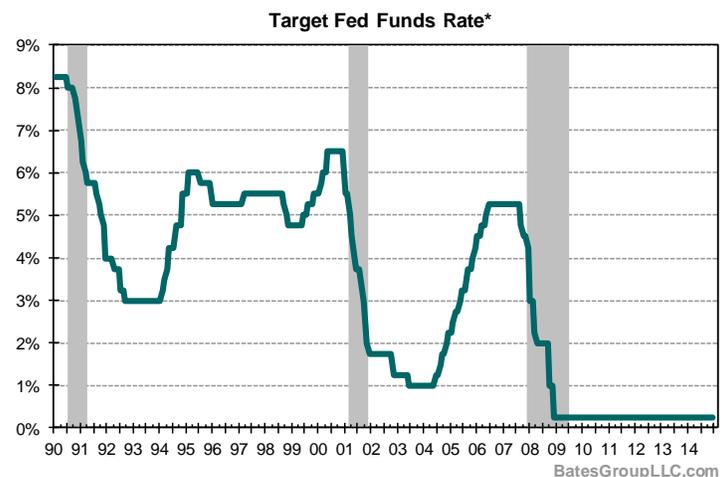




Reaching for Yield

For the past five-plus years, a historically low interest rate environment has persisted within the United States as a result of the Credit Crisis in 2008. This has left investors in the unenviable position of trying to find yield in a marketplace where yield is currently scarce. The need for yield and income is exacerbated by the changing landscape of investors; recent data covering more than 40,000 advisors revealed that the average client age is 62, and that figure will increase by approximately six months every year moving forward. Only 23% of advisor clients were under the age of 45. There is clearly a tremendous amount of focus on retirement income for the vast majority of investors, and their advisors have attempted to locate that yield for them in a number of ways. In this paper, we will examine four potential ways to increase yields commonly seen in

portfolios: buying lower quality credits, extending maturity or duration, moving away from a balanced portfolio, and/or buying “debt-like” products with riskier variables. We will also examine the costs of keeping your money on the sidelines while waiting for higher rates.



Marshall Kneeland

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Buying Lower on the Credit Spectrum

Most of our scenarios will begin the same way -- a bond held in the investor's portfolio matures (or will mature shortly), and the time has come for the advisor and client to select a replacement security. However, the yield that the investor had been receiving on the maturing security simply can't be replaced with a similar security in today's market. Often, investors will be tempted to purchase a bond further down the credit scale in order to make up for that lost income. During this selection process, the risks that this purchase introduces to the investor's portfolio are overlooked, ignored, or simply misunderstood. The credit ratings themselves are "...forward-looking opinions of the relative credit risks of financial obligations..."¹ which are compiled to "...reflect both on the likelihood of a default on contractually promised payments and the expected financial loss suffered in the event of default" for rated securities. Ignoring recovery rates and focusing in on default probabilities alone, we can examine the implications of moving down the rating scale. While it is not necessarily problematic to move from an Aaa-rated security to an Aa-rated security (as seen in the table below), the risk of default does increase quite a bit in moving from an Aa-rated security to Baa (which is four times more likely to default over a five-year period). Breaking the Baa barrier and moving into below-investment-grade securities increases these risks substantially, putting both the performance of

¹ Moody's *Rating Symbols and Definitions*, March 2015.

the bond and the repayment of principal at risk. The default probabilities in the table below are for corporate bonds; the same scale for municipal bonds would show considerably lower levels of default at each letter grade.

Moody's 1920-2010

Rating	5 Year Default Probability (%)
Aaa	0.163
Aa	0.748
A	1.244
Baa	3.061
Ba	9.658
B	22.009
Caa-C	41.28

A careful examination of the costs and benefits of moving down the credit scale should be conducted. Sometimes, a simple illustration of the actual dollars at stake can be very illuminating in these instances. For example, Bond B yields 1% more than Bond A on a nominal annual basis, because Bond B is rated lower than Bond A. If an investor has \$100,000 to invest, that extra 1% in yield represents an extra \$1,000 in income each year. That equates to about \$83 a month or about \$19 a week. Certainly, every bit of income is important, but does that marginal increase in income justify the increased risk of default and potential loss of some or all the \$100,000 principal from investing at a lower credit quality? The additional yield and income must be balanced against the increased risk created by the lower-rated bond. Lower-rated securities can also carry additional risks beyond the exposure to greater credit risk. They are often less liquid than higher rated

bonds, leaving an investor exposed to fire sale prices in the event that they are forced to liquidate in a falling market. The liquidity of lower-rated bonds also leads to more price volatility with wider bid/ask spreads, meaning that even in times of normally functioning markets, investors may find themselves exposed to rapid price changes in the event that they must liquidate the bond prior to maturity.

