



# Pension

Investment Review as of September 30, 2019

UC INVESTMENTS

# UC Pension

1. Asset Allocation
2. Performance
3. Asset Classes
4. Risk

## INVESTMENT OBJECTIVES

- Maximize real, long-term total returns (income plus capital appreciation adjusted for inflation), while assuming appropriate levels of risk.
- Maximize the probability of meeting the Plan's liabilities, subject to the Regents' funding policy.

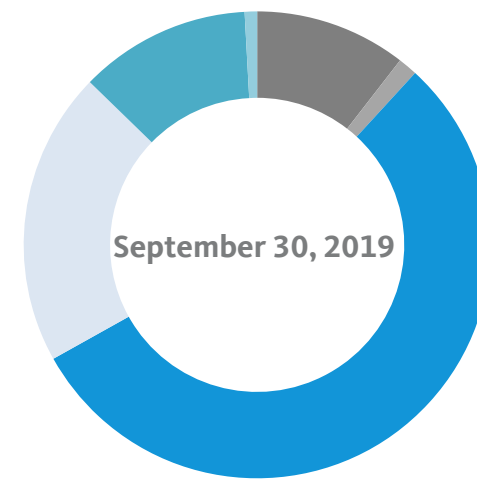
# UC Investments

**MISSION:** Growing Portfolios. Building Partnerships. Delivering value through values.

## INVESTMENT PRODUCTS

- Investing Endowment assets since 1933 (87 years)
- Investing Blue & Gold assets since 2019 (1 years)
- Investing Pension assets since 1961 (59 years)
- Investing Retirement Savings assets since 1967 (52 years)
- Investing Working Capital since 1976 (44 years)
- Investing Fiat Lux Insurance assets since 2016 (3 years)

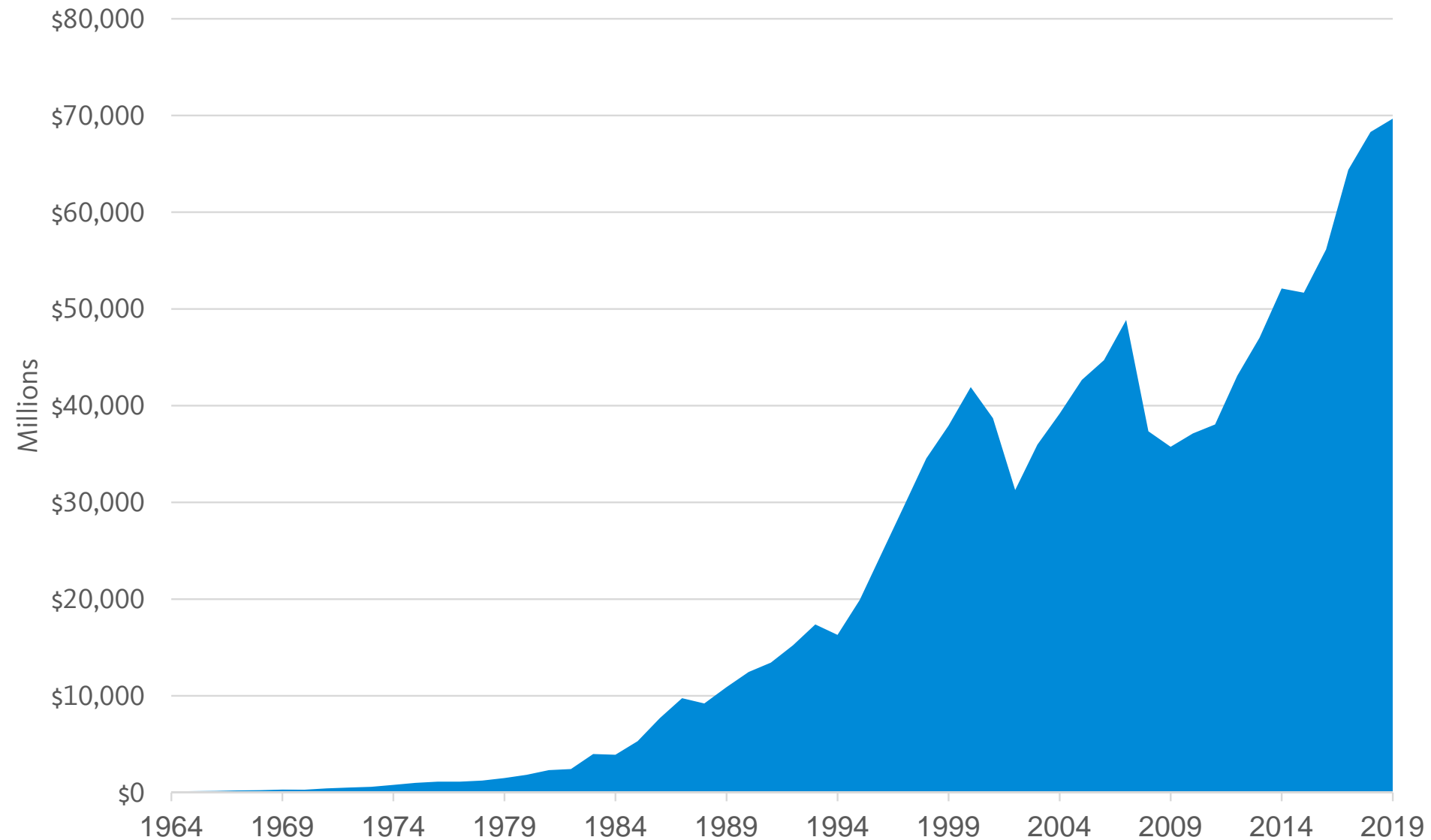
## \$126.6 BILLION ACROSS 7 PRODUCTS



● Endowment:.....	\$13.3B (10%)
● Blue & Gold:.....	\$1.7B, (1%)
● Pension:.....	\$69.7B, (55%)
● Retirement Savings:.....	\$25.8B, (20%)
● Working Capital:.....	\$15.0B, (12%)
<i>Total Return:.....\$9.0B</i>	
<i>Short Term:.....\$6.0B</i>	
● Fiat Lux Insurance:.....	\$1.1B, (1%)

