

Fed Policy to the Bond Yield

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When I learned that this meeting was to be held in this beautiful museum of the Missouri Historical Society, I immediately fell into a reflective mood. What I have to say does not remotely compare in importance with the story of Lewis and Clark, or other important events in Missouri history. But I am going to look at some unusual features of our current economy in the context of what history can tell us.

My topic is one particular aspect of recent behavior of financial markets—the fact that long-term interest rates have changed little during a period when short-term rates fell to levels not seen since the early 1960s. More specifically, the federal funds rate, which the Federal Reserve targets, fell from 6 percent at the beginning of 2001 to 1 percent in December 2001, where that rate sits today. But the 10-year Treasury bond rate, which was a tad over 5 percent when the Fed first started easing policy in January of last year, has fluctuated between roughly 4 percent and 5 percent during most of this period. The rate was close to 5 percent in May of last year, and it approached 4 percent after the terrorist attacks, but those rates were temporary. What explains this historically unusual behavior, where the long rate seems so little influenced by Fed policy? How do we go from Fed policy to the bond yield? Everyone with responsibility for raising funds in the capital markets has to be concerned with these questions.

Before I attempt to address these issues, I want to emphasize that the views I express here are mine and do not necessarily reflect official positions of the Federal Reserve System. I thank my colleagues at the Federal Reserve Bank of St.

Louis for their comments, especially the Bank's Research director, Bob Rasche, but I retain full responsibility for errors.

LONG-RUN CONSIDERATIONS

To tackle the issues involved with my questions, I'm going to explore some rather abstract considerations, and then apply them to our current circumstances. I'll start with long-run considerations, which we can think of as applying to data averaged over, say, five to ten years.

Many years ago, the distinguished economist Irving Fisher provided a significant insight into the behavior of interest rates by partitioning observed nominal rates on conventional, non-indexed bonds into two components: one is the real rate of interest and the second the anticipated rate of inflation. The former represents the rate of interest that would be observed in a noninflationary environment. The latter is the premium that the market adds to interest rates to reflect anticipated inflation over the life of the bond contract. The premium is, of course, negative—a discount—in a deflationary environment.

The usefulness of this decomposition depends in part on whether the two components move independently of each other. Based on decades of research, economists now view this independence condition as a reasonable characterization of the long-run behavior of interest rates, though not necessarily appropriate for the analysis of interest rate fluctuations over any short period.

For this discussion, I will associate the anticipated inflation component with that part of

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interest rates which the Federal Reserve, or more generally, a central bank, can influence in the long run through the effects of monetary policy on the rate of inflation. I will associate the real rate of interest component with that part of interest rates which, given the independence of the two interest rate components, the Federal Reserve has little and only indirect influence on in the long run.

What I call the anticipated inflation component has traditionally been associated with expected inflation. A central bank that wants to achieve moderate levels of market interest rates over the long run should seek to produce an environment of low inflation. Success in maintaining low inflation is essential if expectations of low inflation are to become entrenched in market thinking.

A more complete analysis of anticipated inflation recognizes the effect of inflation on risk premia. Many studies have found that higher rates of inflation also generate more volatile inflation. Thus it is reasonable to attribute an inflation risk premium to the difference between, say, the 10-year Treasury bond rate and the corresponding 10-year risk-free real rate of interest. There are, therefore, two aspects of the anticipated inflation component of interest rates that are affected by Federal Reserve policy. Establishing a low-expected-inflation environment will produce lower long-term interest rates both because expected inflation is lower and because inflation risk is reduced. An implication of this observation is that the central bank can reduce the average level of market interest rates by increasing the credibility of its low-inflation objective, which will thereby reduce the inflation risk premium.

The next step in the analysis is to note that higher inflation volatility is associated with higher volatility of the economy in general. Economic booms and busts tend to be more extreme when inflation is variable. As a consequence, riskier firms and industries tend to be more risky the higher the rate of inflation. The higher risk shows up in interest rate spreads between more and less risky bonds of comparable maturity. For example, the spreads of lower rated corporate bonds rela-

tive to Treasury bonds tend to be higher in the riskier environment created by higher inflation.

To summarize the effects of higher inflation on interest rates, the higher the average rate of inflation the higher will be the expected rate of inflation, which gets bid into nominal interest rates as investors protect themselves from erosion of the purchasing power of the currency. Secondly, higher inflation is invariably more erratic inflation, which makes inflation more difficult to predict. That uncertainty in turn makes the economy and many businesses more risky. As a consequence, investors bid higher risk premia into nominal interest rates.

What determines the real rate of interest? This is the component of the nominal market rate, averaged over a period of years, that is largely independent of Federal Reserve actions.

Across time and across economies the average value of the real rate of interest depends on the entire structure of the economy: market structure, tax structure, productivity trends, and the like. Of particular importance is the fact that more rapidly growing economies, reflecting public policies conducive to productive business investment and entrepreneurial activity, generate higher real rates of interest. The logic is easy to understand: When the expected real return to business investment in new technology and new markets is high, the expected real return on bonds, which compete for investors' funds, will also have to be high.

