

## SHORT DURATION VS. CORE BONDS IN A RISING RATE ENVIRONMENT

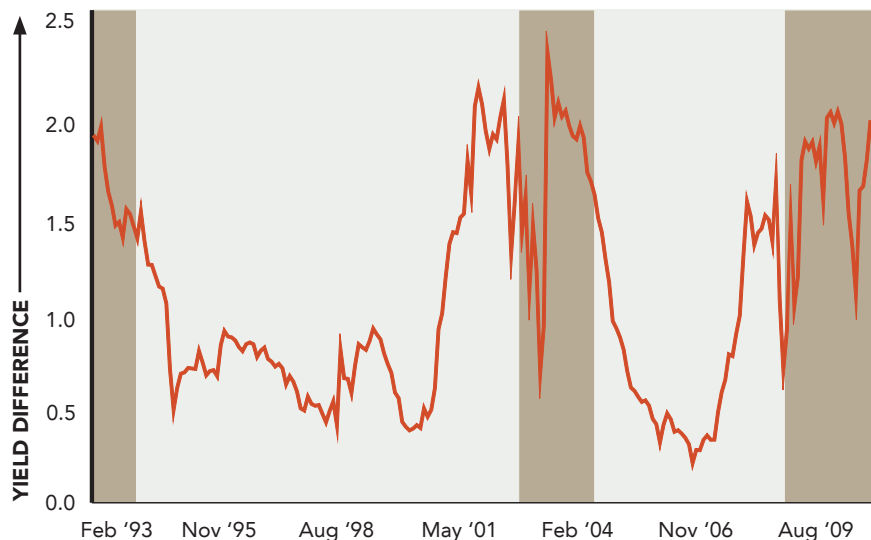
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**In today's low rate environment, interest rate risk has emerged as a primary concern for market participants. Given that the Fed has held interest rates near zero for over two years, many investors are worried about the effect of an increase in rates on their portfolios. As interest rates rise, the discounted value of future cash flows to bond investors falls, causing a drop in price of bond portfolios.**

Longer duration bonds are exposed to greater interest risk as their cash flows are discounted over a longer period. While this may lead investors to shorten the duration of their portfolios, in doing so they incur an opportunity cost by accepting a lower yield. As interest rates rise, long duration portfolios will decrease more in price, but investors that shorten bond duration lose in coupon income. One way to measure the opportunity cost of shortening the duration of a bond portfolio is the yield differential between core bond and short bond portfolios. As shown in the exhibit below, this opportunity cost is highest when investors are most likely to consider shortening portfolio duration: when the Fed is holding down interest rates.

Although the yield differential between core and short duration is substantial, so is the duration differential. Over time, the average duration difference between the BarCap Aggregate and the 1-3 Year (short

**Exhibit 1: Yield Differential (BarCap Agg vs. 1-3 YR component of the Agg)**



Source: BarCap and St. Louis Fed

Low Rate Environment

duration) component of the Aggregate has been 2.8. This means in theory that for every instantaneous 100bp increase in interest rates (assuming a parallel shift in the yield curve) the price

of a core bond portfolio will drop 2.8% more than the price of a short duration portfolio. The current yield differential is about 1.9%. This means for every year interest rates don't move, investors in core

bonds will earn about 1.9% more than investors in short bonds. Exhibit 2 shows a theoretical illustration of this tradeoff. The further an entry in the table is to the right, the higher the interest rate shift, and the lower the performance of core bonds relative to short bonds. The further down the table an entry is on the table, the longer a given interest shift takes to occur, and the higher the performance of core bonds relative to short bonds. For example, if rates increase 100bps fifteen months from now, core bonds would theoretically underperform short bonds by 40bps. A core bond portfolio would earn greater yield in the fifteen months before the interest rate increase, but not enough to make up for the decrease in price due to higher duration. Conversely, if the same 100bps shift in rates took eighteen months to occur core bonds would theoretically outperform short bonds by 10bps due to their higher yield.

Of course, in the real world all interest rate shifts are neither instantaneous nor parallel.

