Private Asset Class Roles and Benchmarks

April 17, 2017

What We Hope to Accomplish Today

- Review – Asset Liability Management Timeline (Progress and Goal)
- Discuss – Benchmark Selection for Private Asset Classes

2017-18 ALM Timeline | Board Review & Decision Making

2017

January Board Offsite
Public Asset: Roles, Segments, Benchmarks
- Global Equity, Global Fixed Income, Inflation

April Investment Committee (information)
Private Asset: Roles and Benchmarks
- Real Assets, Private Equity

May Investment Committee (Action)
Private Asset: Roles and Benchmarks
- Private Equity, Real Assets

June Investment Committee
Adopt Capital Market Assumptions

July Board Offsite
Alternative Strategic Asset Allocation Approach
- Use of Leverage

November ALM Board Workshop
Strategic Asset Allocation Approach
- Current Approach : Asset Class
- Alternative Approach: Asset Segment

2018

February Board Meeting
Adopt Strategic Asset Allocation Policy Portfolio
- Current Approach: Asset Class
- Alternative Approach: Asset Segment

July Implementation
Strategic Asset Allocation Policy Portfolio

Real Assets

Real Assets | Introduction

- Maintain the Real Asset role adopted in April 2016
  - The role of Real Assets is to own real assets with stable cash yield and act as an economic diversifier to equity risk.
    - ***Diversification***
    - ***Income***
    - ***Inflation***

- Recommend two modifications to Real Assets within the Strategic Asset Allocation
  - Consolidation of segments
  - Benchmark

Real Assets| Recommendation

Consolidation of segments

- **Current:**
  - Forestland 1%
  - Infrastructure 1%
  - Real Estate 11%

- **Proposed:**
  - Real Assets 13%

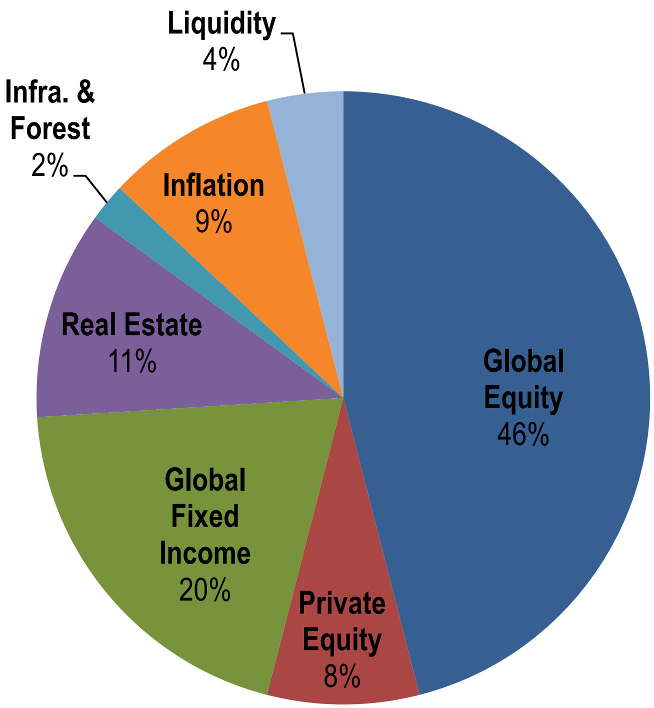
Real Assets| Why

- Focus Strategic Asset Allocation on asset classes / segments with sufficient materiality
- Underwrite in Real Estate, Infrastructure and Forestland seeking similar underlying investment characteristics
- Retain the ability of Real Assets to invest in Infrastructure and Forestland
- Build common focus for the Real Assets team within INVO

Existing Asset Classes | Total Fund Investment Policy

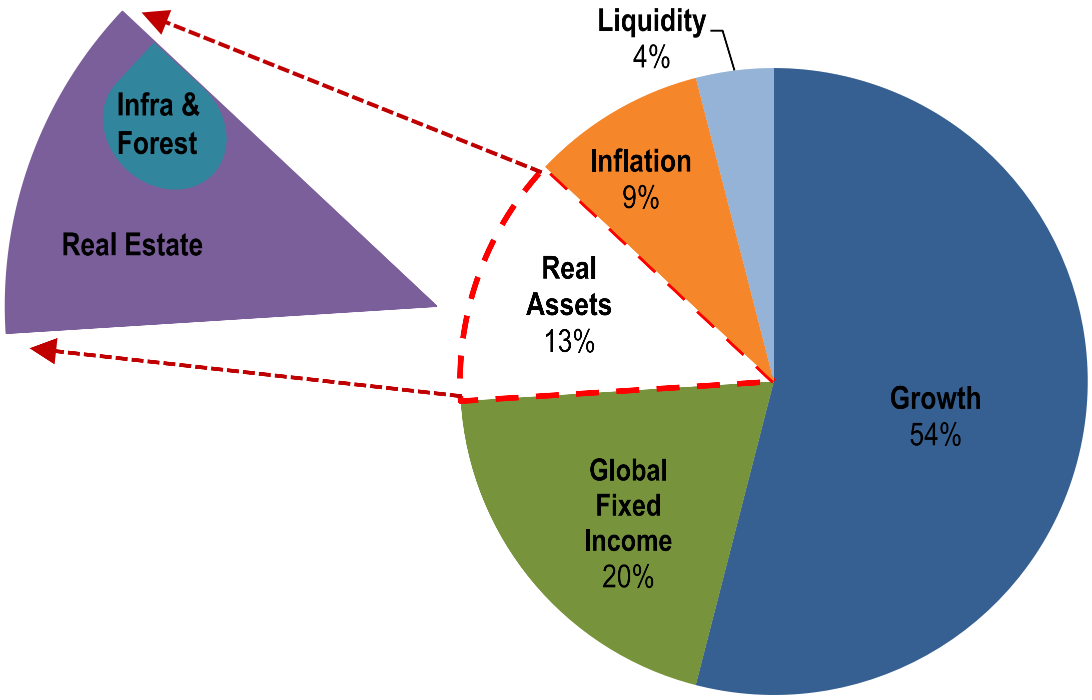
From:

Current Asset Class Allocation



Towards:

Reference Portfolio Construction



Real Assets| Recommendation

Benchmark

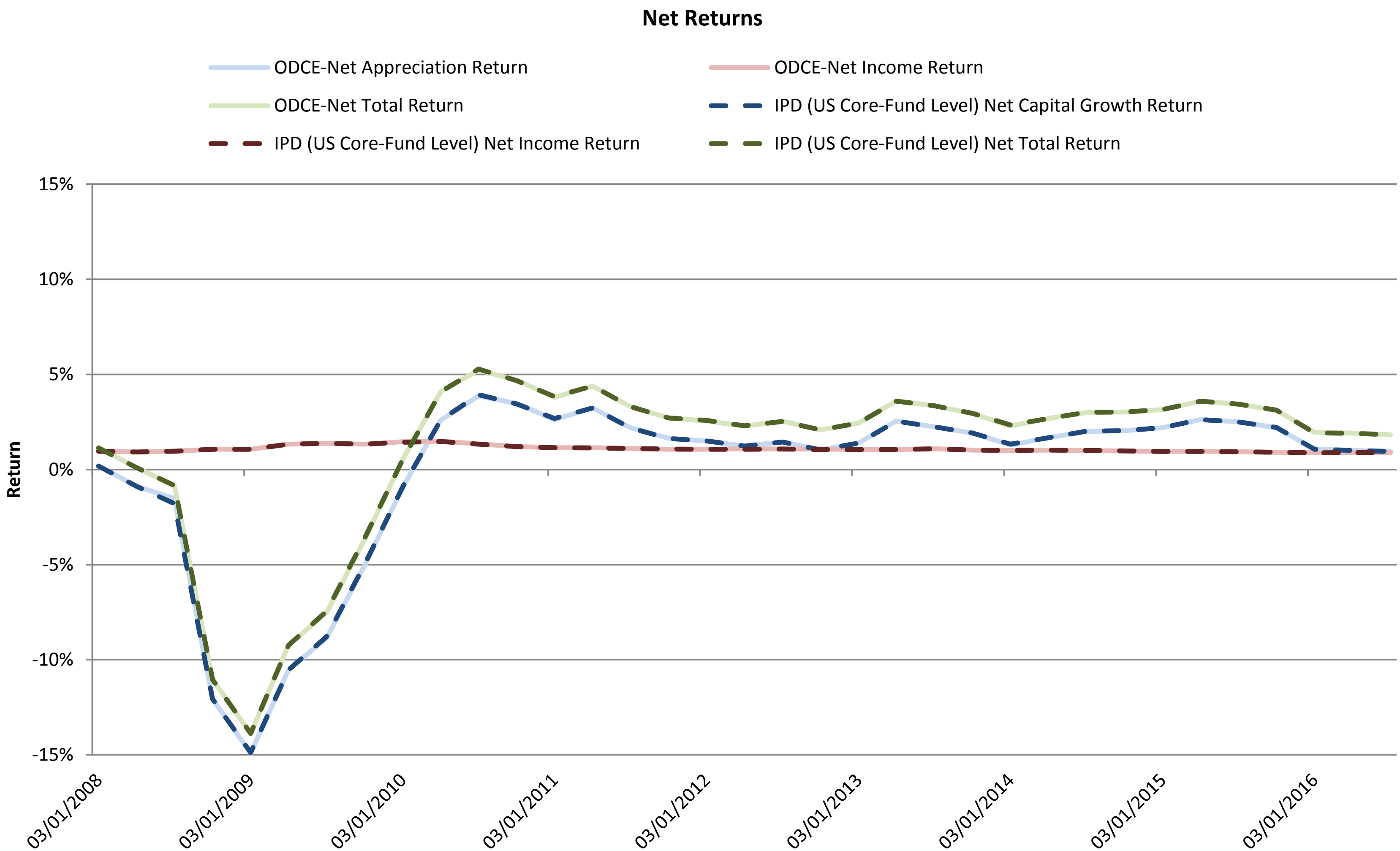
- **Current:**
  - National Council of Real Estate Investment Fiduciaries (“NCREIF”) Open-End Diversified Core Equity (“ODCE”)

- **Proposed:**
  - MSCI Investment Property Databank (“IPD”) (U.S. Core – Fund Level)

Real Assets| Why

- “NCREIF ODCE” and “IPD U.S. Core – Fund Level” measure nearly identical exposures
- Simplify vendor relationships (BarraOne provider)
- Potential to extend to Infrastructure and Global Real Estate should these segments become material enough to warrant separation

Real Assets | Net Returns – IPD (US Core Fund Level) vs. ODCE (Fund Level)



Private Equity

Private Equity| Introduction

- Partially address challenges identified during November 2015 Private Equity workshop

