan matures, the liability matures, too, and a new transaction can be made at the new market rates.⁵ Money market lending is often carried out in close cooperation with the bank's financial instrument trading desk to ensure that the pricing and maturity

matching on the transaction are precise. Because the rate on money market loans must be close to money market rates to be competitive, bank profit

⁵Not all money market loans are fixed-rate credits. Indeed, banks are now offering large customers an exotic variety of loans pegged to different short-term rates and adjustable (repriced) at different intervals. For example, some banks are making five-day loans with rates pegged to the daily federal funds rate. Others are making one-year loans priced as a markup over the 3-month Treasury bill rate, but repriced quarterly. These hybrid credits are likely close substitutes for and have rates highly correlated with those on the more numerous fixed-rate, short-term credits. No distinction is made in the text among the varieties of money market loans.

margins are small, and large transactions are necessary to cover the costs of arranging the loan.

WHAT ACCOUNTS FOR BELOW-PRIME LENDING?

In experimenting with money market lending in recent years, banks have offered corporate customers with good credit standing a choice between a variety of short-term credits tied to money market rates as well as prime-related loans with longer maturities. Given the stickiness in the prime rate, it was inevitable that rates on short-term loans tied to money market rates would fall below the prime when interest rates declined. In those periods, firms tried to reduce their borrowing costs by taking fixed-rate, short-term credits instead of prime-related loans. The responsiveness of fixed-rate borrowing to the spread between the prime and the 30-day commercial paper rate can be seen in Figure 5 (p. 20). The peaks in the proportion of large loans made with fixed rates occurred when the commercial paper rate fell below the prime. The peaks in fixed-rate lending in Figure 5 also mark periods of widespread below-prime lending. In both the first weeks of May, 1980 and November, 1981, for example, the weighted average rate on all commercial loans at surveyed banks was below the ruling prime rate. In those weeks the prime rate was over 800 basis points and 330 basis points, respectively, above the 30-day commercial paper rate. Given these cost differences, it should not be surprising that customers with the ability to take out loans at money market rates did so.

The recent episodes of fixed-rate lending and below-prime lending cannot be dismissed as mere aberrations from normal prime-related lending patterns. Since late 1979, as Figure 5 shows, a trend towards more below-prime lending developed at large banks, reflecting the trend toward more fixed-rate lending in large credits. Yet it would be premature to conclude that the prime rate is no more than an artifact of past lending practices. Assuming that the majority of floating-rate loans are prime-related, and that most large fixed-rate loans represent money market credits, Figure 5 shows that in many periods large banks make more floating-rate loans (in dollars of credit extended) than money market loans, and that even in periods of massive fixed-rate lending large banks still

FIGURE 4 DEMAND AND SAVINGS DEPOSITS HAVE FALLEN RELATIVE TO INTEREST-SENSITIVE FUNDS IN LARGE BANKS' LIABILITIES

Percent of Total Liabilities

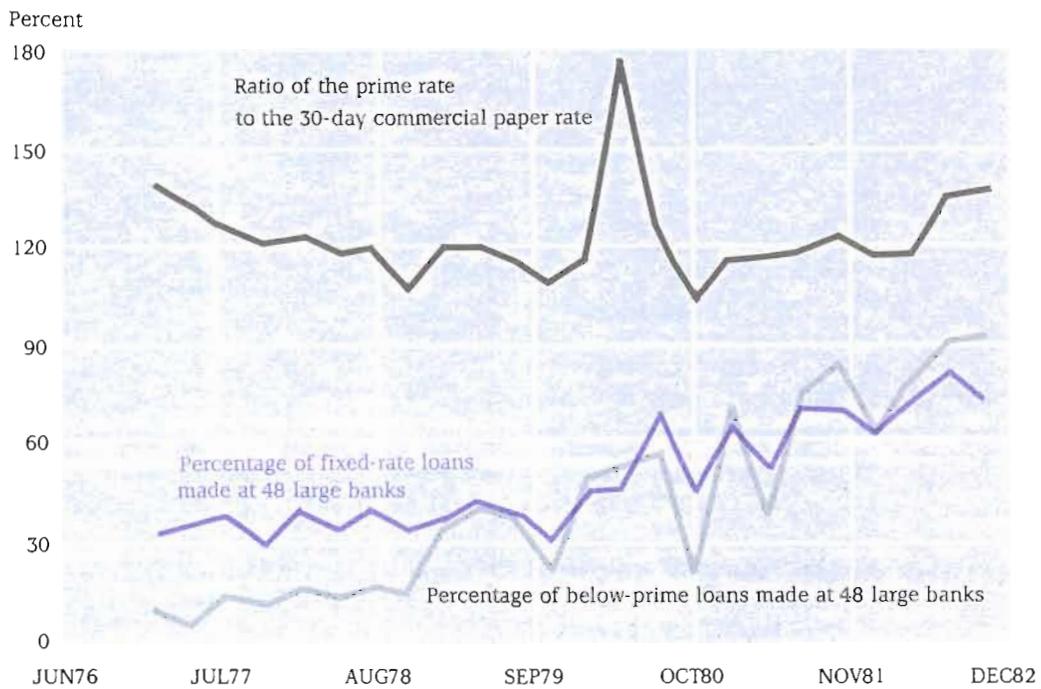
Date	Demand and Savings Deposits	Interest-Sensitive Funds ^a	Other Liabilities
1972	52.3	28.8	18.9
1973	45.9	38.3	15.8
1974	40.9	45.3	13.8
1975	41.7	44.1	14.2
1976	46.7	39.0	14.3
1977	45.4	40.0	14.6
1978	42.3	43.7	14.0
1979	39.1	47.2	13.7
1980	36.1	48.2	15.7
1981	33.1	50.9	16.0
1982	28.6	53.8	17.6

