Investment Education Workshop #3
Public Markets Part Two: Global Equity

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CalPERS

Overview

- CalPERS Board Self-Evaluation Workstream: Board Curriculum
- Board delegation sets Investment Committee Responsibilities
- Partnership with CFA Institute and Council of Institutional Investors
- Workshop #1 – Risk and Return Basics
- Workshop #2 – Asset Class Overview: Global Fixed Income
- Workshop #3 – Asset Class Overview: Global Equity

The CalPERS Pension Buck

Why Investment Returns Matter

Investment Committee Responsibilities

As set by the Board's Delegation

Conduct:
- Strategic asset allocation
- Selection and performance of board consultants

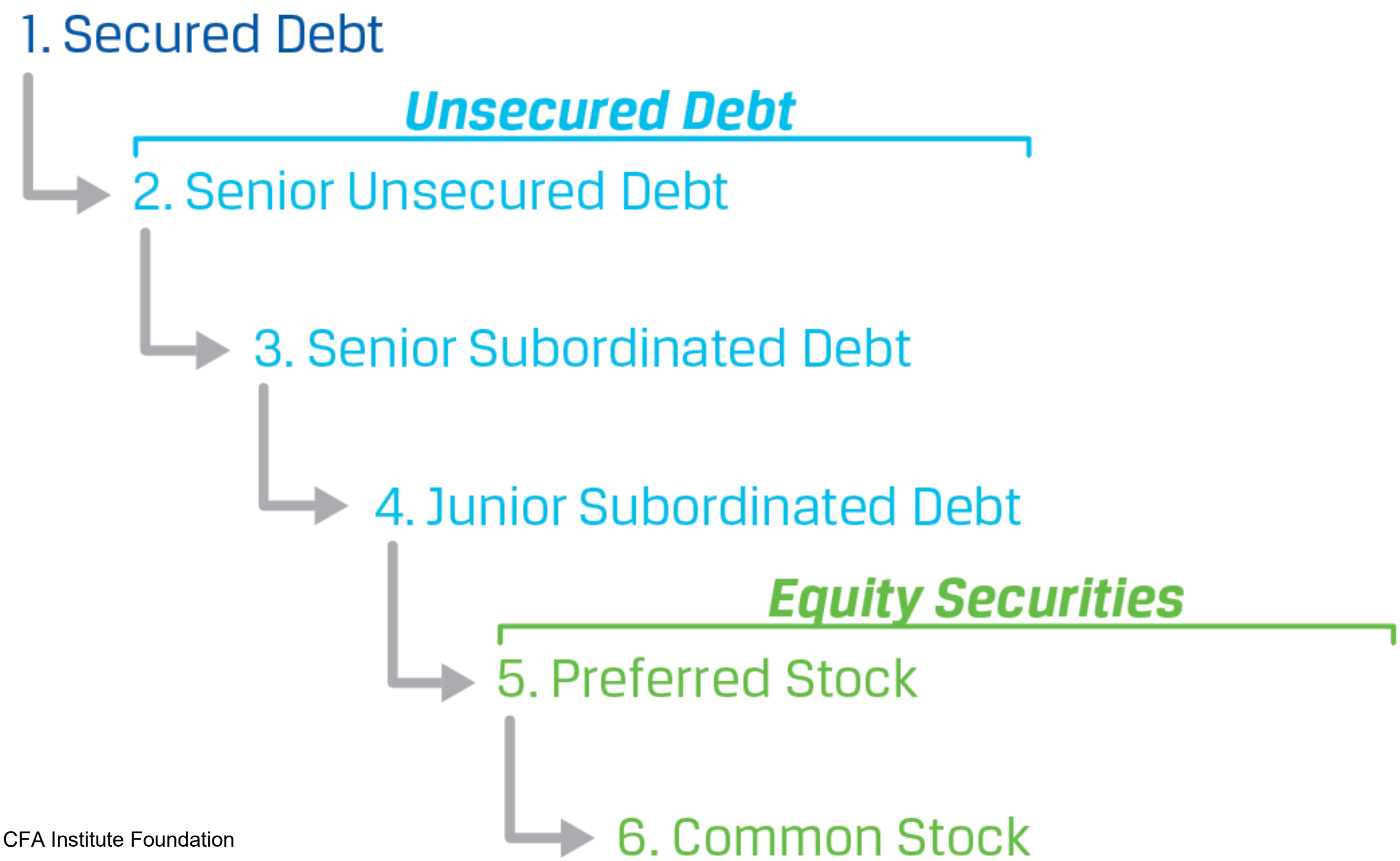
Oversee:
- Investment performance
- Fund liquidity management
- Selection and performance of partners, managers, and consultants
- Cost effectiveness of investment program
- Investment Office risk assessment and control environment
- Environmental, Social, and Governance program
- Management of risks

What is Equity?

- Equity securities are issued by companies to raise capital for operations or grow the business.
- There are several types of equity securities:
  - Common stock
  - Preferred stock
  - Convertible bonds
  - Warrants

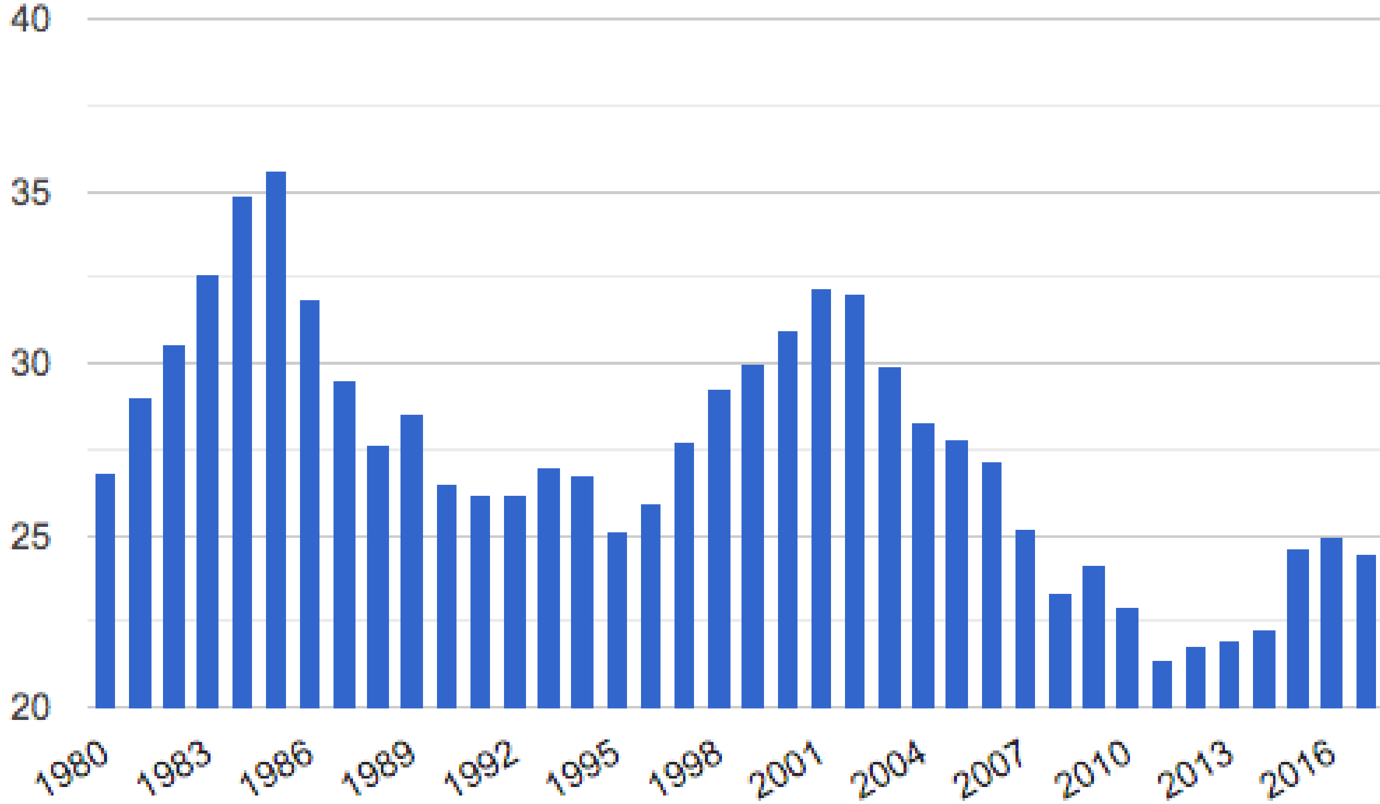
- What constraints have we put on global equity allocation?
- What is their purpose?
- How do we track their impact on risk and return?
- Do the returns from global equity justify the risks?
- Why not have a 100% global equity portfolio?

