Market insights

Multi-Asset Solutions

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Fixed-income factors in focus for target date portfolios

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Key points:

- The main fixed-income factors—the features of securities that impact returns and risks—are related to interest-rate sensitivity, credit exposure, and inflation sensitivity.
- Interest-rate sensitivity refers to how a security's price changes when Treasury yields change. This factor is important to consider for striking a balance between generating income and reducing duration.
- Credit exposure from yield-advantaged securities typically generates a positive risk premium over a medium- to longer-term investment horizon, suggesting that target-date investments—which are aiming for a long investment horizon—should be biased toward investment-grade, high-yield, and emerging markets debt.
- Inflation sensitivity is important for retirees seeking to maintain their purchasing power when they may not have wage income to compensate for changes in inflation. As a result, target date portfolios will typically increase exposure to this factor over time.

Fixed-income factors are not as widely discussed as equity factors, but they are equally important in designing a target date portfolio to attempt to improve participant outcomes. Factors are risk sensitivities of fixed income assets that describe how they will likely respond to various macroeconomic forces. When exposure to them is tailored to the investor's needs, they may give better risk/return payoffs over time. Within fixed income, these factors can be broadly categorized as interest-rate sensitivity, credit exposure, and inflation sensitivity.

Factor: Interest-rate sensitivity

Interest-rate sensitivity describes how the price of an asset responds to changes in interest rates. Classic banking involves a process called maturity transformation, whereby banks pay interest on short-term deposits and earn interest on longer-term loans they make to borrowers. Banks expect to make money from the *term premium*, which refers to the fact that longer-dated securities typically yield more than short-term securities, other things equal. Similarly, fixed-income investors typically collect a term premium—an expectation of a higher return from holding long-term securities than shorter-term securities due to greater market uncertainty over a longer time period.

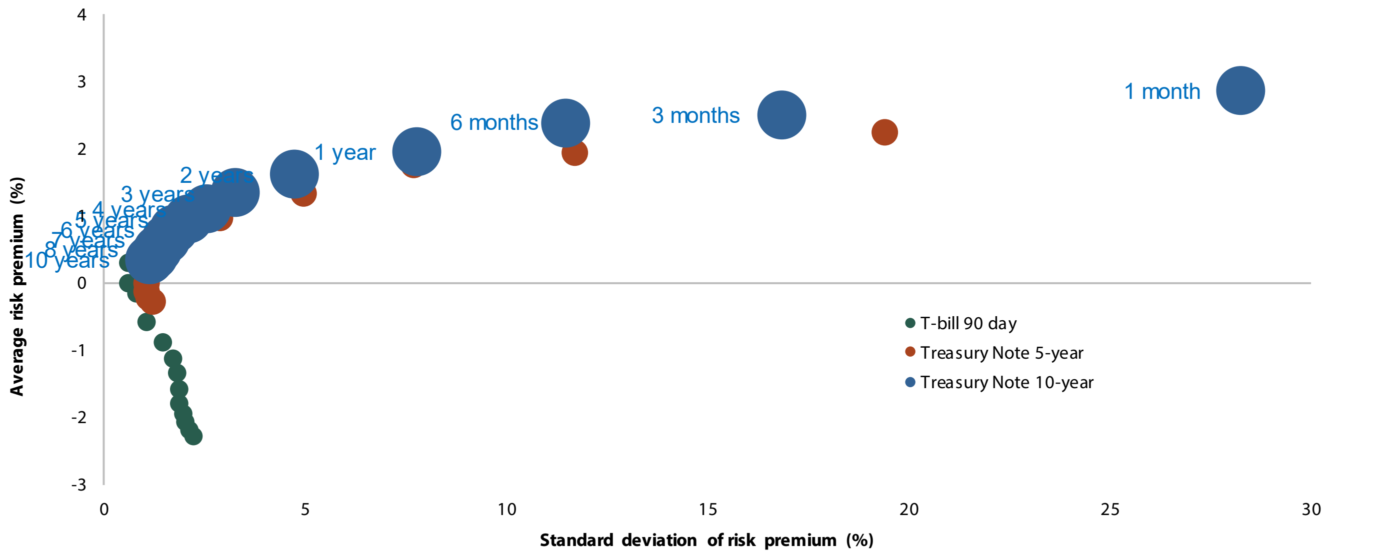
To illustrate the term premium, we compared three portfolios with different terms: a portfolio of 90-day constant maturity U.S. Treasury bills, a portfolio of 5-year constant maturity U.S. Treasury notes, and a portfolio of 10-year constant maturity U.S. Treasury notes. These are constant maturity portfolios in the sense that every month, the coupon and maturity proceeds are reinvested such that the maturity is held constant. We measured the total risk premium over different holding periods. The risk premium was calculated as the total return of the portfolio minus the total return on a Treasury security that matured at the end of the holding period. For example, for a one-year holding period, the risk-free security was a one-year Treasury note. The risk premium on the 10-year constant maturity Treasury note portfolio was the total return from the constant maturity portfolio minus the risk-free return. We used monthly data from the beginning of 1970 through August 2017 to calculate the average risk premiums and the standard deviation of risk premiums. This timeframe covered periods of rising interest rates as well as falling interest rates.

