

Transformational Norms In Pension Investing: Using Factors to Dynamically Manage Funding Risk

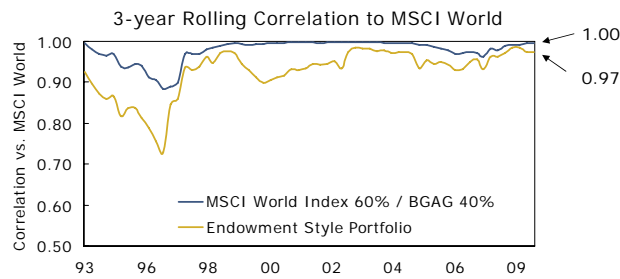
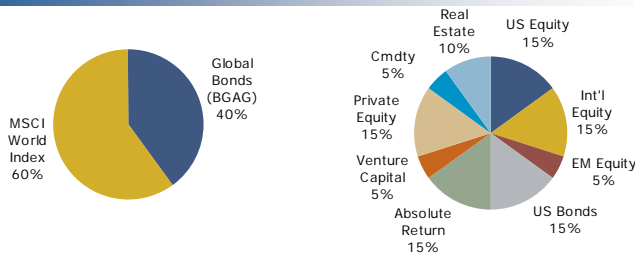
Dr. James Moore, Executive Vice President, PIMCO
 April 2010

Pacific Investment Management Company LLC, 840 Newport Center Drive, Newport Beach, CA 92660, 949-720-6000

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Asset Class Diversification \neq Risk Diversification

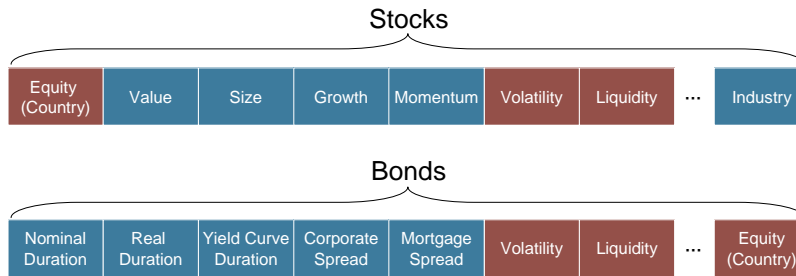


SOURCE: Morgan Stanley, Bloomberg, Cambridge Associates, and Hedge Fund Research. As of September 30, 2009
 Private Equity and Venture Capital quarterly returns are released approximately 12-15 weeks following the close of each quarter.

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What Are Risk Factors?

- Building blocks that drive asset class returns
- Asset classes are simply carriers of various risk factors

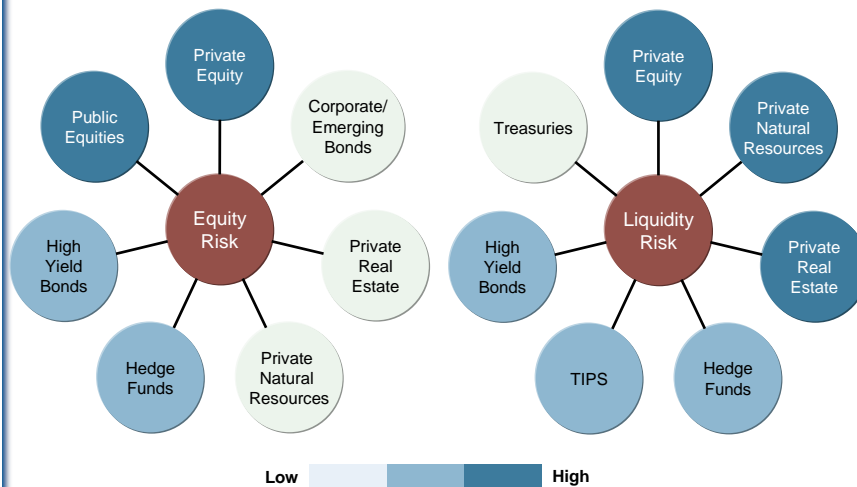


PIMCO has used a risk factor based approach to investing for over 30 years

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It's 10pm: Do You Know Where Your Risk Factors Are?

