



UNIVERSITY OF CALIFORNIA

Office of the Chief Investment Officer

Endowment

Investment Review as of June 30, 2017

Growing Portfolios Building Partnerships

UC Investments



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GEP Executive Summary

How is our Endowment positioned?

How did our Endowment perform?

How are we managing risk in our Endowment?



Office of the Chief Investment Officer

The **mission** of the General Endowment Pool (“GEP”) is to provide a common investment vehicle, which will generate a stable and continuously growing income stream, for (most but not all of) the University’s endowments and quasi-endowments, for which the University is both trustee and beneficiary.

The overall investment goal of the GEP is to preserve the purchasing power of the future stream of endowment payout for those funds and activities supported by the endowments, and to the extent this is achieved, cause the principal to grow in value over time.



Office of the CIO at a glance

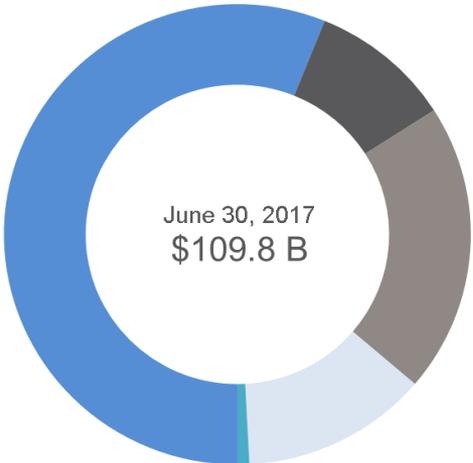
Office of the Chief Investment Officer

Growing Portfolios. Building Partnerships.
Delivering value through values.

Office of the CIO Facts

- ▶ Endowment assets: \$10.8 billion (as of 6/30/17)
- ▶ Investing Endowment assets since 1933 (84 years)
- ▶ Investing pension assets since 1961 (56 years)
- ▶ Investing defined contribution assets since 1967 (50 years)
- ▶ Serving more than 150,000 pension members
- ▶ Serving more than 300,000 DC participants

\$109.8 billion across 6 products



- Endowment: 10%, \$10.8B
- Pension: 56%, \$61.6B
- Retirement Savings: 20%, \$22.3B
- Working Capital: 13%, \$14.2B
- TRIP: \$8.9B
- STIP: \$5.3B
- Fiat Lux: 1%, \$0.9B



The team managing your money





GEP Executive Summary



GEP at a Glance

Global Markets

- Equities post strong performance
- International Equities meaningfully outperform US Equities over last year
- High Yield spreads continue to tighten driving strong performance

Assets Under Management

- Assets surpass \$10 billion

Asset Allocation

- Overweight Public Equities
- Overweight Cash
- Underweight Alternatives (Absolute Return, Real Estate, and Real Assets)
- Underweight Fixed Income

Risk Allocation

- Close to target risk allocation

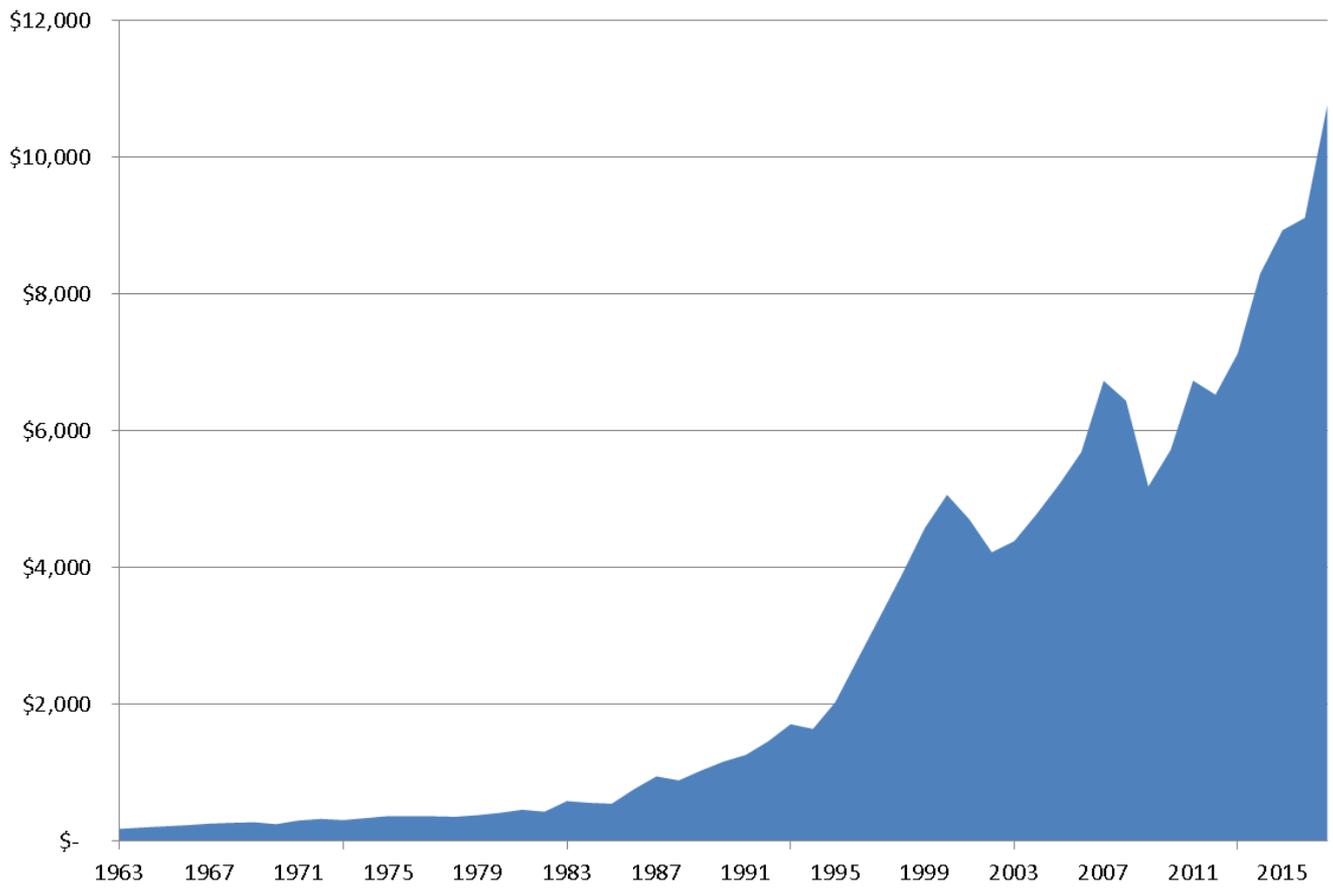
Performance

- Strong absolute and relative performance driven by equity markets
- Active management particularly in developed international markets paid off