As can be seen in Chart 1, the risk-return trade-off of rolling (reinvesting) a portfolio of 90-day Treasury bills was unattractive. The longer the holding period, the worse the trade-off between risk (standard deviation) and returns (average) was for this portfolio, which illustrates the considerable reinvestment risk associated with rolling forward a short-term portfolio of securities.

The trade-off between risk and return for the 5-year Treasury portfolio and the 10-year Treasury portfolio were similar to one another. During the long period of declining interest rates from the early 1980s through 2017, the trade-off was more attractive the shorter the holding period. In contrast, in a period of rising interest rates, as was the case between 1970 and early 1980, average risk premiums were negative for holding periods of shorter than six years and more attractive for longer holding periods. The 5-year Treasury note portfolio had a positive risk premium for holding periods of six years and longer. The 10-year Treasury note portfolio had a positive risk premium after a holding period of nine years.

- Thus, depending on the general direction of interest rates, longer- or shorter-maturity portfolios may do better or worse. Based on the historical record, there is a benefit to investing in intermediate-term securities compared to very short or very long-term securities. This helps lower the risk of incurring a negative risk premium that is common with T-bills, but it also avoids excessive interest-rate risk associated with longer-dated fixed income. Investors in target date strategies tend to have long investment horizons by virtue of saving

Chart 1: Intermediate-term portfolios may be prudent, balancing the risk of reinvestment (if rates decline) and interest-rate risk (if rates rise).



Past performance is no guarantee of future results. Sources:Global Financial Data (GFD), FactSet, and Wells Fargo Asset Management's calculation. T-bill index is the Global Financial Data USA Total Return Treasury Bill Index; the 5-year T-note index is the Global Financial Data USA 5-year Government Note Total Return; and the 10-year T-note index is the Global Financial Data USA 10-year Government Note Total Return Index. Methodology: The chart depicts constant maturity portfolios in the sense that every month, the coupon and maturity proceeds are reinvested such that the maturity was held constant. The risk premium was calculated as the total return of the portfolio minus the total return on a Treasury security that matured at the end of the holding period. For example, for a one-year holding period, the risk-free security was a one-year Treasury note. The risk premium on the 10-year constant maturity Treasury note portfolio was the total return from the constant maturity portfolio minus the risk-free return. We used monthly data from the beginning of 1970 through August 2017 to calculate the average risk premiums and the standard deviation of risk premiums.

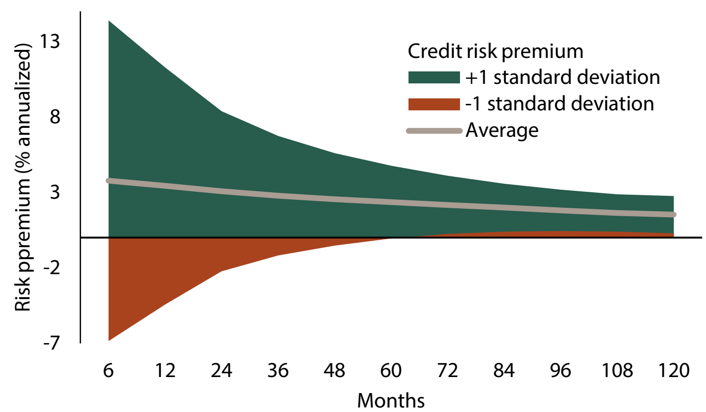
for retirement. Therefore, they may benefit from holding longer-maturity portfolios than cash and cash alternatives, but if interest rates stay flat or eventually rise, keeping maturities closer to the intermediate range of the yield curve may be prudent.

