

## U.S. Bond Market Outlook

THE U.S. BOND MARKET provides endowment and foundation managers with a wide range of investment alternatives. Six categories are included in our asset allocation. Three are from the government sector: long-term U.S. Treasury bonds, intermediate-term U.S. Treasury notes/bonds, and inflation-protected Treasury bonds (known as TIPS). Two are from the corporate sector: investment-grade, long-term corporate bonds and non-investment grade corporate bonds (known as high-yield bonds). We also include a category from the asset-backed sector, mortgage-backed bonds. These six categories do not cover the entire bond market, but, in aggregate, they constitute a significant proportion of the market and provide a broad range of risk/return possibilities. Figure BMO.1 reports expected returns for each of these categories in addition to expected returns on Treasury bills, the risk-free investment alternative, and expected inflation rates.

### BOND MARKET EXPECTED RETURNS

Asset Class	Near-term (current market consensus)
Treasury-bills	4.8%
Intermediate-term Treasuries	5.0%
Long-term Treasuries	5.1%
TIPS (inflation-indexed)	5.0%
Long-term corporate bonds	5.9%
High-yield bonds	8.8%
Mortgage-backed bonds	6.1%
Inflation	2.5%

Figure BMO.1: Bond Market Expected Returns

The outlook for the U.S. bond market is for modest single-digit returns both near-term and long-term. Despite seventeen increases in the target federal funds rate (the rate at which banks lend to each other overnight) from June 2004 to August 2006, current bond yields are low and remain below historical averages. Credit spreads on corporate bonds (the risk premium corporate borrowers pay) are narrower or lower than in recent years. Supply and demand conditions have been in a tenuous equilibrium that appears unsustainable for the long term with changes likely to result in falling bond prices and rising rates. All in all, the U.S. bond market offers investors more down-side risk than up-side potential. Endowment managers and fiduciaries would do well to realize returns equal to current bond yields, but capital depreciation may be unavoidable, providing low single-digit positive returns at best if interest rates increase.

The bond market itself is forecasting little change in interest rates. Inflation expectations, as measured by the spread between the yield on 5 year Treasuries and 5 year inflation-indexed Treasuries, remain modest at 2.5% and essentially unchanged since mid 2004 (see figure BMO.2). The forward or future rates implied by the late-October 2006 Treasury yield curve are little different from current rates. Future short-term rates are projected to decline between 0.30% and 0.40%. Future intermediate and long-term rates are within 0.20% of current levels between 4.80% and 5.00% (see figure BMO.7 for future spot rates).

