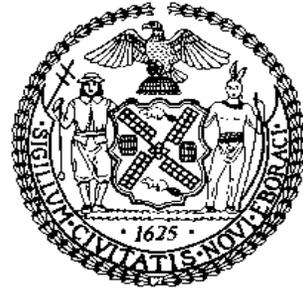




# COMMON INVESTMENT MEETING Public Session



THE CITY OF NEW YORK  
OFFICE OF THE COMPTROLLER

June 19, 2019

# MARKET OVERVIEW

# Market Returns: Q1-2019

Asset Class	Index	First Quarter Returns 2019	Fiscal YTD	3 Year	5 Year	Expected*
Equities - U.S.	Russell 3000	14.04%	4.70%	13.48%	10.36%	7.80%
Equities - Developed Intl	MSCI World ex USA IMI Net	10.52%	-3.22%	7.29%	2.40%	8.90%
Equities - Emerging Intl	MSCI EMERGING MARKETS	9.92%	0.60%	10.68%	3.68%	11.00%
Debt - US Govt Long Duration	FTSE Treasury 10+	4.70%	5.84%	1.48%	5.53%	
Debt - US Government	NYC Treas/Agency +5	3.37%	5.57%	1.22%	3.67%	2.80%
Debt - Investment Grade	NYC IG Credit	4.72%	5.82%	3.45%	3.55%	3.40%
Debt - High Yield	FTSE BB & B	7.29%	5.28%	8.05%	4.45%	6.10%

\*Average of consultant long-term arithmetic expected market returns, as of 2016

Source: State Street



## What changed in Q1?

- **Reduced global growth concerns**
  - US –government shutdown ended, FCI easing
  - Optimism on US– China trade negotiations
- **Fed dovish pivot**
  - Policy rate
  - End of quantitative tightening
  - Inflation strategy



# Market Returns Q1 – 2019

- Tightening of financial conditions



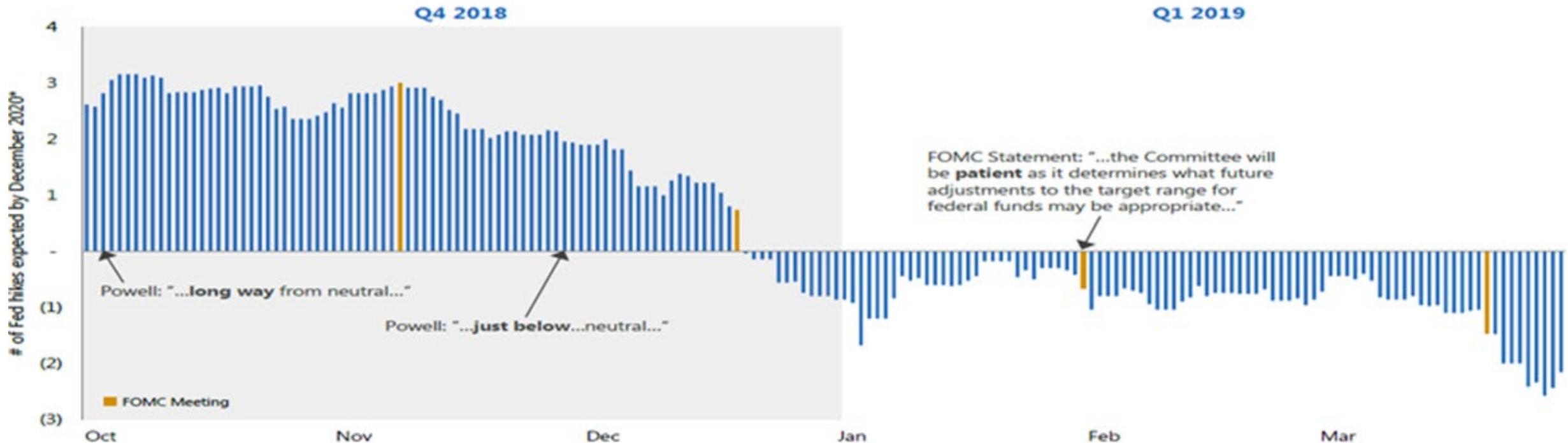
Source: Bloomberg

- FCI is derived from weighted average of 10-yr US Treasury yield, broad dollar index, broad equity index and investment grade spreads.
- FCI tightened into year-end
- Given Fed's goal of higher inflation, Fed will adopt policies for continued easing of FCI



# Market Returns Q1 – 2019

- Change in expectations of Fed policy



Q4 2018	
Investment Grade Credit Spreads	+47 bps
High Yield Credit Spread	+210 bps
S&P 500 Total Return	-13.5 %

Q1 2019	
Investment Grade Credit Spreads	-34 bps
High Yield Credit Spread	-135 bps
S&P 500 Total Return	+13.6 %

# Market Returns Q1 – 2019

- **Fed dovish pivot**
- Inability to achieve 2% target inflation



Source: Bloomberg



# Current Market Themes

1. US – China/Mexico/Europe trade policy
2. Federal Reserve and future interest rate policy
3. US equity earnings and valuations



# Current Market Themes

## 1. US – China/Mexico/Europe trade negotiations

- Trade negotiations with China have deteriorated, Trump threatening additional tariffs on remaining \$300B of imports.
- G-20 leaders Summit June 28-29 in Japan, Trump and Xi expected to meet.
- US-EU auto tariff decision is looming.
- Tariff implications – expected impacts on growth +inflation

	Growth	Core inflation
raised tariff	↓ .1 to .2	↑ +.2
addl. 25 %	↓ .4	↑ +.5
auto tariff	↓ .2	↑ +.3

- Tariff (and threat of tariffs) increase economic uncertainty, resulting in downside risks to global growth, business confidence and investment.
- Corporations evaluating changes to global supply chains.



# Current Market Themes

## 2. Federal Reserve and future interest rate policy

I. FOMC meeting today

II. Federal Reserve, three possible easing regimes

- Easing to offset recession
- Insurance easing, to sustain recovery
- Average inflation targeting, easing to promote higher inflation



# Current Market Themes

## 3) US Equities – earnings and valuations

1. Q1'19 earnings largely as expected; Q2'19 earnings announcement mid-July
2. Earnings concerns include 1) rising labor costs 2) tariff concerns and 3) slowing revenue
3. Equity buyback programs slowing
4. What is appropriate P/E multiple going forward, given downside earnings risks vs. dovish Fed?

### US equity earnings

Year	Earnings	%	% Growth
2016	\$118		.5 %
2017	\$132		11.8 %
2018	\$162		22.7 % (~10% of growth from cut in corporate tax rate)
2019 E	\$178 → \$170		9.8 % → 4.9 %
2020 E	\$180		5.9 %

### '19 earnings and PE multiples

Earnings/multiples	14x	15x	16x	17x
\$160	2240	2400	2560	2720
\$170	2380	2550	2720	2890
\$180	2520	2700	2880	3060

### '20 earnings and PE multiples

Earnings/multiples	14x	15x	16x	17x
\$170	2380	2550	2890	2720
\$180	2520	2700	2880	3060
\$190	2660	2850	3040	3230



# Current Market Themes

- 1-year forward Price-Earnings Multiple



Source: Bloomberg

# Q1 - Asset Allocation Review

## Portfolio Update – Q1'19

### 1) Rebalancing activity

- Extended US Treasury duration
- Rebalanced Developed International Equity to target
- Increased underweight in Investment Grade Credit

### 2) Portfolio concerns

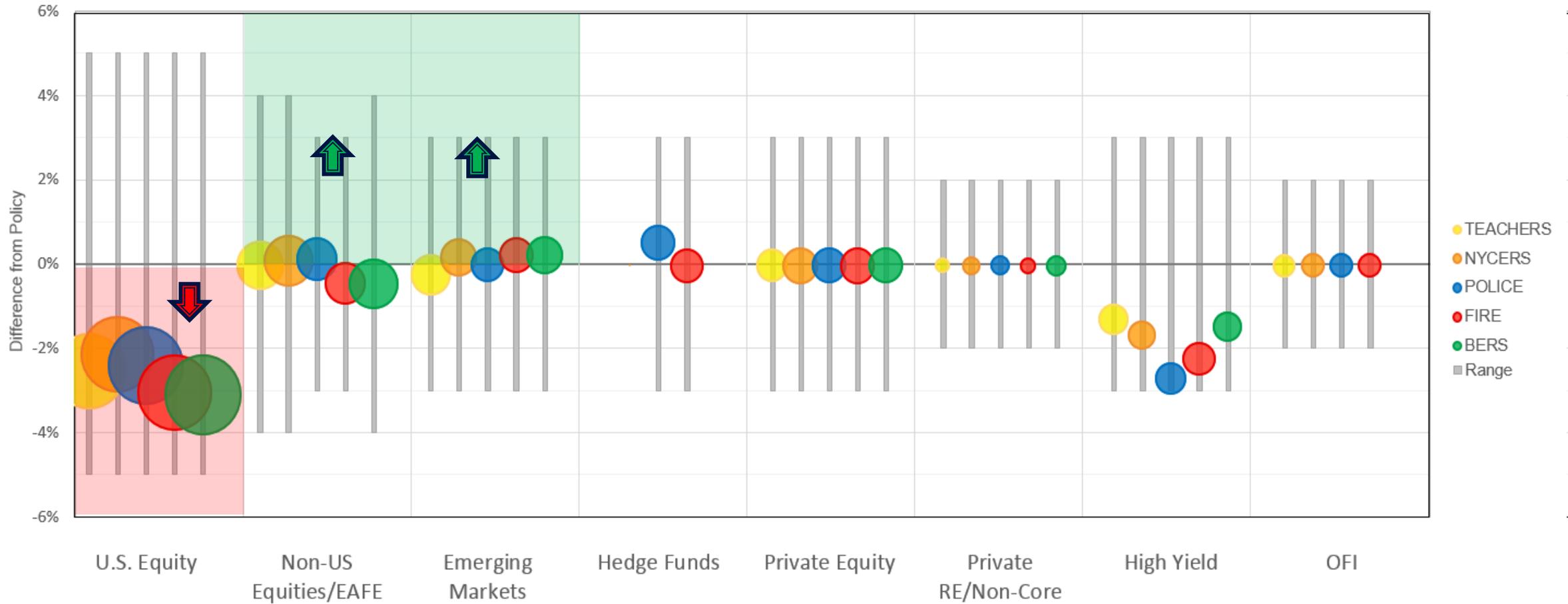
- US Equities- concerns include late cycle dynamics, downside risks to earning estimates, equity valuations historically expensive, US elections in November 2020.
- US Treasuries- yield curve inverted, yields biased to continue lower, lower yields vs. yield curve steepening
- Credit spreads- spread widening risk on both IG and MBS