# Pension Asset Growth

**PENSION ASSETS 1963 – 2019**



## 5 YEAR GROWTH

September 30, 2019

Today	△ Change
\$69.7 billion	
1 Year Ago \$68.3 billion	+\$1.4 billion
5 Years Ago \$52.1 billion	+\$17.6 billion

# Assets Under Management

	Market Value (\$B)
June 30, 2019	70.0
Market Gains	0.3
Value Added	(0.1)
Net Cash Flow	(0.5)
September 30, 2019	69.7

# Pension Asset Allocation

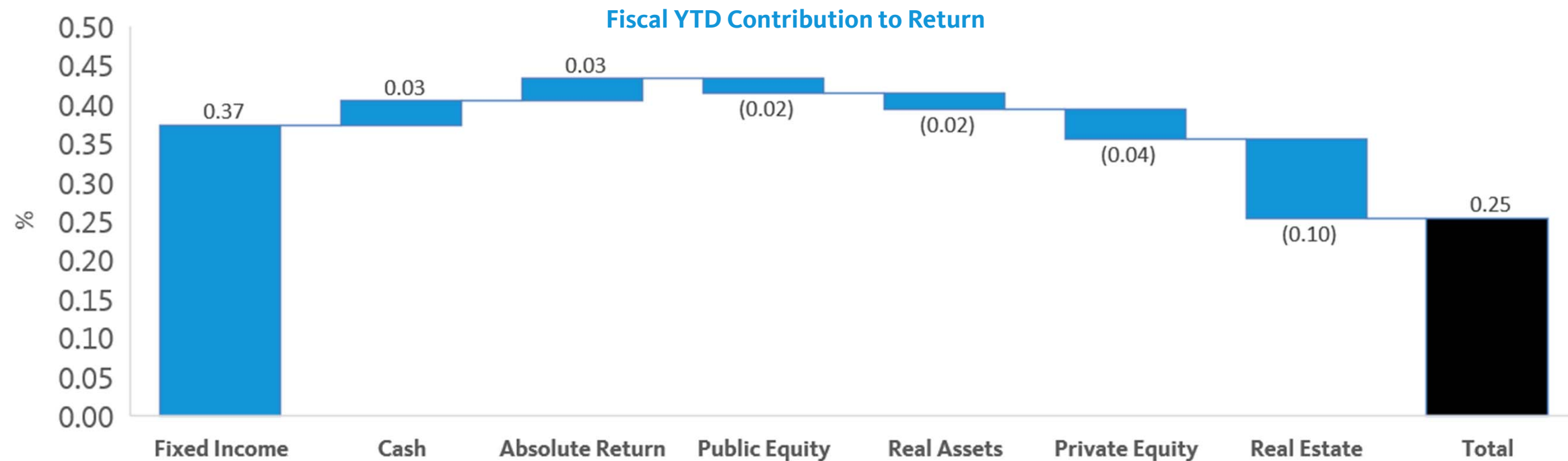
As of September 30, 2019	Market Value (\$B)	Weight (%)	Over/Underweight to Interim Policy (%)	Interim Policy (%)	Long-Term Target (%)
Public Equity	34.3	49.2	(5.4)	54.6	50
Fixed Income	15.6	22.4	1.4	21.0	20
Other Investments	14.2	20.4	(0.6)	21.0	30
Absolute Return	4.3	6.2	(0.5)	6.7	10
Private Equity	4.1	5.9	(0.2)	6.1	10
Real Estate	4.2	6.0	(0.1)	6.1	7
Real Assets	1.6	2.2	0.1	2.1	3
Cash	5.5	8.0	4.6	3.4	0
<b>Total</b>	<b>\$69.7B</b>	<b>100.0%</b>		<b>100.0%</b>	<b>100%</b>

# Pension Performance

As of September 30, 2019 Net Returns (%)	Market Value (\$B)	Weight (%)	Annualized Returns					
			Fiscal YTD	1 Year	3 Year	5 Year	10 Year	20 Year
UC Pension	69.7	100	0.3	3.7	8.0	6.2	8.1	6.0
Policy Benchmark*			0.4	3.4	7.7	5.8	7.5	5.4
<i>Value Added**</i>			(0.2)	0.3	0.3	0.4	0.6	0.6

\*The Policy Benchmark is a weighted average of investment policy targets.

\*\*Value add calculation may be slightly off due to rounding and the level of precision used for returns.



# Pension Attribution – Fiscal Year to Date

As of September 30, 2019	Portfolio Return	Benchmark Return	Allocation Attribution	Selection Attribution	Total Attribution
<b>Public Equity</b>	-0.1	-0.2	0.0	0.0	0.0
<b>Fixed Income</b>	1.7	2.0	0.0	-0.1	-0.1
Core Fixed Income	1.9	2.3	0.0	0.0	-0.1
High Yield	1.2	1.2	0.0	0.0	0.0
Emerging Market Debt	1.3	1.5	0.0	0.0	0.0
TIPS	1.3	1.4	0.0	0.0	0.0
<b>Other Investments</b>	-0.6	0.3	0.0	-0.2	-0.2
Absolute Return	0.5	-1.1	0.0	0.1	0.1
Private Equity	-0.7	1.7	0.0	-0.1	-0.1
Real Estate	-1.6	0.8	0.0	-0.1	-0.1
Real Assets	-0.9	-0.7	0.0	0.0	0.0
<b>Cash</b>	0.7	0.4	0.0	0.0	0.0
<b>Total</b>	<b>0.3</b>	<b>0.4</b>	<b>0.0</b>	<b>-0.2</b>	<b>-0.2</b>