- Recommend three modifications to Private Equity within the Strategic Asset Allocation
  - Role
  - Consolidation into a growth related asset segment
  - Benchmark

Addressing Private Equity Challenges (11/2015)

Challenge	Initiative to Address Challenge
• Controlling Private Equity Exposure	• Liquid Public Market Proxy
• Difficult to Identify Sources of Risk • Complex, Higher, and Non-transparent fees	• Private Equity Accounting and Reporting Solution (PEARS)
• Determining Appropriate Benchmark	• Role of Private Markets • Benchmark Evaluation and Discussion
• Predicting Cash Flows	• Liquidity – Operations

Private Equity | Potential Questions

- **Eliminating Private Equity?**
  - **No**, an important part of investment portfolio
- **Benchmark shift due to underperformance?**
  - **No**, making an explicit link to the investible alternative (opportunity cost)
- **Eliminating excess return expectation in the capital market assumptions?**
  - **No**, the excess return expectation would be extrapolated to this growth segment (implies target weight)
- **Reduce transparency?**
  - **No**, maintain commitment to all enhanced reporting and disclosure

Private Equity| Recommendation

Role

- **Current**:
  - Private equity allocations are a means of enhancing equity returns through a value added approach to investment management of a diverse set of portfolio companies and to capture the illiquidity premium. The major driver for returns is appreciation with negligible cash yield.
  - ***High Growth Risks***
  - ***Illiquid***

- **Proposed**:
  - Private equity allocations are a means of enhancing equity returns through an active, value-added approach. The major driver for returns is appreciation, aided by leverage, with negligible cash yield.
  - ***Growth***

Private Equity| Recommendation

Incorporation into growth related asset segment

- **Current:**
  - Private Equity a distinct, stand alone asset class
- **Proposed:**
  - Merge Private Equity with capitalization weighted Global Equity to form a combined growth related segment

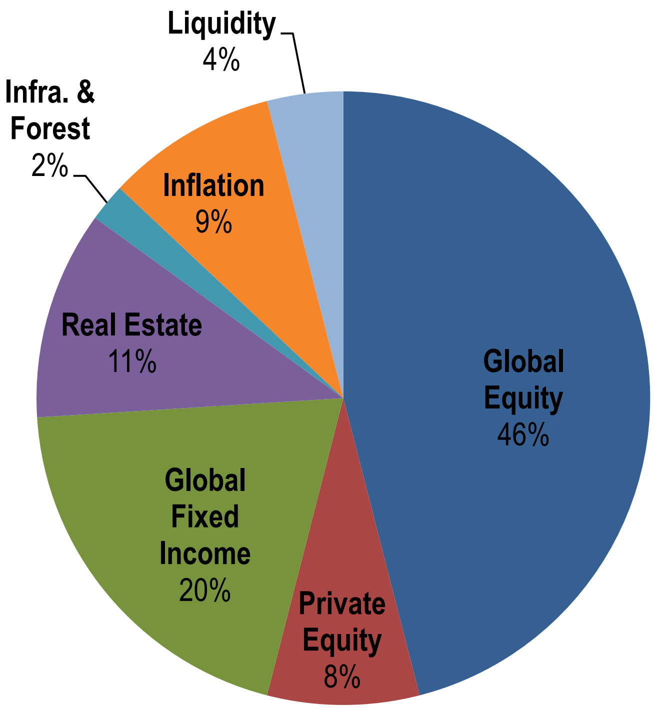
Private Equity| Why

- Focus management of the allocation to Private Equity at the total fund level
- Enable potential portfolio construction capability to offset idiosyncratic regional, sector and company exposure
- Enable search for additional tools to generate the expected excess return
- Link private equity commitments to funding source
- Build common focus for growth-oriented teams within INVO

Private Equity| Consolidation of growth related segments

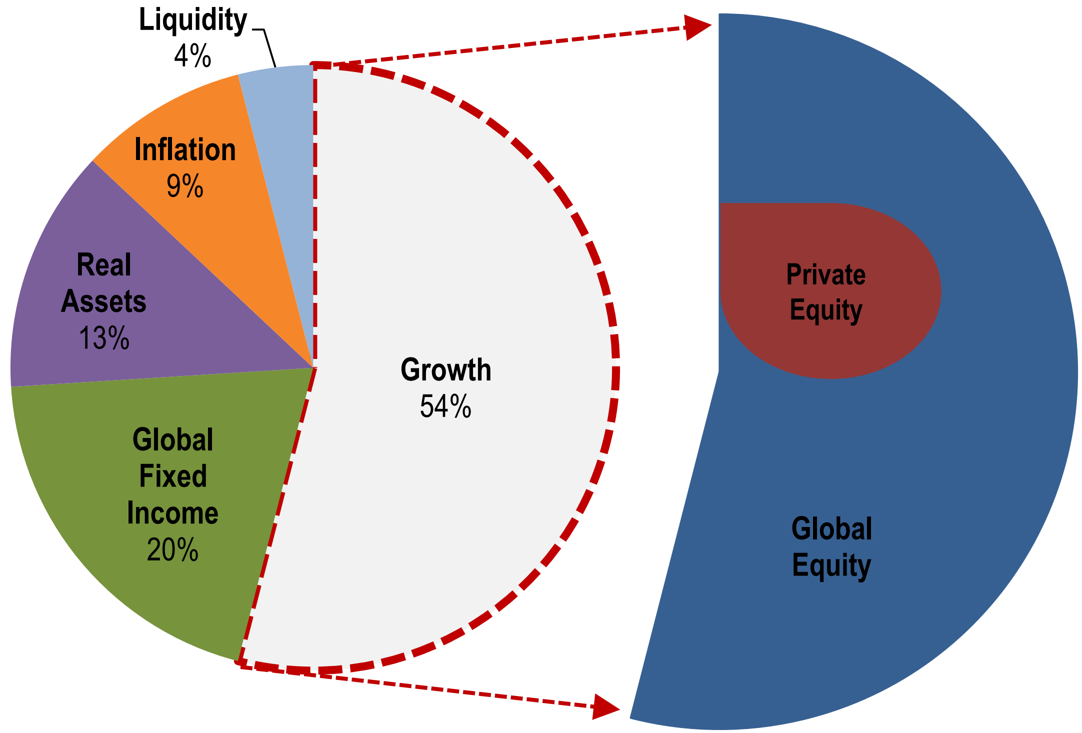
From:

Current Asset Class Allocation



Towards:

Consolidated Growth Bucket



Private Equity| Who else consolidates Public and Private Equity

Peer	Reference Portfolio Equity Allocation	Actual Equity Allocation[7]
Ontario Teachers' Pension Plan	42%[1]	38%[4]
Canadian Pension Plan Investment Board	72%[2]	52%[5]
New Zealand Superannuation Fund	85%[3]	75%[6]

1. Based on FY 2016 Annual Report – Exposure Policies
2. Based on FY 2016 Annual Report – Risk Appetite – The Reference Portfolio
   Strategic Portfolio Asset Class is the Aspirational composition for the Investment Portfolio and carried an equity target weight of 62%
3. Based on FY 2016 Annual Report – Growth Assets of Reference Portfolio
4. As of 12/31/2016
5. As of 03/31/2016
6. As of 06/30/2016 and excludes the impact of any strategic tilts.
7. Includes both Public Equity and Private Equity

Private Equity| Recommendation

Benchmark

- **Current:**
  - 67% FTSE U.S. Total Market + 33% FTSE All World ex U.S. + 300 basis points
    - Lagged one quarter
    - Attempted to reflect actual geographic exposures

- **Proposed:**
  - FTSE All World, All Capitalization (Global Equity) + Return Premium (TBD)

Private Equity| Why

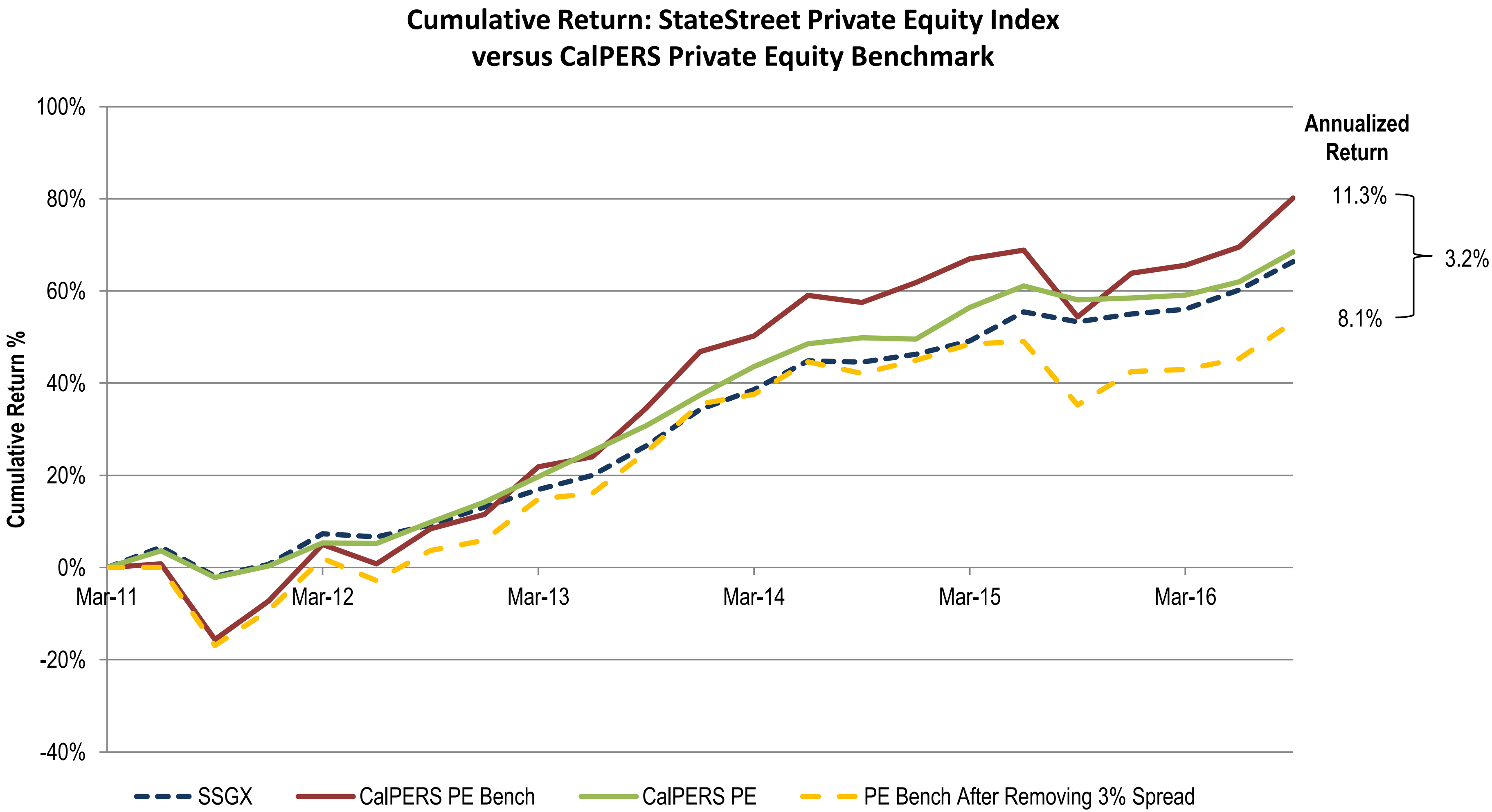
Example 2016 Capital Markets Assumptions

