

Fixed Income Portfolio Analysis

National Council on Teacher Retirement

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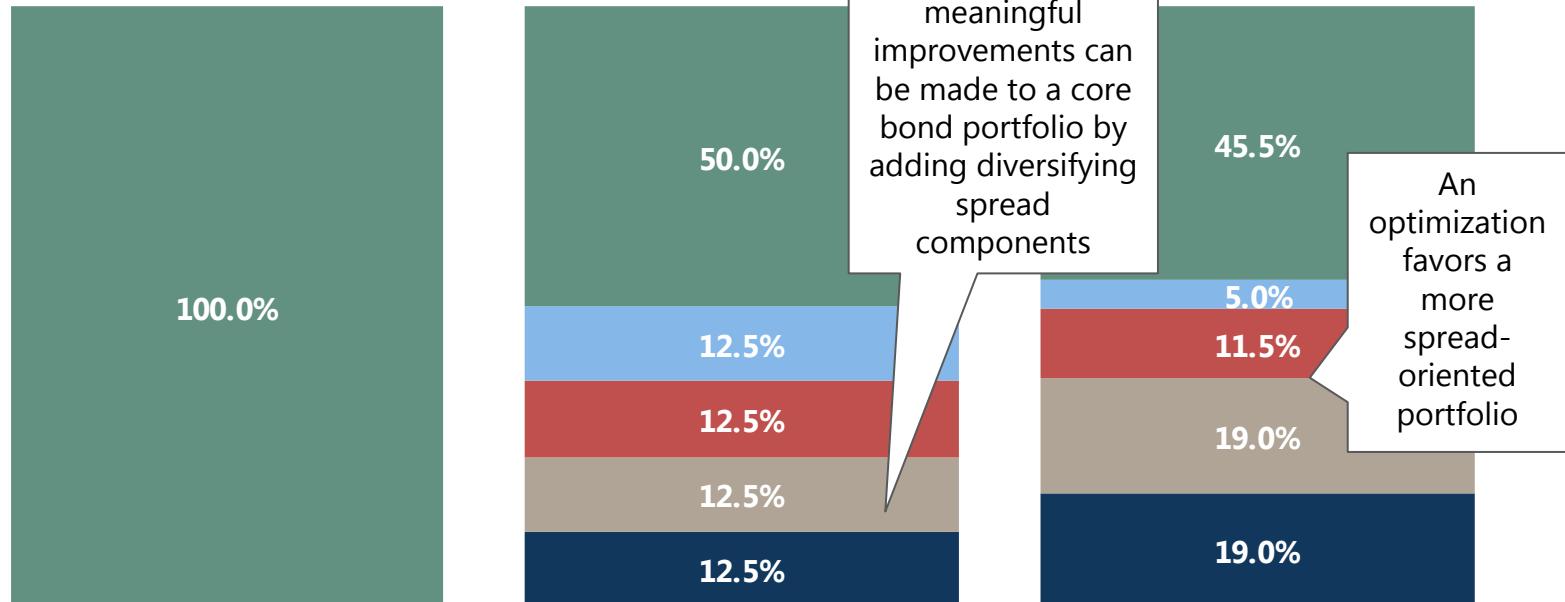


Fixed Income Working Examples



Portfolio composition¹

- Core Bonds
- IG Credit
- High Yield
- EM Bonds
- Bank Loans



Portfolio Characteristic	FI Allocation I: 100% Core Bonds	FI Allocation II: Diversified FI	FI Allocation III: Optimization
Estimated Return ²	1.5%	2.2%	2.4%
Estimated Total Carry	2.0%	3.6%	3.9%
Estimated Volatility ³	3.6%	4.5%	4.5%
Estimated Return / Volatility	0.42	0.49	0.52
VAR (95%) ⁴	4.6%	5.7%	5.6%

As of 31 August 2012

SOURCE: PIMCO

Hypothetical example for illustrative purposes only

¹ Asset classes represented using the following indices: Barclays U.S. Aggregate Index (Core Bonds), Barclays U.S. Credit Index (IG Credit), Barclays Capital U.S. High Yield Index (High Yield), JPMorgan EMBI Global Diversified Index (EM Bonds), CSFB Leveraged Loan Index (Bank Loans).

