

**Bridging The Gap:  
Investment Opportunities in Traditional, Non-Traditional, and Alternative  
Fixed Income Strategies**

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Fund Evaluation Group, LLC

- Keith Berlin

## Research Staff

Christopher M. Meyer, CFA  
Managing Principal/  
Chief Investment Officer

Bruce A. Benjamin, CFA  
Managing Principal

Susan M. Fasig, CFA  
Managing Principal/  
Director of Alternative  
Investments

Anthony L. Festa, CFA  
Managing Principal

Gary R. Price  
Managing Principal/  
Director of FEG Advisors

J. David Stein  
Managing Principal

Michael J. Oyster, CFA  
Vice President

Keith M. Berlin  
Senior Research Analyst

Greg Dowling  
Senior Research Analyst

J. Alan Lenahan, CFA  
Vice President

Adam J. Smith, CFA  
Vice President

Christian S. Busken  
Senior Research Analyst

Kevin Conroy  
Research Analyst

Tej Mateti  
Research Analyst

Nathan C. Werner  
Alternatives Analyst

*The low return environment prevailing in today's capital markets has led institutional fixed income investors to consider strategies beyond the realm of traditional or "core" fixed income, in an effort to enhance returns. This paper serves as a fixed income strategy primer for institutional investors, as it reviews and discusses traditional and non-traditional strategies, derivative structures commonly used by fixed income managers, and examines alternative investments utilizing fixed income strategies. In the future, many of these strategies will likely become attractive investments from a tactical standpoint (many are already attractive from a strategic perspective). In addition to these strategies, new approaches to investing in the capital markets are constantly under development. As these strategies gain traction in the future, analysis will be conducted and recommendations will be made regarding their potential.*

## OVERVIEW

With fixed income securities offering historically low yields (compared to recent decades), institutional fixed income investors have become more open to considering non-traditional and alternative fixed income strategies. They have also been driven to educate themselves regarding the potential benefits and pitfalls of derivatives, as their use in portfolios has become more widespread. This paper will be divided into the following seven modules and a conclusion with recommendation:

**Module 1:** Traditional Capital Markets Background

**Module 2:** Common Methods of Adding Value in Traditional Capital Markets

**Module 3:** Non-Traditional Capital Markets Background

**Module 4:** Derivative Use in Fixed Income Strategies

**Module 5:** Alternative Investments: Fixed Income Strategies

**Module 6:** Common Vehicles and Fee Structures for Institutional Investors

**Module 7:** Asset Allocation in a Fixed Income Portfolio

## MODULE 1: TRADITIONAL CAPITAL MARKETS BACKGROUND

When discussed in this paper, traditional capital markets will include those sectors of the market that are included in the Lehman Brothers Aggregate Bond Index (LBAG). These sectors include U.S. Treasury and government agency securities, mortgage-backed securities, asset-backed securities, investment grade corporate securities, and municipal bonds. The remainder of this module provides a definition of each sector and highlights important details specific to each area.

## Bridging the Gap

One of the world's largest and most liquid bond markets is comprised of debt securities issued by the U.S. Treasury, by U.S. government agencies and by U.S. government-sponsored enterprises. U.S. Treasury securities, used to finance the U.S. government debt, are also considered to have the bond market's lowest risk because they are guaranteed by the U.S. government's "full faith and credit" or, in other words, its taxing authority. Government agencies and government-sponsored enterprises such as the Government National Mortgage Association (Ginnie Mae), the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac) also issue debt to support their role in financing mortgages that enable more Americans to own homes. These agency securities are also popular investments because of their high credit ratings.<sup>1</sup> The Treasury market is approximately \$3.8 trillion in size (as measured by the Lehman Brothers Treasury Index) and the Government agency market is approximately \$2.6 trillion in size (as measured by the Lehman Brothers Agency Index). These two sectors comprise approximately 40% of the LBAG.

Mortgage-backed securities (MBS) are primarily "agency" securities issued by a government agency such as Ginnie Mae or a government-sponsored enterprise such as Fannie Mae or Freddie Mac. These agencies typically guarantee the interest and principal payments on their securities and are considered to offer strong credit quality due to their access to lines of credit from the U.S. Treasury. The MBS market also includes "private-label" mortgages issued by subsidiaries of investment banks, financial institutions and home builders, although these represent only a small portion of the total MBS outstanding.<sup>2</sup> The MBS market is roughly \$5.8 trillion in size (as measured by the Lehman Brothers Mortgage-Backed Securities Index). MBS comprise approximately 40% of the LBAG.

By investing in MBS and asset-backed securities (ABS) an investor is purchasing an interest in pools of loans. In the case of MBS, these loans are usually first mortgages on residential properties. With ABS, the loans might be credit card receivables, auto loans and leases or home equity loans. As the underlying loans are paid off by the borrowers, investors in MBS or ABS receive payments of interest and principal over time. These securities help make credit available to more people by giving lenders access to large pools of capital that helps them manage their risk. ABS also typically carry some form of credit enhancement such as bond insurance, which makes them more attractive to investors.<sup>3</sup> The ABS market is approximately \$1.9 trillion in size (as measured by the Lehman Brothers Asset-Backed Securities Index). ABS comprise slightly more than 1% of the LBAG.

Investment grade corporate bonds are debts issued by industrial, financial and utilities companies to finance capital investment and operating cash flow. Investors in corporate bonds have a wide range of choices when it comes to bond structures, coupon rates, maturity dates, credit quality and industry exposure. Investment grade corporate bonds are generally considered suitable for preservation of invested capital; ordinarily, those rated Baa3 or better by Moody's Investors Service (Moody's), or BBB- or better by Standard & Poor's Corporation (S&P).<sup>4</sup> The investment grade corporate bond market is approximately \$5 trillion in size (as measured by the Lehman Brothers Credit Index). Investment grade corporate bonds comprise nearly one quarter of the LBAG while non-investment grade (i.e., high yield bonds) corporate bonds are not included in the LBAG.

Municipal bonds are attractive to many investors because the interest income is exempt from federal income tax and, in many cases, state and local taxes as well. Additionally, municipal bonds often represent investments in state and local government projects that have an impact on the daily lives of Americans, including schools, highways, hospitals, housing, sewer systems and other important public projects.<sup>5</sup> While most investors think of municipal bonds on a tax free basis, taxable municipal bonds are another option for the municipal bond investor. Taxable municipal bonds exist because the federal government will not subsidize the financing of certain activities that do not provide a significant benefit to the public at large. Taxable municipals offer yields more comparable to those of other taxable

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sectors, such as corporates or agencies, than to those of other municipals. The taxable municipal market has grown considerably in the last five years, with more than \$90 billion in new issuance.<sup>6</sup> The municipal bond market (comprised of both taxable and tax free municipals) is approximately \$2.2 trillion in size (as measured by the Lehman Brothers Municipal Index). Municipal bonds comprise less than 1% of the LBAG.

### **MODULE 2: COMMON METHODS OF ADDING VALUE IN TRADITIONAL CAPITAL MARKETS**

This section will focus on common methods institutional fixed income managers use when seeking to add value in the traditional capital markets. There are five methods commonly used in what is considered the “core” fixed income space; security selection, sector rotation, duration management, yield curve positioning, and trading and execution.

Security selection in the capital markets varies by sector and is considered a “bottom-up” function. Security selection within the corporate bond space focuses on credit analysis and investment management firms will generally incorporate a team of analysts, each with specific industry coverage, in order to review a bond. The analysts will often place their own rating on each credit within their industry and compare it with the ratings of the agencies (Moody’s, S&P, Fitch Ratings) in order to determine the attractiveness of each security.

