CalPERS Trust Level Review
Trust Summary: Public Employees' Retirement Fund (PERF)

December 31, 2016

Investment Belief 6: Strategic asset allocation is the dominant determinant of portfolio risk and return. CalPERS strategic asset allocation process transforms the fund's targeted rate of return to the market exposures that staff will manage. CalPERS will aim to diversify its overall portfolio across distinct risk factors and return drivers.

PERF Objective

CalPERS' general investment goals are broad in nature. The overall objective of CalPERS' investment program is to provide members and beneficiaries with benefits as required by law. CalPERS has generated strong long-term returns by effectively managing investments to achieve the highest possible return at an acceptable level of risk. The CalPERS portfolio is diversified into several asset classes. A well-diversified portfolio helps reduce investment risk to the extent that losses in one area may be offset by gains in another.

The starting point and most important element of CalPERS' investment is our asset allocation - our diversification among stocks, bonds, cash and other investments. Asset allocation is not an asset-only or liability-only decision. All factors, including liabilities, benefit payments, operating expenses, and employer and member contributions are taken into account in determining the appropriate asset allocation mix. Our goal is to maximize returns at a prudent level of risk - an ever-changing balancing act between market volatility and long-term goals.
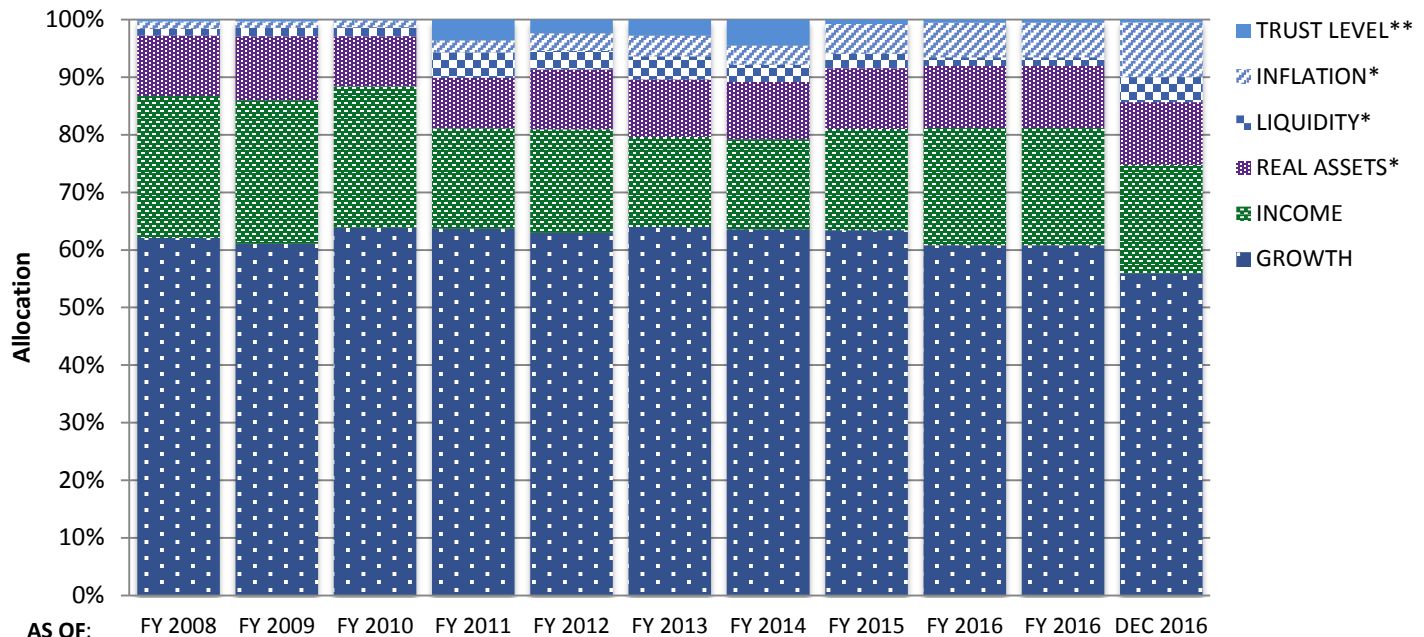
PERF Characteristics

Chief Investment Officer: Theodore Eliopoulos

Assets: $302.9 Billion

- Investments span domestic and international markets
- Invest ~9% of CalPERS' total assets in California
- Utilize multiple asset classes to diversify investments
  - Global Equity
  - Private Equity
  - Income
  - Liquidity
  - Inflation Assets
  - Real Assets

Actual Asset Allocation

Legend: TRUST LEVEL**, INFLATION*, LIQUIDITY*, REAL ASSETS*, INCOME, GROWTH

AS OF: FY 2008, FY 2009, FY 2010, FY 2011, FY 2012, FY 2013, FY 2014, FY 2015, FY 2016, FY 2016, DEC 2016

Inflation, Liquidity and Real Assets were created on July 1, 2011 from existing portfolios; therefore historical values are being represented for prior years.

**Trust Level includes Absolute Return Strategies (ARS), Multi-Asset Class (MAC), and Overlay, Transition and Plan Level Portfolios*

PERF PERFORMANCE

Total Returns
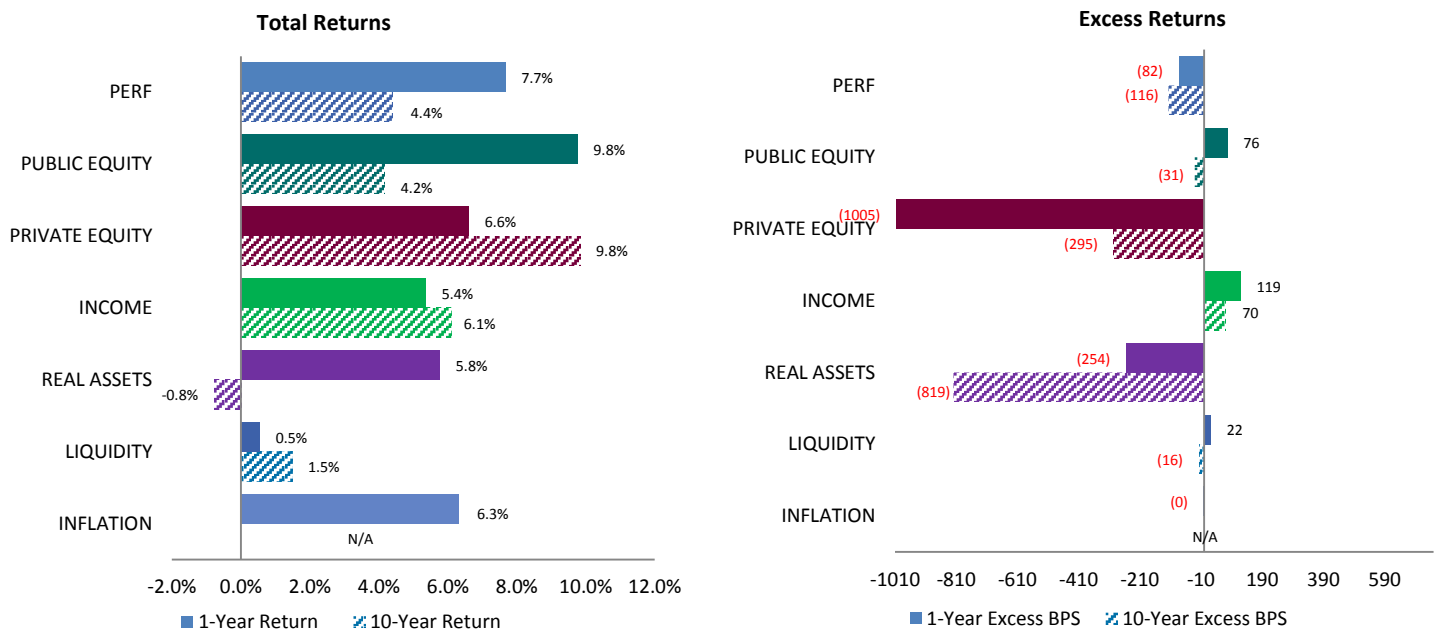
Excess Returns

PERF Attribution

Total Fund Attribution: For the Year Ending December 31, 2016

	Average Weight %	Returns %			Contribution to Plan Excess (bps) [1]
		Total Return	Benchmark Return	Excess Return	
Total Excess Return (bps)					**(82)**
Program Contributions [2]					**(54)**
PUBLIC EQUITY	50.7%	9.8%	9.0%	0.8%	35
PRIVATE EQUITY	8.9%	6.6%	16.7%	-10.1%	(86)
INCOME	19.6%	5.4%	4.2%	1.2%	23
REAL ESTATE	9.1%	6.8%	9.1%	-2.3%	(21)
FORESTLAND	0.7%	-9.4%	3.3%	-12.7%	(10)
INFRASTRUCTURE	0.9%	8.3%	5.5%	2.8%	3
INFLATION	6.4%	6.3%	6.3%	0.0%	(0)
OTHER					1
Allocation Impact [2]					**(14)**
Private Asset Class "Proxy" Shortfall [3]					**(5)**
Other/Residual					**(9)**

[1] Contribution figures are calculated on monthly basis and aggregated over the respective period.

[2] Contribution from MAC and ARS Programs are inlcuded in Allocation Impact.

[3] Impact of not obtaining full desired interim policy exposure to private asset classes and proxying these with public assets. Includes the impact of lagged reporting of private asset benchmarks relative to current month reporting of public proxies.

CalPERS Trust Level Review
Trust Summary: Judges' Retirement System II Fund (JRF II)

December 31, 2016

## STRATEGIC ASSET ALLOCATION

JRF II Objective

The JRF II was established to provide retirement, death, health and disability benefits for State Supreme and Appellate Court justices, Superior Court judges, and Municipal Court judges appointed or elected on or after November 9, 1994. Funds are allocated across five asset classes, with global equities comprising the predominant share of invested assets.

The Fund is actively managed by CalPERS staff.

Actual Capital Allocation
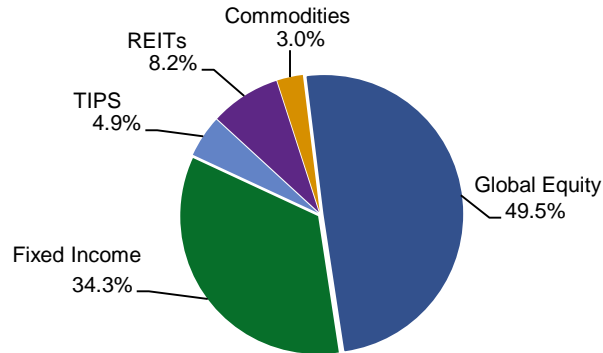

Strategic AllocationTarget Ranges
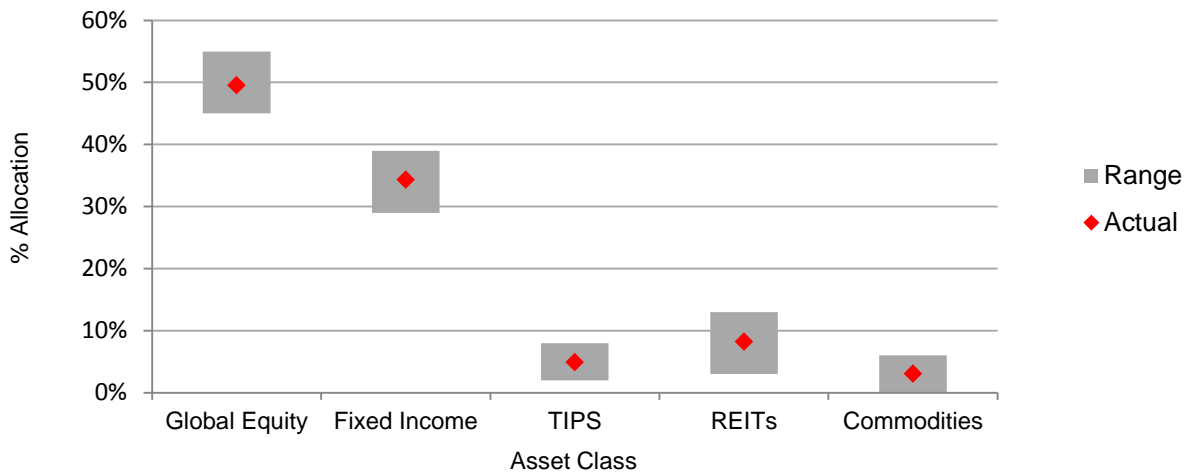
JRS II ASSET ALLOCATION	Current Allocation (%)	Target Allocation (%)	Variance (%)	Current Allocation (millions)	Target Allocation (millions)	Dollar Variance (millions)
Global Equity	49.5%	50.0%	-0.5%	$ 603.3	$ 608.9	$ (5.6)
US Fixed Income	34.3%	34.0%	0.3%	$ 418.0	$ 414.1	$ 3.9
TIPS	4.9%	5.0%	-0.1%	$ 59.8	$ 60.9	$ (1.1)
REITs	8.2%	8.0%	0.2%	$ 99.7	$ 97.4	$ 2.3
Commodities	3.0%	3.0%	0.0%	$ 37.1	$ 36.5	$ 0.5
Cash	0.0%	0%	0.0%	$ 0.0	$ -	$ 0.0
Total	100.0%	100.0%	0.0%	$ 1,217.9	$ 1,217.9	$ (0.0)

Policy asset allocation targets were approved by the Investment Committee on October 13, 2014.