# Q1 - Asset Allocation Review - Growth

## Relative Mix to Adjusted New Policy Weights

Policy vs Actual Asset Allocation - Growth



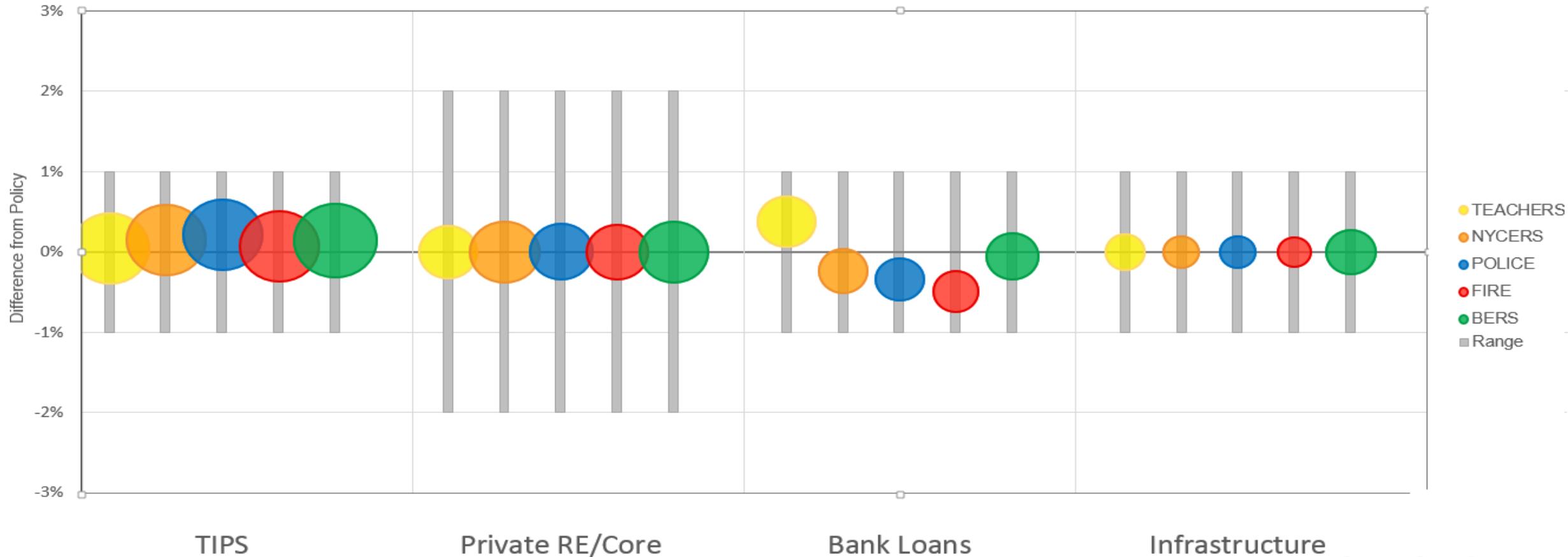
Source: State Street



# Q1 - Asset Allocation Review – Inflation Protection

## Relative Mix to Adjusted New Policy Weights

Policy vs Actual Asset Allocation - Inflation Protection



Source: State Street



# Q1 - Asset Allocation Review - Deflation Protection

## Relative Mix to Adjusted New Policy Weights

Policy vs Actual Asset Allocation - Deflation Protection



Source: State Street



# Core Bond Portfolio Duration, Actual Vs. Target (as of 03/31/2019)

	TRS	NYCERS	Police	Fire	BERS
Original Duration	6.19	6.34	6.51	6.39	6.25
New Duration Target	11.76	8.43	11.54	11.73	8.07
Duration as of 12/31/18	9.27 (55%)	7.53 (57%)	10.55 (80%)	8.99 (49%)	7.08 (46%)
Duration as of 3/31/19	10.12 (71%)	8.10 (84%)	10.43 (78%)	10.38 (75%)	7.96 (94%)

Source: State Street



**QUESTIONS?**

# PERFORMANCE REPORTING

## 1<sup>st</sup> Quarter 2019



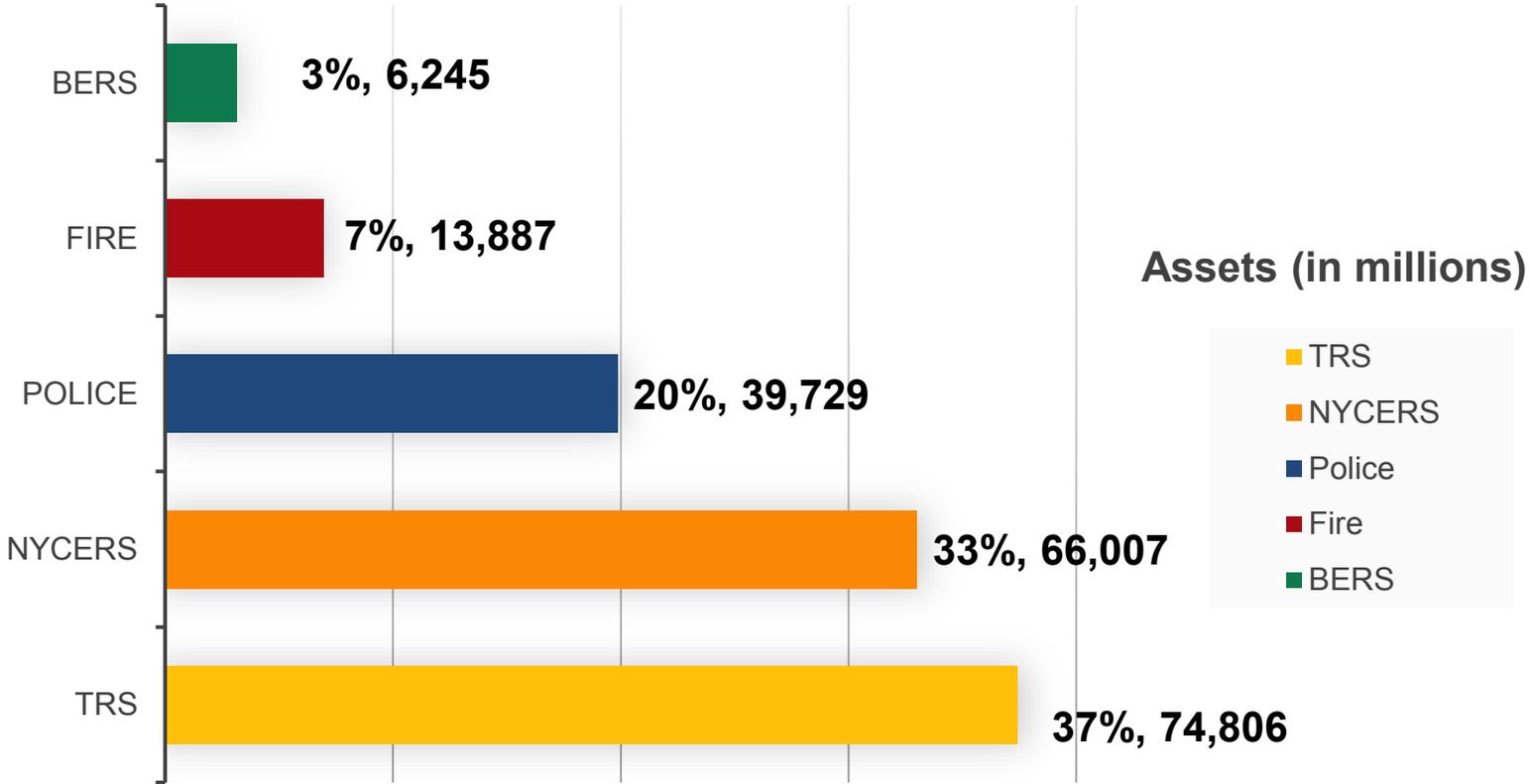
# NYC Retirement Systems AUM (% , in millions)

\$200,675m Total AUM for all 5 Systems as of March 31, 2019



Board of Education Retirement System

New York City Fire Pension Fund



Source: State Street



# Total NYC Pension Fund Net Performance as of 03/31/2019

NYC Pension System	Portfolio Std Dev - 1 yr.	3 Month	Fiscal YTD	One Year Trailing	Three Year Trailing
BERS	8.62	8.17%	3.52%	4.36%	10.38%
TRS	7.92	7.57%	3.83%	4.42%	8.93%
FIRE	7.65	7.43%	3.60%	4.69%	9.21%
NYCERS	7.57	7.11%	3.61%	4.29%	9.05%
POLICE	7.57	7.21%	3.52%	4.50%	9.34%
<b>Public Mkt Equiv 65/35</b>		<b>9.22%</b>	<b>3.35%</b>	<b>4.74%</b>	<b>8.19%</b>
<b>Median Fund - TUCS</b>		<b>7.01%</b>	<b>3.32%</b>	<b>4.65%</b>	<b>8.90%</b>

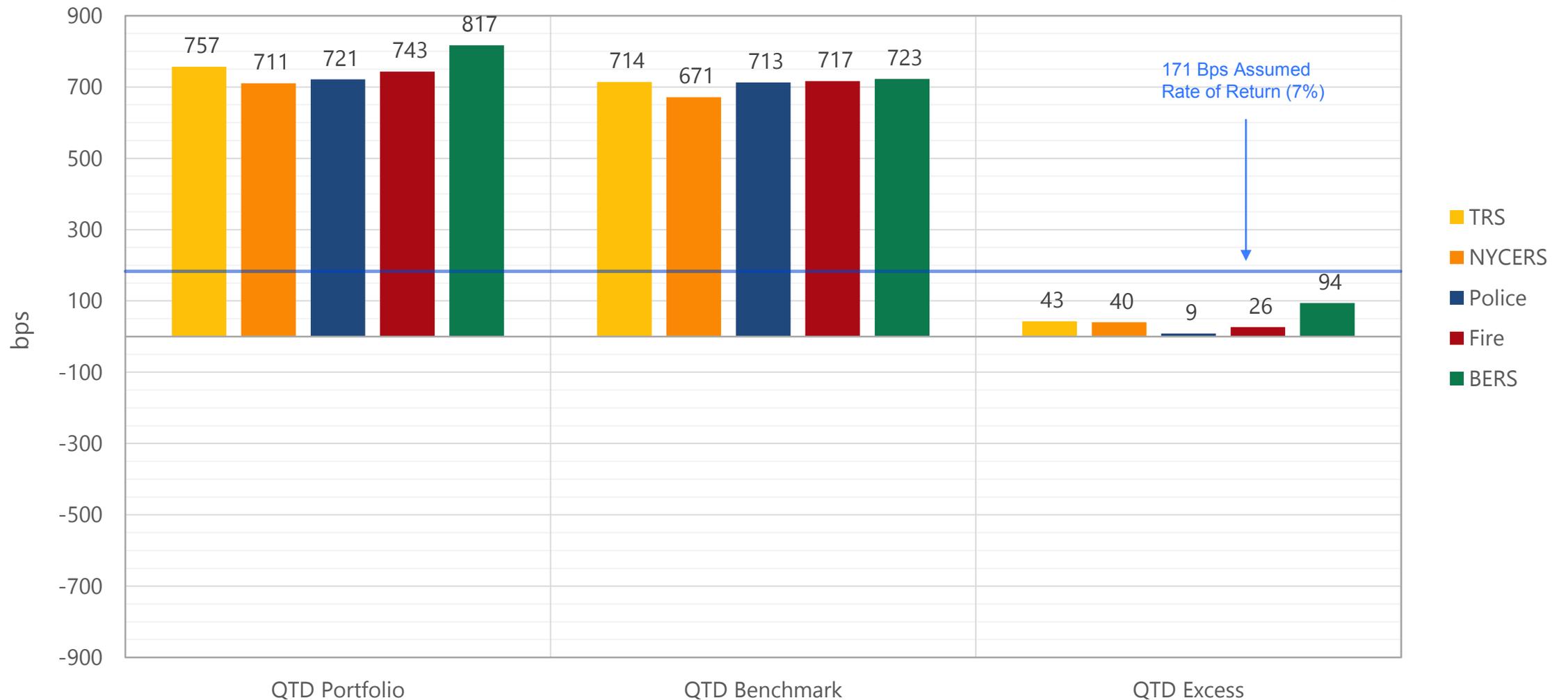
Net of fees in public asset classes are recorded on an accrual basis.  
Private markets data is reported on a lagged basis

