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Federal Reserve Bank of Cleveland

Why Haven't Long-Term Interest Rates Fallen?

by David E. Altig and Ed Nosal

In 2001, the Federal Reserve lowered the federal funds rate target more than it had in over 25 years, but long-term interest rates didn't budge. Has monetary policy become ineffective? Just the opposite, the authors argue. The stability of long-term rates shows that people don't expect inflation to rise. That confidence, especially in light of the dramatic shocks the economy experienced, attests to the success of the central bank's policies.

On December 29, 2000, the yield on 10-year U.S. Treasury securities was 5.12 percent. Within a week of that date, the Federal Open Market Committee convened a rare unscheduled meeting and implemented the first in a rapid-fire string of 11 reductions in the federal funds rate. By the end of the year, the funds rate was a full 475 basis points lower than at the beginning, marking the rate's largest 12-month decline since 1975.

Very-short-term market rates also fell, but there was scant impact on long-term interest rates. On December 28, 2001, the yield on the 10-year Treasury note was 5.15 percent, slightly higher than its value at the beginning of the year. Long-term interest rates did drift lower at certain points in the year, but most of the effect was in the immediate aftermath of September 11 and had dissipated by year-end.

How can this be? By conventional wisdom, reducing the funds rate by the magnitude experienced last year should have had some impact on longer-term interest rates. Why hasn't this happened? Does it mean that monetary policy has lost its effectiveness?

Quite the contrary. It is, paradoxically, precisely because monetary policy has been so effective in recent years that long rates have failed to budge as short rates have plunged. The effectiveness of monetary policy is ultimately measured by the central bank's ability to provide liquidity without raising the specter of inflation, that is, without causing inflation expectations to increase. As we review 2001, we see a policy environment that continued to deliver the expectation of stable inflation, and hence one in which the behavior of market interest rates more generally were wholly determined by developments in the real economy.

In our opinion, federal funds rate changes throughout most of 2001 are best thought of as the reactions required to keep policy from becoming either inflationary or disinflationary. The onset of economic weakness—beginning, roughly, in mid-2000—created conditions that caused market interest rates to sag. In addition, coincident features of the economy—reversals in the stock market, poor corporate earnings, rising unemployment—elevated perceptions of risk, prompting savers and lenders to prefer assets with greater liquidity and shorter maturities. This impulse inevitably drove down short-term security yields relative to those on longer-term assets. Because inflation expectations remained stable, these forces generated an environment in which short rates (including the federal funds rate) fell, and fell a lot, with relatively little effect on rates at the longer end of the maturity spectrum. In fact, we argue that the lower funds rate was necessary to justify the belief that the inflation outlook would be little changed.

Implicit in the logic of this story is a prediction about the future course of market interest rates. If recession and wobbly confidence have driven interest rates down (especially short-term rates), recovery and restored confidence will, sooner or later, drive them up.

The Yield Curve: A Few Preliminaries

Our interpretation of interest rate developments over the past year—and our sense of what the future might bring—spring from a simple conventional theory of the yield curve. Before proceeding to the details of our story, then, some brief comments on yield curve theory are in order.

A yield curve is a plot of the returns to securities that differ in terms of the number of months or years in the future that the assets mature, or "pay off." Because the yield curve is all about comparing the effect of maturity on interest rates, we want to plot the returns on assets that are comparable along all dimensions except the payoff date. For this reason, the most common yield curve is the one for U.S. Treasury securities. Treasury securities tend to have similar default risk (the probability of the U.S. government reneging on its debt is really not much higher in 10 years than in 3 months), they are generally available in active secondary markets (making them easy to buy and sell), and so on.

How are the yields on Treasury securities that pay off in the short run related to the yields on those that pay off further into the future? For the answer, we usually first look to the expectations theory of the term structure. (Term structure is just another way to refer to the yields on a collection of assets that differ by maturity.)

The simplest version of the expectations theory suggests a straightforward connection between short-term and long-term interest rates. Take, for example, the relationship between returns to 10-year Treasury notes and 1-year

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Treasury bills. The yield on the 10-year note should equal the average expected yield on a sequence of 1-year Treasury bills in the 10-year period over which the note matures.

Why should this be so? Suppose it were otherwise. Suppose, in particular, that the yield on 10-year notes were to fall below the yield investors expect to get by buying 1-year bills this year, cashing them in and buying new 1-year securities next year, rolling over those proceeds, and so on over the entire 10-year horizon. The demand for the longer-maturity asset would obviously fall, as savers would choose the sequence of short-term security acquisitions that they expect will have a higher return. The decline in demand, however, will drive down the price of long-term securities, thus raising the interest rate on the longer-term assets. These sorts of market forces will remain in play until the interest rate on the 10-year note is equal to the expected return on the sequence of 1-year bills—in other words, until the yield on a 10-year note equals the average of yields on 1-year bills.