# Pension Policy Benchmark

Asset Class	Policy Benchmark Component	Target	Allowable Ranges	
			Min	Max
<b>Total Public Equity</b>	MSCI All Country World Index Net IMI Tobacco Free	54.6%	40.0%	59.1%
<b>Total Fixed Income</b>				
U.S. Core Fixed Income	Barclays U.S. Aggregate Bond Index	14.0%	6.8%	19.2%
High Yield Debt	Merrill Lynch High Yield Cash Pay Index	2.5%	1.5%	3.5%
Emerging Market Debt	JP Morgan Emerging Markets Bond Index Global Diversified	2.5%	2.0%	3.0%
TIPS	Barclays U.S. TIPS	2.0%	2.0%	2.0%
<b>Total Other Investments</b>				
Private Equity	Russell 3000 + 2%	6.1%	1.1%	11.1%
Absolute Return	HFRI Fund of Funds Composite	6.7%	0.0%	16.7%
Real Estate	NCREIF ODCE Index	6.1%	1.1%	11.1%
Real Assets	Actual Real Asset Portfolio Returns	2.1%	0.0%	5.1%
<b>Cash</b>		3.4%	0.0%	13.4%

# Public Equity

As of September 30, 2019 Net Returns (%)	Market Value (\$B)	Weight (%)	Annualized Returns					
			Fiscal YTD	1 Year	3 Year	5 Year	10 Year	20 Year
Public Equity	34.3	100	(0.1)	1.1	10.3	7.2	9.2	5.1
Policy Benchmark*			(0.2)	0.6	9.6	6.6	8.7	5.8
<i>Value Added</i>			0.1	0.5	0.7	0.6	0.5	(0.7)

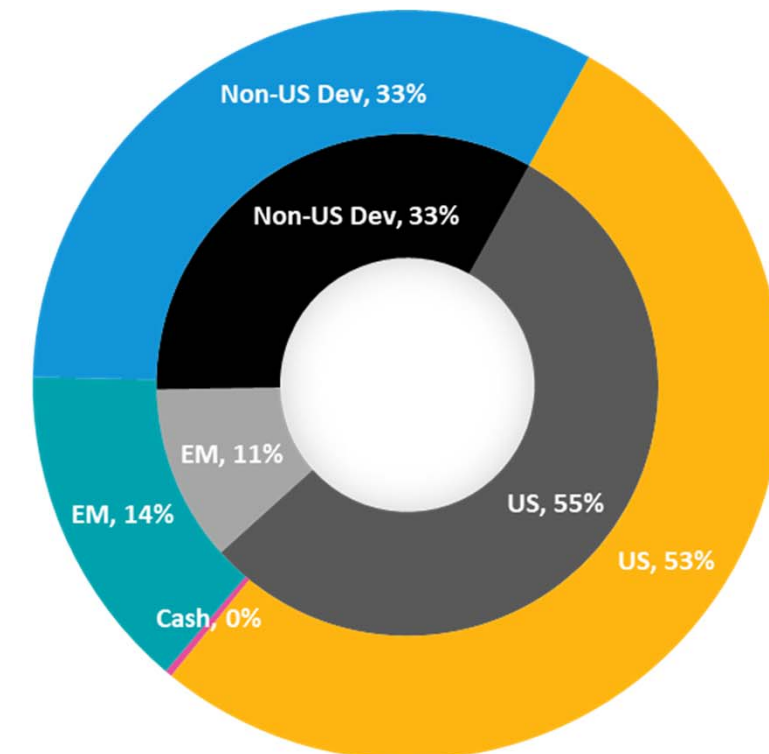
\* Prior to July 1, 2016, the total public equity benchmark was an aggregate of benchmarks for underlying equity portfolios

Active Managers	# of funds	Weight
Global Generalist	5	17.0%
USA	3	6.5%
Developed Non-USA	4	4.8%
Global Sector Specialist	3	3.8%
Emerging Markets	4	4.2%
	<b>19</b>	<b>36.3%</b>

Passive Index Exposure	Strategy	Weight
MSCI ACWI IMI Tobacco Free	Global Passive	63.7%

## Regional Lookthrough Exposure

Pension ■ ■ ■ ■  
 Benchmark ■ ■ ■



# Public Equity (cont.)

## Attribution:

UCRP outperformance FYTD 2019/20 driven by positive returns for several of largest funds, with only modest detractions from underperforming funds.

Top 3 Contributors FYTD	FYTD return	Weight (Sept. 30)
1. Global Value Manager	4.8%	3.5%
2. Global All-Cap Manager	1.1%	7.1%
3. Global REIT Manager	3.7%	1.6%

Top 3 Detractors FYTD	FYTD return	Weight (Sept. 30)
1. Global Growth Manager	-4.9%	3.1%
2. China Large Cap Manager	-3.6%	2.7%
3. Global Healthcare Manager	-7.5%	0.8%

Geographic Exposures	Portfolio	Benchmark
US Equity	52.8%	55.3%
Developed Non-US Equity	32.7%	33.3%
Emerging Market Equity	14.2%	11.4%
Cash	0.3%	0.0%

# Fixed Income (Liquidity) and Cash

As of September 30, 2019 Net Returns (%)	Market Value (\$B)	Weight (%)	Fiscal YTD	Annualized Returns				
				1 Year	3 Year	5 Year	10 Year	20 Year
Fixed Income	15.6	100	1.7	8.7	3.7	3.8	4.8	6.1
Pension Policy Benchmark*			2.0	9.8	3.5	3.8	4.7	6.0
<i>Value Added</i>			-0.3	-1.1	0.2	0.0	0.1	0.1
Core Fixed Income	9.7	63	1.9	9.3	3.3	3.5	4.1	5.6
Barclays U.S. Aggregate Bond Index			2.3	10.3	2.9	3.4	3.7	5.5
<i>Value Added</i>			-0.4	-1.0	0.4	0.1	0.4	0.1
High Yield	2.3	14	1.2	5.7	5.7	5.3	8.0	-
Merrill Lynch High Yield Cash Pay Index			1.2	6.3	6.1	5.4	7.8	-
<i>Value Added</i>			0.0	-0.6	-0.4	-0.1	0.2	-
Emerging Market Debt	1.7	11	1.3	11.3	4.4	4.7	5.6	-
JPM EM Bond Index Global Diversified			1.5	11.6	4.6	5.7	6.6	-
<i>Value Added</i>			-0.2	-0.3	-0.2	-1.0	-1.0	-
TIPS	1.8	12	1.3	7.0	2.6	2.6	3.7	-
Barclays U.S. TIPS			1.3	7.1	2.2	2.4	3.5	-
<i>Value Added</i>			0.0	-0.1	0.4	0.2	0.2	-