Endowment surpasses \$10 Billion in Assets

GEP Assets 1963 - 2017



5 Year Growth

June 30, 2017
\$10.8 billion

1 Year ago
\$9.1 billion

5 Years ago
\$6.5 billion



AUM growth driven by markets and value add

Assets Under Management Attribution

Assets Under Management June 30, 2016	\$9.1 billion
Market Gains	\$1.2 billion
Value Added	\$0.2 billion
Net Cash Flow	\$0.3 billion
Assets Under Management June 30, 2017	\$10.8 billion



How is our Endowment positioned?



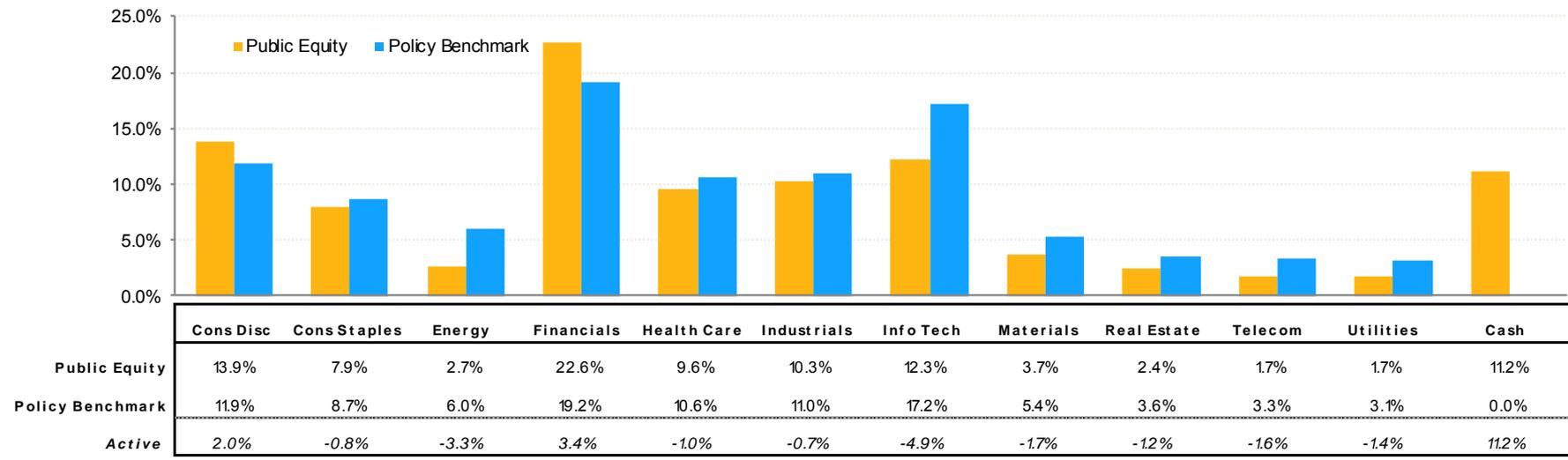
Asset Allocation

Relative Weight	As of June 30, 2017	Market Value in \$ Billions	Percentage	Over/Underweight Relative to Policy	Policy Weight
	Public Equity	4.7	43.4%	0.9%	42.5%
	Fixed Income	1.2	10.5%	-2.0%	12.5%
	Government/Treasury	0.4	3.5%	-1.5%	5.0%
	High Yield	0.4	3.3%	0.8%	2.5%
	Emerging Market Debt	0.2	1.5%	-1.0%	2.5%
	TIPS	0.2	2.2%	-0.3%	2.5%
	Other Investments	3.8	35.9%	-9.1%	45.0%
	Absolute Return	1.9	18.0%	-5.0%	23.0%
	Private Equity	1.2	11.5%	0.0%	11.5%
	Real Estate	0.5	4.5%	-3.0%	7.5%
	Real Asset	0.2	1.9%	-1.1%	3.0%
	Cash	1.1	10.2%	10.2%	0.0%
	Total	10.8	100.0%	0.0%	100.0%

