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ECONOMIC COMMENTARY
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Monetary Policy and the Federal Funds Futures Market

by John B. Carlson and Jean M. McIntire

How well did the federal funds futures market anticipate recent monetary policy actions? The authors examine the predictive content of fed funds futures rates, which provide the Federal Open Market Committee with a clear reading of market expectations for policy, in the context of 1994 policy moves and analyze the fed funds futures market outlook in early 1995.

Events rarely unfold exactly as we foresee them. In the monetary policy arena, for example, the timing and intensity of specific actions can be difficult to anticipate. Following a 15-month period during which no policy action was taken, the Federal Open Market Committee (FOMC), the central bank's policymaking arm, embarked on a series of moves that has raised money market interest rates seven times since January 1994.

More specifically, FOMC actions lifted the federal funds rate—the interest rate banks charge each other for overnight loans—from 3 percent to 6 percent (see figure 1). Four of these actions were accompanied by increases in the discount rate—the rate the Federal Reserve charges banks that borrow at the discount window. At 5¼ percent, the discount rate is now 2¼ percentage points above where it stood before the series of policy moves was initiated.

As the operating target of the FOMC, the fed funds rate is a benchmark for overnight lending rates and hence a key rate against which to hedge or even to speculate. In 1988, the Chicago Board of Trade began trading an interest-rate futures contract based on average monthly fed funds rates (see box). A 30-day fed funds futures contract may be written for any calendar month up to 24 months ahead. (Contracts for six months ahead or more are less common.) The market price of fed funds futures embodies a prediction of the monthly average of the daily fed funds rate.

Because market participants understand that deviations of the overnight funds rate from its desired level will tend to average out over the span of a month, the implied rate is essentially the market's expectation of the FOMC's intended rate.[1] Thus, the fed funds contract offers in fairly precise terms a market indicator of expected future policy actions. In this *Economic Commentary*, we review the circumstances that led to the series of policy actions initiated in January 1994 and examine how well the fed funds futures market anticipated the policy moves. We also assess how the outlook of the fed funds futures market has changed dramatically in 1995.

The Practice of Monetary Policy

Participants in futures markets have every incentive to understand the determinants of the price for the commodity or financial instrument on which the contract is written. Fed funds futures are perhaps unique in the sense that the monthly-average fed funds rate is determined by a deliberative process—a decision of the FOMC. Although the fed funds rate varies substantially on a daily basis, its monthly average is generally close to the intended range that the FOMC communicates to the New York Trading Desk.[2] Because the level of the fed funds rate is essentially determined by policy decisions, the fed funds futures rate would be expected to have predictive value for the size and timing of future policy actions.

To appreciate the behavior that leads to changes in interest rates, it is helpful to understand the context in which U.S. monetary policy decisions are made. Ultimately, monetary policy seeks to achieve the highest possible advance in Americans' living standards over time.[3] This goal can best be accomplished if policy actions do not allow concerns about the variability of the purchasing power of money to become a factor in private decisions. In his February 1995 testimony before Congress, Federal Reserve Chairman Alan Greenspan stated, " Price stability enables households and firms to have the greatest freedom possible to do what they do best—to produce, invest, and consume efficiently."

* The *Economic Commentary* series will contain 20 issues starting this year. The sequence will remain semimonthly EXCEPT during June, July, November, and December, when we will publish a single issue for the month.

WHAT THE FUTURES MARKET EXPECTS FOR POLICY

After each trading day, *The Wall Street Journal* publishes data on outstanding contracts for 30-day fed funds futures. The data include the open, the high and low for the day, and the "settle" price (around closing), as shown in the table below. The futures settlement price is calculated as 100 minus the monthly arithmetic average of the daily effective fed funds rate that the New York Trading Desk reports for each day of the contract month.

Thus, from the settlement price, one can obtain the implied rate for the specified contract month. To illustrate, consider the settle column for the May contract, which indicates a price of 93.98 and hence an expected fed funds rate of 6.02 percent. The 93.81 September contract price, on the other hand, implies an expected rate of 6.19 for that month.

