

Curves you can't ignore

The Treasury bond market always has been an excellent tool for forecasting moves in stocks. But some means of exploiting this relationship are better than others. Yield curve analysis is one of those superior approaches.

By Deborah J. Weir

Every trader has the most powerful stock market timing tool in the world right under his nose, the bond market. Bonds, always important, have attracted increased attention since the free ride to the upside for stocks ended in March 2000. All equity-related traders, whether the underlying instrument is stock index futures, cash stocks or the upcoming individual equity futures, must pay attention to the bond market. You'll have good company when you do: The Federal Reserve's monthly publication, *Economic Trends*, makes frequent reference to bonds as an economic forecasting device.

Let's see how we can use the fixed-income market's ability to analyze risk tolerance in financial markets to help forecast the stock market. The concept here hardly is controversial; the discounted income streams from the underlying instruments determine the returns on both stocks and bonds. The return on equities is considered riskier because bonds are

senior to stocks in a corporation's capital structure. However, the income stream on stocks can grow with the company, while bonds' income stream is fixed.

The shape of things to come The yield curve, the picture of how returns vary across maturities, is an important and unique feature of the bond market. The normal yield curve slopes upward, with longer-dated issues yielding more than shorter-dated ones. This curve compensates investors for the risks associated with long-term investing.

An investor is more likely to be repaid tomorrow than in 30 years; after all, the world changes a lot in 30 years. Thirty years ago, Polaroid was one of the Nifty Fifty stocks. Now it has defaulted on its bond payments. Pacific Gas & Electric used to be a preferred investment for widows and orphans. Now its AAA-rated bonds have fallen to junk status. In addition to the uncertainty implied by a long-term investment, there is

the missed opportunity of making other, potentially more rewarding investments in the interim.

There are many ways to measure a yield curve, but one of the simplest and most effective is to calculate forward rates along the curve and compare those rates to the horizon rate. A forward rate is the rate we can obtain now for financing to begin at some point in the future; the formula is given below. For example, the forward rate between one and 10 years is the rate we can lock-in today for financing in years two through 10. If the yield curve is positively sloped, this forward rate will be greater than the 10-year rate.

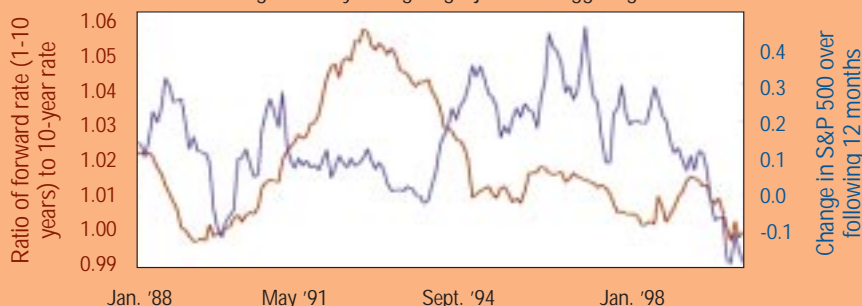
$$FR_{1,10} = \left(\frac{(1 + R_{10})^{10}}{(1 + R_1)} \right)^{(1/9)} - 1$$

While we can calculate between any two points on the yield curve, one year and 10 years are selected as the bridge between money market and investment rates. We can plot the ratio of these forward rates to 10-year rates and overlay the percentage change in the S&P 500 over the next year, as seen in "Predictive capacity" (left). One aspect of this relationship is clear: The Fed is much better at slowing the economy and the stock market with higher short-term interest rates than it is at reviving the economy and the stock market with lower rates. It's much easier to destroy than to create.

Sophisticated investors recognize different yield curves for different markets and that the relationships between these yield curves contain information important for trading. For example, a firm looking to issue