### INFLATION EXPECTATIONS

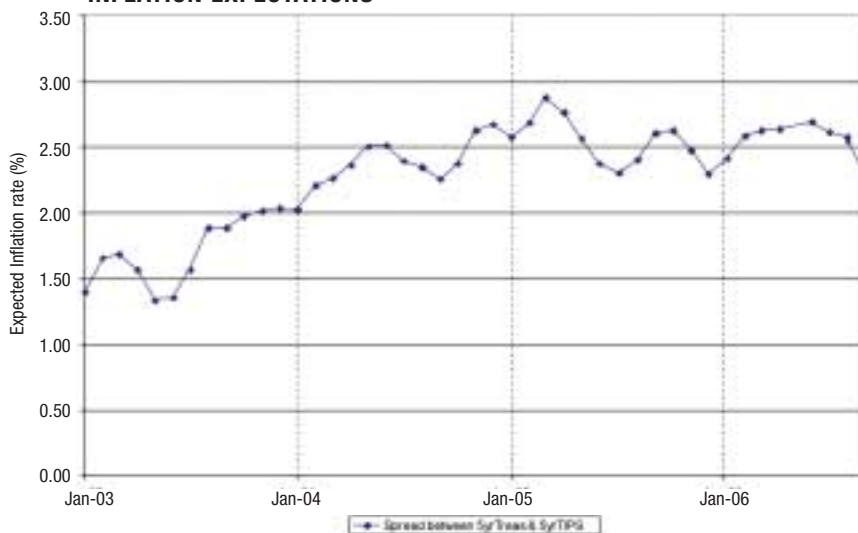
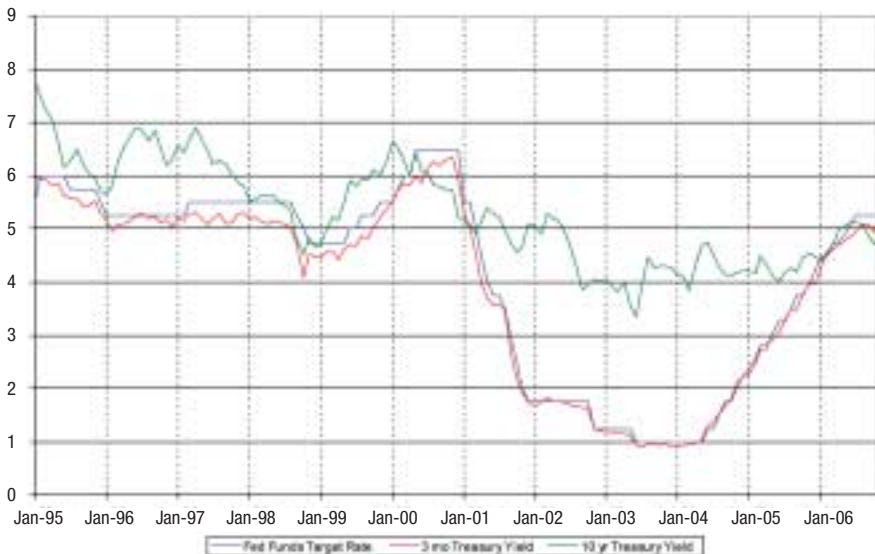


Figure BMO.2: Inflation Expectations  
Source: Federal Reserve Board

Current bond yields remain below historical averages despite the rate hikes by the Federal Reserve Bank. Figure BM0.3 shows the history of yields since 1995 on 3-month and 10-year Treasuries versus the target fed funds rate. The Fed began tightening credit conditions in June 2004. Technically, it is more accurate to say that the Fed began to reduce the accommodation it made in response to the 2001 recession and the effects of the stock market decline and attacks of 11 September 2001. Since June 2004, the Fed has increased the target federal funds rate from its 46-year low of 1.0% to the current 5.25% level. Responses in the bond market to the reduction in the Fed’s accommodation have surprised some people. Although short-term rates have responded to the Fed increases, long-term rates have remained relatively unchanged throughout, only recently reaching 5.0%.

If the good news is that the market doesn’t believe bond yields will rise (and prices fall) in the near term, the bad news is that on a longer-term basis, long-term rates are almost certain to rise.

**FEDERAL FUNDS TARGET VS. 3-MONTH & 10-YEAR TREASURY YIELDS**



**Figure BM0.3:** Federal Funds Target Rate versus Yields on 3-month and 10-year Treasuries  
**Source:** Federal Reserve Board

Current yields on long-term Treasuries remain near to the lowest levels seen in a generation and are below historical averages. Figure BM0.4 shows the history of the yield on the 10-year Treasury since 1957. The late-October yield of approximately 4.8% is 2.5% less than the 30-year median rate of 7.3% and 1.5% less than the 50-year median rate of 6.34%. We have to go back to 1965 to find bond yields as low as they have been in recent times.