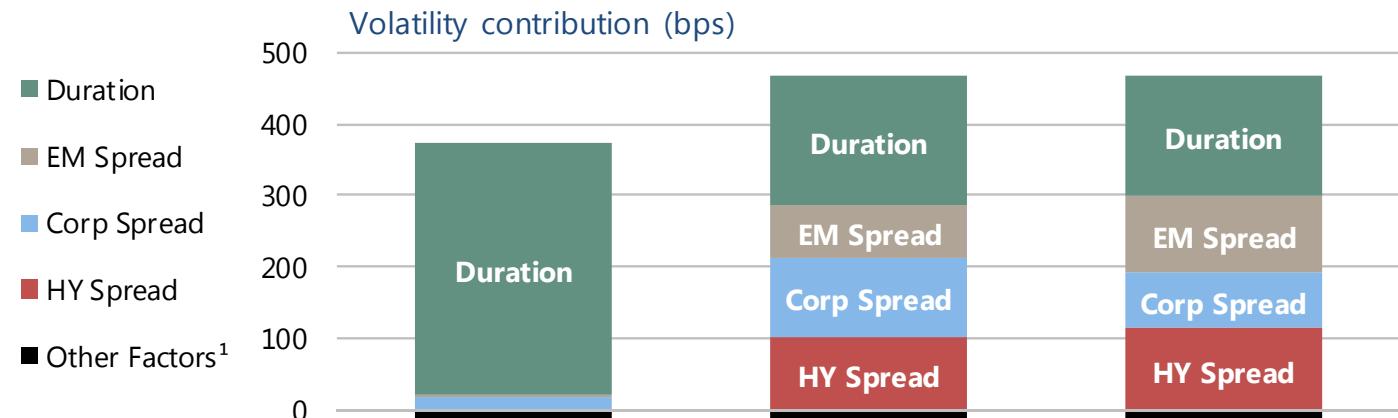
² Return estimates are derived from an internal process based on a combination of methods, pulling together historical data, valuation metrics and qualitative inputs based on PIMCO's secular views.

³ See appendix for additional information regarding volatility estimates.

⁴ Value-at-Risk (VAR) is an estimate of the minimum expected loss at a desired level of significance.

Refer to Appendix for additional performance and fee, hypothetical example, index, investment strategy, portfolio analysis, return assumption, risk, total carry and VAR information.

Fixed Income Working Examples: Risk Exposures



Reducing duration may better position the portfolio for rising rates

Increasing spreads diversifies the components of risk

Key Risk Factors	FI Allocation I: 100% Core Bonds		FI Allocation II: Diversified FI		FI Allocation III: Optimization	
	Factor Weight (%)	Volatility (bps)	Factor Weight (%)	Volatility (bps)	Factor Weight (%)	Volatility (bps)
Duration	4.65	351	4.55	184	4.30	169
EM Spread	0.14	4	1.06	72	1.48	107
Mtge Spread	0.96	7	0.48	8	0.44	7
Corp Spread	2.19	18	2.35	112	1.68	78
HY Spread	0.00	0	0.57	102	0.63	114
Other Factors ¹		-23		-21		-21
Estimated Return²		150		224		235
Estimated Volatility³		357		455		454
Estimated Return / Volatility		0.42		0.49		0.52