JRF II RISK AND RETURN

### Asset Liability Management Expectations

Per the current CalPERS Judges' Retirement System II Fund Statement of Investment Policy.

JRS II 3-Year Realized Risk and Return
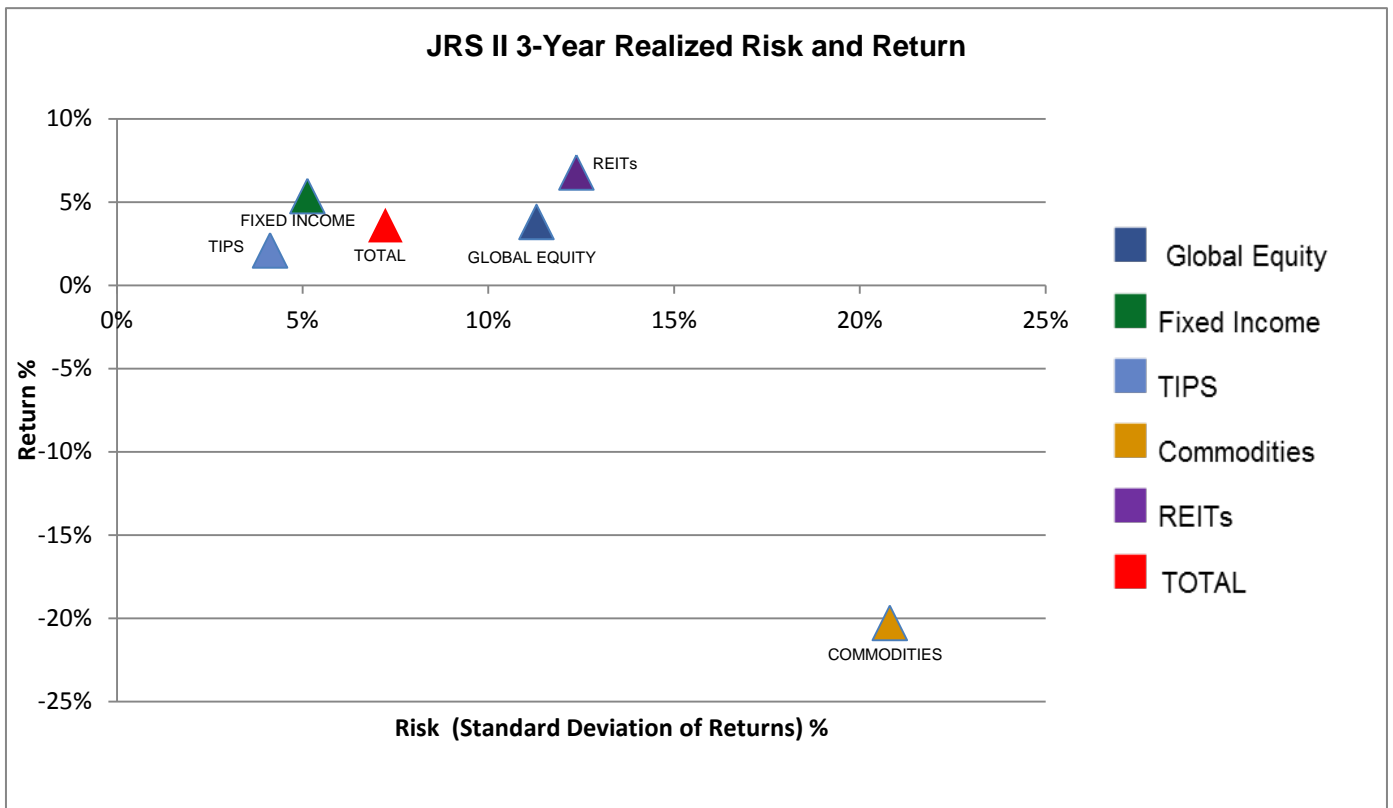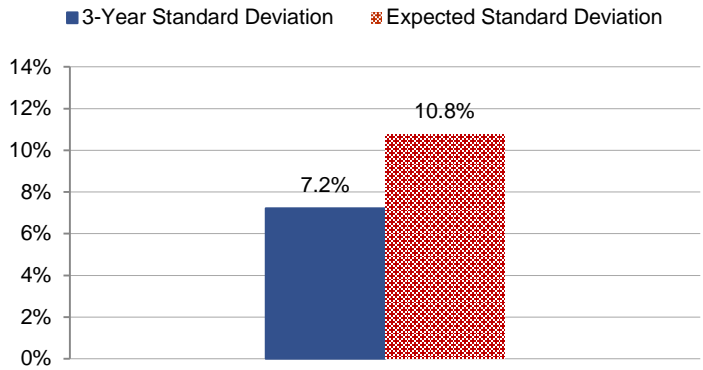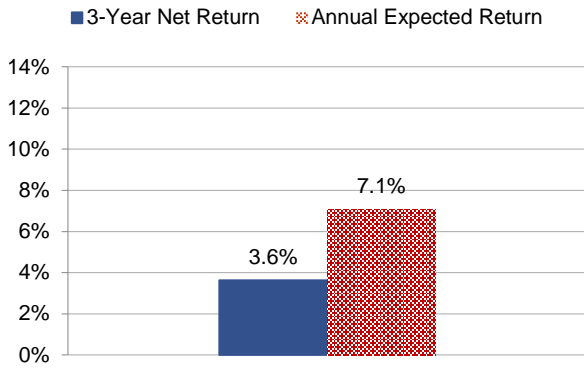
JRF II PERFORMANCE SUMMARY

As of 12/31/2016	1 - YEAR			3 - YEAR			5 - YEAR			10 - YEAR		
	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps
GLOBAL EQUITY	9.19	9.00	19	3.80	3.71	9	10.38	10.25	13	3.93	3.87	7
US FIXED INCOME	5.74	4.33	141	5.37	4.85	51	3.98	2.99	99	6.31	5.74	57
TIPS	4.59	4.68	(10)	2.10	2.26	(16)	0.84	0.89	(5)	-	-	-
REITs	5.02	4.99	4	6.79	6.78	1	10.33	10.33	(0)	1.25	0.90	34
COMMODITIES	11.81	11.37	44	(20.27)	(20.60)	33	(13.20)	(13.13)	(8)	-	-	-
JRF II FUND	7.63	7.19	44	3.62	3.47	15	7.92	7.65	27	4.78	4.78	(1)

JRS II CUMULATIVE RETURNS
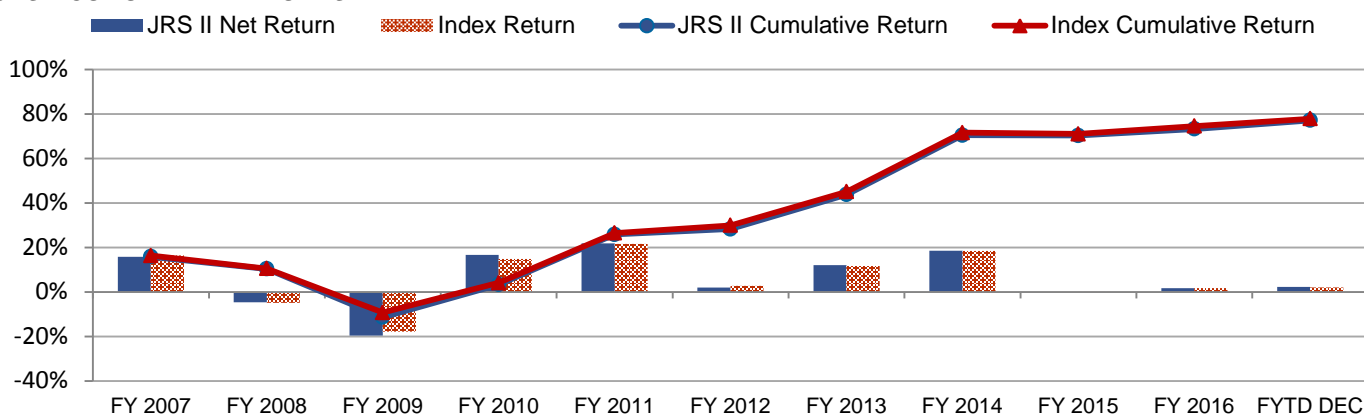
JRS II 1-YEAR EXCESS AND ROLLING 3-YEAR EXCESS RETURNS
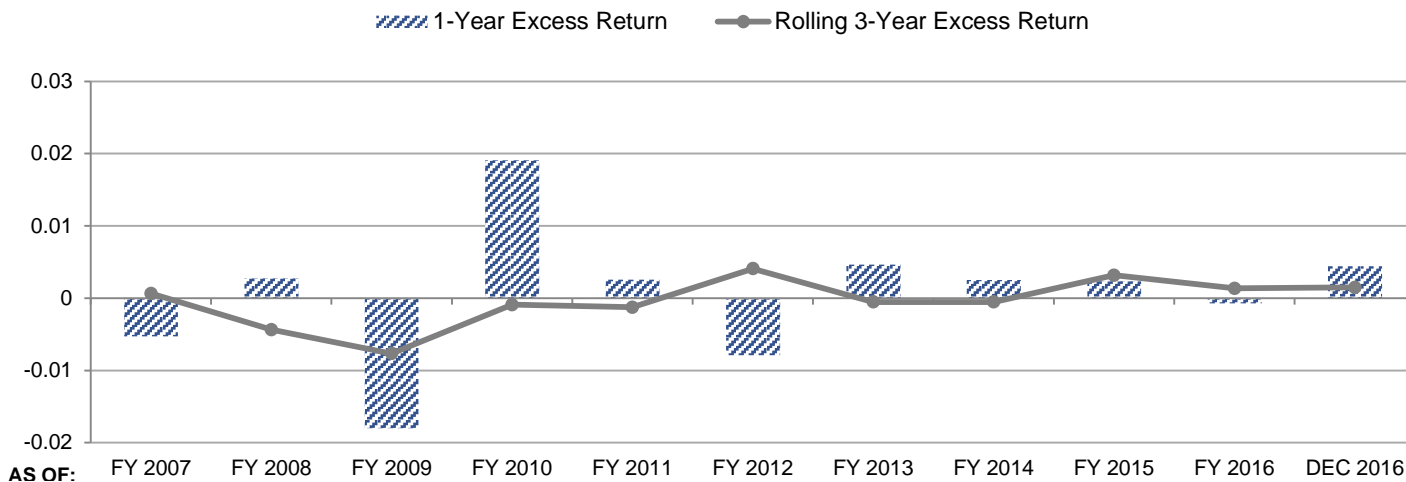
CalPERS Trust Level Review
Trust Summary: Legislators' Retirement System Fund (LRF)

CalPERS

December 31, 2016

STRATEGIC ASSET ALLOCATION

LRF Fund Objective

The Legislators' Retirement System Fund is a supplemental income plan that was available to members of the California Legislature serving prior to November 7, 1990; all elected constitutional officers; and legislative statutory officers. Funds are allocated across five asset classes under a fairly balanced investment strategy.

The Fund is actively managed by CalPERS staff.