Source: State Street



# Quarter to Date Return as of 03/31/2019 – Total Portfolio

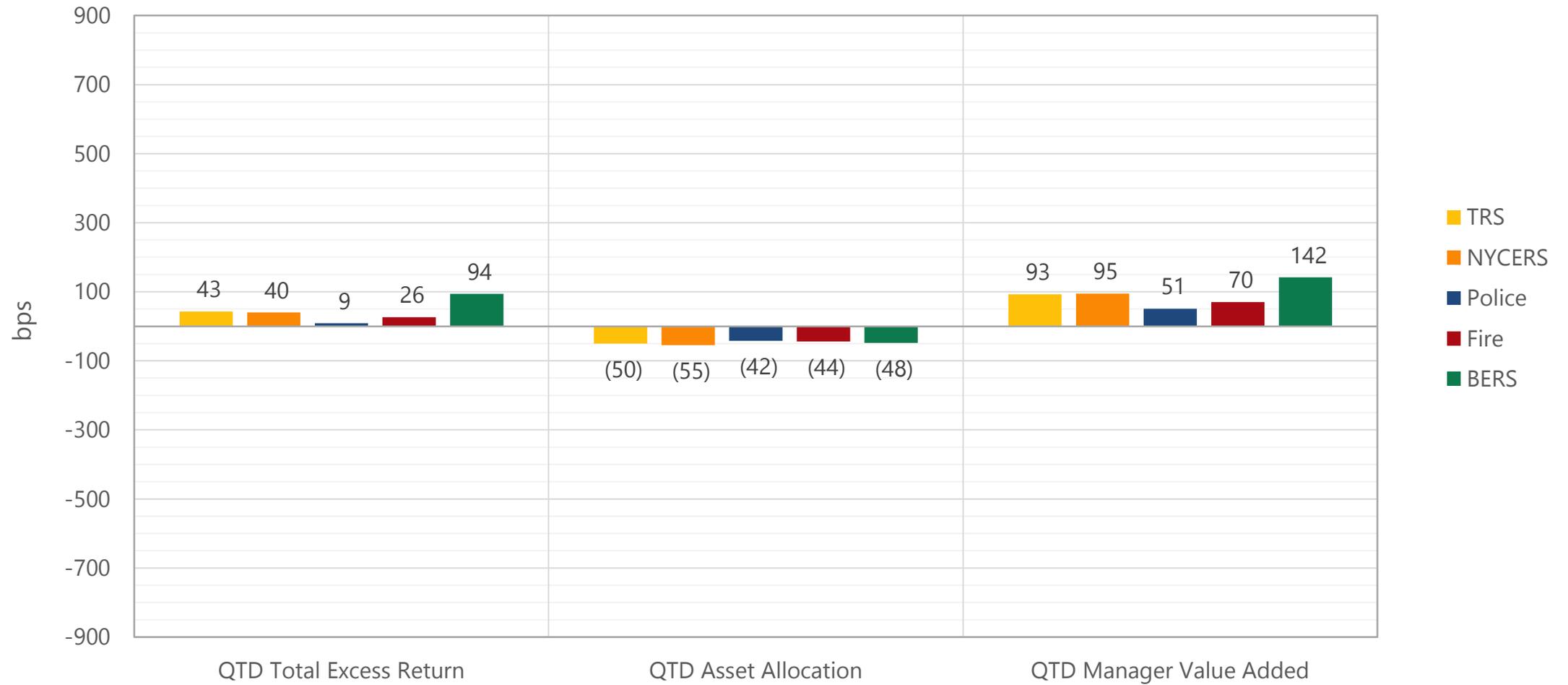
Basis Points of Excess Return (SSB T, N, p.14; F p.15 ; P p.16 B p.17)



Source: State Street

# Quarter to Date as of 03/31/2019 Excess Return – Total Portfolio

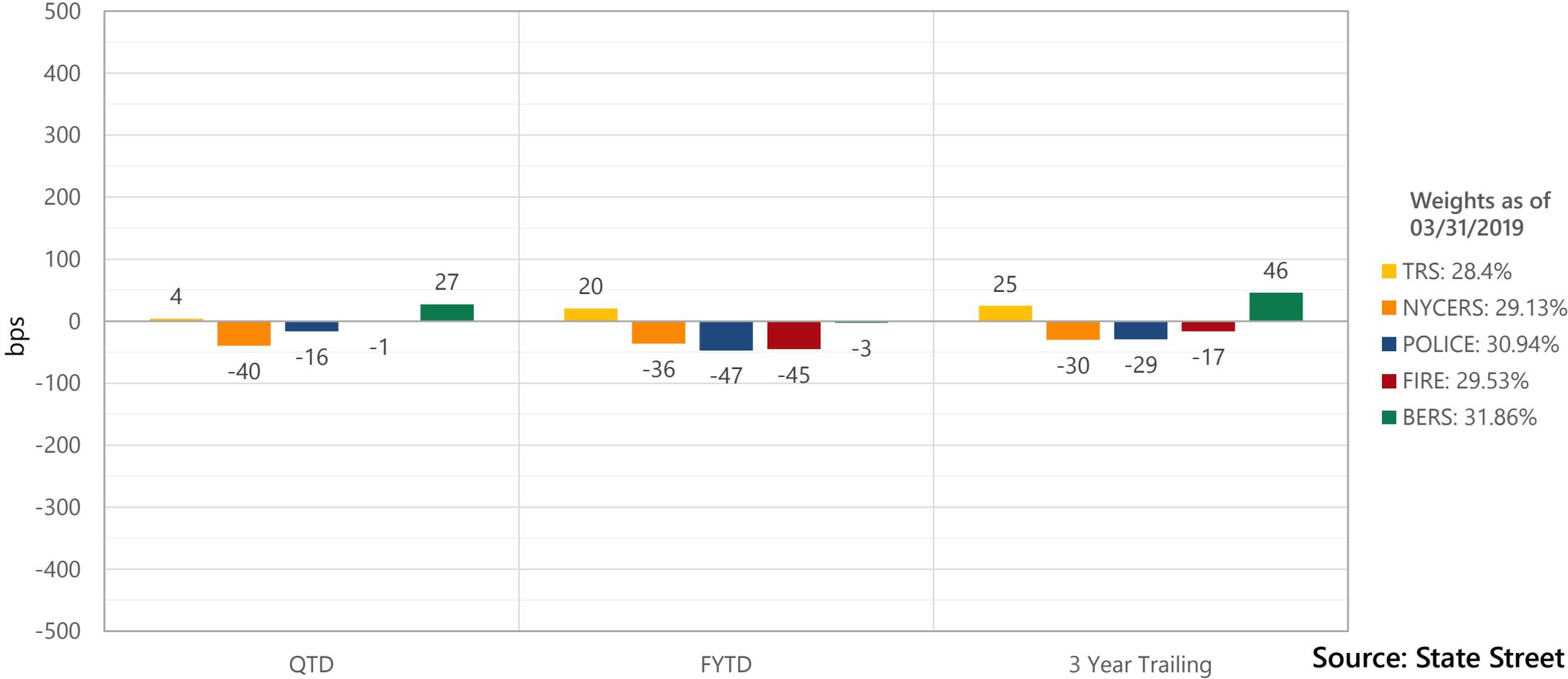
Basis Points of Excess Return (SSB T, N, p.14; F p.15 ; P p.16 B p.17)



Source: State Street

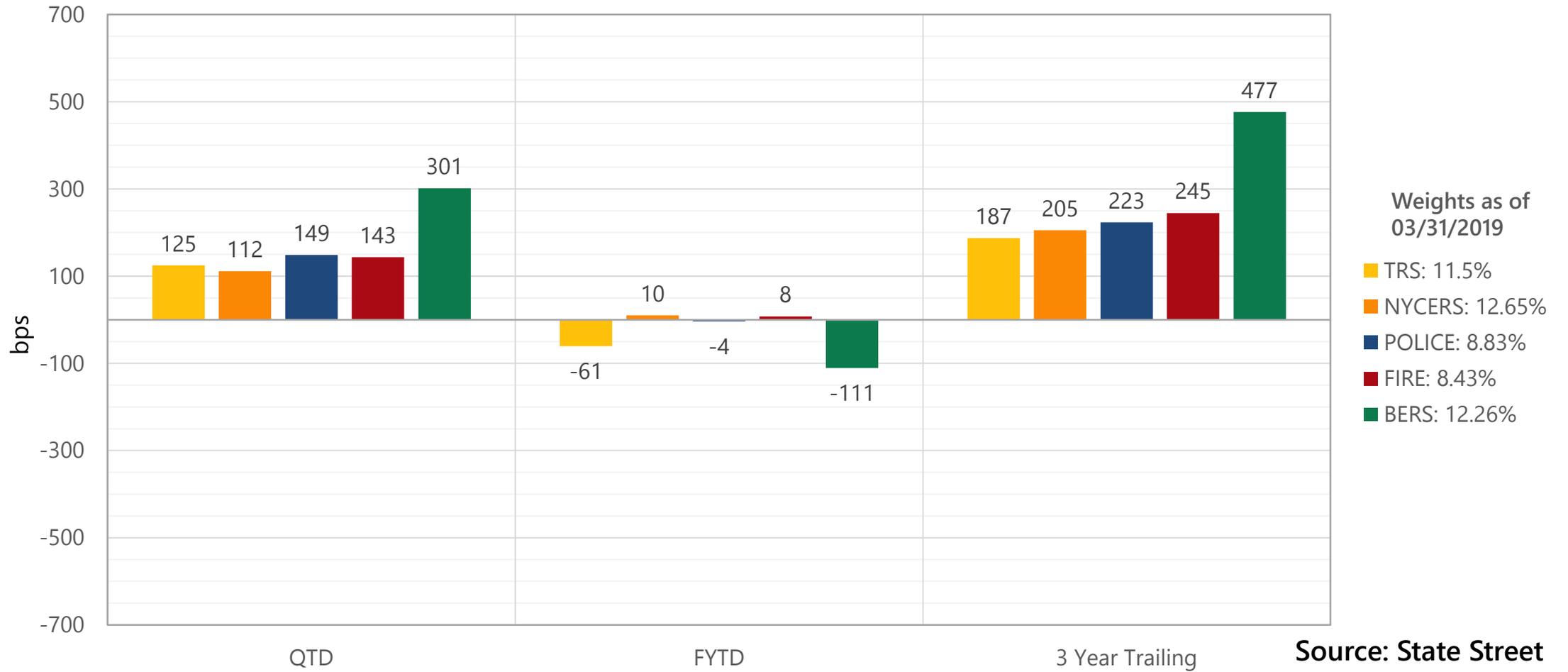
# Value Added – Total Domestic Equity

Basis Points of Excess Return (SSB **T** p. 29; **N** p.30; **F** p.31; **P** p.32; **B** p.33)