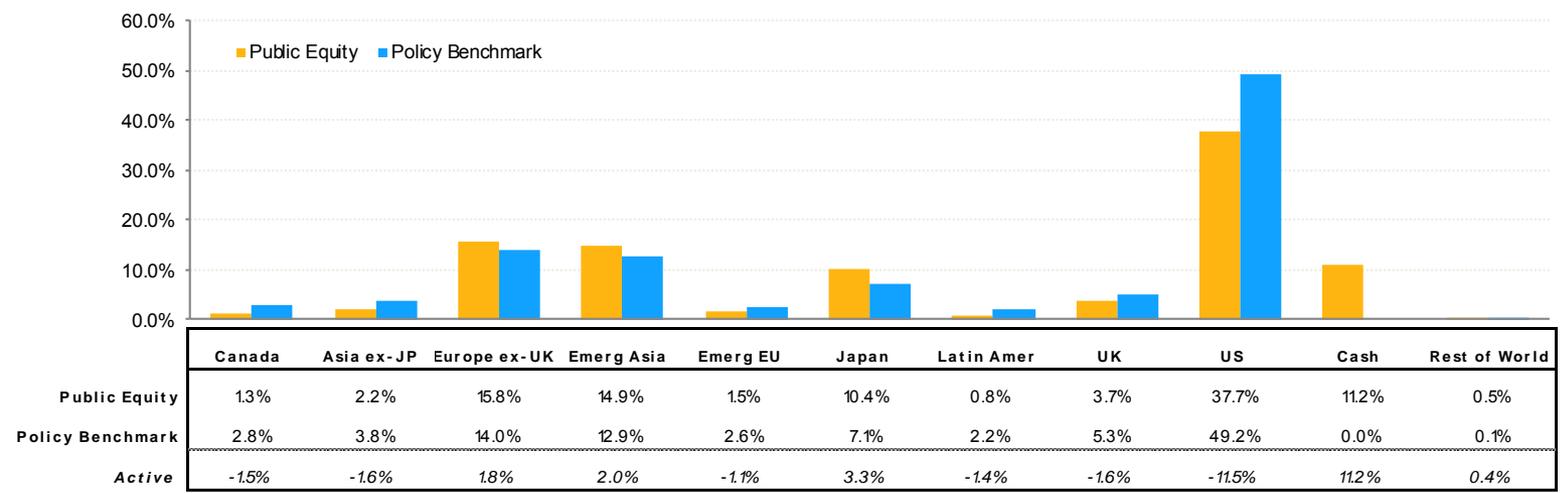


Public Equity Exposures

Sector Exposure:



Regional Exposure:

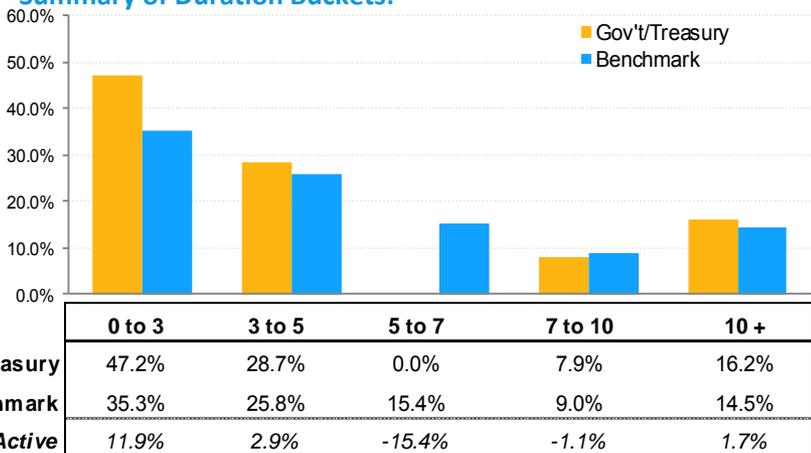




Fixed Income Exposures

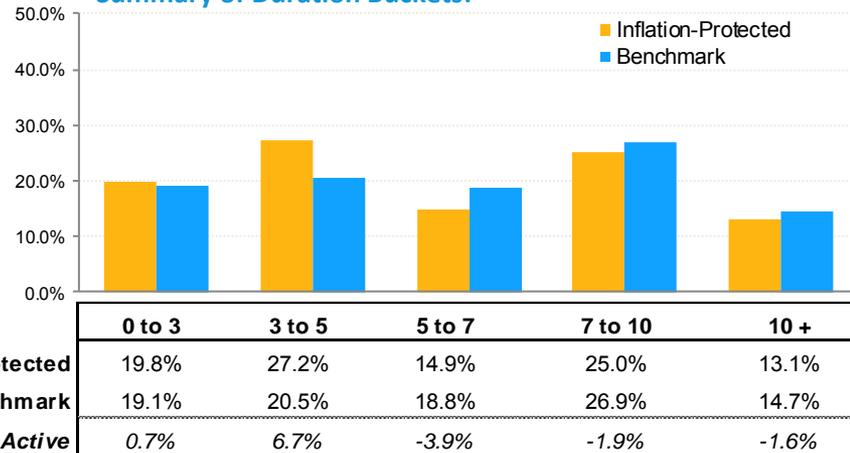
Government/Treasury Portfolio – \$373M

Summary of Duration Buckets:



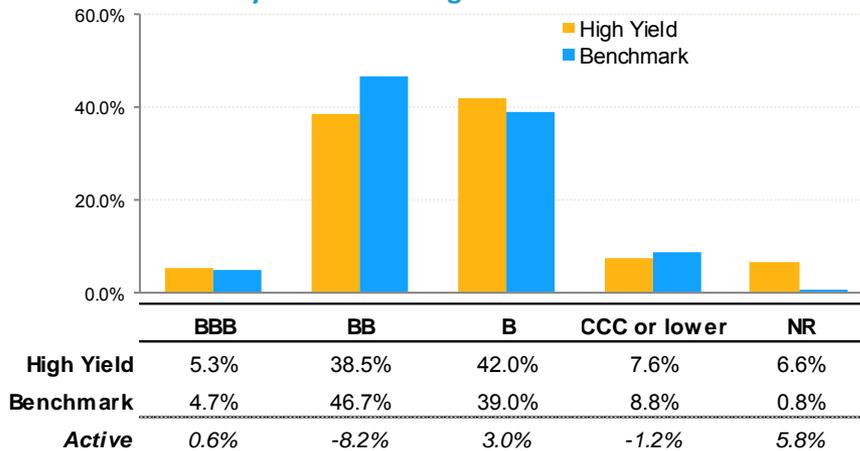
Treasury Inflation-Protected Securities – \$242M

Summary of Duration Buckets:



