Bond investors enter 2013 following five years of aggressive central bank easing, and before that, three decades of falling inflation and growth expectations. As a result, yields across most high-quality fixed-income products are near record lows (Exhibit 1). To a significant degree, today’s low rate environment is simply a byproduct of the depressed global economy. The U.S. recovery remains subpar, Europe and Japan are in recession, and central banks are easing almost everywhere. It is hardly surprising that interest rates would be very low with this macroeconomic backdrop.

Exhibit 1: Steady decline in interest rates for 30 years

10-year U.S. Treasury yield (%)

Jan 90  Jan 95  Jan 00  Jan 05  Jan 10  Jan 13
10  15  20  5  0

Source: Federal Reserve, 01/13

But just like other asset classes, interest rate products (e.g., high-quality government bonds and related instruments) can sometimes become over- or under-valued, even after we take the economic environment into account. And at the moment, investors are demanding relatively little compensation for the interest rate risk in government bonds. We think interest rate products should be considered objectively overvalued, by perhaps 75–100 basis points (bp) in yield terms for 10-year securities.

In this article we explain the basics of our fair value framework for interest rates, which is based on the concept of the “bond risk premium.” We then discuss some possible explanations for the unusually low level of rates and what might cause those factors to unwind. The low bond risk premium suggests investors should approach duration risk more cautiously in the year ahead. This means favoring shorter duration funds, sectors with limited correlation to Treasury returns (e.g., high-yield credit) and products with the flexibility to actively manage interest rate risk.

The bond risk premium
We currently see little reward for the interest rate risk in government bonds.
by Zach Pandl, Senior Portfolio Manager and Strategist

Highlights
> Bond risk premium — yield compensation for the interest rate risk in government bonds
> Economic theory unclear on appropriate size of risk premium
> We see exceptionally low risk premium in markets today
> Low risk premium could result from government policy and other factors
> Change in monetary policy outlook could be catalyst for higher rates

The low bond risk premium suggests investors should approach duration risk more cautiously in the year ahead.
**Bond risk premium — yield compensation for the interest rate risk in government bonds**

On average, the U.S. Treasury yield curve slopes upward, with long-term interest rates above short-term interest rates. One reason for this shape could be investor expectations that short-term interest rates will tend to rise over time. For example, the Federal Reserve may reduce short-term rates after a recession, and markets might anticipate that it will bring rates back up again once the economy recovers. But this is not a natural equilibrium — over many business cycles, rising and falling short-term rates should be equally likely. Therefore, expectations for short-term rates are unlikely to explain why the yield curve slopes upward on average over long periods of time. Instead, long-term interest rates likely imbed a premium that compensates investors for their greater risk relative to short-term rates. We refer to this phenomenon as the “bond risk premium” (the bond risk premium is also sometimes called the term premium or the maturity premium).

The bond risk premium is closely related to the more familiar concept of the equity risk premium. Equities are a relatively risky asset class, with high volatility and a high correlation with the business cycle — that is, they tend to perform poorly in recessions. Historically, however, investors have been rewarded for this additional risk in equities. The excess return of U.S. stocks over Treasury bills — a measure of the ex-post equity risk premium — was around 5% over the last 100 years. The equity risk premium was similarly large for other developed market economies.

Although longer term government bonds are default-risk-free (or at least we will work under that assumption here), they are also riskier than bills. In particular, they are much more sensitive to changes in interest rates. Nominal returns for default-risk-free bonds come from only two sources: the bond’s interest income and any capital gains or losses resulting from changes in the level of rates. A bond’s duration measures the sensitivity of its price to changes in market interest rates — securities with higher durations will see larger price changes for any given change in rates. In general, duration increases with maturity — longer bonds have higher durations and thus more sensitivity to rate changes.

What does this mean in practice? For simplicity, consider zero-coupon Treasuries for which duration equals maturity. In this case, a 25 bp increase in rates across the curve would cause the price of a 1-year bond to fall by 0.25%, a 5-year bond to fall by 1.25% and a 10-year bond to fall by 2.5%. Because of their greater sensitivity to changes in rates, longer maturity bonds carry more risk. This greater risk is what results in the yield curve’s upward slope — it is the source of the bond risk premium.

