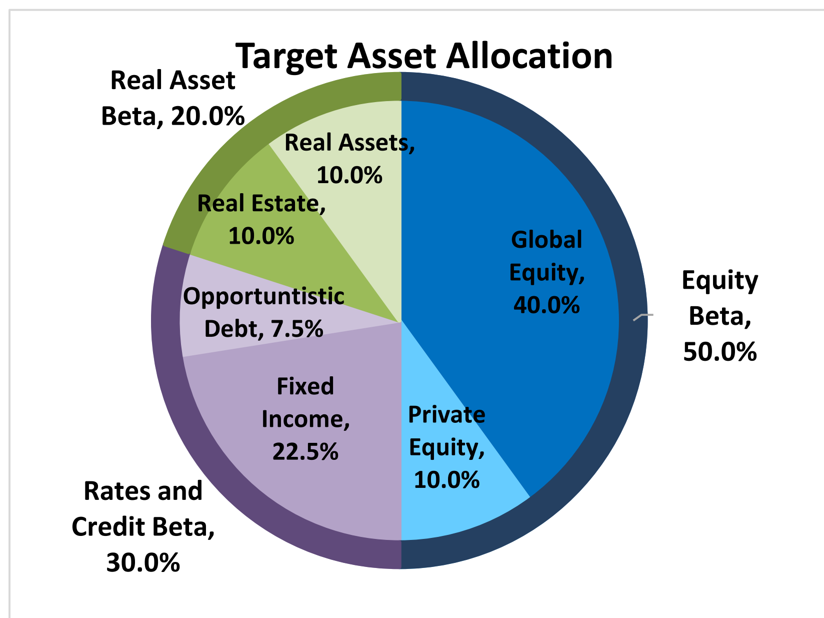
June 2020

MPERS
Alpha and Beta

The terms "alpha" and "beta" are often used in the world of finance and investing. While both of these descriptors are related, they define different aspects of investing. Beta is generally a measure of the risk/volatility inherent in the entire market or to a specific market segment. In many cases, the words "market" and "beta" are interchangeable in the context of finance & investing. Beta also serves as a measurement of the systematic risk of a security or portfolio in comparison to the market as a whole or to a particular segment of the market. This concept is illustrated in the beta groups that represent MPERS' target asset allocation.



In the chart above, the beta groups are represented by the outside circle. Equity beta represents 50% of the targeted asset allocation, the (interest) rates and credit beta group represents 30%, and the real assets beta group represents 20% of the allocation. It is important to note that beta is indifferent to the manner in which underlying market exposure is obtained, so each beta group can include a wide range of investment structures and strategies. MPERS' equity beta allocation, for example, includes public and private equity structures along with equity market exposure obtained through hedge fund strategies. The rates and credit beta includes traditional fixed income securities (direct government and corporate bond holdings) along with various opportunistic debt strategies (i.e., private credit). Similarly, the real assets beta group includes a mix of public and private real estate, energy, timber, infrastructure, and metals and mining strategies.

Investors typically assign a corresponding benchmark to each beta group in order to track and monitor the success of that segment of the portfolio. This is where the term alpha enters the discussion. Alpha is most commonly defined as the excess return of an investment relative to a benchmark. For example, if an equity portfolio is comprised of 25 domestic (U.S.) large cap companies, the S&P 500 might be

utilized as the equity beta benchmark. If the actual performance of that portfolio was 20% during a period where the S&P 500 earned 15%, the alpha would equal a positive 5%. A negative alpha would indicate that an asset underperformed its benchmark.

In MPERS' investment performance reports, there is the reference to the "policy" return. The policy return represents what the market (i.e., beta) contributed to the portfolio in terms of return, assuming passive investment across the targeted asset allocation and maintaining the exact target percentages over the entire period. In mathematical terms, the policy return represents the weighted average sum of the individual asset classes multiplied by the benchmark return of each asset class. The "actual" return of the portfolio can then be broken down into two distinct components, namely beta (what the market provided) and alpha (performance above or below the broader market returns).

Alpha generation, whether positive or negative, is typically created from two sources (or effects):

1. The allocation effect, which comes from overweighting the best performing asset classes in the portfolio (or underweighting the worst performing asset classes), or
2. The selection effect, which comes from hiring managers and/or assembling a portfolio of investments that outperforms the respective benchmark assigned to that segment of the portfolio.

The breakdown of alpha into the allocation and selection effects are found in the quarterly investment performance reports under the "Total Fund Attribution Analysis" portion of the report. A key element of this analysis is the selection of appropriate benchmarks for each underlying asset class. The ideal benchmark is both indicative of the underlying holdings in the portfolio, but also investable so actual performance can truly be compared to a passive beta portfolio. Unfortunately in a number of cases (private equity, real assets, hedge funds, etc.), an investable benchmark does not exist so investors will often utilize a proxy for certain asset class benchmarks. In the case of MPERS, this occurs within the private equity portfolio (which utilizes an S&P 500 plus a 3% return premium for its benchmark) and the real assets portfolio (which utilizes a 4% spread over inflation for its benchmark). The use of proxies can complicate the overall analysis of investment performance, as it often mixes elements of both beta and alpha into the benchmarking process.

Evaluating investment performance is a complex task, especially with institutional investment portfolios with multiple asset classes and managers across the portfolio. As with any complex task, breaking the decision down into smaller pieces will often simplify the process. Reviewing investment performance in the context of beta and alpha provides a deeper analysis of investment performance, effectively breaking down performance between the broad market performance (beta) and the effectiveness of the management and implementation of the portfolio (alpha). It is then possible to differentiate whether the issue lies within the broad market exposure (i.e., the asset allocation), or whether a new implementation approach is warranted.