**10-YEAR TREASURY BOND AVERAGE MONTHLY YIELDS**



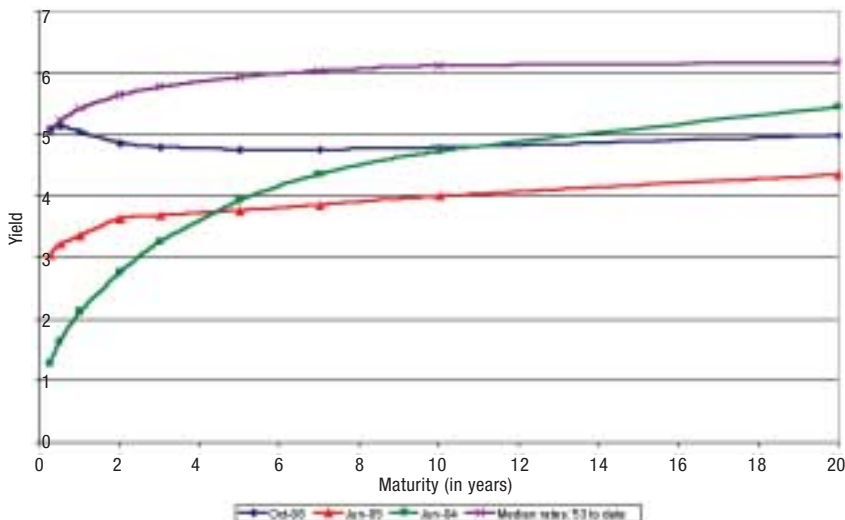
**Figure BM0.4:** 10-Year Treasury Bond Average Monthly Yields, Jan 1957 to Oct 2006  
**Source:** Federal Reserve Board



Current yields on long-term Treasuries remain near to the lowest levels seen in a generation.

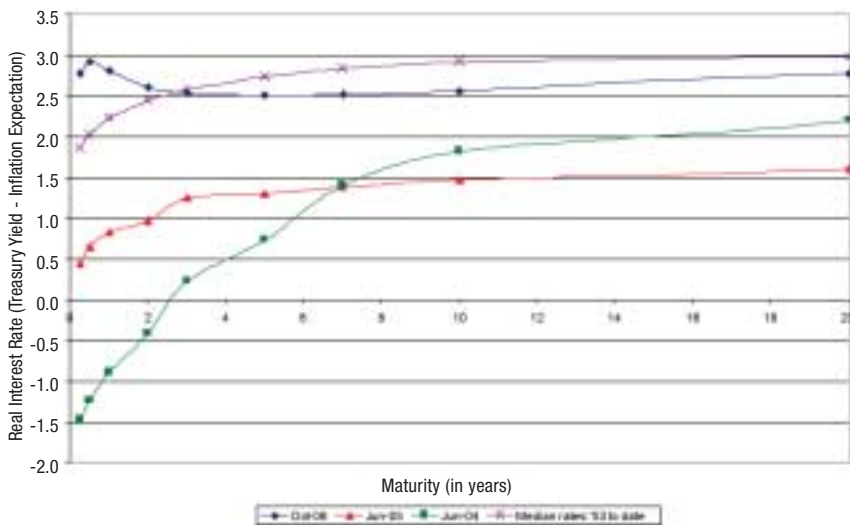
Beyond one year, the entire yield curve on both a nominal and real basis is below historical averages. Figures BMO.5 and BMO.6 show the comparisons.

