Glossary

January 20, 2015

About this document

- This document is intended to provide “at hand” access to terms that will support the benchmark topics discussions with the Committee

- The definitions in this document are focused on their context within the planned engagements with the Committee in early to mid-2015. Some terms may have additional meaning or uses not addressed in this document.
  - Definitions may have been adapted from their original sources for ease of reading or to better reflect the primary focus of these sessions

- Where applicable, these definitions are accompanied by a “CalPERS-specific,” or other relevant example, to provide additional context or illustration

Contents

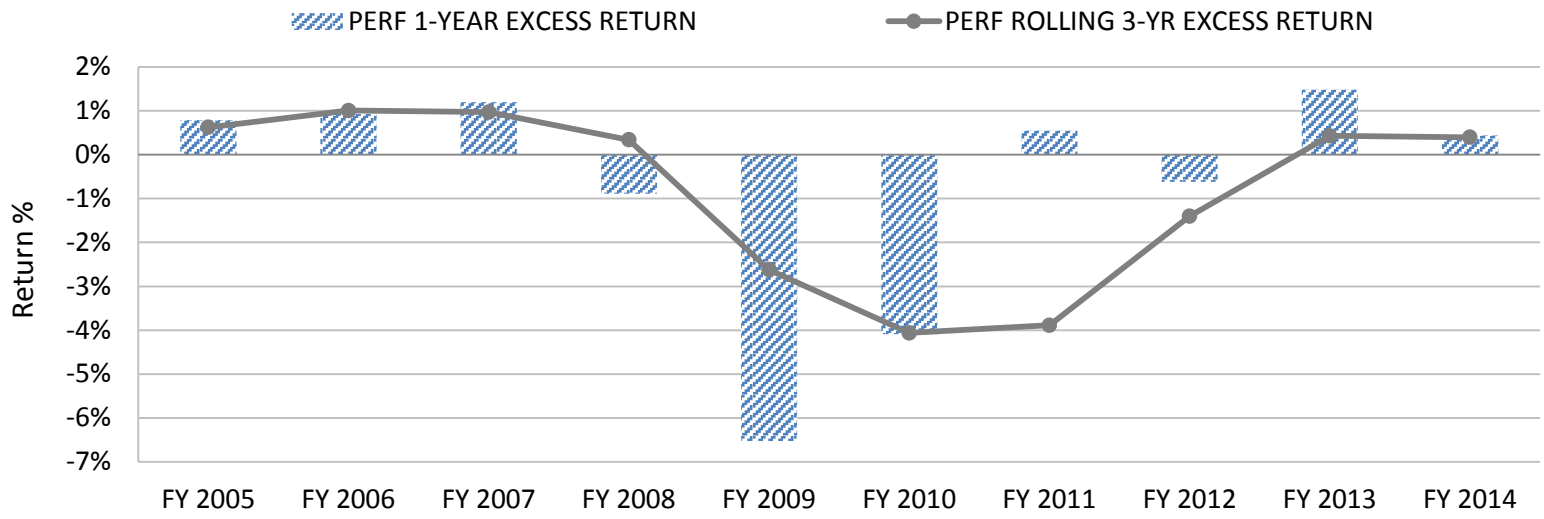
Active Return

Definition:

Active return, also known as excess return, is the difference between the portfolio return and the benchmark return. It can be positive or negative and is typically used to assess performance. [1]

CalPERS Example:

The active return of the Public Employees' Retirement Fund (PERF), referred to as "excess return" in CalPERS Trust Level Reports, depicted below for the 1-year and 3-year periods[2]



[1] *Source: Adapted from Investopedia*

[2] *Source: Excerpt, August 2014, IC Agenda Item 7a*

Active Risk

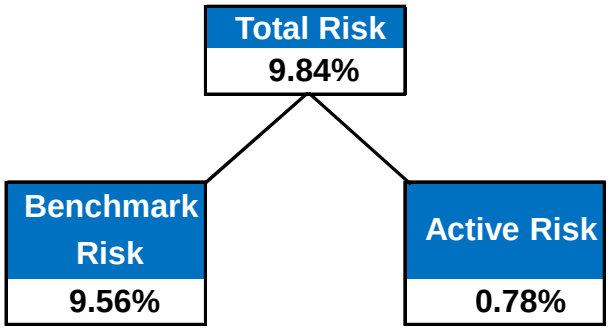
Definition:

A type of risk that a fund, or managed portfolio, creates as it attempts to beat the returns of the benchmark against which it is compared. In theory, to generate a higher return than the benchmark, the manager is required to take on more risk. [1] Active risk can be quantified by using "tracking error," which is the standard deviation of the difference between the portfolio and benchmark returns.[2]

CalPERS Example:

CalPERS' active risk is reported to the Committee monthly through the Monthly Update – Performance & Risk. Active risk is also reported through the semi-annual Trust Level Review reports.

PERF Risk Profile as of May 31, 2014 [3]



Risk & Return Summary as of August 31, 2014 [4]

Risk and Return Summary							
	Portfolio Risk			Active Risk			
Asset Class	3-Year Realized Return(%)	3-Year Realized Risk(%)	Projected Total Risk(%)	3-Year Active Return(%)	3-Year Active Risk(%)	Projected Active Risk(%)	Realized Info Ratio
GROWTH	14.79%	10.53%	13.04%	-0.27%	2.71%	0.88%	(0.28)
Public Equity	15.28%	13.70%	13.24%	0.38%	0.28%	0.20%	1.64
Private Equity	13.10%	4.75%	12.88%	-1.77%	12.84%	5.23%	(0.32)
INCOME	5.21%	4.61%	4.77%	0.98%	0.74%	1.14%	1.22
REAL ASSETS	14.91%	8.64%	11.99%	3.95%	6.95%	2.78%	0.56
Real Estate	16.69%	9.49%	12.31%	4.63%	7.60%	2.38%	0.52
Forestland	1.00%	7.39%	13.83%	-5.58%	7.33%	11.33%	(3.03)
Infrastructure	10.28%	13.59%	10.05%	4.49%	13.59%	10.05%	2.06
LIQUIDITY	0.64%	1.35%	0.57%	0.00%	0.48%	0.88%	
INFLATION	1.58%	7.63%	6.23%	-0.23%	2.04%	0.88%	0.76
ARS	4.34%	3.08%	3.50%	-0.94%	3.06%	3.62%	0.35
TOTAL FUND	12.26%	6.79%	9.55%	0.80%	1.91%	0.86%	-