High Yield – \$356M

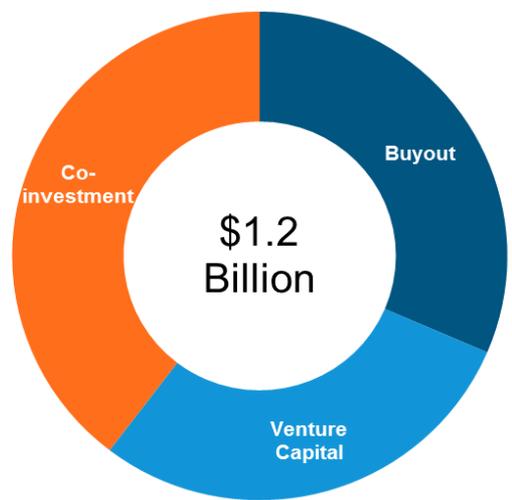
Summary of Credit Rating





Private Equity Exposures

Private Equity



● Buyout: 31%
\$0.4B

● Venture Capital: 31%
\$0.4B

● Co-investment: 38%
\$0.4B



Absolute Return Exposures

Absolute Return



● **Opportunistic: 21%**
\$0.4B

● **Alternative Risk Premia: 10%**
\$0.2B

● **Relative Value: 35%**
\$0.7B

● **Global Macro: 21%**
\$0.4B

● **Event Driven: 11%**
\$0.2B

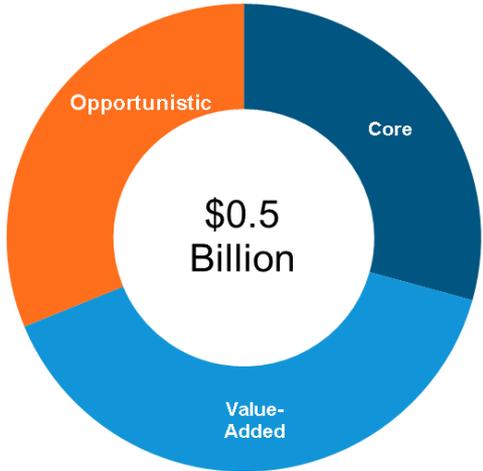
● **Fund of Funds: 1%**
\$0.0B

● **Distressed: 1%**
\$0.0B



Real Estate Exposures

Real Estate



● Core: 27%
\$0.1B

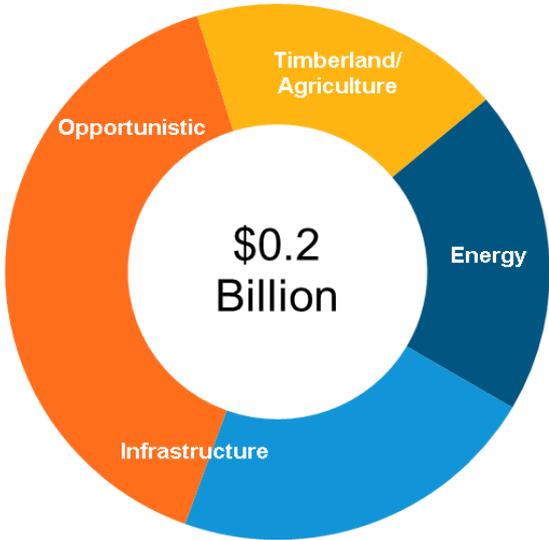
● Value-Added: 38%
\$0.2B

● Opportunistic: 35%
\$0.2B



Real Assets Exposures

Real Assets



● Energy: 19%
\$0.03B

● Infrastructure: 22%
\$0.04B

● Opportunistic: 40%
\$0.08B

● Timberland/Agriculture: 19%
\$0.04B



How did our Endowment Perform?



Performance: Strong absolute and relative

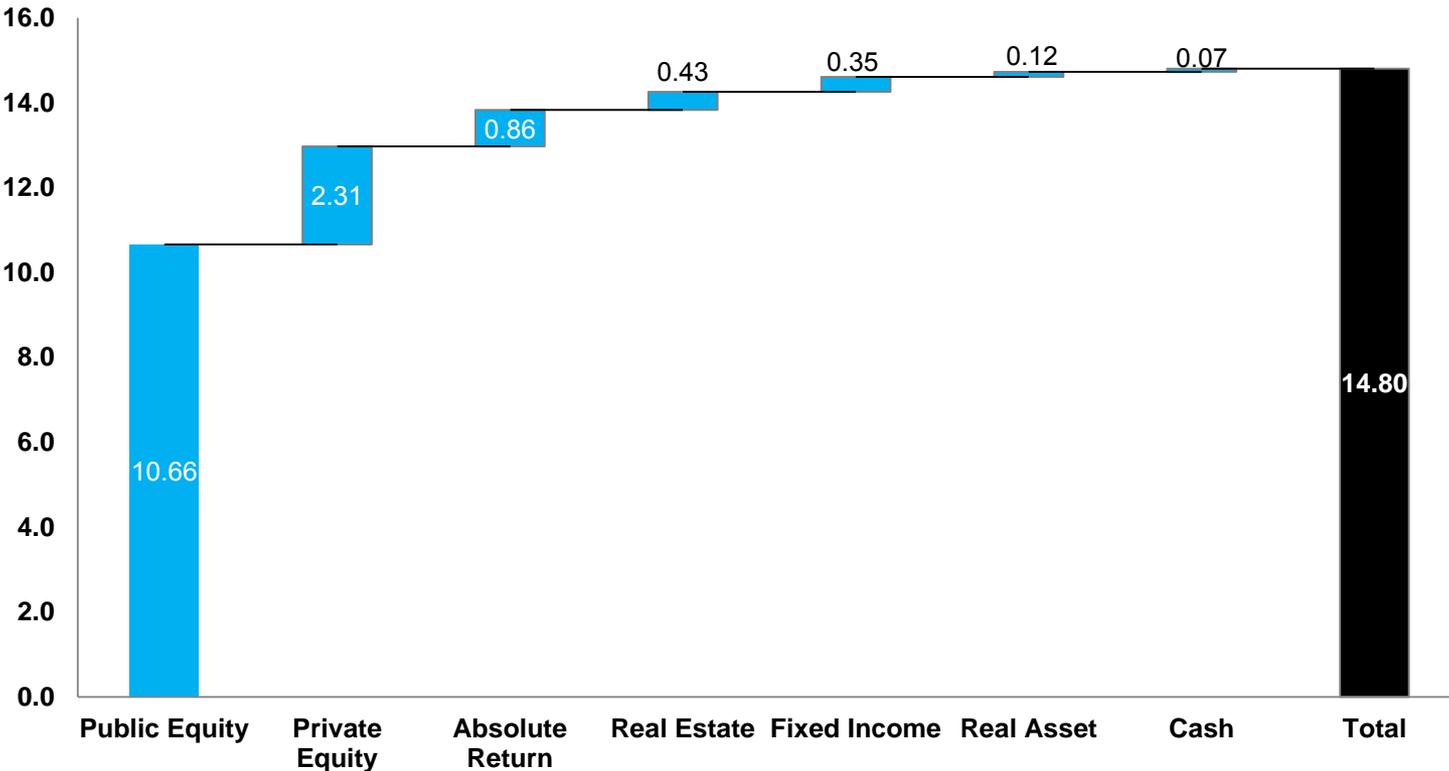
Net Returns (%) As of June 30, 2017	Annualized Returns							
	3 Month	6 Month	1 Year	3 Year	5 Year	7 Year	10 Year	20 Year
UC Endowment	3.2	7.2	14.8	5.5	9.4	9.3	5.3	7.3
UC Endowment Benchmark	3.1	7.1	12.2	4.6	8.0	7.8	4.8	6.8
Value Added	0.1	0.1	2.6	0.9	1.4	1.5	0.5	0.5