The expectations theory suggests that, on average, the yield curve ought to be flat. To say that the annualized long-term interest rates are literally the average of expected annualized short-term interest rates is to say that the yields are independent of maturity. But the yield curve is not typically flat. On average, it slopes upward, like curve A in figure 1. The simple expectations theory needs to be augmented to account for saver preferences, which favor shorter-term assets.

In the augmented version of our term structure theory, long-term interest rates are equal to the average of expected short-term rates plus a premium to compensate savers for their preference to hold assets that have shorter maturities. One reason that people might have such preferences is that there is an element of liquidity provided by an asset that pays off sooner rather than later. Keep this in mind, as it plays a key role in our story.

Why Does the Yield Curve Look Like it Does?

With the theory of the yield curve in hand, we can turn to the more interesting question of why the structure of market interest rates looks like it does at any particular point in time. The augmented expectations theory tells us that, on average, the yield curve should have a positive slope (as in the stylized yield curve A in figure 1). It does not of itself, unfortunately, provide us with very much insight regarding the height (or position) of the curve, nor how steep it should be. So what, then, would change the position and shape of this curve?

Consider first a situation in which the economy suffers a permanent loss in the pace at which the productivity of capital expands. If we assume, for the sake of argument, that such a loss does not alter savers' sense of risk, the answer seems pretty straightforward. A negative shock to productivity growth will reduce the return to capital. If the change is permanent, the impact on capital returns will be permanent, and we would expect to see the entire yield curve shift downward, as illustrated by curve B in figure 1.

Things get a bit more complicated when the shortfall in productivity growth is only temporary, but our basic point doesn't really change. Negative shocks will cause the yield curve to shift down. The more persistent the downturn, the more the impact on interest rates will look like the shift from curve A to curve B.

It is unlikely, of course, that the adverse environment we have been describing would leave savers' sense of risk unaltered, and one consequence of a downturn may very well be a heightened preference for relatively liquid assets. In the context of the term structure, this change in preferences would manifest itself in a greater demand for short-term securities relative to longer-term securities. Simple supply and demand logic then suggests that the price of the former will rise relative to the price of the latter. In other words, interest rates on Treasuries with shorter maturities will fall relative to those with longer maturities, and the yield curve will twist, as illustrated by comparing curve B to curve C in figure 1.

All this might be an academic discussion except for the fact that over the course of last year the economy entered recession and corporate profit expectations faltered. The world also appeared to be a decidedly more uncertain place. Just as we would suspect, during this period the yield curve in the United States shifted down and twisted. These dynamics were solidly underway before September 11, as can be seen in figure 2. They accelerated thereafter.

The preceding explanation assumes that inflation expectations are fixed. But because interest rates incorporate these expectations, changes in the anticipated pace of price-level growth will independently affect the shape and position of the yield curve. For example, if people expect inflation to be higher, interest rates will rise at all maturities (and quite likely more at the longer end of the yield curve than at the shorter end). Given that changes in inflation expectations can have an impact on the term structure, why do we assume these expectations are fixed? Because, we argue, this best describes the environment of the past year.

Has Monetary Policy Lost Its Juice?

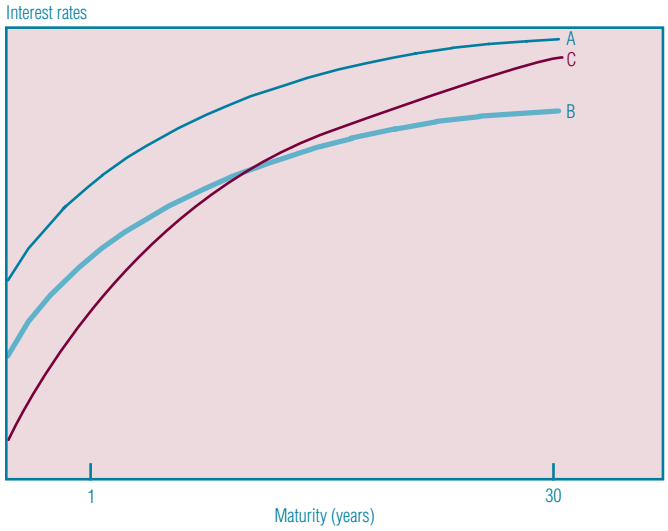
Some will be tempted to look at figure 2 and conclude that the Federal Open Market Committee's actions in 2001 have not been particularly successful. That would certainly be an understandable conclusion if you held the belief that the hallmark of a productive monetary policy is its ability to manipulate the course of market interest rates and, through this channel, stimulate total spending.

There is, however, another view. In this view, the dynamics of economic activity can have less to do with deficient spending than with the fundamental forces driving productivity, forces that monetary policy cannot reliably (or usefully) alter. If you need some convincing, think dot-com bust (the almost overnight realization that a lot of what was thought to be productive capital wasn't), ask yourself whether monetary policy could have avoided or alleviated the resulting market carnage, and you'll get the basic idea. (For a more extensive treatment of this topic, see this Bank's 2001 *Annual Report* essay.)