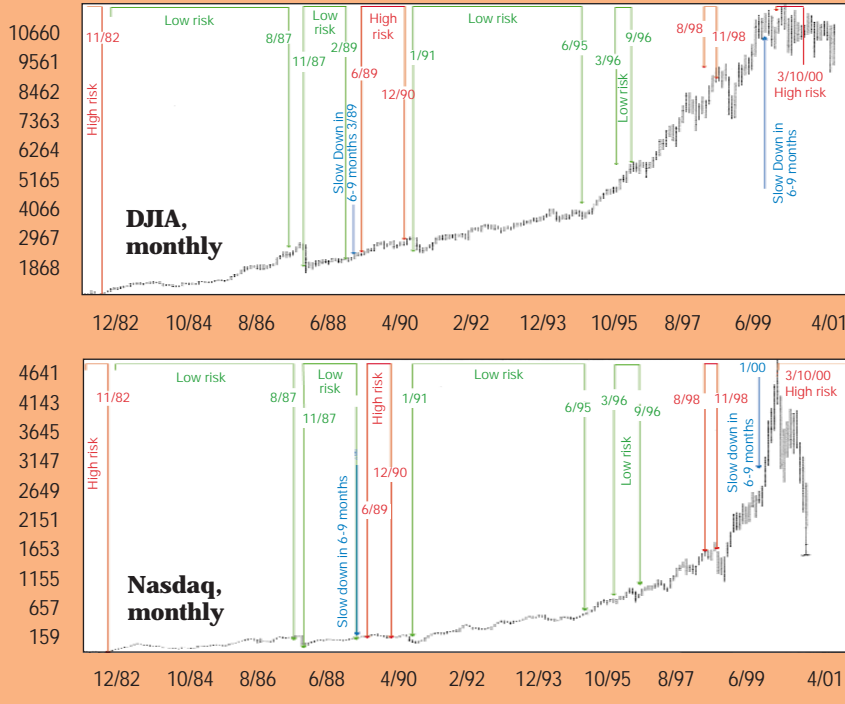
PREDICTIVE CAPACITY

History suggests that monetary policy is a tool better used for slowing down a roaring economy than giving a jolt to a staggering one.



TRACKING THE PULSE

These charts show how activity in the bond market clearly suggested the coming 1990 recession. Such foretellings will occur regardless of where the trouble originated from, allowing the bond market to act as a clearinghouse of sorts of economic health.



commercial paper to meet its cash needs will pay attention to money market yield curves. International investors and currency traders need to look at foreign yield curves, which measure a country's economic outlook, currency strength and political stability. Finally, there are corporate yield curves, which reflect investors' opinion of the ongoing nature of the business. An astute trader can divine much information by measuring these curves individually and by studying their interrelationships.

Consider the first quarter of 2000, the final phase of the Nasdaq's technology bubble. The Treasury had been re-purchasing long-term bonds, which served to push yields lower at those maturities. Because the Fed had been tightening credit since May 1999, the yield curve was inverted, with short rates trading over long rates. One consequence of the Treasury buyback was, in Keynesian terms, a fiscal drag: The money used to buy the bonds was derived from excess levels of taxation, and this slowed down the real economy. The stock market bubble burst as people reacted to the government's fiscal and monetary tightening. Cash

flowed out of the riskiest investments first, technology stocks whose earnings lay furthest in the future.

The yield curve's inversion signaled the coming economic slowdown. An economic slowdown translates into higher risk for equities as investors and consumers prefer cash, dividends and stocks that deliver steady earnings. An environment of higher risk in the equities market usually precedes a stock market decline.

Many investors missed last year's sell signal from the bond market for another reason: The prolonged bull market, which had sloughed off so

many previous downturns, led to over confidence. The red light flashing from the yield curve was seen as just one more bump in the road.

No guessers need apply Bond market data are objective; unlike recently unmasked stock market analysts, bond prices don't talk up their position. We should add that futures traders tend to be more objective than stock traders: All futures traders are equally ready to go short as to buy, and the same cannot be said for conventional investors. If you want unbiased information — and you certainly should — look to the aggregate outcome of bond market trading decisions

There's no better place to look than banks. Federal Reserve member banks are the only credit market participants that can borrow and lend at the Federal funds rate. Banks played a pivotal role in the course of equity markets in 1998, mainly through their aggressive lending to such over-leveraged hedge funds as Long-Term Capital Management.

Banks must meet certain reserve funding requirements every afternoon to satisfy the Federal Reserve and state banking commissioners. Banks, therefore, lend each other money at the Federal funds rate throughout the day in anticipation of what is called in industry jargon, "settling up with the Fed." (In other countries, it is known as the inter-bank rate.) Obviously, this rate of return is a statistical measure of the demand for cash. We can study this rate intently as it is a measure of liquidity in our financial system.

The Federal funds rate can be affected by exogenous threats to the system, such as the default of the Russians on their bonds in August 1998. Many hedge funds were

MEASURING RISK

Below are some of the objective figures that may be helpful in measuring qualitative and cultural variables that previously have been gauged subjectively.

Financial variables:

- Federal funds rate (absolute and relative)
- Changes in prime rate
- Federal Reserve Policy
- Shape of various yield curves
- Quality spreads
- Change in money supply
- Level of money supply relative to Fed's target
- Commercial paper
- Content analysis of financial media

Cultural Variables:

- Bidding wars in the real estate market
- No parking near stores
- Excessive presentation & prices in restaurants
- Presidents breaking sexual taboos
- High divorce rate

heavily invested and in some cases leveraged more than 20-to-1, in these defaulted bonds. As the hedge funds defaulted on their loans from the banks, the banks scrambled for cash to meet their deadline at the Federal Reserve. This scramble pushed up the rate on Federal funds and created a sell signal for anyone watching. It is interesting that the shortest-term domestic rate reflected a problem with a long-term foreign bond.