Net Returns (%) As of June 30	One Year Returns									
	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008
UC Endowment	14.8	(3.5)	6.1	19.0	12.0	(0.7)	20.2	11.3	(18.2)	(1.5)
UC Endowment Benchmark	12.2	(1.7)	3.7	16.6	10.1	(2.4)	17.9	9.1	(13.1)	0.1
Value Added	2.6	(1.8)	2.4	2.4	1.9	1.7	2.3	2.2	(5.1)	(1.6)



Fiscal YTD return driven by Public Equity

1 Year Contribution to Return - Percentage (%)





Endowment Attribution – Fiscal Year-to-Date

As of June 30, 2017	Average Weight	Average Active Weight	Allocation Attribution	Selection Attribution	Total Attribution
Public Equity	46.3	+3.8	+1.2	+0.7	+1.9
Fixed Income					
Government/Treasury	3.4	-1.6	+0.2	+0.0	+0.2
High Yield	3.3	+0.8	-0.1	+0.1	+0.0
Emerging Market Debt	1.3	-1.2	+0.1	+0.0	+0.1
TIPS	2.4	-0.1	+0.0	+0.0	+0.0
Other Investments					
Absolute Return	18.6	-4.4	+0.4	+0.5	+0.9
Private Equity	11.4	-0.1	+0.0	+0.0	+0.0
Real Estate	5.2	-2.3	+0.1	+0.0	+0.1
Real Asset	2.0	-1.0	+0.1	+0.0	+0.1
Cash	6.1	6.1	-0.8	+0.1	-0.7
Total GEP	100.0%	+0.0%	+1.2%	+1.4%	+2.6%



Public Equity Performance

Net Returns (%) As of June 30, 2017	Market Value		Annualized Returns							
	(\$ Million)	% Allocation	3 Month	6 Month	1 Year	3 Year	5 Year	7 Year	10 Year	20 Year
Public Equity	4,670	100%	4.8	12.1	23.8	5.3	11.1	11.0	4.2	6.2
GEP Public Equity Policy Benchmark			4.5	11.8	20.0	4.9	10.6	10.6	4.2	5.9
Value Added			0.3	0.3	3.8	0.4	0.5	0.4	0.0	0.3
U.S. Equity	1,982	42%	0.8	5.2	17.0	5.4	12.4	13.7	6.0	6.5
Russell 3000 Tobacco Free Index			3.0	8.8	18.5	8.9	14.6	15.2	7.1	7.4
Value Added			(2.2)	(3.6)	(1.5)	(3.5)	(2.2)	(1.5)	(1.1)	(0.9)
Non-U.S. Equity	1,762	38%	8.0	16.7	35.4	2.6	9.4	8.5	1.9	-
MSCI World ex-U.S. (net dividends) Tobacco Free			5.7	12.8	19.8	0.6	8.1	7.4	0.9	-
Value Added			2.3	3.9	15.6	2.0	1.3	1.1	1.0	-
Emerging Market	926	20%	7.7	21.4	23.6	3.4	5.3	5.3	2.6	-
MSCI Emerging Market (net dividends)			6.3	18.4	23.7	1.1	4.0	3.9	1.9	-
Value Added			1.4	3.0	(0.1)	2.3	1.3	1.4	0.7	-

* Total public equity benchmark is an aggregate of benchmarks for equity portfolios in the pool.



Fixed Income Performance

Net Returns (%) As of June 30, 2017	Market Value		Annualized Returns							
	(\$ Million)	% Allocation	3 Month	6 Month	1 Year	3 Year	5 Year	7 Year	10 Year	20 Year
Fixed Income	1,131	100%	1.4	3.2	3.2	2.3	3.2	4.6	5.5	6.3
Policy Benchmark			1.2	2.4	2.0	2.6	3.1	4.5	5.6	6.4
Value Added			0.2	0.8	1.2	-0.3	0.1	0.1	-0.1	-0.1
Government/Treasury	373	33%	1.4	2.1	-1.2	1.5	2.2	3.1	4.1	5.6
Barclays US Government Bond Index			1.2	1.8	-2.2	1.8	1.8	2.9	4.3	5.7
Value Added			0.2	0.3	1.0	-0.3	0.4	0.2	-0.2	-0.1
High Yield	356	32%	2.5	5.0	10.3	4.2	6.9	8.2	7.3	-
Merrill Lynch High Yield Cash Pay Index			2.2	4.9	12.8	4.5	6.9	8.0	7.5	-
Value Added			0.3	0.1	-2.5	-0.3	0.0	0.2	-0.2	-
Emerging Market Debt	160	14%	1.7	5.7	4.0	-	-	-	-	-
JP Morgan Emerging Markets Bond Index Global Diversified			2.2	6.2	6.0	-	-	-	-	-
Value Added			-0.5	-0.5	-2.0	-	-	-	-	-
TIPS	242	21%	-0.3	1.0	0.1	0.9	0.4	3.1	4.6	-
Barclays U.S. TIPS			-0.4	0.9	-0.6	0.6	0.3	2.9	4.3	-
Value Added			0.1	0.1	0.7	0.3	0.1	0.2	0.3	-

Policy benchmark for Core Fixed Income prior to July 1, 2016 was the Barclay's US Aggregate Bond Index. Policy would be a weighted average composite of the historical policy benchmarks and targets.