### Actual Capital Allocation
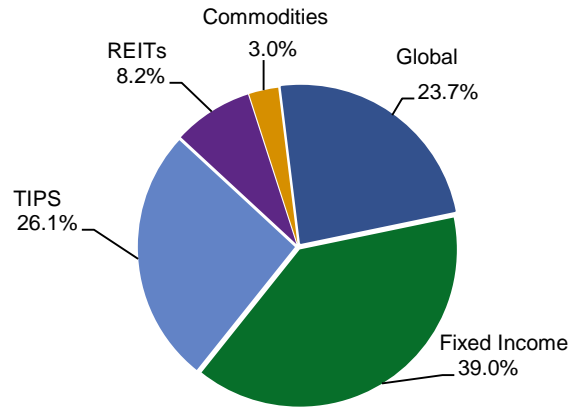
Strategic Allocation Target Ranges
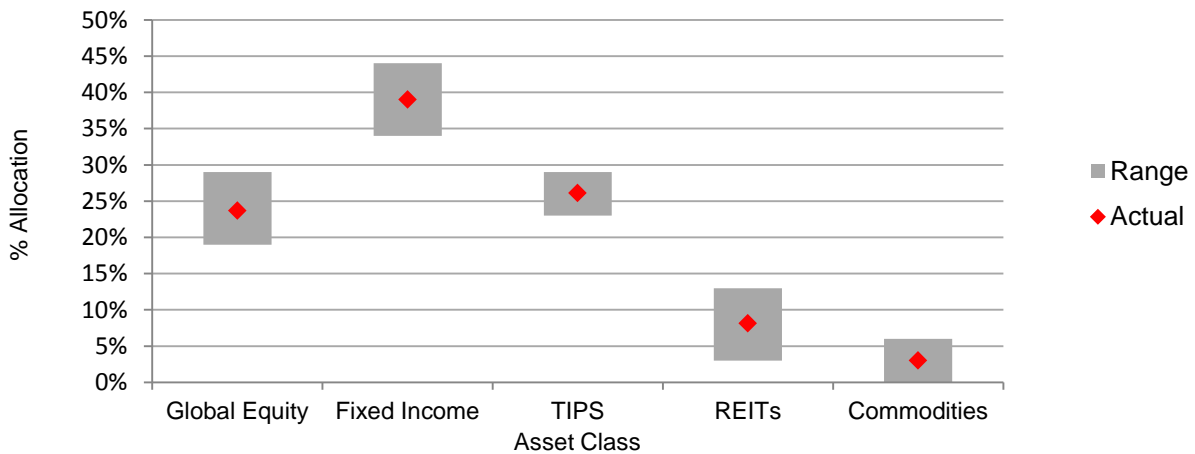
LRF ASSET ALLOCATION	Current Allocation (%)	Target Allocation (%)	Variance (%)	Current Allocation (millions)	Target Allocation (millions)	Dollar Variance (millions)
Global Equity	23.7%	24.0%	-0.3%	$ 27.2	$ 27.6	$ (0.4)
US Fixed Income	39.0%	39.0%	0.0%	$ 44.9	$ 44.9	$ 0.0
TIPS	26.1%	26.0%	0.1%	$ 30.1	$ 29.9	$ 0.1
REITs	8.2%	8.0%	0.2%	$ 9.4	$ 9.2	$ 0.2
Commodities	3.0%	3.0%	0.0%	$ 3.5	$ 3.5	$ 0.0
Cash	0.0%	0%	0.0%	$ 0.0	$ -	$ 0.0
Total	100.0%	100.0%	0.0%	$ 115.1	$ 115.1	$ (0.0)

Policy asset allocation targets were approved by the Investment Committee on October 13, 2014.

LRF RISK AND RETURN

Asset Liability Management Expectations

Per the current CalPERS Legislators' Retirement System Fund Statement of Investment Policy.

LRF 3-Year Realized Risk and Return
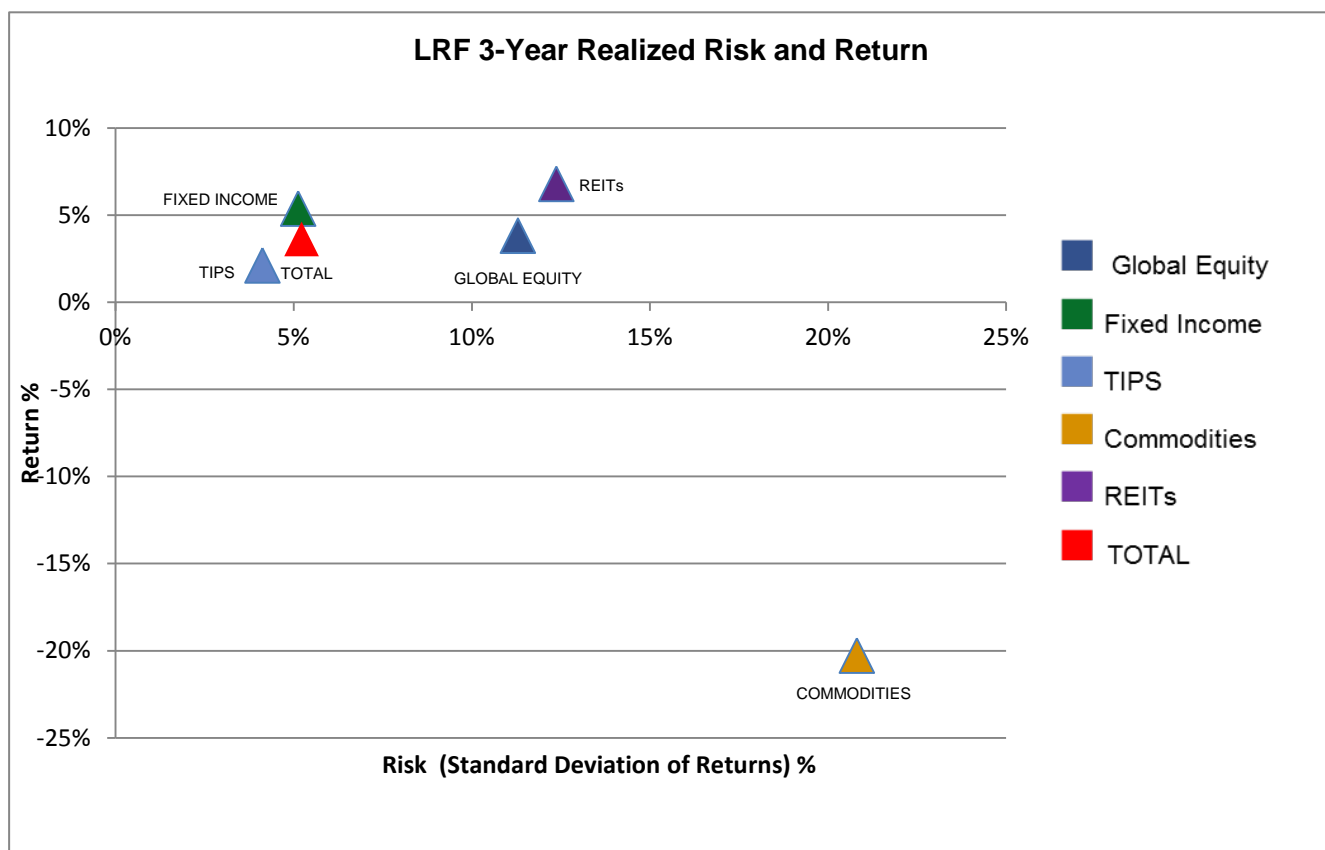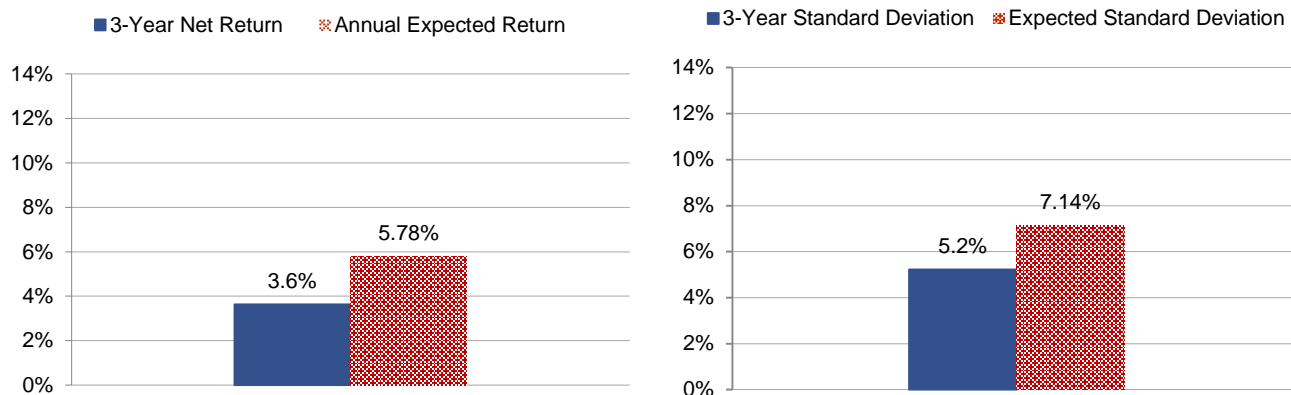
LRF PERFORMANCE SUMMARY

As of 12/31/2016	1 - YEAR			3 - YEAR			5 - YEAR			10 - YEAR		
	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps
GLOBAL EQUITY	9.22	9.00	22	3.82	3.71	11	10.39	10.25	14	4.03	3.95	7
US FIXED INCOME	5.73	4.33	140	5.38	4.85	53	3.98	2.99	100	6.30	5.73	57
TIPS	4.60	4.68	(9)	2.12	2.26	(14)	0.85	0.89	(5)	4.39	4.35	3
REITs	5.05	4.99	6	6.80	6.78	2	10.33	10.33	0	-	-	-
COMMODITIES	11.87	11.37	50	(20.28)	(20.60)	32	(13.21)	(13.13)	(8)	-	-	-
LRF FUND	6.46	6.02	44	3.63	3.47	16	5.56	5.14	42	5.18	4.93	25

LRS CUMULATIVE RETURNS
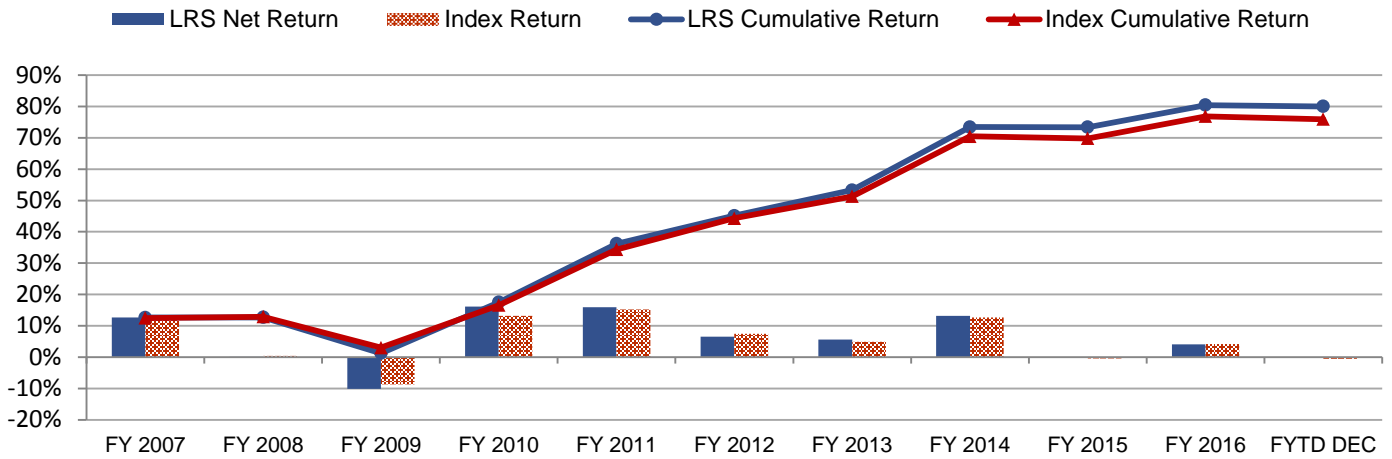
LRS ROLLING 3-YEAR EXCESS RETURNS
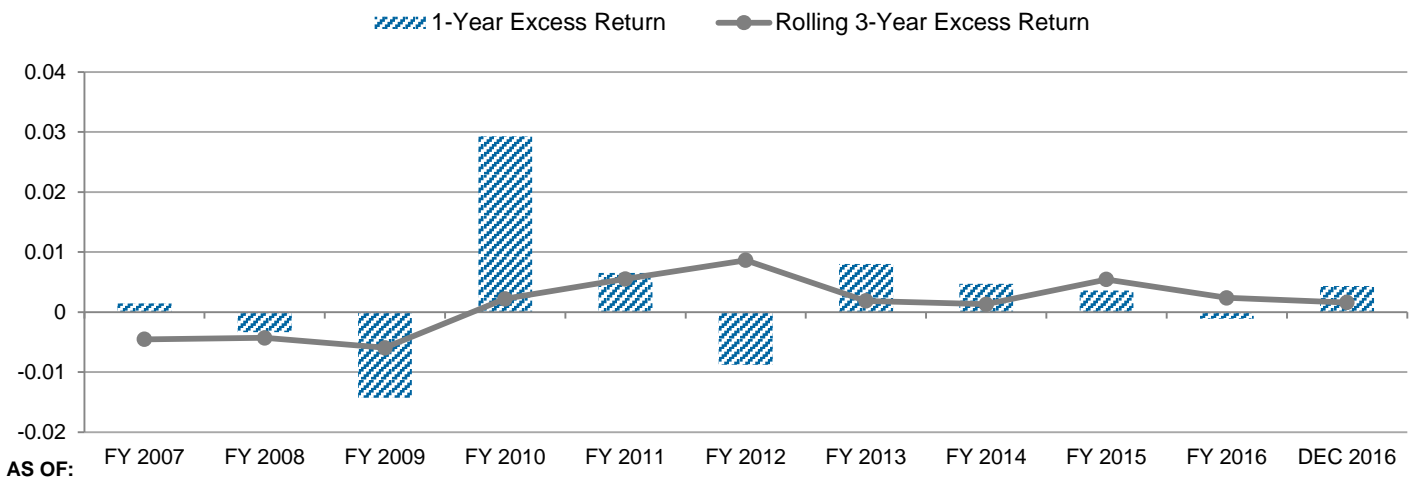
CalPERS Trust Level Review
Trust Summary: Long-Term Care Fund (LTCF)