- Different asset classes can carry exposure to the same underlying risk, although the level of exposure may vary

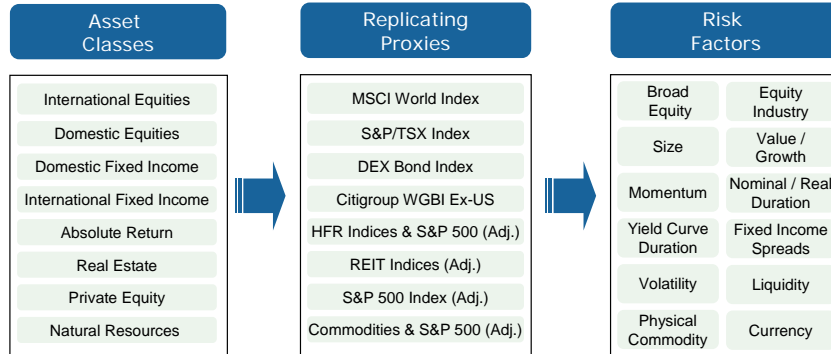


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Mapping Asset Classes to Risk Factors

Steps

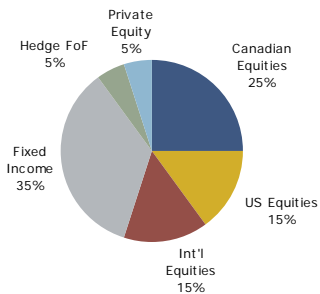
1. Assign replicating proxies that best represent underlying investments/asset classes
2. Decompose replicating proxies into underlying securities
3. Calculate risk factor loadings for each security in each proxy
4. Aggregate security factor loadings to get portfolio factor loadings



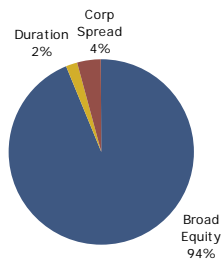
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Asset Allocation Versus Risk Allocation

Asset Allocation
(by market value weight)



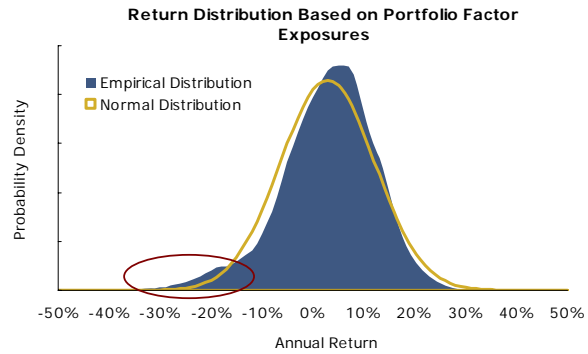
Risk Allocation
(by contribution to estimated volatility)



Hypothetical Example for illustrative purposes only.
The hypothetical portfolio analysis provided throughout this presentation is proxied by index returns and investment strategies as of March 1, 2010.

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Distribution of Portfolio Returns



During stress events, risk-asset values fall and return correlations rise amongst asset classes

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DB Case Study – Current Status

