Innealta CAPITAL

COMMENTARY: MARCH 1, 2012

UPDATES AND ENHANCEMENTS TO THE FIXED INCOME PORTFOLIO

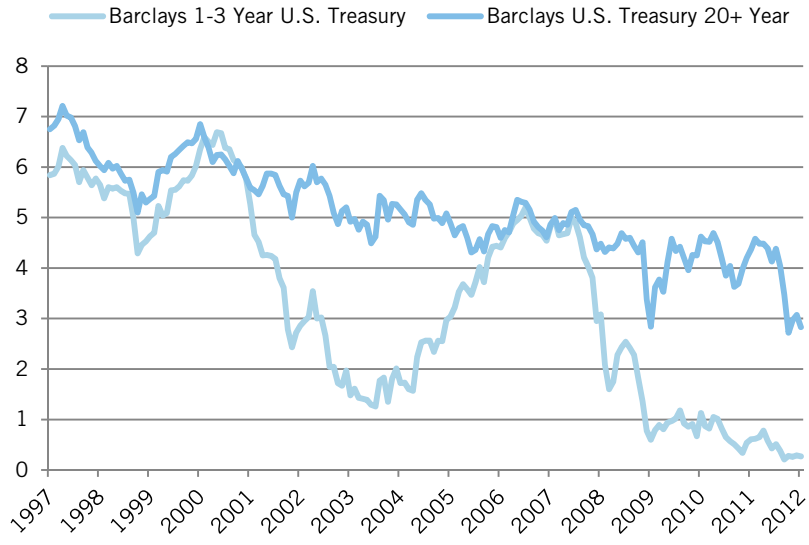
- During market environments such as those of the past five years, during which our Rotation portfolios have mostly underweighted equities, the composition of the fixed income portfolio is a critical driver of performance. Mindful of changing macroeconomic and secular tides, the investment committee (IC) periodically reviews the composition of the fixed income ETF portfolio. And as innovation in the fixed income ETF product space presents new opportunities for yield and diversification, we are further motivated to review fixed income portfolio allocations. To illustrate how this process works, we focus this monthly commentary on the investment committee's recent review of the fixed income portfolio.
- The review encompasses the expected return and risk profiles of the fixed income sectors, an opportunity set first augmented via a rigorous evaluation of the fixed income ETF product space in search of new exposures to enhance diversification and generate additional yield. Readers should understand that this particular portfolio review process is separate and distinct from the secular TAA changes to the risk-based portfolios, the subject of recent commentary. The key difference is that the risk-based analysis focused on diversification within the mean-variance framework across all asset classes, while the analysis discussed this month focuses on diversification and the expected return-to-risk relationship across various sectors within the fixed income asset class only. While both frameworks require constrained optimization procedures, the objective functions are very different.
- Elaborated in the commentary to follow, the most important features of the changes we made to the portfolio based on the latest evaluation include:
    - Adding to emerging market debt exposure
    - Shifting from Sovereign Credit to Corporate Bonds
    - Slightly increasing the duration exposure
    - Reducing U.S. Treasury exposures

THE CURRENT YIELD ENVIRONMENT

Searching for attractive yield opportunities in a low interest rate environment is a challenging endeavor and currently is a major theme among professional investment managers. We begin our review of the fixed income portfolio by painting a backdrop of the current interest rate environment as compared to recent history.

We begin by presenting the yields on U.S. Treasury bonds dating back to 1997. Specifically, we offer two time series in Figure 1: the yields to maturity on the Barclays 1-3 Year and 20+ Year U.S. Treasury Benchmark Indexes. The figure demonstrates the sobering reality of the current interest rate environment: nominal yields on U.S. Treasury bonds are low by any historical standard. Extending the figures further back would amplify this conclusion. The figure highlights the stingy yield on short-term U.S. Treasuries, where investors earn negative real rates of return on these supposed default-risk-free securities. It is abundantly clear that there is virtually no capital gain potential in the short-term sector of U.S. Treasuries. By historical standards, yields on long term-treasuries as measured by the 20+ years index, are also anemic at near 3%. The difference between the two lines gives information about the slope of the yield curve. Historically speaking, a positively sloped curve (long-term rates are higher than short-term rates) has been a bullish economic indicator. In recent years, the Federal Reserve has added much noise to that signal, however, as it intervened in unprecedented ways within the U.S. Treasury bond market. During several rounds of quantitative easing, the Federal Reserve has purchased billions of dollars of Treasuries. As a result, one must carefully interpret the prevailing market levels and slope of rates, as these actions have resulted in the short end of the term structure to have been pinned close to zero nominal yields.