Private Equity Performance

Net Returns (%) As of June 30, 2017	Market Value		Annualized Returns							
	(\$ Million)	% Allocation	3 Month	6 Month	1 Year	3 Year	5 Year	7 Year	10 Year	20 Year
Private Equity	1,234	100%	6.5	10.1	21.1	19.3	19.6	17.5	12.6	18.1
Actual Private Equity Returns			6.5	10.1	21.1	19.3	19.6	17.5	12.6	18.1
Buyout	376	31%	7.8	10.9	34.5	24.9	19.4	17.1	12.5	13.6
Venture Capital	387	31%	10.4	12.2	14.1	12.0	15.9	15.2	11.1	24.0
Co-investment	471	38%	3.5	9.8	18.0	23.0	33.8	29.8	-	-



Absolute Return Performance

Net Returns (%) As of June 30, 2017	Market Value		Annualized Returns						
	(\$ Million)	% Allocation	3 Month	6 Month	1 Year	3 Year	5 Year	7 Year	10 Year
Absolute Return	1,932	100%	0.2	1.4	4.8	2.1	5.9	5.6	3.6
Custom Absolute Return Index			0.7	1.4	1.9	(1.9)	1.3	(0.1)	1.9
Value Added			(0.5)	0.0	2.9	4.0	4.6	5.7	1.7
Opportunistic	400	21%	1.1	4.9	12.4	7.5	-	-	-
Alternative Risk Premia	193	10%	-1.2	-1.2	-3.3	-6.2	3.1	-	-
Relative Value	678	35%	1.1	3.2	10.0	5.5	7.2	-	-
Global Macro	412	21%	-3.4	-6.2	-5.3	1.9	1.6	-	-
Event Driven	215	11%	4.7	11.2	15.8	0.8	7.2	-	-
Fund of Funds	14	1%	2.7	3.5	5.1	-1.1	2.1	-	-
Distressed	20	1%	-1.3	0.1	2.9	-2.0	3.1	-	-

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



Real Estate Performance

Net Returns (%) As of June 30, 2017	Market Value		Annualized Returns						
	(\$ Million)	% Allocation	3 Month	6 Month	1 Year	3 Year	5 Year	7 Year	10 Year
Real Estate	486	100%	3.8	1.9	8.6	12.3	12.3	13.9	1.6
NCREIF Funds Index-Open End Diversified Core Equity Index (lagged 3 months)			1.5	3.5	7.4	10.9	11.0	13.0	2.3
Value Added			2.3	(1.6)	1.2	1.4	1.3	0.9	(0.7)
Core	131	27%	2.1	8.2	5.3	11.6	12.1	13.4	6.2
Value-Added	185	38%	1.6	5.0	5.3	11.3	11.0	12.2	1.2
Opportunistic	170	35%	2.8	7.6	12.5	11.4	12.4	15.1	1.1

* Underlying strategy returns are calculated by an external consultant, and provided on a quarterly lag once quarterly values are finalized



Real Assets Performance

Net Returns (%) As of June 30, 2017	Market Value		3 Month	Calendar YTD	Annualized Returns			Since Inception
	(\$ Million)	% Allocation			1 Year	3 Year	5 Year	
Real Asset	203	100%	0.9	2.0	6.5	(5.1)	(0.1)	3.9
Actual Real Asset Returns			0.9	2.0	6.5	(5.1)	(0.1)	3.9
Energy	40	19%	-7.2	-5.2	12.6	-26.3	-13.7	-3.2
Infrastructure	45	22%	9.4	13.4	17.6	10.7	11.2	9.9
Opportunistic	80	40%	5.2	3.8	7.9	6.1	5.8	6.7
Timberland/Agriculture	38	19%	2.1	5.0	3.6	6.6	4.0	5.4

Inception Date for Real Assets is April 1, 2010.



How are we Managing Risk in our Endowment?



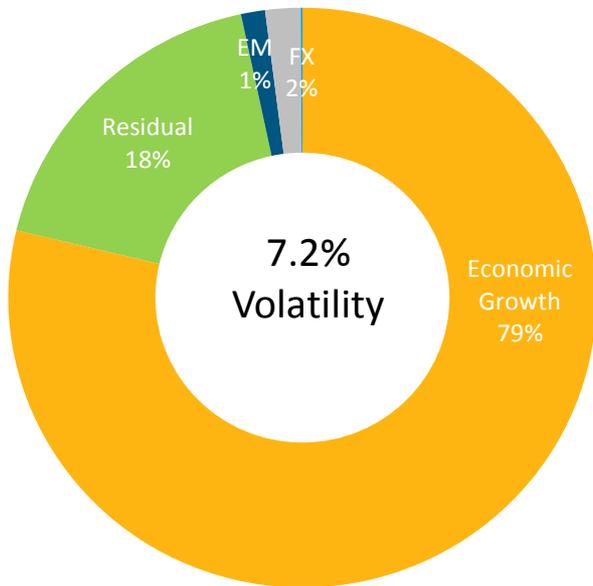
Endowment Risk Measurement

Name	Beta vs Benchmark	Portfolio Risk (%)		Benchmark Risk (%)		Active Risk (%)	
	Current	Standalone Volatility	QoQ Change	Standalone Volatility	QoQ Change	Tracking Error	QoQ Change
GEP Total		7.2	<i>(1.0)</i>	7.5	<i>(0.7)</i>	1.2	<i>0.0</i>
Public Equity	0.90	9.7	<i>(1.4)</i>	10.6	<i>(1.3)</i>	2.3	<i>(0.0)</i>
Fixed Income	0.86	2.9	<i>0.0</i>	3.0	<i>(0.3)</i>	0.3	<i>(0.3)</i>
Absolute Return	0.84	3.3	<i>0.5</i>	1.2	<i>(0.1)</i>	3.2	<i>0.4</i>
Private Equity ⁽¹⁾	1.00	22.4	<i>0.1</i>	22.4	<i>0.1</i>	0.0	<i>0.0</i>
Private Real Estate	1.19	11.3	<i>(1.2)</i>	8.8	<i>(1.0)</i>	4.7	<i>0.0</i>
Real Assets ⁽¹⁾	1.00	28.5	<i>(2.8)</i>	28.5	<i>(2.8)</i>	0.0	<i>0.0</i>
Cash	0.00	0.3	<i>(0.0)</i>	0.0	<i>0.0</i>	0.3	<i>(0.0)</i>