Interest-Rate Futures—30-Day Federal Funds

	Open	High	Low	Settle	Change
April	93.97	93.98	93.96	93.97	—
May	93.99	93.99	93.98	93.98	–0.01
June	93.95	93.95	93.94	93.95	—
July	93.87	93.87	93.86	93.86	–0.01
Aug.	93.83	93.83	93.83	93.83	–0.02
Sept.	93.82	93.82	93.79	93.81	–0.01

Unfortunately, there is no consensus on the appropriate path to this ultimate goal. The link between the primary instrument of monetary policy—the fed funds rate—and its ultimate goal is complex and not easy to understand. Monetary policymaking is thus an uncertain enterprise in which FOMC members must make their best judgments about the level of short-term interest rates consistent with the specified goals. Policy moves—changes in the fed funds rate—are generally made incrementally, as new information about the effects of previous actions becomes available and in the context of other events that may bear on the future path of economic activity.

■ Policy Actions and the Recent Run-up in the Fed Funds Rate

In February and July of each year, the FOMC sets annual growth ranges for the monetary and credit aggregates and makes projections for output growth, inflation, and the unemployment rate. Chairman Greenspan presents these ranges and projections in testimony before Congress pursuant to the Humphrey–Hawkins Act of 1978. In the February 1994 report, the FOMC anticipated reasonably strong output growth, a slight acceleration in inflation, and a relatively steady unemployment rate.

Although the economy had been expanding on average since the spring of 1991, recovery from the 1990-91 recession had been unusually fragile. Economic and financial restructuring was thought to have restrained output from growing at a more normal pace. Moreover, inflation fell to rates not seen since the early 1960s. Over this period, monetary policy maintained an increasingly accommodative stance in reserve markets. Reserve conditions were associated with a fed funds rate that fell to around 3 percent—at or near the trend inflation rate. This implied a real yield of near zero. Long-term interest rates, although somewhat higher, continued to fall until October 1993 (see figure 2).

By the end of that year, however, forecasters believed that the strong economy had gained substantial momentum that would carry on into 1994. What's more, inflationary pressures were thought to be building. It was against this backdrop and with a desire to extend the gains associated with low and declining inflation that the FOMC embarked on the series of policy actions that raised both the fed funds rate and the discount rate.

Although the fed funds futures market anticipated a rise in the fed funds rate in early 1994, the frequency and cumulative magnitude of policy actions appeared to surprise most market participants. Figure 3 contrasts the actual path of the effective fed funds rate with the rate path implied by reported futures prices on three days throughout the year. For example, on the first trading day of the year (January 3, 1994), market prices indicated an expectation that the fed funds rate would rise to around 3½ percent in June. In fact, the actual rate rose to 3½ percent in April and to 4¼ percent in June.

By midyear, the fed funds futures market seemed to get on track in its prediction of future funds rate changes. The implied futures rates on July 20 proved to be accurate predictors of the actual policy path. At year's end, however, futures rates anticipated a continuation of rate increases that has yet to materialize.

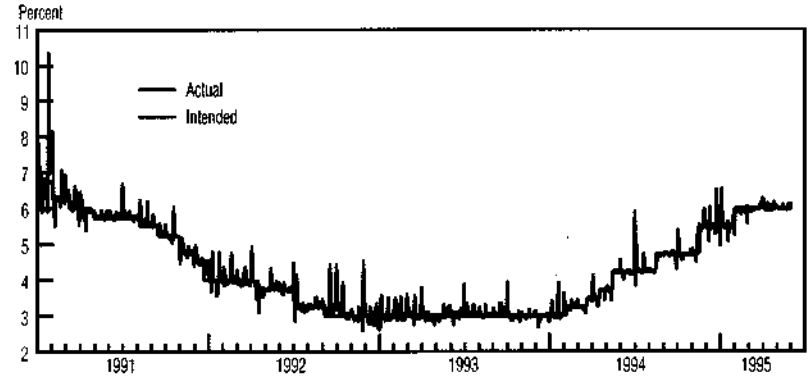
The 1994 experience with fed funds futures as a predictor of future rates accords with the longer—though relatively short—history of the instrument. The tendency is for predictions to be more accurate, the shorter the horizon. This to some extent reflects the incremental nature of policymaking.