CalPERS

December 31, 2016

STRATEGIC ASSET ALLOCATION

Long-Term Care Fund Objective

CalPERS offers optional long-term care benefits to members, funded entirely by enrollee premiums. The Long-Term Care Program was established to administer and finance the program. Funds are allocated across five asset classes, predominantly in fixed income.

The Fund is passively managed by State Street Global Advisors.

Actual Capital Allocation
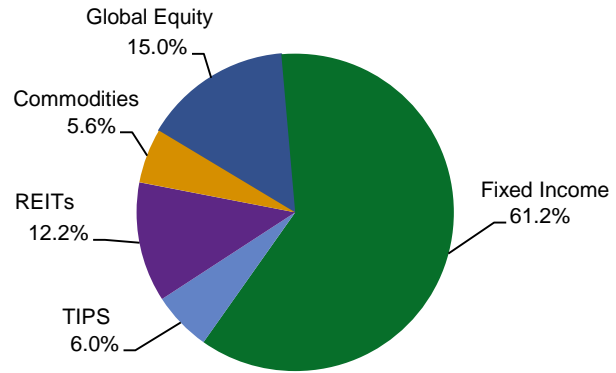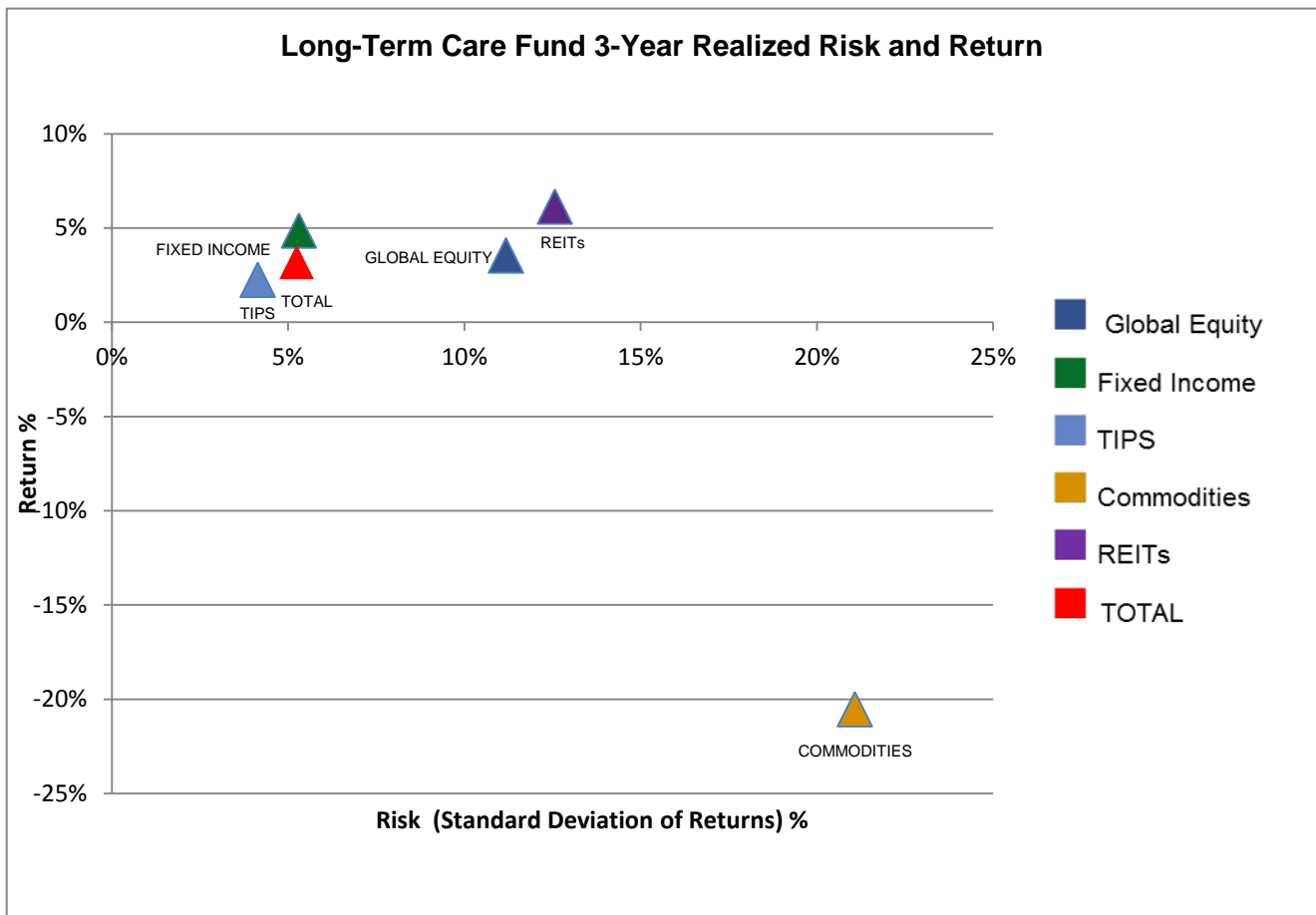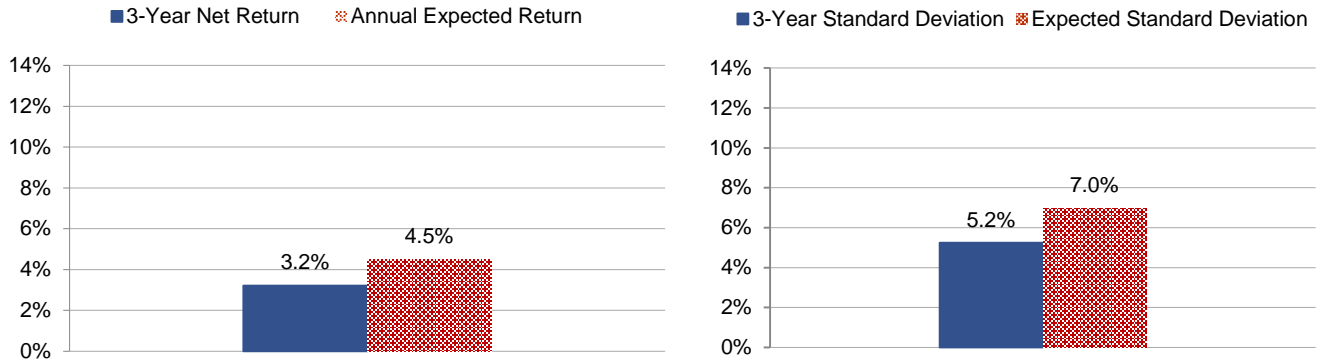

Strategic AllocationTarget Ranges
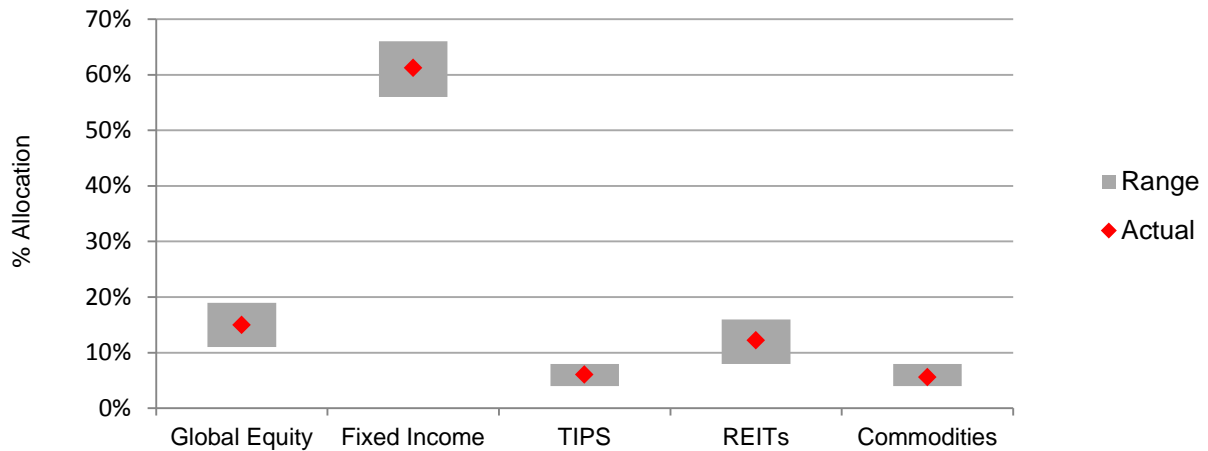
LTCF FUND ASSET ALLOC	Current Allocation (%)	Target Allocation (%)	Variance (%)	Current Allocation (millions)		Target Allocation (millions)		Dollar Variance (millions)	
Global Equity	15.0%	15.0%	0.0%	$	633.3	$	633.9	$	(0.6)
US Fixed Income	61.2%	61.0%	0.2%	$	2,585.8	$	2,577.8	$	8.0
TIPS	6.0%	6.0%	0.0%	$	254.9	$	253.6	$	1.4
REITs	12.2%	12.0%	0.2%	$	516.5	$	507.1	$	9.4
Commodities	5.6%	6.0%	-0.4%	$	235.3	$	253.6	$	(18.3)
Cash	0.0%	0%	0.0%	$	0.1	$	-	$	0.1
Total	100.0%	100.0%	0.0%	$	4,226.0	$	4,226.0	$	0.0

Policy asset allocation targets were approved by the Investment Committee on April 16, 2012.

LTCF RISK AND RETURN

Asset Liability Management Expectations
Per the current CalPERS Long-Term Care Fund Statement of Investment Policy.