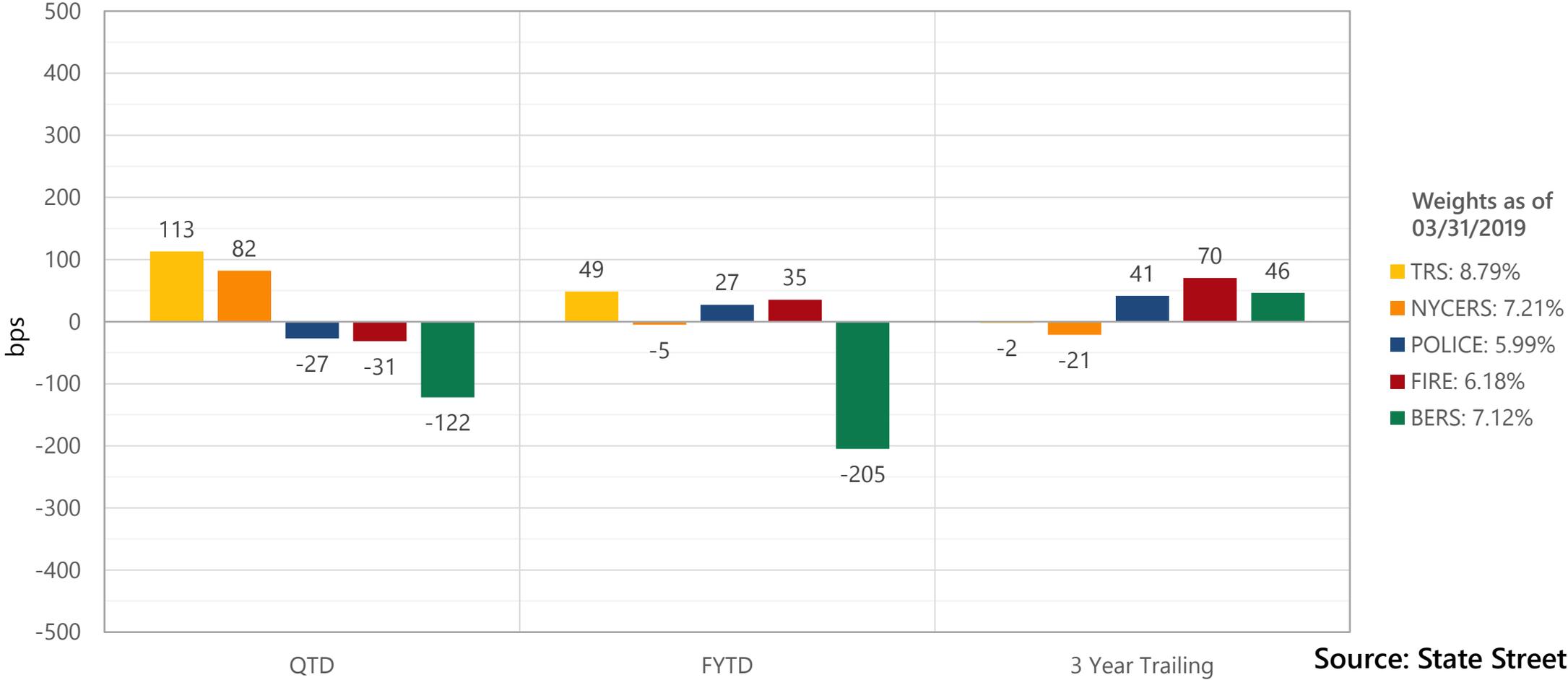
# Value Added – Total World Ex-USA

Basis Points of Excess Return (SSB; T p.30; N p.31; F p.33; P, B p.34)



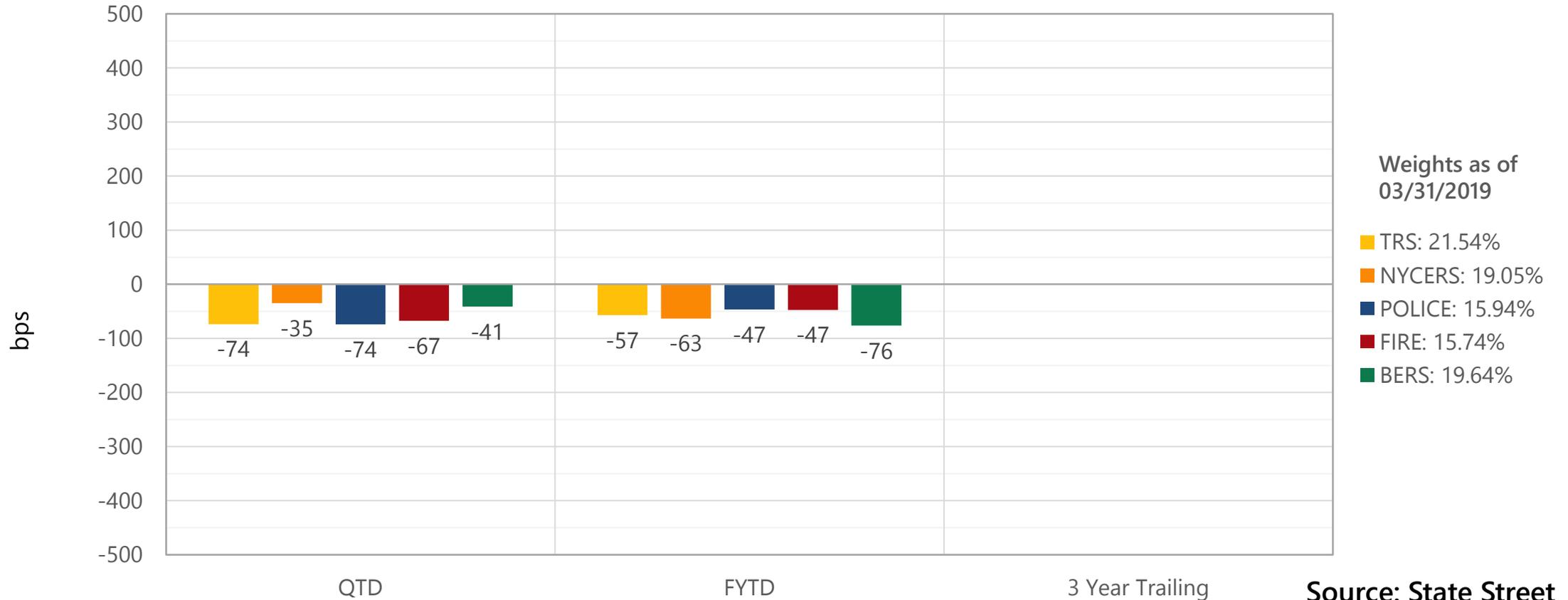
# Value Added – Total Emerging Markets

## Basis Points of Excess Return



# Value Added – Total Structured Fixed Income

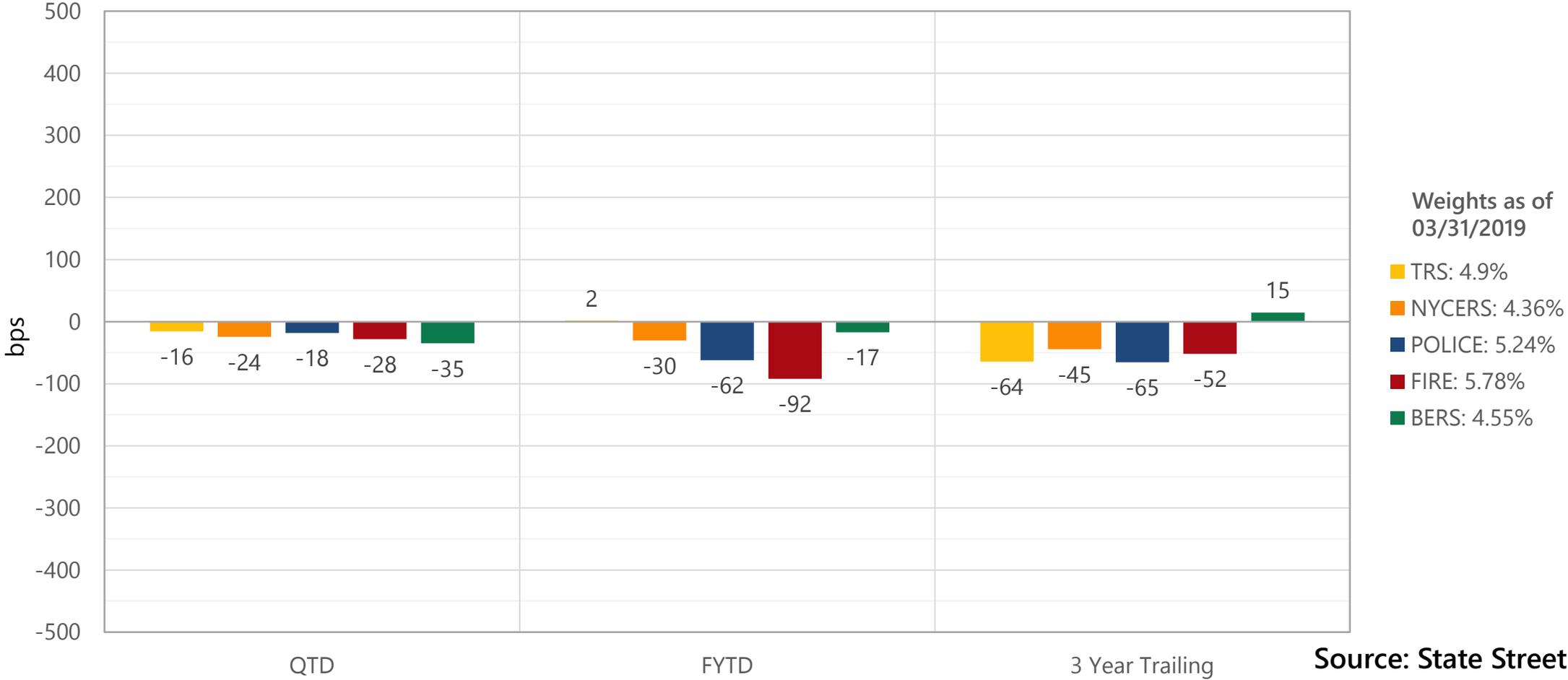
Basis Points of Excess Return (SSB; T p.33; N p.35; B p.36; F p.37; P p.38)



Note: The blended benchmark reflects the current asset allocation. No Data for the Trailing 3yr.