	Arithmetic Return			Geometric Return			Volatility	
	Public Equity	Private Equity	Arith. Rtn Premium	Public Equity	Private Equity	Geo. Rtn Premium	Public Equity	Private Equity
Wilshire[1]	7.8%	12.1%	4.3%	6.5%	8.9%	2.4%	17.1%	27.5%
Meketa	9.7%	13.2%	3.5%	7.9%	9.6%	1.7%	19.0%	27.0%
PCA	9.1%	12.1%	3.0%	7.5%	9.1%	1.6%	19.0%	26.0%
JP Morgan	8.8%	10.6%	1.7%	7.5%	8.5%	1.0%	17.3%	21.8%
BNY	N/A	N/A	N/A	7.3%	9.1%	1.8%	16.6%	19.1%
Callan[2]	8.6%	12.5%	3.8%	7.0%	7.4%	0.4%	19.0%	32.9%
Blackrock[2]	N/A	N/A	N/A	5.24%	5.8%	0.6%	16.3%	24.6%
		Median:	3.4%		Median:	1.3%		

CalPERS Investment Office
Trust Level Portfolio Management

1. Based on email request on 11/1/2016
2. No Global Equity estimate given. Used a blend of 50% Broad US Equity and 50% Global ex-US as the estimate for Public Equity asset class for both geometric return and volatility

Private Equity Relative Performance| Problem with Compounding



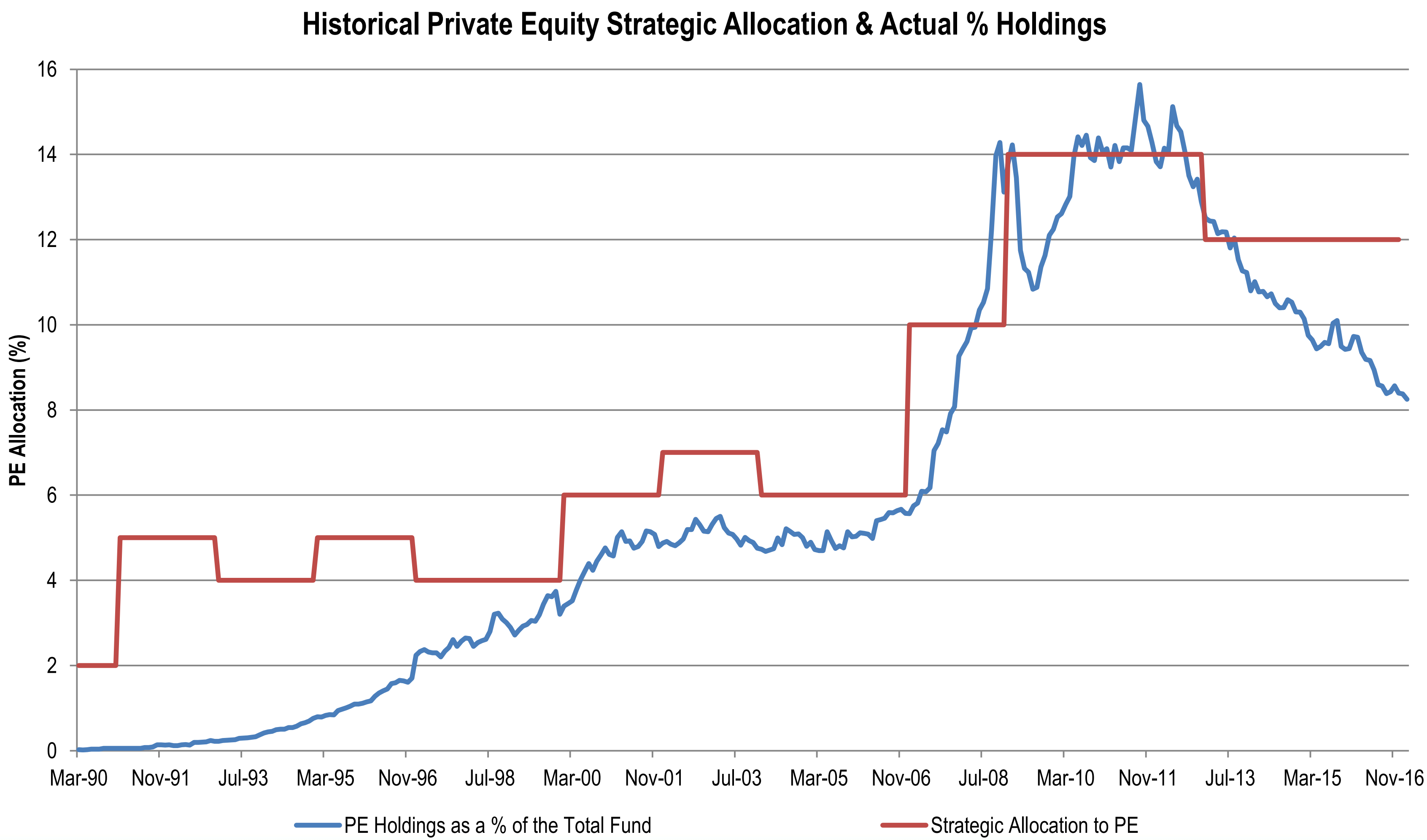
- Data Source: CalPERS PE Benchmark (StateStreet); SSGX PE (SSGX); Quarterly data from Q2 2011 to Q3 2016
- CalPERS PE Bench: 67% FTSE US TMI + 33% FTSE AW ex-US + 3%