Legend: ■ 3-Year Net Return ▨ Annual Expected Return

Values: 3.2%, 4.5%

Legend: ■ 3-Year Standard Deviation ▨ Expected Standard Deviation

Values: 5.2%, 7.0%

Long-Term Care Fund 3-Year Realized Risk and Return

Legend:
■ Global Equity
■ Fixed Income
■ TIPS
■ Commodities
■ REITs
■ TOTAL

X-axis: Risk (Standard Deviation of Returns) %
Y-axis: Return %

LTCF PERFORMANCE SUMMARY

As of 12/31/2016	1 - YEAR			3 - YEAR			5 - YEAR			10 - YEAR		
	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps
GLOBAL EQUITY	8.73	8.36	37	3.54	3.25	30	10.02	9.82	20	3.98	3.87	12
US FIXED INCOME	4.28	4.33	(6)	4.87	4.85	2	3.27	2.99	29	5.93	5.72	21
TIPS	4.66	4.68	(3)	2.25	2.26	(0)	0.89	0.89	(1)	4.41	4.35	5
REITs	3.17	2.37	80	6.14	5.40	74	9.61	9.08	53	0.70	0.33	38
COMMODITIES	11.70	11.37	33	(20.53)	(20.60)	7	(12.93)	(13.13)	19	-	-	-
LTCF CARE FUND	5.18	5.39	(21)	3.21	3.08	12	4.38	4.10	28	3.70	3.62	8

LONG-TERM CARE FUND CUMULATIVE RETURNS
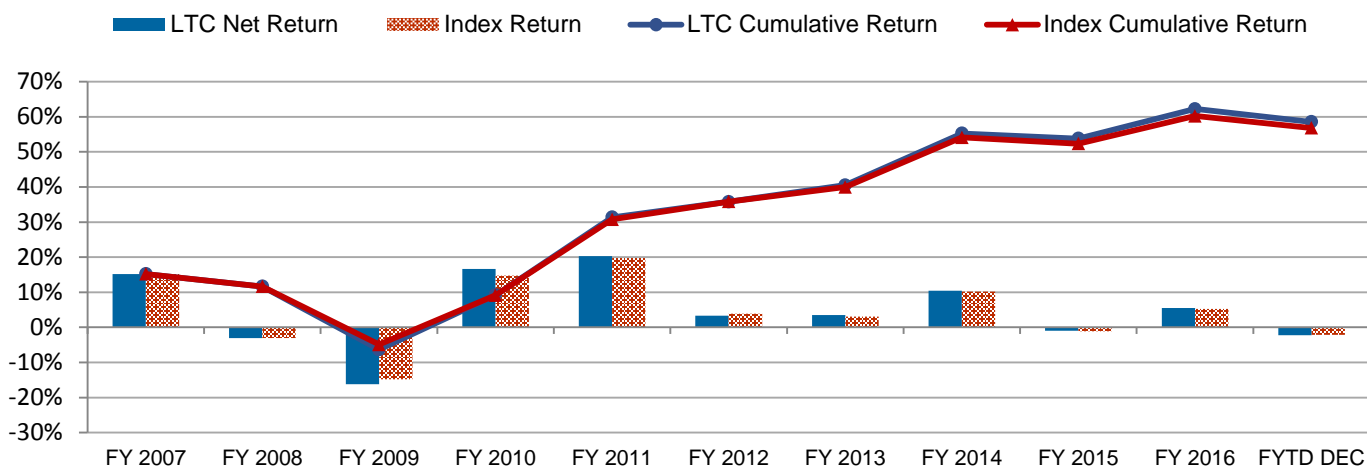
LONG-TERM CARE FUND ROLLING 3-YEAR EXCESS RETURNS
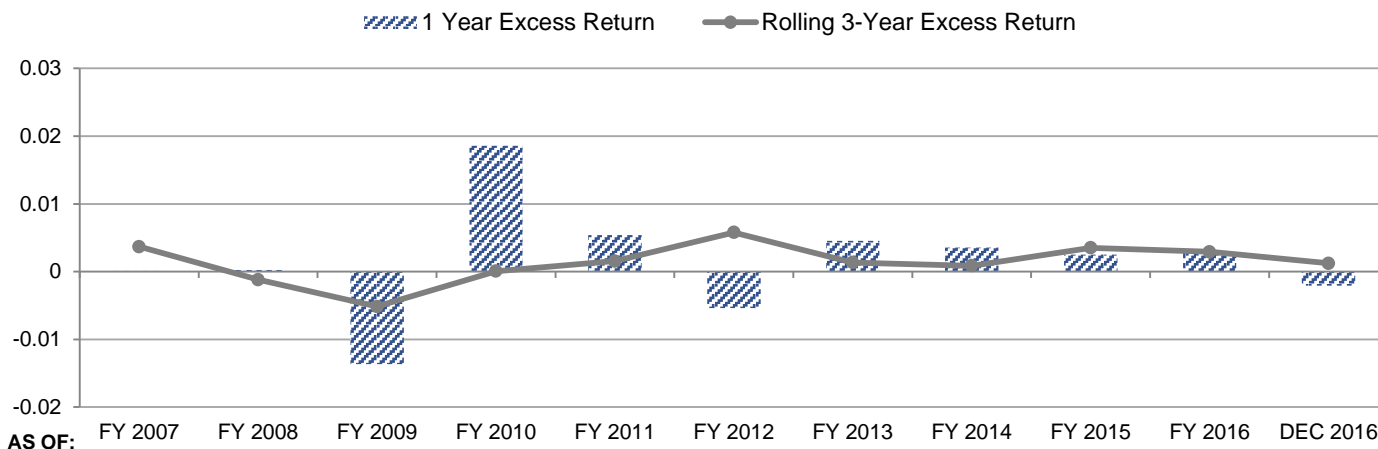
CalPERS Trust Level Review
Trust Summary: CERBT Strategy 1

CalPERS

December 2016

STRATEGIC ASSET ALLOCATION

CERBT Strategy 1 Objective

The California Employer Retirees' Benefit Trust (CERBT) was established in March 2007 for public employers to pre-fund their retiree health and other post-employment benefit obligations. Employers may choose among three different CERBT investment strategies. Compared with Strategies 2 and 3, this portfolio consists of a higher percentage of equities than bonds and other assets.

Fixed income, TIPS and commodities asset classes are managed by CalPERS staff. Global equity and REITs are managed by State Street Global Advisors.

Actual Capital Allocation
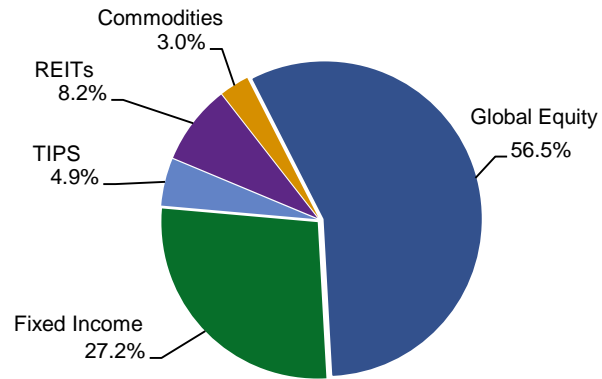
Strategic AllocationTarget Ranges
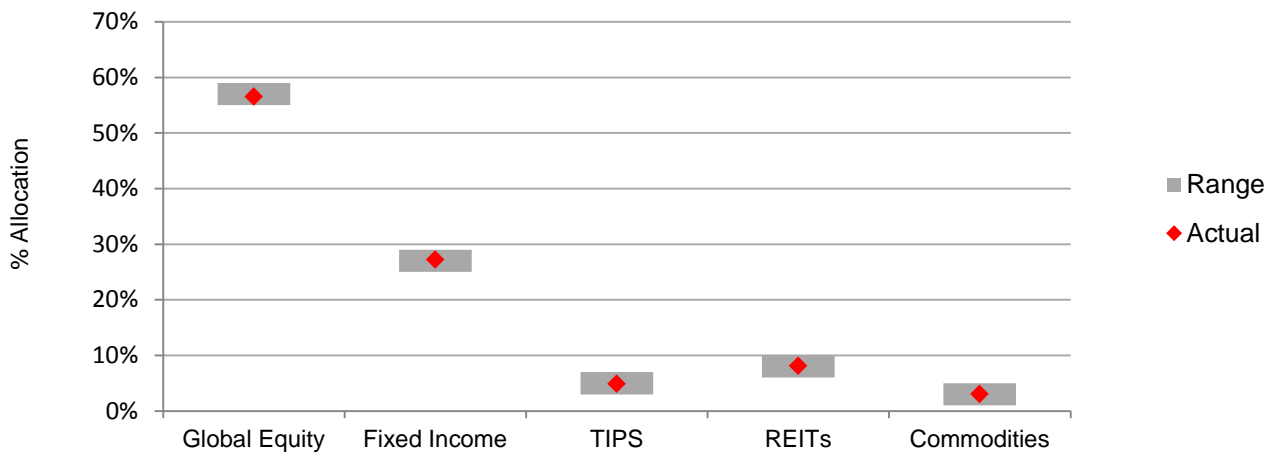
CERBT S1 ASSET ALLOCATION	Current Allocation (%)	Target Allocation (%)	Variance (%)	Current Allocation (millions)	Target Allocation (millions)	Dollar Variance (millions)
Global Equity	56.5%	57.0%	-0.5%	$ 2,750.9	$ 2,773.7	$ (22.9)
US Fixed Income	27.2%	27.0%	0.2%	$ 1,325.5	$ 1,313.9	$ 11.7
TIPS	4.9%	5.0%	-0.1%	$ 238.0	$ 243.3	$ (5.3)
REITs	8.2%	8.0%	0.2%	$ 396.9	$ 389.3	$ 7.6
Commodities	3.0%	3.0%	0.0%	$ 147.8	$ 146.0	$ 1.8
Cash	0.1%	0.0%	0.1%	$ 7.1	$ -	$ 7.1
Total	100.0%	100.0%	0.0%	$ 4,866.2	$ 4,866.2	$ 0.0

Policy asset allocation targets were approved by the Investment Committee on October 13, 2014.

CERBT STRATEGY 1 RISK AND RETURN

Asset Liability Management Expectations

Per the current CERBT Fund Statement of Investment Policy.

CERBT Strategy 1 3-Year Realized Risk and Return
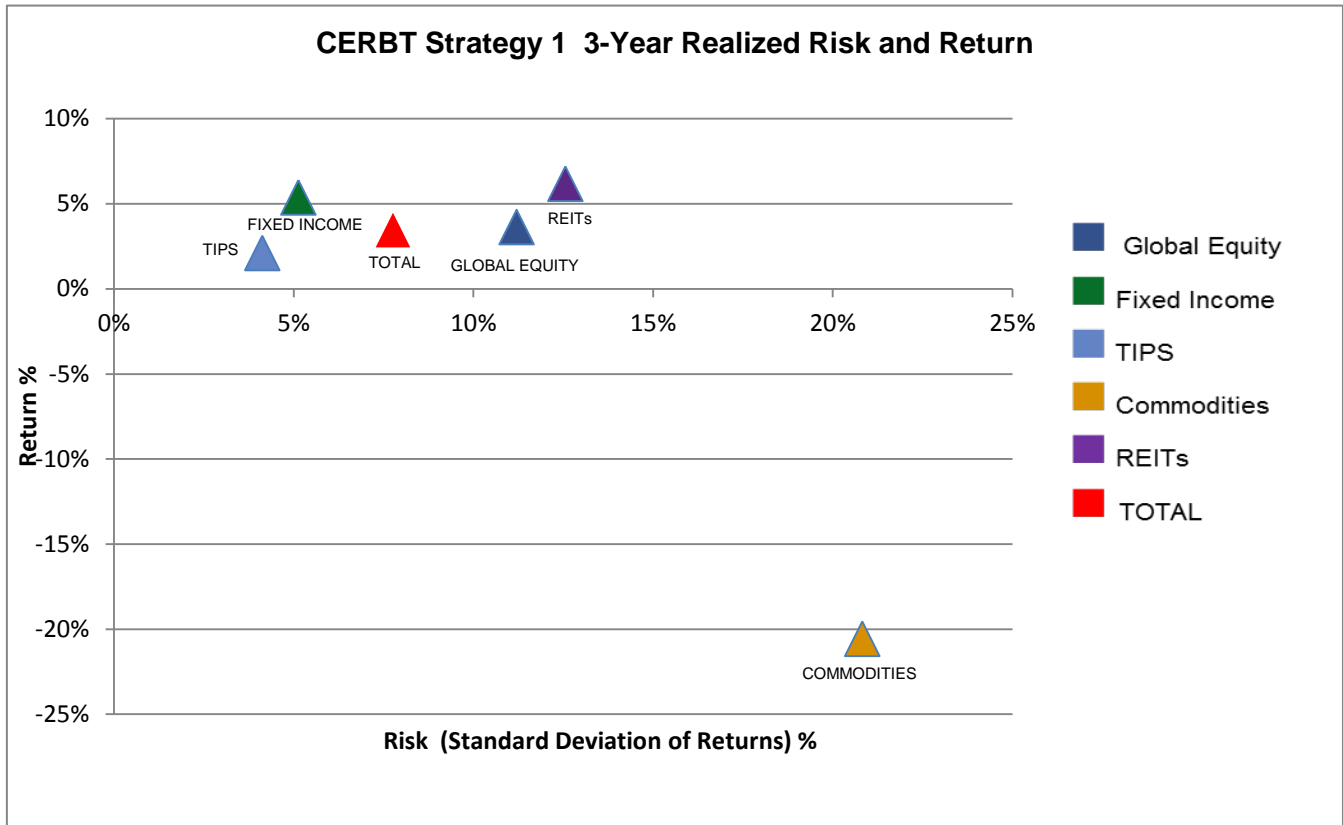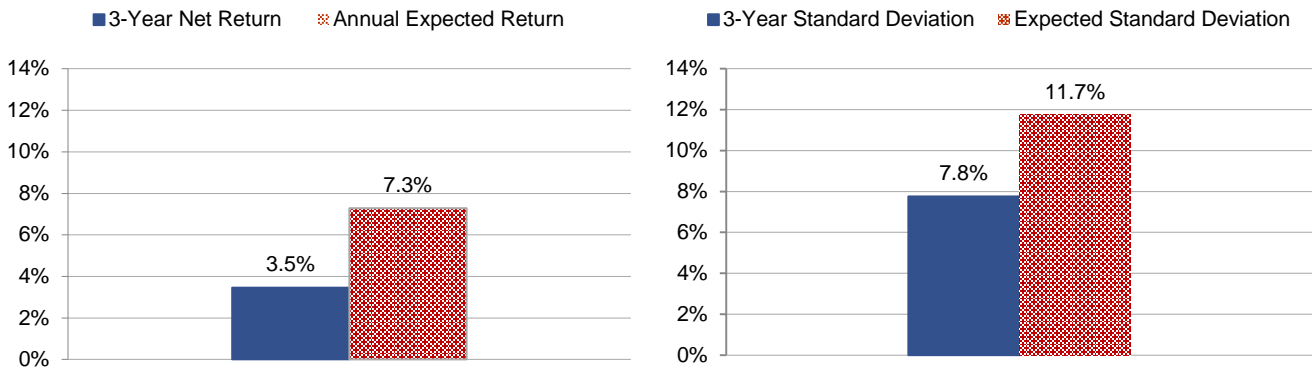
CERBT STRATEGY 1 PERFORMANCE SUMMARY