No individual policy action is likely to have decisive or even identifiable economic effects. Rather, the cumulative effect of a *series* of policy actions can be substantial. As a result, policy actions tend to be persistent: Interest-rate increases tend to be followed by additional increases and, after a turning point, decreases by additional decreases. As one might expect, the predictive accuracy of fed funds futures is lowest just before one of these policy turning points. However, once policy changes direction, it becomes easier to predict, especially over longer horizons.

■ Policy Expectations for 1995

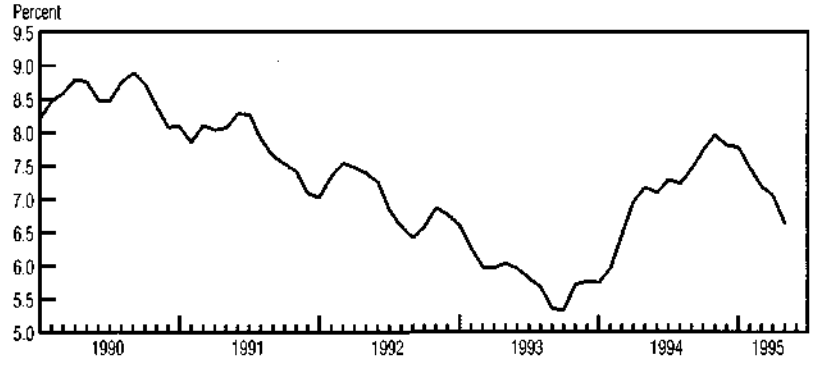
After steadily rising since fall 1993, yields on government bonds and notes have declined noticeably since November 1994. The turnaround in these rates has been associated with evidence that economic growth is slowing to a more sustainable pace. Moreover, the inflationary pressures identified early last year have yet to become manifest in a rise in trend inflation. Under these circumstances, the FOMC has increased the fed funds rate only once since November 1994. This leaves the actual fed funds rate well below the path implied by fed funds futures at year's end.

FIGURE 1 ACTUAL AND INTENDED FEDERAL FUNDS RATE



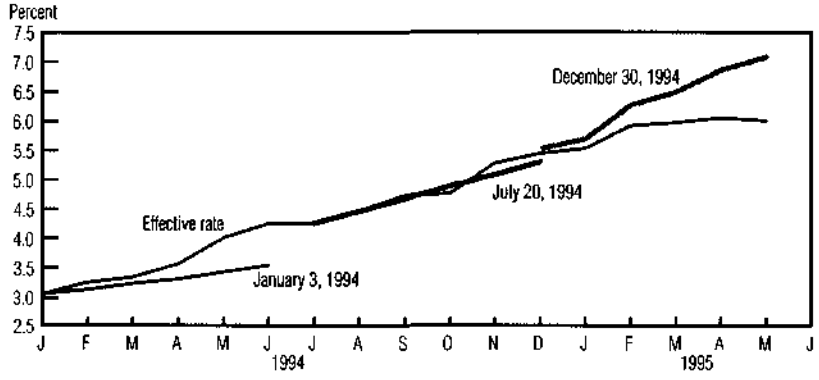
SOURCES: Board of Governors of the Federal Reserve System; and Federal Reserve Bank of New York.

FIGURE 2 10-YEAR TREASURY BOND RATE



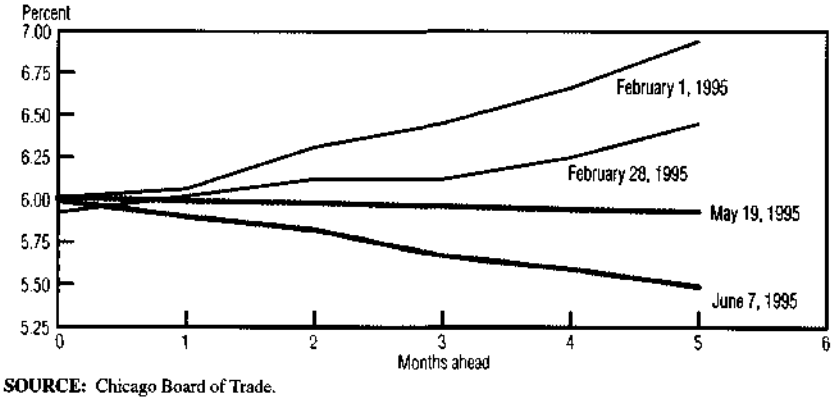
SOURCE: Board of Governors of the Federal Reserve System.