Historically, lower-rated bonds have also shown a greater degree of sensitivity to changes in interest rates than higher-rated bonds. All bond prices fall when interest rates are rising, and rise when interest rates are falling, but this effect is magnified at lower credit qualities. Many high-yielding bonds (with lower credit quality issues) have a call feature built into them, allowing the company the option of redeeming them at its discretion. Companies will exercise this feature in falling interest rate environments, but are unlikely to do so when rates are rising. Many high-yield bonds are priced with the assumption they will be called, so when rate increases cause them not to be called, they are effectively a longer-duration security (we will discuss duration next) in a rising rate environment.

Extending Duration

Duration is a measure of a bond's sensitivity to changes in interest rates, the greater the duration, the greater the change in the bond's price will be if interest rates change. When rates are falling, a higher duration leads to greater price appreciation compared to a bond with a lower duration. The inverse is also true: greater duration bonds will experience larger price declines in periods of rising interest rates. After

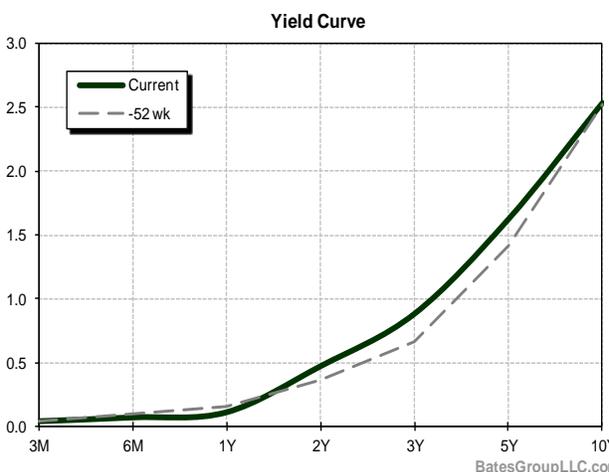
credit risk, which we discussed above, interest rate risk is the other primary concern for fixed income investors, and duration is a measure of their sensitivity to this risk factor.

Extending duration may be an appropriate response to a low interest rate environment, depending on the investor's individual circumstances. However, increasing your portfolio's exposure to changes in interest rates in order to pick up additional yield is an easy trap to fall into. When interest rates are near zero, there is only minimal room left for rates to fall, which would lead to price increases commensurate with the level of duration in the bond or portfolio as a whole. There is, however, quite a bit of room for rates to increase, and in fact, the probability that there will be a rate increase itself has increased. This means that investors who increase their duration in order to pick up yield may be doing so at exactly the wrong time -- there is little room for rate decreases that will benefit their investments, and future interest rate increases (which will now have a greater negative impact on their investments) have a greater likelihood of occurring. Should the investor need to liquidate part or all of their portfolio prior to maturity, these price decreases could have a large impact on realized returns.

Beyond the current rate environment, investors considering extending duration should be aware of the shape of the yield curve. An example yield curve (as of yearend 2014) is presented below, showing the relative value, in terms of yield, of purchasing Treasury bonds with a longer maturity. The dashed grey line shows the same curve as of yearend 2013. From this chart,

Reaching for Yield

we can see that yields on shorter-dated Treasuries have decreased, whereas the yields on longer-dated ones have risen. The disparity between long- and short-term yields has increased the value to investors of moving further out on the yield curve, relative to what they could have gotten one year ago.



Even with an increase in spreads, the benefits of buying longer-dated bonds may not actually be worth the additional incremental risk in interest rate exposure. To quantify the additional exposure, we can look at the change in price for three example maturities (assuming par, non-call bonds) that would be caused by a change in interest rates of 5 basis points (0.05%).

Value of the 05

Maturity	Price Change (\$) per 0.05% Change in Rates
One Year	0.5
Five Year	2.37
Ten Year	4.29

A five-basis-point movement is fairly small (the Federal Reserve typically changes interest rates in 25-basis-point increments), and you can see above that longer maturity or duration bonds have a much greater price response to these changes compared to shorter ones. This can have a large impact on investor returns, and is something that bond buyers need to be aware of when making the decision to extend the duration or maturity of the securities they hold. Is the additional increase in yield that they will gain balanced against their greater exposure to changes in interest rates? Does this tradeoff still make sense in the current interest rate environment they find themselves in, especially if that environment leaves them with a much greater long-run probability of interest rate increases rather than decreases? Both FINRA and the SEC have named interest-rate-sensitive securities as one of their top enforcement priorities for this year for these very reasons -- investors may not understand the risks they are taking by positioning themselves at longer durations in a prolonged low-rate environment.