Equity vs Debt: Priority of Claims



Source: CFA Institute Foundation

U.S. Percent of Global GDP



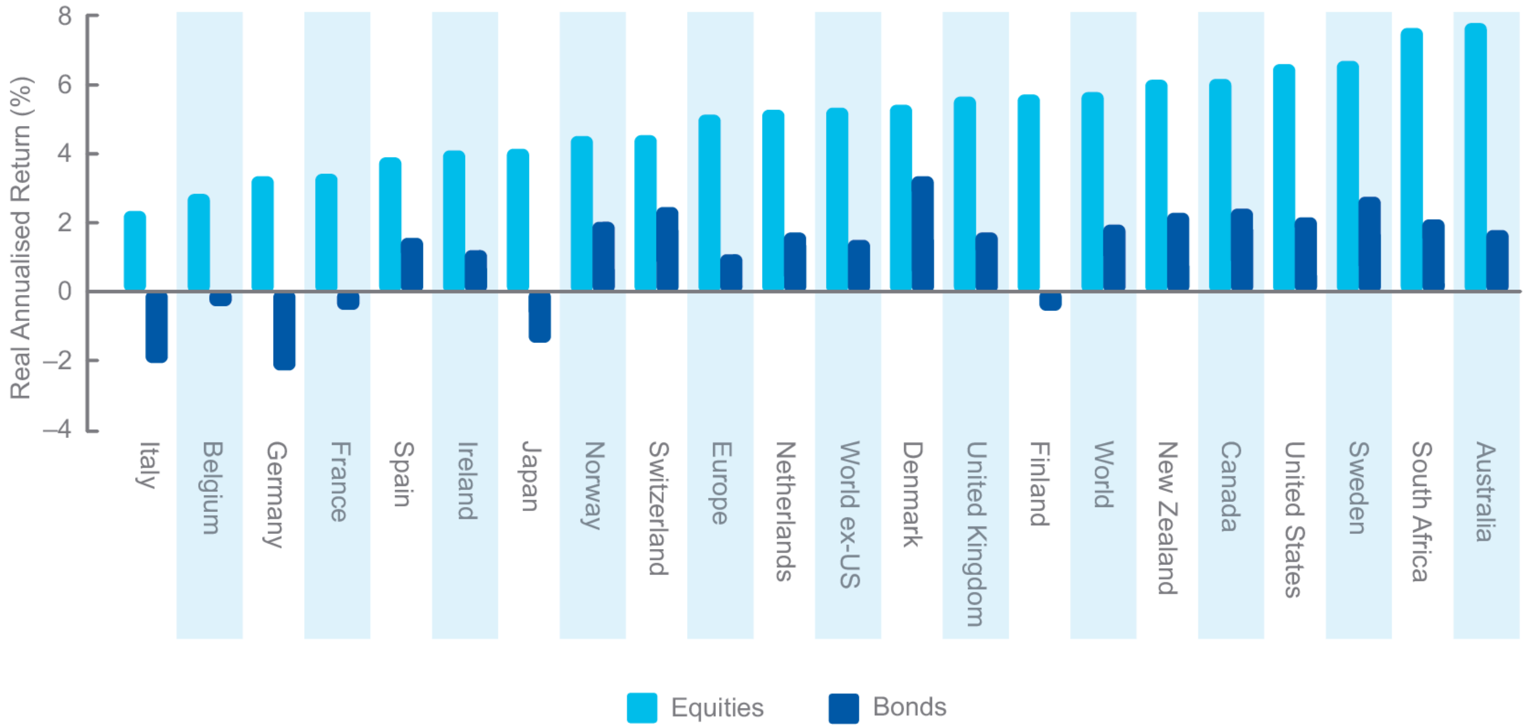
Source: World Data

What is a Global Equity Allocation?

- A global equity fund or allocation gives the portfolio manager the ability to invest anywhere in the world, including the United States

- A global equity fund is usually divided into three major categories:
  - U.S. Stocks
  - International Developed Market Stocks
  - Emerging Markets Stocks

Exhibit 4 Real Annualised Returns on Equities vs. Bonds Internationally, 1900–2010



