

What Can We Expect from the Yield Curve?

NJ Bankers 2007 Annual Convention

Palm Beach, FL

March 23, 2007

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Introduction

Good morning. It is a pleasure to be here in Palm Beach and to have this opportunity to speak with so many leaders from the New Jersey banking community. Given the great weather, and the list of great presentations and activities that will take place during the convention, I will try to keep my remarks short. I will actually try to follow some advice I was once told about public speaking: “Always be shorter than anybody dared to hope.”

My topic today is one that I know is on many of your minds — the flattening of the yield curve. Between June 2004 and June 2006, the Fed raised the fed funds rate target by 450 basis points, but long-bond yields changed little. And since June 2006, as short rates stabilized, the 10-year T-bond yield has fallen; it is currently 25 basis points lower than it was at the start of the tightening in June 2004 and the yield curve is inverted.

Today I want to discuss the yield curve in some detail. I will begin by discussing the basic relationship between short- and long-term interest rates. I then want to move on and make three points about the yield curve and some implications for the financial industry.

- 1) First, I will argue that, on average, I expect the yield curve to be flatter than at comparable points in previous business cycles.
- 2) Second, while this flattening of the yield curve puts pressure on banks’ interest income, given the amount of financial innovation in the industry, banks will be able to adjust.
- 3) Finally, to be successful banks will need to remain focused on hiring, training, and retaining skilled employees.

Relationship Between Short- and Long-Term Interest Rates

To understand the shape of the yield curve and how it changes over time, we need to consider how long-term interest rates are related to short-term rates in efficient financial markets. For the purposes of this talk, when I talk about the yield curve I am referring to nominal interest rates, or yields, on Treasury securities of different maturities.

Economists see nominal yields as having two major components: the real yield, which reflects real economic conditions, and an inflation premium, which compensates investors for the expected loss in the purchasing power of their return due to inflation. In a world of uncertainty, nominal yields might also incorporate a third component, which we refer to as a risk premium.

If investors were not risk averse, the market would set long-term rates equal to the average of current and expected future short-term rates. In this case investors would be totally indifferent between holding a long-term bond and rolling over a series of short-term securities.

However, as we know, most people do not like risk. Risk-averse investors demand compensation for the risk associated with holding an investment. Since there is uncertainty about the price at which you would be able to sell a bond if you needed to sell it before maturity, we say you face market risk. So the longer the term of the asset, the greater the market risk and the greater the compensation, or risk premium, investors demand.

Putting this all together, the nominal long-term rate can be thought of as the average of current and expected future real short-term rates, plus expected inflation, plus a risk premium.

So this means that the slope of the yield curve, that is, the difference between the nominal long-term and short-term rate, reflects the expected change in short-term real rates, plus the expected change in inflation, plus the risk premium.

Why the Yield Curve Will Be Flatter

So what can these relationships tell us about the future behavior of the yield curve? I anticipate that the yield curve is likely to be flatter, on average, than at comparable points in past business

cycles. This is not to say that the yield curve is going to be inverted all the time, but, on average, I believe the curve will be flatter. My case for a flatter yield curve is based on two premises: first, inflation and inflation expectations are likely to be lower and more stable, and hence, the inflation premium will be smaller than in the past; and second, inflation and the real economy are likely to be less volatile, so the risk premium will be smaller.

Lower Inflation Expectations

First, as I mentioned earlier, expected future inflation plays an important role in the determination of the slope of the yield curve. If investors believe future inflation will be higher than today, they will need to be compensated in the form of a higher yield for holding that longer-term asset.

Over the last several years, confidence in the fact that inflation in the United States is going to stay low and more stable means there is less reason for long-term rates to be above short-term rates. It also makes a difference for how the yield curve responds to news of an upward movement in inflation. Suppose inflation picks up temporarily, and the inflation premium in short-term interest rates rises in response. If market participants believe that the Fed will allow the higher inflation to persist, the inflation premium in long-term interest rates will rise as well. So the whole yield curve would shift up, without changing its shape. But if market participants believe that the Fed is committed to keeping inflation low and will bring inflation back to a lower level, the inflation premium in long-term interest rates will remain stable. So, with short-term rates rising and long-term rates relatively unchanged, the yield curve will flatten.

