



## How to Beat a Bond Index

Bond indices have become more than just benchmarks but bogeys that money managers are compared to on both a risk and reward basis. Performance measurement, asset allocation and performance attribution or style analysis is index dependent. The success of any money manager is extremely sensitive to the relative behavior pattern of assets versus chosen index(s).

One would think that understanding the mechanics, the methodology, the idiosyncrasies of indices is a requirement of the trade. Just like the good football team, the key to victory is to understand the opponent and build a strategy based on the opponent's strength and weaknesses. So let's take a look at a popular bond index, Lehman Govt/Credit Index, to strategize how to beat it.

<b>Weighting</b>	Market weighted. This means that the large issues dominate (i.e. Treasuries). Additionally, in bear markets weights shift to shorter maturities (Governments dominate. They comprise 85% of the 1 year maturity cell and 77% of the 2 year maturity cell) and vice versa in bull markets (Corporates more balanced).
<b>Composition</b>	Portfolio of Govt/Credit and Yankee bonds with maturities longer than one year rated BBB or higher with \$150 million outstanding. There have been numerous definition changes since 1973. The last change was July 1999 raising the minimum outstanding issue from \$100 to \$150 million which reduced the number of issues by 32%. Note that Treasuries have decreased from a high of 68% to 38% today. As such, indices are dynamic structures that may change dramatically due to a definition modification or market developments.
<b>Averages</b>	Bond indices normally do not show their portfolio but only provide summary statistics or averages. Bond math is quite complex and is not linear. However, the averages provided are linear expressions. The Sept. 1990 averages of this index are a classic example:  <b>Coupon = 9.13% Price = 100.00 Yield = 8.57%</b> How could these numbers be correct? What do you do?

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<p><b>Risk/Reward</b></p>	<p>Lehman Govt/Corp has displayed the risk of a 5 year Treasury and the reward of a 10 year Treasury historically:</p> <table border="1" data-bbox="518 302 1390 579"> <thead> <tr> <th rowspan="2"></th> <th colspan="2"><b>Last 10 Years Ending 7/31/01</b></th> </tr> <tr> <th><b>(Risk) Standard Deviation</b></th> <th><b>(Reward) Annualized Return</b></th> </tr> </thead> <tbody> <tr> <td><b>Lehman Govt/Corp</b></td> <td align="center"><b>4.22 %</b></td> <td align="center"><b>8.06 %</b></td> </tr> <tr> <td><b>Treasury 5 year</b></td> <td align="center"><b>4.25 %</b></td> <td align="center"><b>7.27 %</b></td> </tr> <tr> <td><b>Treasury 10 year</b></td> <td align="center"><b>6.65 %</b></td> <td align="center"><b>7.75 %</b></td> </tr> </tbody> </table> <p>It is obvious that this index will behave like a well diversified (by maturity) government portfolio with extra yield. Since it is market weighted, it is skewed to shorter maturities (38 % in 1 and 2 year maturities). Due to the existing auction process (no 3, 4 or 7 year auction, 30 year auction cut by over 20% from 1998 to 200) this index should get even shorter in maturity profile.</p>		<b>Last 10 Years Ending 7/31/01</b>		<b>(Risk) Standard Deviation</b>	<b>(Reward) Annualized Return</b>	<b>Lehman Govt/Corp</b>	<b>4.22 %</b>	<b>8.06 %</b>	<b>Treasury 5 year</b>	<b>4.25 %</b>	<b>7.27 %</b>	<b>Treasury 10 year</b>	<b>6.65 %</b>	<b>7.75 %</b>
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<p><b>ND Study</b></p>	<p>A group of prominent academics from Notre Dame performed a thorough test of all broad bond indices. They concluded that over 95% of the returns of these indices was explained by the Treasury yield curve. That interest rate risk (systematic risk) is the dominate risk factor.</p>														
<p><b>Strategies</b></p>	<p><b>1. Match Interest Rate Risk of Index</b> Too difficult to speculate on interest rates. So neutralize this factor by matching durations or term structure of opponent.</p> <p><b>2. Outyield The Index</b> If you can match interest rate risk, extra yield provides a cushion or insurance against risk plus a victory margin.</p> <p><b>3. Buy What Index Can't</b> Try to find value in areas index can't buy by definition. Zero coupon bonds are fertile ground that no index owns. Mortgages are loaded with issues that indices don't own even if the index has mortgages in it (indices own generic mortgages with usually less then 1,000 issues vs the vast amount available). Smaller issue sizes are another area but liquidity might prove to be too difficult.</p> <p><b>4. Don't Use Index Averages</b> Beware of these numbers. They usually provide erroneous answers when used or matched. Try to understand cash flow sculpture or term structure of index.</p> <p><b>5. Replicate Index for Analysis Purposes</b> The good football practices against a surrogate opponent all week long preparing for game day. The good money manager needs to practice or test any strategy versus the opponent before implementation. To do this requires a proxy that best represents the index baseline portfolio.</p>														