Figure 1: U.S. Treasury Bond Yields

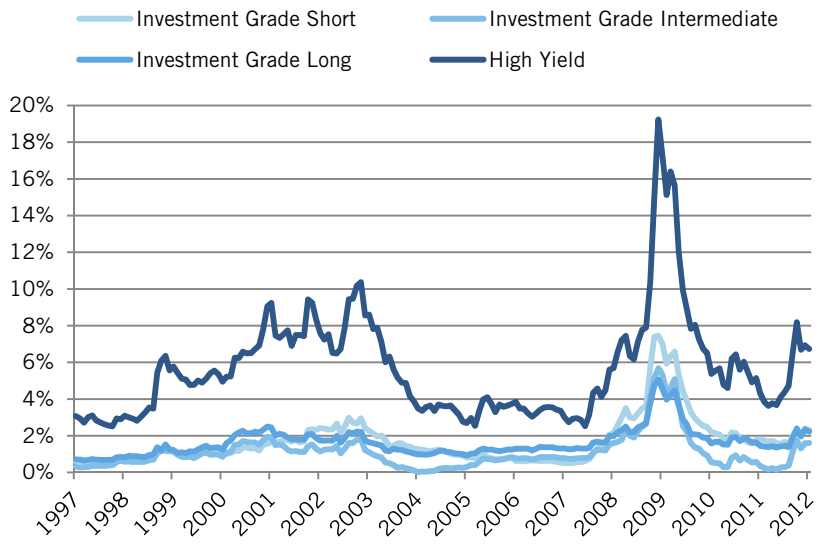


SOURCE: Datastream

While the Treasury yields presented in Figure 1 provide information about the benchmark level, we next add to our picture of the current market landscape by taking a look at credit spreads. Credit spreads represent the difference between the yields on bonds of issuers other than the U.S. Treasury, such as investment grade corporate bonds, over and above the

yield on comparable (in terms of duration) Treasuries. The magnitude of this difference changes over time and represents the premium that borrowers pay over default-risk-free Treasuries. Figure 2 presents the historical credit spread for four sectors of the corporate bond market: short-term investment grade corporate bonds, intermediate-term investment grade corporate bonds, long-term investment grade corporate bonds, and high-yield corporate bonds.

Figure 2: Yield Spreads, U.S. Corporates over U.S. Treasuries



SOURCE: Datastream

The figure highlights the 2008-9 financial crisis period, when spreads ballooned to extreme levels. High yield spreads approached 20% during the height of the crisis, when investors were forced to dump holdings into an illiquidity-plagued junk-bond market. Investment grade credit spreads also spiked to high levels by historical standards during the financial crisis. Although spreads since have narrowed to come back in line with typical non-crisis periods, the charts illustrate that credit spreads remain attractive compared to the recent historic levels during non-crisis periods.

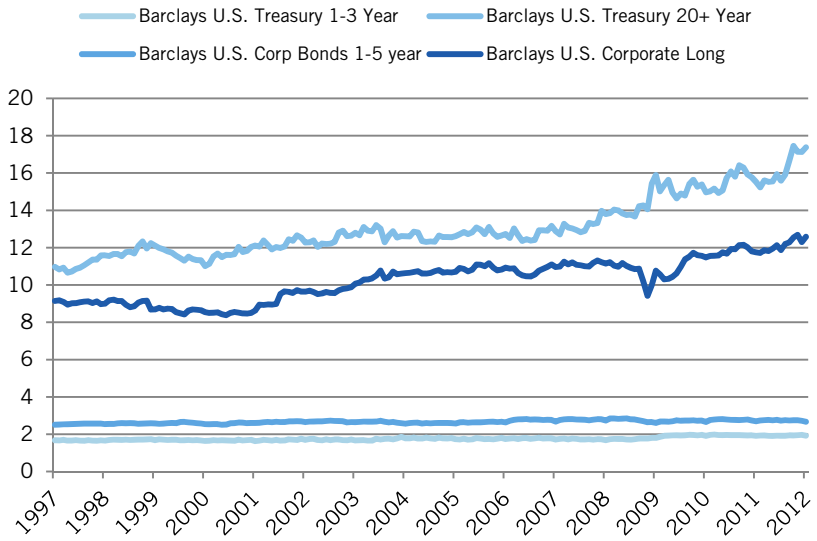
Figure 1 and Figure 2 thus provide visual reference to the question the IC recently addressed: in response to the current low-yield environment, should we take on additional credit risk and possibly additional duration risk in search of richer yield opportunities? Based on our empirical analysis in conjunction with our macroeconomic views, we remain convinced that the answer is yes.