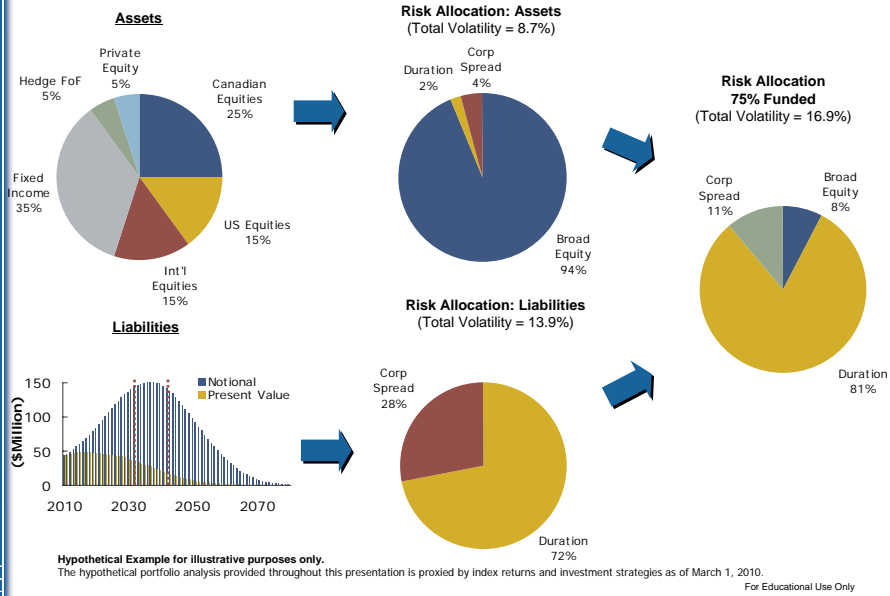
Assets		Liabilities
Equities		Traditional DB Plan 14 years duration
Canadian Equity	25.0%	
US Equity	15.0%	
International Equity	15.0%	
Fixed Income		
DEX Universe Bond Index	35.0%	
Other		
Private Equity	5.0%	
Hedge Funds	5.0%	
Total Assets	75	

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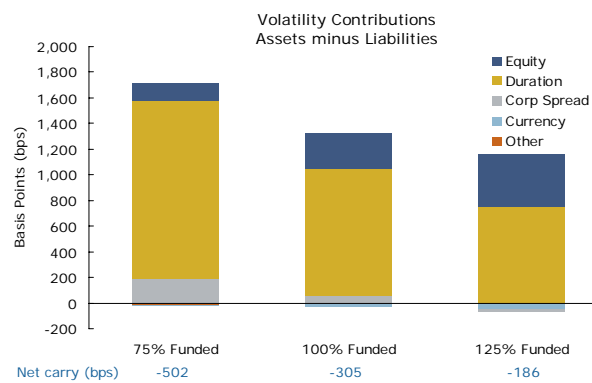
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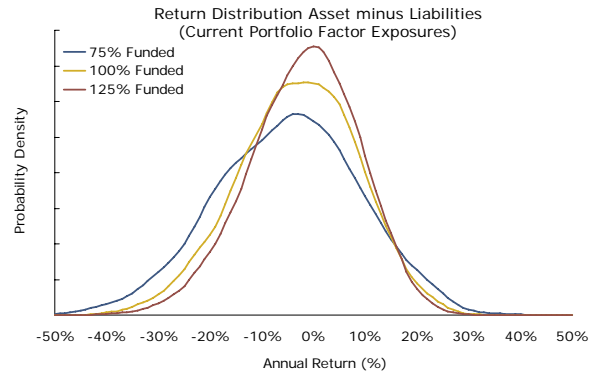
DB Case Study – Current Factor Exposures



DB Case Study – Impact of Funding Ratio



DB Case Study – Impact OF Funding Ratios on Surplus Distributions



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DB Case Study – Diagnosis

- Plan suffers from
 - Serious duration shortfall relative to liabilities
 - Serious carry deficiency relative to liabilities
 - Underfunding **Magnifies** exposure to the liability factors
- Equity exposure is a secondary risk contributor *at the current funding levels*
 - At low funding levels equity contribution lower as it offsets some of the underhedged credit spread exposure

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DB Case Study – Prescription

1. Move Aggregate Bond Portfolio to Long Government Credit
 - Reduce duration and credit spread factor mismatch without changing overall portfolio allocations
 - Reduce carry deficiency
2. Move 15% of Equity to a portable alpha combination of Equity and Long Duration
 - Maintain current equity exposure
 - Reduce duration and credit spread factor mismatch without changing overall portfolio allocations
 - Reduce carry deficiency
3. Move 10% of Equity Exposure (5% US, 5% International) to a Diversified Income Portfolio
 - Reduce equity exposure
 - Increase carry in the portfolio

Hypothetical Example for illustrative purposes only.