SHORT-RUN CONSIDERATIONS

We can think of the long-run relationships as determining the levels around which short-run fluctuations in interest rates occur. Over periods measured from a few weeks to several years, Federal Reserve policy actions can be expected to impact interest rates across the maturity spectrum. At the very shortest maturity, the FOMC sets a target for the federal funds rate—the so-called “intended” federal funds rate. Through open market operations, the Trading Desk at the New York Fed keeps the daily average funds rate—

what the Federal Reserve calls the “effective” federal funds rate—very close to the FOMC’s intended rate. Clearly, at this maturity the Federal Reserve has almost total control over the real rate of interest in the short run. For example, if the FOMC were to adjust the intended rate either up or down at its next meeting, the real rate of interest would change by the same amount because there would be no immediate response of the inflation rate or, I would predict under today’s conditions, the expected inflation rate.

The Federal Reserve has no direct influence over interest rates at longer maturities, in either the short or long run. Now we are getting closer to addressing the issue I posed at the beginning. Where does the long rate come from? An investor has the option of periodically rolling over short-term bonds or simply holding a long-term bond. Although the different strategies carry different risks, abstracting from those considerations, we expect that ten successive one-year investments will have about the same return as one ten-year investment. Thus the key to understanding the relationship between long bond yields and short bond yields is to understand investor expectations of future short yields.

In studying history to provide insights into today’s economy, perhaps the single most important observation is that, after the early 1960s, changes in inflation expectations were often important in changing investor expectations about the likely course of short-term interest rates. Over the past three or four years, however, all the evidence we have indicates that inflation expectations have changed little. It is essential to keep this important point in mind when studying past interest rate patterns.

It is well-known that interest rates have exhibited a strong procyclical pattern historically. Both short-term and long-term interest rates tend to rise in economic expansions and, absent rising inflation, tend to fall in economic contractions. The amplitude of the cyclical fluctuations in short-term rates is substantially larger than that of long-term rates.

We can be more precise about cyclical interest rate patterns by comparing the behavior of rates

to turning points in economic activity—the cycle peaks and troughs designated by the National Bureau of Economic Research. The relationship between peaks and troughs of short-term interest rates and NBER cycle peaks and troughs is somewhat variable. Short rates sometimes lead and sometimes lag the cycle turning points, although usually not by more than a few months. The most recent cycle was not unusual in this regard; using monthly average data, the 3-month Treasury bill rate reached a peak in November 2000, four months before the cycle peak in March 2001.

Historically, long-term rates also turn within a few months of cycle peaks and troughs. But recent experience has been somewhat different. For one thing, gradually declining inflation brought rates down on average during the cyclical expansion from 1982 to 1990, and again during the expansion from 1991 to 2001. More strikingly, the peak in the 10-year Treasury rate, using monthly average data, was in January 2000, 14 months before the cycle peak. Following January 2000, long rates declined significantly over the course of the year and then, as I have noted, have fluctuated in a relatively narrow range from late 2000 to the current day.

In short, we have to explain not only why the long rate did not fall, on average, during 2001, when the Fed was aggressively cutting the intended federal funds rate, but also why the long rate began to fall so much ahead of the March 2001 cycle peak, contrary to typical experience historically.

Given that long rates reflect market expectations of future short rates, the key to answering these questions is to understand how market expectations were changing during this period. Given that the Fed controls the short end of the yield curve, we have to circle back to ask what the market might reasonably believe about monetary policy.

For starters, in an environment in which long-run inflationary expectations are well anchored, the Fed need not be, and is not, hypersensitive to inflation concerns. If inflation concerns are not active in the short run, what should be the guiding principle of Fed policy? In my view, in

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this environment the Federal Reserve can credibly attempt countercyclical monetary policy. That is, the Fed has room to adjust policy in an effort to reduce unwanted fluctuations in employment and output.

The Fed has room to act, but does it have the knowledge to act? It has been well documented that forecasters, including Fed forecasters, have great difficulty predicting the turning points of business cycles or even recognizing them soon after they occur. Hence, the best that can be reasonably expected is that the FOMC would be able to initiate policy actions several months in advance of cycle turning points, or to adjust policy on the basis of accumulating evidence to help reduce the magnitude of a recession once one is observed as having started.

The most recent cycle is a useful example of exactly this process. The business cycle peak is dated in March 2001. The FOMC started lowering the intended funds rate at the beginning of January 2001, a two-month lead on the cycle turning point. At the previous meeting in December, the FOMC had indicated its concern that the economy might be weakening with this language in its policy statement:

“Against the background of its long-run goals of price stability and sustainable economic growth and of the information currently available, the Committee consequently believes that the risks are weighted mainly toward conditions that may generate economic weakness in the foreseeable future.”

As will be clear if you read the FOMC’s published minutes over the course of last year, the Committee did not foresee the extent of the downturn. But over the course of the year, the Committee did sense the continuing weakness and did respond readily to incoming information suggesting that the expected revival of activity was not occurring.

My interpretation of these events is that in 2000, especially toward the end of the year, the bond market sensed that the economy was weakening. The decline in the nominal yield was almost entirely due to a decline in the real yield.