**Economic theory unclear on appropriate size of risk premium**

Interestingly, economic theory is ambiguous as to whether the bond risk premium should be positive or negative. Although the bond math above demonstrates that prices of longer term securities will be more volatile, this does not necessarily mean they are less desirable in a portfolio. Modern asset pricing theory tells us that we should care about both a security’s volatility as well as its correlation — how it behaves relative to other assets in a portfolio and/or relative to the state of the economy. A security that outperforms during economic downturns and when prices of other securities are falling can provide diversification benefits, which will affect its value in the marketplace.

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1 Throughout this article we will ignore any gains resulting from “rolling” down the yield curve.
At times long-term government bonds have this insurance-like aspect — they pay off when other asset values are declining. For instance, in 2008 investment-grade corporate bonds lost 4.9%, emerging market debt 14.8% and high-yield corporates 26.2%. In contrast, the Barclays U.S. Treasury Index gained 13.7%. If duration risk is negatively correlated with other types of portfolio risks, it is not obvious that it should command a high premium in the market.

In general, government bonds behave differently with the economic cycle than traditionally risky asset classes. As shown in Exhibit 2, most “risky” asset classes like equities and high-yield credit are very sensitive to changes in growth expectations. When expectations for economic growth rise, excess returns for these asset classes tend to increase. The opposite occurs for Treasuries — returns decline when growth expectations increase. The countercyclical nature of government bond returns means that Treasury volatility and equity volatility are not directly comparable — the timing of the ups and downs matters a great deal for the price of duration risk.

**Exhibit 2: Government bonds perform better when economic growth declines**

<table>
<thead>
<tr>
<th>Sensitivity of excess returns to growth expectations (T-statistics*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treasuries</td>
</tr>
<tr>
<td>-5</td>
</tr>
</tbody>
</table>

Source: Columbia Management, 01/13.

* T-statistics of returns (excess returns for fixed income) on changes in growth expectations; sample 1989–2012; shorter for samples for EM bonds and ABS.

**We see exceptionally low risk premium in markets today**

Because theory offers no clear answers, the level of the bond risk premium is ultimately an empirical question. We measure the bond risk premium in two ways: (1) using historical excess return data, which gives an ex-post (after the fact) estimate of the term premium; and (2) with surveys, which can provide ex-ante (forward-looking) estimates.

The ex-post bond risk premium is simply the historical excess return of long-term bonds over bills. This calculation is straightforward, but estimates of excess returns vary because of different sample periods and the specific securities considered. For the best estimates we want to consider long sample periods that include both rising and falling inflation. Ilmanen (2011), for example, reports Treasury excess returns over bills of 0.3%–1.4% from 1952–2009, with the highest excess returns at the 5- to 7-year point on the yield curve (Exhibit 3). For a generic “long-term” security (e.g., with 10 years or slightly more remaining maturity), these results suggest a bond risk premium of around 1% or a bit less.
Exhibit 3: In the past, longer term bonds have outperformed bills in the U.S...


Dimson, Marsh and Staunton (2002) find similar results across a large group of countries (Exhibit 4). For the United States, the authors report an ex-post bond risk premium of 0.7% for 1900–2000. This is slightly above the mean for all countries in their sample of 0.5%. The results range from as high as 2.4% (France) to as low as -1.7% (Germany), but most estimates fall between zero and 1%.

Exhibit 4: …and across most major economies


Excess returns over long periods of time can provide a rough estimate of the required bond risk premium. But these measures are still imperfect due to very long secular trends in inflation and real interest rates — as these examples show, sample size matters a great deal. Better measures of the bond risk premium will be forward looking, and directly take into account market expectations.

There are a variety of techniques for measuring the ex-ante bond risk premium, but our preferred approach uses survey-based data. This is equivalent to typical measures of the equity risk premium, which are based on analysts’ projections of corporate earnings. All measures of the ex-ante bond risk premium build on the idea that longer-term interest rates can be considered the sum of expectations for short-term interest rates over time and compensation for duration risk. For example, the yield on a 10-year Treasury note could be thought of as:

\[
10\text{-year yield} = \text{average expected future short rates} + \text{bond risk premium}
\]
The goal of our models is to estimate expected future short-term rates, such that we can back out the bond risk premium from observed market yields.