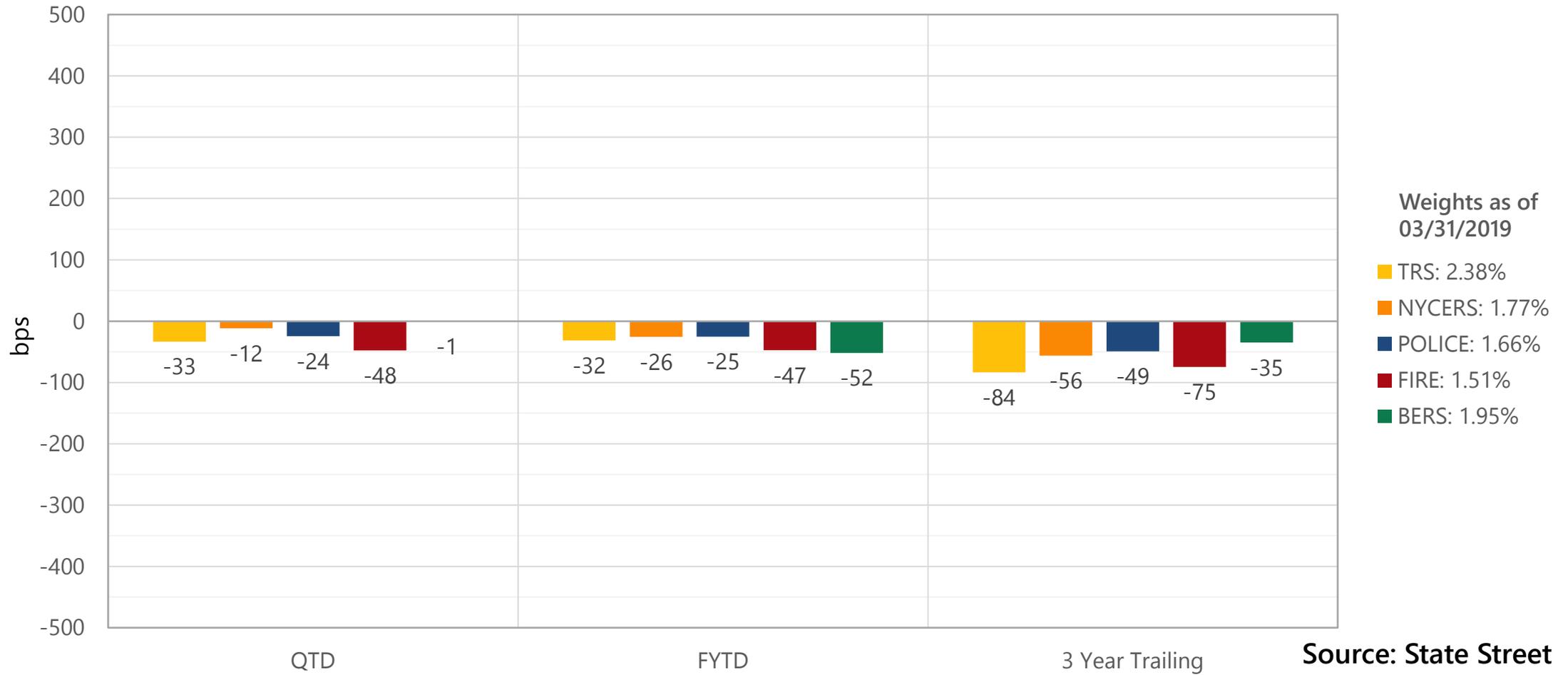
# Value Added – High Yield

Basis Points of Excess Return (SSB; T p.33; N p.35; B p.36; F p.37; P p.38)



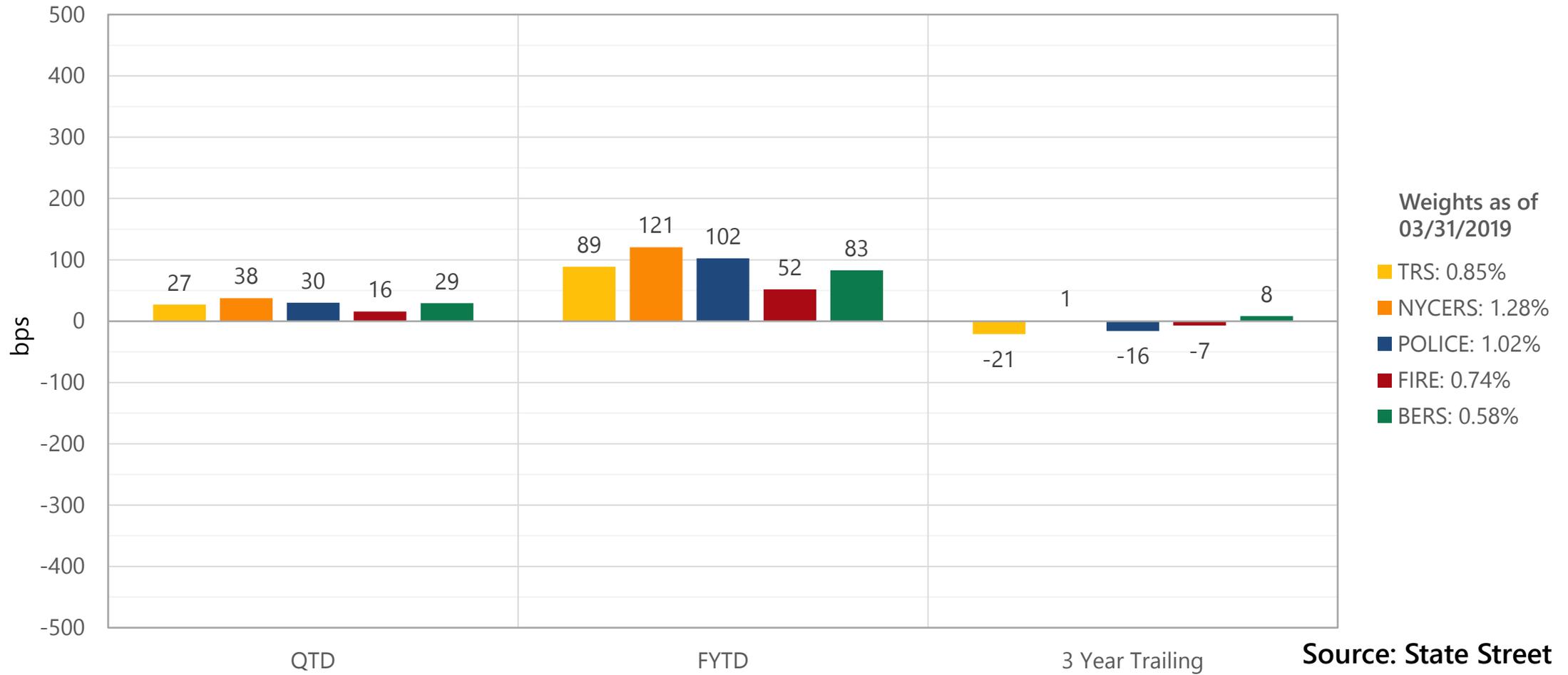
# Value Added – Bank Loans

Basis Points of Excess Return (SSB; T p.33; N p.35; B p.36; F p.37; P p.39)



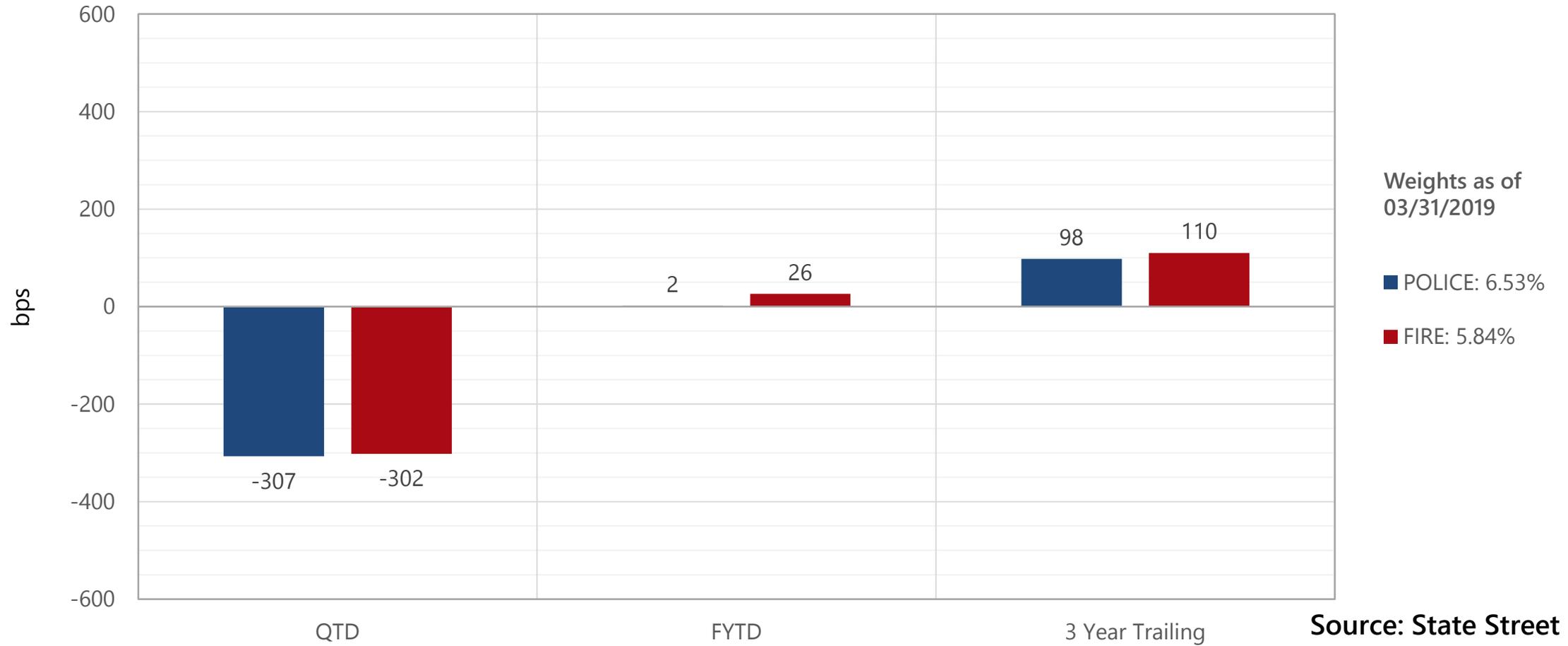
# Value Added – Economically Targeted Investments

Basis Points of Excess Return (SSB; T p.33; N p.35; B p.36; F p.37; P p.39)



# Value Added - Hedge Funds

Basis Points of Excess Return (SSB F p.35; P p.36)



# Hedge Fund Performance Less Tactical Trade

	<b>Q1 2019</b>	<b>FYTD</b>	<b>3 Year</b>
<b>FIRE</b>	2.2%	1.7%	6.3%
<b>POLICE</b>	2.2%	1.4%	6.2%
<b>HFRI+100</b>	4.9%	0.4%	5.0%

Source: Aksia



# Tactical Trade Performance

	<u>Q1 2019</u> <u>POLICE &amp; FIRE</u>	<u>FYTD</u>
Tactical Hedge Fund Trade	-0.7%	-6.5%
RUSSELL 3000	14.0%	4.7%
<b><i>Underperformance</i></b>	<b>-14.7%</b>	<b>-11.2%</b>

