NCCMP

Evolution of Asset Allocation

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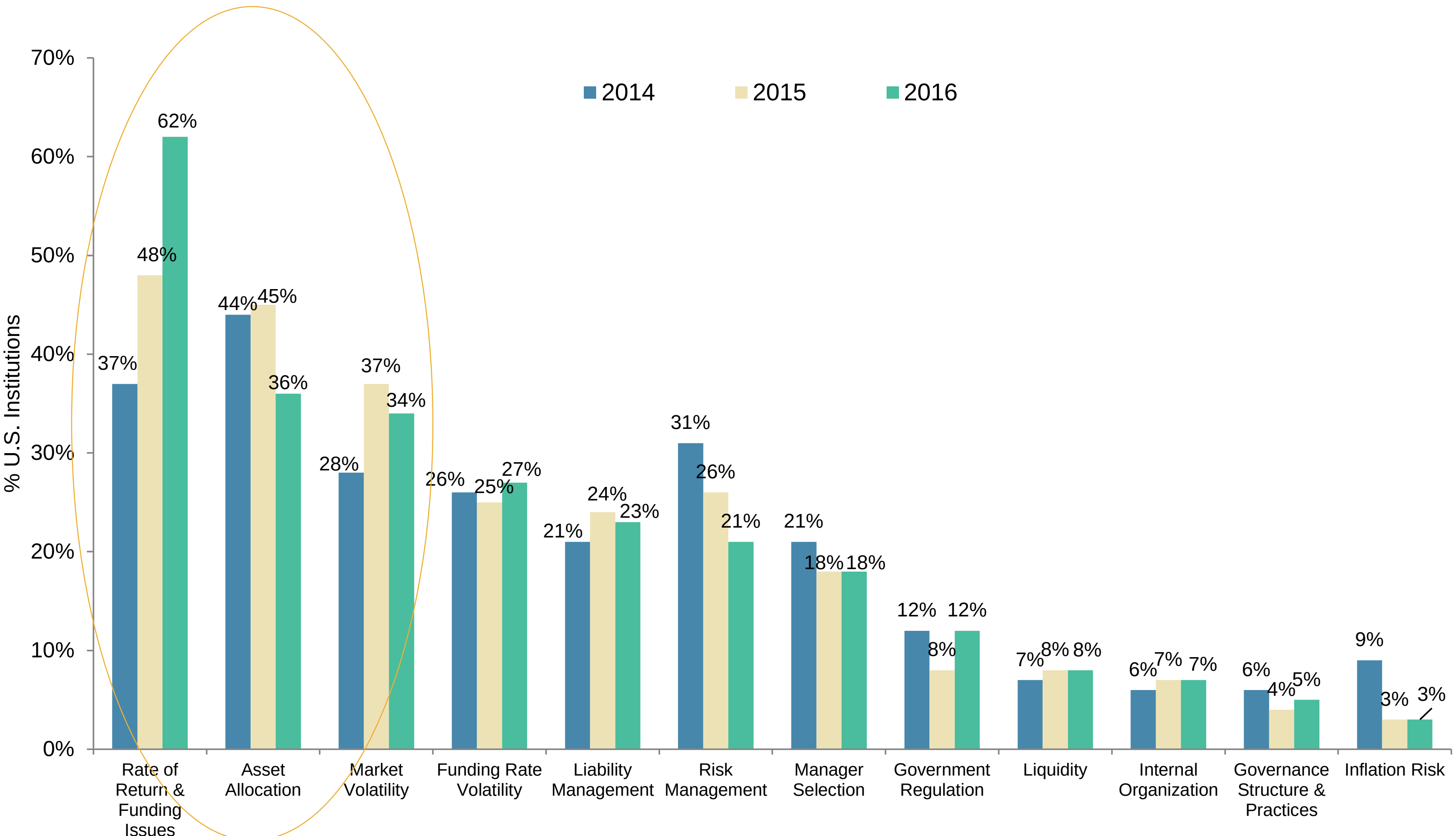
Key Challenges for Multiemployer Plans

- Stretched valuations across traditional asset classes – capital market assumptions decreasing
- PPA’s influence on pension plan management – shorter term focus, drawdown concerns
- Funding status and funding status volatility
- Maturing plan’s with increasing cash flow and liability pressure
- Differing objectives (across plans)

Key Challenges for Institutional Investors



Source: Greenwich Associates 2016 U.S. Institutional Investors Study

The Challenge

Equity Valuations Relative to History

Table 2: S&P 500 Valuations -- borders denote metrics trading above their historical average (as of 7/31/17)

Metric	Current	Average	Avg. ex. Tech Bubble	Min	Max	% Above (below) avg	Z-Score	History
Trailing PE	20.1	16.1	15.4	6.7	30.5	25%	0.9	1960-present
Trailing GAAP PE	23.6	19.1	18.2	6.7	122.4	24%	0.4	1960-present
Forward Consensus PE	17.7	15.2	14.2	9.8	25.1	16%	0.7	1986-present
Trailing Normalized PE	20.0	19.0	17.5	9.2	33.9	5%	0.2	9/1987-present
Median Forward P/E	17.9	15.0	14.7	10.0	20.5	19%	1.4	1986-present
Shiller PE	30.2	16.8	16.1	4.8	44.2	80%	2.0	1881-present
P/BV	3.24	2.48	2.25	0.98	5.34	31%	0.8	1978-present
EV/EBITDA	12.3	10.0	9.6	6.0	15.1	23%	1.1	1986-present
Trailing PEG	1.57	1.45	1.43	0.93	2.21	8%	0.5	2001-present
Forward PEG	1.38	1.22	1.20	0.82	1.67	13%	0.9	2001-present
P/OCF	14.1	10.6	9.8	5.6	19.5	33%	1.2	1986-present
P/FCF	24.2	28.3	24.9	12.9	65.7	-15%	-0.4	1986-present
EV/Sales	2.38	1.83	1.73	0.86	2.91	30%	1.1	1986-present
ERP (Market-Based)	720	467	482	136	880	54%*	1.4	11/1980-present
Normalized ERP	436	291	336	-96	947	50%*	0.7	1987-present
S&P 500 Div. Yld. vs. 10yr Tsy. Yld.	0.8	0.6	0.6	0.2	2.3	28%*	0.5	1953-present
S&P 500 in WTI terms	53.0	23.5	20.7	2.7	109.0	126%	1.9	1960-present
S&P 500 in Gold terms	1.95	1.58	1.32	0.17	5.48	23%	0.3	1968-present
S&P 500 vs. R2000 Fwd. P/E	0.95	1.00	0.94	0.76	1.71	-4%	-0.2	1986-present
S&P 500 Market Cap/GDP	1.10	0.59	0.55	0.22	1.29	88%	1.9	1964-present

*Above average implied equities are attractive relative to bonds. Note: Trailing P/E based on GAAP EPS from 1960-77; Operating EPS from 1978-87; Pro forma EPS 1988-now. Trailing GAAP P/E based on GAAP P/E for entire series. Market-based ERP based on DDM-implied S&P 500 return less AAA corp bond yield. Normalized ERP based on normalized EPS yield less normalized real risk-free rate.