[1] *Source: Adapted from Investopedia*

[2] *Source: Adapted from Wikipedia*

[3] *Source: Excerpt, August 2014, IC Agenda Item 7a*

[4] *Source: Excerpt, November 2014 IC Agenda Item 4c*

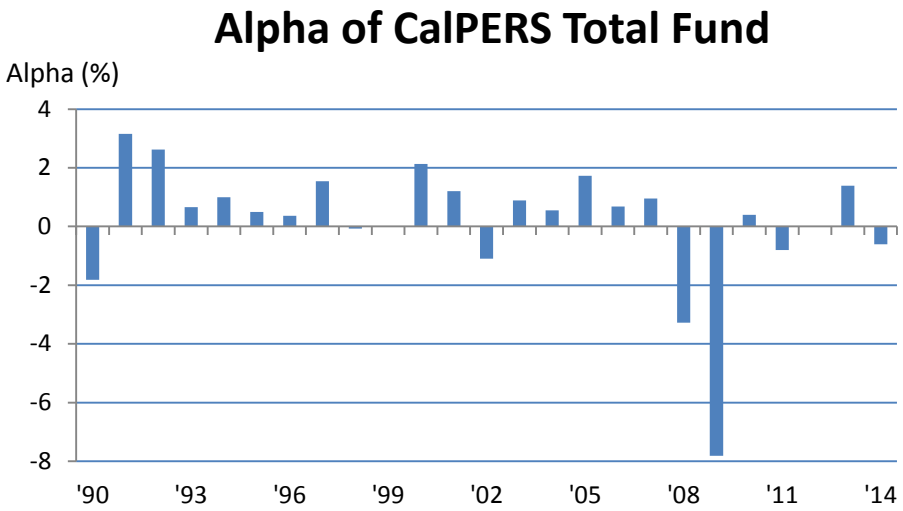
Alpha

Definition:

A measure of performance on a risk-adjusted basis. Alpha compares a fund's risk-adjusted performance to a benchmark index. The excess return of the fund relative to the return of the benchmark index is a fund's alpha.[1]

CalPERS Example:

The chart below illustrates the annual alpha of the CalPERS Total Fund from 1990-2014



[1] *Source: Adapted from Investopedia*

[2] *Data source: State Street, ending period September 30th annually*

Asset Class

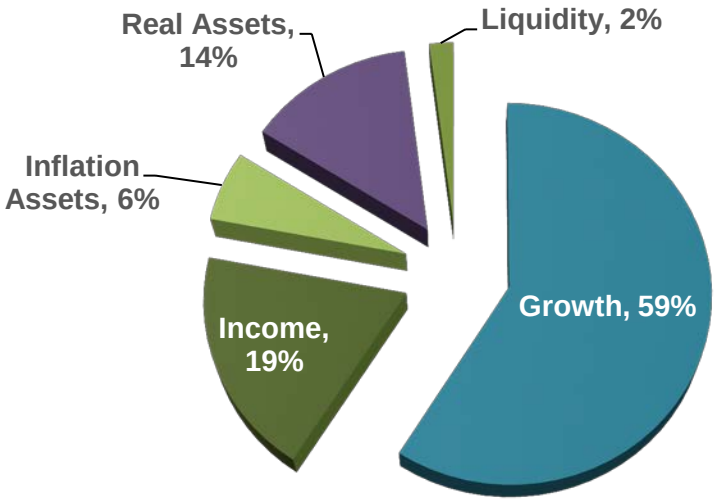
Definition:

A group of financial instruments that exhibit similar characteristics, behave similarly in the marketplace, and are subject to the same laws and regulations. [1]

CalPERS Example:

CalPERS' Benchmarks Policy defines five asset classes: 1) Growth (incl. Global and Private Equity), 2) Income, 3) Inflation Assets, 4) Real Assets (incl. Real Estate, Infrastructure, Forestland), 5) Liquidity.

PERF Strategic Asset Allocation Policy Targets[2]



[1] *Source: Adapted from Investopedia*

[2] *Source: CalPERS Asset Allocation Strategy Policy*

Asset Class Role

Definition:

Different asset classes have different characteristics (i.e. risk and return profile, relative liquidity, etc.). Part of CalPERS' Asset Allocation Strategy is to ensure that these different characteristics are managed to efficiently support the long-term return target at an acceptable level of risk, while maintaining a well-diversified pool of assets.

As part of the 2013-14 ALM process asset class roles were defined based on their expected characteristics in five key areas:

1. Growth – How well does the asset class capture economic growth realized in the broad capital market
2. Risk Protection – How well does the asset class offset systematic equity risk
3. Inflation Protection – How well does the asset class hedge (attempt to offset the effects of) inflation
4. Liquidity – How fast can the asset be converted to cash without materially affecting the asset's price
5. Cash Yield – How well does the asset class support CalPERS' ongoing cash flow needs by providing sufficient and steady income

Asset Class Role *Continued*

CalPERS Example:

The table below summarizes the expected contributions of each asset class to the five characteristics based on the 2013-14 ALM process.

Asset Class	Growth	Risk Protection	Inflation Protection	Liquidity	Cash Yield
Global Equity	●	–	–	●	◐
Private Equity	●	–	–	○	◔
Fixed Income	◔	●	–	●	●
Real Estate	●	●	◐	○	●
Infrastructure	◐	●	◐	○	●
Forestland	◐	–	●	○	◐
Inflation Assets	◐	–	●	●	◔
Liquidity	–	●	–	●	–

Legend:

● High contribution
◔ Low contribution
– Unassigned
◐ Moderate contribution
○ None

Benchmark

Definition:

A standard against which the performance of an investment portfolio can be measured. Also see definitions for:

- Benchmark attributes (slides 11-15)
- Benchmark roles (slides 16-19)
- Benchmark types (slides 20-29)

CalPERS Example:

CalPERS' policy benchmarks are identified in the *Statement of Investment Policy for Benchmarks* (Benchmarks Policy).

Benchmark Attributes: Investable

Definition:

The securities contained in the benchmark should represent tradable positions. Ideally, the benchmark should be constructed with low turnover to minimize transaction costs. [1]

CalPERS Example:

This attribute is identified as a desirable characteristic for public market securities / program benchmarks in the CalPERS Benchmarks Policy.

CalPERS' Global Equity policy benchmark is the FTSE CalPERS Global Index (the FTSE All-World, All Capitalization index customized to exclude Board-directed divestments).

The FTSE CalPERS Global Index, reflects "investability" in that the constituent stocks of the FTSE CalPERS Global index could be readily bought and held in the same weights to generate the same returns as the index.

[1] *Source: CalPERS Benchmarks Policy*

Benchmark Attributes: Measurable

Definition:

The pricing of the benchmark should be transparent, making it possible to track benchmark performance. [1]

CalPERS Example:

This attribute is identified as a desirable characteristic for public and private market securities / program benchmarks in the CalPERS Benchmarks Policy.

CalPERS' Global Equity policy benchmark, the FTSE CalPERS Global Index, reflects the attribute of "measurability" because the return of the benchmark can be calculated on a daily basis. All of the securities in the benchmark are priced daily.