The fact that long-term inflationary expectations have come down and have become more stable is apparent from our Bank's [*Survey of Professional Forecasters*](#). The survey asks participants what they expect the inflation rate to be over the next 10 years. This number has fallen from 4 percent in 1991 to 2.35 percent today and has remained essentially flat for the past 8 years. Keeping inflation expectations anchored at lower levels is going to keep long rates lower, on average.

Decreased Volatility

In addition to the fact that long-term inflation expectations are lower, I believe that inflation will be less volatile in the future than it has sometimes been in the past. This trend is well underway. Researchers have found that over the last 20 years inflation volatility has declined by almost two-thirds.

This decrease in volatility is not limited to inflation. Over the past 20 years there has been a significant decrease in volatility in the overall macroeconomy. In fact, this period has been referred to as the “Great Moderation.” Researchers have found that the variability of quarterly growth in real output, as measured by its standard deviation, has declined by 50 percent since the mid-1980s. To put this decline in volatility in context, you can think about this piece of evidence: the last two recessions we experienced were relatively mild by historical standards and the recent expansions have been longer.

The dampening of volatility in inflation and the real economy suggests a flatter yield curve as well. Consider the typical evolution of the yield curve over a business cycle. The yield curve’s slope tends to steepen during recessions and in the early stages of recoveries as the central bank cuts short rates and a weak economy naturally leads to lower real rates. Investors realize these lower rates are temporary and that short rates will rise as economic growth returns to trend. Thus, long rates do not fall as much as short rates and the yield curve steepens. Then, as the expansion unfolds and as the economy returns to a more sustainable growth rate, short rates rise and the yield curve flattens again. Now, to the extent that business cycle fluctuations remain milder and less frequent, the cyclical steepening in the yield curve will be less pronounced and it will remain flatter, on average.

There is another important aspect here. Because the real economy is more stable on average, not only will the cyclical variability in the yield curve decline, but the risk premium will also decline, further limiting the overall premium built in to long rates.

The reduction in the volatility of inflation has a similar impact. If the volatility of future inflation is large, even if its expected level is low, investors will be at some risk and so will demand a

greater premium to hold longer-lived assets. Yet if markets believe that the Federal Reserve can and will limit the volatility of inflation, the risk premium in long-term rates is reduced.

In short, the reduction in volatility in both real output and inflation creates a macro environment with relatively less risk. Thus, not surprisingly, the risk premium an investor demands for holding longer maturity bonds decreases.

I am not trying to make the case that this reduction in economic volatility that we have seen is necessarily going to be permanent. Clearly volatility is a characteristic of financial markets and can be affected by domestic and world events. Indeed, we've experienced such volatility over the past couple of weeks. If increased volatility were to return, investors would then require a larger risk premium to hold long-term securities. What is important to recognize is that the reduction of the risk premium is being caused by some longer-term trends, not just cyclical factors.

I would note that even if volatility in the real economy returns to a higher level, the Federal Reserve is not likely to let the volatility in inflation rise, so that source of risk, I believe, will stay lower.

Global Evidence

This flattening of the yield curve is happening not only in the United States; it is, in fact, a global phenomenon. There has been significant flattening or inversion of the yield curve in the United Kingdom, Canada, and Japan, just to name a few.

This is not surprising once we realize that the Great Moderation and the decrease in inflation expectations are also global phenomena. Since the 1980s, the median inflation rate for advanced economies has declined from 7 percent to 2 percent and the volatility of inflation has declined as well. Over the same period, the median inflation rate has fallen from 9 percent to 4 percent in emerging markets.

So I would suggest that, going forward, as you think about the kind of environment you are going to be in, you may want to anticipate a world where, on average, the spread between short-term rates and long-term rates is likely to be smaller than it has been in some recent periods.

Implications for Banks

Now that I have discussed the reasons why I think the yield curve will likely be flatter, the important question is — especially for you as bankers: How might this affect the banking industry? Certainly, the traditional strategy of earning profits by borrowing short and lending long becomes problematic as the yield curve flattens

Of course, banks have become progressively more adept at managing the interest rate risk inherent in this strategy and at insulating their net interest margins from unexpected changes in market rates. Consequently, the relationship between banks' net interest income and the slope of the yield curve has weakened over time.