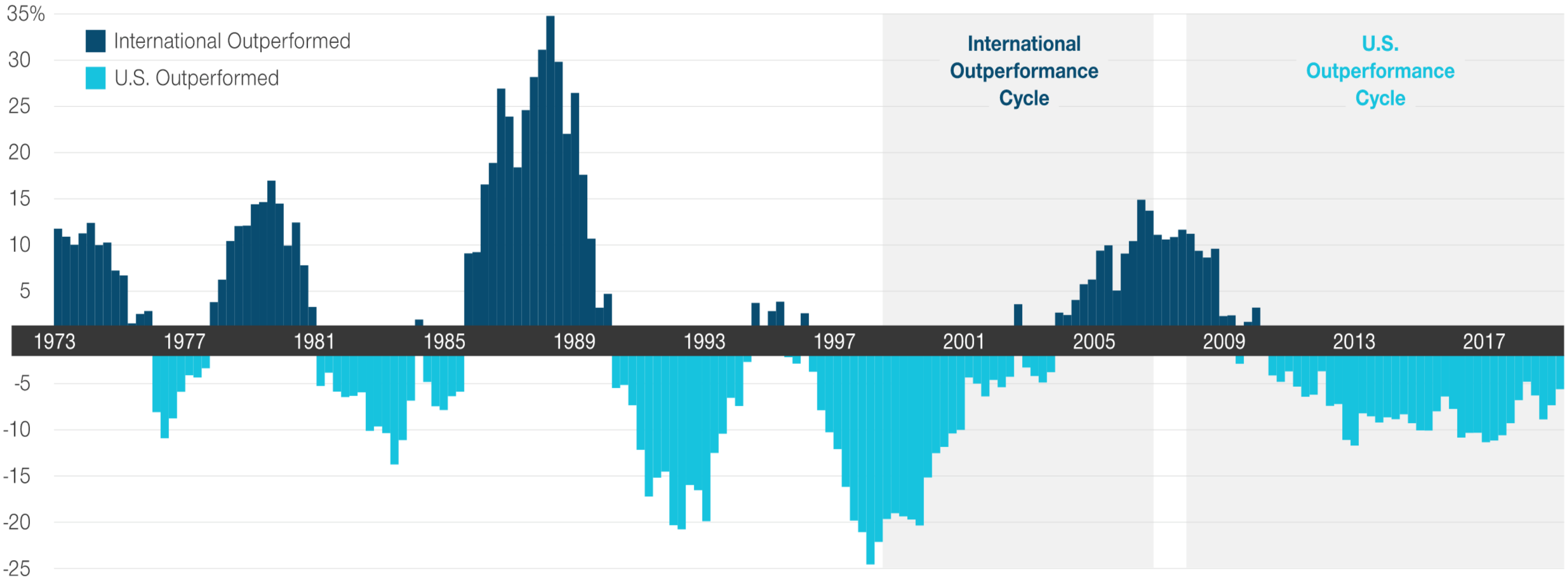
Source: E. Dimson, P. Marsh, and M. Staunton, *Credit Suisse Global Investment Returns Sourcebook 2011* (Zurich: Credit Suisse Research Institute, 2011).

Traditional Rationale of Global Investing

- Diversification lowers risk
- Capitalize on global economic growth
- Breadth of opportunities, including market inefficiencies
- Take advantage of economic cycles

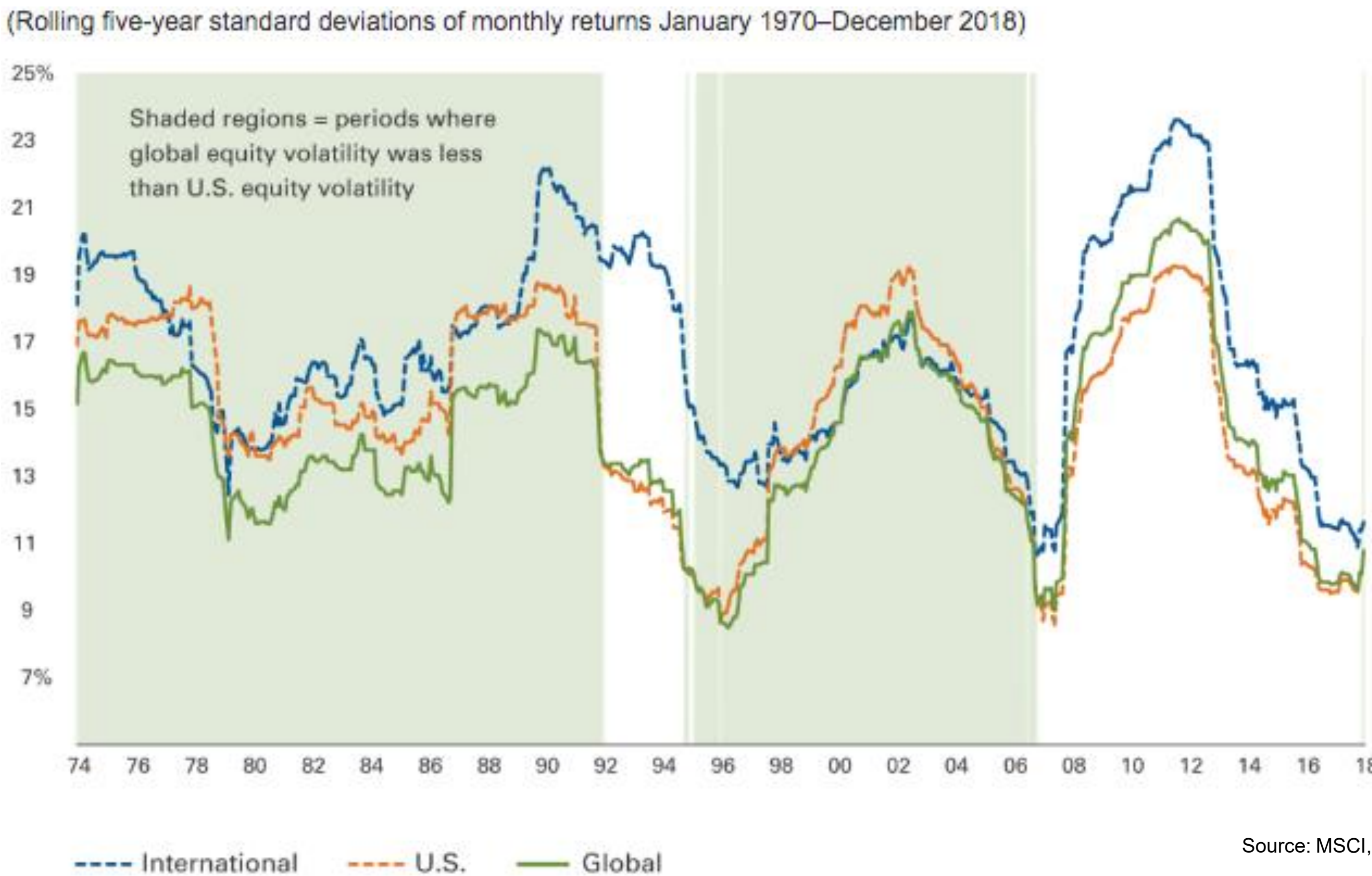
- For a fund our size, what should be our focus on beta and alpha?
- How likely is it that global equity can deliver the returns we need?