[1] *Source: CalPERS Benchmarks Policy*

Benchmark Attributes: Unambiguous

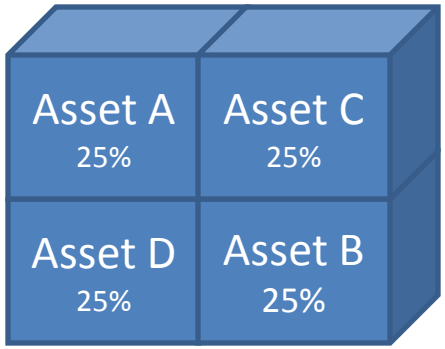
Definition:

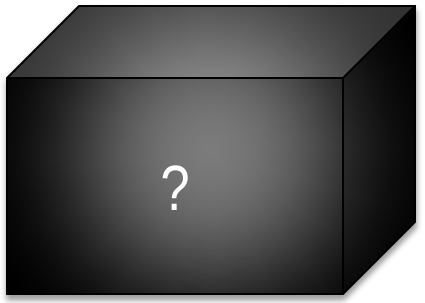
The names and weights of the securities in the benchmark should be clearly defined. [1]

CalPERS Example:

This attribute is identified as a desirable characteristic for public market securities / program benchmarks in the CalPERS Benchmarks Policy.

CalPERS' Global Equity policy benchmark, the FTSE CalPERS Global Index, reflects the attribute of "unambiguous" because the included stocks (constituents) and their respective weight in the index are all clearly defined.





[1] *Source: CalPERS Benchmarks Policy*

Benchmark Attributes: Pre-determined

Definition:

The names and weights of the components in the benchmark should be clearly defined. [1]

The benchmark is specified at the start of the evaluation period and is known to all parties. [2]

CalPERS Example:

This attribute is identified as a desirable characteristic for private market program benchmarks in the CalPERS Benchmarks Policy.

CalPERS' Real Estate policy benchmark, the National Council of Real Estate Investment Fiduciaries (NCREIF) Fund Index (NFI) Open End Diversified Core Equity (ODCE) index is capitalization-weighted and consists of specified real estate funds. The NCRIEF NFI ODCE reflects the attribute of "pre-determined" because the names and weights of the components are clearly defined.

[1] *Source: CalPERS Benchmarks Policy*
[2] *Source: CFA Institute*

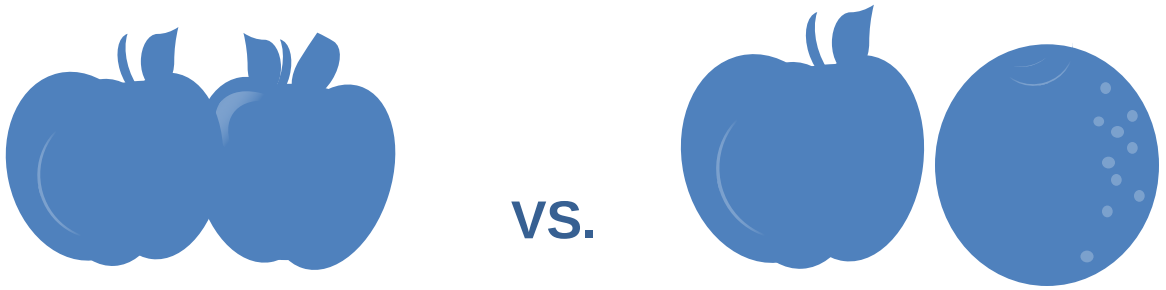
Benchmark Attributes: Representative

Definition:

The components of the benchmark should be suitably representative of the investments and their associates risk and return levels [1]

CalPERS Example:

This attribute is identified as a desirable characteristic for private market program benchmarks in the CalPERS Benchmarks Policy. The Real Estate policy benchmark, the NCREIF NFI ODCE index can be considered somewhat representative based on the inclusion policies for the index, such as a focus on a "core" investing strategy/style.



[1] *Source: CalPERS Benchmarks Policy*

Benchmark Roles: Express Program Goal

Definition:

Benchmarks can be used to express a program's goal or long-term objective.

CalPERS Example:

CalPERS' Infrastructure policy benchmark is an example of a benchmark being used to define a program goal.

The Infrastructure Program Benchmark is the Consumer Price Index (CPI) plus an additional 4%. "CPI +4%" is not "investable," and does not reflect an investment universe, but does represent a program goal.

Benchmark Roles: Define Investment Universe

Definition:

From a fund sponsor's perspective, a benchmark can be considered the collection of securities that the fund sponsor would own if the fund sponsor were required to place all of its investments within the asset category in a single, passively managed portfolio. [1]

CalPERS Example:

The use of a benchmark as an item that "defines the investment universe" for a manager, is demonstrated by the Global Equity Program. Holdings in the program are intended to closely align with the Program's policy benchmark, the FTSE CalPERS Global Index.

[1] *Source: Adapted from CFA Institute*

Benchmark Roles: Proxy for an Asset Class

Definition:

As asset allocation has come to the forefront of the practice of investing, analysts have studied the historical returns and other characteristics of indexes in an attempt to understand the behavior of the asset classes they represent. Essentially, the index becomes a proxy for a particular asset class in analysis to project future behavior (return and risk profile) of that asset class [1]

CalPERS Example:

CalPERS' policy benchmarks are used in the process to develop CalPERS' capital market assumptions (CMAs). CMAs are an essential input into CalPERS' ALM process and ultimately influence the development and selection of a policy portfolio.

[1] *Source: Adapted from "Origins, Uses, and Characteristics of U.S. Equity Benchmarks" 2003, The Research Foundation of AIMR*

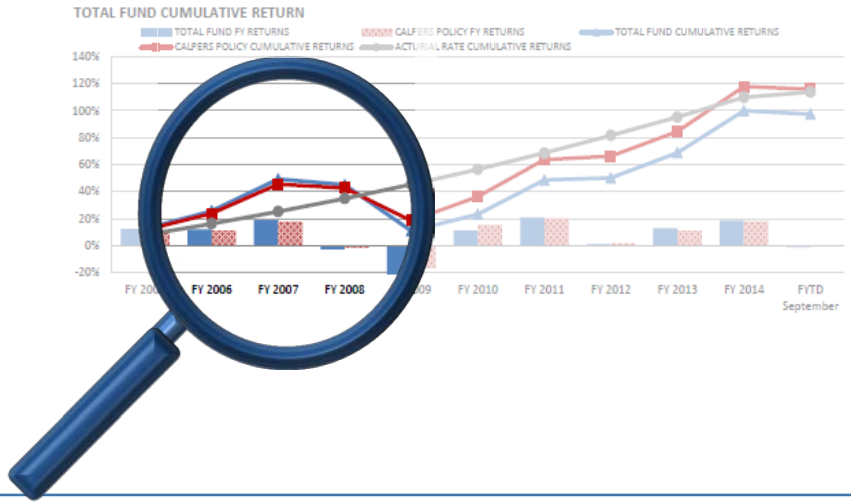
Benchmark Roles: Performance Measurement

Definition:

Benchmarks can be used as a standard against which the performance of an investment portfolio can be measured.

CalPERS Example:

Benchmarks are used as a starting point to evaluate the relative value of active management (considering both returns and risk). CalPERS defines specific benchmarks that will be utilized to evaluate performance. The returns of the portfolios and benchmarks are calculated on a regular basis.