The results for the United States are shown Exhibit 5. The blue line is the 10-year Treasury yield observed in the market. The teal line is our estimate of market expectations for the average level of short-term interest rates over the next 10 years. Observe how this estimate rises and falls with Fed tightening and easing cycles and also trends lower over time. The purple line is simply the difference between market rates and average expected short rates — our estimate of the bond risk premium. According to this approach, the ex-ante bond risk premium averaged 0.8% over this sample period, close to the ex-post risk premium from Dimson, Marsh and Staunton (2002). The current bond risk premium from our survey-based approach is about -0.25%.

Exhibit 5: We estimate a current bond risk premium of approximately -0.25%

Exhibit 6 is a graph of the U.S. bond risk premium alongside those for five other G10 economies. A few key observations stand out. First, the estimates are highly correlated, suggesting that global factors drive much of the variation in risk premiums over time. Second, risk premiums were much higher in the early 1990s for all countries. In our view this reflects structurally higher inflation and greater inflation uncertainty across the G10 during this period. The UK government, for instance, granted independence to the Bank of England and established inflation targeting only in 1998. The reduction in inflation uncertainty has likely contributed to lower risk premiums in UK bond yields since that time.

Exhibit 6: Bond risk premiums tend to move together
Third, across these countries from 1998 through 2007 (i.e., the low inflation era, but before the latest recession) the bond risk premium averaged 0.7%, which could be a reasonable estimate of its long-run equilibrium. But fourth, the bond risk premium has been meaningfully lower in two periods: during the 2005–2007 “conundrum,” and over the last 1–2 years.²

**Low risk premium could result from government policy and other factors**

The latest bond market “conundrum” — the exceptionally low bond risk premiums across G10 economies — is more extreme than during the 2005–2007 period and raises important questions about rate market valuation. Broadly speaking, we see three candidate explanations for today’s very low bond risk premiums: (1) reduced policy rate uncertainty; (2) a supply/demand imbalance; and (3) a greater focus on the “shock absorber” role of duration.

**1. Reduced policy rate uncertainty.** The basic building block of the yield curve is the short-term interest rate, and, as a result, the primary source of risk in the yield curve is uncertainty about the path for short-term rates. In our view, the Fed’s communication about how long the funds rate will remain near zero — what it refers to as its “forward guidance” — has lowered market uncertainty about the future path of short-term rates, and thereby reduced risk premium in the yield curve.

We can measure investors’ perceived uncertainty about short-term rates from the options market. Exhibit 7 shows the term structure of interest rate volatility at two points in time: the average level during 2009–2010 (when the funds rate was also near zero) and the most recent level. The drop in implied volatility should be interpreted as a greater degree of confidence about the trajectory of short-term rates over the next few years. Economic theory suggests there should be a close correspondence between uncertainty about the future path of short-term rates and risk premium in the yield curve.

**Exhibit 7: Bond risk premium related to uncertainty around future path for rates**

<table>
<thead>
<tr>
<th>Number of periods forward</th>
<th>End 2012</th>
<th>2009-2010 average</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 month</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>1 year</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>2 years</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>3 years</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>4 years</td>
<td>125</td>
<td></td>
</tr>
<tr>
<td>5 years</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>6 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 years</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Barclays, 01/13

Note: Implied volatility for 1-year swap rate.

² At the semiannual Humphrey-Hawkins testimony before Congress in February 2005, then-chairman Alan Greenspan said that the “behavior of world bond markets remains a conundrum,” because distant forward interest rates had fallen even as the Federal Reserve had begun raising the short-term rates.
2. Supply/demand imbalance. Federal government debt levels have increased sharply since the onset of the 2008–2009 recession. The amount of U.S. Treasury debt held by the public has increased from about $5.1 trillion at the end of 2007 to about $11.6 trillion today. In isolation, an increase in government debt of this magnitude would likely drive interest rates higher. However, at the same time that government debt issuance has increased, private sector borrowing has declined sharply. Exhibit 8 shows total U.S. fixed-income issuance over 12-month periods, broken down between Treasuries and “spread product” — a broad group that includes government-sponsored enterprise (GSE) debt and mortgage-backed securities (MBS), other securitized products, corporate bonds and municipal securities. Although Treasury issuance has indeed increased dramatically, total fixed-income issuance is roughly on par with prerecession years.