Within the mortgage-backed area, most investment firms have dedicated professionals focusing on factors such as pre-payment speeds, option-adjusted spreads, etc., when making buy/sell recommendations to portfolio managers. The asset-backed sector requires more detailed analysis than mortgage-backed, as these bonds generally require a thorough analysis of the collateral being used to back the security as well as the credit enhancement. According to an analysis of core fixed income strategies, portfolio managers expect approximately one third of their value-added to come from security selection.<sup>7</sup>

Sector rotation is generally considered to be a “top-down” decision that is typically made by comparing the relative attractiveness of the various sectors discussed in the previous module. Sector rotation is normally a function of a portfolio manager’s decision to shift assets from what they perceive to be an overvalued sector into one that is more attractively valued. According to an analysis of core fixed income strategies, portfolio managers expect approximately one third of their value-added to come from sector rotation.<sup>8</sup>

Duration management consists of investors making an active decision on the future course of interest rates. Duration is defined as the approximate percentage change in price for a 1% change in interest rates. When a portfolio is shorter in duration than the benchmark and rates rise, the portfolio tends to outperform. Conversely, when a portfolio is longer in duration than the benchmark and rates rise, the portfolio will underperform the benchmark.

In the early development of institutional fixed income portfolio management, portfolio managers placed a greater emphasis on making active decisions with regard to duration management. Managers who invested in this fashion tended to have more volatile returns than those who were less willing to make a strong decision in either direction. As fixed income portfolio management has become more standardized, institutional investors in the core fixed income space looked for their managers to act more defensively in order to produce more predictable returns. As a result, fewer institutional fixed income managers are willing to make significant duration decisions in their portfolios. Typical duration targets for core fixed income investors currently range from a neutral position to +/- 25% of the

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benchmark's duration. Institutional fixed income managers expect approximately one fifth of their portfolio's value-added to come from the duration decision.<sup>9</sup>

Yield curve positioning is a function of how the manager structures the portfolio along the maturity spectrum. There are three basic structures used by investors in this space; barbell, ladder, and bullet.

- A barbell portfolio is when there are considerably greater weights given to the shorter and longer maturity bonds than to intermediate maturity bonds. A barbell strategy is typically used by investors who expect short-term interest rates to rise in the near term and long-term interest rates to fall.
- A laddered portfolio is one in which the distribution of securities is approximately equal across the maturity spectrum. There are three major advantages to investing in a laddered portfolio. First, the investment is spread over a number of years with a set amount maturing each year and being reinvested. Second, by investing at regular intervals, the portfolio is less affected by the day-to-day volatility in the market. Third, by laddering annual reinvestments, it takes the guess-work out of where to invest.
- For a portfolio to be considered bulleted, the maturities of the issues included in the portfolio are concentrated at a specific maturity.<sup>10</sup> Bulleted fixed income strategies are designed to determine where the best total return value lies along the yield curve. When the yield curve is expected to steepen (i.e., short-term interest rates are declining at a faster rate than long-term interest rates), for example, a portfolio may be bulleted in the intermediate part of the yield curve in order to add the most value. This strategy would enable the investor to benefit from the roll-down of maturities (i.e., the investor is less susceptible to interest rate and price movements as the bond progresses toward maturity).

An analysis of core fixed income strategies suggests that managers expect approximately one seventh of their value-added to come from yield curve positioning.<sup>11</sup>

Trading and execution is an area with which investors can add marginal value. A focus on minimizing transaction costs and trading in large blocks to get best execution are examples of sources of value-added for investors. Experienced traders can add value through their ability to understand the markets and key trading partners in which they are trading. According to an analysis of core fixed income strategies, managers expect approximately 5% of their value-added to come from trading and execution.<sup>12</sup>

### **MODULE 3: NON-TRADITIONAL CAPITAL MARKETS BACKGROUND**

For the purpose of this paper, non-traditional capital markets will include those sectors that are not included in the Lehman Brothers Aggregate Bond Index (LBAG). These sectors include domestic and non-dollar denominated corporate high yield bonds, Treasury Inflation Protected Securities (TIPS) and non-dollar denominated inflation-linked bonds, convertible bonds, bank loans, non-dollar denominated bonds, and emerging market debt. The remainder of this section will provide a brief definition and the size of each sector, and their potential for inclusion in a broadly diversified fixed income portfolio.

Domestic high yield bonds (a.k.a., "junk" bonds) are bonds issued by a corporation that are considered to be of lower credit quality (i.e., higher credit risk) than investment grade corporate bonds. The credit rating of a high yield bond is considered to be of "speculative" grade or "below investment grade". As a result, the chance of default for high yield bonds is greater than it is for investment grade

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corporate bonds. Due to the increased level of credit risk associated with high yield bonds their yields are higher than investment grade corporate bonds, which are considered to be less risky due to their higher credit quality. High yield bonds have traditionally been used by institutional investors on both a tactical and strategic basis and the high yield market is approximately \$900 billion in size.

The strategic rationale for including high yield bonds in a diversified bond portfolio can be justified by the chart below, which shows a low correlation and high annualized returns for the sector (using the Lehman Brothers High Yield Credit Bond Index as a proxy) when compared to investment grade corporate bonds (using the Lehman Brothers Credit Bond Index as a proxy) and the LBAG. The relatively low level of outperformance for high yield bonds compared to investment grade bonds is a valid rationale for why many investors prefer the tactical approach to investing in high yield bonds.

The tactical rationale for including high yield bonds in a diversified bond portfolio is justified by market conditions that from time-to-time, may dictate an allocation be made. For example, when spreads on high yield bonds are particularly wide relative to comparable investment grade corporate bonds (and/or U.S. Treasuries) and default rates are high and expected to decline (these two situations tend to work in tandem, as when default rates increase, high yield spreads widen), a tactical allocation to high yield bonds could be considered.

July 1983 to September 2005			
	<u>LB HY</u>	<u>LB Credit</u>	<u>LBAG</u>
<b>Correlation</b>	1.00	0.47	0.34
<b>Standard Deviation</b>	7.4%	5.5%	4.6%
<b>Annualized Return</b>	9.7%	9.4%	8.8%

Source: Strategic Performance Solutions, LLC

Non-dollar denominated corporate high yield bonds are another consideration for investment within the high yield space, as these bonds (which can be invested in either a hedged or unhedged basis) increase the opportunity set for high yield investors. This market is comprised of all non-U.S. high yield issuers and is approximately \$200 billion in size. European issuers comprise more than 50% of issuance and have the most clearly defined index, the Merrill Lynch Euro High Yield (Hedged) Index (this index is being used as a proxy, but is not completely representative of the entire global high yield universe).

The primary rationale for adding non-dollar denominated high yield bonds to a diversified bond portfolio is the sector's relatively low correlation to domestic high yield bonds (using the Lehman Brothers High Yield Credit Index as a proxy) and the LBAG.

January 1998 to September 2005			
	<u>ML EU HY</u>	<u>LB HY</u>	<u>LBAG</u>
<b>Correlation</b>	1.00	0.69	0.10
<b>Standard Deviation</b>	16.0%	8.1%	3.7%
<b>Annualized Return</b>	-4.1%	5.3%	6.2%

Source: Strategic Performance Solutions, LLC

Treasury Inflation Protected Securities (TIPS) are securities issued by the U.S. Treasury whose principal is tied to the Consumer Price Index (CPI). With an increase in inflation, the principal

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of these bonds also rises. When inflation falls (deflation), the principal of these bonds decreases. When the security matures, investors receive the original or adjusted principal, whichever is greater. The U.S. TIPS market is approximately \$325 billion in size and TIPS have only been issued since 1997. Allocations to TIPS are typically made in an environment where investors believe that inflation is rising, or is likely to rise faster than the market's expectations.