Benchmark Type: Policy Benchmark

Definition:

CalPERS' policy benchmarks represent the characteristics of CalPERS' asset classes, including respective risk and return profiles. Ultimately, CalPERS' policy benchmarks inform our ALM process and are used to evaluate performance of the programs.

CalPERS Example:

CalPERS' Total Fund Policy Benchmark is a combination of the asset class benchmarks weighted by the policy allocation weights. The policy allocation weights are established through CalPERS' ALM process.

Benchmark Type: Asset Class Benchmark

Definition:

A portfolio of securities used to measure performance of an asset class portfolio.

CalPERS Example:

CalPERS' asset class policies are specified in CalPERS' Benchmarks Policy. For example:

- *CalPERS' Total Growth asset class policy benchmark is "84% Public Equity benchmark + 16% Private Equity benchmark"*
- *CalPERS' Inflation asset class benchmark is "75% Inflation-Linked Bonds (ILB) benchmark + 25% Commodities benchmark."*

Benchmark Type: Broad-based Market Benchmark

Definition:

An index designed to reflect the exposure of an entire market.[1]

CalPERS Example:

As previously mentioned, CalPERS' Global Equity benchmark is based on the FTSE All-World Index. The FTSE All-World Index is derived from the FTSE Global Equity Index Series which covers over 7,400 securities in 47 different countries, capturing 90-95% of the investable market capitalization. [2]

[1] *Source: Adapted from Investopedia*

[2] *Source: FTSE Fact Sheet – FTSE All-World Index as of 11/28/2014 and www.ftse.com (accessed December 2014)*

Benchmark Type: Sector Benchmark

Definition:

A portfolio of securities used to measure performance of a sector-based portfolio.

A sector is defined here as an industry or market sharing common characteristics, such as technology, health care, utilities, etc.[1]

[1] *Source: Adapted from Investopedia*

Benchmark Type: Style Benchmark

Definition:

An index designed to represent a sub-group of an asset class. For example, the U.S. common stock asset class can be divided into six sub-groups:

1) large-cap growth,
2) large-cap value,
3) mid-cap growth,
4) mid-cap value,
5) small-cap growth, and
6) small-cap value.

Example:

If a portfolio manager's strategy is to invest in large-cap value companies, then the most appropriate benchmark would be a "large-cap value" index

Benchmark Type: Fundamental-weighted Benchmark

Definition:

A type of equity index in which components are chosen based on fundamental criteria as opposed to market capitalization. Fundamentally-weighted indexes may be based on fundamental metrics such as revenue, dividend rates, earnings or book value.

Proponents of these indexes claim that they are a more accurate aggregate measure of the market because market capitalization figures tend to overweight companies that are richly valued while underweighting companies with low valuations. [1]

[1] *Source: Adapted from Investopedia*

Benchmark Type: Capitalization-weighted Benchmark

Definition:

A type of market index in which individual components are weighted according to their market capitalization, so that companies with larger market values carry a larger percentage weighting.[1]

CalPERS Example:

CalPERS' Global Equity and Private Equity policy benchmarks are based on capitalization-weighted benchmarks.

[1] *Source: Adapted from Investopedia*

Benchmark Type: Absolute Return Benchmark

Definition:

Some benchmarks are defined as an absolute return number.

CalPERS Example:

CalPERS' Multi-Asset Class Partners Program utilizes an absolute return benchmark of 7.5%.

Benchmark Type: Custom Benchmark

Definition:

Different from a standard public benchmark, a custom benchmark is tailored to a specific manager, portfolio, etc., such as a security-based benchmark reflecting a particular manager's unique investment universe and/or weighting approach [1]

CalPERS Example:

CalPERS' Global Equity Index is a customized FTSE index that excludes Board-directed divestments such as tobacco or stocks from certain countries.

[1] *Source: Adapted from CFA Institute*

Benchmark Type: Peer Benchmark

Definition:

An index based on data from a peer group of investment managers who have the same investment style. This analysis may report information such as the returns each fund generates against other similar styles. [1]

Use of a peer group as a benchmark can contextualize performance in terms of how other like-funds ("investors") are performing in a particular asset class/strategy, in a shared economic environment. Peer group benchmarks, by focusing on a narrowed sample (by style, peer definition, etc.), may have inherent biases, such as self-reporting bias or survivorship bias. Care must be taken to select peers that are pursuing similar investment strategies.

Example:

Earlier in 2014 CalSTRS adopted a peer-based index for short-term evaluation of their Private Equity Program.

[1] *Source: Adapted from Investopedia "Manager Universe Benchmark" definition*

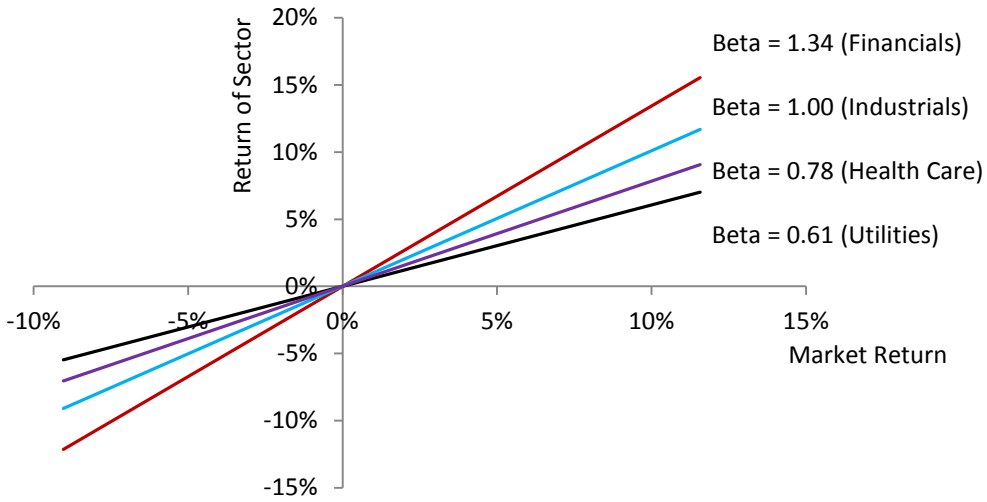
Beta

Definition:

A measure of the systematic risk of a security or a portfolio in comparison to the market as a whole. A beta of:

- Greater than 1 means the investment has more systematic risk than the market,
- Less than 1 means less systematic risk than the market, and
- Equal to one means the same systematic risk as the market. [1]

Beta of Different Sectors[2]



[1] *Source: Adapted from Investopedia*
[2] *Data source: Bloomberg Period 9/12/1989-11/5/2014*

Correlation

Definition:

A statistical measure of how two securities move in relation to each other. Correlation is computed into what is known as the correlation coefficient, which ranges between -1 and +1.

- Perfect positive correlation (a correlation co-efficient of +1) implies that as one security moves, either up or down, the other security will move identically, in the same direction.
- Alternatively, perfect negative correlation means that if one security moves, the security that is perfectly negatively correlated will move in the opposite direction.
- If the correlation is 0, the movements of the securities are said to have no correlation; their co-movements are completely random.