Source: S&P, Compustat, Bloomberg, FactSet/First Call, BofA Merrill Lynch US Equity & US Quant Strategy

The Challenge

Capital Market Assumptions – Subset of Core Asset Classes

Asset Class	2000 Expected Return	2000 Expected Risk	2017 Expected Return	2017 Expected Risk	Increase/ (Decrease) Return	Increase/ (Decrease) Risk
Equity – Large Cap	10.3	14.9	7.7	17.0	-2.6	2.1
Equity – Mid Cap	11.1	16.7	8.2	20.0	-2.9	3.3
Equity – Small Cap	11.7	20.1	8.7	25.0	-3.0	4.9
Equity – Int'l (Unhedged)	10.6	17.7	8.9	21.0	-1.7	3.3
Fixed Income - Core	6.7	5.8	3.3	5.5	-3.4	-0.3
Fixed Income – High Yield	10.5	8.5	5.8	11.0	-4.7	2.5
Real Estate – Equity	9.2	12.4	6.8	11.5	-2.4	-0.9
Private Equity	15.2	24.4	12.1	22.5	-3.1	-1.9

Note: Does not include all asset classes and based on Segal Marco assumptions

The Challenge
Investment Outlook

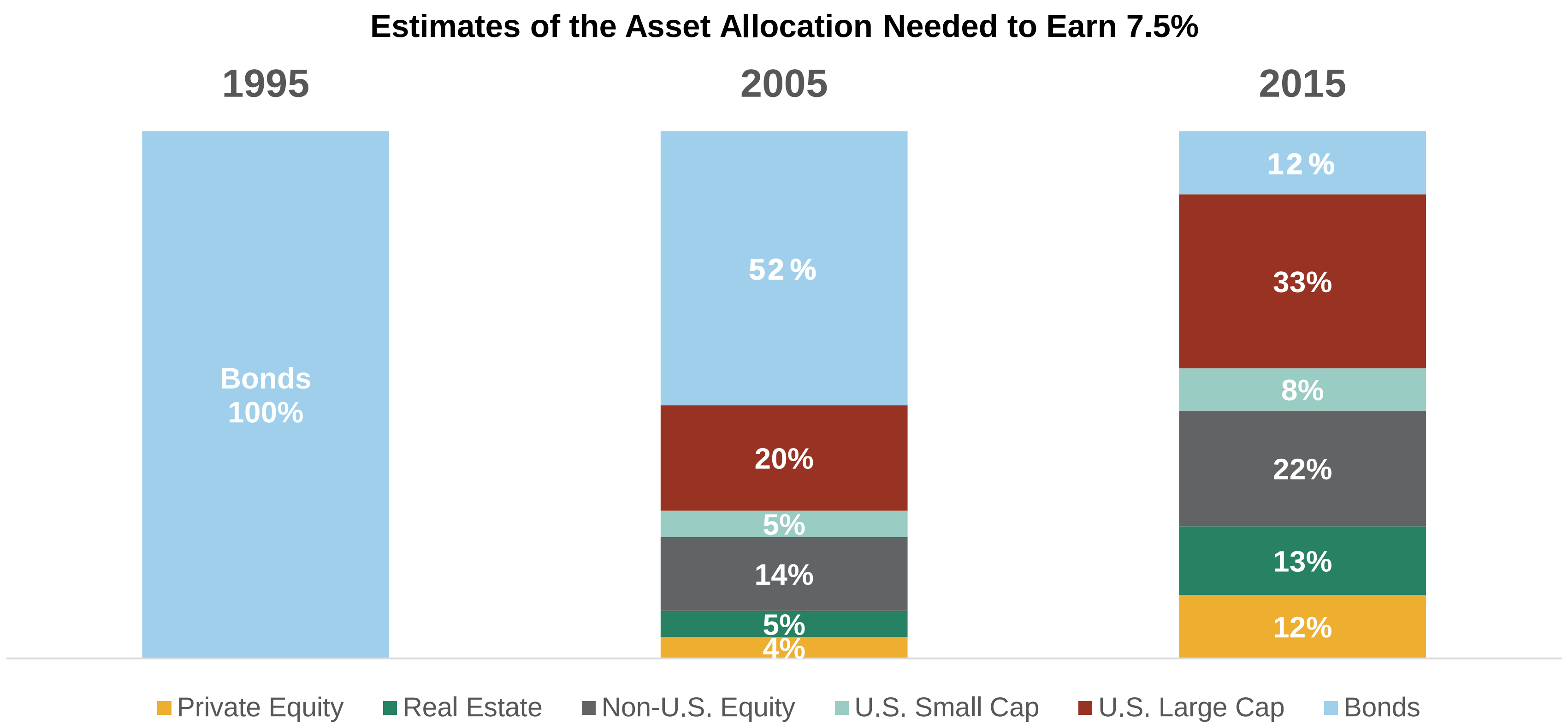
- The expected returns for most asset classes are muted today
  - Equity valuations are stretched, bond yields historically low, private investments have lots of dry powder

- Institutional investors have been reluctant to re-risk into equities with fears of another financial crisis

- Still need 7-8% return annually over the long-run

- <u>Only options are:</u>
  - ***Stay the course*** (accept potential for lower returns)
  - ***Re-risk to get to return*** (may include larger volatility of returns or less liquid investments)
  - ***De-risk*** (try to protect from losses)

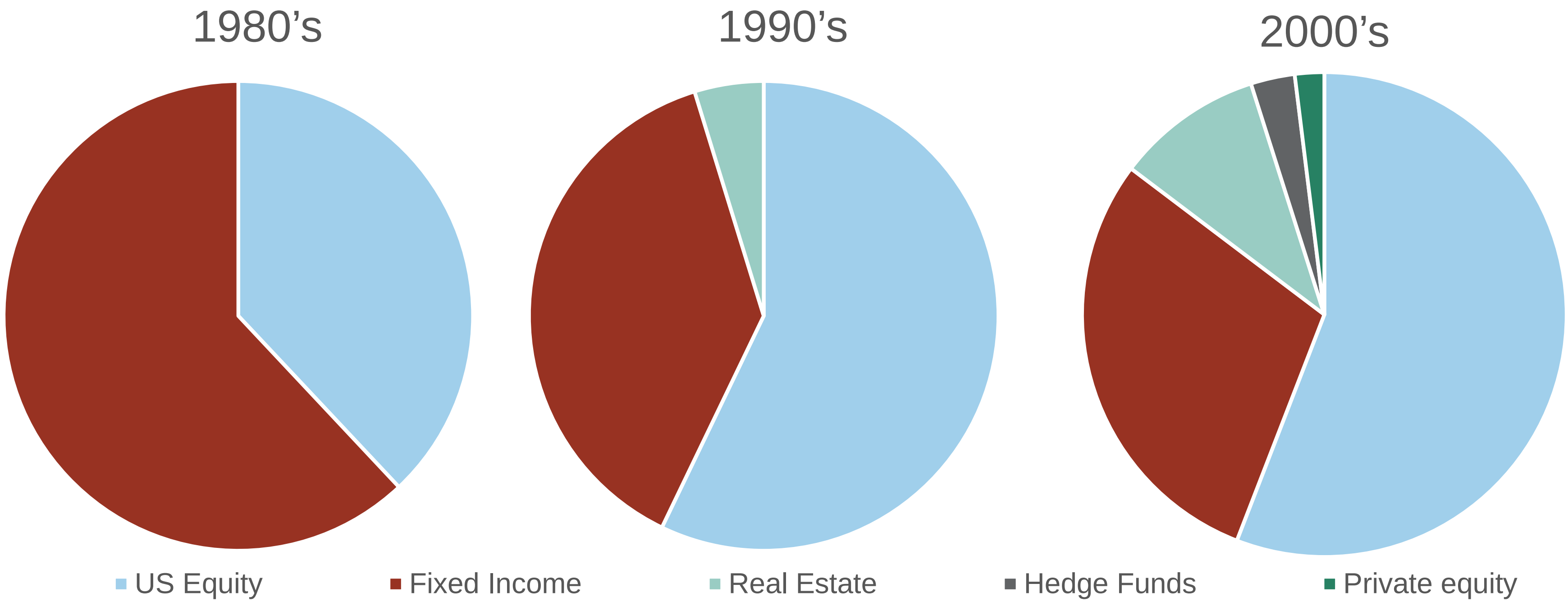
The Challenge
Getting to 7.5% Return



Expected Return	**7.5 %**	**7.5 %**	**7.5 %**
Expected Volatility	6.0%	8.9%	17.2%