July 1997 to September 2005		
	<b>LB TIPS</b>	<b>LBAG</b>
<b>Correlation</b>	1.00	0.78
<b>Standard Deviation</b>	5.1%	3.6%
<b>Annualized Return</b>	7.9%	6.5%

Source: Strategic Performance Solutions, LLC

In addition to U.S. TIPS, non-dollar denominated inflation-indexed bonds are another option for investors seeking to protect themselves from the threat of global inflation. The non-dollar denominated market is somewhat less straight-forward than the U.S., however, as there are 21 different countries that have issued "linkers". In terms of being different than U.S. TIPS, for example, France has four bonds linked to French CPI (ex-Tobacco), and four linked to Euro Area Harmonized Index of Consumer Prices (ex-tobacco). French and Greek linkers have annual coupons, while Italian linkers have semi-annual coupons, but have yields quoted on an annual basis. Finally, the United Kingdom makes the situation even more convoluted, as its indexation works on a monthly basis and has an 8-month lag. With such variation in calculations and inflation-linked indices, issue selection is of vital importance for investors seeking the benefits of global inflation-indexed securities. The top five non-U.S. issuers of linkers (UK, France, Italy, Sweden, and Canada) comprise more than \$400 billion (USD), nearly \$100 billion more than the U.S. market.

Global linkers can provide additional diversification benefits to a fixed income investor, as the chart below suggests. As a proxy for non-dollar denominated inflation-indexed bonds, the BarCap World Government Ex-U.S. Inflation Linked Bonds All Maturities Gross Price Index was used, and offers low correlations to both the Lehman Brothers U.S. TIPS Bond Index and the LBAG. Risk is higher for linkers than it is for both comparative indices, primarily as a result of these bonds being linked to varying foreign inflation measures and being denominated in a foreign currency.

September 1997 to September 2005			
	<b>BC World</b>	<b>LB TIPS</b>	<b>LBAG</b>
<b>Correlation</b>	1.00	0.46	0.49
<b>Standard Deviation</b>	9.1%	5.1%	3.6%
<b>Annualized Return</b>	6.9%	7.9%	6.5%

Source: Strategic Performance Solutions, LLC

Convertible bonds give the investor the right to "convert" or exchange the par amount (the principal amount of a bond or note due at maturity, a.k.a., par value) of the bond for common shares of the issuer at some fixed ratio during a particular period. As bonds, they have some of the characteristics of fixed income securities. Their conversion feature, however, also gives them features of equity securities. Convertible bonds have a coupon payment and are legally considered to be debt securities, which rank senior to all equity securities in a default situation. Their value, like all bonds, depends on the level of prevailing interest rates, the credit quality of the issuer, and the stock price. The convertible bond market is approximately \$260 billion in size.

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The exchange feature of a convertible bond gives the investor the right to convert the par amount of the bond for common shares at a specified price or “conversion ratio”. For example, a conversion ratio might give the holder the right to convert \$100 par amount of the convertible bonds of XYZ Corporation into its common shares at \$25 per share. This conversion ratio would be said to be 4 to 1.<sup>13</sup> Issuers of convertible bonds sell them in order to pay a lower current yield to investors. Investors buy convertible bonds in order to gain an attractive current yield with less downside than owning the equity, since the convertible should trade to its bond value in the case of a steep drop in the common share price. Despite having both equity and fixed income characteristics, convertible bonds (using the Merrill Lynch All Convertibles Index as a proxy) have a higher correlation to equities than they do to bonds (see chart below). As a result, convertible bonds are generally considered to be a fixed income diversifier rather than an equity diversifier for this reason.

January 1995 to September 2005			
	<u>ML ALL</u>	<u>S&amp;P 500</u>	<u>LBAG</u>
<b>Correlation</b>	1.00	0.79	-0.26
<b>Standard Deviation</b>	12.6%	15.2%	3.8%
<b>Annualized Return</b>	10.4%	11.5%	7.3%

Source: Strategic Performance Solutions, LLC

Another approach to investing in convertible bonds is investing in a “busted” convertible. This is a convertible security that is trading significantly lower than its conversion value. While the possibility of the convertible actually converting into stock is remote, “busted” convertibles typically trade at prices and yields that are very close to other non-convertible debt. As a result, the investor would benefit from being assured the returns of the bond, and if by some chance the stock rebounds, the bond that they bought at a depressed price could become extremely valuable.

Bank loans are known by a variety of different names, such as leveraged bank loans, structured bank loans, floating rate loans, high yield loans, etc. For the sake of clarification for this paper, bank loans are simply loans made by banks or other financial institutions to non-investment grade companies. To dispel any confusion, the term “leverage” refers to the credit quality of the issuer and not a portfolio manager’s potential use of leverage. These loans have seniority in a company’s capital structure, so that in the event of bankruptcy or liquidation, the company is required to pay down these loans prior to other claims on their assets, such as corporate bonds or publicly-issued equity. This structure helps protect investors from some of the credit risk they might assume by investing in these below investment grade companies through other means (such as high yield bonds), although bank loans are typically classified as below investment grade. Bank loans also pay floating rates that reset frequently (typically every 90 days). The market for bank loans is greater than \$1 trillion.

The tactical argument for investing in bank loans lies in a rising rate environment, as interest rates rise, the loan rate rises in commensurate fashion, protecting investors from much of the interest rate risk other fixed income investments face. Importantly, because of the re-pricing factor (i.e., floating-rate nature) for bank loans, the duration of a portfolio consisting of bank loans is exceptionally short.

An allocation to bank loans may also be appropriate from a strategic perspective for investors seeking to add an asset category to their portfolio that offers low correlation to other fixed income investments (bank loans are most commonly compared to high yield bonds), as the chart below indicates. In the chart below, the Credit Suisse First Boston Leveraged Loan Index is used as a proxy for bank loans. Bank loans have also provided attractive historical risk-adjusted returns relative to both benchmarks, which improve the argument for a strategic allocation.

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January 1992 to September 2005			
	<u>CSFB LL</u>	<u>LBHY</u>	<u>LBAG</u>
<b>Correlation</b>	1.00	0.50	-0.06
<b>Standard Deviation</b>	2.2%	6.7%	3.9%
<b>Annualized Return</b>	6.7%	8.3%	6.7%

Source: Strategic Performance Solutions, LLC

Non-dollar denominated bonds now account for more than half of the global bond market, due largely to rising issuance of euro-denominated corporate debt. The growth of the international bond market brings additional diversification possibilities for investors. By failing to consider non-dollar denominated bonds in a diversified portfolio, an investor is avoiding a significant opportunity to improve the risk/return profile of their portfolio.