**Exhibit 2: Theoretical Return Advantage of Core vs. Short Duration for Different Yield Shift Scenarios**

		RATE INCREASE (BPS)					
		25	50	75	100	125	150
MONTHS UNTIL RATE INCREASE	3	-0.2	-0.9	-1.6	-2.3	-3.0	-3.7
	6	0.3	-0.4	-1.1	-1.8	-2.5	-3.2
	9	0.7	0.0	-0.7	-1.4	-2.1	-2.8
	12	1.2	0.5	-0.2	-0.9	-1.6	-2.3
	15	1.7	1.0	0.3	-0.4	-1.1	-1.8
	18	2.2	1.5	0.8	0.1	-0.6	-1.3
	21	2.6	1.9	1.2	0.5	-0.2	-0.9
	24	3.1	2.4	1.7	1.0	0.3	-0.4

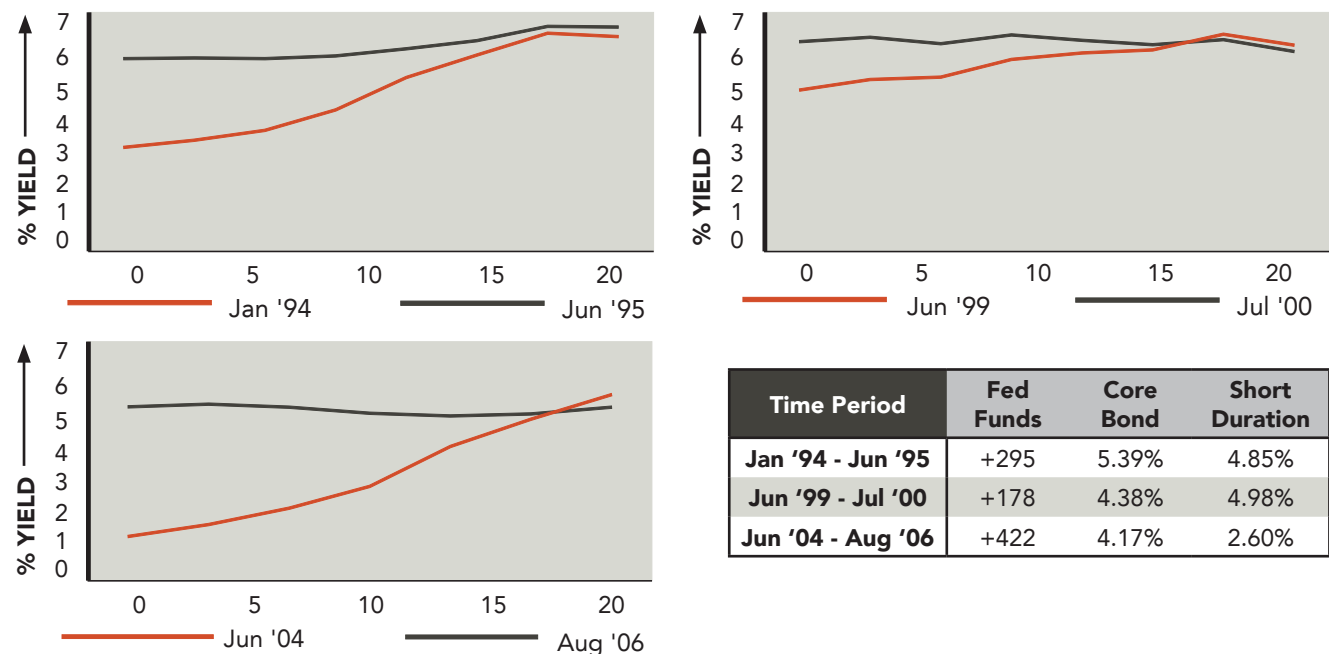
Source: Marquette Associates

The Fed tends to gradually raise rates over time, and as they do so, the yield curve tends to flatten as it shifts upward. Stepping outside the simple illustration of Exhibit 2, what really happens to core and short bond portfolios in rising rate environments?