(1) Private Equity and Real Assets do not have standalone (line item) tracking error as per policy, but may contribute to total portfolio Tracking Error due to strategic asset allocation over/underweights



High Level Macroeconomic Risk Factors



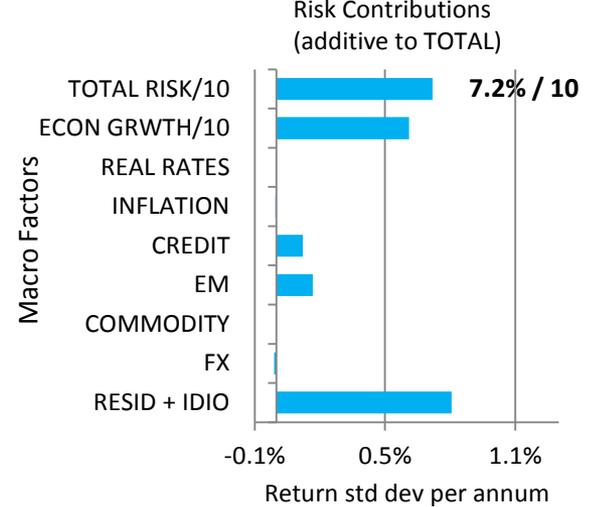
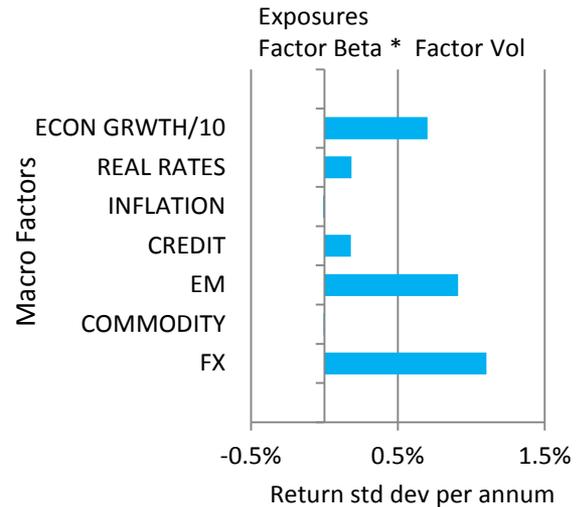
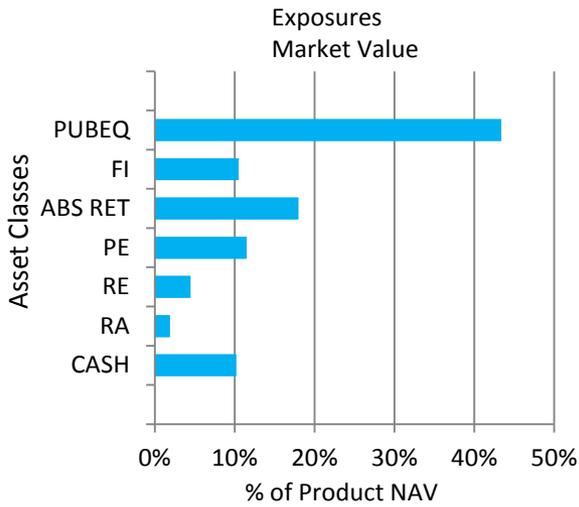
Portfolio Standalone Risk Factor Decomposition

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

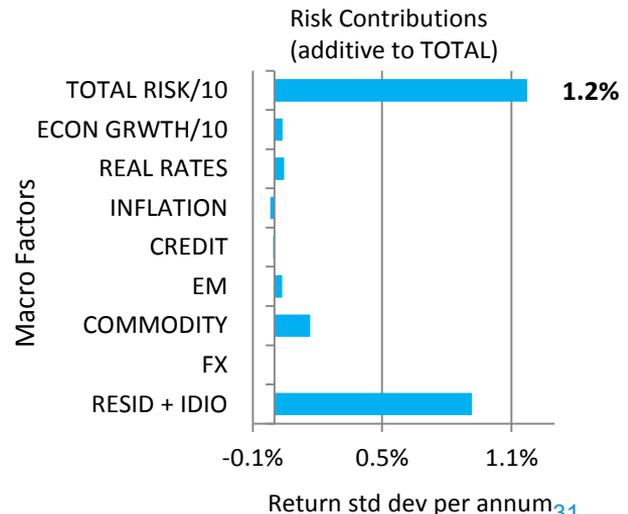
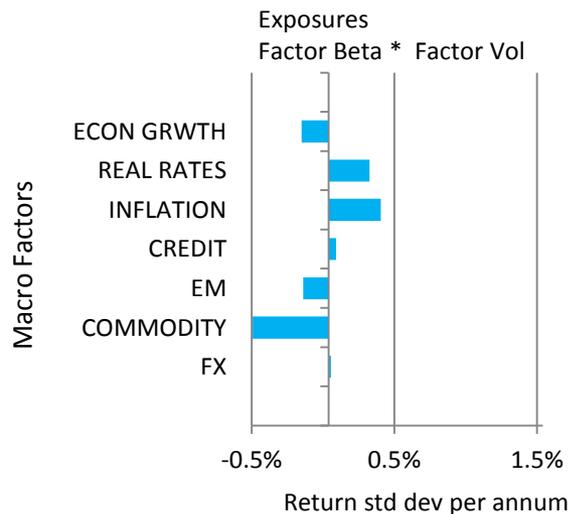
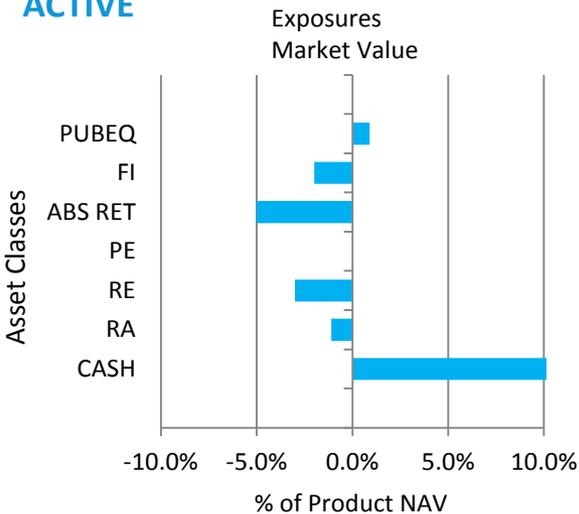