Factor: Credit exposure

Another factor in fixed-income investing is credit exposure. Investing in securities with an element of credit risk has historically generated positive risk premiums over time. For example, U.S. Treasuries are assumed to be free of default risk and therefore have no credit risk premium. At the other end of the spectrum, high-yield bonds have greater credit risk and therefore command a significant yield advantage over Treasuries, known as the credit spread. The credit risk premium depends on the initial level of the credit spread and the economic environment that prevails during the holding period. Historical data show that the credit risk premium tends to decline as the holding period lengthens but its standard deviation begins to stabilize after a fairly short holding period, providing a sense of what a reasonable investment horizon may be for benefiting from credit exposure.

- For target date investors, maintaining exposure to credit risk may be an important source of returns. This is especially true when inflation is low but possibly rising, and corporate fixed-income securities may be one of the few fixed-income areas that have an initial yield in excess of expected inflation. The additional return from credit exposure may also help offset price declines if interest rates rise.

Chart 2: The credit risk premium begins to stabilize relatively soon, showing the historical evidence of using credit exposure to generate positive risk premiums over time.



Sources: Global Financial Data, FactSet, Federal Reserve, and Wells Fargo Asset Management's calculations. The credit risk premium was calculated as the difference in total return between the Dow Jones Equal Weight U.S. Issued Corporate Bond Index and a U.S. Treasury security with the same maturity as the holding period (zero-coupon Treasury securities published by the Federal Reserve).

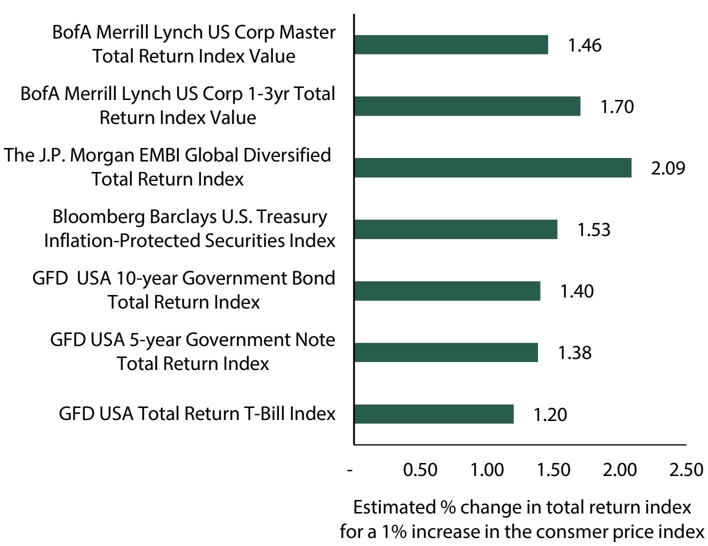
Factor: Inflation sensitivity

Different securities behave differently depending on the inflation environment, and this is an especially important consideration for target-date investors. Those who are working can typically expect raises in their paychecks to compensate for increases in inflation. Since 1983, according to the Federal Reserve Bank of Atlanta's Wage Growth Tracker,[1] which measures wage growth of those continuously employed, wages grew—on average—1.3 percentage points faster than inflation as measured by year-on-year changes in the Consumer Price Index. Only 11% of the time did the average wages of those continuously employed fail to keep up with inflation. The majority of those instances were during the 2007–2009 recession and the 2011–2012 period of sluggish wage gains.

Without a current wage, retirees are left to create their own paychecks from their investments in addition to Social Security, part-time work, and defined benefit plan payments. As a result, getting exposure to investments with positive inflation sensitivity may be an important consideration for those approaching retirement and those in retirement.

Chart 3 shows that many fixed-income securities, especially shorter-term corporate debt, have attractive inflation sensitivity where the returns can more than compensate for inflation. However, there are two additional considerations for target date investors. First the sub-asset classes performed differently depending on the point in the business cycle due to credit risk. Second, because many fixed-income investments are highly correlated with each other, it may be important to consider which asset classes have low correlations to other assets in the portfolio in an attempt to diversify the set of inflation-sensitive assets.

Chart 3: Emerging markets debt, corporate bonds, and inflation-linked sectors did best when inflation increased.



Source: Global Financial Data. Sensitivities were estimated by regressing the natural log of the total return index on the natural log of the consumer price index, the natural log of real personal disposable income, the level of 2-year Treasury yield, and the level of the 10-year Treasury yield. The coefficient on the CPI variable is a measure of the inflation sensitivity. Each equation was estimated on the basis of monthly data for the longest period available for each. For the Treasury indexes, this period was from January 1959 through August 2017. For the TIPS index, the series began January 1999. The emerging market index began March 1994. The corporate indexes started December 1975.