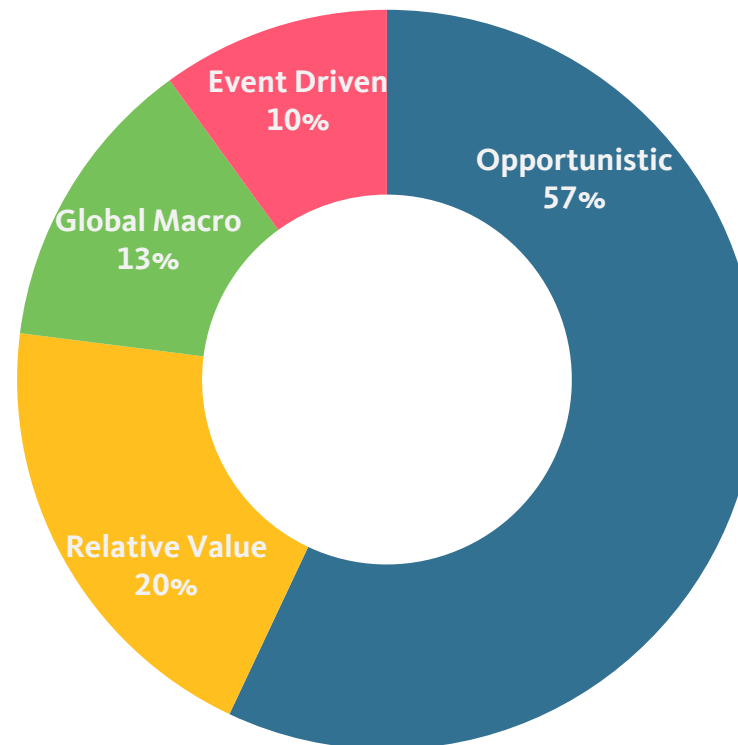
\* Total fixed income policy benchmark is an aggregate of underlying portfolio benchmarks

Net Returns (%)	Market Value (\$B)	Weight (%)	Fiscal YTD	Annualized Returns				
				1 Year	3 Year	5 Year	10 Year	20 Year
Cash	5.5	100	0.7	2.8	1.9	1.6	2.8	-

# Absolute Return

As of September 30, 2019 Net Returns (%)	Market Value (\$B)	Weight (%)	Annualized Returns					
			Fiscal YTD	1 Year	3 Year	5 Year	10 Year	20 Year
Absolute Return	4.3	100	0.5	5.7	5.5	3.9	5.7	-
Policy Benchmark*			-1.1	0.0	3.1	0.7	1.0	-
<i>Value Added</i>			1.6	5.7	2.4	3.2	4.7	-
Opportunistic	2.5	57	1.7	7.6	8.8	7.7	0.0	-
Relative Value	0.9	20	-0.7	3.9	7.3	7.3	7.6	-
Global Macro	0.5	13	-3.5	3.2	-0.5	0.7	-0.1	-
Event Driven	0.4	10	0.9	3.9	8.6	4.1	6.9	-
Fund of Funds	0.0	0	0.4	3.2	3.9	1.9	0.0	-

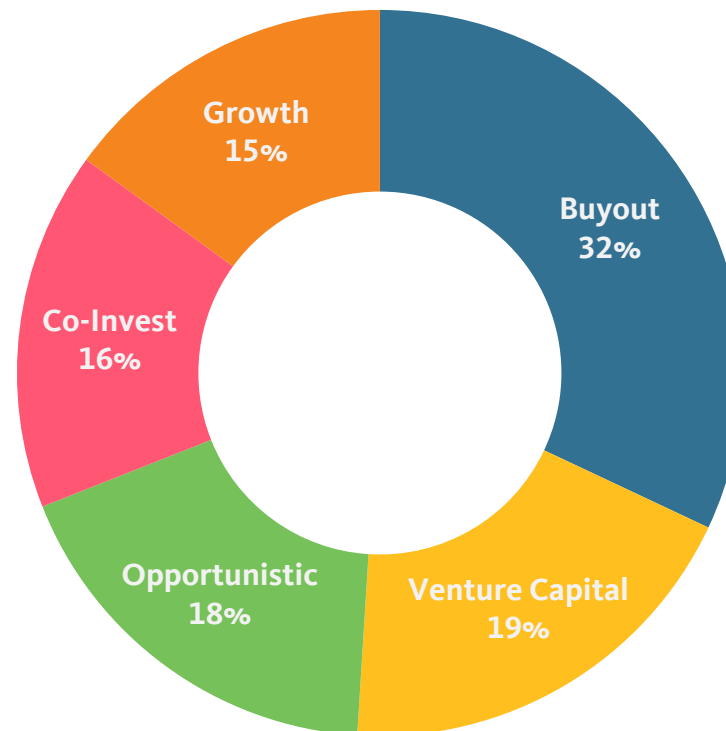
\* From April 1, 2003 to March 1, 2009, the portfolio benchmark was 1 Month T-Bill+4.5%; thereafter the benchmark changed to 50% HFRX Absolute Return/50% HFRX Market Directional until February 2016 when it became HFRX Absolute Return. As of July 1, 2017, the benchmark is HFRI Fund of Funds Composite.