As of 12/31/2016	1 - YEAR			3 - YEAR			5 - YEAR			10 - YEAR		
	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps
GLOBAL EQUITY	8.83	8.36	47	3.61	3.25	37	10.05	9.77	28	-	-	-
US FIXED INCOME	5.69	4.33	136	5.38	4.85	53	3.98	2.99	100	-	-	-
TIPS	4.59	4.68	(9)	2.11	2.26	(15)	0.85	0.89	(5)	-	-	-
REITs	3.18	2.37	81	6.18	5.40	78	9.63	9.08	55	-	-	-
COMMODITIES	11.03	11.37	(34)	(20.56)	(20.60)	4	(13.40)	(13.13)	(27)	-	-	-
CERBT Strategy 1	7.58	6.92	66	3.46	3.08	38	7.84	7.48	35	-	-	-

CERBT STRATEGY 1 CUMULATIVE RETURNS

CERBT STRATEGY 1 ROLLING 3-YEAR EXCESS RETURNS
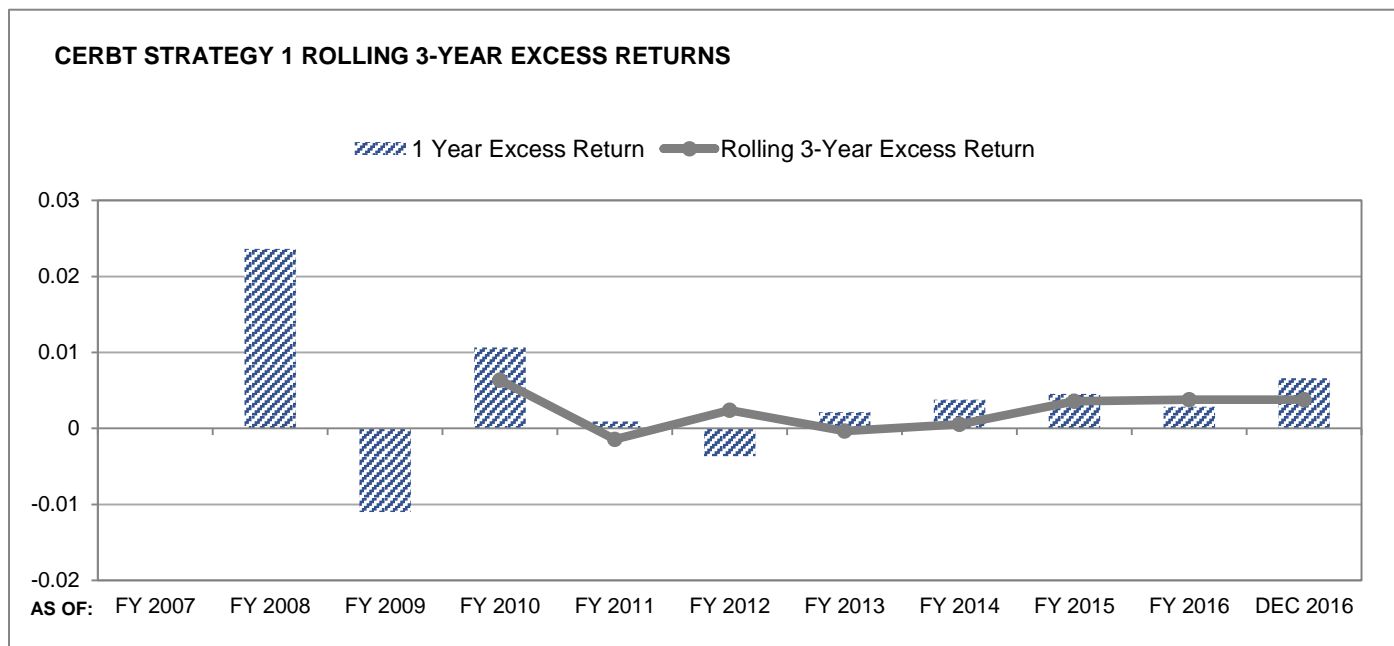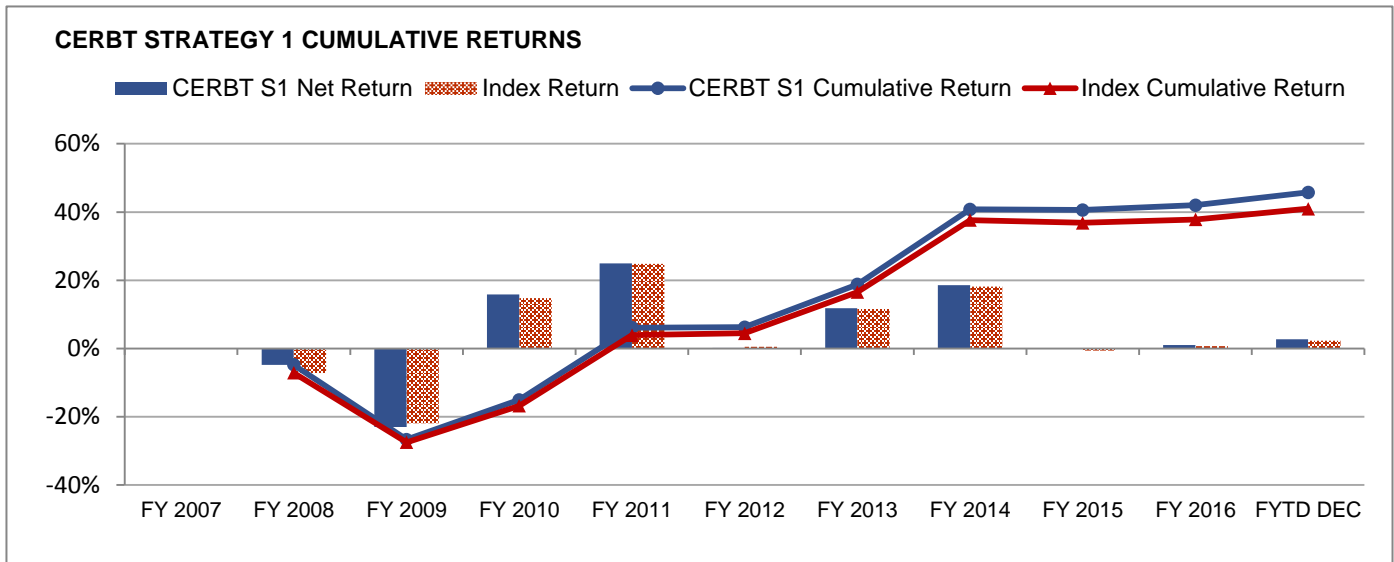
CalPERS Trust Level Review
Trust Summary: CERBT Strategy 2

CalPERS

December 31, 2016

## STRATEGIC ASSET ALLOCATION

CERBT Strategy 2 Objective

The California Employer Retirees' Benefit Trust (CERBT) was established in March 2007 for public employers to pre-fund their retiree health and other post-employment benefit obligations. Employers may choose among three different CERBT investment strategies. Compared with Strategies 1 and 3, this portfolio consists of a more moderate allocation of equities, bonds, and other assets.

Fixed income, TIPS and commodities asset classes are managed by CalPERS staff. Global equity and REITs are managed by State Street Global Advisors.

Actual Capital Allocation
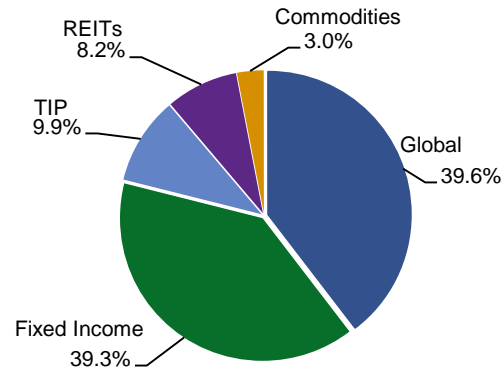

Strategic Allocation Target Ranges
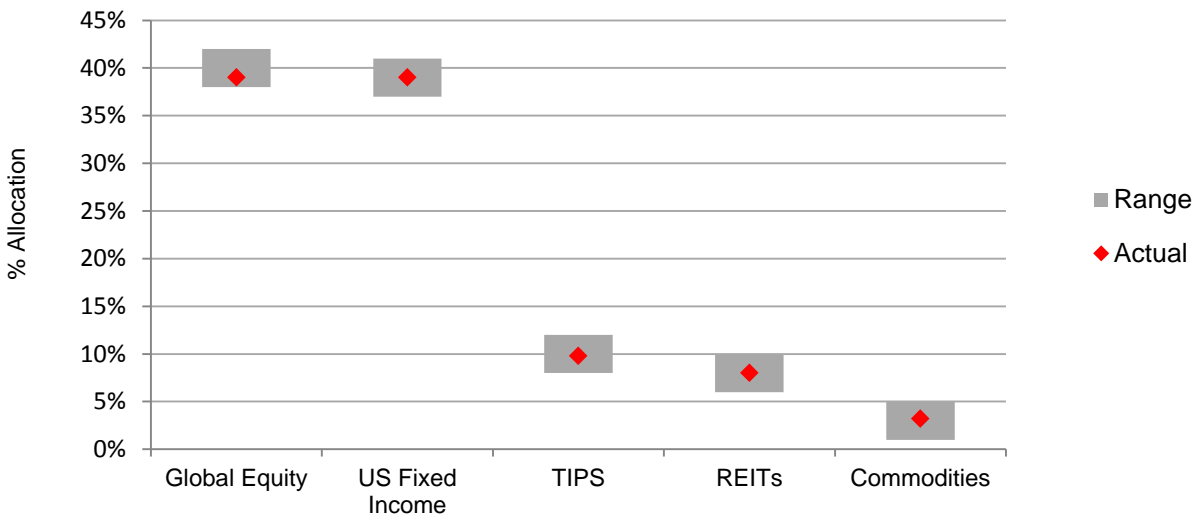
CERBT S2 ASSET ALLOCATION	Current Allocation (%)	Target Allocation (%)	Variance (%)	Current Allocation (millions)	Target Allocation (millions)	Dollar Variance (millions)
Global Equity	39.6%	40.0%	-0.4%	$ 294.0	$ 297.1	$ (3.1)
US Fixed Income	39.3%	39.0%	0.3%	$ 292.0	$ 289.7	$ 2.3
TIPS	9.9%	10.0%	-0.1%	$ 73.4	$ 74.3	$ (0.8)
REITs	8.2%	8.0%	0.2%	$ 60.6	$ 59.4	$ 1.2
Commodities	3.0%	3.0%	0.0%	$ 22.6	$ 22.3	$ 0.3
Cash	0.0%	0%	0.0%	$ 0.3	$ -	$ 0.3
Total	100.0%	100.0%	0.0%	$ 742.8	$ 742.8	$ (0.0)

Policy asset allocation targets were approved by the Investment Committee on October 13, 2014.