Multiemployer Asset Allocation

Evolution Over Time



1980's

- Fixed income dominant
- Primarily core bonds
- Domestic equity into portfolios

1990's

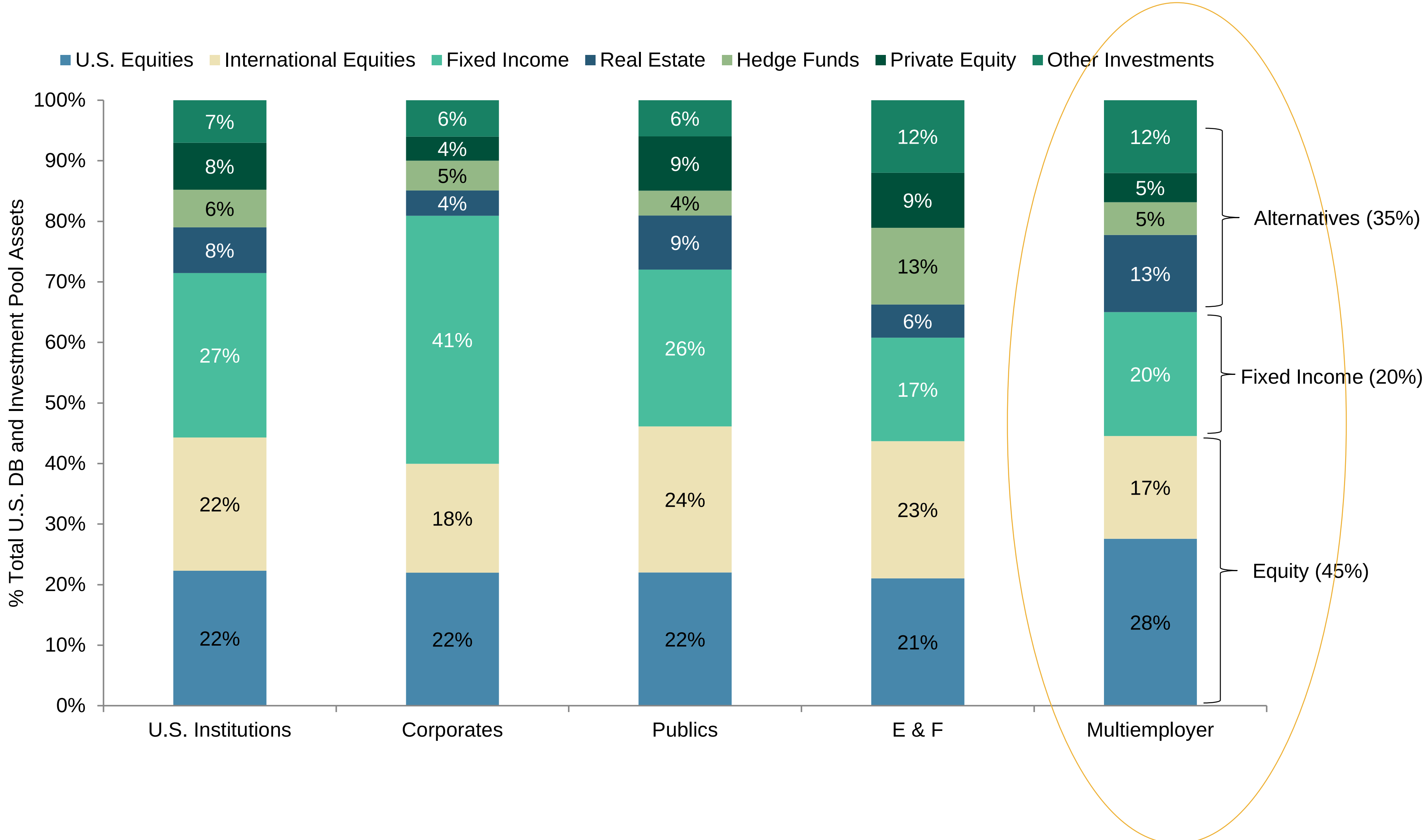
- Equity dominant (60/40)
- Real estate added
- Fixed income includes corporates and high yield

2000's

- Equity dominant, more diversified
- Fixed income, more diversified
- Real estate increased
- Hedge funds introduced
- Private equity introduced

Asset Allocation Pushing into Alternatives

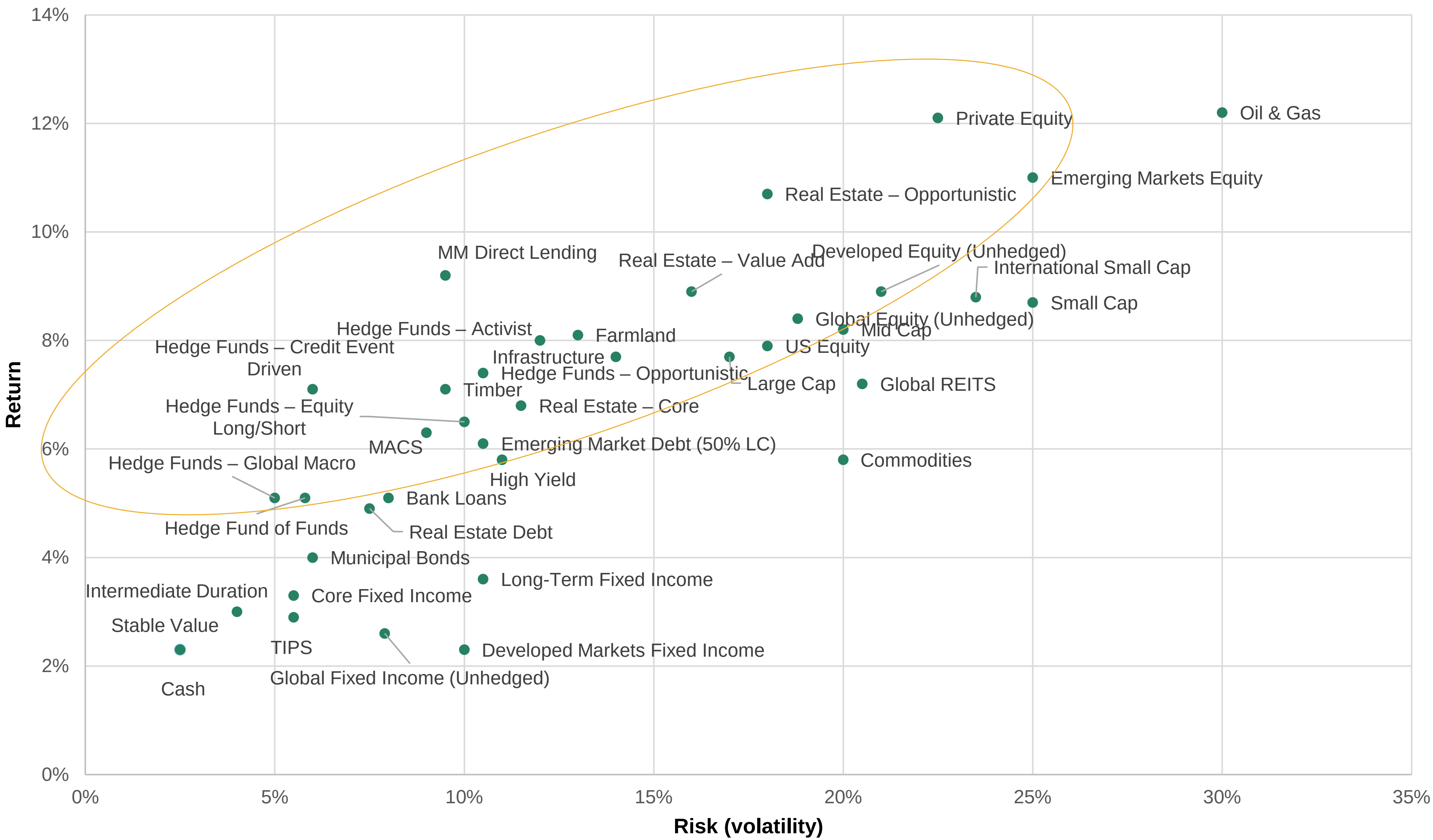
- Multi-Employer Plans have increased allocation to alternatives.