Perfectly correlated securities are rare, rather investors typically find that securities have some degree of positive correlation. [1]

[1] *Source: Adapted from Investopedia*

Correlation *Continued*

CalPERS Example:

The table below lists the correlations between CalPERS asset classes, developed as part of the 2013-14 ALM process.[1]

Asset Class	Correlations						
	Global Equity	Private Equity	Fixed Income	Real Estate	Infra. & Forest	Inflation Assets	Liquidity
Global Equity	1.00	0.73	0.21	0.37	0.27	0.03	0.00
Private Equity	0.73	1.00	0.12	0.38	0.20	0.01	0.00
Fixed Income	0.21	0.12	1.00	0.13	0.20	0.25	0.50
Real Estate	0.37	0.38	0.13	1.00	0.50	0.10	0.05
Infra. & Forest.	0.27	0.20	0.20	0.50	1.00	0.20	0.20
Inflation Assets	0.03	0.01	0.25	0.10	0.20	1.00	0.14
Liquidity	0.00	0.00	0.50	0.05	0.20	0.14	1.00

[1] *Source: November 2013 ALM Workshop*

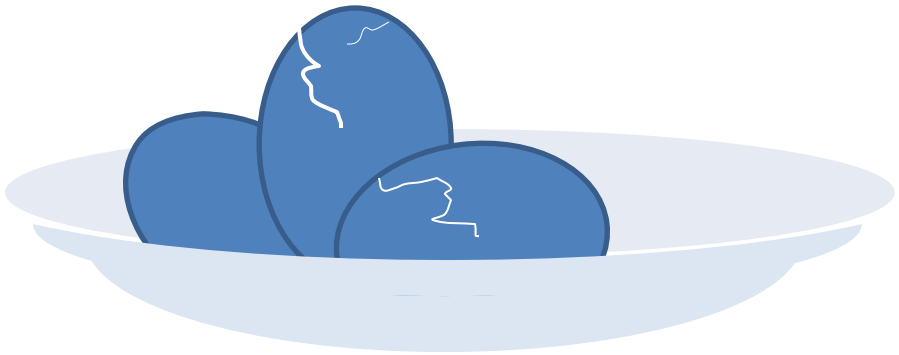
Diversification

Definition:

The act of investing in a variety of securities in a way so that a failure or slump in one will not be disastrous.

CalPERS Example:

One of the goals of asset allocation is to build a well-diversified portfolio. Traditionally, fixed income has been seen as a diversifier to public equity, in that the two assets at time can have negative correlation (if one slumps, the other does not slump). However, in the 2008 financial crisis, as public equity declined, so did fixed income. The correlation jumped from negative, to positive, because of "hidden" underlying factors the two asset classes had in common. [1]



[1] *Source: June 2013 ALM Presentation*

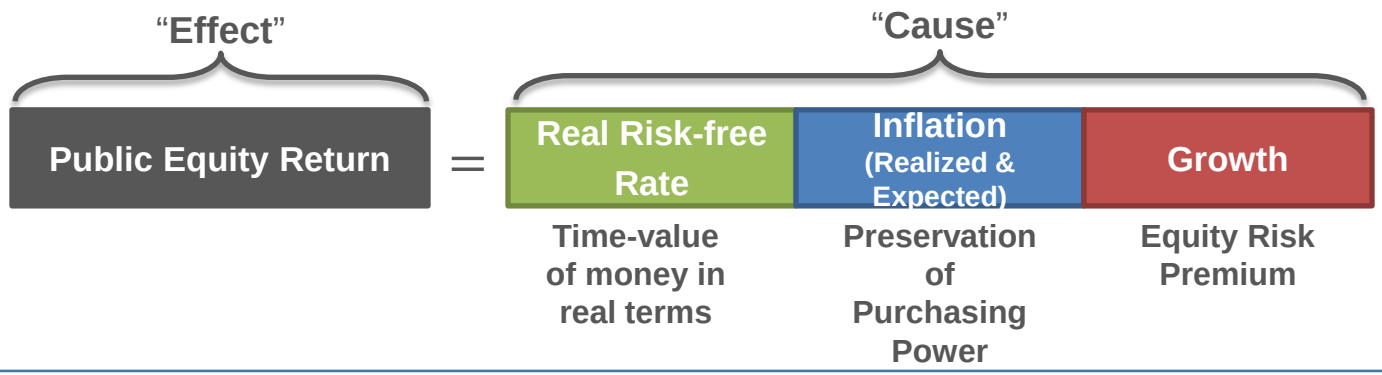
Factor Model

Definition:

By applying mathematical techniques, the returns of a portfolio or a manager can be decomposed by the exposure to specific risk factors. For example, a manager's performance can be attributed to how much exposure he or she has towards specific risk factors such as growth, inflation, volatility, etc.

CalPERS Example:

In June 2013, a presentation on Factor-based analysis was provided as part of the 2013-14 ALM process. The graphic below provides an illustrative example of using three commonly used factor categories to identify the "cause" behind returns (the "effect" of the exposure).



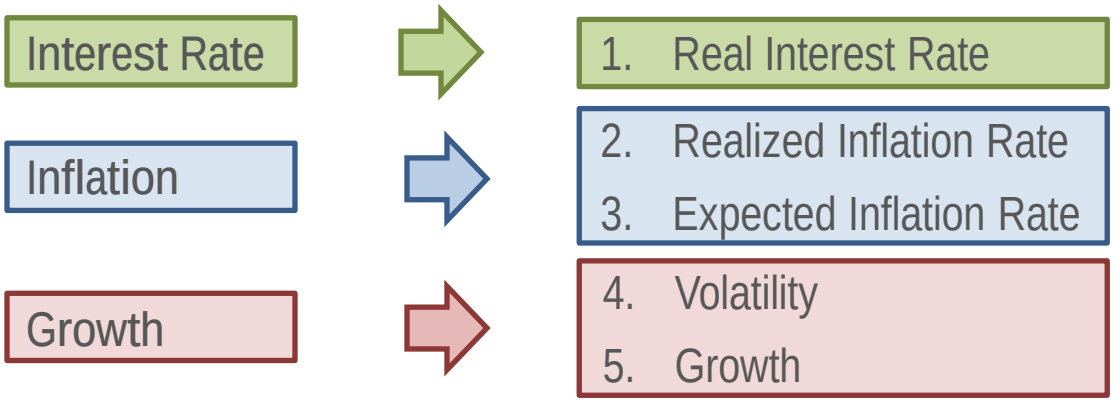
Factor-Based Asset Allocation

Definition:

Compared to the traditional asset allocation where assets are allocated to achieve certain exposure of different securities or asset classes, under the factor-based asset allocation framework, assets are allocated to achieve certain exposure of different risk factors.