As of 31 August 2012
SOURCE: PIMCO

Hypothetical example for illustrative purposes only

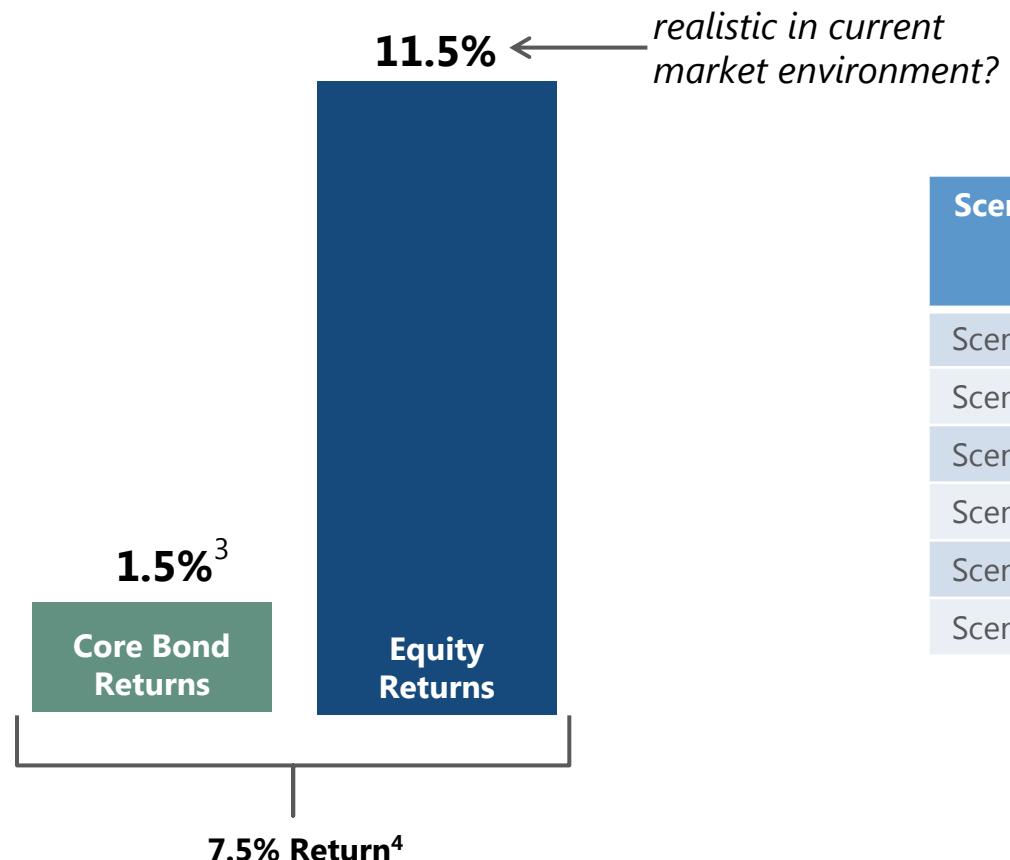
¹ Other factors include: Swap spread and Idiosyncratic (specific) risk.

² Return estimates are derived from an internal process based on a combination of methods, pulling together historical data, valuation metrics and qualitative inputs based on PIMCO's secular views.

³ See appendix for additional information regarding volatility estimates.

Refer to Appendix for additional performance and fee, hypothetical example, index, investment strategy, portfolio analysis, return assumption and risk information.

Traditional return targets may be hard to achieve with a 60/40 portfolio¹ invested in the traditional manner...



Scenario ²	Fixed Income Return ³	Equity Return	Implication for 60/40 Portfolio
Scenario 1	1.5%	5%	3.6%
Scenario 2	1.5%	6%	4.2%
Scenario 3	1.5%	7%	4.8%
Scenario 4	1.5%	8%	5.4%
Scenario 5	1.5%	9%	6.0%
Scenario 6	1.5%	10%	6.6%

SOURCE: PIMCO

Hypothetical example for illustrative purposes only.

¹ 60/40 portfolio is 60% MSCI World/ 40% Barclays US Aggregate Index (BAGG)

² In this analysis PIMCO has outlined three equity return scenarios which, in theory, would impact the portfolios illustrated in this analysis. This allows us to model the hypothetical performance of the portfolios for each scenario. No representation is being made that any one of these scenarios are likely to occur or that any portfolio is likely to achieve profits, losses, or results similar to those shown.

³ Return estimates are derived from an internal process based on a combination of methods, pulling together historical data, valuation metrics and qualitative inputs based on PIMCO's secular views.

⁴ Plan return target (7.5%) provided by NCTR and the 11.5% return represents the equity return required to achieve the client's plan target.
Refer to the Appendix for additional performance and fee, hypothetical example, index, return assumption and risk information.