CERBT STRATEGY 2 RISK AND RETURN

### Asset Liability Management Expectations

Per the current CERBT Fund Statement of Investment Policy.

CERBT Strategy 2 3-Year Realized Risk and Return
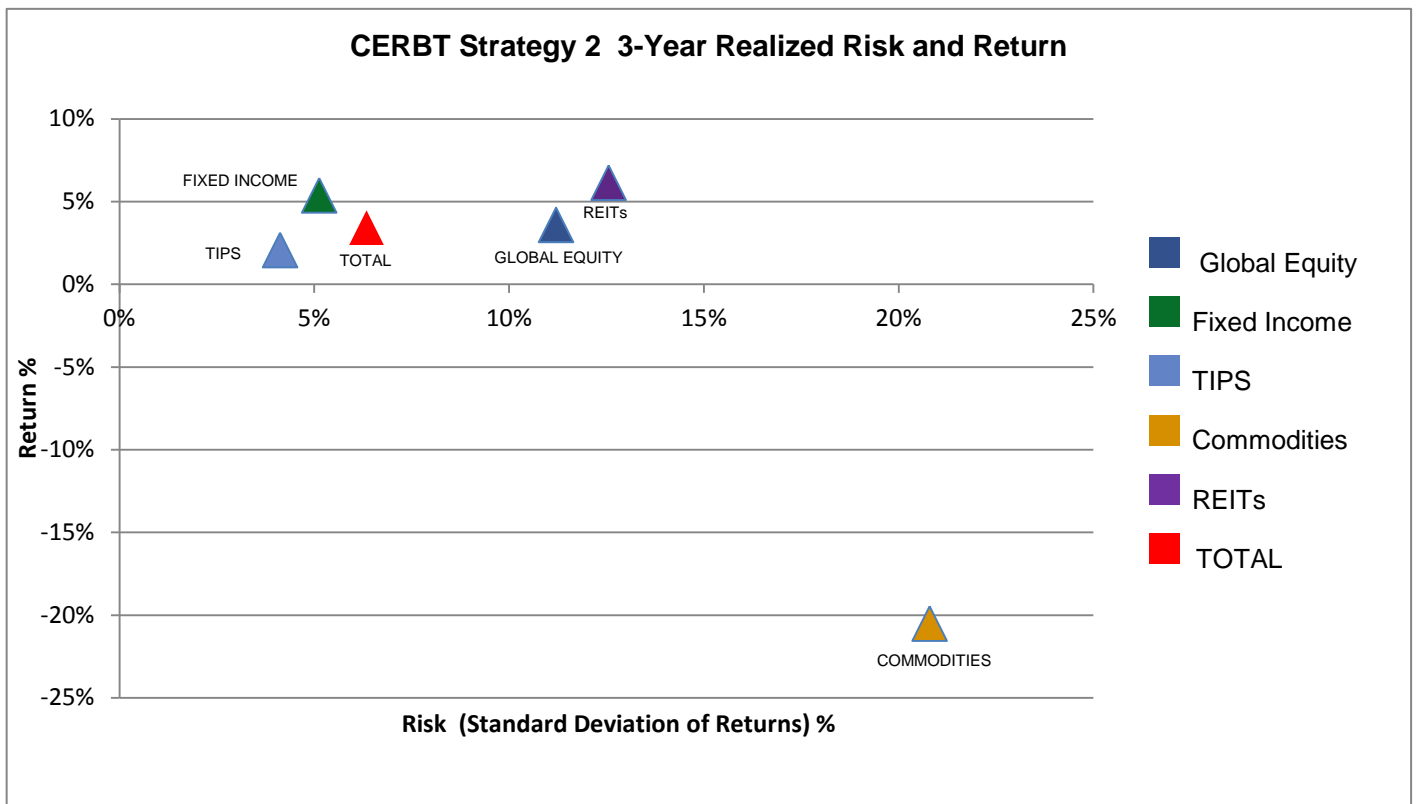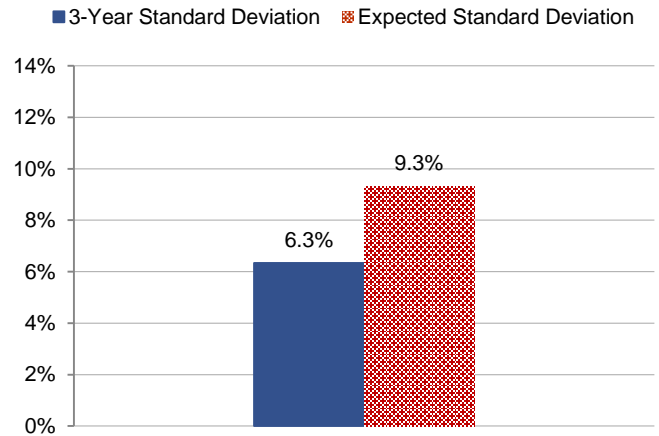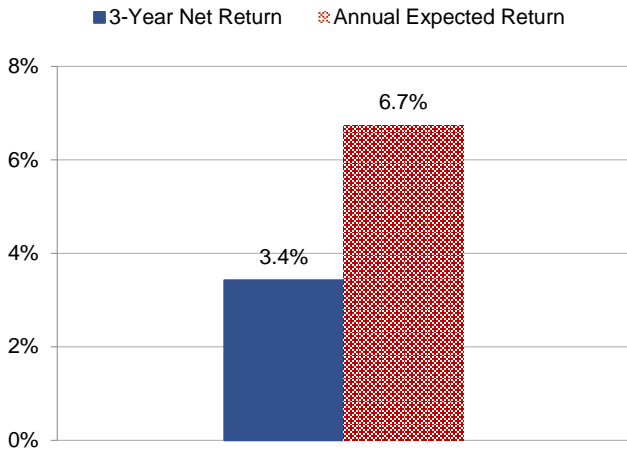
CERBT STRATEGY 2 PERFORMANCE SUMMARY

As of 12/31/2016	1 - YEAR			3 - YEAR			5 - YEAR			10 - YEAR		
	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps
GLOBAL EQUITY	8.77	8.36	41	3.57	3.25	33	10.02	9.76	25	-	-	-
US FIXED INCOME	5.73	4.33	140	5.38	4.85	53	3.98	2.99	100	-	-	-
TIPS	4.59	4.68	(9)	2.07	2.26	(19)	0.82	0.89	(7)	-	-	-
REITs	3.21	2.37	85	6.15	5.40	74	9.60	9.08	53	-	-	-
COMMODITIES	11.15	11.37	(21)	(20.51)	(20.60)	9	(13.36)	(13.13)	(23)	-	-	-
CERBT Strategy 2	6.96	6.27	69	3.43	3.14	29	6.58	6.23	35	-	-	-

CERBT STRATEGY 2 CUMULATIVE RETURNS
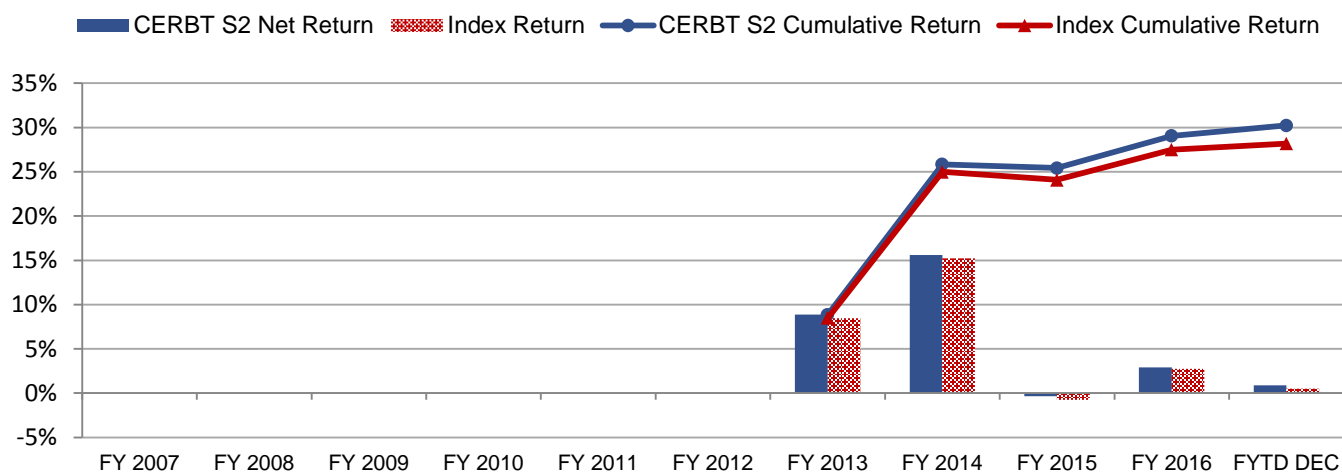
CERBT STRATEGY 2 ROLLING 3-YEAR EXCESS RETURNS
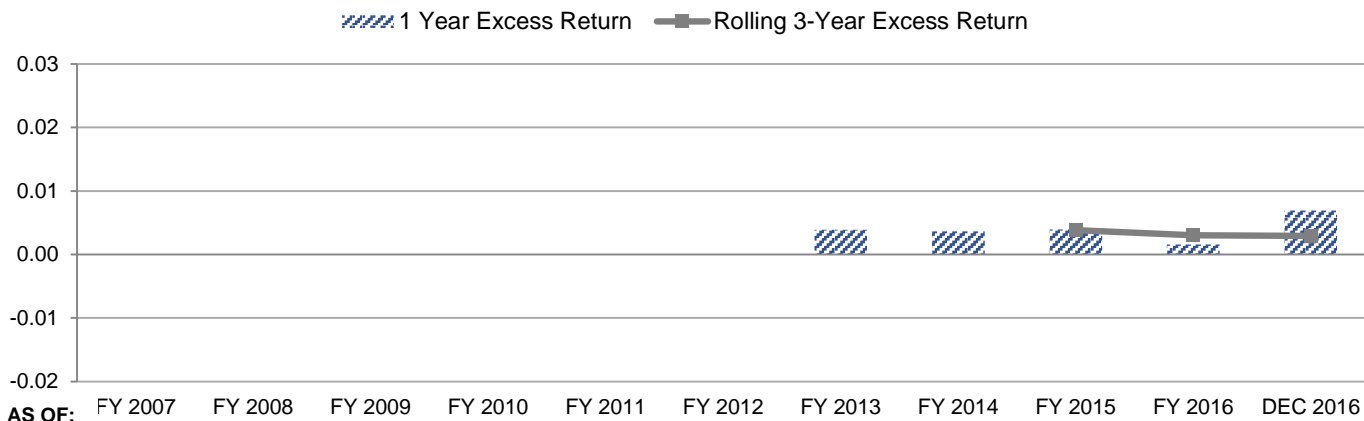
CalPERS Trust Level Review
Trust Summary: CERBT Strategy 3

CalPERS

December 31, 2016

## STRATEGIC ASSET ALLOCATION

CERBT Strategy 3 Objective

The California Employer Retirees' Benefit Trust (CERBT) was established in March 2007 for public employers to pre-fund their retiree health and other post-employment benefit obligations. Employers may choose among three different CERBT investment strategies. Compared with Strategies 1 and 2, this portfolio consists of a higher percentage of bonds and other assets and a lesser percentage of equities.

Fixed income, TIPS and commodities asset classes are managed by CalPERS staff. Global equity and REITs are managed by State Street Global Advisors.