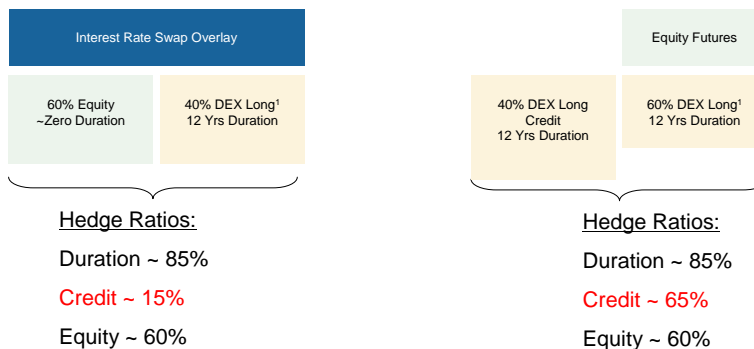
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Equity Overlay to Help Improve Duration and Credit Spread Duration Match

Combining an equity overlay with a long duration fixed income portfolio may be a more effective approach to preserving equity market exposure while also increasing the percentage of liability risk that is hedged with fixed income

“Traditional” Swap Overlay → Equity Overlay



Hypothetical example for illustrative purposes only.
We have assumed a liability duration of 14 years.

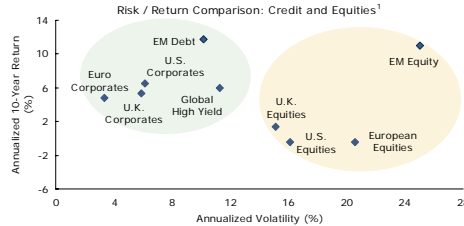
¹ DEX Long Index.

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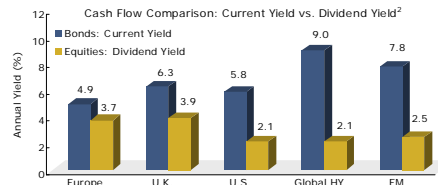
Diversified Credit Can Serve as an Attractive Return Engine Relative to Other Risky Assets

As of December 31, 2009

- A blend of Investment Grade, High Yield, and EM Credit can be a high-Information Ratio Return Generator



- Corporate bonds may provide greater annual income through coupon payments
- Dividends are discretionary, coupon payments are contractual



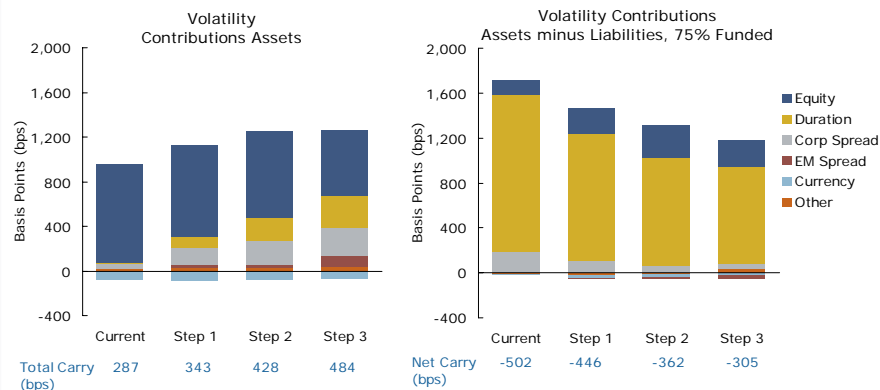
SOURCE: Bloomberg Financial Markets, BofA Merrill Lynch

¹ European Corporates represented by BofA Merrill Lynch European Corporate Index; U.K. Corporates represented by BofA Merrill Lynch Sterling Corporate Index; U.S. Corporates represented by BofA Merrill Lynch U.S. Corporate Master Index; Global High Yield represented by BofA Merrill Lynch Global High Yield Index; U.K. Equities represented by FTSE 100 Index; U.S. Equities represented by S&P 500 Index; European Equities represented by DowJones EuroStoxx 50 Index; EM Debt is represented by the JPMorgan EMBI Global Index; EM Equity is represented by the Morgan Stanley MSCI Emerging Markets Free Index.