Chart 4 (next page) shows that U.S. Treasury bills struggled to beat inflation during and since the global financial crisis. Other fixed-income assets have at least kept pace with inflation. Treasury Inflation Protected Securities (TIPS), by design, offer income that adjusts with inflation but they are also highly correlated with nominal Treasury securities. The correlation coefficient of returns between the Bloomberg Barclays U.S. Treasury Inflation-Protected Securities Index and the Global Financial Data USA 10-year Government Note Total Return Index was 0.63 for the monthly returns from January 1999 through August 2017. Because these sectors are not perfectly correlated, there is some diversification benefit to including TIPS for inflation sensitivity, but they need to be thoughtfully added to a portfolio of fixed-income assets that are highly correlated with their returns.

Emerging market bonds can also play a role in providing additional inflation sensitivity. A diversified portfolio of emerging markets bonds outpaced inflation during different sub-periods of the March 2001 to July 2017 timeframe. Since 1994, the correlation coefficient of returns with the 10-year U.S. Treasury Index is -0.05, making them attractive from a diversification perspective. These also have significant credit risk, meaning that they should not just be tacked onto a portfolio that already has credit risk exposure.

- Because the inflation-sensitivity factor is related to credit exposure due to the fact that both factors allocate to asset classes with higher expected returns, exposures must be thoughtfully added. Paying attention to correlations between asset classes can promote diversification. In addition, awareness of a portfolio's aggregate credit exposure is important to prevent overexposure to credit risk.

Putting the factors together

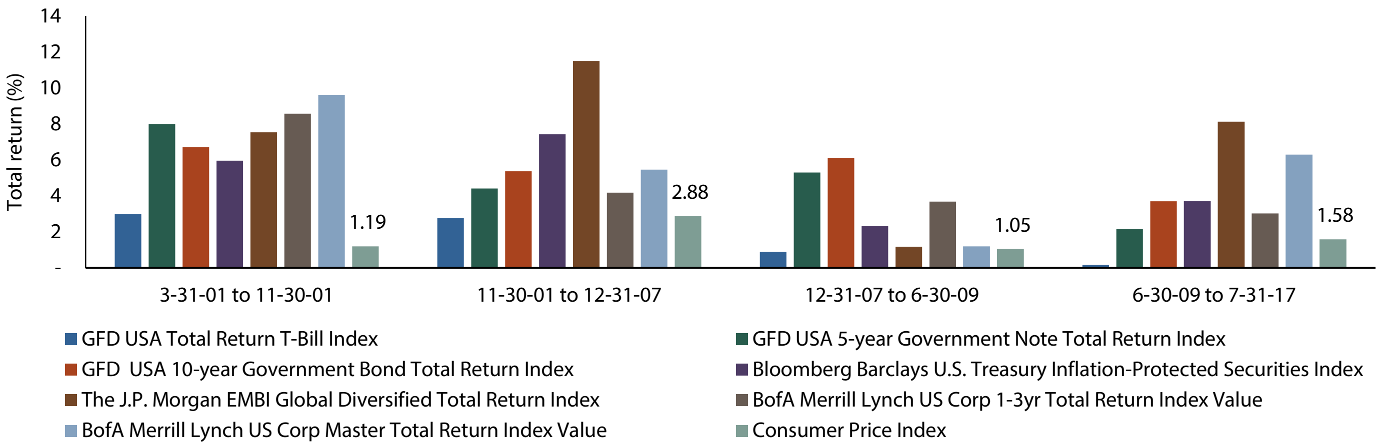
Each factor of a fixed-income portfolio, especially interest-rate sensitivity, credit exposure, and inflation sensitivity, may play an important role in constructing a dynamic fixed-income portfolio for target date investing. These might help improve retiree outcomes because they seek to limit interest-rate and reinvestment risk, benefit from credit exposure to yield-advantaged sectors, and maintain purchasing power by allocating to sectors whose returns keep pace with or outpace inflation.

Fixed income sub-asset classes	Primary role of sub-asset class in portfolio	Factor used
U.S. intermediate-term bonds	Mitigate interest-rate risk and reinvestment risk	Interest-rate sensitivity
U.S. investment-grade corporate bonds	Mitigate volatility, provides income, additional diversification	Credit exposure
High-yield bonds	Mitigate longevity risk, additional diversification	Credit exposure
TIPS	Mitigates inflation risk	Inflation sensitivity
Emerging markets bonds	Mitigate longevity risk, additional diversification	Inflation sensitivity and credit exposure

Specifically, because target date strategies tend to have long investment horizons, they may benefit from holding longer-maturity portfolios than cash and cash alternatives. If interest rates stay flat or eventually rise, however, keeping maturities closer to the intermediate range of the yield curve may be prudent because there is little

Chart 4: However, a sector's ability to outpace inflation depended on the point in the business cycle.