LOW-YIELD RISK

It is important to note that a straightforward implication of the current low interest rate environment results from the well-known property between bond price volatility and yield-to-maturity. As required return (yield-to-maturity) declines, holding all else constant, interest rate risk (modified duration) increases. Therefore, during the current low yield market environment, these anemic yields are coupled with relatively high interest rate risk. To illustrate, we next present Figure 3, which illustrates the modified duration of four

benchmark bond indexes over the last 15 years: The Barclays 1-3 year and 20+ year U.S. Treasury Indexes and the Barclays 1-5 year and Long Term U.S. Corporate Bond indexes. All four of these benchmark indexes exhibit current modified durations that are at or near their highest levels achieved over the past 15 years. For example, the U.S. Treasury 20+ year index presently has a modified duration just shy of 18 compared to about 11 in January 1997. Recall that modified duration is the approximate percentage price change in response to a 1 percentage point change in yield, so if yield increases 1%, a modified duration of 18 suggest a commiserate price decline of 18%, a large capital loss for investors in a bond sector yielding 3%.

Figure 3: Modified Duration, U.S. Treasury and Corporate Bonds



SOURCE: Datastream

As we will present shortly, the committee's primary objective designing the diversified fixed income portfolio is to maximize expected return (yield and estimated price change), while constraining portfolio risk to a suitable level. The figures presented so far demonstrate that the risk-return characteristics of bond market sectors are dynamic, necessitating these periodic reviews. Specifically, in response to historically low yields and relatively higher durations across all fixed income asset classes, we seek to position the portfolios opportunistically by enhancing yield, while minimizing overall portfolio risk through diversification.

Incorporated both quantitatively and qualitatively into our work are our expectations for shifts in interest rate levels. Consistent with the observation that economic indicators indicate significant slack in the macroeconomy, we expect yields on U.S. Treasury bonds to continue to trade in a narrow range, in turn suggesting little risk of rising interest rates. Additionally, we see no signs of inflation on the horizon, further supporting our belief that there is small chance in the near-term of entering a rising interest rate environment.

SCOURING THE ETF SPACE FOR NEW OPPORTUNITIES

The number of fixed income ETFs has increased dramatically in recent years, opening exciting new opportunities for our portfolios. Early ETFs offered exposure to the Barclays Aggregate Index and Barclays U.S. Treasury Indexes. New innovations include products that offer more granular exposures across the investment grade U.S. bond market, which complement a series of new and fully differentiated sectors, such as bank loans, non-U.S. sovereign, non-U.S. corporate and (including the slice we've included in the portfolio for over a year now), additional offerings covering emerging market issuers. These recent innovations expand the opportunity set for our portfolios, offering prospects of additional yield and diversification.

To sift through the list of fixed income ETFs, now numbering in excess of 100, we apply several filtering criteria. First, we require sufficient data on the benchmark index, generally eliminating ETFs that track proprietary or active benchmarks (unless, in the case of proprietary indexes, we can find a substantially similar substitute). Additionally, we require sufficient ETF performance history to quantify the risk and covariance of each potential new exposure with other bond sectors. The committee uses these data to determine whether or not we are confident we understand the return dynamics and evaluate the transaction costs associated with trading in the funds. In many cases we work closely with the providers to gain understanding of the funds' sampling procedures and other relevant structures, including the creation/redemption process. Unlike domestic equity ETFs, fixed income ETFs almost always rely on "replication sampling" to select a subset of the index securities that represent the important characteristics of the index without requiring the fund to hold and trade the entire universe of securities comprising the benchmark index. This is necessary since many of the respective indices hold relatively large numbers of bonds (amping construction- and rebalance-related transactional costs). Too, many bonds are not always available for trading.