The critical decision for investors considering making an allocation to foreign bonds is whether to invest in a hedged or un-hedged basis. Currencies can be volatile, and their impact can dominate the risk and return characteristics of an international bond portfolio. According to PIMCO, currency positions can be as much as 2.5 times more volatile than bond market positions. As a result, investing in a hedged basis allows investors to take a position in global bond markets while attempting to limit exposure to potential volatility in currencies. Alternatively, investing in an un-hedged manner will result in a higher risk profile for the investor's non-dollar bond allocation.<sup>14</sup>

The primary reason for investing in non-dollar denominated bonds on a hedged basis is for the diversification benefits that arise from a broader investment opportunity set. As finance textbooks have long postulated, broadening the opportunity set to include other assets, so long as they are not perfectly correlated, can reduce overall portfolio volatility and perhaps even result in higher returns.<sup>15</sup> To be clear, however, an investment in a portfolio hedged for currency will have a higher correlation to a broad fixed income portfolio than an un-hedged portfolio, which would have a lower correlation and hence, offer more attractive diversification benefits.

For those investors seeking to make an allocation to a higher-risk/higher return area of the market, un-hedged foreign bonds can be a good source of returns and given their low or negative correlations to stocks and bonds, a good source of diversification. An un-hedged portfolio is among the most efficient ways to gain exposure to foreign currencies and is essentially a play on the U.S. dollar.<sup>16</sup>

The chart below shows the correlation of both the hedged and un-hedged versions of the JP Morgan GBI Broad Non-U.S. indices relative to the LBAG. The standard deviation is only slightly higher for the un-hedged version of the benchmark relative to the hedged version, with the un-hedged version producing better returns than the hedged. As a result, adding foreign bonds to a fixed income portfolio comes with a higher risk level, but increases the opportunity set of securities for the fixed income investor.

January 1988 to September 2005			
	<u>JPM GBI (US\$)</u>	<u>JPM GBI (Non\$)</u>	<u>LBAG</u>
<b>Correlation</b>	1.00	0.94	0.31
<b>Standard Deviation</b>	8.5%	9.2%	4.4%
<b>Annualized Return</b>	5.1%	6.7%	7.9%

Source: Strategic Performance Solutions, LLC

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Emerging markets comprise those nations whose economies are considered to be developing (or emerging from underdevelopment), and usually include most or all of Africa, Eastern Europe, Latin America, Russia, the Middle East and Asia (excluding Japan). Some of these areas are heavily dependent on commodity exports while others have extensive service and manufacturing sectors. Emerging market debt includes sovereign bonds (issued by governments) as well as securities issued by public and private companies domiciled in emerging nations.<sup>17</sup>

Because of the higher level of risk associated with investing in emerging markets, this sector offers higher yields to attract investment. In addition to offering higher yields, this asset category has the potential to reduce the volatility of a diversified fixed income portfolio, as the returns on emerging market debt are not closely correlated with those of many traditional asset categories (see chart below, in which the JP Morgan Emerging Markets Bond Index is used as a proxy for the emerging debt market).<sup>18</sup>

January 1994 to September 2005			
	<u>JPM EMBI</u>	<u>LBHY</u>	<u>LBAG</u>
<b>Correlation</b>	1.00	0.48	0.26
<b>Standard Deviation</b>	15.5%	7.4%	3.9%
<b>Annualized Return</b>	11.1%	7.0%	6.4%

Source: Strategic Performance Solutions, LLC

Because of their size and rapid growth, emerging markets have become an integral part of the global fixed income investment landscape. Given emerging countries' chronic need for substantial amounts of external capital, they are likely to remain major issuers of debt securities, which suggests that the market place should continue to expand.<sup>19</sup> There is approximately \$460 billion in outstanding issuance for emerging market debt, with 62% of the market rated investment grade and 38% rated below investment grade. As a result, many high yield investors include an allocation to emerging market debt in their portfolios. An allocation to emerging market debt may be appropriate from both a tactical and strategic perspective for investors seeking to add an asset class to their portfolio that offers a low correlation to other fixed income markets, as the chart above suggests.

### MODULE 4: DERIVATIVE USE IN FIXED INCOME STRATEGIES

Investors generally use derivatives for one of three reasons: hedging, substitution, or yield enhancement. Mortgage lenders created adjustable rate mortgages in order to transfer the risk of rising interest rates onto the mortgage holder (i.e., an interest rate hedge). Investors seeking diversification often purchase mutual funds as a substitute for individual stocks and bonds. Certain riskier derivatives offer enhanced yields in order to entice investors to accept increased volatility.

A derivative is a financial instrument that derives its value from an underlying investment, usually stocks, bonds, indices, commodities, mortgages, currencies, interest rates or some combination thereof. Derivatives are not necessarily complex. For example, a mutual fund, in the broadest sense, is a derivative, as its value is derived from the underlying stocks, bonds and cash that comprise the fund. If one were to purchase a home with an adjustable rate mortgage, a derivative is being utilized. The mortgage note will derive its value from the underlying reference interest rate, usually tied to a U.S. Treasury note. Derivative use within fixed income strategies has become increasingly more commonplace and more accepted by institutional investors, as investors have become more comfortable with the positive benefits of their structures and less concerned that derivatives are only for the most speculative investors. Today, fixed income derivatives are more flexible, more liquid, have lower

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transaction costs, and in some instances can be less complex than bonds.

Unfortunately, high profile “derivatives disasters” in the past have caused some investors to assume that derivatives cause disasters. Derivatives, like automobiles, do not cause accidents; people do. The causes of “derivatives disasters” are usually the same: poor oversight and control, a lack of understanding of the risks, excessive leverage, and more often than not, fraud. When responsibly used and managed, however, many derivatives can replicate bond exposures that are no riskier than the underlying bonds themselves and can often be bought and sold more efficiently than the latter. Also, derivatives allow managers to tailor the risk and return characteristics of their portfolios with greater flexibility.<sup>20</sup> Given this knowledge, derivatives and strategies that incorporate their use should be considered for their ability to improve returns.

Before discussing the strategies that include derivative use, an understanding of those derivatives most frequently used by fixed income investors is required. The derivatives most often used in fixed income portfolio management are bond futures contracts, interest rate swaps, currency forward contracts, credit default swaps, and total return swaps. The ability of investors to use derivatives to establish synthetic long and short positions will also be discussed.<sup>21</sup>

The most simple of the fixed income derivatives are bond futures and interest rate swaps whose prices are specifically designed to respond to changes in the term premium (i.e., duration). A bond futures contract is made by two counterparties (a buyer and a seller) in order to buy or sell a bond at a future date (known as the expiry date). The price of the contract is set at the time of the agreement, but is not payable until the expiry date. The buyer of a futures contract agrees to receive the delivery of the bond and pay for it, while the seller promises to deliver the bond and receive payment. An interest rate swap is an agreement between two or more counterparties to exchange sequences of cash flows over a period of time in the future. These cash flows are generally tied to the value of the bond at the time of the agreement. Interest rate swap counterparties are often exchanging a fixed payment for floating payment that is linked to an interest rate (typically LIBOR (the London Interbank Offered Rate)). Treasury bonds, bond futures, and interest rate swaps are key tools that can be used by fixed income investors seeking to efficiently manage the duration risk of a fixed income portfolio and can be used interchangeably to achieve the desired result.<sup>22</sup>

Currency forward contracts are generally used by international investors (either fixed income or equity) to hedge currency risk. A currency forward contract is an agreement between two counterparties to buy or sell a currency at a pre-agreed future point in time. Currency forward contracts are typically used to control and hedge currency risk in an international or global bond portfolio. Global and international bond benchmarks are reported on both a hedged and un-hedged basis, and the instrument used to produce the hedged versions are currency forward contracts.<sup>23</sup>