U.S. and International Equities: Periods of Outperformance



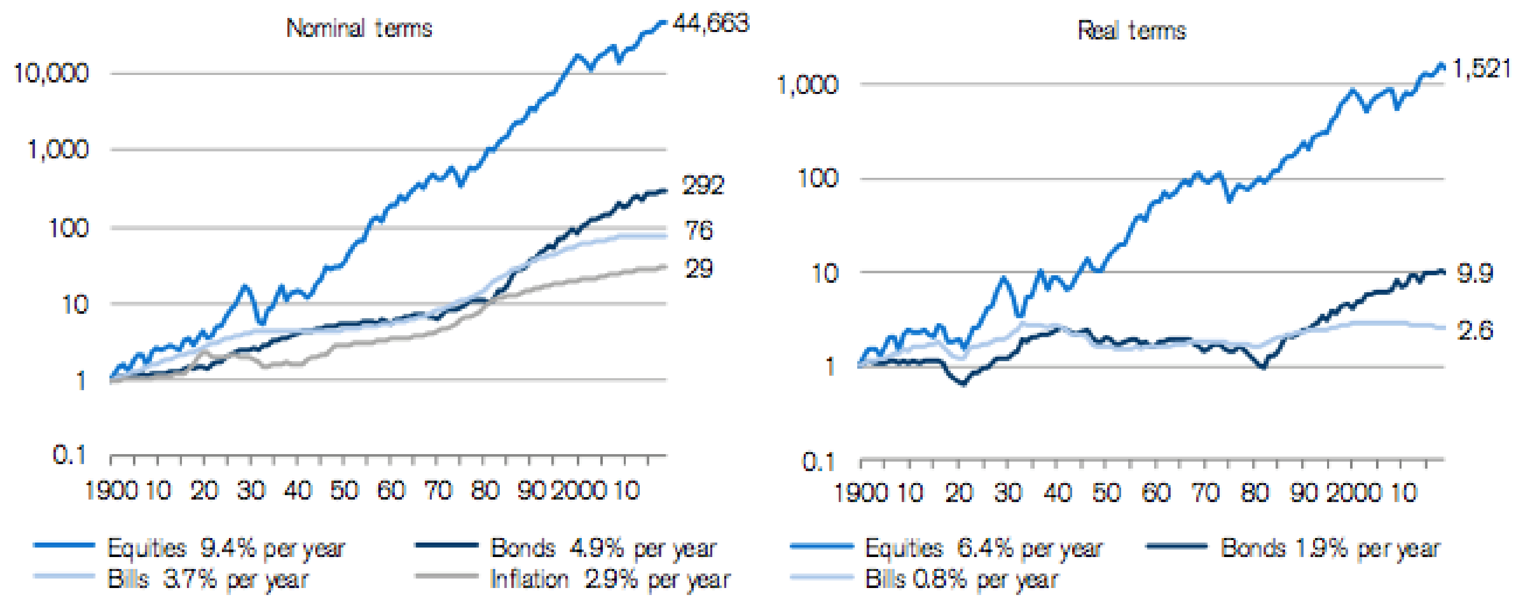
Sources: FactSet, MSCI, S&P, and T. Rowe Price.

U.S. Equity vs International Equity



Source: MSCI, Morningstar, Vanguard

Global Equity Performance vs Other Assets



Sources: Elroy Dimson, Paul Marsh and Mike Staunton, Triumph of the Optimists, Princeton University Press, 2002, and Global Investment Returns Yearbook, Credit Suisse, 2019. Not to be reproduced without express written permission from the authors.

Source: Elroy Dimson, Paul Marsh and Mike Staunton, Triumph of the Optimists, Princeton University Press, 2002, and Global Investment Returns Yearbook, Credit Suisse, 2019.

Why CalPERS Invests in Global Equity

Primary role

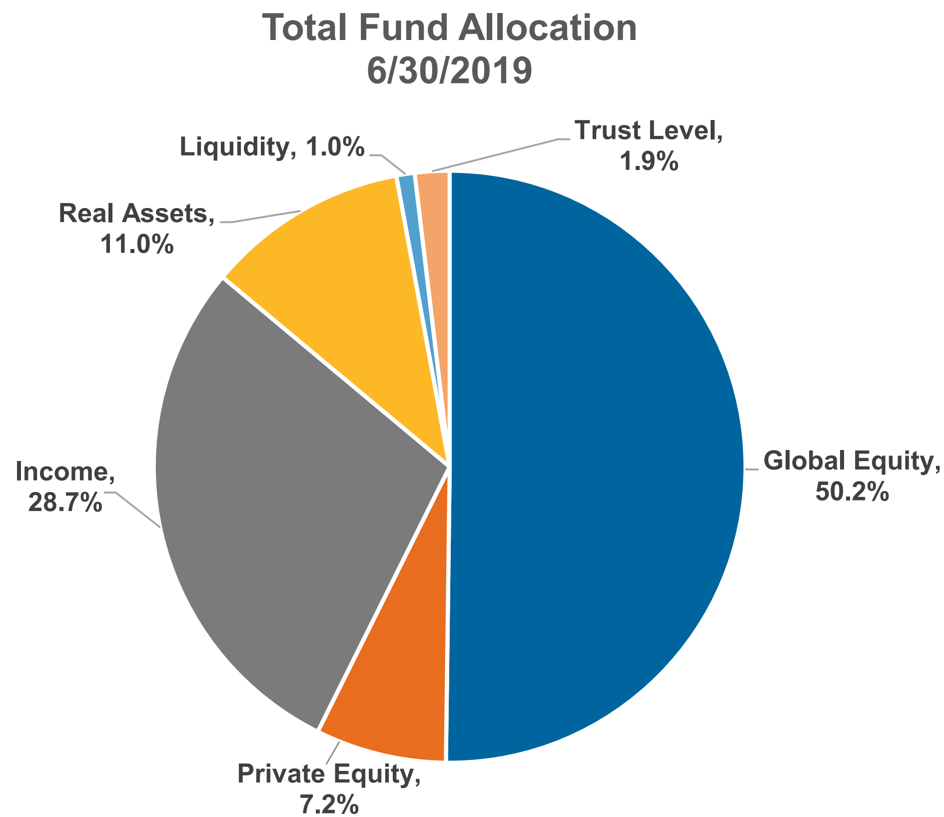
The role of equities is “total return oriented and to capture the equity risk premium (ERP), defined as the excess return over risk-free government bonds, by means of ownership risk in companies and exposure to corporate earnings growth. The major driver is appreciation, with some cash yield (growth and liquidity)” – CalPERS website

- Is tracking error the main measure of risk?
- What is our tracking error budget and why?
- What other measures of risk should we consider for global equity?

Why CalPERS Invests in Global Equity

- Drivers of total performance
  - Price appreciation
  - Cash yield
- Risks
  - Economic: High sensitivity to global economic growth variability
  - Liquidity: Portfolio expected to remain highly liquid