In this view, the hallmark of a productive monetary policy is one that does no harm. In other words, a productive monetary policy maintains the expectation of price stability while neither artificially restraining nor stimulating the pace of economic activity. If economic recovery awaits resource reallocation and market adjustment, then the appropriate monetary policy is the one that delivers an environment in which the real economy can do its thing.

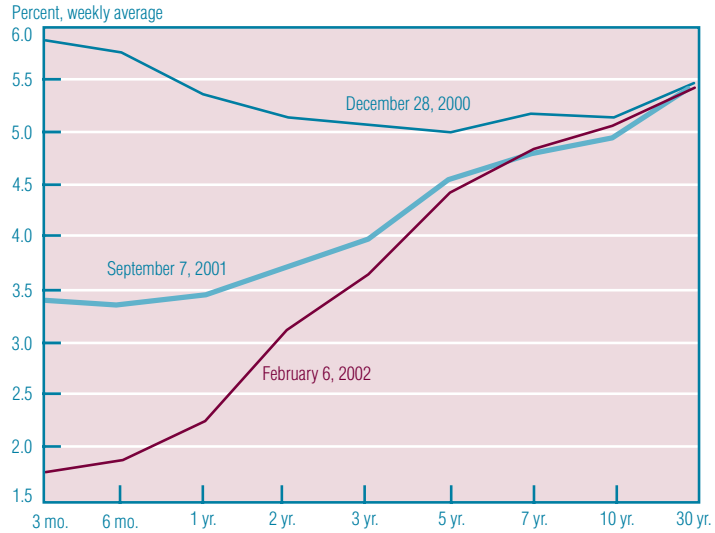
How do we know when this environment has been delivered? There, of course, is the rub, but among the necessary conditions would certainly be the maintenance of economic conditions in which neither strong inflationary nor strong disinflationary (or even deflationary) pressures emerge. In such an environment, the behavior of the yield curve would take on the character of the real economy. In such an environment, the course of the yield curve might very well look like figure 2. And, it is worth emphasizing, in such an environment monetary neutrality—a policy that does no harm—is almost certainly inconsistent with an unchanging federal funds rate.

FIGURE 1 SOME STYLIZED YIELD CURVES



SOURCE: Authors.

FIGURE 2 THE SHIFTING AND TWISTING YIELD CURVE



SOURCE: Board of Governors of the Federal Reserve System.

Crystal Ball Time

We'll make a fearless prediction. The recovery will come. In fact, at the time of this writing there are an increasing number of learned observers who believe that the recession has come and gone. If so, it is entirely reasonable to expect to see the pattern of interest rates that developed in 2001 reverse. If the dropping and twisting of the yield curve was, as we suggest, an archetypal response to diminished productivity growth and flagging confidence, a bounce back in both will likely bring a rise in short rates relative to long rates.

The reason that interest rates would rise as the economy expands is quite simple. As the economy turns around, productivity recovers. Higher productivity growth means better investment opportunities, and better investment opportunities mean heightened demand for investment funds. Those funds, of course, must be coaxed from the pockets of savers, and it is higher interest rates that do the trick.

These dynamics have direct consequences for the level of the funds rate that would be consistent with monetary neutrality. As real forces in the economy tend to drive market interest rates higher, the funds rate must also rise. The central bank can, of course, attempt to resist the tide and keep the funds rate fixed. Such a policy, however, can only be achieved by a more rapid expansion in the money supply. This will, in the end, do nothing to staunch the rise in interest rates. If anything, it will contribute to yet higher interest rates by creating inflation.

Federal funds futures currently reveal that market participants believe higher funds rate targets will arise sooner rather than later (although some care must be taken in the interpretation—see the article "How Well Does the Federal Funds Futures Rate Predict the Federal Funds Rate?" cited in our recommended reading). When rates do begin to rise, there will no doubt be much commentary about the FOMC's tightening of monetary policy to reign in growth. Expect headlines like "Fed Punch Bowl Police Bust Up Party!" This will be, in our view, exactly wrong.

In an environment like last year's, when the dynamics of the real economy were, of their own momentum, driving short-term interest rates south, a monetary environment conducive to recovery could not have been achieved without reductions in the federal funds rate. But the argument is symmetric, and, as the forces in the real economy begin to move interest rates in the opposite direction, adjustments in the funds rate will be inevitable. Doing nothing—keeping the funds rate artificially low—means we would be abandoning policies consistent with monetary neutrality. If adjustments prove necessary because of market rate developments, the punch bowl headlines may come, but we hope for something better: Fed Raises Rates; Lets Growth Happen.

Recommended Reading:

Ed Nosal, "How Well Does the Federal Funds Futures Rate Predict the Federal Funds Rate?" Federal Reserve Bank of Cleveland, *Economic Commentary,* October 1, 2001.

"Rhetoric Aligned with Theory: Talking Productively About Interest Rates," 2001 *Annual Report*, Federal Reserve Bank of Cleveland, forthcoming 2002.

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