Appendix



RISK FACTOR DEFINITIONS

DURATION ("INTEREST RATE" RISK FACTOR)

- Duration measures a bond's sensitivity to a parallel shock of the par yield curve. PIMCO's systems use a scenario-based duration calculation. Our algorithm first prices the security, and then shocks the interest rate to calculate the bond's duration.
- Our systems generate several additional versions of interest rate duration, including proprietary duration measures such as:
 - Bull Duration: bond sensitivity to a fall in interest rates,
 - Bear Duration: bond sensitivity to a rise in interest rates,
 - Forward secular duration: bond sensitivity to a forward-looking yield curve shift scenario specified by PIMCO's Investment Committee.

CURVE DURATION ("SLOPE" RISK FACTOR)

- Interest rate duration assumes a parallel shift in the yield curve. But parallel shifts rarely occur because monetary policy acts mostly on the short end of the curve, while inflationary expectations are expressed in the longer end of the curve. Therefore, the yield curve typically steepens or flattens as interest rates move.
- Our systems define curve duration as the price sensitivity of a bond to a steepening of the yield curve. Every day, each bond is priced using our proprietary pricing models and then shocked to calculate its curve duration. Our algorithm uses the 10-year bond as anchor point and measures steepening as the change in the 2-to-10 year yield spread.

CORPORATE OR CREDIT SPREAD DURATION ("CREDIT" RISK FACTOR)

- Credit spread duration measures the sensitivity of the bond's price to changes in the spread of a reference single A rated security. Our process to calculate credit spread duration follows two steps:
 1. First, the algorithm calculates the sensitivity of the bond price to its own spread. This process occurs overnight and leverages our proprietary pricing models.
 2. Second, the algorithm translates this own-security spread duration into a duration related to the reference single A rated security. This mapping relies on a proprietary model that takes into account the OAS of the bond under consideration and the OAS of the reference bond.

EQUITY ("WORLD AND EQUITY INDUSTRY" RISK FACTOR)

- World Equity is a sensitivity of the portfolio to changes in the global equity markets.
- Equity Industry includes exposure to 34 equity industries.

CREDIT SPREAD DURATION ("CREDIT" RISK FACTOR)

- Credit spread duration measures the sensitivity of the bond's price to changes in the spread of a reference single A rated security. Our process to calculate credit spread duration follows two steps:
 1. First, the algorithm calculates the sensitivity of the bond price to its own spread. This process occurs overnight and leverages our proprietary pricing models.
 2. Second, the algorithm translates this own-security spread duration into a duration related to the reference single A rated security. This mapping relies on a proprietary model that takes into account the OAS of the bond under consideration and the OAS of the reference bond.

HIGH YIELD ("HIGH YIELD" RISK FACTOR)

- High Yield spread duration measures the sensitivity of the bond's price to changes in the spread of a reference single A rated security. Our process to calculate high yield spread duration follows two steps:
 1. First, the algorithm calculates the sensitivity of the bond price to its own spread. This process occurs overnight and leverages our proprietary pricing models.
 2. Second, the algorithm translates this own-security spread duration into a duration related to the reference single A rated security. This mapping relies on a proprietary model that takes into account the OAS of the bond under consideration and the OAS of the reference bond.

Appendix



CURRENCY ("HIGH YIELD", "EMERGING MARKET CURRENCY", AND "DEVELOPED CURRENCY" RISK FACTOR)

- EM Currency includes exposure to a basket of 30 emerging market currencies
- Developed Currency includes exposure to a basket of 11 developed market currencies

REAL ESTATE AND COMMODITY ("REAL ESTATE" AND "COMMODITY" RISK FACTOR)

- Real Estate is a sensitivity of the portfolio to real estate industry
- Commodity is a sensitivity of the portfolio to changes in a basket of diversified commodities

MORTGAGE/SWAP/EM SPREAD DURATION ("MORTGAGE/SWAP/EM" RISK FACTOR)

- Our process to calculate these spreads follows several steps:
 1. We build yield curve simulation paths based on a swap curve.
 2. We then generate cash flows and discount those cash flows with a spread (OAS) to get a par value equal to the market price.
 3. Finally, we shock the OAS to get different prices. The spread durations are calculated based on those prices.
- The result is a measure of the sensitivity of the bond's price to changes in the corresponding spread. For example, for every 1 basis point of mortgage spread tightening, a portfolio with mortgage spread duration of 1 year will rise in price by one basis point.