**TREASURY CONSTANT MATURITY YIELD CURVES**



**Figure BMO.5:** Treasury Constant Maturity Yield Curves  
**Source:** Federal Reserve Board and Advisor calculations

**REAL INTEREST RATE YIELD CURVES**

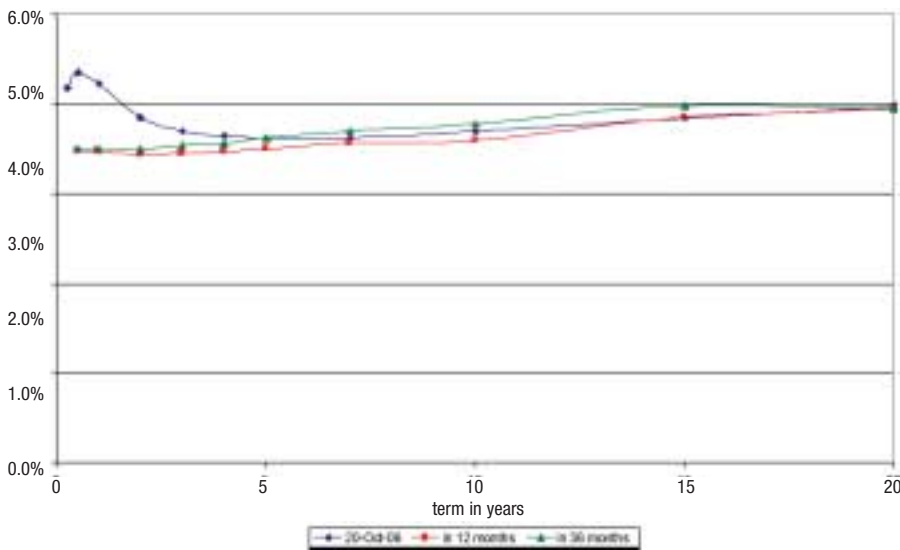


**Figure BMO.6:** Real Interest Rate Yield Curves  
**Source:** Advisor calculations

Figure BMO.6 clearly shows the accommodation by the Fed in reducing the target federal funds rate to 1.0% in 2003 and maintaining that target through mid-year 2004. Real interest rates were negative on the short end of the curve in June 2004, and were less than 1.0% in June 2005.

Low yields reduce current income and expose the bond investor to the risk of capital depreciation should rates increase. Although there is not much room for bond yields to go lower, the yield curve is currently signaling that the market does not believe bond yields will go appreciably higher in the near term. Forward rates (those future rates implied by the difference between today's rates for different terms) indicate that the market expects short-term rates to decrease 0.30% to 0.40%, and intermediate and long-term rates to remain essentially unchanged. Figure BMO.7 shows the implied spot rates for 12 months and 36 months forward from late October 2006.

**ACTUAL & FORWARD SPOT RATE CURVES**



**Figure BM0.7:**  
Actual Forward Spot  
Rate Curves  
**Source:** *Asset  
Allocation Advisor*

The equilibrium of foreign exchange will almost certainly decrease the value of the dollar and require higher interest rates in the U.S.

If the good news is that the market doesn't believe bond yields will rise (and prices fall) in the near term, the bad news is that on a longer-term basis, longer-term rates are almost certain to rise. Two factors make interest rate increases highly likely in the longer term.

First, the size of the U.S. fiscal and current account deficits have resulted in foreign investors being a major supplier of credit to the U.S. The U.S. fiscal deficit is the largest (as a % of GDP) of all industrial countries except for Japan. Its current account deficit is the largest. The strength and security of the U.S. economy, however, have made it a desirable place for incoming foreign investment and will likely continue to do so. But there's a catch. The equilibrium of foreign exchange will almost certainly decrease the value of the dollar versus world currencies and require that interest rates increase in the U.S. to continue to attract foreign investment sufficient to finance its deficits.

The outlook for corporate bonds is not much better than for government bonds. Corporate bonds face the same underlying interest rate and valuation dynamics as government bonds, and current risk premiums for investing in corporate bonds (both investment and non-investment grade) versus government bonds provide little reason to believe that corporate bonds will offer a better return prospect than government bonds. Credit spreads on investment-grade bonds (the difference between what a corporation pays to borrow versus what the federal government pays to borrow with no risk of default) have declined from their peaks in 2001 and 2002 (see figure BM0.8). AAA credit spreads are currently (late October) at 0.6%, just under the median of 0.64% since 1993. Baa credit spreads at 1.50% are just over the median of 1.47% since 1993.