Source: Aksia

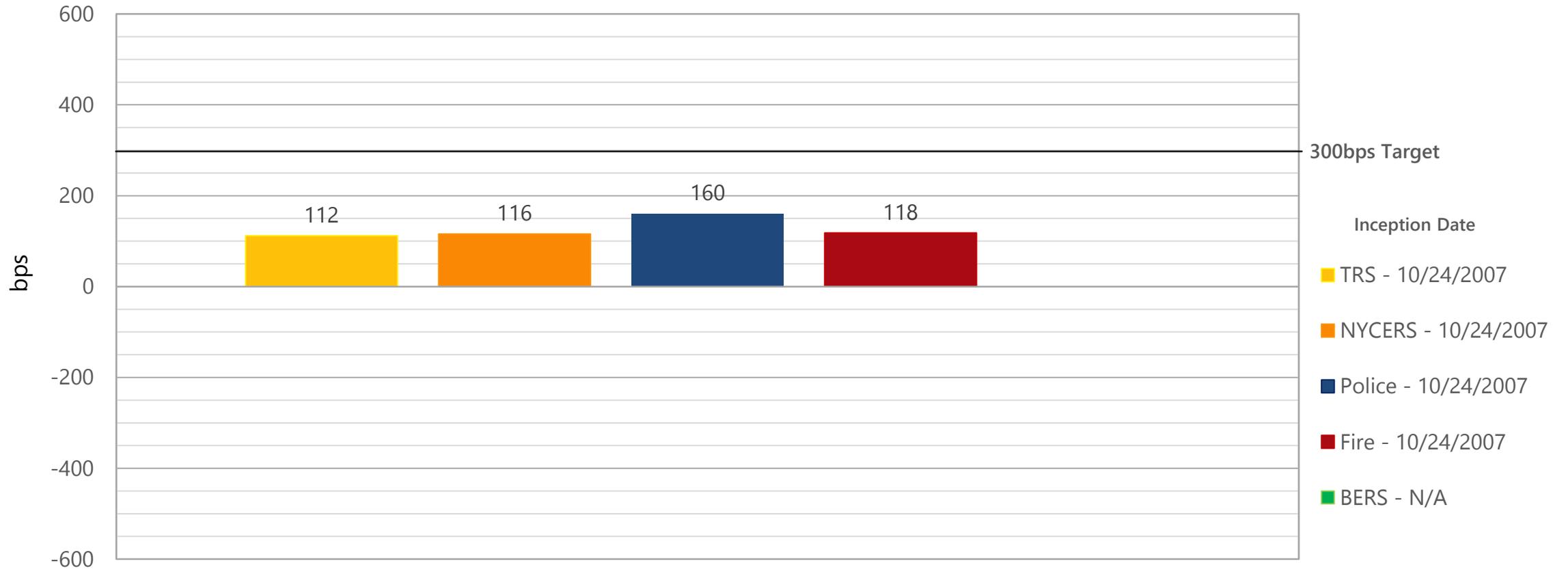


# PRIVATE MARKET DATA



# Value Added - Opportunistic Fixed Income (OFI)

## Basis Points of Cumulative IRR above Public Market Equivalent



Excess Return Since Inception; PME Benchmark: 50% JP Morgan Global High Yield 50% CS Leveraged Loans as of 03/31/19

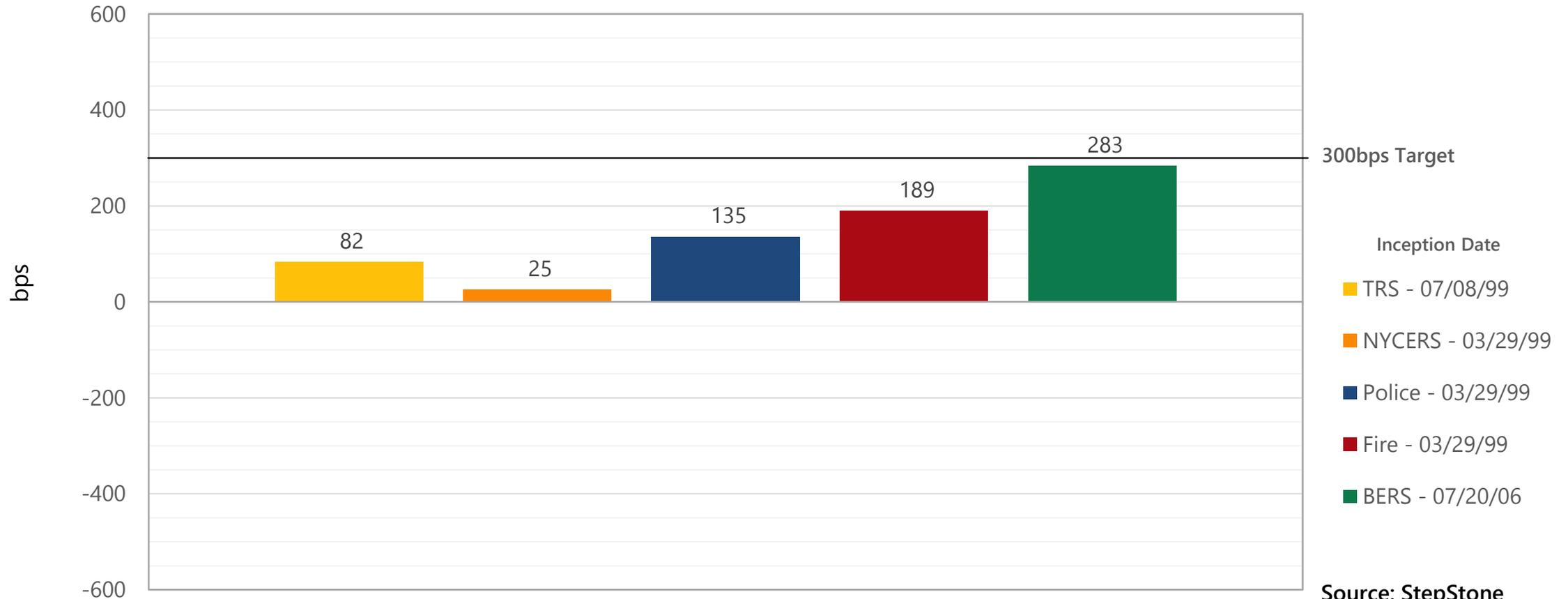
Source: State Street

**The PME Spread is the difference between the IRR and the PME.**



# Value Added - Private Equity

## Basis Points of Cumulative IRR above Public Market Equivalent



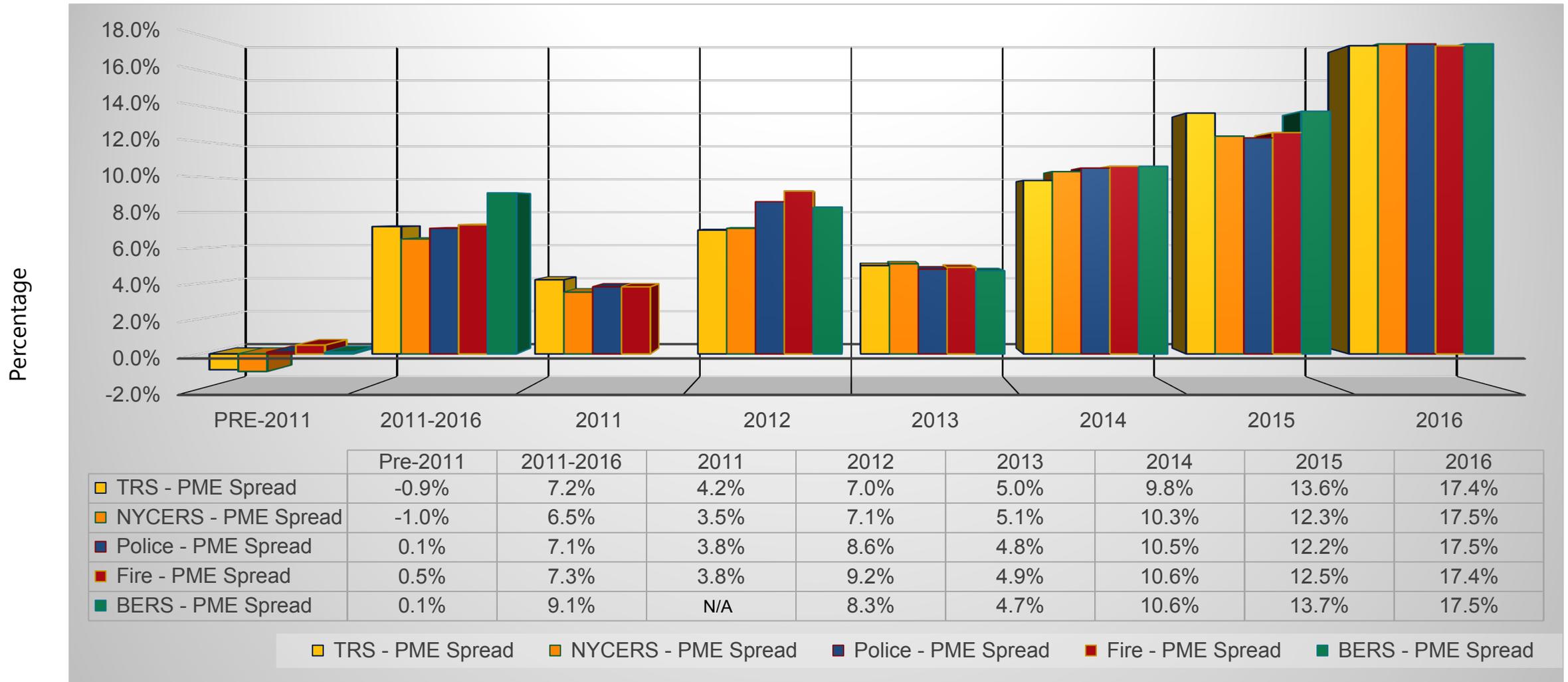
Excess Return Since Inception; The PE Benchmark is the Russell 3000 + 300 bps as of 12/31/18

Source: StepStone Group & Hamilton Lane

**The PME Spread is the difference between the IRR and the PME.**



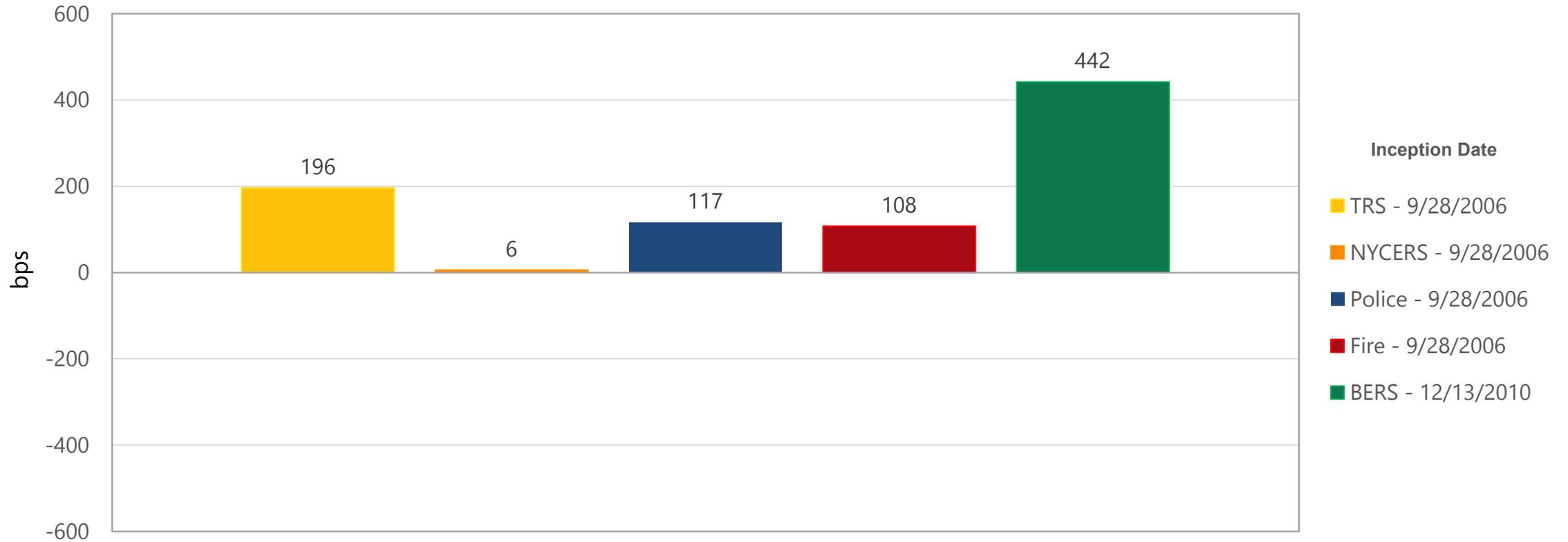
# Private Equity Value Added – PME Spread By Vintage Year as of 12/31/18