Data are for Large Weekly Reporting Banks with Assets of \$2 billion or more in 1972 dollars as of June of each year.

^aInterest-sensitive funds are defined as the sum of federal funds purchased, time deposits in accounts of \$100,000 or more, and other borrowings (including liabilities to foreign branches as a proxy for Eurodollar borrowings).

SOURCE: Weekly Report of Assets and Liabilities for Large Banks, Board of Governors, Federal Reserve System.

FIGURE 5
BELOW-PRIME LENDING AND FIXED-RATE LENDING VARIES WITH THE RATIO OF THE PRIME TO MONEY MARKET RATES



SOURCE: *Federal Reserve Bulletin* and unpublished portions of the Survey of Terms of Bank Lending.

make some prime-related loans.⁶ Data collected in the Federal Reserve's Survey of the Terms of Bank Lending indicate, moreover, that fixed-rate lending and below-prime lending are not as widespread at small and medium-sized banks as at large banks.

The reason prime-related loans coexist with

money market loans is that not all loan customers can substitute money market loans for prime-related credits, and those who can do not find them to be perfect substitutes. Prime-related loans today, as in past years, are generally floating-rate loans, usually repaid in 60 to 90 days, that are used as working capital by businesses.⁷ A firm will not substitute money market loans or commercial

⁶No data are available on the quantities of prime-related and money market loans. Conversations with bankers, however, indicate that most floating-rate loans are tied to the prime rate. Though not all fixed-rate credits are short-term money market loans, the fixed-rate credits of \$1 million or more graphed in Figure 5 generally had average maturities of one month or less, and thus may be considered money market loans.

⁷Prime-related loans are commonly made with a variety of fixed maturities, as well as on demand. A precise average maturity for prime-related loans thus cannot be provided. Survey data and conversations with bankers, though, indicate that 60 to 90 days is a reasonable approximation of the normal effective maturity of prime-related loans.

paper for prime-related loans if its funding needs are small, because only large money market credits and commercial paper issues will overcome the fixed costs of going to the market. If a firm's credit is less than impeccable, it will not be able to sell its commercial paper, and will have little power in bargaining for a money market loan from its bank. Even firms with funding needs and a credit standing allowing them to obtain money market loans will not always do so, because it is not always clear that a string of short-term credits at market rates will be less expensive than a single prime-related loan. If interest rates were to take an unexpected upturn over the firm's borrowing horizon, for example, the rate increases on market-related credits could outstrip the more slowly changing costs of prime-related credit.

For these reasons, small firms without access to the commercial paper market and larger firms with less than flawless credit are likely to find prime-related loans attractive. Large, creditworthy firms, furthermore, can be expected to continue to bargain with banks for money market loans when interest rates are falling rapidly, and to try to switch back into prime-related loans when rates are rising or are expected to remain unchanged.