Note: Data provided by Greenwich Associates

Proliferation of Investment Options

Better risk and return trade off

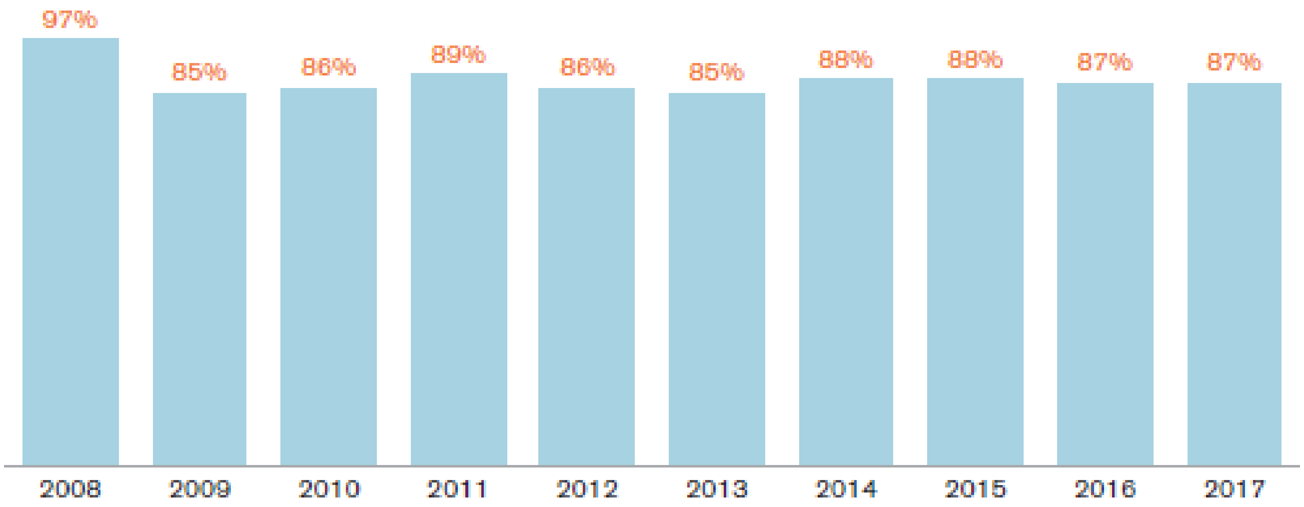


Note: Data based on Segal Marco capital marker assumptions

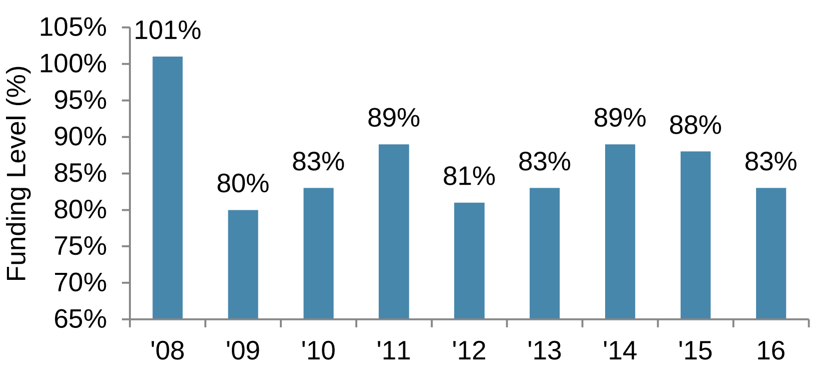
The Challenge

Increased Regulations (PPA) and Decreased Funding Levels

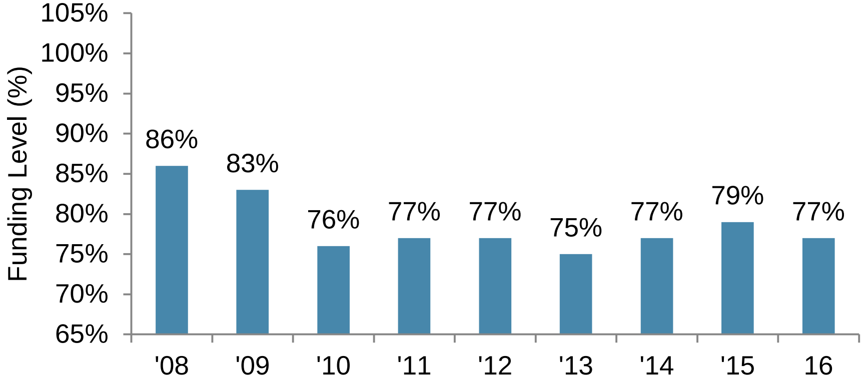
Taft-Hartley PPA Funding Levels



U.S. Corporate Funds' Average Funding Levels



U.S. Public Funds' Average Funding Levels

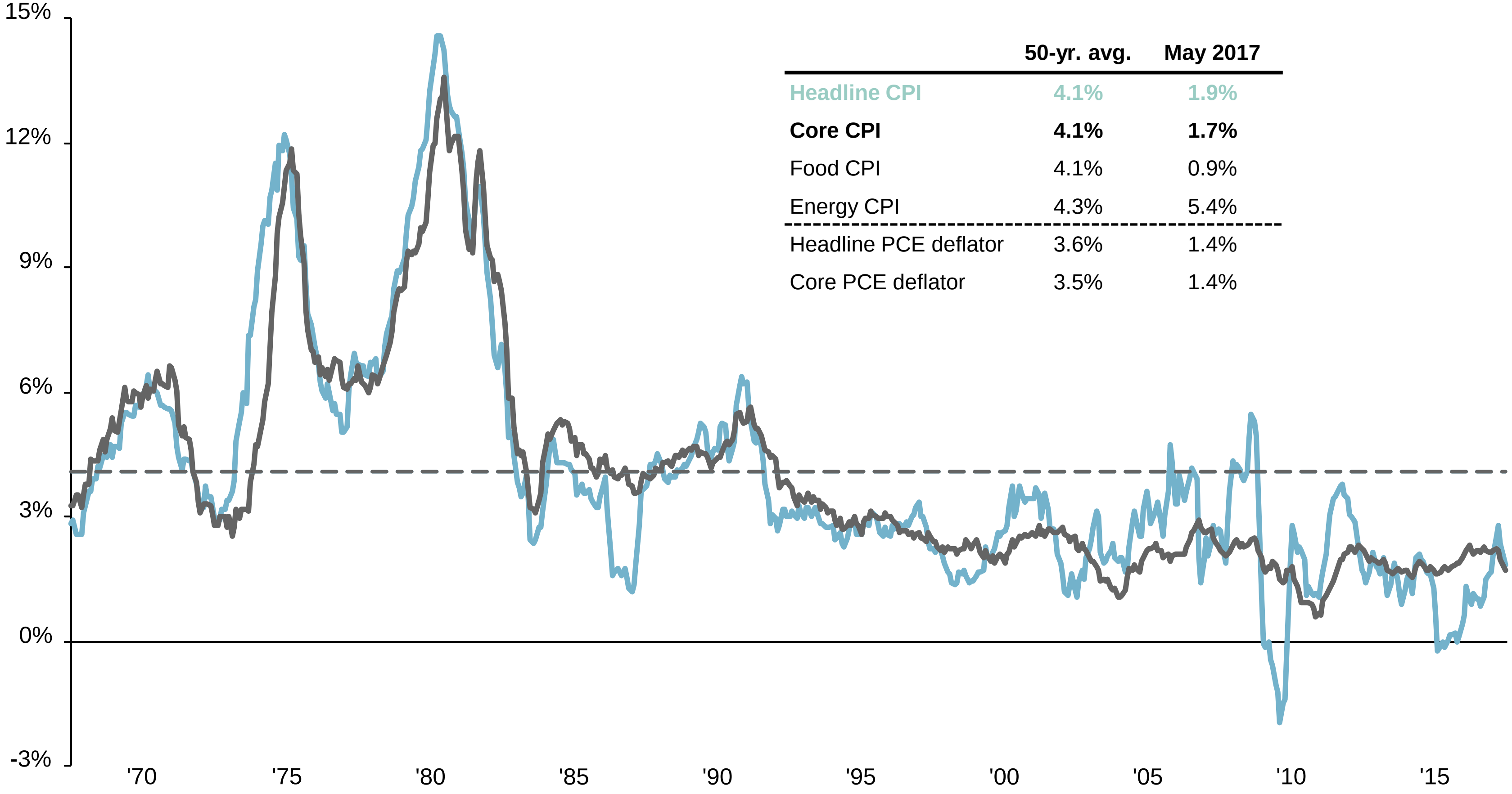


Note: Segal Consulting / Greenwich Associates 2016 U.S. Institutional Investors Study

Inflation

CPI and core CPI

% change vs. prior year, seasonally adjusted