Source: StepStone Group & Hamilton Lane

# Value Added - Private Real Estate - Core

Basis Points of Cumulative IRR above Public Market Equivalent



Excess Return Since Inception; Core PME = 40% Equities Russell 3000 & 60% Barclay Agg. as of 12/31/18

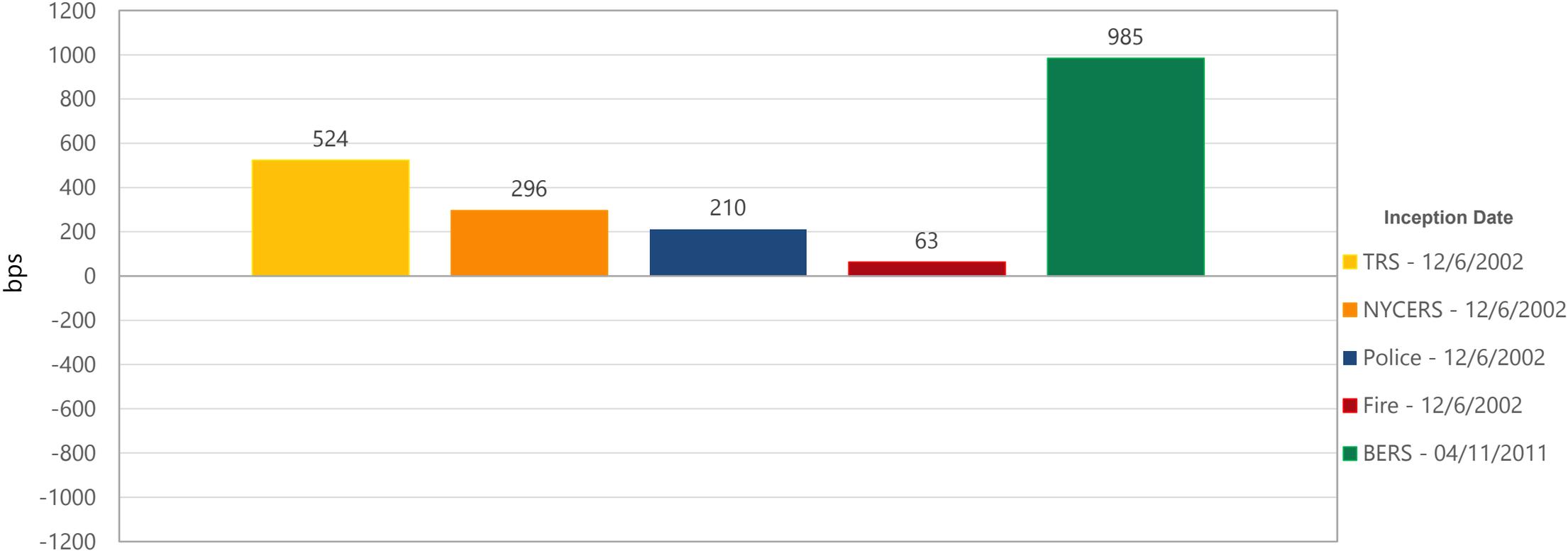
Source: State Street

The PME Spread is the difference between the IRR and the Core PME Return.



# Value Added - Private Real Estate – Non-Core

Basis Points of Cumulative IRR above Public Market Equivalent

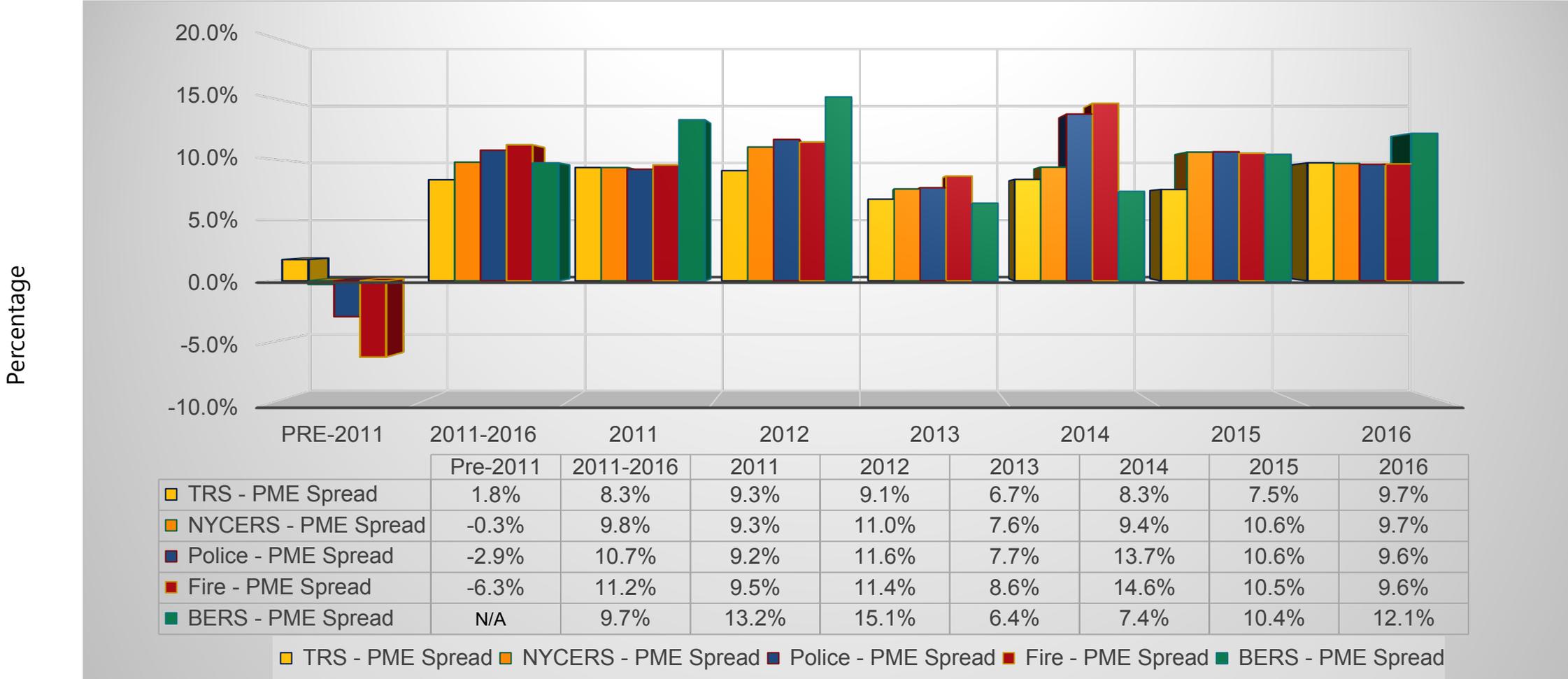


Excess Return Since Inception; Non-core PME = 60% Equities Russell 3000 & 40% Barclay Agg. as of 12/31/18

Source: State Street

The PME Spread is the difference between the IRR and the Non-core PME Return.

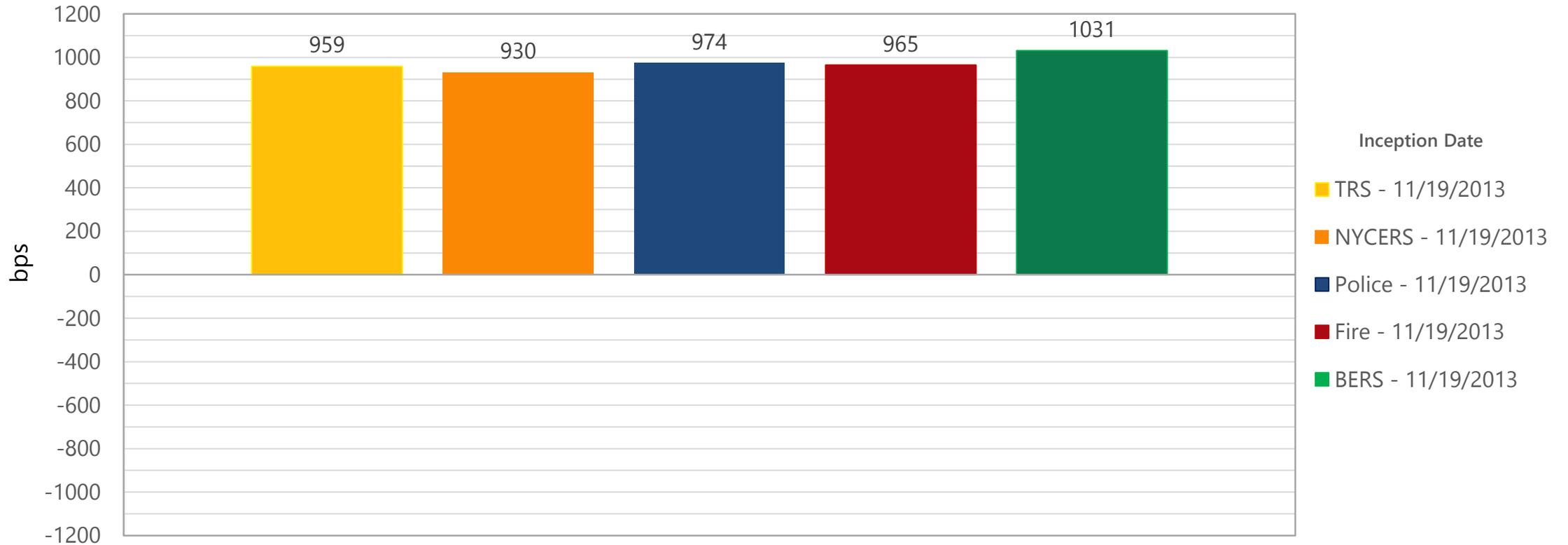
# Private Real Estate (Non-Core) Value Added - PME Spread By Vintage Year as of 12/31/18