Recall that during 2010 we expanded the portfolios by adding the Market Vectors Emerging Markets Local Currency (EMLC) ETF. The key drivers were the high ratio of the portfolio's yield-to-duration, its historically low relative correlations with other major fixed income sectors, the exposures to emerging market local currencies and its reasonably low expense ratio. International debt exposures and emerging markets debt market exposures in particular have been one of the most fertile sectors for the creation of new ETFs. This trend arises from the conjunction of two major investment themes: investor cautiousness or risk-aversion and the emerging markets growth story. Though the number of products that pass our screening requirements continues to be fairly small, the growth in non-U.S. fixed income ETFs is welcome for its potential to add diversity to portfolio exposures.

DESIGNING THE OPTIMAL, DIVERSIFIED FIXED INCOME PORTFOLIO

After scouring the investment landscape and assembling a set of fixed income ETFs satisfying our investment criteria, the investment committee turned to designing the 'optimal' portfolio allocation across these ETFs. By 'optimal', we mean to suggest that the analysis focuses on maximizing expected total return while achieving diversification subject to a set of constraints tailored to meet our defined objectives. We employ a portfolio

optimization routine to solve this problem, guiding us toward the fixed income portfolio that best (*optimally*) suits our stated objectives.

The optimization procedure begins with definition of what is referred to as "the objective function," the value that we seek to maximize. Our specific objective is to maximize the portfolio expected return given the prevailing yields on fixed income assets and our own expected price changes. We use the symbol ω to refer to the vector of N portfolio weights, one for each fixed income ETF considered for our portfolio. The weighted average of the expected returns is equal to the portfolio expected return. In mathematical notation, we write this as the product of the weights vector, ω, and the vector r containing the expected returns:

$$\max_{\omega} \ \omega' r$$

The objective function, in English, simply formulates the goal as "to select the N portfolio weights (vector ω) producing the portfolio with the highest possible expected return." At this point we have what is referred to as an 'unconstrained' problem, which can result in unrealistic weights, some of which will be negative. Specifically, the optimizer can maximize return by taking infinitely large short positions in the lowest expected return assets and investing those proceeds in the asset with the highest expected return (If that doesn't sound familiar…that's just how our banks work with the Federal Reserve!). Thus, we sparingly add a set of constraints to guide the optimizer towards a practical and implementable solution. The first set of constraints simply impose that the weights are non-negative, which instructs the optimizer to disregard any solutions involving short sales. Additionally, we constrain the sum of the weights to equal one, which is to say we direct the optimizer to consider only fully invested portfolios.

Thus far, we have instructed the optimizer to maximize total return subject to constraints that prohibit short selling and require the portfolio to be fully invested. We have not, however, designed the optimizer to consider risk when arriving at a solution. To restrict the level of risk in the portfolio, we may add a constraint to guide the optimizer to consider only the feasible portfolios that meet a desired risk-tolerance, ℓ. The portfolio risk takes into account the variances of each fixed income sector and the covariances between each sector.

Note that total risk, or portfolio variance, is only one definition of the bond portfolio's risk. Why not define risk as duration (interest rate risk)? In a simple setting where the only source of risk to bond investors comes from interest rate risk, this would be appropriate. However, by diversifying across a range of credit and international sectors, our analysis must factor in other germane risks such as credit risk, liquidity risk and exchange rate risk. By constraining total risk, we encapsulate all these risks into the analysis. Of course we may also take interest rate risk exposure into account by imposing limits on the portfolios' interest rate risk exposures as measured by effective duration. To accomplish this we would add an additional constraint specifying consideration of only the set of portfolios having durations that are less than or equal to a target level, δ.

In some settings, we may also wish to ensure that the portfolio is not overly concentrated in any one sector or in other cases to force an allocation to a particular asset class if so desired. For example, absent a limit, the optimizer assigns unrealistically large weights to U.S. High Yield Corporate Bonds, since this asset class has attractive properties relative to other asset

classes. Although it is a somewhat volatile asset class at times, it has relatively low duration and relatively high expected return. The low correlation with other major bond sectors makes it all the more desirable in the optimizer's eyes, pulling down the portfolio variance. Thus, we may impose a maximum allocation to avoid overly concentrated portfolios. Liquidity may also influence constraints placed on individual asset classes. The following notation formalizes the general framework:

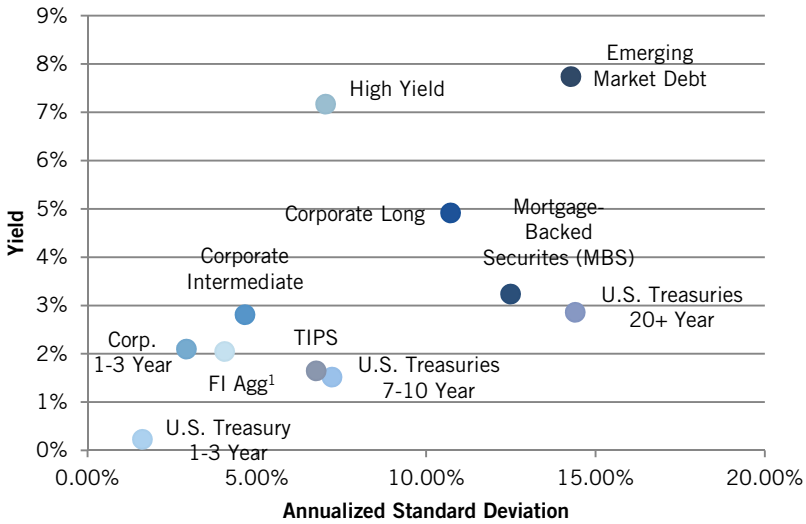
$$\mathbf{max}_{\boldsymbol{\omega}} \ \boldsymbol{\omega}'\boldsymbol{r}, \textit{ subject to the following constraints:}$$

1. $\sum_{i=1}^{N} \omega_i = 1, and\ \omega_i \geq 0$
2. *Total Risk* $\leq \ell$
3. *Portfolio Duration* $\leq \delta$
4. $min_i \leq \omega_i \leq max_i$.

A visual of the mechanics

Ignoring for the moment any expected price changes, it is helpful to refer to a visual representation of the yield versus total risk relation for various sectors of the fixed income market. Referring to Figure 4, we clearly see that corporate high yield and emerging market local currency debt have the highest yield, though total risk for the high yield segment is considerably lower than that for the other. Ignoring for the moment any expected price changes due to interest rate changes, the relatively higher yield on these two sectors illustrates why the optimizer favors heavily these asset classes, particularly high yield, necessitating the maximum allocation constraints. Continuing with this line of thinking, the figure also shows suggestive evidence why the optimizer steers the portfolio away from U.S. Treasury bonds. With yields so anemic on U.S. Treasury bonds, they do not have desirable characteristics based on the optimizer inputs: low yield, considerable risk and, most importantly, low yield per unit of risk and assuming expected price changes from interest rate shifts are zero. The optimizer would only allocate positive weights to such an asset class if it exhibited negative covariance with other higher-yielding asset classes, which is clearly not the case of U.S. Treasury bonds. Keep in mind that this analysis is illustrative and ignores capital gains or losses from forecast interest rate changes.

Figure 4: Yield, versus Volatility, Fixed Income Sectors

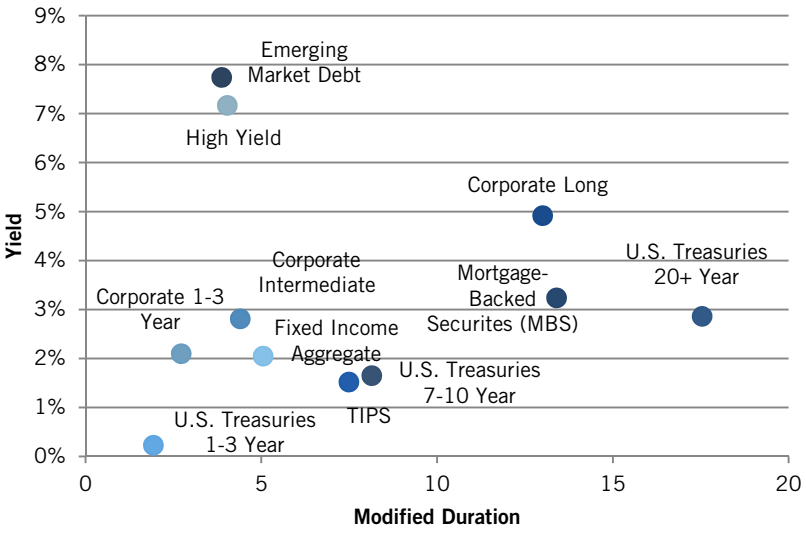


[1]Fixed Income Aggregate SOURCE: Datastream

Figure 5 illustrates the yield versus modified duration of the same set of fixed income sectors. The picture is largely similar to Figure 4, except that it is worth noting the emerging markets debt has high total risk but relatively lower duration. This is due to the fact that this asset class has exposure to factors other than interest rate exposure that boost volatility. Specifically, these risks include exchange rate risk and default risk.