Total return of inflation-sensitive sectors by time period compared with inflation (CPI)



Sources: BofA Merrill Lynch, J.P. Morgan, Bloomberg Barclays, Global Financial Data, and National Bureau of Economic Research.

historical evidence of a benefit to investing in extremely long-term securities relative to intermediate-term securities. Investing in intermediate-term securities, therefore, helps lower the risk of incurring a negative risk premium from reinvestment risk that is common with T-bills, but it also attempts to avoid excessive interest-rate risk associated with longer-dated fixed income.

A second consequence of the typically longer-term investment horizon of target date investors is that credit risk may be compensated and therefore credit exposure might be an important source of return. Investment-grade corporate bonds usually provide income beyond what Treasury securities can, often with less duration risk. High-yield bonds ususally provide additional income with more diversification benefits as they are even less correlated with Treasuries than investment-grade corporates.

Inflation-sensitive sectors most notably include TIPS, which can specifically target mitigating inflation risk. Another inflation-sensitive sector—emerging markets bonds—not only have a historical record of beating inflation and generating income, they also have additional diversification properties U.S. fixed income instruments do not. By having returns that are often driven by macroeconomic forces unique to emerging markets, they may provide macroeconomic diversification for an otherwise all U.S.-based portfolio.

Index descriptions

The Global Financial Data USA Total Return T-Bill Index is an index constructed such that every month it is assumed accrued interest and principal is reinvested at an interest rate equal to the yield on the 90 day Treasury bill published by the Federal Reserve. You cannot invest directly in an index.

The Global Financial Data USA 5-year Government Note Total Return Index is an index constructed such that every month it is assumed accrued interest and principal is reinvested at an interest rate equal to the yield on the 5 year Treasury note published by the Federal Reserve. You cannot invest directly in an index.

The Global Financial Data USA 10-year Government Note Total Return Index is an index constructed such that every month it is assumed accrued interest and principal is reinvested at an interest rate equal to the yield on the 10-year Treasury note published by the Federal Reserve. You cannot invest directly in an index.

The Dow Jones Equal Weight U.S. Issued Corporate Bond Index is designed to track the total returns of 96 large and liquid investment-grade bonds issued by companies in the U.S. corporate bond market. You cannot invest directly in an index.

The J.P. Morgan EMBI Global Diversified Total Return Index tracks total returns for traded external debt instruments in the emerging markets, and is an expanded version of the EMBI+. As with the EMBI+, the EMBI Global includes US dollar-denominated Brady bonds, loans, and Eurobonds with an outstanding face value of at least $500 million. However, this index limits the weights of countries with larger debt stocks by only including a specified portion of these countries' eligible current face amounts of debt outstanding. You cannot invest directly in an index.

The BofA Merrill Lynch U.S. Corporate 1-3 Year Index Value, a subset of the BofA Merrill Lynch U.S. Corporate Master Index, tracks the performance of U.S. dollar denominated investment grade rated corporate debt publically issued in the US domestic market. This subset includes all securities with a remaining term to maturity of less than 3 years. You cannot invest directly in an index.

The Bloomberg Barclays U.S. Treasury Inflation-Protected Securities Index is an index of inflation-indexed-linked U.S. Treasury securities. You cannot invest directly in an index.

The BofA Merrill Lynch U.S. Corporate Master Index tracks the performance of U.S. dollar denominated investment-grade rated corporate debt publically issued in the U.S. domestic market. To qualify for inclusion in the index, securities must have an investment grade rating (based on an average of Moody's, S&P, and Fitch) and an investment grade rated country of risk (based on an average of Moody's, S&P, and Fitch foreign currency long term sovereign debt ratings). Each security must have greater than 1 year of remaining maturity, a fixed coupon schedule, and a minimum amount outstanding of $250 million. You cannot invest directly in an index.

The Consumer Price Index is a measure of the average change over time in the prices paid by urban consumers for a market basket of consumer goods and services. You cannot invest directly in an index.

1 The Atlanta Fed's Wage Growth Tracker is a measure of the nominal wage growth of individuals. It is constructed using microdata from the Current Population Survey and is the median percent change in the hourly wage of individuals observed 12 months apart. The measure is based on methodology developed by colleagues at the San Francisco Fed.

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