² Bond Current Yields are represented by the following indices: Europe is the BofA Merrill Lynch European Corporate Index; U.K. is the BofA Merrill Lynch Sterling Corporate Securities Index; U.S. is the BofA Merrill Lynch U.S. Corporate Master Index; Global High Yield is the BofA Merrill Lynch Global High Yield Index; EM Debt is represented by the JPMorgan EMBI Global Index. Equity Dividend Yields are represented by: Europe is the DowJones EuroStoxx 50 Index; U.K. is FTSE 100 Index; U.S. is S&P500 Index; Global High Yield is MSCI World Index; EM Equity is represented by the Morgan Stanley MSCI Emerging Markets Free Index. Refer to Appendix for additional index and risk information.

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DB Case Study – Portfolio Prescriptions

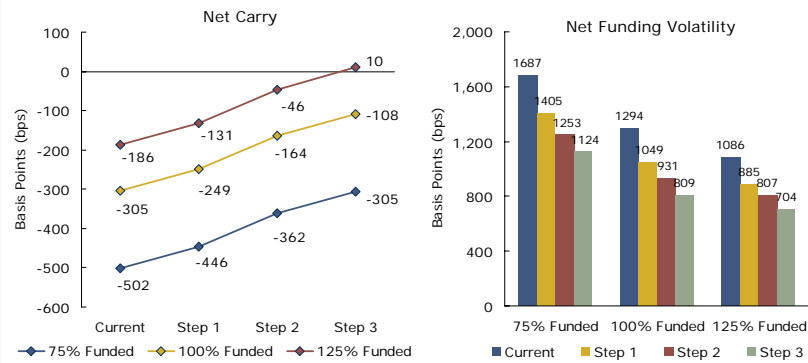


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DB Case Study – Impact of Funded Status



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DB Case Study – Key Conclusions

- Funded Ratio of Plan is a Critical Element to watch in managing the Asset-Liability Relationship
 - Acts as a lever on key factor relationships between assets and liabilities
 - Relative weights and impact of differing Factors may move considerably as funded status changes
- Asset Carry relative to liability discount rate is also very important
 - Negative net carry is like quicksand – the more negative, the more powerful the downward pull
- Minimizing negative net carry and managing Factor exposures dynamically through time in response to changes in funded status can be instrumental in maintaining a plan's health

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Appendix

Past performance is not a guarantee or reliable indicator of future results.

Endowment Style Portfolio Index Sources

US Equities are represented by the S&P 500, International Equities are represented by the MSCI EAFE Net Dividend Index in USD, EM Equities is represented by the MSCI Emerging Markets Index, US Bonds are represented by the Barclays Capital US Aggregate Index, Global Bonds are represented by the JPMorgan Global Unhedged Index, Commodities are represented by the Dow Jones UBS Commodity Total Return Index, REITs are represented by NCREIF Property Index, Absolute Return is represented by the HFRI Fund Weighted Composite Index, Private Equity is represented by the Cambridge Associates LLC U.S. Private Equity Index®, Venture Capital is represented by the Cambridge Associates LLC U.S. Venture Capital Index®

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.

Model

The replicating proxies used in the model portfolio are based on indices. The set of assumptions can change materially at any time and are subject to change with market conditions. Some important factors which could cause actual results to differ materially from those in any forward-looking statements include changes in interest rates; domestic and foreign business, market, and financial conditions. Accordingly, there can be no assurance that estimated returns or projections can be realized or that actual returns or results will not be materially lower than those estimated therein. 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. The hypothetical model returns are presented gross of fees, transaction costs, and other expenses.

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Appendix

Portfolio Analysis

No representation is being made that the structure of the portfolio or any account will be 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. 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 these 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.

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. 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. Mortgage and asset-backed securities may be sensitive to changes in interest rates, subject to early repayment risk, and their value may fluctuate in response to the market's perception of issuer creditworthiness; while generally supported by some form of government or private guarantee there is no assurance that private guarantors will meet their obligations. 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. 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. Diversification does not insure against loss.