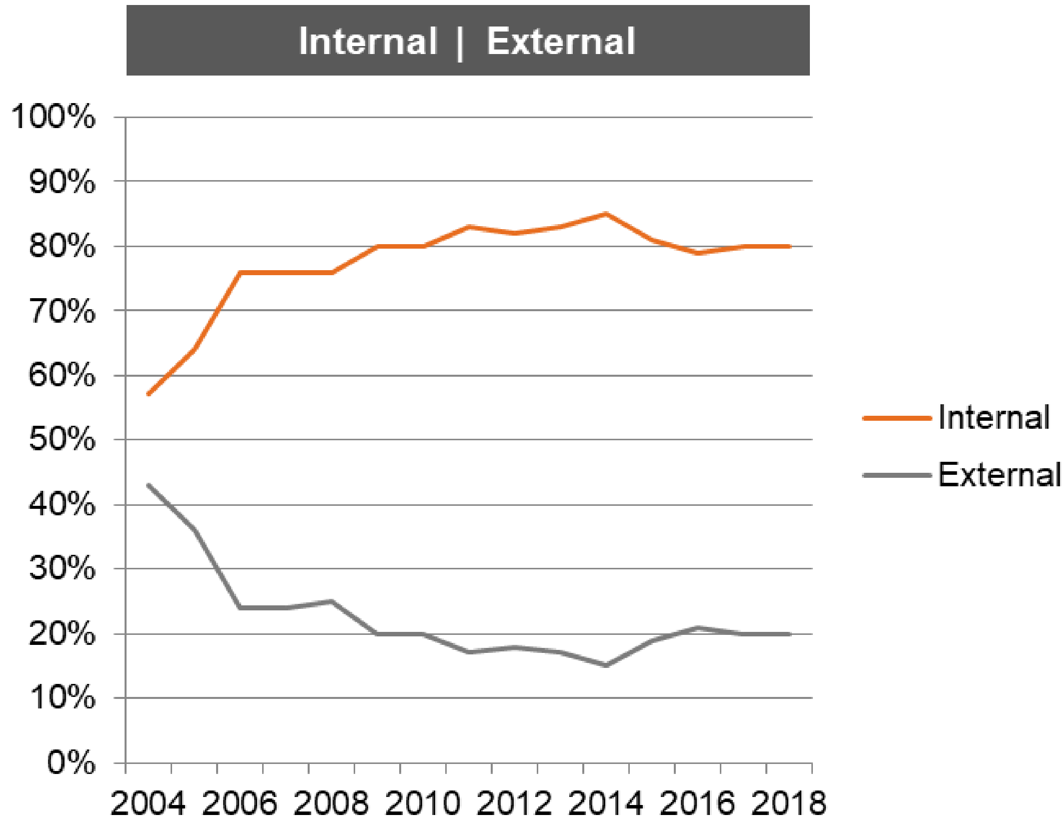
CalPERS Total Fund Asset Allocation



CalPERS' Global Equity Investment Philosophy (2018)

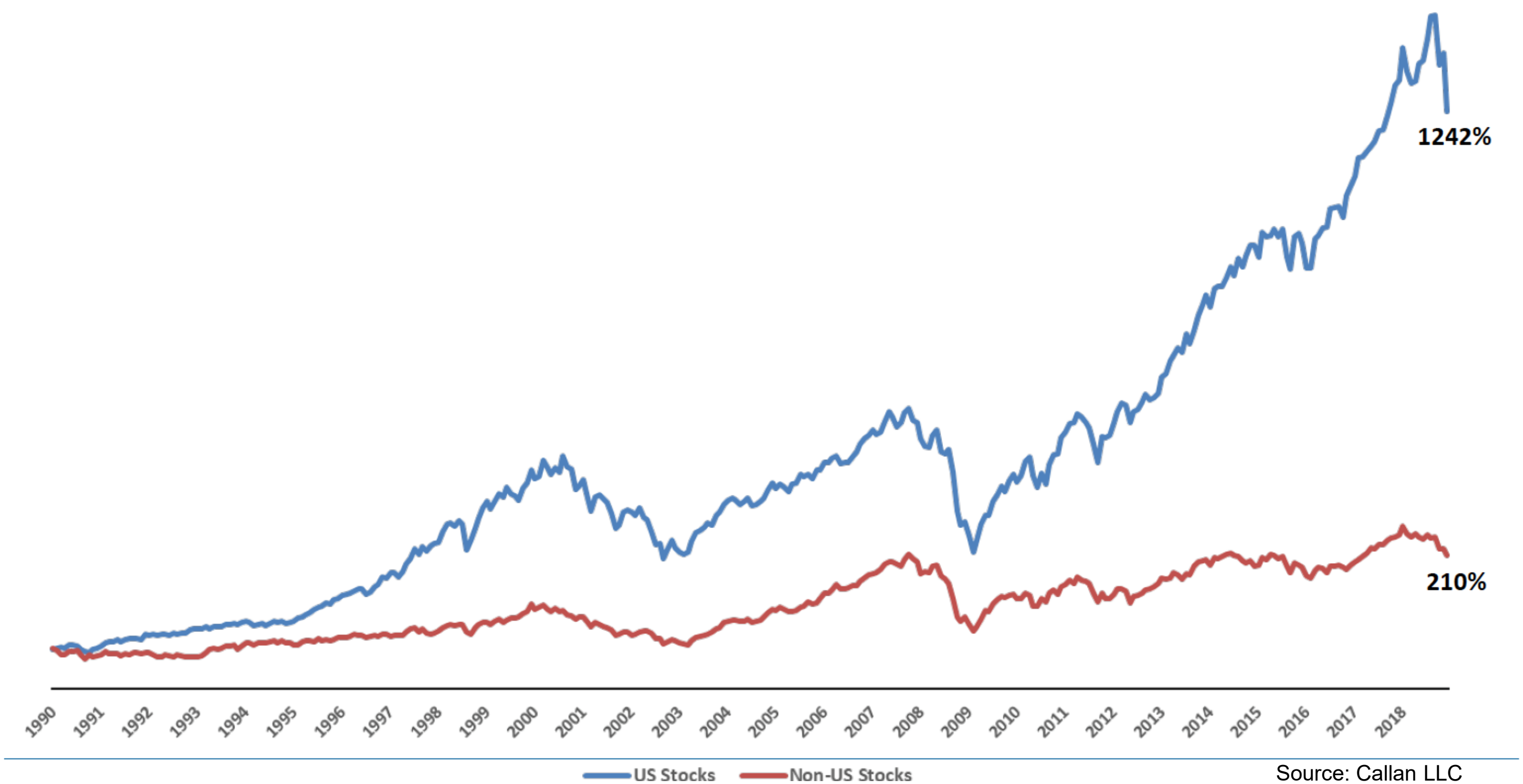
- Global Equity markets are difficult to predict
  - Priority is the efficient delivery of equity market returns through a risk-managed combination of index-oriented, alternative beta, and traditional active management
- Alpha opportunities are multi-faceted and time-varying
  - Structural alpha: systematic market structures and behaviors
  - Tactical alpha: market dislocations
  - Time-varying opportunities; risk-taking based on opportunity set
- Focus on holistic portfolio, net of costs
  - 80% of the portfolio is invested in cost-efficient, internally-managed strategies
  - Capital allocation decisions are based on holistic portfolio risk, opportunities, and implementation capabilities