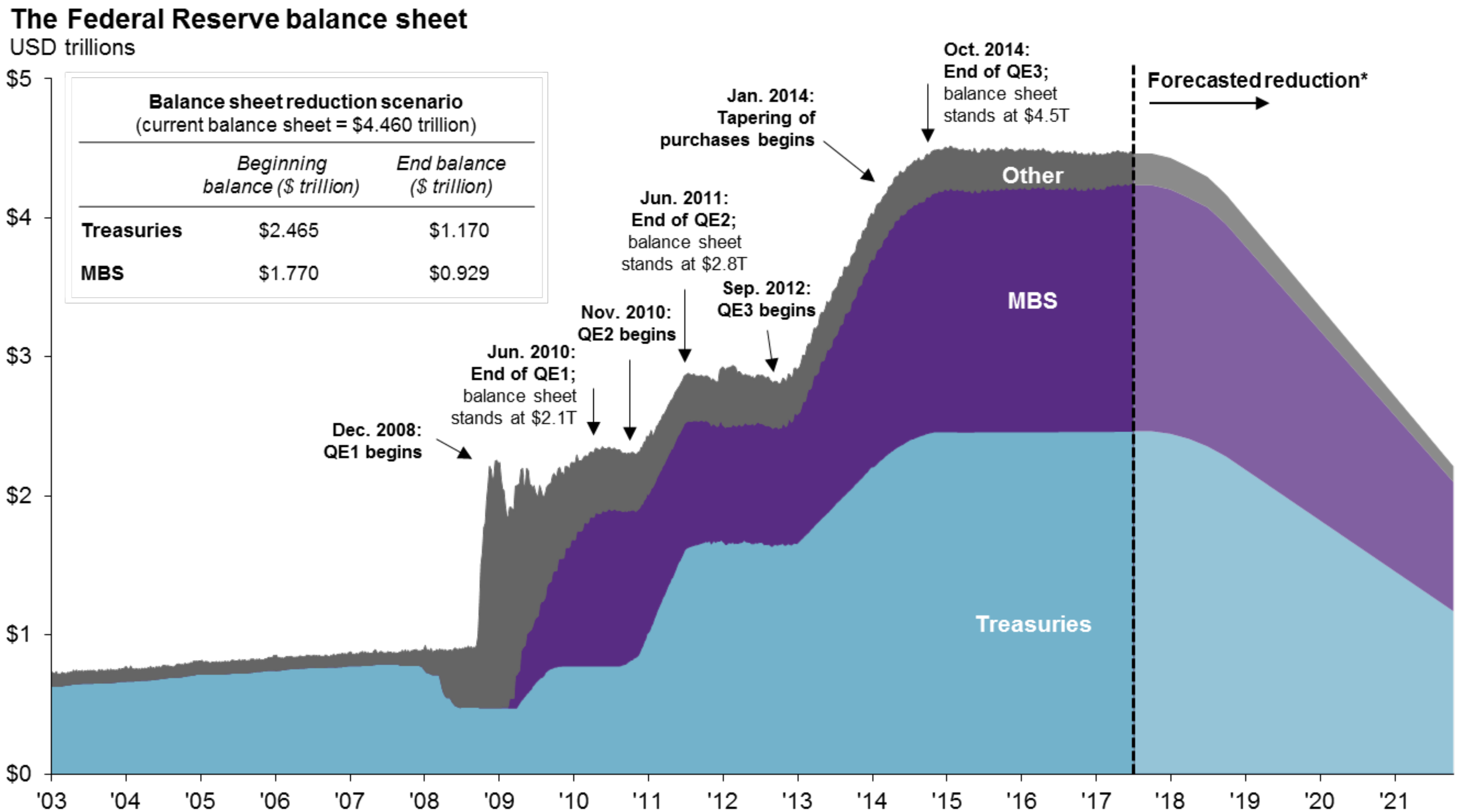


	50-yr. avg.	May 2017
Headline CPI	4.1%	1.9%
Core CPI	**4.1%**	**1.7%**
Food CPI	4.1%	0.9%
Energy CPI	4.3%	5.4%
Headline PCE deflator	3.6%	1.4%
Core PCE deflator	3.5%	1.4%

Source: BLS, FactSet, J.P. Morgan Asset Management.

CPI used is CPI-U and values shown are % change vs. one year ago. Core CPI is defined as CPI excluding food and energy prices. The Personal Consumption Expenditure (PCE) deflator employs an evolving chain-weighted basket of consumer expenditures instead of the fixed-weight basket used in CPI calculations.

The Federal Reserve Balance Sheet



Source: Federal Reserve, FactSet, J.P. Morgan Asset Management.