The total risk and duration figures are particularly useful when considering the risk constraints we impose on the portfolio. Recall that one set of constraints limits the total risk of the portfolio, while the other imposes restrictions on the modified duration. In both cases, the optimizer's portfolio solution must have total risk and modified duration less than or equal to the specified levels (i.e. relative to our performance bogie). One can imagine this constraint as a vertical line drawn in the figures. For example, imagine we constrain the portfolio duration to be 7. Long-term U.S. Treasuries have a modified duration of roughly 18, indicating that to meet that constraint, portfolios containing long-term U.S. Treasuries must also contain considerable allocations to low duration sectors such as short-term U.S. Treasuries. Clearly with yields of approximately 3%, and ignoring expected price changes, this will not be the optimal solution unless one expects significantly positive price appreciation. Such a view would stand in stark contrast to the committee's expectation of interest-rate driven price changes near zero due to tremendous slack in the aggregate economy. Instead, consider a combination of short-term corporate and long-term corporate bonds. The figures illustrate that the corporate bonds offer richer yields while the long-term corporate have considerably lower total risk and modified durations than long-term U.S. Treasuries. Although we acknowledge that the total risk contribution to the portfolio is not this straightforward, since we have omitted consideration of the covariance terms, the magnitude of the differences gives the observer a good idea why the optimizer steers us away from Treasuries in the current environment.

Figure 5: Yield, versus Modified Duration, Fixed Income Sectors



SOURCE: Datastream

Additionally, the duration plot presents visual confirmation why we must constrain the maximum allocations to individual funds. Ignoring the portion of expected return stemming from expected price changes, High Yield carries over 7% yield but has a relatively low modified duration of approximately five. Assuming the duration constraint is set no lower than 5, the optimizer will tend to allocate to High Yield up to the constraint.

SETTING THE CONSTRAINTS

In the above figures, a generally positive relation emerges between yield and risk in the current environment. Recall that we set out to maximize expected return in what is by historical standards a low interest rate environment. The decision we face is whether to relax the risk constraints to chase incremental yield. Extending the duration of the portfolio increases the exposure, should interest rates rise. To gain comfort with our decision to loosen the duration constraint by a small amount, the committee turns to the model framework and the assessment of the current macroeconomic environment. With no hint of higher inflation on the near-term horizon, interest rate increases would have to come through demand as fueled by economic growth. Our assessment of the employment situation, the continued crisis in Europe and our own domestic issues slowly percolating toward the top, the committee is comfortable extending the duration in exchange for the resulting yield enhancement, with our forecast of expected price changes of approximately zero.

THE SOLUTION

The optimizer favors a shift from the sovereign credit sector to corporate. This shift is also desirable from a product design standpoint as the credit sector ETFs track benchmark indexes containing significant amounts of overlap. The corporate bond ETFs we selected are purer portfolio building blocks in that they track indexes that do not overlap along the maturity spectrum. It's true that corporate bonds are a large component of the credit

indexes, but credit indexes also contain considerable quantities of Yankee bonds. Issuers of Yankee bonds, dollar-denominated bonds issued in the U.S. by foreign issuers, are primarily foreign governments, banks and other financial institutions. Given the current events coming from Europe and the observation that European banks comprise a large fraction of Yankee bond issuers, we are very comfortable with the optimizer's direction pointing us from credit to corporate exposures. For the corporate exposures, we selected three Vanguard products benchmarked to non-overlapping Barclays Corporate Bond Indexes. These funds come with low expense ratios and present an attractive opportunity to diversify across the investment grade corporate bond market with more precise exposures. Leaving the credit space involved elimination of our positions in CSJ (10%), CIU (10%) and CLY (5%).