Similar to investors who want to introduce interest rate exposure to their portfolio using bond futures contracts or interest rate swaps, an investor who would like to introduce credit exposure might use credit default swaps (CDS). Like an interest rate swap, an investor exchanges payments with a swap counterparty (counterparty risk will be discussed in the following paragraph). In this case, however, the payment the counterparty makes is contingent upon there not being a “credit event” at the “reference entity”. While the definition of a “credit event” has not been fully standardized, in general it means bankruptcy or failure to pay on the part of the reference entity. Failure to pay a bond coupon would be an obvious case; less obvious cases involve those situations where the entity has no bonds outstanding. When a credit event occurs, the swap terminates, the swap counterparty’s payments to the investor cease, and the investor must pay par minus the recovery value on a reference asset. A “reference entity” can be any type of credit, corporate or sovereign debt. Most importantly, the

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reference entity need not have any publicly traded debt outstanding, which means that the universe of possible reference entities exceeds that of the commonly accepted universe of bond issuers.<sup>24</sup>

Counterparty risk is the risk that a party to an over-the-counter derivatives contract may fail to perform on its contractual obligations, causing losses to the other party. Losses are usually quantified in terms of the replacement cost of the defaulted derivatives and include the potential market impact of large and/or illiquid positions. Counterparty risks are bilateral, as both parties may face exposures depending on the value of the positions they hold against each other. Counterparty risk has increased in recent years with the growth of the derivatives market, but so has the ability of professionals to hedge for specific risks. There has been considerable work done in this area to discuss the variety of risks facing counterparties, however, it is outside of the scope of this paper.<sup>25</sup>

With the recovery values similar for CDS and traditional corporate bond investments and with the standardization of the definition of a "credit event" equalizing the probability of such an event having an impact on either market all that is left is "basis risk". "Basis risk" refers to the imperfect correlation between index rates across different interest rate markets for similar maturities. For example, a bank funding loans whose payments are based on U.S. Treasury rates with deposits based on LIBOR rates is exposed to the risk of unexpected changes in the spread between these index rates.<sup>26</sup> There is also "basis risk" for an investment using CDS versus an investment using cash bonds. For now, this "basis risk" is driven mainly by institutional factors, namely the fact that not all investors can use CDS, leaving a supply/demand imbalance in the CDS market relative to the cash market. Over time, this difference is likely to be arbitrated away as more investors begin to use CDS.<sup>27</sup>

A key advantage for investors using CDS is that these instruments isolate credit risk from all of the other risks (interest rate, currency, call, etc.) that are often packaged in a traditional corporate bond. Therefore, CDS investors can use these instruments to evaluate exposures to a particular entity based solely on their thoughts about the likelihood of default and severity of loss given default. This is particularly useful when considering foreign entities or entities whose bonds have embedded call options. For this reason, the CDS market is the fastest growing derivatives market today.<sup>28</sup>

Just as equity index futures and swaps have made the lives of equity portfolio managers easier, the same can be said of fixed income portfolio derivatives. While futures contracts on market indices do not (yet) exist, total return swaps on major fixed income benchmarks are regularly traded. For example, an investor can pay a LIBOR based fee in exchange for the return on the LBAG.<sup>29</sup> These swaps are of particular use for bond managers seeking to add or reduce exposure quickly, and is an inexpensive method of creating benchmark exposure.

Among the most useful features of any derivative is the ease with which investors can create short exposures. When investors want to short a bond, they have to find one that someone is willing to lend, borrow it, sell it short, and deposit the proceeds in a collateral/money market account (so as not to create leverage). Bonds, in particular less liquid corporate bonds, are notoriously difficult to short. Long and short derivatives exposure, on the other hand, is created with equal ease. For a bond futures contract, the open interest represents the universe of buyers and sellers and the number of outstanding contracts, one buyer for every seller. For an interest rate or CDS contract, there are always two counterparties for each trade, similar to a currency forward. Provided that the short investors maintain their collateral/money market account in similar fashion as the long investors, no leverage is created.<sup>30</sup>

Options are available on any of the previously mentioned derivatives, some with more liquidity than others, generally reflecting the liquidity of the underlying derivatives. One must distinguish between long options positions and short ones. Long options positions introduce positive "convexity" to a

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portfolio. When compared with a position that has no convexity, a positively convex position rises more as prices rise, and declines less as prices decline, a favorable amplification of a long portfolio's results. Short options positions (such as embedded call options in callable corporate bonds or covered call writing in general) result in negatively convex positions, where the position does not increase as much as a zero-convexity position when prices rise, but declines by a similar or larger amount as prices fall. Often times, it is negatively convex positions that magnify problems when trouble strikes.<sup>31</sup>

While fixed income derivatives come with a variety of risk factors that may require additional knowledge for some investors before reaching a high degree of comfort, these investment vehicles are tools that are commonly being used today by fixed income investors. When utilized properly, derivatives are no riskier than traditional bond investing and should be viewed as their virtual equivalent.<sup>32</sup>

### MODULE 5: ALTERNATIVE INVESTMENTS: FIXED INCOME STRATEGIES

Alternative investments involving fixed income strategies include those that are derived or involve the use of the capital markets. These strategies include but are not limited to: convertible arbitrage, distressed debt, mezzanine debt, second liens, emerging markets, fixed arbitrage, fixed diversified, fixed mortgage-backed, fixed convertibles, and fixed high yield. The remainder of this module will provide a brief definition of each strategy and the potential for their inclusion in a broadly diversified fixed income portfolio. The aggregate size of the hedge fund market (which includes equity-based strategies) is approximately \$1 trillion. The aggregate size of the private debt market is difficult to ascertain, but approximately \$4.5 billion has been committed for mezzanine debt funds in 2005.

Convertible arbitrage involves the purchasing of a portfolio of convertible securities, generally convertible bonds, and hedging a portion of the equity risk by selling short the underlying common stock. Some managers may also seek to hedge interest rate exposure under certain circumstances. Most convertible arbitrage managers employ some degree of leverage, generally no more than 6 to 1. The equity hedge ratio typically ranges from 30% to 100%. The average credit quality of a bond in a typical portfolio is BB-, with individual ratings ranging from AA to CCC. As the default risk of the company is hedged by shorting the underlying common stock, however, the level of risk is considerably better than the rating of the un-hedged bond indicates.<sup>33</sup>

Distressed securities strategies invest in, and may sell short, the securities of companies where the security's price has been, or is expected to be, affected by a distressed situation. This may involve reorganizations, bankruptcies, distressed sales and other corporate restructurings. Depending on the manager's style, investments may be made in bank debt, corporate debt, trade claims, common stock, preferred stock and warrants. Strategies may be sub-categorized as "high-yield" or "orphan equities" (stocks which have no Wall Street coverage). Leverage may also be used by some managers. Fund managers may also run a market hedge by using S&P put options or put options spreads.<sup>34</sup>

Mezzanine debt is a niche component within the private debt market. Mezzanine securities are junior subordinated debt with equity warrants. Junior subordinated debt is a loan or security that ranks below other loans or securities with regard to claims on assets or earnings. Warrants are an option that gives the holder the right, but not the obligation, to purchase equity from the issuer of the bond at a specific price within a certain time frame and are often included in a new debt issue as a "sweetener" to entice investors to buy the bond. Mezzanine debt is the part of the capital structure "in the middle" of senior loans and equity in an LBO transaction. Mezzanine securities are junior subordinate debt instruments that carry a sizable coupon and equity warrants. Mezzanine debt is often referred to as debt with equity "kickers", because of the warrants. Mezzanine debt ranks junior

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to bank loans and (usually) high yield bonds, but senior to equity.<sup>35</sup>

Second liens are an alternative to mezzanine debt in that they reside in the same place within a corporation's capital structure but can be used to replace mezzanine debt (which is privately negotiated). Second liens are structured loans that are syndicated by an investment bank. Essentially these structures give smaller investors access to this second tier debt, as the banks that issue them make a market for these instruments to trade. No such market exists for traditional mezzanine debt. In a second lien loan transaction, the second lien lenders hold a second priority security interest on the assets of the borrower. As their name implies, their security interest ranks second to the liens in those assets securing the first priority lien debt. In the event of a foreclosure on the shared collateral that secures the first and second lien debt, the first lien creditors are entitled to be paid in full from the enforcement proceeds before any payments are made to the second lien lenders out of those proceeds.<sup>36</sup> Investors will often purchase second liens in lieu of mezzanine debt because their valuations dictate an opportunistic investment.