We know that to be the case from observing the behavior of indexed Treasury yields, which provide a direct market reading on the real rate of interest. This observation fits in with my earlier comment that the real rate of interest is related to the rate of economic growth.

Still, the market would not have bid down long rates in the absence of an anticipation that short rates, controlled by the Fed, would be falling. In fact, the market expected that the Fed would respond to the weakening economy; long rates came down during 2000 in anticipation of the action that the FOMC subsequently took. The timing of the Fed’s January 2001 rate cut took the market by surprise, but not the fact of the cut. Moreover, once the rate cuts began, the odds on a revival of economic activity rose, which I believe is why bond rates did not fall as the FOMC cut the intended funds rate repeatedly over the course of the year.

All during the course of 2001, up to the time of the terrorist attacks in September, current data came in generally weaker than expected but forecasters kept expecting that the economic recovery was just around the corner. The Fed responded to the weaker data by cutting the funds rate aggressively, and the bond market responded to those cuts and the expectation of economic revival by holding long rates in a relatively narrow range.

Moreover, there were a number of instances in which data releases suggested that the economy might see a revival fairly quickly, and these tended to keep long rates from following the declines in the federal funds rate. Let me cite just one example of many. On Friday, April 27, 2001, the 10-year Treasury bond yield jumped by 14 basis points, a large change for a single day. The market was responding to the release of the GDP estimate for the first quarter, which showed growth at a 2 percent annual rate. That was an increase from the 1 percent rate in the fourth quarter and double the increase that the market had been expecting. In reporting on market activity, the *Wall Street Journal* said that, “many already had been wagering that the Fed’s aggressive monetary easing this year would spur growth and spark a rebound in stocks before long...Now, analysts

say, the Treasury market could face a painful period in which yields continue to ratchet higher, the Fed eases less and people pull money out of bonds in anticipation of a continued resurgence in stock prices” (April 30, 2001, p. C15).

The view that economic revival was just around the corner remained into early September. However, when the terrorist attacks occurred, the outlook suddenly looked much worse. The Fed cut the intended funds rate sharply further, and bond rates fell to what turned out to be their lows for the year as forecasters revised down their employment and output forecasts.

In the event, the economy did not sink sharply. Prompt action by the Fed and the resilience of the U.S. economy carried us through. As data arrived in October and November, indicating that housing activity remained very strong and that car sales were responding vigorously to the auto company incentives, the outlook turned brighter. Here it is helpful to look at weekly average data. On that basis, the 10-year Treasury rate reached its low of 4.30 percent in early November. The flow of stronger economic data led the bond market to adjust quickly; in six weeks, the 10-year Treasury rate was up by about 85 basis points.

My interpretation of this period is based on extensive and ongoing research at the St. Louis Fed on the interactions of the markets and Fed policy. I can summarize what we have learned this way: In an environment in which market participants understand how the Federal Reserve interprets incoming data on the economy, the market can forecast future Fed policy actions with some precision. In fact, the market can forecast these actions with about as much precision as the Fed can forecast its own actions!

The market and the Fed both face the same uncertainties about how the economy will evolve. In such circumstances, adjustments in market rates can and do occur in advance of the policy action by the FOMC. The FOMC meets about every six weeks, but the flow of information occurs continuously. The market responds day by day—indeed, hour by hour—to the flow of information, accumulating its significance for Fed action right up to the time of each FOMC meeting.

Then, when the FOMC acts, or fails to act, as the Committee thinks makes most sense given the information available, little if any market response will be observed. The market has the same information the Fed does, to a close approximation, and draws the same conclusions from that information, up to the inevitable professional differences of opinion.

It is worth emphasizing that the process can work this way because the Fed is transparent about its objectives and methods of analysis. If the market did not understand what the Fed is doing and why, it would often come to a different judgment than the Fed on the basis of information available. Monetary policy would itself be a source of uncertainty, adding risk to the market.

Let me now look ahead. In recent weeks, much of the economic data has been on the disappointing side. That is especially true of the employment reports. Inflation, however, continues to be well controlled. So, where is the economy headed?

I cannot offer a guess that is any better informed than the consensus of professional forecasters, who study these matters for a living. The prevailing view is that the economic expansion will continue and that its pace will pick up from that of recent months. That expectation is reflected in the current level of long-term interest rates. Although the 10-year Treasury rate is down more than 50 basis points from its level in March, much of that decline should, in my view, be interpreted as evidence that the market believes that the odds are lower than before that the recovery will proceed so rapidly that the Fed will be required to tighten policy relatively quickly. The important point, though, is that the market believes that the recovery will continue.

If you follow the flow of data as closely as I do, you realize that the forecasts flowing from the data are always subject to revision. What is noteworthy about the current state of monetary policy is that uncertainty over policy itself has been reduced dramatically in recent years. That is, the way in which the Fed will react to changing circumstances is not in much doubt. What is in doubt is how circumstances will change. The world is

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full of surprises, as I am sure your experience will confirm.

I know that we complain about all this uncertainty, but wouldn't the world be a dull place without it? Perhaps I should listen to my own words and rejoice in the endless fascination of the dynamic world we live in. In fact, I do rejoice as I find my job endlessly exciting and interesting.