The optimizer also highlights the relative unattractiveness of the U.S. Treasury sectors, as we mentioned earlier. Reflecting a similar shift in the risk-based products, we took this opportunity to pull the portfolios away from the Treasury allocations in favor of other asset classes offering more attractive yields per unit of risk. We eliminated the 5% allocation to the iShares Barclays 1-3 year Treasury Bond Fund (SHY) and the 15% allocation to the iShares Barclays 7-10 year Treasury Bond Fund (IEF). Of course, exposure to Treasuries remains through the fixed income Aggregate slice, although we reduced slightly the Vanguard Total Bond Market Fund (BND) position from 20% to 15%.

Eliminating the Treasury and credit exposures and reducing the BND position freed up 20%, 25% and 5% of the portfolio, respectively, to redistribute among the more attractive sectors. The proceeds were largely directed towards investment grade corporate bonds: the Vanguard Short-Term Corporate Bond ETF (VCSH) 5%, the Vanguard Intermediate-Term Corporate Bond ETF (VCIT) 25% and the Vanguard Long-Term Corporate Bond ETF (VCLT) 15%. Additionally we added to the emerging markets debt exposure with a 5% allocation to SPDR Barclays Capital Emerging Markets Local Bond ETF (EBND) to complement the 5% allocation to the Market Vectors Emerging Markets Local Currency Bond ETF (EMLC). Although both ETFs provide exposure to emerging market local currency debt markets, allocations by country differ significantly across the funds, which have different benchmark indexes. Given the relatively small fund sizes and low frequency of trading, diversifying counterparty risk across these two ETFs seems appropriate.

TRADE ANALYSIS

Although some sectors of the fixed income market are quite liquid (on-the-run Treasury bonds), others are much less liquid (high-yield corporate bonds). Liquidity also influences our constraints in the formal quantitative framework, since, given the size of our portfolios, our trades have the potential to cause non-trivial price impact. For this reason we have taken steps to minimize that impact, such as working directly with the ETF providers and third-party liquidity providers to ensure (as much as possible) that our portfolio transitions are executed with minimal price disruption. The recent fixed income portfolio transition presents an opportunity for us to take a step back and examine the patterns of quoted prices and execution prices as our ETF order-flow enters the market.

Classic analysis of the price impact of trading volume focuses on relatively large trades of individual stocks. In that context, price impacts may be quite large given informational

asymmetries (uncertainty regarding the true value of a financial asset is high and some market participants are better informed than others) and lack of substitutes. The availability of close substitutes is a critical ingredient for arbitrage. Absent close substitutes, trades that possess superior information regarding the true value of an asset may not trade to take advantage of mispricing.

Trading fixed income ETFs is largely different than trading individual equities. First, the ETF shares and the underlying basket are linked through a tight arbitrage relationship. The creation/redemption mechanism links the value of the basket to the ETF share price. Consider the current portfolio transition via which we increased our holdings of EBND from 0% to 5%. A back-of-the-envelope calculation suggests that this results in an approximately $50-75 million trade. At the time, this exceeded the total net assets of the EBND. Fortunately this is an ETF, not a small cap stock! In the case of an ETF, liquidity is determined by the conjunction of the liquidity of the underlying basket securities and the size of the ETF trade spread across the basket of securities. For ETFs with larger baskets, the impact of trading is diffused across more securities, draining less liquidity from each individual security.

In this case, we expect liquidity for our trade to come from two sources: the secondary market and the primary market. The secondary market consists of other investors (individuals, institutions and market makers) already owning shares. Given the size of the trade, we know the main source of the shares will come from the primary market. In this market, a liquidity trader will create new shares of the EBND in response to market demand. This creation process facilitates our entry into the security. We expect the cost of this trade to come from two main sources: fixed costs associated with creating shares in the secondary market and costs associated with the market makers' transacting in the market for the underlying securities (effective spreads, price impact and the risk-tolerance of the market makers). Next we examine the intraday spreads, traded prices and volume to learn more about the importance of these costs associated with fixed income ETF trading.

We focus on the EBND trades since our aggregated purchase exceeded the fund's total assets under management at the time. Additionally the EBND traded relatively infrequently leading up to our orders. On February 6, EBND opened with multiple market-makers submitting bid and ask quotes of $31.60 and $31.82, respectively. The first trades of the day went off at 9:57 AM. These small trades of 113, 165, 120 and 100 shares each all had transactions prices between $31.82 and$31.84 per share. Under the defensible assumption that market buy orders receive best execution across the limit book and market makers' posted quotes, these prices signal that, unlike actively traded stocks, there is no liquidity between the quotes. This suggests the size of the quotes reflects directly the incremental cost to primary market participants of creating and redeeming shares.