# Private Equity

As of September 30, 2019 Net Returns (%)	Market Value (\$B)	Weight (%)	Annualized Returns					
			Fiscal YTD	1 Year	3 Year	5 Year	10 Year	20 Year
Private Equity	4.1	100	-0.7	10.6	14.8	11.9	14.0	12.0
Policy Benchmark*			1.7	4.5	13.7	11.2	13.7	8.2
<i>Value Added</i>			-2.4	6.1	1.1	0.7	0.3	3.8
Buyout	1.3	32	-2.4	4.0	10.4	10.9	12.7	-
Venture Capital	0.8	19	-0.1	13.4	16.0	12.3	13.9	-
Opportunistic	0.8	18	1.3	11.2	7.6	4.0	16.1	-
Co-Invest	0.7	16	1.4	33.0	31.3	27.9	0.0	-
Growth	0.6	15	-1.6	7.2	13.7	7.2	13.0	-

\* As of July 1, 2019, the Private Equity policy benchmark is the Russell 3000 +2.0%. From July 1, 2017 to June 30, 2019, the Private Equity policy benchmark is the Russell 3000 +1.5%.  
 From March 2005 to June 2017, the Private Equity benchmark was the actual private equity return.  
 From January 2001 to February 2005, the Private Equity benchmark was Russell 3000 + 3% lagged one quarter.  
 Prior to that, it was the S&P 500 + 5% lagged by a quarter.



# Real Estate

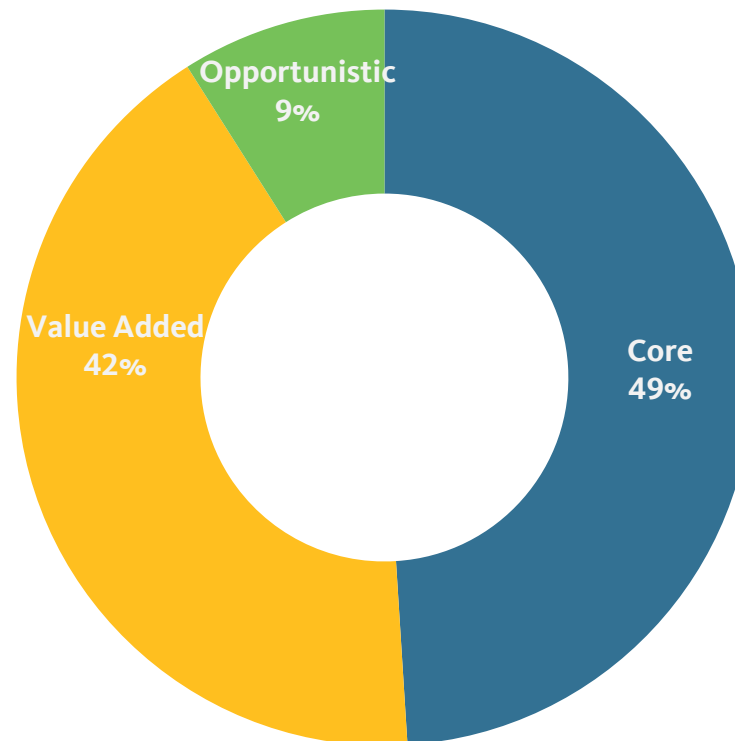
As of September 30, 2019 Net Returns (%)	Market Value (\$B)	Weight (%)	Annualized Returns					
			Fiscal YTD	1 Year	3 Year	5 Year	10 Year	20 Year
Real Estate	4.2	100	-1.6	6.1	7.2	9.5	9.1	-
Policy Benchmark*			0.8	5.5	6.6	8.9	8.5	-
<i>Value Added</i>			-2.4	0.6	0.6	0.6	0.6	-
Core	2.0	49	-1.2	7.1	7.6	9.6	10.4	-
Value Added	1.7	42	-2.6	5.6	8.2	9.4	7.2	-
Opportunistic	0.4	9	1.0	3.1	4.1	7.2	9.1	-

\* One quarter lagged for Private Real Estate Investments.

\*\* Policy Weighted Benchmark is composed of the NFI-ODCE and the UCRP closed-end portfolio return, weighted in proportion to UC's Open End and Closed End components of UCRP's portfolio.

\*\*\* Effective April 1, 2011, the benchmark for evaluating the Program's investment performance was changed to NFI-ODCE.

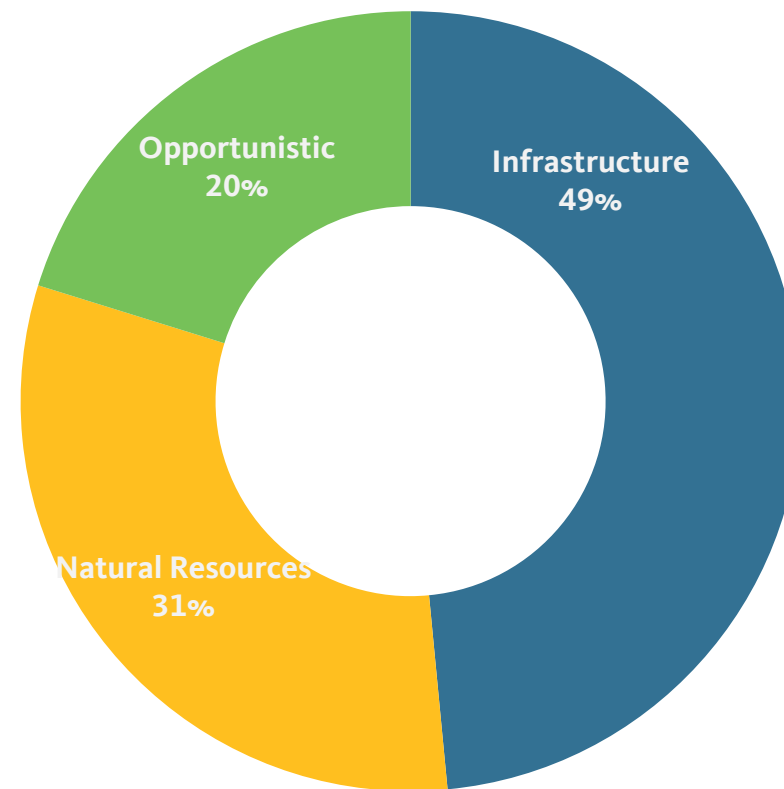
\*\*\* Real Estate Public Securities - Performance - Non Lagged Public Benchmark is a blend of 50% EPRA/NAREIT US and 50% EPRA/NAREIIT Global ex-US.