Appendix



PERFORMANCE AND FEE

Past performance is not a guarantee or a reliable indicator of future results. Certain performance figures do not reflect the deduction of investment advisory fees (described in Part II of PIMCO's Form ADV) in the case of both separate investment accounts and mutual funds; but they do reflect commissions, other expenses (except custody), and reinvestment of earnings. Such fees that a client may incur in the management of their investment advisory account may reduce the client's return. For example, over a five-year period, annual advisory fees of 0.425% would reduce compounding at 10% annually from 61.05% before fees to 57.96% after fees. The "net of fees" performance figures reflect the deduction of actual investment advisory fees but do not reflect the deduction of custodial fees. All periods longer than one year are annualized. Separate account clients may elect to include PIMCO sector funds in their portfolio; sector funds may be subject to additional terms and fees.

HYPOTHETICAL EXAMPLE

No representation is being made that any account, product, or strategy will or is likely to achieve profits, losses, or results similar to those shown. Hypothetical or simulated performance results have several inherent limitations. Unlike an actual performance record, simulated results do not represent actual performance and are generally prepared with the benefit of hindsight. There are frequently sharp differences between simulated performance results and the actual results subsequently achieved by any particular account, product, or strategy. In addition, since trades have not actually been executed, simulated results cannot account for the impact of certain market risks such as lack of liquidity. There are numerous other factors related to the markets in general or the implementation of any specific investment strategy, which cannot be fully accounted for in the preparation of simulated results and all of which can adversely affect actual results.

INVESTMENT STRATEGY

There is no guarantee that these investment strategies will work under all market conditions and each investor should evaluate their ability to invest for a long-term especially during periods of downturn in the market. No representation is being made that any account, product, or strategy will or is likely to achieve profits, losses, or results similar to those shown.

PORTFOLIO ANALYSIS

The portfolio analysis is based on index blends. No representation is being made that the structure of the average portfolio or any account will remain the same or that similar returns will be achieved. The analysis may not be attained and should not be construed as the only possibilities that exist. Real results will vary and are subject to change with market conditions. Different weightings in the asset allocation illustration will produce different results. Actual results will vary and are subject to change with market conditions. There is no guarantee that results will be achieved. No fees or expenses were included in the estimated results and distribution. The scenarios assume a set of assumptions that may, individually or collectively, not develop over time. The analysis reflected in this information is based upon data at time of analysis. Forecasts, estimates, and certain information contained herein are based upon proprietary research and should not be considered as investment advice or a recommendation of any particular security, strategy or investment product.

PIMCO routinely reviews, modifies, and adds risk factors to its proprietary models. Due to the dynamic nature of factors affecting markets, there is no guarantee that simulations will capture all relevant risk factors or that the implementation of any resulting solutions will protect against loss. All investments contain risk and may lose value. Simulated risk analysis contains inherent limitations and is generally prepared with the benefit of hindsight. Realized losses may be larger than predicted by a given model due to additional factors that cannot be accurately forecasted or incorporated into a model based on historical or assumed data.

Appendix



RISK

Investing in the bond market is subject to certain risks including market, interest-rate, issuer, credit, and inflation risk; investments may be worth more or less than the original cost when redeemed. Bank loans are often less liquid than other types of debt instruments and general market and financial conditions may affect the prepayment of bank loans, as such the prepayments cannot be predicted with accuracy. There is no assurance that the liquidation of any collateral from a secured bank loan would satisfy the borrower's obligation, or that such collateral could be liquidated. High-yield, lower-rated, securities involve greater risk than higher-rated securities; portfolios that invest in them may be subject to greater levels of credit and liquidity risk than portfolios that do not. Equities may decline in value due to both real and perceived general market, economic, and industry conditions. Investing in foreign denominated and/or domiciled securities may involve heightened risk due to currency fluctuations, and economic and political risks, which may be enhanced in emerging markets. Derivatives may involve certain costs and risks such as liquidity, interest rate, market, credit, management and the risk that a position could not be closed when most advantageous. Investing in derivatives could lose more than the amount invested. All investments contain risk and may lose value.