It is common to divide large trades into many small orders. Sophisticated computer algorithms split trades and route them in ways that achieve the best execution. On the buy side, this involves entering the position at the lowest possible cost basis. On the sell side, this involves liquidating a position at the highest possible value. It is interesting to see that over 100 trades took place within 20 seconds of the first order hitting the market, totaling over 11,300 shares. It is very important to note that the ask price held tight. That the ask price held steady suggests that market makers stepped in and provided liquidity. As orders

continued to flow into the market, the bid and ask prices stepped up to 31.82 and 31.91 respectively. Note that the width of this spread still reflects the cost to market makers of providing liquidity, but the increase in the midpoint reflects the fact that the market price is determined through order flow. The arrival of buy orders causes the market maker to believe someone out there may know more than they do. In the case of an individual stock, the market maker would raise the price dramatically. In this case, the price increase of the ETF shares is less since ultimately the arbitrage relationship with the underlying basket limits the increase. Our buying volume translates to the price of the underlying basket through the market maker's purchasing of the basket securities. The trades in the individual securities comprising the basket are small, even if the overall trade size is large. Theory suggests the price impact is a monotonically increasing function of the order size (there are theoretical reasons why it should be a linear relationship in fact), but if the individual trades on the securities comprising the basket are not that large, there should be minimal price impact. We see this born out in the fact that the ask price held tight as the buy volume continued to trickle in to the market. This is an especially important observation since we note that the market maker was unable to transact immediately in many of the underlying securities given that many emerging market exchanges were closed at the time of the trade. This provides strong support in favor of the ETF structure.

We focus the discussion here on the EBND trade, but similar patterns occurred in the other fixed income ETFs purchased by the portfolios that day. Turning to the credit funds that we sold, we see the reverse pattern, as the transactions prices took place near the bid price (consistent with order flow initiated by sellers) and the bid price initially widened slightly, but did not decline significantly as volume continued to hit the market. Additionally, the bid-ask spread in the credit funds is tighter than the EBND, no doubt reflecting the fact that the arbitrage trade is straightforward as domestic funds are open at the same time as the ETF trades take place, reducing the arbitrageur's risk.

In summary, the intraday price analysis suggests that although several of the fixed income ETFs are relatively illiquid and in some cases the basket securities are illiquid, our large trades do not result in dramatic price impact, owing to the arbitrage relationship and the fact that the liquidity demands on the basket securities are relatively small given that the baskets contain many securities.

CONCLUSIONS

Our thorough empirical analysis of currently available fixed income ETFs led us to make several changes to the portfolios in order to achieve more favorable expected returns per risk unit. The analysis incorporates our current assessment of the macroeconomic landscape, where we see significant levels of slack, excess capacity and no warning signs of inflation on the immediate horizon. The implications of our assessment, in conjunction with the current universe of available fixed income ETFs, led us to reposition the fixed income portfolio.

We are excited with the changes, which we believe position the portfolios well for the current market environment, while also taking advantage of the continuing evolution in the fixed income product space to enhance diversification and increase expected return. Finally, while the committee discussed concerns about the liquidity of several fixed income

ETFs, our ex-post trade analysis confirms the desirable pattern: that in response to our order flow, market makers provided liquidity in the primary market at relatively narrow spreads to the original bid-ask midpoint.

IMPORTANT INFORMATION

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Securities rated below investment grade, commonly referred to as "junk bonds", may involve greater risks than securities in higher rating categories. Junk bonds are regarded as speculative in nature, involve greater risk of default by the issuing entity, and may be subject to greater market fluctuations than higher rated fixed income securities.

Investment in emerging markets subjects a fund to a greater risk of loss than investments in a developed market. This is due to, among other things, greater market volatility, lower trading volume, political and economic instability, high levels of inflation, deflation or currency devaluation, greater risk of market shut down, and more governmental limitations on foreign investment policy than those typically found in a developed market. In addition, the financial stability of issuers (including governments) in emerging market countries may be more precarious than in other countries. As a result, there will tend to be an increased risk of price volatility in a fund's investments in emerging market countries, which may be magnified by currency fluctuations relative to the U.S. dollar.

Diversification does not protect against loss in declining markets.

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