# Real Assets

As of September 30, 2019 Net Returns (%)	Market Value (\$B)	Weight (%)	Annualized Returns					
			Fiscal YTD	1 Year	3 Year	5 Year	10 Year	20 Year
Real Assets	1.6	100	-0.9	3.2	6.0	-1.9	-	-
Policy Benchmark*			-0.9	3.2	6.0	-1.9	-	-
<i>Value Added</i>			0.0	0.0	0.0	0.0	-	-
Infrastructure	0.8	49	-0.8	10.6	11.1	10.1	-	-
Natural Resources	0.5	31	-1.0	-5.1	1.2	-9.5	-	-
Opportunistic	0.3	20	-0.9	2.4	4.6	4.1	-	-

\* Inception date for Real Assets is April 1, 2010





# Risk 1.0 : Risk Measurement

Portfolio risk drops slightly on the quarter, in part due to underweighting of public equities. Pension tracking error unchanged.

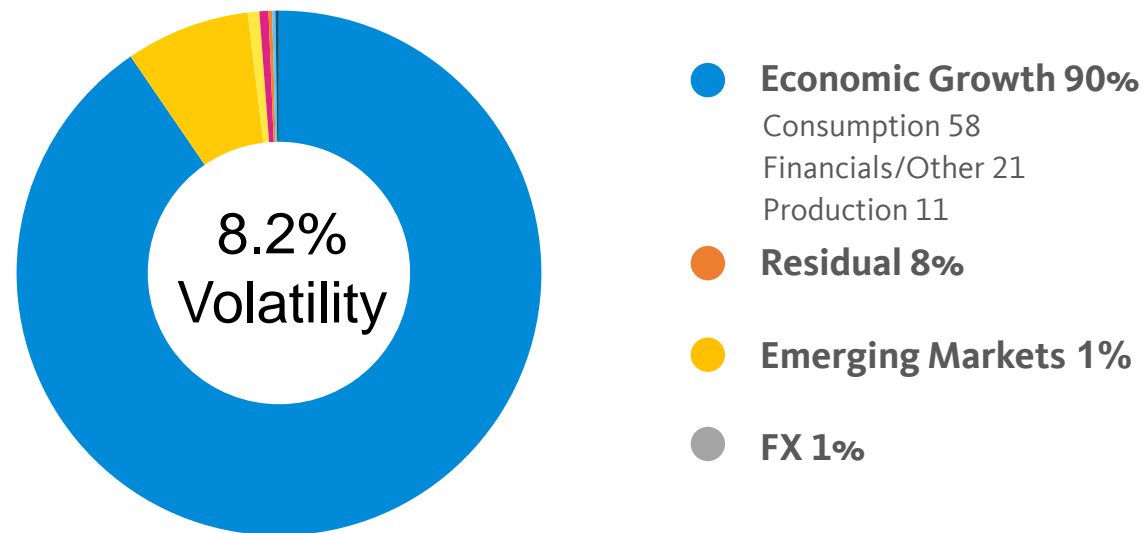
Portfolio	Benchmark	Weight (%)	Portfolio Risk (%)		Benchmark Risk (%)		Active Risk (%)	
			Standalone Volatility	QoQ Change	Standalone Volatility	QoQ Change	Tracking Error	QoQ Change
<b>Pension</b>	Policy (Blend)	100	8.2	(0.2)	8.4	0.2	0.8	(0.0)
<b>Public Equity</b>	MSCI ACWI ex Tobacco	49	12.8	0.4	12.7	0.5	0.8	(0.1)
<b>Fixed Income</b>	Policy (Blend)	22	2.4	0.3	2.9	0.5	0.6	0.2
<b>Absolute Return</b>	HFRI FOF	6	4.9	1.7	2.4	(0.2)	3.8	1.6
<b>Private Equity</b>	Russell 3000	6	18.6	(0.6)	14.4	0.3	7.5	(1.5)
<b>Real Estate</b>	NFI-ODCE	6	10.9	0.8	10.0	(0.3)	6.3	0.3
<b>Real Assets</b>	Real Assets	2	19.1	3.0	19.1	3.0	0.0	0.0
<b>Cash</b>	Merrill Lynch 3M	8	0.1	(0.1)	0.1	0.0	0.1	(0.1)

# Macroeconomic Risk Factors

Portfolio systematic risk generally dominated by “Economic Growth” risk. Within Economic Growth, “Consumption” dominates.

## Retirement Plan

Portfolio Standalone Risk Factor Decomposition



Factor Name	Factor Description
<b>Economic Growth</b>	Proxied by broad, developed market equity index returns
<b>Real Rates</b>	Inflation-linked bond returns
<b>Inflation</b>	Return of long nominal bonds, short inflation-linked bonds portfolio
<b>Credit</b>	Return of long corporate bonds, short nominal bonds portfolio
<b>Commodity</b>	Weighted GSCI Commodity index returns
<b>Emerging Markets (EM)</b>	Equally weighted basket of EM Assets