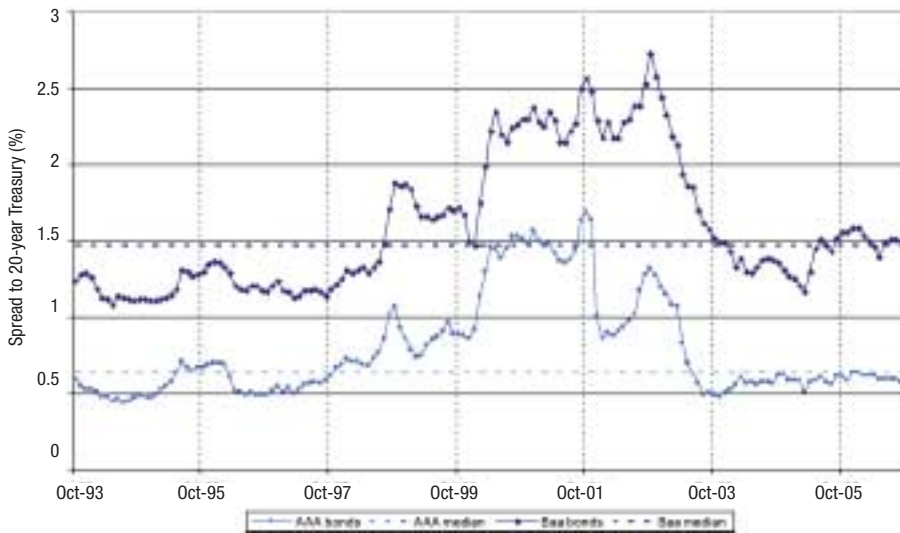
On balance, it would appear that there is more room for credit spreads to increase than decrease from current levels. Corporate bond investors, therefore, face an additional risk besides rising



**"I'm just glad we got out before interest rates went up again."**

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**CORPORATE BOND CREDIT SPREADS - MONTHLY AVERAGES**



**Figure BM0.8:** Corporate Bond Credit Spreads  
**Source:** Federal Reserve Board and Advisor calculations

rates, namely, the risk that credit spreads will increase, leaving current bonds below market even if rates do not increase.

Fortunately, however, corporate balance sheets are strong and the economy has been growing, giving the market little reason to look for larger credit risk premiums. In the long term, though, the balance of uncertainties seems more heavily weighted on down-side risk than up-side potential for corporate credit spreads. Just as with government bonds, then, we believe endowment managers and fiduciaries would do well to realize current yields but may find price depreciation compounded by increasing interest rates and credit spreads unavoidable in the longer term.

We conclude the bond market outlook with comments on the return expectations for each asset category in view of the market's interest rate outlook and the value of other return parameters relative to historical norms.

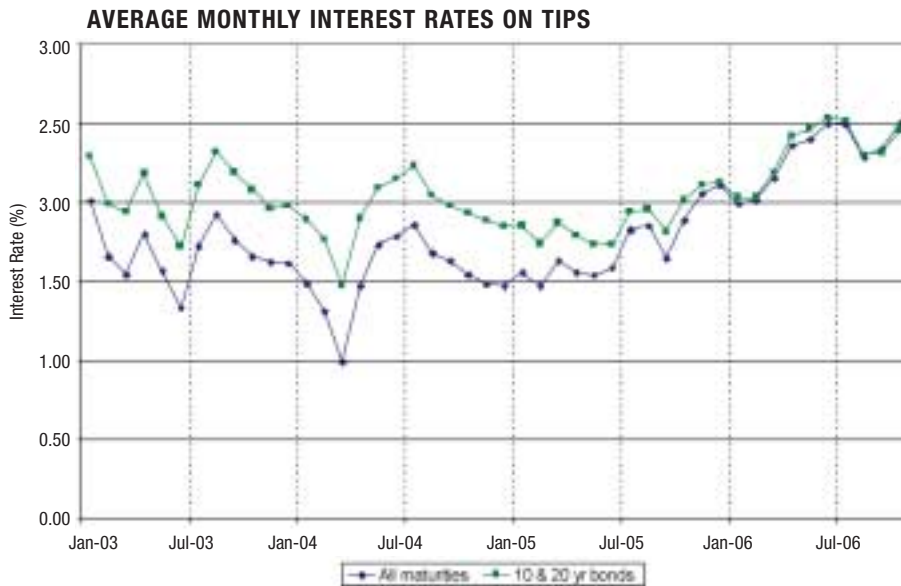


The outlook for the U.S. bond market is for modest single digit returns.