CalPERS Example:

As part of the 2013-14 ALM process CalPERS utilized a factor-based approach to identify and evaluate potential policy portfolios. To enhance precision, the three common factor categories were subdivided into five factors.[1]

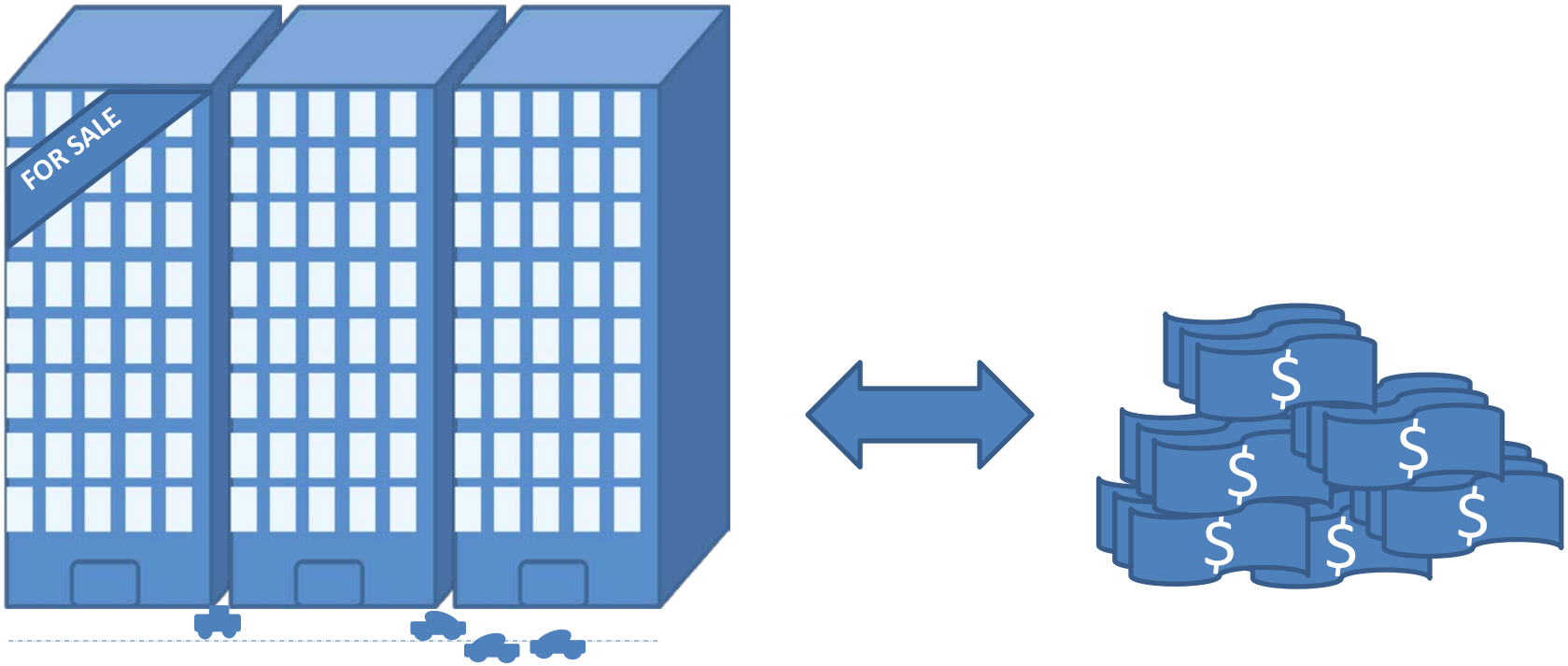


[1] *Source: June 2013 Investment Committee workshop*

Illiquid Asset

Definition:

An asset that cannot easily be sold or exchanged for cash without a substantial loss in value. This illiquidity may be because of a lack of willing investors or speculators to purchase the asset, or contractual limitations and penalties.[1]



[1] *Source: Adapted from Investopedia*

Information Ratio

Definition:

A ratio of excess return of a portfolio (relative to a benchmark) to the tracking error. The information ratio (IR) measures a portfolio manager's ability to generate excess returns relative to a benchmark, but also attempts to identify the consistency of the manager. [1]

Example:

For instance, if two managers have identical excess returns, then the manager having a lower tracking error (which will result a higher IR) demonstrates better consistency and may be considered more skillful.

[1] *Source: Adapted from Investopedia*

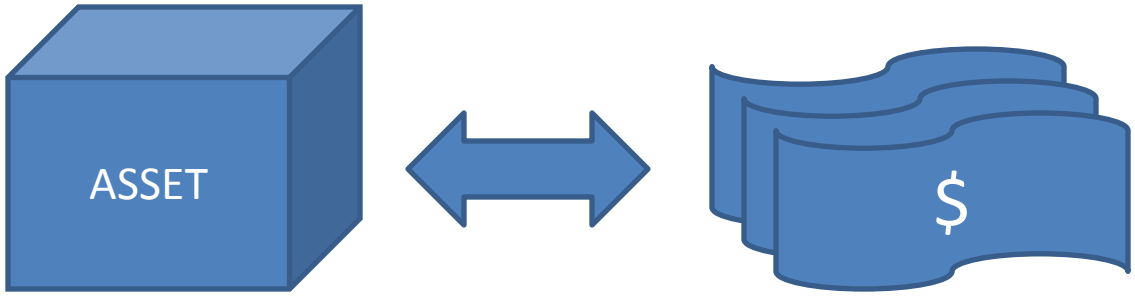
Liquid Asset

Definition:

An asset that can be converted into cash relatively quickly with minimal impact to the price received.[1]

CalPERS Example:

Typically public assets, such as stocks (global equities) and bonds (global fixed income securities) are considered relatively liquid.



[1] *Source: Adapted from Investopedia*

Market Capitalization

Definition:

The total dollar market value of all of a company's outstanding shares. Market capitalization is calculated by multiplying a company's shares outstanding by the current market price of one share. The investment community uses this figure to determine a company's size, as opposed to sales or total asset figures. [1]

Example:

*As of November 21, 2014, the number of outstanding shares Apple has is 5.87 billion; and the stock price of Apple's shares is $116.47, thus, the market capitalization ("market cap" for short) is 5.87 billion * 116.47 = $683.68 billion.*

[1] *Source: Investopedia*

Mean Reversion

Definition:

A theory suggesting that prices, returns or values eventually move back towards the mean or average. This mean or average can be the historical average of the price or return or another relevant average such as the growth in the economy or the average return of an industry. [1]

Example:

The chart below displays the Chicago Board Options Exchange Volatility Index (VIX) which reflects a market estimate of future volatility. The chart shows that the estimate levels tend to revert back towards the mean (blue line).[2]

[1] *Source: Investopedia*

2 Data Source: Bloomberg, Period November 23, 1994- November 24, 2014.

Momentum

Definition:

If a security displays the characteristic of momentum, the price of that security is more likely to keep moving in the same direction than to change directions.

Example:

For example if a security exhibits momentum and the recent returns of that security are better than the market as a whole, the near-term future returns may also be likely to beat the market.