Appendix

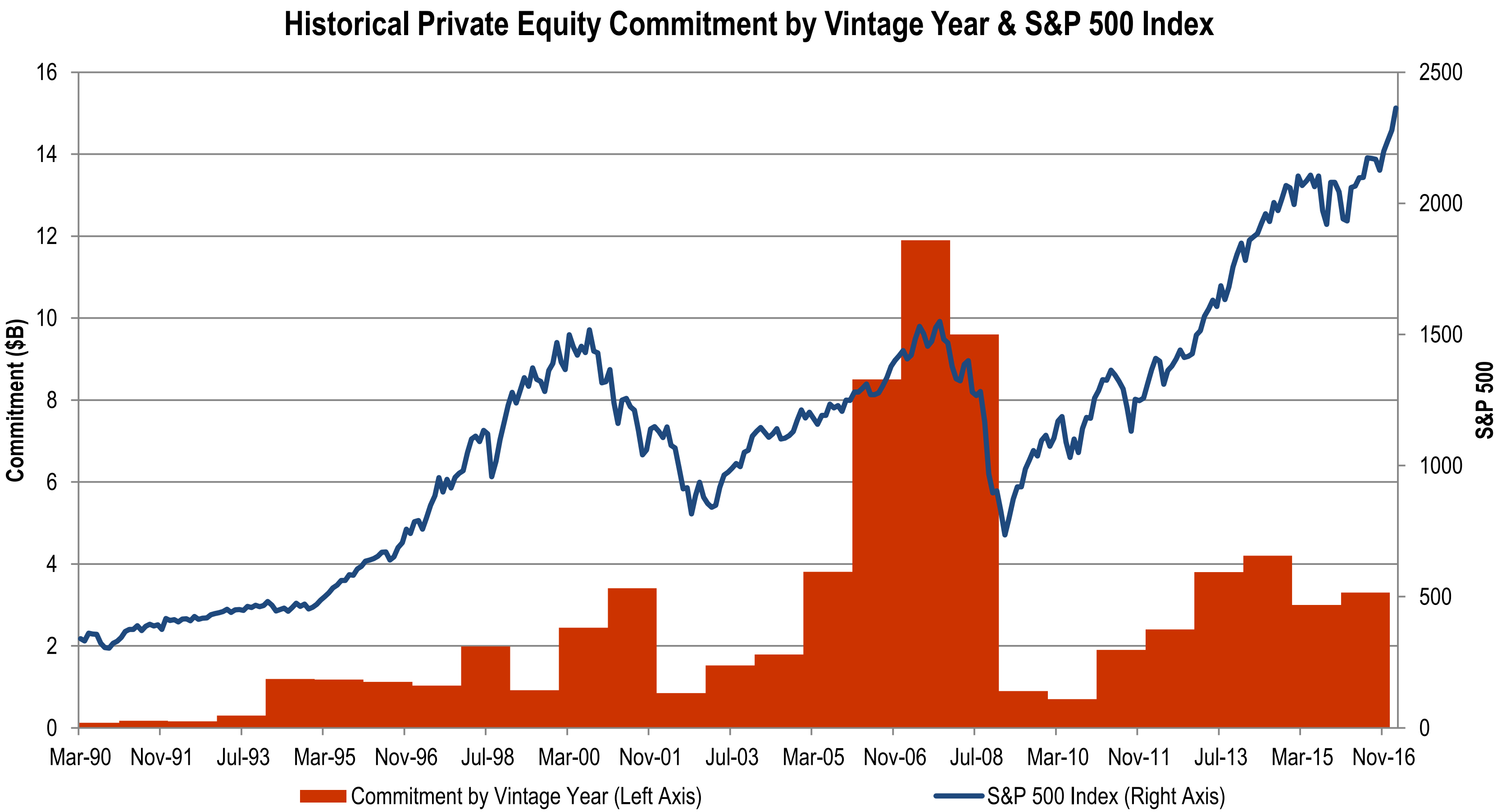
Appendix: Role Definitions

Role	Definition
Income	Generate current cash flow
Inflation	Provide protection against inflation
Diversification	Reduce risk associated with public equity exposure
Growth	Increase sensitivity to economic growth
Liquidity	Ability to convert assets into cash