Exhibit 8: Treasury issuance has increased, but everything else has declined

<table>
<thead>
<tr>
<th>U.S. fixed-income issuance ($ billions, year-over-year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar 05</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>Treasuries*</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

Sources: Barclays Rates Strategy, Federal Reserve Board, 01/13

*Greater than one year remaining maturity; includes Fed holdings.

**Barclays U.S. Aggregate Index less Treasuries plus high yield plus non-agency residential mortgage-backed securities (RMBS) (from flow of funds accounts).

Against this backdrop of modest fixed-income supply, a few factors have also boosted demand for high-quality bonds. First, central banks have purchased fixed-income assets outright through quantitative easing (QE) programs. We estimate that prior to QE, the Fed’s balance sheet normally held about 4% of the duration in the high-quality U.S. fixed-income market; today the Fed holds almost 18% of the total market duration (Exhibit 9). Combined with waning issuance of structured products and GSE debt, the Fed’s purchases have meant that the amount of high-quality U.S. fixed-income duration in public markets has been approximately unchanged for two years (Exhibit 10).

Exhibit 9: The Federal Reserve now owns a large portion of U.S. bond market...

<table>
<thead>
<tr>
<th>Share of market duration held by the Federal Reserve (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec 03</td>
</tr>
<tr>
<td>0</td>
</tr>
</tbody>
</table>

Sources: Barclays, Columbia Management, 01/13

3 High-quality U.S. fixed-income defined as the Barclays U.S. Aggregate Index.
THE BOND RISK PREMIUM

Exhibit 10: …such that other investors have not needed to absorb much more

High-quality U.S. fixed-income duration held by private and foreign sectors
($ billions, 10-year equivalents)

Sources: Barclays, Columbia Management, 01/13

Second, individual investors have shown a strong preference for fixed-income investments in recent years. This pattern is fairly typical around recessions, but the recent trend appears outsized relative to history. Exhibit 11 shows four-quarter net inflows into equity mutual funds and taxable fixed income funds, both scaled by GDP. Over the last year, net inflows into fixed-income funds totaled $226 billion, or about 1.4% of U.S. GDP. In contrast, equity funds saw net outflows of $151 billion, or about 1% of GDP. The magnitude and duration of investors’ relative preference toward fixed income resembles the equally strong preference for equity funds during the 1990s.

Exhibit 11: Strong preference for fixed-income funds post-crisis

Net inflows into mutual funds (% of GDP)

Sources: ICI, BEA, Columbia Management, 01/13

Finally, the European sovereign debt crisis may have played a role boosting demand for high-quality government bonds and depressing the bond risk premium. In effect, the debt crisis eliminated a portion of the “risk-free” sovereign bond market, providing incremental demand for the debt of economies still considered safe havens. Therefore, it seems likely that the European crisis has depressed bond risk premiums, but it is very difficult to quantify its impact.
3. Duration as a shock absorber. As we previously noted, economic theory is ambiguous as to whether the bond risk premium should be positive or negative. Asset classes that behave like insurance, and payoff at favorable times, could potentially warrant a negative “premium” in the market — and at times nominal government bonds fit this description. Therefore, a final theory for the negative bond risk premium we observe today is that investors have begun to put a greater focus on this “shock absorber” role that duration risk can play in a portfolio.

Over very long periods of time the correlation between stocks and bonds appears to be relatively small. Using data from 1871–2012, we estimate a correlation between monthly returns between a 10-year U.S. Treasury bond and the S&P 500 Index of 0.06 — effectively zero. However, we can still observe persistent positive and negative correlations over 5- to 10-year periods. Exhibit 12 shows the 5-year rolling correlation between equity and Treasury returns since 1975. The average correlation over this sample was very small, but there were long stretches in which the correlation remained positive or negative.

Exhibit 12: Shock absorber role of Treasuries may have boosted demand

![5-year rolling correlation between stock and bond returns](image)

Source: Columbia Management, 01/13

In our view, the fact that bond and stock returns have generally been negatively correlated in recent years may have emphasized the shock absorber role of duration risk in a portfolio and lowered investors’ required bond risk premium. This may also help to explain the persistent trend toward fixed-income funds seen in the mutual fund flow statistics.