CONCLUSIONS

The distinguishing feature of the prime rate has always been its stickiness in comparison with money market interest rates. The prime has never been closely related to any specific current short-term rate, but instead has been priced as a markup over banks' cost of raising new funds from all sources. A substantial portion of these funds have been from deposits subject to interest rate ceilings, and have been paid for by banks with implicit interest in the form of services. Because these

implicit interest payments were difficult and slow to adjust, banks' cost of funds, and hence their loan rates, were slow to adjust to fluctuations in market rates.

As interest rates became higher and more volatile in the past fifteen years, the incentive for customers to bypass banks and borrow and lend directly in money markets strengthened. Banks responded by issuing liabilities carrying market rates of interest to finance their loans, by speeding up changes in the prime rate, and by offering customers loans with rates tied to the rates on money market instruments. Much of the below-prime lending in recent years occurred when the rates on these money market loans fell below the more slowly moving prime during a decline in interest rates.

With the advent of a large quantity of below-prime lending, the prime no longer represents the lowest rate at which banks are extending credit. But prime-related lending is far from gone. Firms without the credit standing or funding needs to tap money markets are likely to receive prime-related loans for some time in the future. And even those firms with the ability to issue their own paper in the market are likely to find prime-related loans attractive when interest rates are unchanged or rising.

As deposit rate ceilings are phased out and demand and savings deposits are replaced by banks' new money market accounts, bank loan rates will move more closely with market rates. Banks and their customers are likely to find a reference rate for the cost of short-term credit like the prime useful in the future, but it will probably be a faster moving, more closely market-related rate than today's prime.

TECHNICAL APPENDIX

HAS THE WAY THE PRIME IS PRICED CHANGED?

Bankers' formulas for pricing loans and economists' models of setting loan rates are often based on regressions of the prime on current and past money market rates. These regressions contain estimates of the average lag of adjustment of the prime rate to market rates. By estimating these regressions over different periods and comparing the average lags, we can tell whether the speed of adjustment of the prime has changed over time.

Changes in the source of funds used to make loans in turn change the speed with which the prime adjusts to market rates. Consider, for example the simple case of banks that raise in any period t , a portion α of their loanable funds from liabilities by paying a market rate of interest RCD_t , and the rest $(1 - \alpha)$ from demand deposits by paying implicit interest in the form of services at the rate RDD_t . The banks will set their prime rate PR_t as a markup γ over the weighted cost of raising extra funds from both sources, as:

$$(1) \quad PR_t = \gamma + \alpha RCD_t + (1 - \alpha) RDD_t$$

$$0 \leq \gamma, 0 < \alpha < 1$$

If banks paid a competitive, market rate of interest at all times on demand deposits, then $RDD_t = RCD_t$, and the prime would be set simply as a markup on current market rates:

$$(2) \quad PR_t = \gamma + RCD_t$$

Banks, however, generally adjust the services they pay on demand deposits incompletely to changes in current market rates. The inability to adjust services quickly, uncertainty about whether market rate changes are permanent or transitory, and avoidance of interest rate risk will all contribute to a gradual adjustment of implicit interest rates to market rates. Assuming for expository purposes that all adjustment takes place within two periods, this process can be represented as:

$$(3) \quad RDD_t = \beta_1 RCD_t + \beta_2 RCD_{t-1}$$

$$0 < \beta_1, \beta_2 < 1$$

Substituting equation (3) into equation (1) gives an expression for the prime as a function of current and past market rates:

$$(4) \quad PR_t = \gamma + \theta_1 RCD_t + \theta_2 RCD_{t-1}$$

where: $\theta_1 = (\alpha + \beta_1 - \alpha\beta_1)$

and $\theta_2 = (\beta_2 - \alpha\beta_2)$.

In equation (4) it is easy to see that as the proportion of funds from interest-sensitive liabilities α increases, current rates will get a larger weight in setting the prime. If all bank funds are interest sensitive ($\alpha = 1$), the prime rate will be a markup over current rates alone. If instead banks attract all their funds from demand deposits ($\alpha = 0$), the prime rate will be a markup of the relation of implicit interest rates to market rates as given in equation (3). Changes in the sources of bank funds should be reflected in different coefficient estimates over time in a regression of the prime against current and past market rates as specified in equation (4).

Adjustment Lag Estimates. To measure the changes in the adjustment lag of the prime to market rates, the prime was regressed against a distributed lag of current and past 3-month CD rates, using weekly data for each of the four three-year periods between November 4, 1970 and September 29, 1982. The 3-month CD rate was taken to be representative of rates on banks' interest-sensitive liabilities. A geometrically declining pattern of weights extending indefinitely into the past was specified for each regression, under the assumption that banks place progressively less weight on market rates further in the past in setting the

prime.^a (Reasonable values of α and the β_1 coefficients in a regression of equation (4) with lags extending further into the past will produce a geometric lag distribution like the one used here in estimation.)