CalPERS Internal vs External Management



U.S. vs Non-U.S. vs Equity Returns

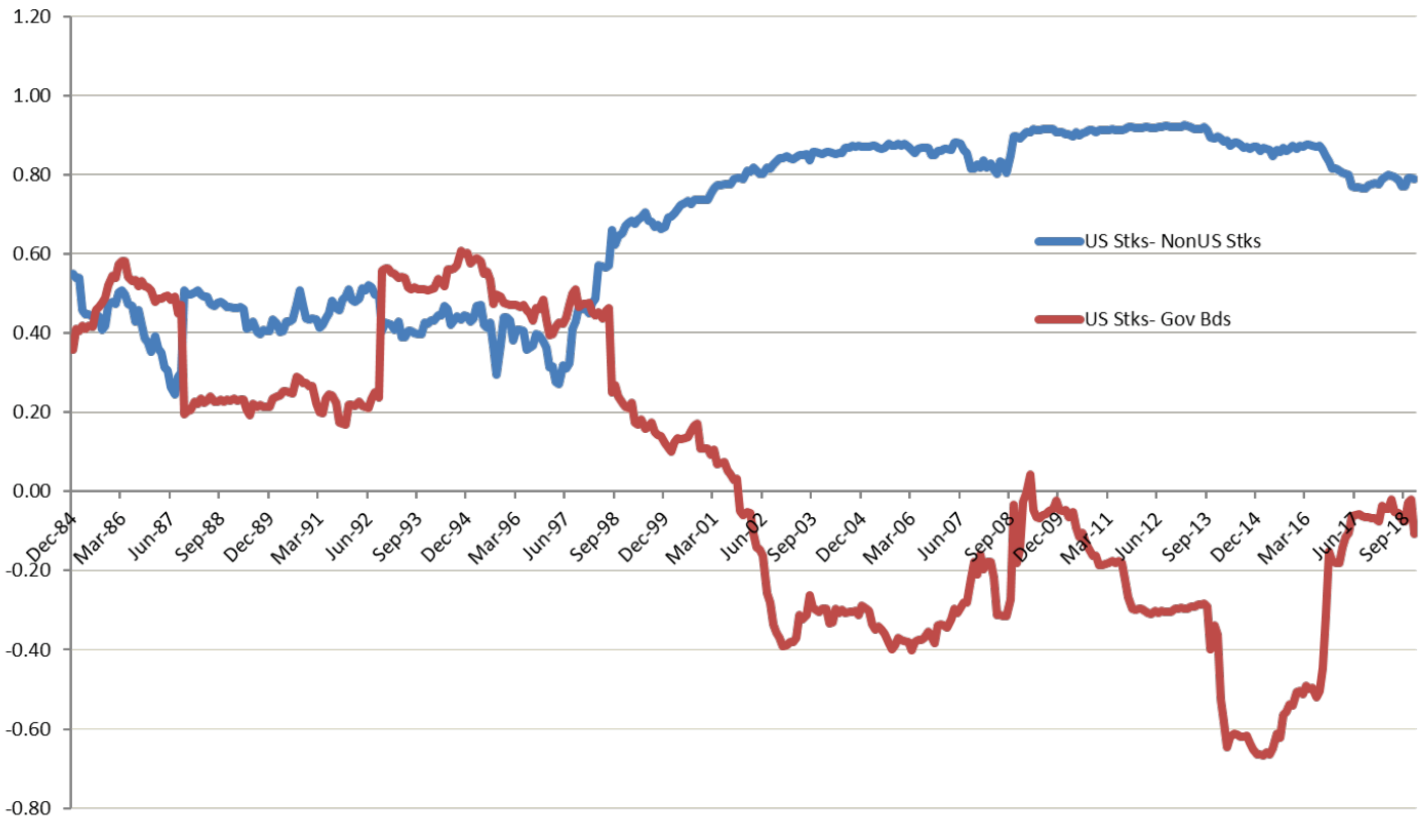
Diversification Comes with Opportunity Costs



Source: Callan LLC

U.S./Non U.S Stocks vs U.S. Stocks/U.S. Bonds

Changing Correlations



Source: Callan LLC

Global Equity Benchmarks

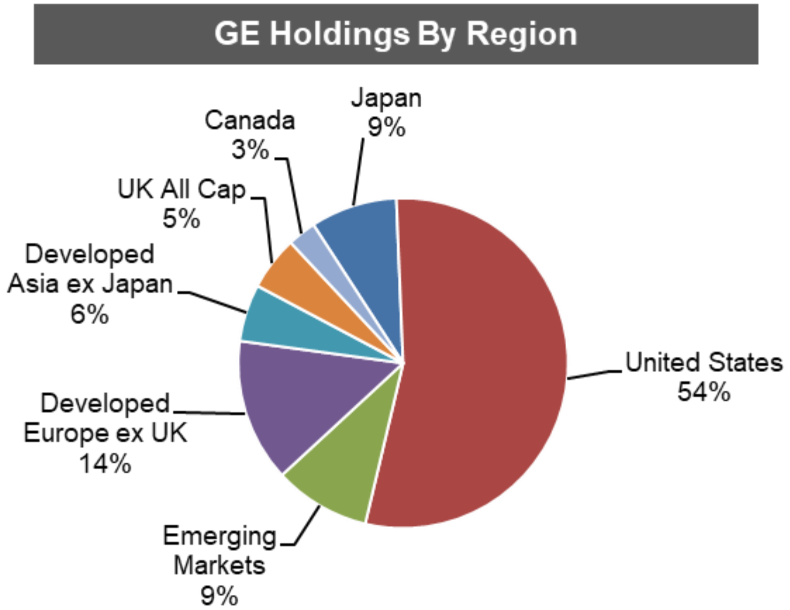
Global equity benchmarks should be:

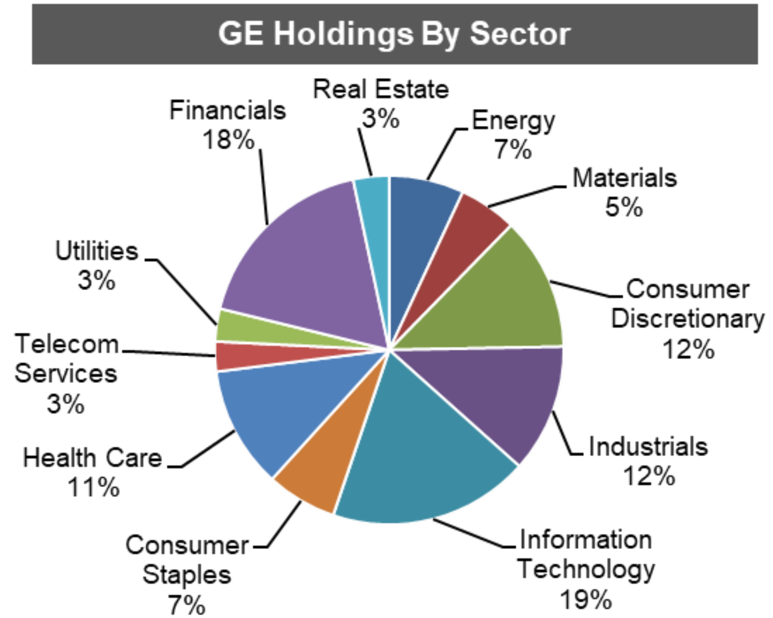
- Unambiguous
- Investable
- Measurable
- Appropriate
- Specified in advance

- Why do we have a global benchmark?
- Does our benchmark capture the right risks?