**Duration** — A measure of the sensitivity of the price of a fixed-income investment to a change in interest rates.

**Correlation** — In finance, a statistical measure of how two securities move in relation to each other.
Change in monetary policy outlook could be catalyst for higher rates

At the moment investors are demanding a relatively small risk premium for taking the duration risk in government bonds. Historically, both ex-post and ex-ante estimates suggest an equilibrium bond risk premium of perhaps 50–75 bp. Today we estimate that the U.S. 10-year bond risk premium is negative 25 bp. There are a variety of possible explanations for the low bond risk premium, including reduced uncertainty about policy rates, a supply/demand imbalance and perhaps a greater focus on the negative correlation between stock and bond returns.

None of the factors depressing the bond risk premium should be permanent. However, all of them could be relatively persistent, and it may take many years for the bond risk premium to drift back up to historical norms. That being said, we think an initial catalyst could come from greater uncertainty about short-term interest rates. The Fed recently introduced a new communication framework that removes the guarantee-like aspect of their earlier guidance and ties the rate outlook directly to outcomes for the economy. Any shift in expectations about the economy will now translate into a revised outlook for policy rates. In our view, this means less predictable Fed policy and more risk premium in rates.

The low bond risk premium suggests investors should approach duration risk more cautiously in the year ahead. This means favoring shorter duration funds, sectors with limited correlation to Treasury returns (e.g., high-yield credit) and products with the flexibility to actively manage interest rate risk.
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The Columbia Strategic Income Team believes that maintaining a diversified allocation to a broad set of fixed-income sectors can provide an attractive yield without concentrating the portfolio’s risks. Tactical sector allocation and duration management can add incremental value to portfolio returns, while strong credit research within each sector of the market can help identify opportunities and mitigate risks. The Columbia Management Strategic Income Strategy seeks to construct a broadly diversified portfolio of fixed-income assets that maximizes return and minimizes risk over the long run.

The team

Colin Lundgren, CFA
Managing Director, Head of Fixed Income, Lead Manager
Industry experience since 1986

Gene Tannuzzo, CFA
Senior Portfolio Manager, Strategic Income
Industry experience since 2003

Zach Pandl
Senior Portfolio Manager and Strategist
Industry experience since 2005

Brian Lavin, CFA
Senior Portfolio Manager, High Yield Fixed Income
Industry experience since 1986

The portfolios capitalize on the depth and breadth of our entire fixed-income platform

> More than 150 investment professionals using proprietary credit research.
> More than $165 billion in fixed-income assets under management across multiple investment strategies

Investment approach

Strategic Income is a “best ideas” fund, which reflects input from across the Columbia Management fixed-income division. The investment process is built around rigorous, in-house, fundamental research. The portfolio management team allocates across fixed-income sectors to those that offer the most attractive risk-adjusted returns, and it also manages overall exposures to the level of interest rates and shape of the yield curve. Columbia Management sector specialists and research analysts determine value in each market segment and help mitigate idiosyncratic risks.

Columbia Strategic Income Fund

> Fundamental research-driven approach
> Diversified across sectors, credit qualities and countries
> Flexible mandate — goes anywhere managers see value
> Leverages best ideas across the Columbia Management fixed-income platform

Class A: COSIX
Class Z: LSIZX

Class Z shares are sold at NAV, have limited eligibility and the investment minimum requirement may vary. Only eligible investors may purchase Class Z shares of the fund, directly or by exchange. Please see the fund’s prospectus for eligibility and other details.
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> A framework for more informed financial decision-making

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The Barclays U.S. Treasury Index includes public obligations of the U.S. Treasury that have remaining maturities of more than one year.

The Standard & Poor’s 500 Index (S&P 500 Index) is an unmanaged list of common stocks that includes 500 large companies.

The Barclays U.S. Aggregate Index is an index comprising approximately 6,000 publicly traded bonds, including U.S. government, mortgage-backed, corporate and Yankee bonds with an average maturity of approximately 10 years. The index is weighted by the market value of the bonds included in the index. This index represents asset types that are subject to risk, including loss of principal.

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