FIGURE 3 FEDERAL FUNDS FUTURES RATES VS. EFFECTIVE RATE



SOURCES: Board of Governors of the Federal Reserve System; and Chicago Board of Trade.

FIGURE 4 FEDERAL FUNDS FUTURES RATES



SOURCE: Chicago Board of Trade.

During May, fed funds futures rates moved below 6 percent (see figure 4), suggesting that market participants started to anticipate that the next policy move has tilted toward an easing.[4] This sea change in expectations began in February and seemed to be reinforced by Chairman Greenspan's testimony before Congress on February 22, when he suggested that the accumulation of policy actions may have been sufficient to head off inflationary pressures. Moreover, the futures rate change has been accompanied by a pronounced decline in long-term interest rates, which peaked in November 1994—more than a percentage point above current levels.

It is interesting to note that a leveling of the fed funds rate for a sustained period is not necessarily associated with a turning point. For example, from late December 1989 to late July 1990, the funds rate remained close to 8.25 percent, its intended rate. This episode was, in retrospect, only a temporary cessation from a longer-term decline. As current events unfold, the FOMC may find increasing evidence that would induce it to move in either direction. Such events, by their nature, are difficult to foresee.

Although peaks in the fed funds rate are often associated with subsequent peaks in the business cycle, this is not always the case. From May 1983 to August 1984, the fed funds rate rose 300 basis points, exceeding 11½ percent, largely in response to fears that inflationary pressures were rebuilding. When inflation failed to materialize, rates fell to about 7½ percent in June 1985 and peaked again six months later at about 8¼ percent. Should the recently observed price pressures abate for a sustained period, we may see a series of fed funds rate reductions.

Conclusion

Fed funds futures rates provide the FOMC with a clear reading of what the market expects it to do over horizons of several months. The predictive content of these rates is quite reasonable, particularly over shorter horizons. The limited history of this instrument suggests, on the other hand, that predictive accuracy is lowest around policy cycle turning

points. As with predicting turnarounds in business cycles, timing is paramount. Thus, it should not be surprising that the fed funds futures market did not fully anticipate the policy shift in early 1994.

In the first five months of 1995, the fed funds rate increased only once and by less than had been anticipated. Over this period, fed funds futures rates revealed a growing belief that the policy cycle has peaked. How rates proceed from this point depends largely on the progress made toward heading off inflationary pressures before they become embedded in the inflation trend. What seems certain now is that no one can really know whether the cumulative effect of policy actions has been sufficient.

Footnotes

1. In recent months, the FOMC has announced immediately after policy deliberations any actions taken to change the intended rate.

2. From October 1988 (when fed funds futures contracts were first traded) through 1994, the average deviation between the actual and intended fed funds rate was only 0.03 percentage point (or 3 basis points). The mean absolute deviation was 6 basis points. For a more thorough discussion of fed funds rate determination, see John B. Carlson, Jean M. McIntire, and James B. Thomson, "Federal Funds Futures as an Indicator of Future Monetary Policy: A Primer," Federal Reserve Bank of Cleveland, *Economic Review*, vol. 31, no. 1 (1995 Quarter 1), pp. 20–30.

3. As specified in the Federal Reserve Act, the central bank is charged with promoting, over time, maximum employment, stable prices, and moderate long-term interest rates.

4. Since their inception, fed funds futures have tended to overpredict the fed funds rate at all horizons (see Carlson, McIntire, and Thomson, footnote 2). This suggests that fed funds futures pricing may be dominated by consistent borrowers of overnight funds who are willing to pay a premium to hedge against the risk of rising interest rates.

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