Emerging market strategies invest in securities of companies or the sovereign debt of developing or emerging countries. Emerging markets include countries in Latin America, Eastern Europe, the former Soviet Union, Africa and parts of Asia. Global funds will shift their weightings among these regions according to market conditions and manager perspectives. Additionally, some managers specialize by investing solely in regional mandates.<sup>37</sup>

Fixed Income: Arbitrage is a market neutral hedging strategy that seeks to profit by exploiting pricing inefficiencies between related fixed income securities while neutralizing exposure to interest rate risk. Fixed income arbitrage is a generic description of a variety of strategies involving investment in fixed income instruments, and weighted in an attempt to eliminate or reduce exposure to changes in the yield curve. Managers attempt to exploit inefficiencies in the pricing between related sets of fixed income securities. The typical strategies involving fixed income hedging trades include: yield-curve arbitrage, corporate versus Treasury yield spreads, municipal bond versus Treasury yield spreads and cash versus futures.<sup>38</sup>

Fixed Income: Convertible Bonds are strategies that invest primarily in long only convertible bonds. As mentioned earlier in the paper, convertible bonds have both fixed income and equity characteristics. If the underlying common stock appreciates, the convertible bond's value should rise to reflect this increased value. Downside protection is offered because if the underlying common stock declines, the convertible bond's value can decline only to the point where it behaves like a straight bond.<sup>39</sup> Managers seek to add value in this strategy through convertible bond arbitrage. One method historically used has been for managers to own the bond and simultaneously be short the stock.

Fixed Income: Diversified funds may invest in a variety of the fixed income strategies mentioned in this paper. While many invest in multiple strategies, others may focus on a single strategy less followed by most fixed income hedge funds. Typical areas of focus include municipal bonds, corporate bonds, and global fixed income securities.<sup>40</sup>

Fixed Income: High-Yield managers invest in below investment grade debt. Objectives may range from high current income to acquisition of undervalued instruments. Like traditional high yield investments, emphasis is placed on assessing the credit risk of the issuer. Some of the available high yield instruments include extendible/reset securities, increasing rate notes, pay-in-kind securities, step-up coupon securities, and useable bonds.<sup>41</sup> Extendible/reset securities allow the issuer to reset the coupon rate (the rate can be reset annually or only once over the life of the bond) so that the bond will trade at a predetermined price. Increasing rate notes (IRNs) are debt obligations in which the coupon rate

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increases by predetermined amounts or to predetermined levels at specified time intervals. Pay-in-kind (PIK) securities are securities with interest or dividends paid in securities rather than cash. Step-up coupon securities have an initial coupon rate that is increased to a higher rate as time increases. Useable bonds can be used as a replacement for cash in the exercise of a warrant.

Fixed Income: Mortgage-Backed funds invest in mortgage-backed securities. Many funds focus solely on AAA-rated bonds, although some may invest in lower rated instruments. Instruments that managers will invest include but are not limited to: government agency, government-sponsored enterprise, adjustable-rate mortgage pass-through securities, and fixed- or adjustable-rate collateralized mortgage obligations. Managers may seek to capitalize on security-specific inefficiencies in pricing and the hedging of pre-payment risk and interest rate risk is common. Leverage may also be used, as well as futures, short sales and options.<sup>42</sup>

### MODULE 6: COMMON VEHICLES AND FEE STRUCTURES FOR INSTITUTIONAL INVESTORS

The table below shows the range of account minimums that investors and average expense ratios that investors can expect to find in the following categories: core and core plus, high yield, TIPS, convertibles, and emerging markets. As expected, the account minimums were higher for separate accounts (versus commingled and institutional funds) in all categories, with lower average expense ratios.

<b>Strategy</b>	<b>Separate Account Minimum (\$MM)</b>	<b>Average Expense Ratio</b>	<b>Commingled Fund Minimum (\$MM)</b>	<b>Average Expense Ratio</b>	<b>Institutional Fund Minimum (\$MM)</b>	<b>Average Expense Ratio</b>
<b>Core and Core Plus</b>	\$5 to \$100	0.37%	\$1 to \$10	0.59%	\$1 to \$10	0.59%
<b>High Yield</b>	\$0.5 to \$100	0.57%	\$0.1 to \$10	0.71%	\$0.1 to \$10	0.71%
<b>TIPS</b>	\$3 to \$275	0.20%	\$0.1 to \$5	0.34%	\$0.1 to \$5	0.34%
<b>Convertibles</b>	\$3 to \$75	0.68%	\$0.3 to \$5	0.94%	\$0.3 to \$5	0.94%
<b>Emerging Markets</b>	\$5 to \$100	0.66%	\$0.3 to \$25	0.74%	\$0.3 to \$25	0.94%

Source: Evestment Alliance

Investing in alternative investment vehicles (using hedge funds as a proxy) is less straight-forward than investing in traditional and non-traditional areas of the fixed income market. Unlike separate accounts, commingled funds and institutional mutual funds, hedge funds charge performance-based fees, with the typical starting point of a 1% management fee, then 20% of the profits the investor earns (in industry jargon this is known as 1 and 20). Many hedge funds also have a “high water mark”, meaning they won’t pay the manager a performance fee in a profitable quarter until the manager has made up a certain amount that was lost in prior quarters.<sup>43</sup>

Hedge fund investors can invest in either onshore or offshore funds or through fund-of-funds. Onshore funds are U.S.-based private investment partnerships that are available only to “accredited investors” (SEC 3(c) 1) or “qualified purchasers” (SEC 3(c) 7). An investment vehicle structured under Section 3(c)1 of the Investment Company Act of 1940 permits the exclusion of investment companies from standard registration requirements with the SEC if they have no more than 99 U.S. investors and those investors are either “accredited investors” or “qualified purchasers”. An investment vehicle structured under Section 3(c) 7 of the Investment Company Act of 1940 permits the exclusion of investment companies from standard registration requirements with the SEC if all U.S. investors are considered to be “qualified purchasers”. There is no numerical limit to the number of investors if all investors are

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“qualified”. Offshore funds are non-U.S.-based private investment partnerships open to non-U.S. and non-taxable U.S.-based investors. Investors in offshore funds are confined to the same parameters as onshore funds. Most tax-exempt U.S. entities tend to invest in offshore funds to avoid UBTI (unrelated business and taxable income). Fund-of-funds can be either onshore or offshore private investment partnerships that invest in other hedge funds. These funds are structured and limited as above.