CalPERS Benchmark

- Excludes tobacco, firearms, thermal coal, Iran/Sudan
- Complies with emerging market principles
- Covers 47 countries, 36 currencies
- Holds approximately 10,000 securities, weighted by market-capitalization



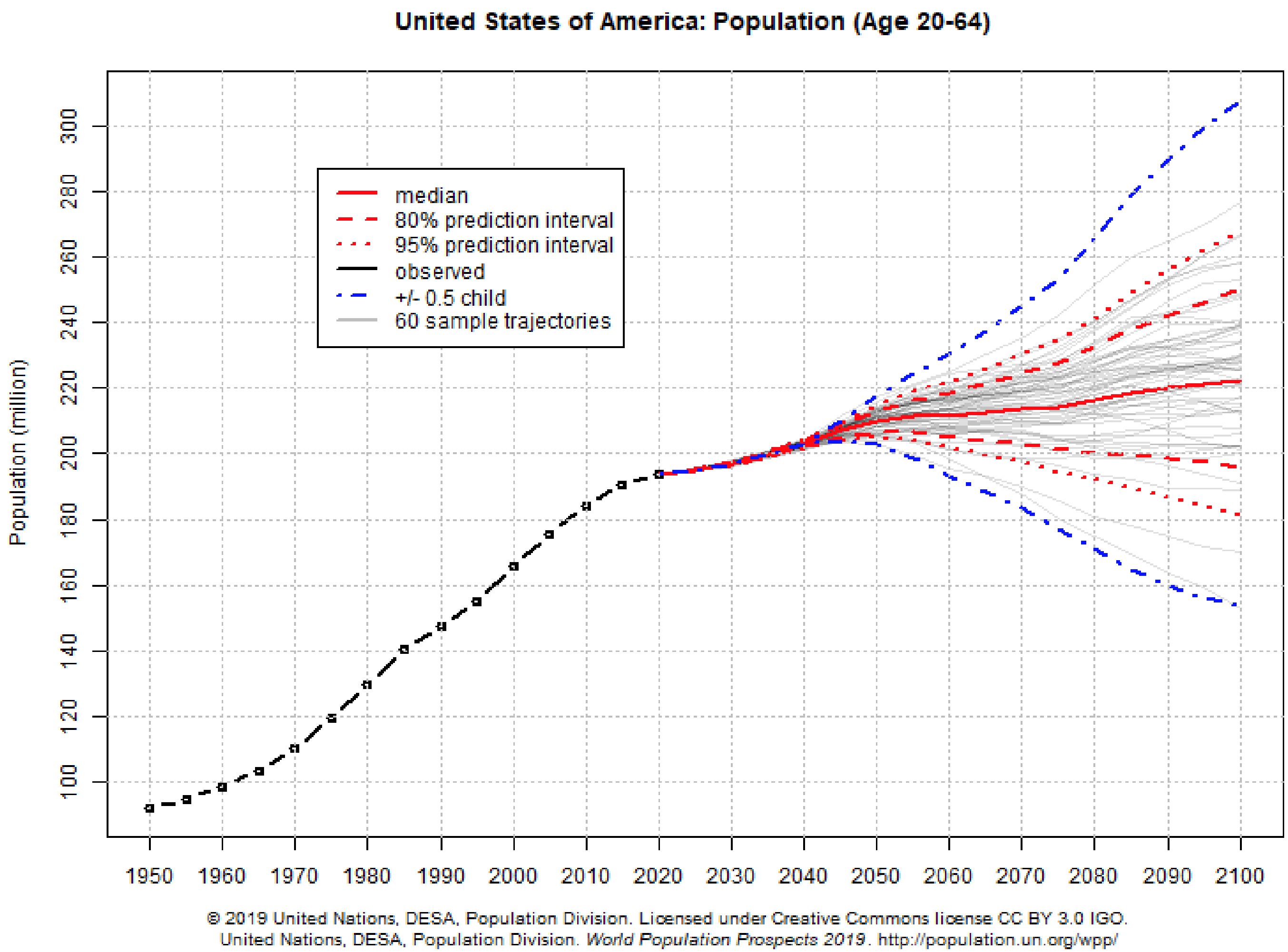


Looking Ahead

- Slowing growth in the world's economies
- Flat or lower returns for global equities
- Future inflation and interest rates are uncertain
- Central bank intervention may distort cyclical market cycles
- Increasing geopolitical tensions may impact returns
- Demographic shifts may change the risk/reward ratio

- Does it matter how the market prices company shares?
- How do we value our global equity portfolio?
- What is the best time horizon for measuring performance?
- Do we have any active strategies, and can they move the needle on performance?
- How do we think about our exposure to the same companies or sectors in public markets, via equity and debt?
- Where do costs and time horizons play into the decisions on passive vs active?

United States Working Population Trend



Source: United Nations

Glossary of Terms

Active vs Passive Management

- Involves holding portfolios that are different from the benchmark in an attempt to outperform that benchmark
- The variability in performance relative to the benchmark is called “active management risk”, or ”active risk”
- Active management is almost always more expensive (costs and fees) than passive investing
- *(Passive Management)* (indexing) attempts to match, with low tracking volatility, the returns on an assigned market index by holding all or most of the of the securities in the index in similar proportions to security weights in the index

Alpha and Beta

The investment industry uses Greek letters to signify various aspects of investment risk and return, among them:

- *Alpha*: the excess return relative to a benchmark, usually referring to the excess return generated by an active manager's skill in generating returns over the benchmark.
- *Beta*: A measure of the volatility (systematic risk) of a security or a portfolio in comparison to the market as a whole. A beta of 1.0 indicates that the investment will move in perfect sync with the market. A beta of less than 1.0 means the investment will be less volatile than the market.

Common Stock

- Most widely issued type of shares
- Represents ownership of the company and includes voting rights, typically on a one-share-one-vote basis
- Shareholders receive cash flow (dividend) rights and common shares are normally issued with an infinite life (as long as the company exists)
- Some companies issue more than one class of shares (e.g. A and B shares) to provide one class of owners (e.g. founders) with more voting powers than public shareholders
- Shares of public companies trade on stock exchanges and are usually highly liquid with prices fixed in daily trading
- Shares of private companies are not traded on exchanges

Convertible Bonds

- A debt security (bond) which like a normal bond pays a fixed rate of interest (coupon) but is convertible into a specified number of common shares
- As a “hybrid security”, convertible bonds have both equity and debt features
- No voting rights but if and when converted into common stock, they convey voting rights to the shareholder

Depository Receipts

- A security that represents an economic interest in a foreign company
- Are issued by a financial institution rather than a company so that foreign investors can avoid the difficulty and high transaction cost of buying shares on an exchange in a foreign country
- Trade like common shares on an exchange, and are known by various names, usually Global Depository Receipts, or GDRs
- American Depository Receipts are known as ADRs