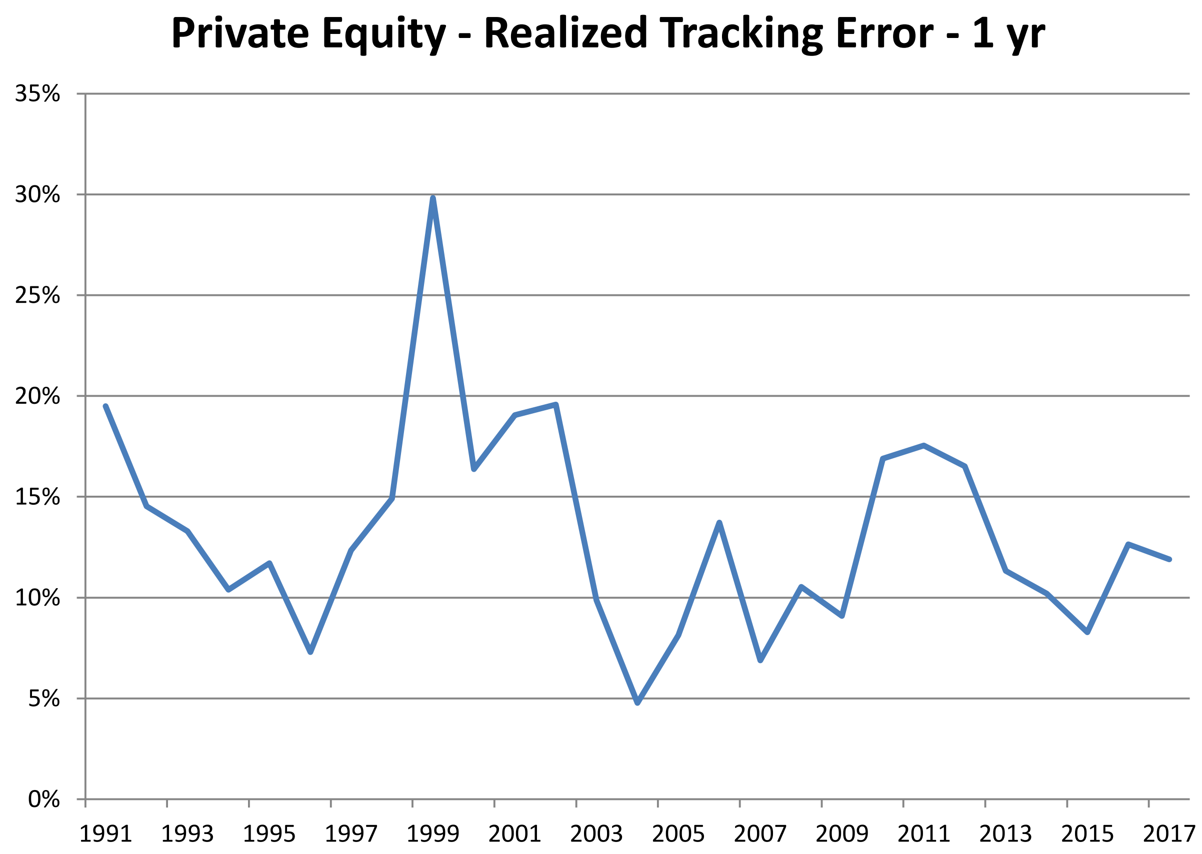
Private Equity| Target versus Actual Allocation



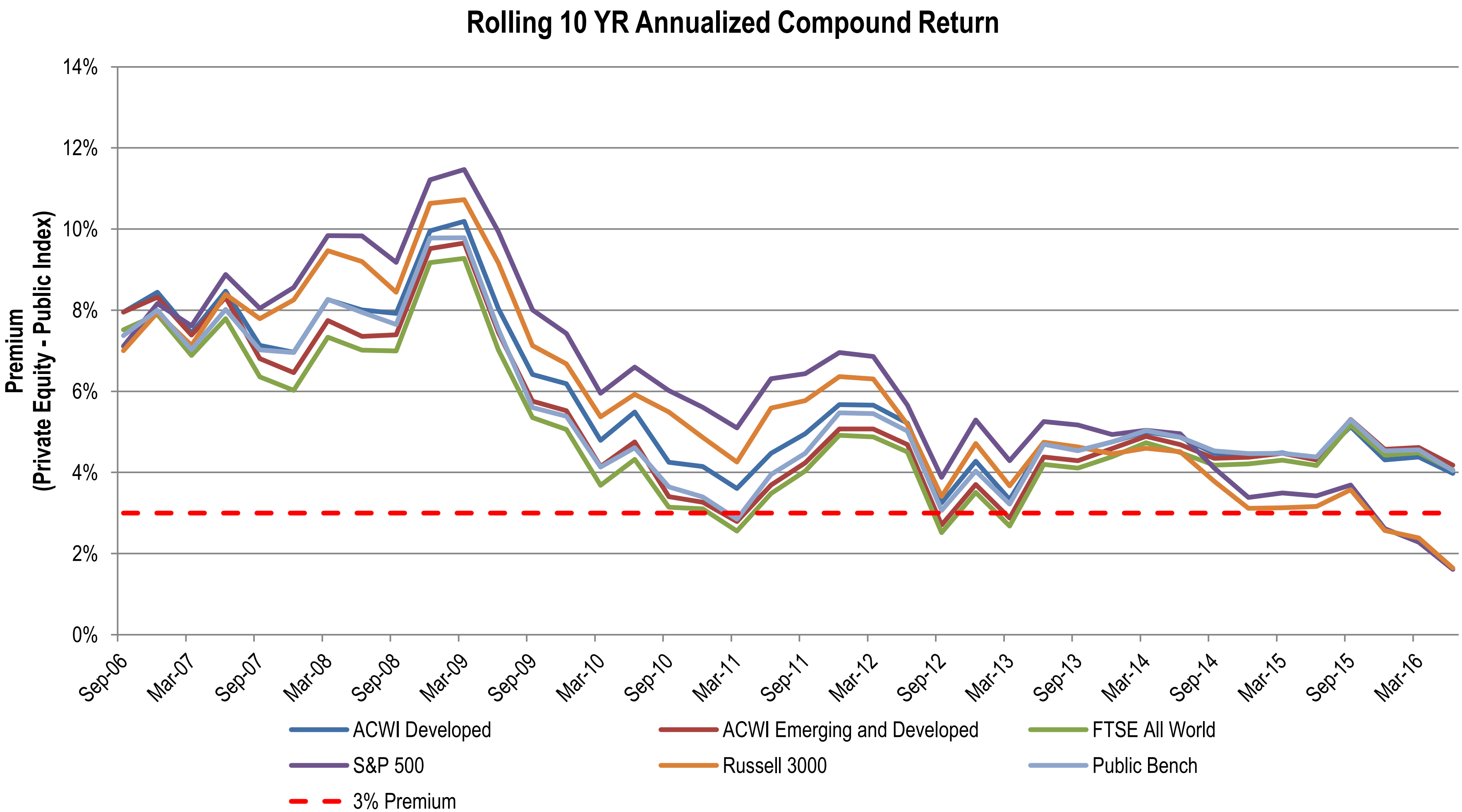
Private Equity | Pro-cyclicality of Commitments