Over the past two decades, the United States has had three periods during which the Fed raised interest rates for a sustained

period. In each of these three periods the overall level of rates rose, and the yield curve flattened. Exhibit 3 shows the yield curve at the start and end of each of these three periods, reflecting the performance of core and short duration bonds. Counter intuitively, in two of the last three rising rate environments core bonds outperformed short duration bonds.

**Exhibit 3: Yield Curve Changes in Rising Rate Environments with Summary of Returns**



Source: BarCap and St. Louis Fed

Exhibit 4 provides a further breakdown of benchmark returns in rising rate environments, decomposing returns into their income and appreciation components. A core bond portfolio would have outperformed a short duration portfolio during rising rate environments in the past for two main reasons:

- Core bonds earned a higher income return than short duration bonds.
- Due to yield curve twists, short duration bonds experience a larger price decline relative to core bonds than expected from a parallel shift. Short duration bonds actually experienced a larger price decline than core bonds during the last period of rising rates.

Exhibit 4 only takes into account the income differential between core bonds and short duration bonds during periods of rising rates. Investors that shorten the duration of their portfolios will presumably implement the change in strategy some time before rates actually rise. While the analysis in Exhibit 4 indicates that historically shortening duration in anticipation of rising rates has been a losing strategy even with perfect timing, shortening duration becomes even less favorable when taking into account that investor timing is unlikely to perfectly anticipate interest rate shifts. Every month investors hold short duration bonds and rates fail to move upward results in lower income earned and lower return compared to a core bond portfolio.

Investors considering short duration portfolios have a broad universe of investment managers to select from, including active managers. While the yield on the 1-3 year portion of the BarCap Agg is 1.13% as of March

**Exhibit 4: Price Return and Income Return (Annualized)**

Time Period	Core Bond			Short Duration		
	Income Return	Price Return	Total Return	Income Return	Price Return	Total Return
Jan '94 - Jun '95	7.25%	-1.83%	5.39%	6.42%	-1.58%	4.85%
Jun '99 - Jul '00	6.70%	-2.42%	4.38%	6.24%	-1.28%	4.98%
Jun '04 - Aug '06	5.06%	-0.86%	4.17%	4.09%	-1.51%	2.60%

Source: BarCap

31, 2011, the median portfolio yield for short duration mutual fund managers is 2.0%. More than a third of managers have shortened their portfolio duration while still yielding well over 2.0%, closer to the 3.1% yield of the BarCap Agg. How are active managers able to shorten duration but out-yield the benchmark? The answer: active short duration managers are increasing credit risk relative to the benchmark in order to boost yields. Portfolio risk is not decreased; it is merely shifted from interest risk to credit risk.

Arguably, for those that believe the chance of a double dip recession is remote, this may not be a bad risk to take. Though credit spreads currently hover at long-term averages, low yields on treasuries are giving investors poor compensation for interest risk, potentially making credit a better relative value. This higher potential return in credit is partially offset by increased portfolio risk, as credit risk is much more correlated with equity risk than interest risk, leading to higher portfolio volatility. Investors interested in decreasing interest risk and increasing credit risk could consider investments in short duration credit or bank loans.

In summary, historical evidence indicates that investors who are concerned about rising rates, shortening portfolio

duration is a poor strategy as short duration portfolios earn lower yield than core portfolios, and as rates rise yield curves tend to move upward on the short end more than the long end, thus decreasing short duration bond returns relative to core bond returns. Additionally, as investors are unable to correctly time interest rate increases, they pay an opportunity cost in lower yield every month they hold short duration bonds and interest rates do not rise. Most active managers attempt to mitigate the lower expected return of short duration bonds by increasing portfolio credit risk. While this is not necessarily a bad bet if the economy continues to improve, investors making it should be aware of the risks. Though increasing the portfolio's allocation to credit can improve expected return, it also increases portfolio volatility and downside risk if the economy unexpectedly weakens. Unfortunately there is no free lunch, and investors must weigh the costs and benefits of any strategic investing decision. ■



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