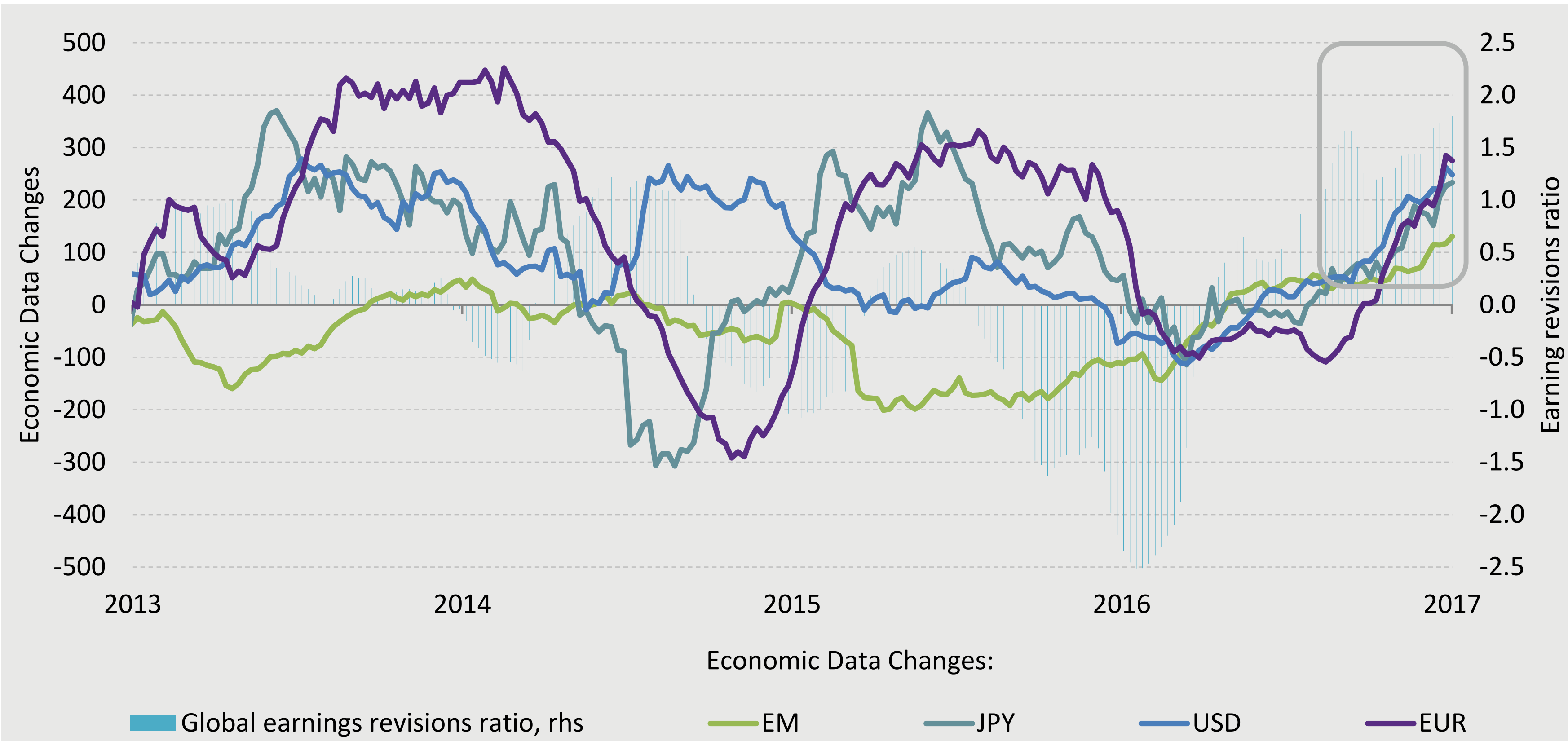
*Balance sheet reduction assumes reduction from current level, beginning October 2017 and lasting four years, concluding in October 2021. Reduction of Treasuries and MBS is per FOMC guidelines from the June 2017 meeting minutes:

Treasury securities will be reduced $6 billion per month initially and reduction rate will increase in steps of $6 billion at three-month intervals over 12 months until reaching $30 billion per month; MBS will be reduced $4 billion per month initially and reduction rate will increase in steps of $4 billion at three-month intervals over 12 months until reaching $20 billion per month; Other assets are reduced in proportion. Forecasts do not take into account months where maturing assets do not exceed the stated cap nor do they consider the reinvestment of principal or interest repayment in excess of the stated cap. *Guide to the Markets* – U.S. Data are as of June 30, 2017.

We are seeing a *synchronized* increase in both data and earnings revisions

Sustained pickup in corporate earnings expectations driven by global economic indicators improving in unison

Economic data are improving in Europe, U.S., Japan and EM



Source: J.P. Morgan Asset Management, Citigroup, Datastream, Bloomberg Data are as of February 2017. Shown for illustrative purposes only.

Global Inflation

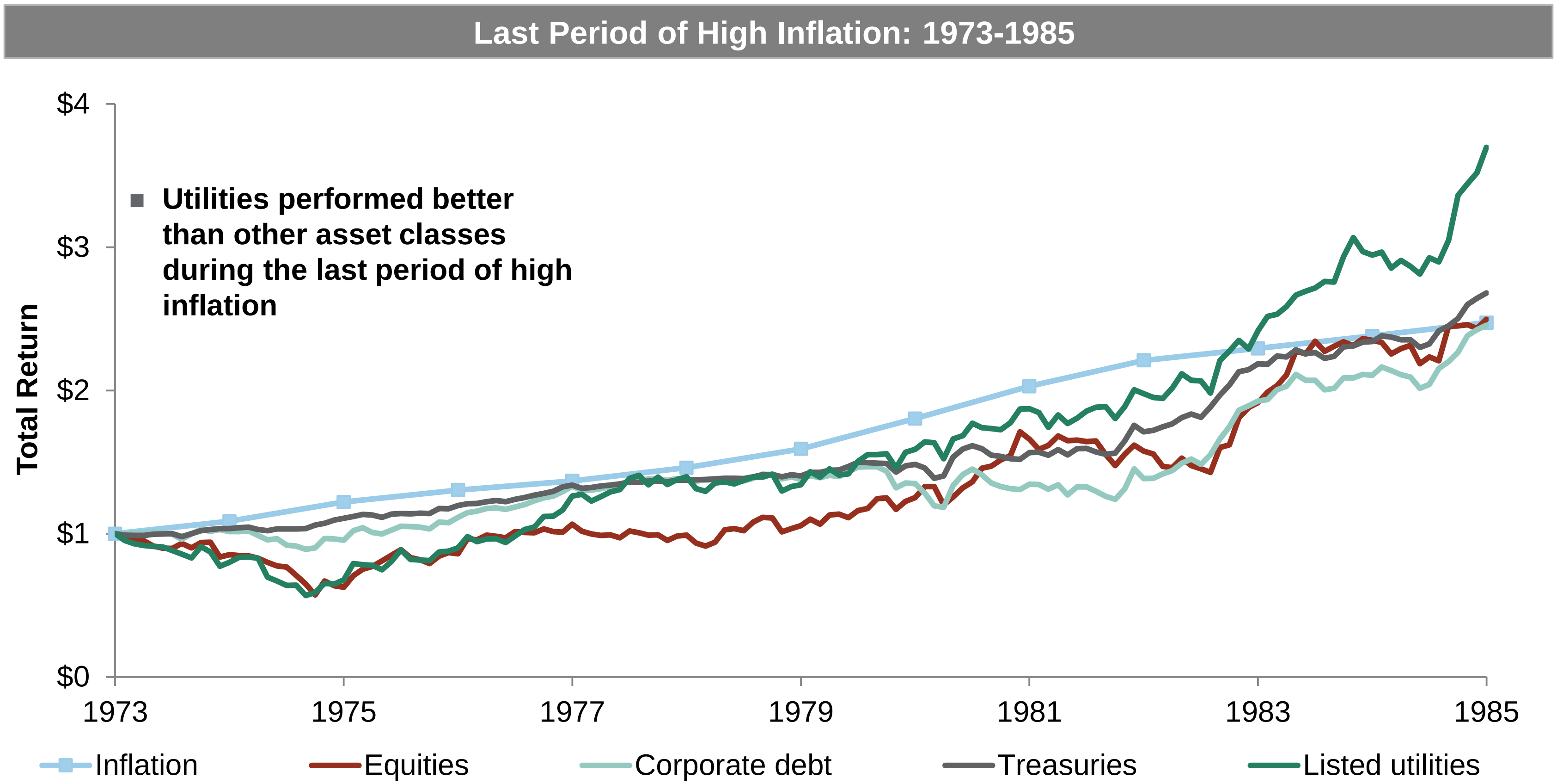
Year-over-year headline inflation by country and region