Asset Allocation Changes

In trying to replace yields and in searching for income, investors may be tempted to abandon the bond market entirely, shifting their overall allocation to more heavily-weighted equities. In particular, many investors may look to high-dividend stocks in order to offset lost yield. However, the risks that the portfolio may be taking are potentially being ignored. Adding more equities to a portfolio may increase returns, but it will also increase the standard deviation of the portfolio as well. Standard

deviation is a measure of risk, in that it measures the magnitude of movements around the average return. If I am expecting an average return of 6.58%, and I have measured the standard deviation of my portfolio as being 7.59%, then with a 95% confidence level, I can expect my actual return to be somewhere in the range of -5.94% to 19.10%. This interval may seem fairly wide, but consider what happens if I shift my portfolio towards a heavy weighting in equities, bringing my expected average return to 6.97% and increasing my standard deviation to 8.96%. My new range, with 95% confidence, is -7.81% to 21.75%. The upside potential of my portfolio has certainly improved, but so has the degree of potential losses that I may experience. It is also important to remember that my expectations are founded on a 95% confidence interval, meaning that 5% of the time I can expect to experience returns that fall outside of the boundaries I've predicted. Those boundaries themselves are also reliant on the standard bell curve, assuming that asset returns are normally distributed, an assumption which may also understate the chances of ending up in the "tails" of the bell curve, beyond the predicted range. Return, risk, and the 95% confidence interval range of predicted outcomes are presented for three portfolios below, moving from a 50/50 balance of bonds and equities to a 70/30 balance in favor of equities.

Mixed Portfolios (2005-2014)

	50% S&P 500 / 50% BarCap Aggregate Bond Index	60% S&P 500 / 40% BarCap Aggregate Bond Index	70% S&P 500 / 30% BarCap Aggregate Bond Index
Annualized Average Return	6.58%	6.97%	7.35%
Annualized Standard Deviation	7.59%	8.96%	10.36%
95% Confidence Interval	-5.94% : 19.10%	-7.81% : 21.75%	-9.74% : 24.44%

We have chosen to use the total return of the S&P 500 index to represent our investment in equities in the above models, whereas many investors would have chosen to place money in high-dividend-yielding stocks. The FTSE High Dividend Yield index was considered for inclusion, but over the ten-year period we considered, it dramatically underperformed the S&P 500, making it a suboptimal representation of an equity investment. For roughly the same degree of risk (S&P 500 annualized standard deviation was 14.67% versus 14.28% for the FTSE High Dividend Yield index), the S&P 500 had an average annual return of 8.51% versus 5.29% for the FTSE HDY. Simply put, investors were better compensated for taking the same amount of risk by investing in the S&P 500 over this period.

However, none of this analysis is meant to downplay the role that both stocks and bonds play in an investor's portfolio. One of the key tenets of Modern Portfolio Theory (MPT) is the idea that all investors must accept a tradeoff between risk and return – assets with higher risk will pay greater returns, and vice versa. Not all asset returns will move in a unified fashion, though, meaning that on some days, asset X will

be up and asset Y will be down; on other days, their positions could be reversed. This relationship and the extent to which two assets move in conjunction with one another is captured by correlation. Correlation was a key insight for MPT, providing investors with quantitative means by which to construct portfolios that delivered lower standard deviations (less risk) for a given level of return. The benefits of diversification are well understood now, and many investors understand why mixed investment strategies are beneficial to their long term goals. During the time period examined above, the correlation between equities and bonds was only 5.16%, meaning that on most days, the two assets moved independently of one another. That's a big benefit to an investor -- having a sensible allocation to bonds can help to insulate a portfolio from losses, even if it serves at times as ballast against a rising equity market. Investor's searching for yield may forget why they choose balanced allocations to begin with.

Alternative Products

Investors may also consider adding products that mimic the income-producing features of traditional bonds, but which carry with them a different set of risk exposures. An example of this type of product would be structured notes. Structured notes are synthetic debt obligations, usually issued by investment banks, that have an embedded derivative component within them. This means that the performance of the note is tied to something else, like a commodity index or a particular stock. While the customized payouts and exposures of these instruments

may be the right fit (and beneficial) for certain investors, those searching for yield may not do the due diligence required to assess whether or not they are the right fit.

One point of concern would be the introduction of counter-party risk with the investment bank itself; if the bank becomes insolvent, or for some other reason defaults on its obligations, then the holder of the note is left without payment.

Trading out of a structured note may be difficult as well, as there is a limited secondary market for trading these securities after they have been issued. So an investor buying new issuance should be considering their investment as one that they will hold until maturity. At maturity, depending on the particular terms of the note, there may also be other unforeseen issues. For instance, many notes (based on the performance of the underlying reference entity) return the underlying asset to the investor rather than a return of principal. You may be expecting to receive \$1,000 per note back, but instead you are paid in Apple stock. For those who are looking to invest in fixed income securities, this is an undesirable outcome, especially if the investor was previously unaware of this feature.