**Intermediate-term government bonds** should generate returns of 5.0% over the next three to five years, according to the market's implied forward rates. **Long-term government bonds** should return 5.1%. Should interest rates increase, intermediate-term total returns will decline in the very near term, but be largely unchanged from 5.0% over a five-year time period, with increasing yields eventually offsetting market value losses. Total returns on long-term bonds, however, will be adversely impacted by any increase in long rates, as yield gains will be insufficient to offset the market value losses on longer duration bonds. A sustained increase of 0.25% per year will reduce the average total return from 5.1% to 4.5% over the next five years. Increases of 0.50% per year will reduce returns further to 3.5%. (Returns on intermediate-term government bonds are based on the total return on a portfolio of five-year Treasury notes rolled over annually. Returns on long-term government bonds are based on total returns on a portfolio of 20-year bonds.)

**Inflation-indexed bonds or TIPS** (Treasury inflation-protected securities) offer the best risk/return value in the fixed income market and may be an effective hedge against rising interest rates. Although the prospective return of 5.0% is no different from the prospective returns on Treasuries, since the principal on these bonds is indexed to the consumer price index (CPI), they will increase in effective yield if inflation (and interest rates) increase. Interest rates on TIPS in late October 2006 were approximately 2.5%, the highest they have been since the Federal Reserve started tracking TIPS in January 2003 (see figure BM0.9, a chart of the average monthly rate on TIPS). The 5.0% prospective return is the compound effect of a 2.5% bond rate and projected inflation, which the market currently projects at 2.5%.

**Investment-grade corporate bonds** are expected to return 5.9% over the next three to five years, according to the market's implied forward rates and assuming no change in credit spreads. Returns will suffer if interest rates and/or credit spreads increase. A fifty percent increase in credit spreads will reduce returns by 0.5% to 0.6%. A sustained increase of 0.25% per year in long rates will reduce returns by 1.3% over five years. Increases of 0.50% per year, bringing the long bond rate to approximately 7.7% in five years, would cut returns nearly in half.



**Figure BMO.9:**  
Average Monthly  
Interest Rates on  
Treasury Inflation-  
protected Securities  
**Source:** Federal  
Reserve Board

Non-investment grade or **high-yield corporate bonds** are expected to return 8.8% over the next three to five years, according to the market's implied forward rates and assuming no change in credit spreads. High-yield credit spreads, though, are at the low end of their historical range over the past twenty years and are approximately 1.0% below the median spread to the 20-year Treasury. Investors in high-yield bonds, therefore, appear to face a larger down-side risk of widening credit spreads than do investment-grade investors. A return to the median credit spread of 4.5% over the 20-year Treasury would reduce the return on high-yield bonds to 7.2% over the next three to five years without any change in interest rates. Compounded with an increase in interest rates, returns on high-yield bonds would be further reduced.

**Mortgage-backed bonds, or MBSs** (mortgage-backed securities), offer endowment and foundation managers a high-quality alternative to Treasury bonds. The MBS market offers a dizzying array of alternative securities. For our purposes, we use agency-guaranteed, fixed-rate MBSs backed by 15-, 20-, or 30-year fixed-rate mortgages. This is a deep and liquid market with more than \$2.5 trillion in outstanding securities.

Fixed-rate MBS returns are projected at 6.1% over the next three to five years. MBS returns are more complex to model than government or corporate bond returns because MBS cash flows are subject to variability due to the prepayment of mortgages when homeowners move, refinance, or choose to pay extra on their home loan. Prepayment speeds, therefore, are a crucial factor in determining the total return on a MBS, and MBS returns are influenced by factors that affect prepayments, including employment, interest rates, home affordability, and demographics. The 6.1% return projection assumes forward rates as implied by the current yield curve and a conditional prepayment rate (CPR) of approximately 15%. Projected MBS returns are relatively immune to modest changes in prepayment speeds. A rising rate environment will reduce projected returns, especially if combined with slower prepayments.