Asset Classes versus Macroeconomic Risk Factors

PORTFOLIO



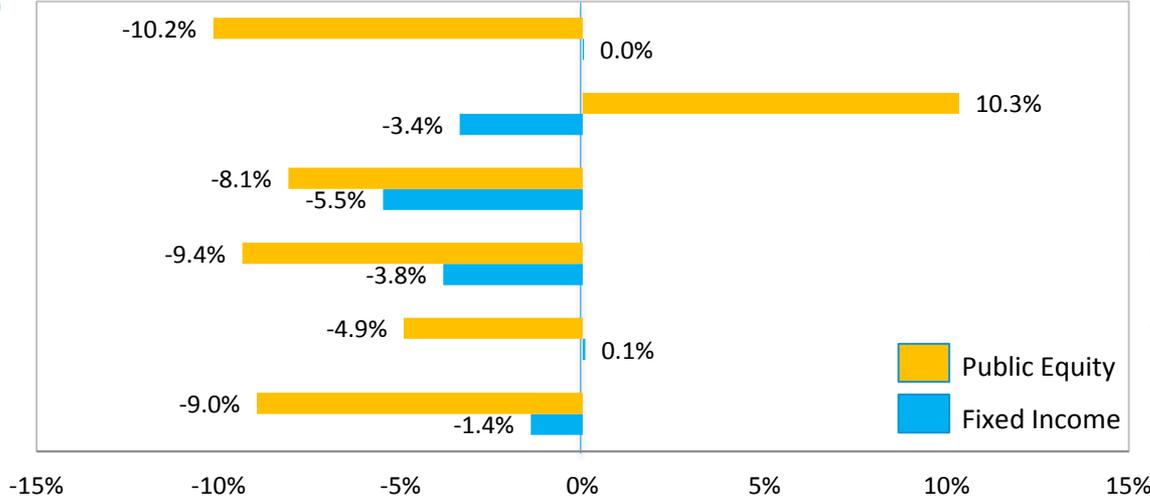
ACTIVE





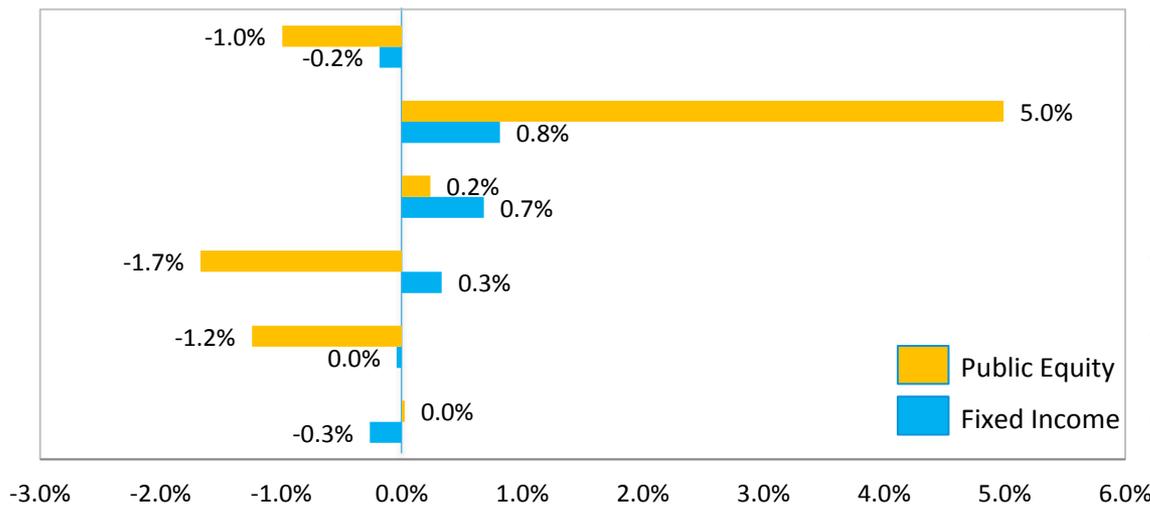
Stress Tests and Scenario Analysis

PORTFOLIO



- S&P -10%
- US TSY +100BPS *
- "Taper Tantrum" 2013
- Volatility Regime Change (Hypothetical)
- Value Reversal (Hypothetical)
- China Credit Crunch (Hypothetical)

ACTIVE



- S&P -10%
- US TSY +100BPS *
- "Taper Tantrum" 2013
- Volatility Regime Change (Hypothetical)
- Value Reversal (Hypothetical)
- China Credit Crunch (Hypothetical)



Endowment Policy Benchmark

Asset Class	Benchmark Component	Target
Total Public Equity		42.5%
U.S. Equity	Russell 3000 Tobacco Free Index	21.0%
Developed Equity	MSCI World ex-U.S. (net dividends) Tobacco Free	14.0%
Emerging Market Equity	MSCI Emerging Market (net dividends)	7.5%
Total Fixed Income		12.5%
Government/Treasury	Barclays U.S. Aggregate Bond Index	5.0%
High Yield Debt	Merrill Lynch High Yield Cash Pay Index	2.5%
Emerging Market Debt	JP Morgan Emerging Markets Bond Index Global Diversified	2.5%
TIPS	Barclays U.S. TIPS	2.5%
Total Other Investments		45.0%
Absolute Return	HFRX Absolute Return Index (Prior to February 2016 blended weighted composite)	23.0%
Private Equity	Actual Private Equity Returns	11.5%
Real Estate (Private)	NCREIF Funds Index-Open End Diversified Core Equity Index	7.5%
Real Assets	Actual Real Assets Portfolio Returns	3.0%