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Appendix

Index Descriptions

The S&P 500 Index is an unmanaged market index generally considered representative of the stock market as a whole. The index focuses on the Large-Cap segment of the U.S. equities market

The MSCI EAFE Net Dividend Hedged USD Index is an unmanaged index of issuers in countries of Europe, Australia, and the Far East represented in U.S. Dollars on a hedged basis.

Barclays Capital 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.

JPMorgan GBI Global (Unhedged) is an unmanaged market index representative of the total return performance in U.S. dollars on an unhedged basis of major world bond markets.

The Dow Jones UBS Commodity Total Return Index is an unmanaged index composed of futures contracts on 19 physical commodities. The index is designed to be a highly liquid and diversified benchmark for commodities as an asset class. Prior to May 7, 2009, this index was known as the Dow Jones AIG Commodity Total Return Index.

The NCREIF Property Index is a quarterly time series composite total rate of return measure of investment performance of a very large pool of individual commercial real estate properties acquired in the private market for investment purposes only. All properties in the NPI have been acquired, at least in part, on behalf of tax-exempt institutional investors - the great majority being pension funds. As such, all properties are held in a fiduciary environment.

The HFRI Fund Weighted Composite Index is comprised of over 2000 domestic and offshore constituent funds. All funds report assets in USD and report net of fees returns on a monthly basis. There is no Fund of Funds included in the index and each has at least \$50 million under management or have been actively trading for at least twelve months.

The Cambridge Associates LLC U.S. Venture Capital Index is based on returns data compiled on funds representing over 80% of the total dollars raised by U.S. venture capital managers between 1981 and 2001. Cambridge Associates LLC calculates the pooled net time-weighted return by quarter from March 31, 1981 through the most recent quarter. The pooled means represent the time-weighted rates of return calculated on the aggregate of all cash flows and market values as reported by the General Partners to Cambridge Associates LLC in their quarterly and annual audited financial reports. Net returns exclude all management fees, expenses and performance fees that take the form of a carried interest.

The Cambridge Associates U.S. Private Equity Index is based on returns data representing nearly two-thirds of leveraged buyout, subordinated debt, and special-situations partnerships since 1986.

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Barclays Capital Global Aggregate (USD Hedged) Index provides a broad-based measure of the global investment-grade fixed income markets. The three major components of this index are the U.S. Aggregate, the Pan-European Aggregate, and the Asian-Pacific Aggregate Indices. The index also includes Eurodollar and Euro-Yen corporate bonds, Canadian Government securities, and USD investment grade 144A securities.

The Morgan Stanley Capital International World Index is an unmanaged market-weighted index that consists of over 1,200 securities traded in 22 of the world's most developed countries. Securities are listed on exchanges in the US, Europe, Canada, Australia, New Zealand, and the Far East. The index is calculated separately; without dividends, with gross dividends reinvested and estimated tax withheld, and with gross dividends reinvested, in both U.S. Dollars and local currency.

The S&P/TSX Composite Index is a list of the largest companies on the Toronto Stock Exchange as measured by market capitalization. The Toronto Stock Exchange listed companies in this index comprises about 71% of market capitalization for all Canadian-based companies listed on the TSX.

The DEX Universe index covers all marketable Canadian bonds with term to maturity of more than 1 year. History dates from December 1979. The Universe contains over 900 marketable Canadian bonds. The average term is 9 years and the average duration is 5.5 years. The purpose of this index is to reflect performance of the broad "Canadian bond market" in a manner similar to the way the TSE 300 represents the Canadian equity market.

The Citigroup World ex-U.S. Government Bond Index is a market capitalization weighted index consisting of the government bond markets of the following countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, Netherlands, Spain, Sweden, Switzerland, and United Kingdom. Country eligibility is determined based upon market capitalization and investability criteria. The index includes all fixed-rate bonds with a remaining maturity of one year or longer and with amounts outstanding of at least the equivalent of US\$25 million. Government securities typically exclude floating or variable rate bonds, U.S./Canadian savings bonds and private placements.

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