Actual Capital Allocation

Global Equity 23.7%
Fixed Income 39.0%
Commodities 3.0%
REITs 8.1%
TIPS 25.9%
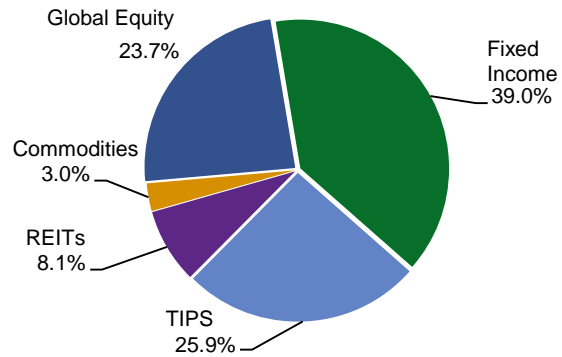
### Strategic Allocation Target Ranges
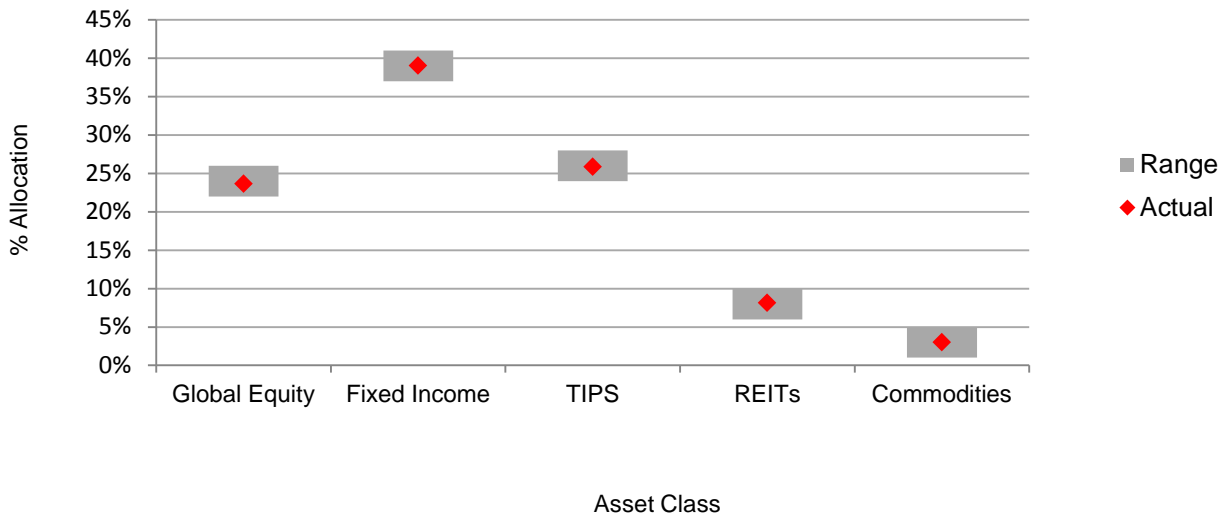
CERBT S3 ASSET ALLOCATION	Current Allocation (%)	Target Allocation (%)	Variance (%)	Current Allocation (millions)	Target Allocation (millions)	Dollar Variance (millions)
Global Equity	23.7%	24.0%	-0.3%	$ 53.6	$ 54.3	$ (0.8)
US Fixed Income	39.0%	39.0%	0.0%	$ 88.4	$ 88.3	$ 0.1
TIPS	25.9%	26.0%	-0.1%	$ 58.6	$ 58.9	$ (0.3)
REITs	8.1%	8.0%	0.1%	$ 18.4	$ 18.1	$ 0.3
Commodities	3.0%	3.0%	0.0%	$ 6.8	$ 6.8	$ 0.0
Cash	0.3%	0%	0.3%	$ 0.7	$ -	$ 0.7
Total	100.0%	100.0%	0.0%	$ 226.4	$ 226.4	$ (0.0)

Policy asset allocation targets were approved by the Investment Committee on October 13, 2014.

CERBT STRATEGY 3 RISK AND RETURN

### Asset Liability Management Expectations

Per the current CERBT Fund Statement of Investment Policy.
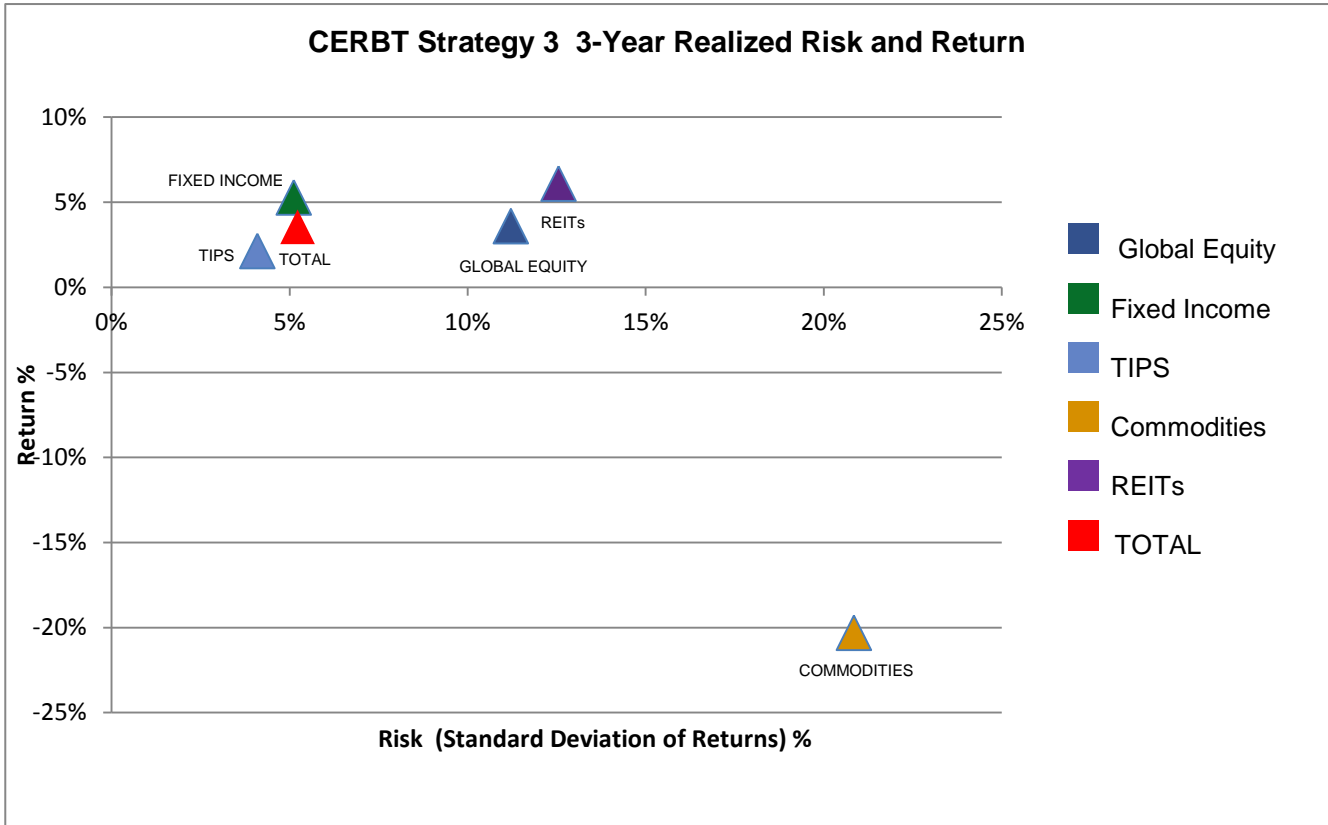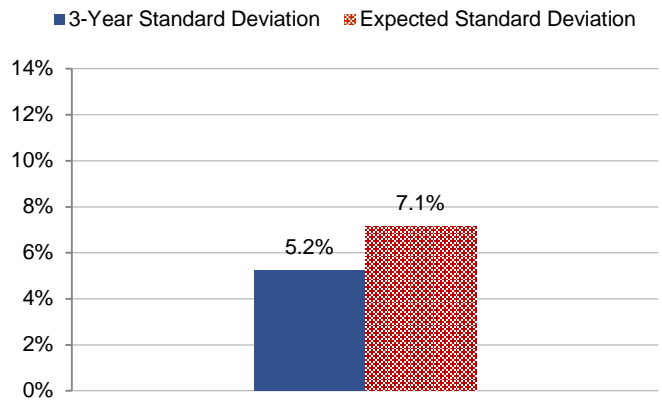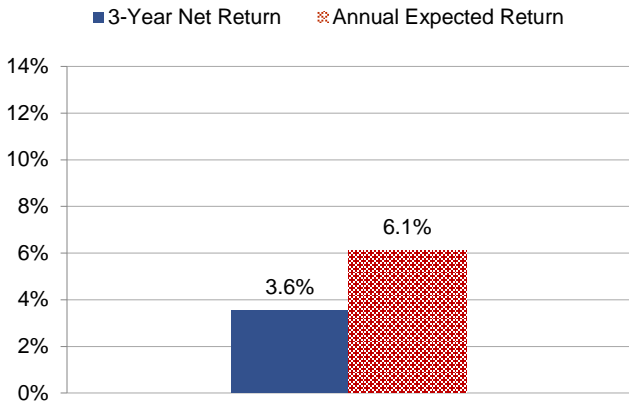
CERBT STRATEGY 3 PERFORMANCE SUMMARY

As of 12/31/2016	1 - YEAR			3 - YEAR			5 - YEAR			10 - YEAR		
	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps	Net Returns	Benchmark Return	Excess Bps
GLOBAL EQUITY	8.74	8.36	38	3.59	3.25	35	9.99	9.76	23	-	-	-
US FIXED INCOME	5.59	4.33	126	5.28	4.85	43	3.93	2.99	94	-	-	-
TIPS	4.56	4.68	(13)	2.13	2.26	(12)	0.86	0.89	(4)	-	-	-
REITs	2.92	2.37	56	6.10	5.40	69	9.55	9.08	48	-	-	-
COMMODITIES	11.74	11.37	38	(20.30)	(20.60)	30	(13.23)	(13.13)	(10)	-	-	-
CERBT Strategy 3	6.24	5.65	59	3.56	3.25	30	5.25	4.92	34	-	-	-

CERBT STRATEGY 3 CUMULATIVE RETURNS

Legend: CERBT S3 Net Return | Index Return | CERBT S3 Cumulative Return | Index Cumulative Return
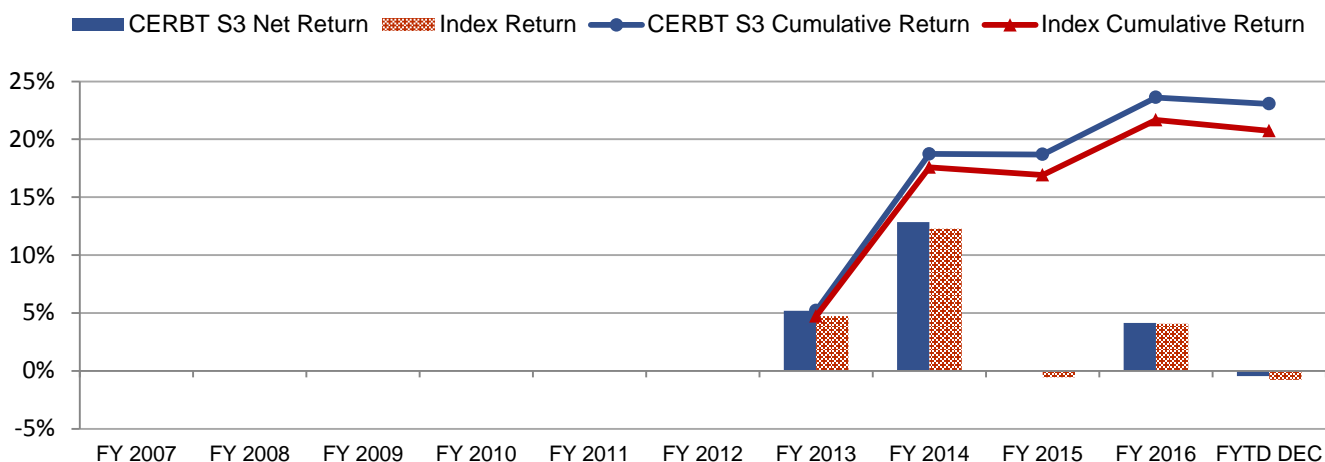
CERBT STRATEGY 3 ROLLING 3-YEAR EXCESS RETURNS

Legend: 1 Year Excess Return | Rolling 3-Year Excess Return