Accredited investor status guidelines for businesses are for those that have investment discretion on more than \$5 million. For individual investors to be considered accredited, they must have an individual net worth, or joint net worth with their spouse in excess of \$1 million or have had individual income (exclusive of any income attributable to their spouse) of more than \$200,000 in each of the past two years, or joint income with their spouse of more than \$300,000 in each of those years, and a reasonable expectation to reach the same income level in the current year. Accredited investors are limited to a 3(c) 1 investment vehicle that limits the total number of investors to 100, or an SEC registered product.

An investor is a qualified purchaser if the businesses have discretion of more than \$25 million or more in investments. For an individual to be qualified, this person must own \$5 million or more in investments including investments held jointly with a spouse. Also, a family-held business that owns \$5 million or more in investments or, trusts sponsored by qualified purchasers may be considered qualified purchasers.

### **MODULE 7: ASSET ALLOCATION IN A FIXED INCOME PORTFOLIO**

Until this point, this paper has focused on providing an understanding of the investment strategies and vehicles that are available to today’s fixed income investors. This inevitably leads to questions about how investors can improve their returns by investing in a diversified fixed income portfolio. This section will provide examples of potential allocation decisions that could be made by fixed income investors and how these decisions could impact the overall level of risk/return potential in their portfolios.

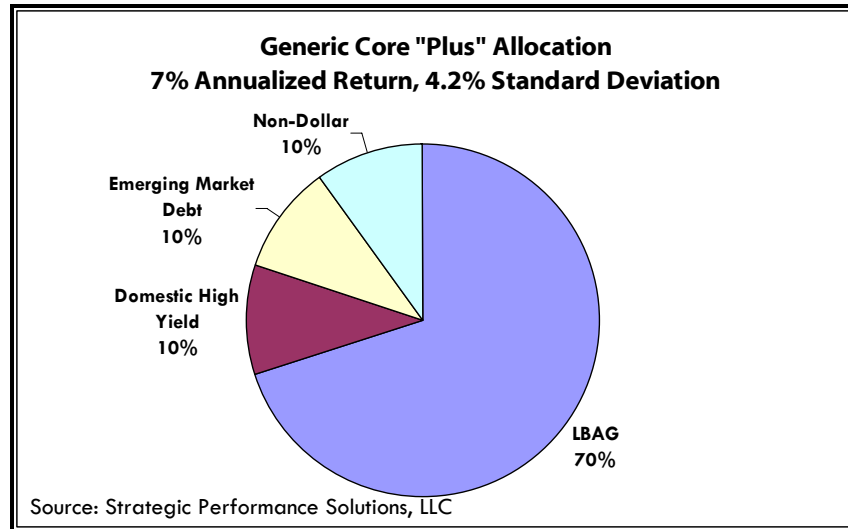
These examples will ignore the non-fixed income aspect of asset allocation, as that is outside the realm of this paper. For the purposes of these examples, we will assume a 100% allocation to fixed income. The standard fixed income allocation for many institutional investors is to invest with a core fixed income manager, with the expectation that this manager will provide some return that is slightly better than the LBAG with comparable risk. An investor with an allocation of 100% to a core fixed income manager (using the LBAG’s returns since January 1994, a common inception date among the other indices that will be used for the remainder of this paper) had an annualized return of 6.4% with a standard deviation of 3.9%.

With the 100% core fixed income allocation as a base, we can now adjust the risk/return profile of the portfolio by adding non-traditional fixed income sectors. There is a segment of institutional investors who seek to take on additional risk in the fixed income space, and these investors historically have invested in a style known within the industry as core “plus”, with the “plus” sectors including an allocation to any one or more of the non-traditional sectors discussed earlier in the paper.

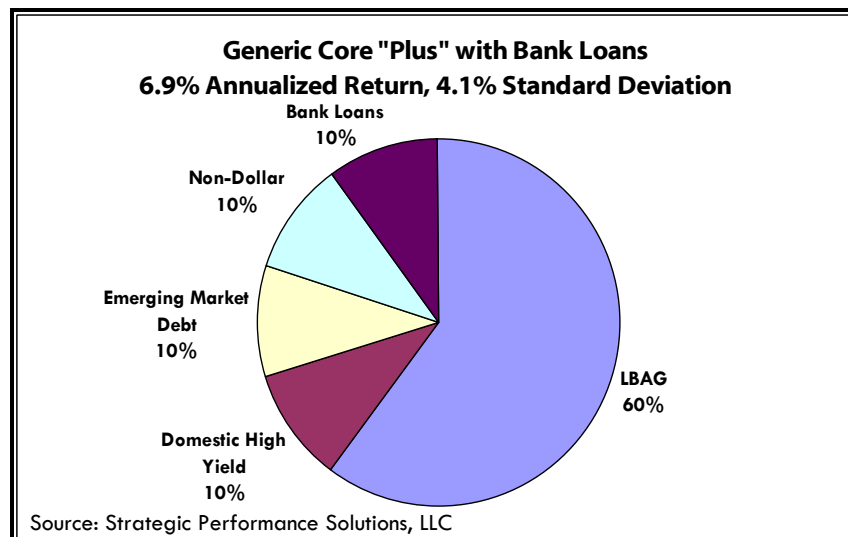
A typical allocation for a core “plus” investor would be 70% LBAG sectors, 10% high yield (normally domestic), 10% emerging markets, and 10% non-dollar denominated bonds. U.S. TIPS are often included in core and core “plus” strategies, so for the sake of this example, they will be considered to be already included in the core allocation. A generic core “plus” product (consisting of 70% LBAG, 10% Lehman Brothers High Yield Index, 10% JP Morgan Emerging Markets Bond Index, and 10% JP Morgan Global Bond Index (non-US)) was used to create the following risk/return expectations, with a

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common inception date of January 1994. The impact of diversifying the core fixed allocation to include these non-traditional strategies impacted the portfolio by increasing the annualized return to 7% with a slight increase in the standard deviation to 4.2%.



This is the point where many investors believe they have done "all they can" in terms of diversification within the fixed income space. They have taken on as much risk as their guidelines will allow, and they are not interested in further diversification. For open-minded fixed income investors, the potential benefits of further diversification are worthy of consideration. Consider the potential impact on a fixed income portfolio if an investor were to include a 10% allocation to a portfolio of bank loans (using the CSFB Leveraged Loan Index as a proxy) to the generic core "plus" product and reduce the core portion to 60% from 70%. By including an allocation to bank loans in the generic core "plus" product, again using a January 1994 inception date, the annualized return was reduced slightly to 6.9% while the standard deviation was reduced to 4.1% from 4.2%. While these numbers do not suggest a strong rationale for including bank loans in a portfolio, the tactical and strategic rationale for their inclusion were developed earlier in the paper.



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Including bank loans in an extended core “plus” portfolio could be seen as having a dampening affect on risk and return, but it should be noted that the time period used in this allocation was one in which interest rates were primarily falling. As mentioned earlier in the paper, a rising interest rate environment favors including bank loans in an extended core “plus” portfolio, as return expectations rise in conjunction with higher rates due to the rate resetting feature in bank loans.