Passive Investing

Definition:

An investment strategy involving limited active buying and selling. Passive investors will purchase investments with the intention of long-term appreciation and limited maintenance. [1] Passive investments will track their benchmarks very closely and exhibit low tracking error.

CalPERS Example:

A significant portion of the CalPERS global equity portfolio is invested passively, by holding the same constituents and weights as the benchmark.

[1] *Source: Adapted from Investopedia*

Price Transparency

Definition:

The accessibility of price information for assets or securities.

CalPERS Example:

In CalPERS case, one example of public assets could be Global Equity and one example of private assets could be Private Equity.

- *For Global Equity, the market for stock trading is fairly transparent; almost all investors can obtain price information for any individual stocks at any time.*

- *However, for Private Equity, both because the "market" is not as transparent as that of Global Equity and because private equity investments do not get valued as frequently as public equities (a stock could be valued hundreds of times within a day based on actual traded prices while a private equity might be evaluated once per quarter based on a valuation model), it has less price transparency.*

Pricing Frequency

Definition:

This is the terminology used to define how frequently an asset gets evaluated.

Example:

For stocks, their pricing frequency is relatively high because a stock could be valued hundreds of times within a day. While for private equity or real estate, their pricing frequency is relatively low because a private equity or a real estate might be valued once per quarter.

Sharpe Ratio

Definition:

A ratio developed by Nobel laureate William F. Sharpe to measure risk-adjusted performance. The Sharpe ratio is calculated by subtracting the risk-free rate from the rate of return for a portfolio and dividing the result by the standard deviation of the portfolio returns. [1]

Example:

The Sharpe ratio tells us whether a portfolio's returns are due to smart investment decisions, or a result of excess risk. The greater a portfolio's Sharpe ratio, the better its risk-adjusted performance .

- *For example, Manager [A] earned a 15% return, and Manager [B] earned 12%*
- *However, if Manager [A] took much larger risks than Manager [B], Manager [B] may have a higher Sharpe ratio[1]*

[1] *Source: Adapted from Investopedia*

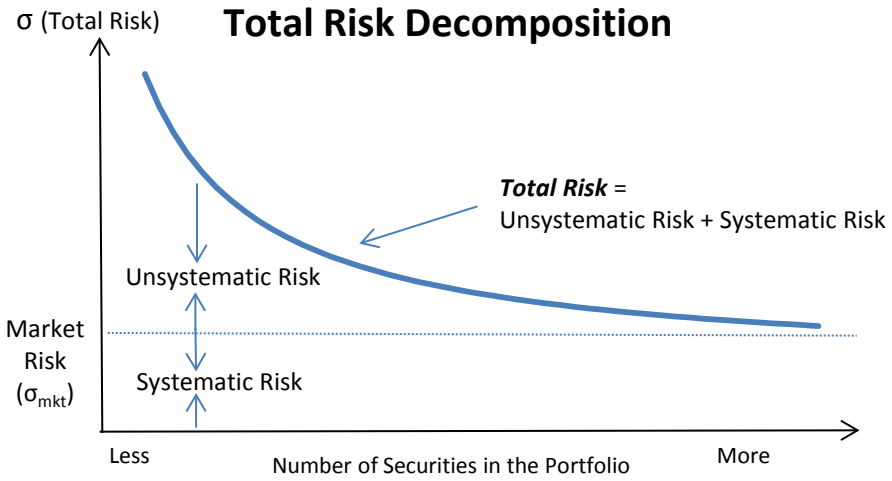
Systematic Risk

Definition:

The risk inherent to the entire market or an entire market segment. Systematic risk, also known as "un-diversifiable risk" or "market risk," affects the overall market, not just a particular stock or industry. [1]

Example:

The Great Recession provides a prime example of systematic risk. Investors saw the values of their investments change in 2008 because of the market-wide economic event, regardless of what types of securities they held. [1]



[1] *Source: Adapted from Investopedia*

Diversifiable Risk

Definition:

Company or industry-specific hazard that is inherent in each investment. Unsystematic risk can be reduced through diversification. Diversifiable risk is also known as:

- nonsystematic risk
- specific risk
- idiosyncratic risk
- residual risk[1]

Example:

The risk that airline industry employees will go on strike, and airline stock prices will suffer as a result, is considered to be unsystematic risk. This risk primarily affects the airline industry, airline companies and the companies with whom the airlines do business. It does not affect the entire market system, so it is an "unsystematic" or "nonsystematic" risk.

An investor who owned nothing but airline stocks would face a high level of unsystematic risk. By diversifying his or her portfolio with unrelated holdings, such as health-care stocks and retail stocks, the investor would face less unsystematic risk.[1]

[1] *Source: Adapted from Investopedia*

Time Horizon

Definition:

In investments this term is typically used to

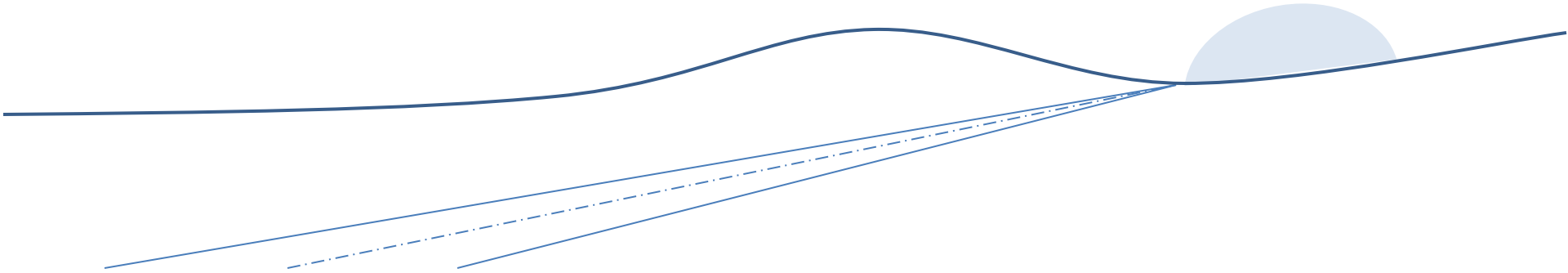
1) Define how long an investor plans to hold an investment; i.e., one month, one year, ten years, etc., or

2) Define a set period for performance evaluation (1-year, 3-year, 5-year, 10-year, 20-year)

Time horizons are often characterized as short-term or long-term. However, the distinction between long-term and short-term is relative to the investor.

CalPERS Example:

CalPERS, as an institutional investor with a "perpetual" fund, has an exceptionally long investment horizon. For example, a "5-year" time horizon for an individual investor could be a "long-term" while CalPERS would not consider a time horizon of less than 10 or 15 years to be "long-term."