	Jun'15	Jul'15	Aug'15	Sep'15	Oct'15	Nov'15	Dec'15	Jan'16	Feb'16	Mar'16	Apr'16	May'16	Jun'16	Jul'16	Aug'16	Sep'16	Oct'16	Nov'16	Dec'16	Jan'17	Feb'17	Mar'17	Apr'17	May'17
Global	1.5%	1.5%	1.6%	1.4%	1.4%	1.6%	1.6%	1.9%	1.7%	1.6%	1.6%	1.6%	1.6%	1.5%	1.5%	1.7%	1.9%	1.9%	2.1%	2.5%	2.3%	2.1%	2.2%	2.0%
Developed Markets	0.6%	0.6%	0.6%	0.3%	0.5%	0.7%	0.8%	0.9%	0.6%	0.5%	0.6%	0.5%	0.6%	0.6%	0.7%	0.9%	1.1%	1.2%	1.6%	2.0%	2.2%	1.9%	2.0%	1.7%
Emerging Markets	3.5%	3.5%	3.7%	3.5%	3.4%	3.5%	3.4%	3.4%	3.6%	3.3%	3.3%	3.2%	3.2%	3.1%	2.8%	3.0%	3.1%	3.1%	2.9%	3.2%	2.4%	2.5%	2.6%	2.6%
U.S.	0.1%	0.2%	0.2%	0.0%	0.2%	0.5%	0.7%	1.4%	1.0%	0.9%	1.1%	1.0%	1.0%	0.8%	1.1%	1.5%	1.6%	1.7%	2.1%	2.5%	2.7%	2.4%	2.2%	1.9%
Canada	1.0%	1.3%	1.3%	1.0%	1.0%	1.4%	1.6%	2.0%	1.4%	1.3%	1.7%	1.5%	1.5%	1.3%	1.1%	1.3%	1.5%	1.2%	1.5%	2.1%	2.0%	1.6%	1.6%	1.3%
UK	0.0%	0.1%	0.0%	-0.1%	-0.1%	0.1%	0.2%	0.3%	0.3%	0.5%	0.3%	0.3%	0.5%	0.6%	0.6%	1.0%	0.9%	1.2%	1.6%	1.8%	2.3%	2.3%	2.7%	2.9%
Euro Area	0.2%	0.2%	0.1%	-0.1%	0.1%	0.1%	0.2%	0.3%	-0.2%	0.0%	-0.2%	-0.1%	0.1%	0.2%	0.2%	0.4%	0.5%	0.6%	1.1%	1.8%	2.0%	1.5%	1.9%	1.4%
Germany	0.2%	0.1%	0.1%	-0.1%	0.2%	0.2%	0.2%	0.4%	-0.2%	0.1%	-0.3%	0.0%	0.2%	0.4%	0.3%	0.5%	0.7%	0.7%	1.7%	1.9%	2.2%	1.5%	2.0%	1.4%
France	0.3%	0.2%	0.1%	0.1%	0.2%	0.1%	0.3%	0.3%	-0.1%	-0.1%	-0.1%	0.1%	0.3%	0.4%	0.4%	0.5%	0.5%	0.7%	0.8%	1.6%	1.4%	1.4%	1.4%	0.9%
Italy	0.2%	0.3%	0.4%	0.2%	0.3%	0.2%	0.1%	0.4%	-0.2%	-0.2%	-0.4%	-0.3%	-0.3%	-0.2%	-0.2%	0.1%	-0.2%	0.1%	0.5%	1.0%	1.6%	1.4%	2.0%	1.6%
Spain	0.0%	0.0%	-0.5%	-1.1%	-0.9%	-0.4%	-0.1%	-0.4%	-1.0%	-1.0%	-1.2%	-1.1%	-0.9%	-0.7%	-0.3%	0.0%	0.5%	0.5%	1.4%	2.9%	3.0%	2.1%	2.6%	2.0%
Greece	-1.1%	-1.3%	-0.4%	-0.8%	-0.1%	-0.1%	0.4%	-0.1%	0.1%	-0.7%	-0.4%	-0.2%	0.2%	0.2%	0.4%	-0.1%	0.6%	-0.2%	0.3%	1.5%	1.4%	1.7%	1.6%	1.5%
Ireland	0.4%	0.2%	0.2%	-0.1%	-0.1%	-0.1%	0.2%	0.0%	-0.2%	-0.6%	-0.2%	-0.2%	0.1%	0.1%	-0.4%	-0.3%	-0.4%	-0.2%	-0.2%	0.2%	0.3%	0.6%	0.7%	0.0%
Australia	1.5%	1.6%	1.7%	1.9%	1.8%	1.8%	2.0%	2.3%	2.1%	1.7%	1.5%	1.0%	1.5%	1.0%	1.2%	1.3%	1.5%	1.5%	1.8%	2.1%	2.1%	2.2%	2.6%	2.8%
Japan	0.4%	0.2%	0.2%	0.0%	0.2%	0.3%	0.1%	-0.1%	0.2%	0.0%	-0.3%	-0.4%	-0.3%	-0.5%	-0.5%	-0.5%	0.2%	0.5%	0.3%	0.5%	0.2%	0.2%	0.4%	0.4%
China	1.4%	1.6%	2.0%	1.6%	1.3%	1.5%	1.6%	1.8%	2.3%	2.3%	2.3%	2.0%	1.9%	1.8%	1.3%	1.9%	2.1%	2.3%	2.1%	2.5%	0.8%	0.9%	1.2%	1.5%
Indonesia	7.3%	7.3%	7.2%	6.8%	6.2%	4.9%	3.4%	4.1%	4.4%	4.4%	3.6%	3.3%	3.5%	3.2%	2.8%	3.1%	3.3%	3.6%	3.0%	3.5%	3.8%	3.6%	4.2%	4.3%
South Korea	0.7%	0.7%	0.7%	0.5%	0.8%	0.8%	1.1%	0.6%	1.1%	0.8%	1.0%	0.8%	0.7%	0.4%	0.5%	1.3%	1.5%	1.5%	1.3%	2.0%	1.9%	2.2%	1.9%	2.0%
Taiwan	-0.6%	-0.6%	-0.4%	0.3%	0.3%	0.5%	0.1%	0.8%	2.4%	2.0%	1.9%	1.2%	0.9%	1.2%	0.6%	0.3%	1.7%	2.0%	1.7%	2.2%	-0.1%	0.2%	0.1%	0.6%
India	5.4%	3.7%	3.7%	4.4%	5.0%	5.4%	5.6%	5.7%	5.3%	4.8%	5.5%	5.8%	5.8%	6.1%	5.0%	4.4%	4.2%	3.6%	3.4%	3.2%	3.7%	3.9%	3.0%	2.2%
Mexico	2.9%	2.7%	2.6%	2.5%	2.5%	2.2%	2.1%	2.6%	2.9%	2.6%	2.5%	2.6%	2.5%	2.7%	2.7%	3.0%	3.1%	3.3%	3.4%	4.7%	4.9%	5.4%	5.8%	6.2%
Russia	15.3%	15.6%	15.8%	15.7%	15.6%	15.0%	12.9%	9.8%	8.1%	7.3%	7.3%	7.3%	7.5%	7.2%	6.8%	6.4%	6.1%	5.8%	5.4%	5.0%	4.6%	4.3%	4.1%	4.1%
Brazil	8.9%	9.6%	9.5%	9.5%	9.9%	10.5%	10.7%	10.7%	10.4%	9.4%	9.3%	9.3%	8.8%	8.7%	9.0%	8.5%	7.9%	7.0%	6.3%	5.4%	4.8%	4.6%	4.1%	3.6%

- Source: Federal Reserve, Statistics Canada, UK Office for National Statistics (ONS), Eurostat, Melbourne Institute, Japan Ministry of Internal Affairs & Communication, National Bureau of Statistics China, Statistics Indonesia, Korean National Statistical Office, DGBAS, India Ministry of Statistics & Programme Implementation, Bank of Mexico, Goskomstat of Russia, IBGE, FactSet, J.P. Morgan Asset Management.
- Heatmap colors are based on z-score of year-over-year inflation rate relative to five year history, for the time period shown.
- *Guide to the Markets – U.S.* Data are as of June 30, 2017.

