UNDERSTANDING YIELD CURVES

A yield curve is a line graph that illustrates the relationship between the yields and maturities of fixed income securities.

Yield curve graphs provide a quick way to review and compare the yields that different types of fixed income securities offer, and to determine investor expectations for market conditions in the future. They are created by plotting the yields of different maturities for the same type of bond. The “spreads” between the yields of different maturities are what create the slope, or shape, of the yield curve for a given type of security.

The chart below shows a “normal” yield curve. As you can see, it is upward sloping. The longest-maturity securities offer the highest returns while the shortest maturities offer the lowest returns. This scenario is considered “normal” because longer-term securities generally bear the greatest investment risks and, as a result, “should” offer higher interest rates. Of course this is not always the case. In addition to a normal, upward sloping curve, a yield curve may also be inverted, or downward sloping, or it may be “humped,” as we will discuss later in this paper.

![Normal Yield Curve](image)

For illustrative purposes only.

TYPES OF YIELD CURVES

Yield curves may be created for any type of fixed income security, including US Treasury securities, investment-grade and high yield corporate securities, global bonds, and municipal bonds. The yield curve for US Treasury securities is considered a market benchmark, as it is often used as a basic reference point by fixed income investors to evaluate market conditions. It is also used as a benchmark to evaluate the relative attractiveness of investing in non-US Treasury securities. This is because US Treasuries, in theory, have no credit risk, so the extra yield offered by a similar maturity, non-US Treasury security should offer adequate compensation for any additional risks incurred by the investor.
The yield curves for corporate securities are more typically known as “credit curves” because, unlike yield curves that plot the yield and maturity of a specific security, credit curves plot the yields available on a universe of corporate bonds of a specific credit quality, such as AAA-rated (the highest investment-grade credit quality) through BBB-rated (the lowest investment-grade credit quality), as well as for lower-quality, high yield bonds.

**COMPARING YIELD CURVES**

Comparing the yield curves of different types of securities can help investors determine the “relative value” of a bond and can also help to create strategies to increase a portfolio's total return. Investors may wish to compare the US Treasury yield curve against AAA-rated and AA-rated corporate bonds, for example, to see how much additional yield they could capture by assuming some credit risk. (See charts below.)

One way to do this is to review the “spread,” or the difference in yields between different types of securities. The “spread” columns in the chart below show the difference between the yields on the benchmark US Treasury yield curve and the AAA- and AA-rated corporate bond curves, respectively. Investors can use this data to determine if the amount of spread available today on a AAA- or AA-rated bond offers enough additional yield over US Treasuries to make the security an attractive investment.

Investors can also evaluate spreads from a “current vs. historical” standpoint. In other words, let’s say the spread today between a 10-year US Treasury bond vs. a 10-year AAA-rated corporate bond is +50 basis points. Is that typical? Perhaps not. Perhaps the spread was only +35 basis points a year ago. If that’s the case, the AAA-rated corporate bond, with the +50 basis points yield advantage today, looks particularly attractive.

Finally, investors also use yield curves to compare the relationship between maturities within the same type of security, such as between 2-year and 10-year US Treasury securities (often called “2s/10s” for short). In the above example, that spread is +175 basis points (4.25% vs. 6.00%). Another maturity relationship that is frequently evaluated is the spread between the ultra-short 3-month US Treasury bill versus the ultra-long 30-year US Treasury bond. This spread tells investors whether they are being paid enough in extra yield to compensate them for the additional interest rate risks associated with extending maturities within the same type of security.

### US Government vs. AAA-/AA-Rated Credit Curves

<table>
<thead>
<tr>
<th>Yield to Maturity</th>
<th>Govt</th>
<th>AAA</th>
<th>AA</th>
<th>AAA</th>
<th>AA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Year</td>
<td>4.00%</td>
<td>4.15%</td>
<td>4.45%</td>
<td>0.15%</td>
<td>0.45%</td>
</tr>
<tr>
<td>2-Year</td>
<td>4.25</td>
<td>4.45</td>
<td>4.90</td>
<td>0.20</td>
<td>0.65</td>
</tr>
<tr>
<td>3-Year</td>
<td>4.50</td>
<td>4.75</td>
<td>5.20</td>
<td>0.25</td>
<td>0.70</td>
</tr>
<tr>
<td>5-Year</td>
<td>5.00</td>
<td>5.30</td>
<td>5.90</td>
<td>0.30</td>
<td>0.90</td>
</tr>
<tr>
<td>10-Year</td>
<td>6.00</td>
<td>6.50</td>
<td>7.25</td>
<td>0.50</td>
<td>1.25</td>
</tr>
<tr>
<td>30-Year</td>
<td>7.00</td>
<td>7.70</td>
<td>8.50</td>
<td>0.70</td>
<td>1.50</td>
</tr>
</tbody>
</table>

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EVERY YIELD CURVE TELLS A STORY

The shape of a yield curve provides valuable information to investors as to what other investors believe will take place in the fixed income market in the future.

Each yield curve shape tells a different story. A normal, upward-sloping yield curve implies that investors expect the economy to grow in the future, and for this stronger growth to lead to higher inflation and higher interest rates. They will not commit to purchasing longer-term securities without getting a higher interest rate than those offered by shorter-term securities. A normal yield curve typically occurs when central banks (such as the Federal Reserve in the United States) are “easing” monetary policy, increasing the supply of money and the availability of credit in the economy.

A normal yield curve signals that investors expect the economy to expand. An illustration of this is shown below.

![Normal Yield Curve](image)

An inverted yield curve, on the other hand, occurs when long-term yields fall below short-term yields. An inverted yield curve indicates that investors expect the economy to slow or decline in the future, and this slower growth may lead to lower inflation and lower interest rates for all maturities. An inverted yield curve typically indicates that central banks are “tightening” monetary policy, limiting the money supply and making credit less available. An inverted yield curve has often historically been a harbinger of an economic recession. Investors are willing to accept a lower interest rate now in return for being locked in for years to come. An illustration of this is shown below.

![Inverted Yield Curve](image)

Finally, a “humped” yield curve indicates an expectation of higher rates in the middle of the maturity periods covered, perhaps reflecting investor uncertainty about specific economic policies or conditions, or it may reflect a transition of the yield curve from a normal to inverted, or vice versa.

![Humped Yield Curve](image)

CONCLUSION

Yield curves are created by illustrating the yields for a particular type of security at different maturities. The US Treasury yield curve is used as a benchmark to which yield curves for other types of bonds can be compared. The shape of the yield curve for a fixed income security reflects market factors including the direction of interest rates, risk, and investor demand. Yield curves are widely used by investors and portfolio managers as a snapshot of market conditions and to compare different investment options.
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