Tracking Error

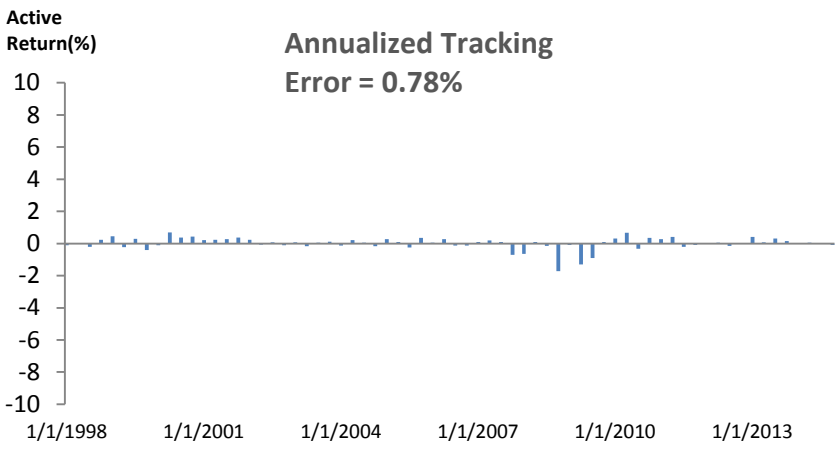
Definition:

Is a measure to quantify the “active risk”, which is the standard deviation of the difference between the portfolio and benchmark returns.[1]

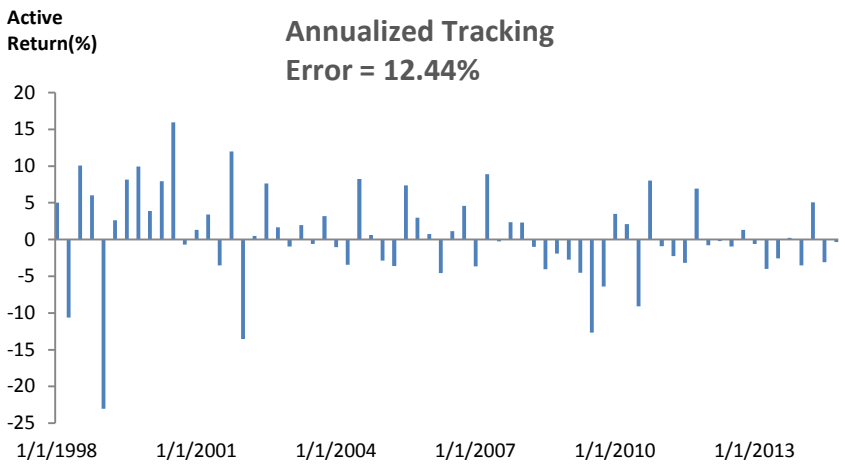
CalPERS Example:

The charts[2] below illustrates the relative tracking error of the Global Equity and Private Equity programs.

GE Quarterly Return Difference



PE Quarterly Return Difference



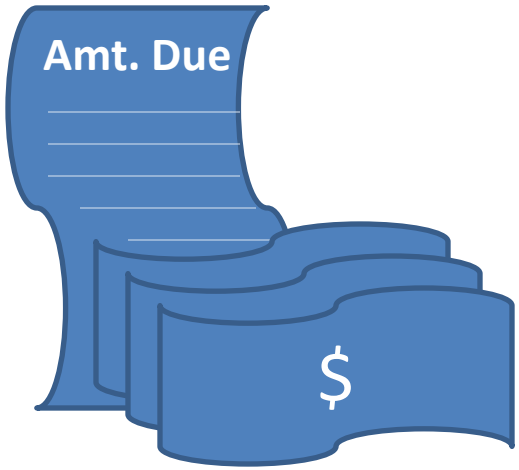
[1] *Source: Adapted from Wikipedia*

[2] *Data Source: State Street, Period 1/31-1998-10/31/2014*

Transaction Costs

Definition:

Expenses incurred when buying or selling securities. Transaction costs include brokers' commissions and spreads (the difference between the price the dealer paid for a security and the price the buyer pays). The transaction costs to buyers and sellers are the payments that banks and brokers receive for their roles in these transactions. There are also transaction costs in buying and selling real estate. These fees include the agent's commission and closing costs such as title search fees, appraisal fees and government fees.[1]



[1] *Source: Investopedia*

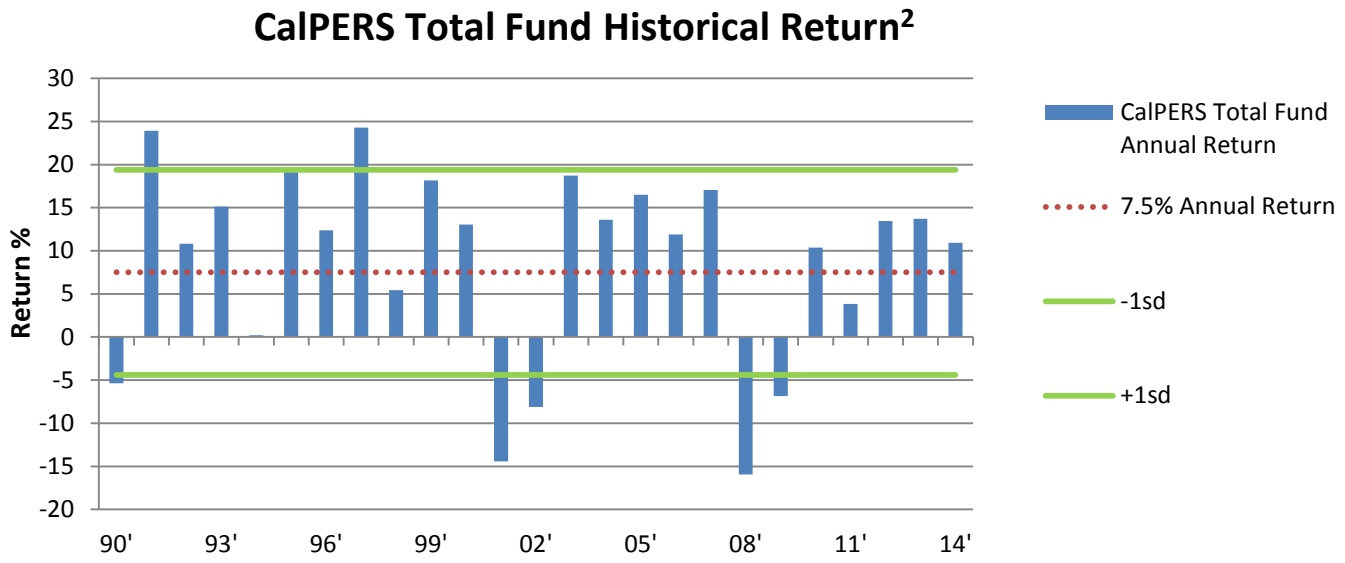
Volatility

Definition:

A statistical measure of the dispersion of returns for a given security, portfolio or market index. Volatility is typically measured by using the standard deviation of the security, portfolio, or index returns. Commonly, the higher the volatility, the riskier the security. [1]

CalPERS Example:

CalPERS' annualized volatility is 11.9%, which means we expect the annual return to be between -4.4% and 19.4% about 70% of the time (depicted below as the area between the two green lines).



[1] *Source: Adapted from Investopedia*

[2] *Data source: State Street, ending period September 30th annually*