Private Equity | High Risk Levels



Private Equity | Historical Private Equity Premium



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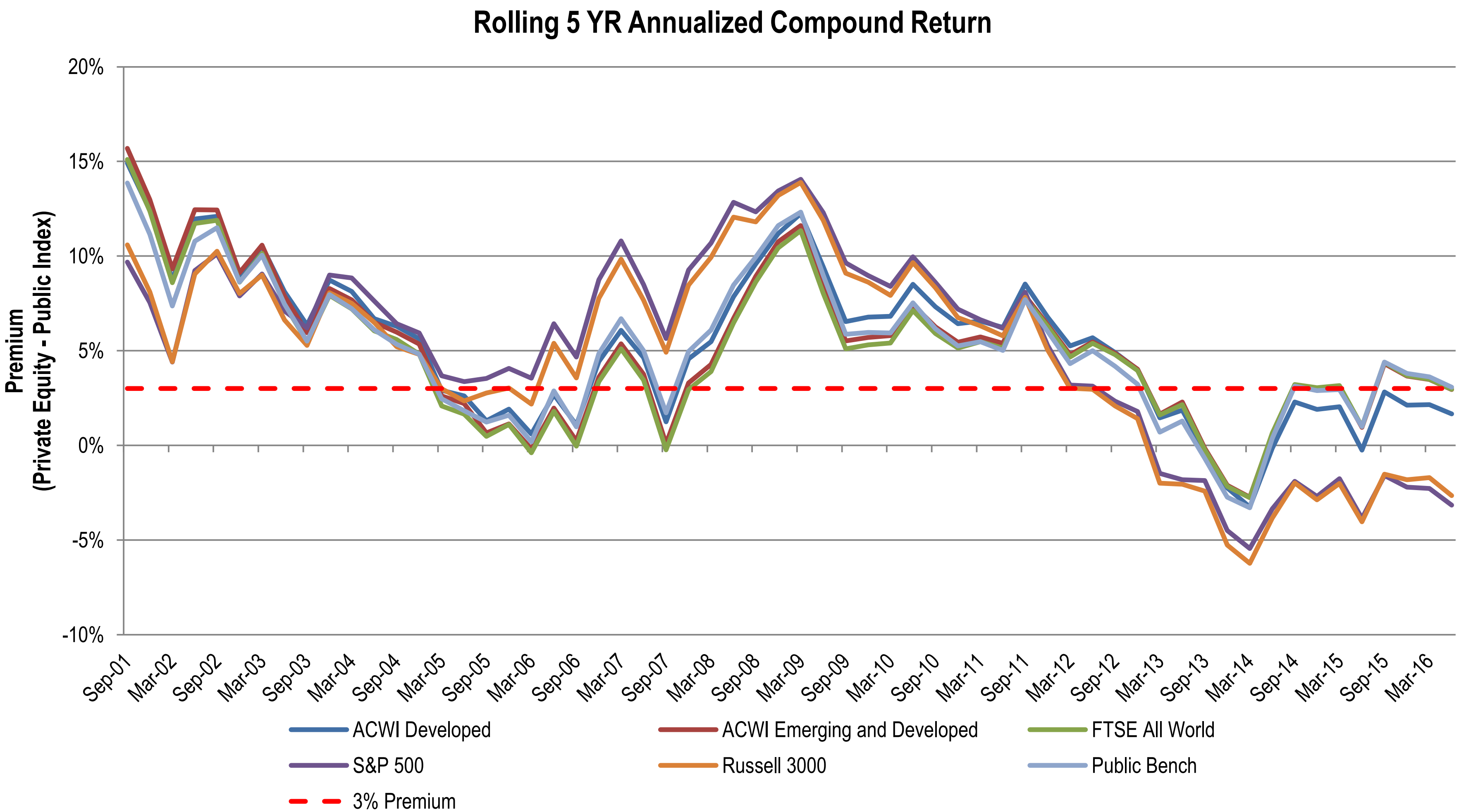
Private Equity | Historical Private Equity Premium



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