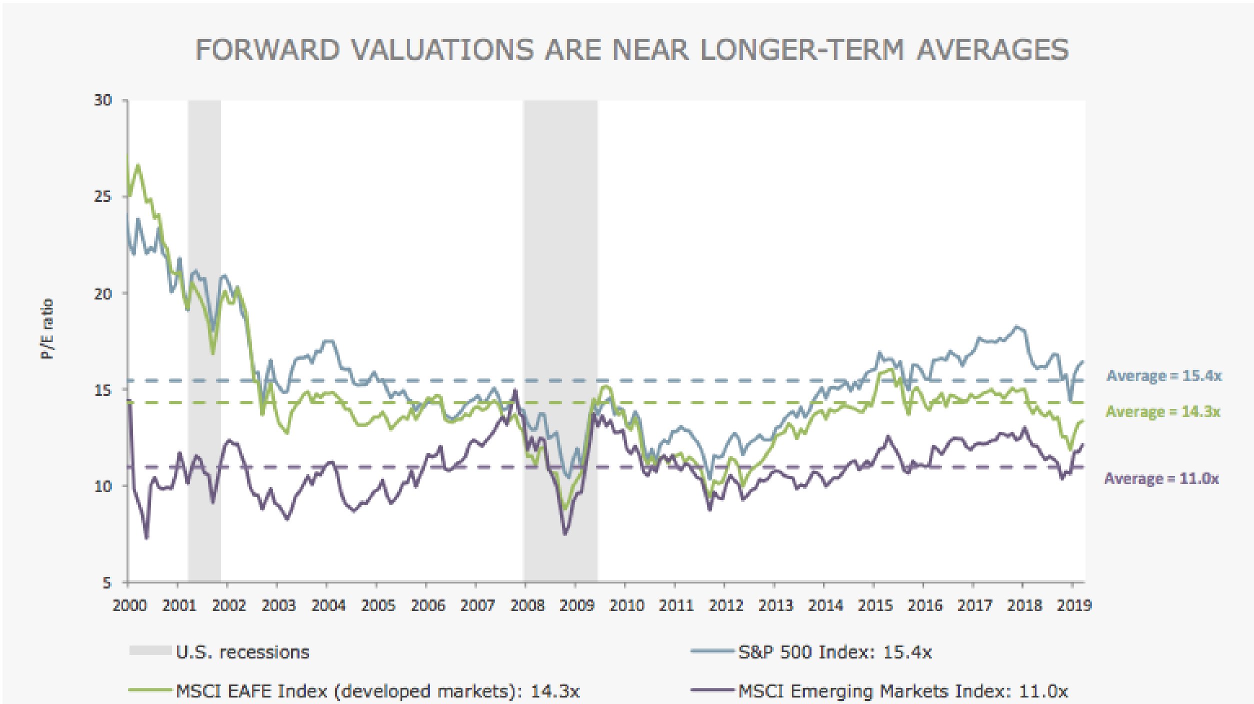
Hedging

- Strategically using instruments in the market to offset the risk of any adverse price movements
- Technically, to hedge you would invest in two securities with negative correlations
- Intended to protect against severe loss, and like buying insurance, hedging a portfolio consistently can be costly over time
- There are many types of investment hedging strategies, most of which involve the use of derivatives or the use of investments which have a low correlation (move in the opposite direction to the asset being hedged): using sovereign bonds to hedge the risk of equities is a common example in portfolios

Preferred Stock

- Issued with a stated par value
- Shareholders receive dividends ahead of common shareholders
- Dividends are voted annually by the board but are not legally guaranteed
- Have no voting rights
- Issuing company may hold the right to redeem the shares at a pre-specified price
- Entitle the holder to receive compensation if the company liquidates, as long as there are sufficient assets to cover them

Relative Stock Market Valuations



Sources: FactSet and Wells Fargo Investment Institute, as of March 31, 2019. For illustrative purposes only. P/E ratios represent the total price of the index divided by its total earnings. The S&P 500 Index is a market-capitalization-weighted index considered representative of the U.S. stock market. The MSCI EAFE Index and the MSCI Emerging Markets Index are equity indices that capture large- and mid-cap representation across 21 developed-market countries (excluding the U.S. and Canada) and 24 emerging-market countries, respectively, around the world. An index is unmanaged and not available for direct investment. ***Past performance is no guarantee of future results.***

KEY TAKEAWAYS

- Adjusting for tax-related earnings benefits, U.S. equities appear fairly valued.
- Investors are focused on trade negotiations, earnings forecasts, and Fed monetary policies.

Risk Tolerance

- A measure of how risk averse the trustees of a fund are, both objectively and subjectively
- Many of these risks can be quantified and a plan developed to mitigate their effects
- Largely a qualitative measure of how trustees will react to adverse events in the markets that might impair the fund's ability to achieve its mission
- Measuring global equity risk is in a sense no different than measuring risk in a U.S.-only portfolio, only the sources of risk are much broader
- There are numerous risks that a pension fund faces:
    - Funding/liability mismatch risk
    - Investment risk
    - Liquidity risk
    - Active management risk
    - Regulatory risk
    - Etc

Risk Tolerance (cont.)

- Investing in equities generally involves taking more capital market risk than investing in fixed income
- The investor assumes the higher risk of loss in the belief that the returns will be high enough to justify that risk
- Trustees should engage in a lengthy discussion on the topic of risk in order to develop a consensus about their level of risk tolerance

Stock Price vs Value

The price of a stock reflects many individual inputs, among them:

- Its competitive market position
- The expected earnings of the company
- The reputation (and brand recognition) of the company among shareholders and the general population
- The sector in which it competes
- The company's reported earnings
- It's growth prospects
- The level of dividends it pays to shareholders
- The revenue and profits the company generates

Stock Price vs Value (cont.)

- The value of a company's stock is based on a valuation analysis, which includes:
  - The outlook for earnings of the company
  - The market value of the assets on its balance sheet
- Normally expressed in terms of the stock's Price/Earnings ratio, or the level of earnings relative to the price of its stock; a company with a high P/E is said to have a high valuation, and low P/E a low valuation.
- Other assets of the corporation are given valuations by analysts who recommend whether the asset is worth buying or selling at the current price
- Other valuation measures such as Price/Book, Earnings Per Share (EPS) and EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortization) are also used
- The valuation of a stock index is the total market value of all the shares in the index.

Tracking Error

- A measure of financial performance that determines the difference between the return fluctuations of an investment portfolio and the return fluctuations of a chosen benchmark
- The return fluctuations are primarily measured by standard deviations
- Frequently categorized by the way it is calculated
- A realized (also known as "ex post") tracking error is calculated using historical returns
- A tracking error whose calculations are based on some forecasting model is called an "ex ante" tracking error
- Low errors indicate that the performance of the portfolio is close to the performance of the benchmark
- High errors reveal that the portfolio's performance is significantly different from the performance of the benchmark

Warrants

- Equity-like securities which have stock-option-like features
- Give the holder the right to buy a pre-specified number of common shares at a pre-specified price prior to an expiration date
- The holder can exercise the right to convert the warrant into common shares when the price of the shares exceed that of the warrants; the company then issues new common shares to the holder
- Warrants are issued by companies to raise capital or to be used as a form of employee compensation (i.e. stock options)