Anyone who missed the Federal

funds' sell signal in 1998 had another opportunity to catch it — quality spreads. The high-yield index was standardized and published regularly after the leveraged buy-out disaster in the late 1980s. Now, it is easy to compare it to the appropriate U.S. T-bond and track the spread. Lower-rated foreign bonds are included in this index. In 1998, the high-yield index included Russian bonds, and the spread over Treasuries widened enough to alert an investor.

These episodes are not unique.

Fixed-income markets are the ultimate expression of the fear and greed that drive all our financial markets. The bond market registered fear in anticipation of the 1990 recession, as we can see in "Tracking the pulse" (page 35). Again, for those who know how to measure the data, there was a clear message of a slow-down coming about a year in advance; the actual decline occurred slightly later than forecast.

In the economic cycle of the early 1990s, the federal government used strong fiscal policies to ward off a deep recession like the one the Japanese have been experiencing. This policy took the form of the savings and loan bailout by the Resolution Trust Corp.; here, the government engineered the sale of foreclosed real estate to restore bank balance sheets in the aftermath of the real estate bubble's collapse.

The beauty of the bond market is that it foreshadows a financial slow-down and subsequent stock market declines regardless of where the financial excess lies. There is one period in recent memory, October 1987, wherein the absolute levels of interest rates did not forecast the oncoming slaughter in stocks. However, other bond market statistics, such as the rising Federal funds rate, widening credit quality spreads and soaring long-term bond yields, did flash a warning.

By early October 1987, fear in the bond markets was palpable, while equity markets seemed oblivious. But this is an unstable situation, as the two markets are linked. The pattern is always the same: Short-term rates change first, followed by long-term rates, followed by equities.

Every period of high risk in bonds has been followed by a decline in the stock market. Does it ever go the other way around? Do bonds ever forecast a period of rising stock markets? Yes, bonds forecast rising stock markets after each bear market. The Federal Reserve re-liquefies the financial system. The government stimulates the economy by writing welfare checks — otherwise known as transfer payments as money is transferred from one sector to another — by lowering taxes and by attempting various forms of economic stimulus. Cash flows back into financial assets.

The first indication of this re-liquefaction is a lower Federal funds rate.

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THERE IS A RISK OF LOSS IN FUTURES TRADING.

Banks no longer have to scramble to settle up with the Federal Reserve by 4 p.m. when "the Fed wire goes dead." The jargon sounds less ominous when banks don't have to worry about their own viability. The funds rate falls to acceptable levels as money becomes available. Available money flows into short-term bonds and brings the yield curve back to normal. The whole curve drifts into a lower plane and market-related rates, such as mortgages, fall. The bond market forecasts a coming bull stock market under these conditions.

Good news coming? So, when will the bond market flash a buy signal for this cycle? Currently, this isn't clear; the market does not owe us a signal. Certain periods in "Taking the pulse" have little in the way of a defining excess or deficit risk level; the markets are in balance. Oddly enough, given markets' tendencies to seek equilibrium, these periods do not last for long. From a trader's perspective, this creates opportunities.

There certainly were plenty of trading opportunities in 1994. That was a difficult market for equity traders who lacked the comfort offered by the bond market. Equity volatility whipsawed many investors who tried in vain to divine the activities of the Federal Reserve. The news from the bond market, however, was good. Investors could have relaxed a little if they had realized that the bond market measured acceptable levels of risk in the stock market.

Can we measure the reliability of the bond market as a stock market indicator? A reliable indicator is one that generates consistently accurate signals with no false positives. In other words, it calls each turn in the market without creating false signals. An extraneous sell signal in the middle of a major rally is just as dangerous as missing a chance to lock in profits at the end of the rally with the right sell signal.

Are there any of those dangerous false positives? An old joke, attributed to Paul Samuelson, is that stocks have predicted nine of the last five recessions. The bond indicator in our charts has no false positives. Similar research compiled by the Federal Reserve Bank of Cleveland going back to 1960

(available at www.clev.frb.org) has no false positives either.

Nelson Freeburg, the editor and publisher of *Formula Research*, currently is testing the validity of such forecasts. One of the things Freeburg is testing is whether the qualitative and cultural variables, listed in "Measuring risk" (page 35), can be quantified. Previous attempts to quantify these variables are best represented by axioms such as a bear market ending when *Time* runs a cover story

on it; subjectivity is inherent in such efforts. A sense of excess speculation is far more an art than a science. Central banks should remember this whenever they decide, in former Fed Chairman William McChesney Martin's memorable phrase, to "take the punch bowl away just when the party's getting good." FM

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