Some investors may also consider preferred stock. Preferred stock shares characteristics with both long-term debt and common stock, and is commonly employed by corporations in their capital structure. Like common stock, preferred shares are an ownership claim on the company, though preferred shares usually don't carry voting rights. Just like common stock, money raised through the sale of preferred shares does not have to be paid back by the company, but preferred shares have fixed

annual dividend payments, much like a bond coupon payment, that are guaranteed. Unlike coupon payments, issuers don't have to pay on time, but most preferred stock has a cumulative feature which means that missed dividends must be repaid in the future. A preferred claim is below a debt claim, but above a common stock claim in the corporate structure. Prices of preferred stocks tend to be less volatile than common equity and tend to behave similarly to the company's debt in their market movements. This can be either a positive or a negative aspect depending on the interest rate environment, as preferred shares tend to behave much like long-dated bonds. As we discussed in the second section above, the addition of long-duration/maturity securities (or those that behave like them) to a portfolio can be problematic depending on the interest rate environment and the shape of the yield curve.

An investor considering a fixed income-like investment (structured notes, preferred stock, CDOs or CLOS, etc) must understand the additional risk and return characteristics that they are exposing their portfolio to at the time they make the investment decision. A desire for more income should not derail their normal diligence process.

Cost of Waiting

Investing in a low-yield market only to see interest rates rise can be costly, but making the choice not to invest, to try and wait for higher yields, can be as well. In searching for better yields, investors have three primary options: invest in a bond now, stay in cash and wait for better yields, or buy short-term bonds and wait

for yields to rise in order to buy higher-yielding securities at maturity.

As an illustration, we can examine the case of an investor who needs to generate income for the next ten years. To simplify our example, we will assume that the most appropriate investment for this investor is U.S. Treasuries. Further, to give us a sufficient amount of data to work with for a hypothetical example, we will assume that the investor is conducting their analysis as of the first trading day of January 2011. At that point in time, the investor had the option to purchase a 10-year bond yielding 3.36%. A \$100,000 investment in this bond will generate \$33,600 in income over the next ten years, which the investor is worried is too low. Assuming that the investor instead decided to place those funds in a money market, they would earn 0.25% a year, or only about \$2,500 in total income. That is a steep drop off, but they have maintained the flexibility to invest at any point in time, should interest rates begin to rise. Unfortunately, checking in on 10-year rates on the first trading day of each of the next four years shows us that yields haven't risen above the 3.36% level originally available (for simplicity again, we are limiting investing decisions to only one time a year). Perhaps the investor would have been better off rolling positions in 2-year Treasuries forward and staying out of low-yield money market funds. Looking at the 2-year yield available on the first trading day of each year for 2011-2015, and assuming each bond was held for two years, we can see that the strategy would have still performed far below the income offered by simply buying and holding the 10-year bond. A table showing the results of

Reaching for Yield

each hypothetical investment decision is shown below.

Cost of Waiting

Period	10 Year Bond	Money Market	Short Term	Available 2 Year Rate	Available 10 Year Rate
1	\$ 3,360.00	\$ 250.00	\$ 610.00	0.61%	
2	\$ 3,360.00	\$ 250.00	\$ 610.00	0.61%	
3	\$ 3,360.00	\$ 250.00	\$ 270.00	0.27%	1.97%
4	\$ 3,360.00	\$ 250.00	\$ 270.00	0.27%	
5	\$ 3,360.00	\$ 250.00	\$ 270.00	0.27%	1.86%
6	\$ 3,360.00	\$ 250.00	\$ 270.00	0.27%	
7	\$ 3,360.00	\$ 250.00	\$ 390.00	0.39%	3.00%
8	\$ 3,360.00	\$ 250.00	\$ 390.00	0.39%	
9	\$ 3,360.00	\$ 250.00	\$ 660.00	0.66%	2.12%
10	\$ 3,360.00	\$ 250.00	\$ 660.00	0.66%	
TOTAL	\$33,600.00	\$2,500.00	\$ 4,400.00		

While the dangers of reaching for yield are tangible, the costs of doing nothing are also very real. Investors face a hard choice when it comes to dealing with a fixed income investment universe that is offering perpetually low yields.

Conclusion

Finding the right balance is key in a low rate environment. Investors must be aware of the risks that they are undertaking in trying to generate additional yield, while balancing those risks against the costs of doing nothing. For many, the choice is critical, as it impacts the quality of life that they are able to sustain in retirement. This paper is meant to highlight some of the commonly overlooked aspects of different investment strategies in an effort to help investors make decisions with more complete information. All of the aforementioned strategies can be valuable contributors to an investor's portfolio, but careful consideration must be paid to match the right decision to each individual investor.

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