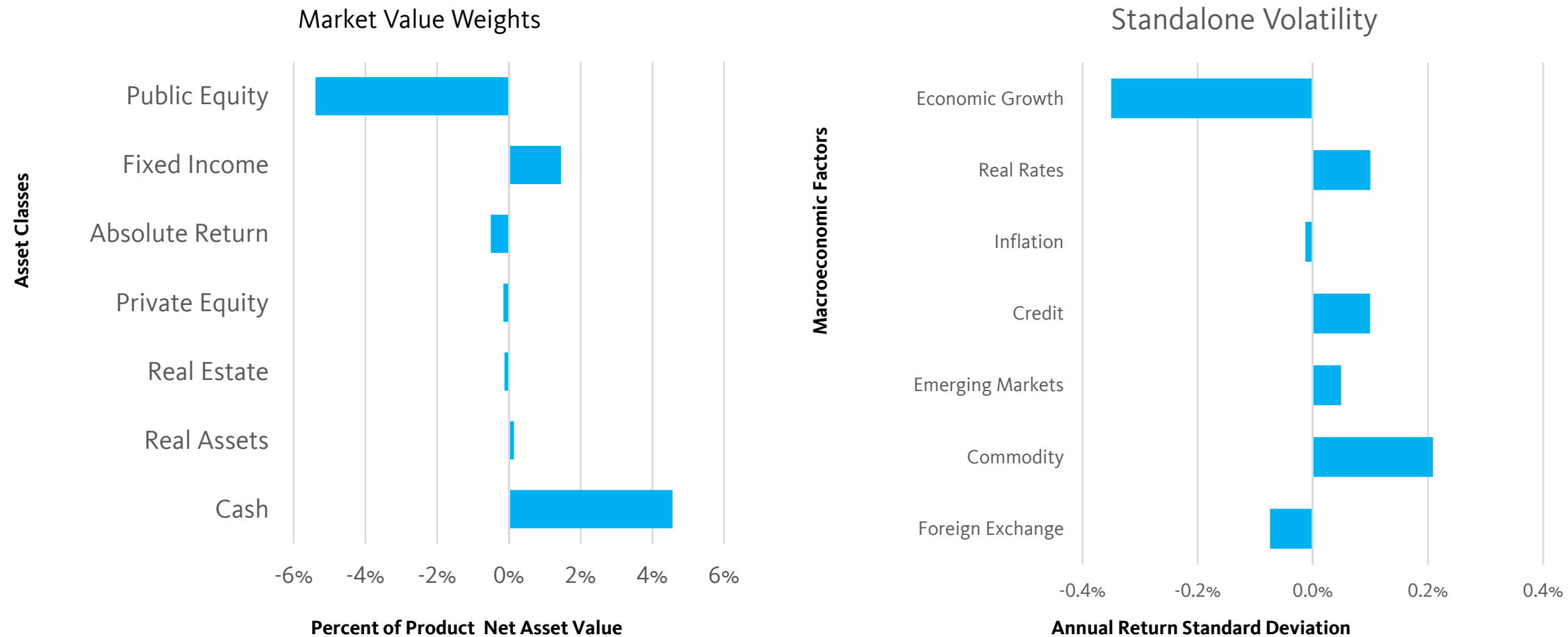
# Risk 1.0: Two Views of Risk

## Asset Classes versus Macroeconomic Factors

Portfolio underweight Economic Growth, consistent with tactically underweighting Public Equities. Commodities overweight from Private Equity portfolio. Short real rates duration contribution from Fixed Income.

### Retirement Plan Active Exposures

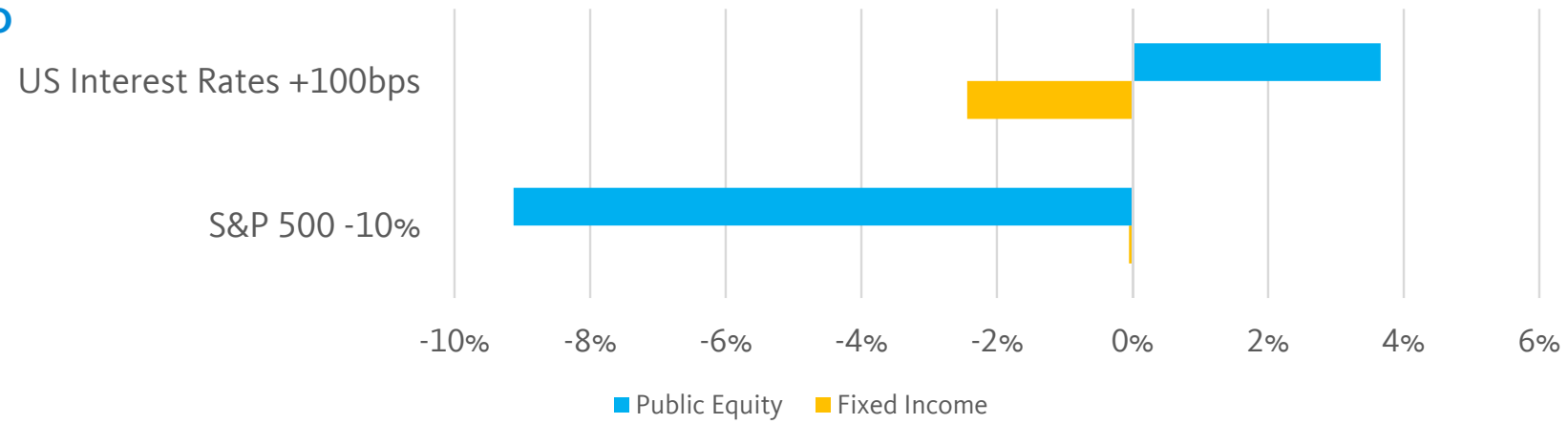
Reference scale: active risk (tracking error) : 0.8%