RETURN ASSUMPTION

Return assumptions are for illustrative purposes only and are not a prediction or a projection of return. Return assumption is an estimate of what investments may earn on average over the long term. Actual returns may be higher or lower than those shown and may vary substantially over shorter time periods.

VOLATILITY (ESTIMATED)

We employed a block bootstrap methodology to calculate volatilities. We start by computing historical factor returns that underlie each asset class proxy from January 1997 through the present date. We then draw a set of 12 monthly returns within the dataset to come up with an annual return number. This process is repeated 15,000 times to have a return series with 15,000 annualized returns. The standard deviation of these annual returns is used to model the volatility for each factor. We then use the same return series for each factor to compute covariance between factors. Finally, volatility of each asset class proxy is calculated as the sum of variances and covariance of factors that underlie that particular proxy.

VAR

Value at Risk (VAR) estimates the risk of loss of an investment or portfolio over a given time period under normal market conditions in terms of a specific percentile threshold of loss (i.e., for a given threshold of X%, under the specific modeling assumptions used, the portfolio will incur a loss in excess of the VAR X percent of the time). Different VAR calculation methodologies may be used. VAR models can help understand what future return or loss profiles might be. However, the effectiveness of a VAR calculation is in fact constrained by its limited assumptions (for example, assumptions may involve, among other things, probability distributions, historical return modeling, factor selection, risk factor correlation, simulation methodologies). It is important that investors understand the nature of these limitations when relying upon VAR analyses.

Stress testing involves asset or portfolio modeling techniques that attempt to simulate possible performance outcomes using historical data and/or hypothetical performance modeling events. These methodologies can include among other things, use of historical data modeling, various factor or market change assumptions, different valuation models and subjective judgments.

PIMCO has historically used factor based stress analyses that estimate portfolio return sensitivity to various risk factors. Essentially, portfolios are decomposed into different risk factors and shocks are applied to those factors to estimate portfolio responses.

Because of limitations of these modeling techniques, we make no representation that use of these models will actually reflect future results, or that any investment actually will achieve results similar to those shown. Hypothetical or simulated performance modeling techniques have inherent limitations. These techniques do not predict future actual performance and are limited by assumptions that future market events will behave similarly to historical time periods or theoretical models. Future events very often occur to causal relationships not anticipated by such models, and it should be expected that sharp differences will often occur between the results of these models and actual investment results.

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Appendix



INDEX DESCRIPTIONS

Barclays U.S. Aggregate Index represents securities that are SEC-registered, taxable, and dollar denominated. The index covers the U.S. investment grade fixed rate bond market, with index components for government and corporate securities, mortgage pass-through securities, and asset-backed securities. These major sectors are subdivided into more specific indices that are calculated and reported on a regular basis.

Barclays U.S. Credit Index is an unmanaged index comprised of publicly issued U.S. corporate and specified non-U.S. debentures and secured notes that meet the specified maturity, liquidity, and quality requirements. To qualify, bonds must be SEC-registered.

The Credit Suisse Leveraged Loan Index is designed to mirror the investable universe of the \$U.S.-denominated leveraged loan market. The index inception is January 1992. The index frequency is monthly. New loans are added to the index on their issuance date if they qualify according to the following criteria: Loans must be rated "5B" or lower; only funded term loans are included; the tenor must be at least one year; and the Issuers must be domiciled in developed countries (Issuers from developing countries are excluded). Fallen angels are added to the index subject to the new loan criteria.

The Barclays U.S. Corporate High-Yield Index covers the USD-denominated, non-investment grade, fixed-rate, taxable corporate bond market. Securities are classified as high-yield if the middle rating of Moody's, Fitch, and S&P is Ba1/BB+/BB+ or below. The index excludes Emerging Markets debt.

The JPMorgan Emerging Markets Bond Index Global is an unmanaged index which tracks the total return of U.S.-dollar-denominated debt instruments issued by emerging market sovereign and quasi-sovereign entities: Brady Bonds, loans, Eurobonds, and local market instruments.

It is not possible to invest directly in an unmanaged index.