One tool for managing your risk exposure is to use hedging strategies, such as holding a higher proportion of floating rate assets to match floating rate liabilities; using interest rate derivative contracts, like swaps; or securitizing assets. Some banks have also chosen to reduce or limit their overall exposure by entering different lines of business to increase their noninterest income, from wealth management and insurance to, as I read in the *American Banker*, a travel agency.

Larger banks have the resources to engage in these more sophisticated strategies for handling interest rate risk, including derivatives hedging and asset-liability pricing strategies. And larger banks also rely more on noninterest sources of income, such as securities trading.

But smaller banks have weathered the flattening yield curve surprisingly well. As the yield curve flattened in 2005 and 2006, the net interest margins at the largest banks — banks with over \$10 billion in assets — fell, while those at smaller banks were little changed or increased. According to FDIC research, 55 percent of FDIC-insured commercial banks saw their net interest margins increase.¹

¹ Source for the 55 percent number is “Risk Management Webinar: Risk Management in a Flat-to-Inverted Yield Curve Scenario,” FTS-FDIC, May 1, 2006. www.fdic.gov/news/conferences/roundtables/riskmgmttrans.html. Source for other is Nathan Powell, “What the Yield Curve Does (and Doesn't) Tell Us,” FYI: An Update on Emerging Issues in Banking, FDIC, February 22, 2006, www.fdic.gov/bank/analytical/fyi/2006/02206fyi.html.

This might seem counterintuitive, but the effect of a flattening of the yield curve on bank earnings also depends on the source of the flattening: is it because long rates fell relative to short rates or because short rates rose relative to long rates? In the past two years, it was the latter, as the Fed began raising short rates in June 2004, while long rates were little changed.

It turns out that the cost of funds at large banks is tied more closely to short-term market rates than that at small banks. Small banks rely more on non-interest-rate sensitive core deposits and associated fees. So the increase in short rates led to a smaller increase in the cost of funds at small banks. In addition, the yields on assets have been higher for small banks than for large banks. So in this regard, small banks' net interest income has suffered less than that of large banks.

Before leaving this topic, I do want to add some words of caution about turning to fee income to protect yourselves from movements in interest rates. Fee income is not entirely insulated from changes in the shape of the yield curve. For example, lower mortgage interest rates could lead to prepayments that deplete the pool of mortgages serviced by a bank, thereby lowering fee income. Also a sizable portion of noninterest income is service charges on deposit accounts – this component makes up 33 percent of the noninterest income of banks with assets less than \$1 billion and 16 percent of that of banks with assets over \$1 billion. Thus, a considerable amount of the industry's \$210 billion in noninterest income comes from traditional banking activity as opposed to nonbanking activities.

While it is true that as the yield curve flattens, noninterest income could help offset declines in net interest income, in practice, a bank cannot simply rely on noninterest income to stabilize its profits and insulate itself from interest rate risk. Research done at the New York Fed indicates that noninterest income growth and net interest income growth are negatively correlated for only

about one-third of banks. This suggests that only some banks have been able to diversify into activities that generate noninterest income and help stabilize their overall income.²

Moreover, research also indicates that the correlation between the growth of noninterest income and net interest income has increased over the last 10 years, making the potential diversification benefits lower than they used to be

Hiring, Training, and Retaining Talent

Discussing the varied techniques banks are using to grow in the face of a flattening yield curve brings me to my third and final point. As you offer more products — and more sophisticated products — whether you are a small bank or a large bank, you will need talented employees who have higher skill levels, more education, and better training. And the labor market data and the comments I hear from bankers and business leaders alike all suggest that finding employees is becoming more and more of a challenge. So I think banks will continue to grapple with questions such as “How do we find talented people?” and, more important, “How do we keep them from leaving?”

Unfortunately, there is no simple answer to this challenge. This is an issue facing all banks and businesses and one that we must deal with at the Federal Reserve.

Nonetheless I believe the robust pace of financial innovation along with banks’ continuing focus on hiring, training, and retaining talented employees and equipping them with the skills they need to be successful innovators will allow the banking industry to continue to thrive even in this challenging environment.

The views expressed today are my own and not necessarily those of the Federal Reserve System or the FOMC.

² Kevin J. Stiroh “Diversification in Banking: Is Noninterest Income the Answer?” Working Paper, Federal Reserve Bank of New York, March 5, 2002.