# Risk 2.0: Stress Tests

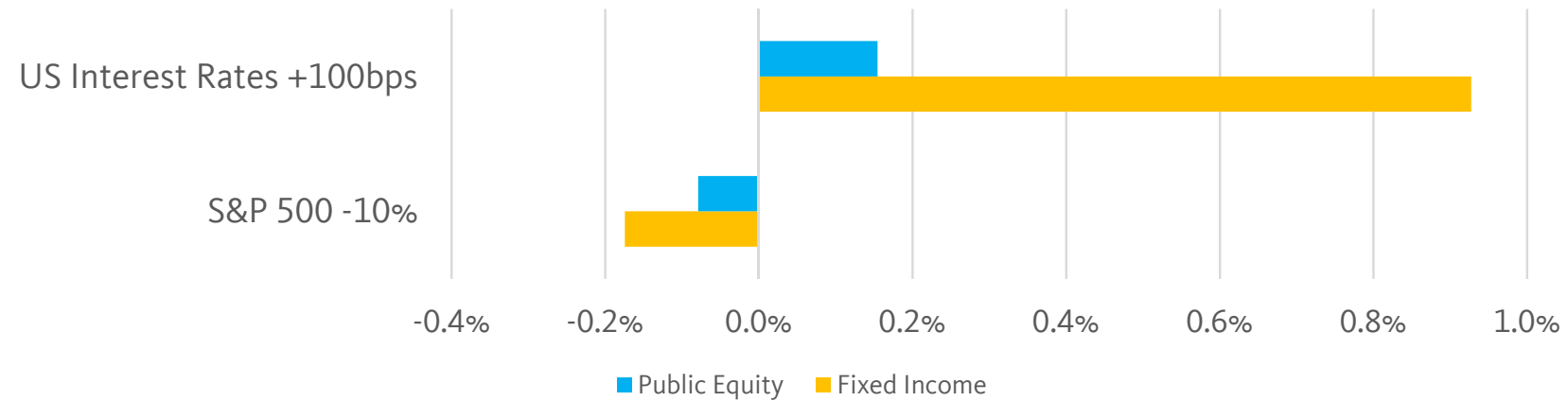
Indicative stressed P&L for public markets investments

## PORTFOLIO



- Public Equity
- Fixed Income

## ACTIVE



# Risk 3.0: Scenario Analysis

## US Scenarios

Federal Reserve Rate Regimes  
Fiscal Policy Stance  
Tax Reform

## European Scenarios

Brexit Negotiations  
Europe Fragmentation/Breakup  
Eurozone Populist Elections

## Emerging Markets /Asia Scenarios

US-China Trade Relations  
Abenomics- Helicopter Money  
North Korea Tensions

## Global Scenarios

Central Bank Policy  
Peak Oil  
Gulf Tensions

## Interest Rate Scenarios

US Rates Paradigm Shift  
Reflation – Deflation  
Rising Inflation – Global Rate Hikes

## Market Technical Scenarios

Volatility Regime Change  
Tech Calamity  
Value Reversal

*Source: BlackRock*

# Risk 3.0: Scenario Analysis

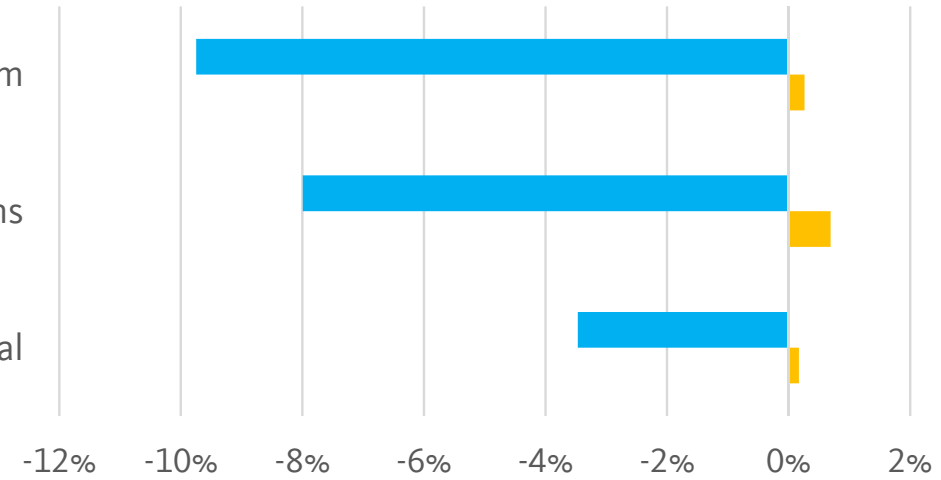
Indicative stressed P&L for public markets investments

## PORTFOLIO

US-China Trade: Global Protectionism

US Fed Rate Pause: Growth Concerns

Brexit: No Deal



Public Equity

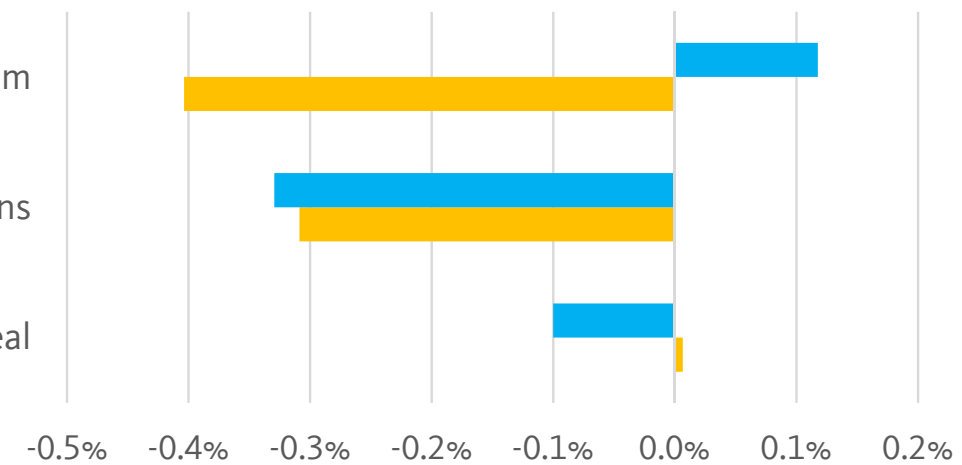
Fixed Income

## ACTIVE

US-China Trade: Global Protectionism

US Fed Rate Pause: Growth Concerns

Brexit: No Deal



As of September, 2019 Reference scale: volatility = 8.2%, tracking error 0.8%