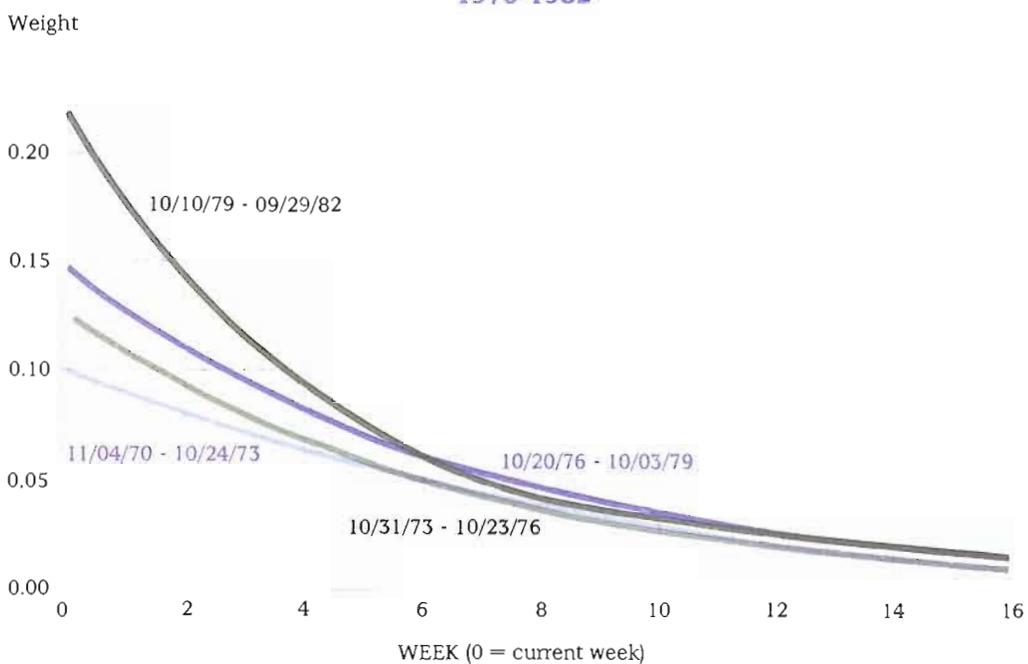
The estimated weights on the current and past CD rates from the regressions are shown in the figure below. The estimated average lag in adjustment of the prime rate to changes in CD rates has changed significantly over the four periods, and has generally been getting shorter over time, as can be seen in the table. By these estimates, the prime was adjusted twice as fast over the 10/10/79 to 9/29/82 period as it was between 11/4/70 and 10/24/73. This quicker adjustment speed is reflected in the visibly steeper pattern of estimated weights in the figure below, indicating that banks have placed heavier weights on current and recent weeks' CD rates in setting the prime in more recent years.^b

Interval	Mean Lag in Adjustment of Prime To CD Rate Changes (in weeks)
11/04/70 - 10/24/73	8.26
10/31/73 - 10/23/76	5.85
10/20/76 - 10/03/79	6.35
10/10/79 - 09/29/82	4.15

^aThe weights were estimated by applying a Koyck transformation to the geometric distributed lag relationship, regressing the prime rate on the prime rate lagged one week and the current week's CD rate. For a discussion of the estimation of geometric distributed lag models, see Jan Kmenta, *Elements of Econometrics* (New York: Macmillan, 1971), pp. 474-475.

^bFor an alternative interpretation of regression of the prime rate on a distributed lag of current and past CD rates, in which the prime rate reflects the cost of previously issued but still outstanding CD's as well as current CD rates, see Michael A. Goldberg, "The Pricing of the Prime Rate," *Journal of Banking and Finance*, 6 (June, 1982), pp. 277-296. In Goldberg's study the prime rate is linked to banks' average cost of funds, rather than their marginal cost of raising funds from all sources as described in the article.

ESTIMATED WEIGHTS PLACED ON CURRENT AND PAST WEEKS' 3-MONTH CD RATES BY BANKS IN SETTING THE PRIME RATE, 1970-1982



Weights are from regressions of the prime rate on an infinite geometric distributed lag of current and past 3-month CD rates.



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