Core infrastructure responds well to inflation

- Compared to utilities, equities and fixed income investments struggled to regain purchasing power following the last period of high inflation



Source: Bloomberg, SNL.com, JPMAM. Inflation is U.S. CPI YoY, equities is S&P 500, corporate debt is Barclays U.S. Corporate Agg, Treasuries is Barclays U.S. Treasuries Index, and listed utilities is Dow Jones Utility Average. Data accessed December 2016. Past performance is no guarantee of future results. Indices do not include fees or operating expenses and are not available for actual investment.

Private infrastructure has low correlation to other asset classes

- Low correlation underpinned by the ability to generate cash yield through market cycles

1997-2016	Global Equities	Global Bonds	U.S. Core Private Real Estate	Private Equity	Hedge Funds	Global Core Private Infrastructure
Global Equities	1.0					
Global Bonds	(0.3)	1.0				
U.S. Core Private Real Estate	0.2	0.0	1.0			
Private Equity	0.8	(0.4)	0.3	1.0		
Hedge Funds	0.7	(0.3)	0.2	0.8	1.0	
Global Core Private Infrastructure	(0.1)	0.4	0.3	(0.1)	0.0	1.0

Low (Negative) High (+1.0)

Sources: Bloomberg, NCREIF, Burgiss, JPMAM. Global equities is MSCI World, global bonds is Barclays Global Agg, U.S. real estate is NFI-ODCE, private equity is Burgiss, hedge funds is HFRI, and global infrastructure is JPMAM. All series are based on gross of fees total return indices, and denominated in USD. As of March 31, 2017.
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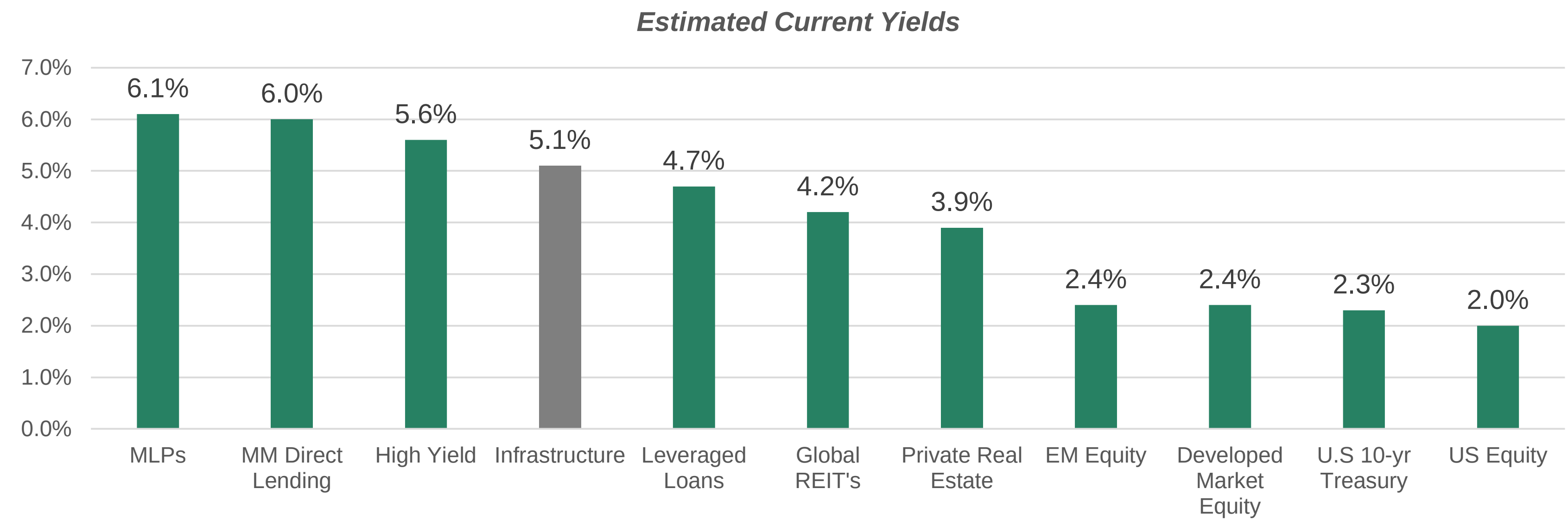
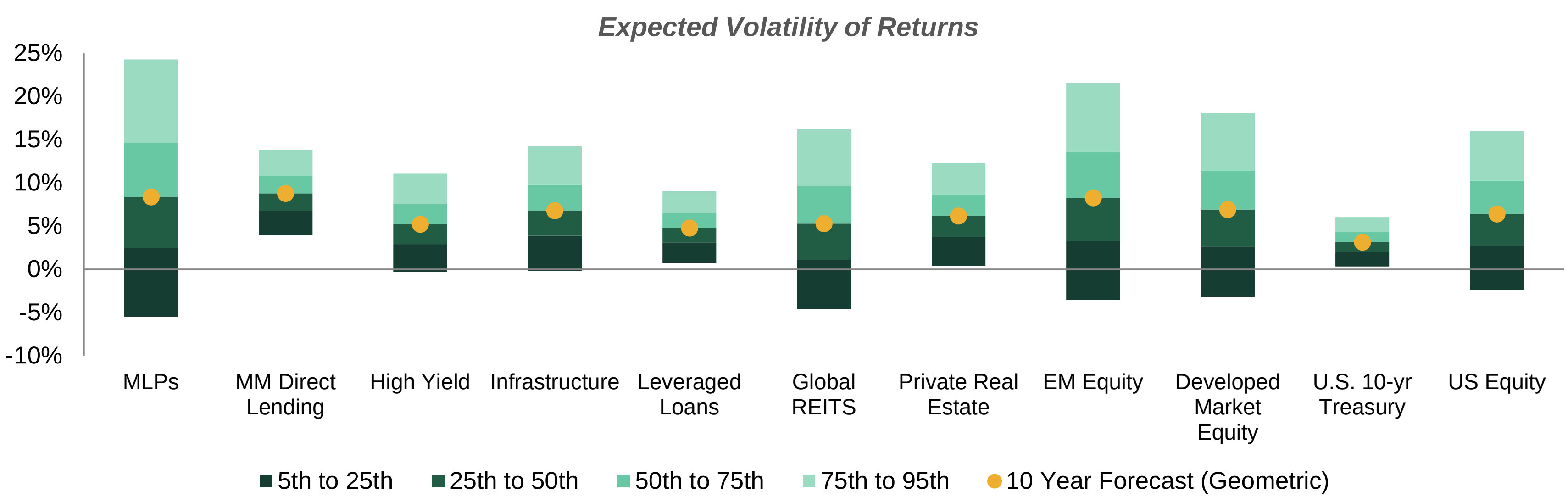
Asset Class Volatilities and Yields





Note: (Top) estimated as of 6/30 based on data from Factset, Prequin, NCREIF ODCE
(Bottom) estimated based on Segal Marco capital market assumptions

Characteristics of Infrastructure

- Infrastructure covers a broad group of investments that span the risk and return spectrum
- Two primary strategies for infrastructure investing:
  - **Brownfield** – lower risk/return, existing assets which may have a value add component to them
  - **Greenfield** – higher risk/return, development of assets

Infrastructure Risk/Return				
Lower Risk ⟷				Higher Risk
Income	Income Oriented	Income/ Growth	Growth Oriented	Growth
Lower Return ⟷				Higher Return
Toll Roads Bridge/Tunnels Education	Private Financing Regulated Assets Car Parks Healthcare	Rail/Transport Airports Energy Distribution	Toll Road Dev. Trans. Dev. Water Treatment Communication	Emerging Market Power Generation

Summary

- Expectations for capital market assumptions continue to decrease
  - Moving away from equity as valuations creep up
  - “Bag the Agg” – too much interest rate risk for not enough yield
  - Real estate continues to look healthy but appreciation has slowed
- Focus shifting from Beta (market) to Alpha (idiosyncratic) investments
- Steady income and more predictable returns in focus
- Infrastructure can serve many purposes within a diversified investment portfolio