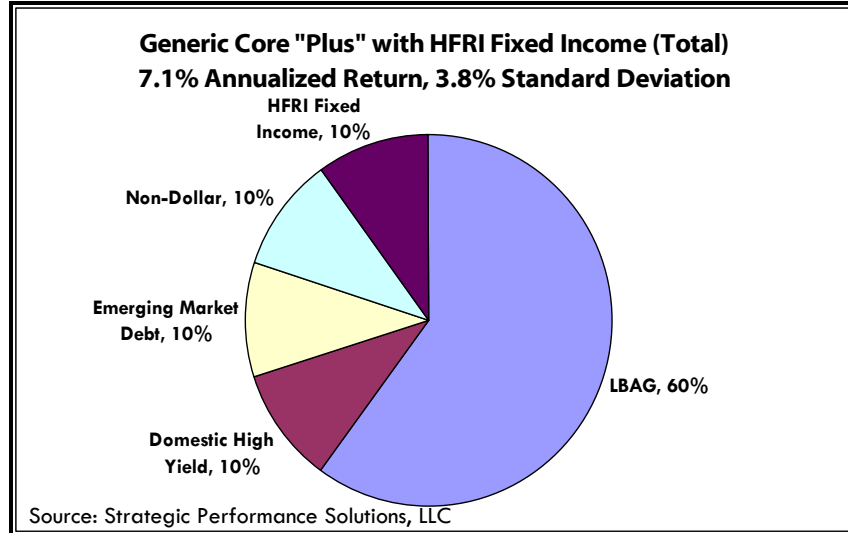
Moving along further with the concept of diversification, many institutional investors have given consideration to fixed income-based alternative strategies (such as hedged funds). Hedge funds, which vary widely in style and philosophy, are an investment strategy, not an asset class. Some may argue that this prevents instructive modeling of these in an asset allocation study. The Hedge Fund Research Inc. (HFR) Indices have monthly returns since January 1987, however, and will be used in the remainder of this paper in an effort to model hedge funds in conjunction with traditional and non-traditional fixed income.

A warning must be included here about the use of the HFR returns, as the asset allocation assumptions made using this data may not accurately reflect the true risk/return tradeoff. Historical performance data on hedge funds is questionable due to a lack of long-term data, data that is tainted with a survivorship bias (hedged funds that have been closed due to poor performance are not included in indices), and data has a self-selection bias, as many investment managers provide returns to benchmark developers only if their performance has been strong, while others never report returns for various reasons. While there are clearly pitfalls to using the data provided in these indices, their returns will still allow us to create asset allocation assumptions for a more broadly diversified fixed income portfolio.

Investors can not directly own the HFR indices in the same fashion as traditional indices, such as the S&P 500 Index. There are no index funds or exchange traded funds for hedge funds at this time. Hedge fund of funds vehicles are a strategic method that is typically used by investors that do not have the critical mass required to invest directly in hedge funds. This method allows investors to gain broad exposure to the hedge fund space.

An institutional fixed income investor may consider making an allocation to an alternative fixed income strategy. This investor’s fixed income asset allocation could look something like this: 60% LBAG, 10% Lehman Brothers High Yield Index, 10% JP Morgan Emerging Markets Bond Index, 10% JP Morgan Global Bond Index (non-US), and 10% Hedge Fund Research Inc. (HFRI) Fixed Income (Total) Index. The HFRI Fixed Income (Total) Index is a composite index made-up of the following fixed income strategies: Fixed Income: Arbitrage, Fixed Income: Convertible Bonds, Fixed Income: Diversified, Fixed Income: High-Yield, & Fixed Income: Mortgage-Backed. An investment of this type (again using data since January 1994) improved the annualized return to 7.1% and lowered the standard deviation of the portfolio (relative to all three portfolios discussed earlier) to 3.8%. The chart showing this is on the following page.

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The following table details similar allocations to other alternative strategies in order to show the potential benefits in terms of an improved risk/return profile for a broadly diversified fixed income portfolio (using the same time period used previously). The following guidelines will be used and are the same as the HFRI Fixed Income example above: 60% LBAG, 10% Lehman Brothers High Yield Index, 10% JP Morgan Emerging Markets Bond Index, 10% JP Morgan Global Bond Index (non-US), and 10% to the following HFRI Indices (all with inception dates of January 1994 unless otherwise noted):

	<b>Standard Deviation</b>	<b>Annualized Return</b>
<b>HFRI Convertible Arbitrage Index</b>	3.8%	7.1%
<b>HFRI Distressed Securities Index</b>	3.9%	7.6%
<b>HFRI Emerging Markets Index</b>	4.4%	7.3%
<b>HFRI Fixed Income Arbitrage Index</b>	3.7%	6.8%
<b>HFRI Fixed Income Convertible Bond Index</b>	4.4%	7.0%
<b>HFRI Fixed Income Diversified index (1/95 inception)</b>	3.9%	8.1%
<b>HFRI Fixed Income High Yield Index</b>	3.9%	7.0%
<b>HFRI Fixed Income Mortgage-Backed Index</b>	3.7%	7.2%

Source: Source: Strategic Performance Solutions, LLC

These strategies provide a broad range of potential exposures to a fixed income portfolio and each will impact the expected risk/return for a given portfolio. Investors seeking a more broadly diversified fixed income portfolio may consider reducing their core holdings further and including more than one alternative strategy. Including alternative strategies makes intuitive sense on both a strategic and tactical basis, as these strategies offer low correlation fixed income alternatives to traditional investors, while also offering attractive tactical opportunities at different points in the cycle for each strategy. From a tactical standpoint, working with an investment advisor backed by an alternative research staff is critical when considering making an allocation.

### **CONCLUSION**

The low expected return environment facing today's institutional fixed income investors is a challenging one, and investors must look outside the traditional scope of investment possibilities to improve their risk/return profiles. The premise behind writing this paper was to broadly define and shed light on areas of the market that may be new to many institutional investors and also to serve as a guidepost when making future asset allocation considerations. FEG recommends that clients invest in a broadly diversified fixed income portfolio in conjunction with a well-diversified portfolio of equity and alternative investments (for investors meeting the guidelines outlined in the paper). We hope that this paper will serve as a reference point for future use as tactical opportunities are likely to arise in one or more of the areas outlined in this paper, and we believe that investors who have a general understanding of these concepts will be able to make more informed decisions with the help of their advisor.

### REFERENCES

- 1-5 [www.bondmarketwatch.com](http://www.bondmarketwatch.com)
- 6 [www.fmsbonds.com/guide/taxable.htm](http://www.fmsbonds.com/guide/taxable.htm)
- 7-9,11-12, 42 [www.evestmentalliance.com](http://www.evestmentalliance.com)
- 10 Fabozzi, Frank J., Ph.D., CFA, Fixed Income Analysis – for the Chartered Financial Analyst® Program, 2000.
- 13 [www.finpipe.com/bndcnvrt.htm](http://www.finpipe.com/bndcnvrt.htm)
- 14-16 PIMCO Publication, February, 2005.
- 17-19 PIMCO Product Focus, November, 2004.
- 20-24, 26-32 Why GMO is Proud to Use the “D” Word: Responsible Uses of Derivatives in Fixed Income—Responsible Uses of Derivatives in Fixed Income, January, 2005.
- 25 [www.mfainfo.org/washington/derivatives](http://www.mfainfo.org/washington/derivatives)
- 33-35, 37-41 [www.hedgefundresearch.com](http://www.hedgefundresearch.com)
- 36 Cummings, Neal and Davenport, Kirk A., A Primer on Second Lien Term Loan Financings., September-October, 2004.
- 43 Oyster, Michael J., CFA, Mission Possible: Achieving Outperformance in an Low-Return, 2005.

**Fund Evaluation Group, LLC**  
**201 East Fifth Street**  
**Suite 1600**  
**Cincinnati, Ohio 45202**  
**P 513.977.4400**  
**F 513.977.4300**  
**[www.feg.com](http://www.feg.com)**

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