Source: State Street

# Value Added - Infrastructure

## Basis Points of Cumulative IRR above Public Market Equivalent



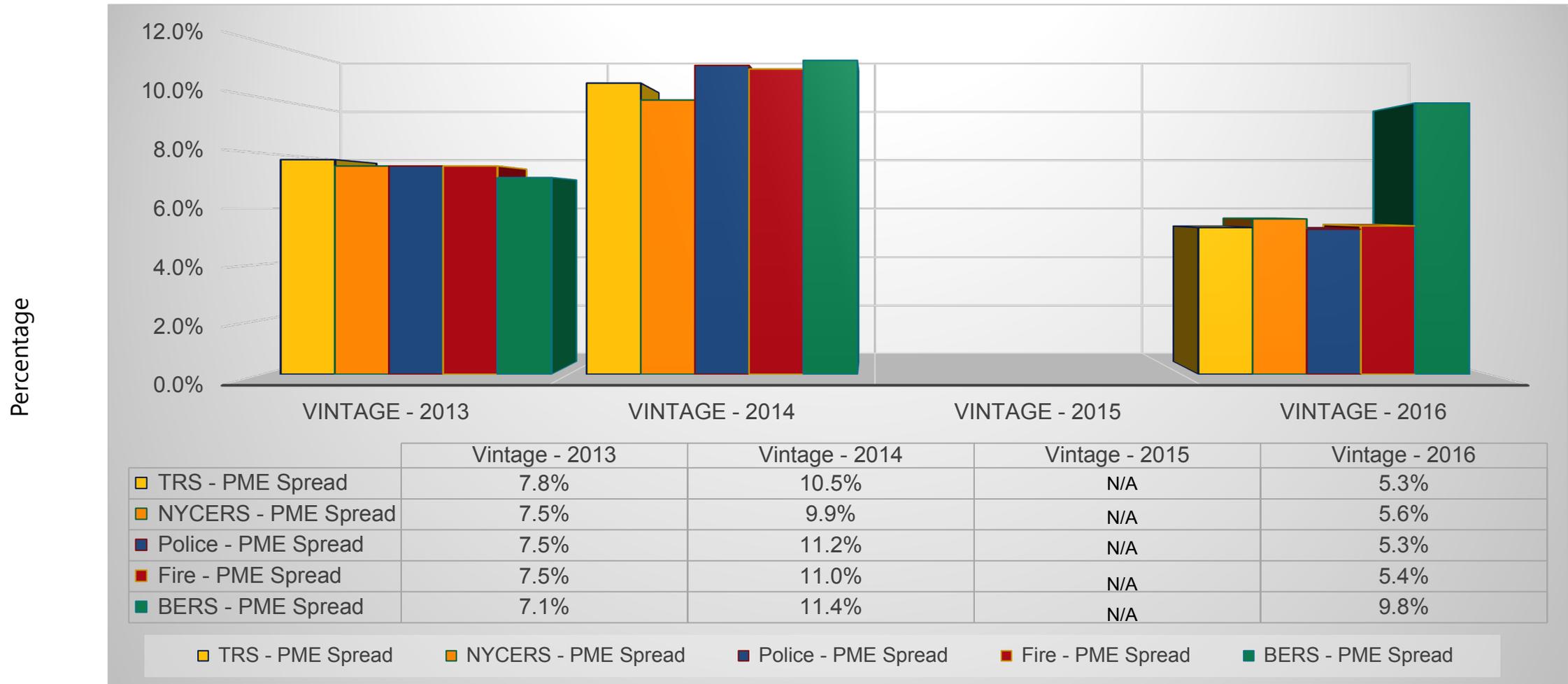
Excess Return Since Inception; PME: 50% R3000 & 50% Barclays Agg. as of 12/31/18

Source: StepStone Group

**The PME Spread is the difference between the IRR and the PME.**



# Infrastructure Value Added – PME Spread By Vintage Year as of 12/31/18



Source: StepStone Group



**QUESTIONS?**

# RISK UPDATE

# Agenda

- Risk Reports
- Performance Attribution Analysis
- Stress Tests



# Total Plan Risk (Macro Factors)

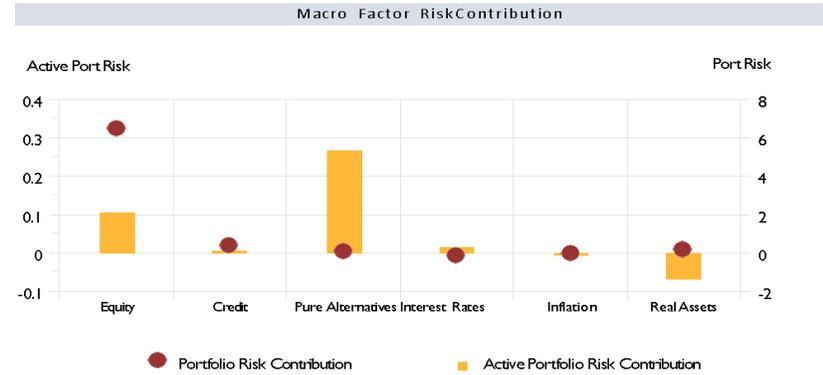
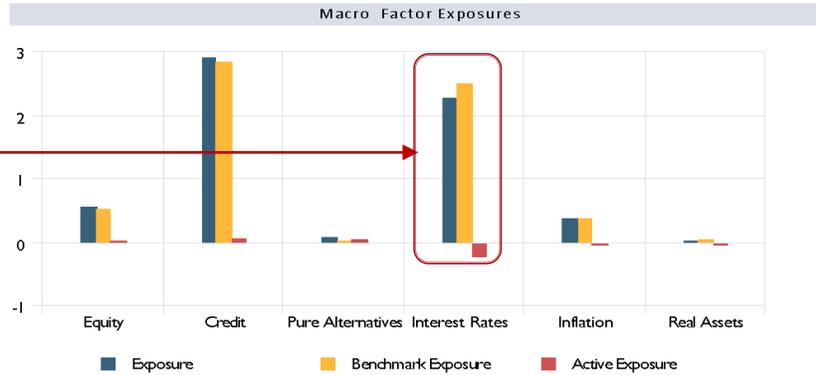
## BarraOne Total Plan Macro Summary

Macro factor models attribute the risk of the Barra Integrated Model to a far smaller set of factors. At the highest level, we use just six factors, representing the primary drivers of total risk and return for a global, multi-asset class portfolio that reduces the number of factors in an integrated factor model by aggregating selected groups of factors into single factors. Tier 1 is the highest level of the Macro Factor Scheme which has 6 factors.

CURRENCY: USD  
ANALYSIS DATE: March 31, 2019

MODEL: BIM303L (Tier 1 Macro Factors)

Overweight to the Interest Rate Macro factor



Total Risk is 7.72% compared with 6.67% as of 12/31/18 and 6.29% as of 9/30/18 (public markets only).

Risk Source	Exposure			Contribution			
	Exposure	Benchmark Exposure	Active Exposure	Portfolio Risk Contribution	% Portfolio Risk	Portfolio Risk Contribution	% Active Risk
Total Risk	-	-	-	7.72	100.00	1.02	100.00
Local Market Risk	-	-	-	7.41	96.05	0.99	97.23
Common Factor Risk	-	-	-	7.38	95.68	0.91	88.90
Equity	0.58	0.55	0.03	6.56	84.97	0.11	10.54
Credit	2.92	2.85	0.07	0.46	5.95	0.00	0.45
Pure Alternatives	0.10	0.05	0.05	0.07	0.86	0.27	26.24
Interest Rates	2.28	2.49	-0.22	-0.11	-1.47	0.02	1.64
Inflation	0.37	0.39	-0.02	0.04	0.48	-0.00	-0.07
Real Assets	0.04	0.06	-0.03	0.23	2.94	-0.07	-6.68
Factor Residual Risk	-	-	-	0.15	1.95	0.58	56.78
Selection Risk	-	-	-	0.03	0.37	0.08	8.32
Currency Risk	-	-	-	0.30	3.95	0.03	2.77

Factor	Exposure Type	Description
Equity	Membership (weights)	Global Public and Private Equity
Credit	Sensitivities (durations)	Sensitivity to global credit spreads
Pure Alternatives	Membership (weights)	Investment strategy return of Private Equity and Hedge Funds net of public factor returns
Interest Rates	Sensitivities (durations)	Sensitivity to global interest rates
Inflation	Sensitivities (durations)	Sensitivity to breakeven inflation
Real Assets	Membership (weights)	Real Estate and Commodities

Risk Source	Portfolio Risk Contribution	% Portfolio Risk	Active Portfolio Risk Contribution	% Active Risk
Commodities	0.00	0.00	0.00	0.00
Equity	0.28	3.66	0.09	8.47
Fixed Income	-0.14	-1.75	0.01	1.42
Hedge Fund	-0.02	-0.26	0.07	7.11
Private Equity	0.04	0.53	0.31	30.35
Private Real Estate	-0.04	-0.47	0.09	9.10
Unassigned Factors	0.02	0.25	0.00	0.33

Active Exposure of -.22 to the Interest Rate Macro factor compared with -.71 as of 9/30/18



For further documentation on Macro factors please refer to the Research Insight, Risk from Any Altitude: Using the BarraOne Macro Factors - March 2014 <https://support.msci.com/docs/DOC-8681>

# Performance Attribution – Public Markets

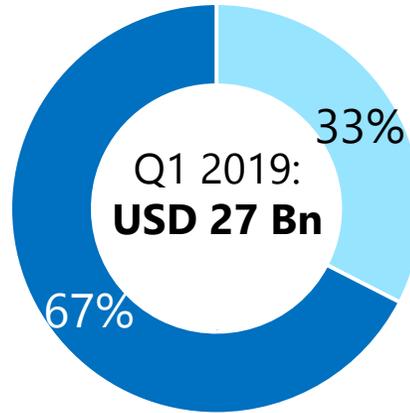
Public portfolio returned 9.7% but underperformed benchmark by ~19 bps

■ Public Equity

■ Public Fixed Income

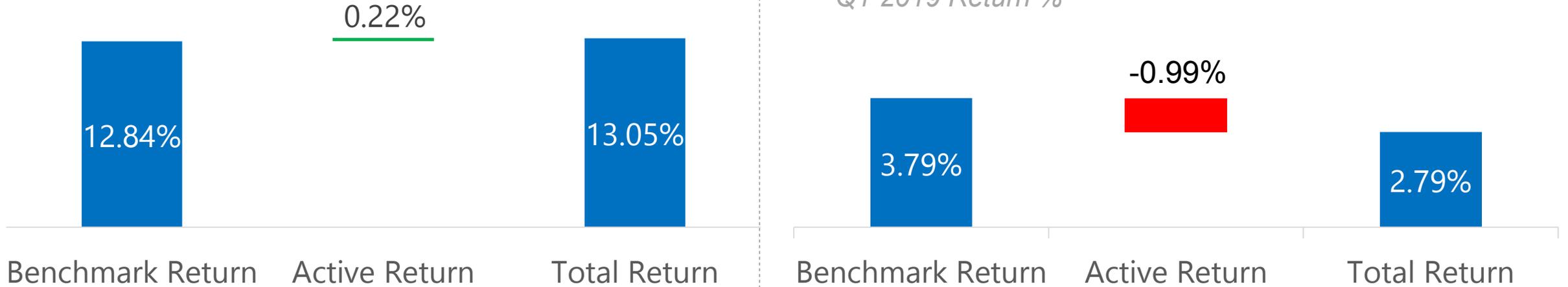
Outperformed by **~22 bps**

Underperformed by **~99 bps**



Q1 2019 Return %

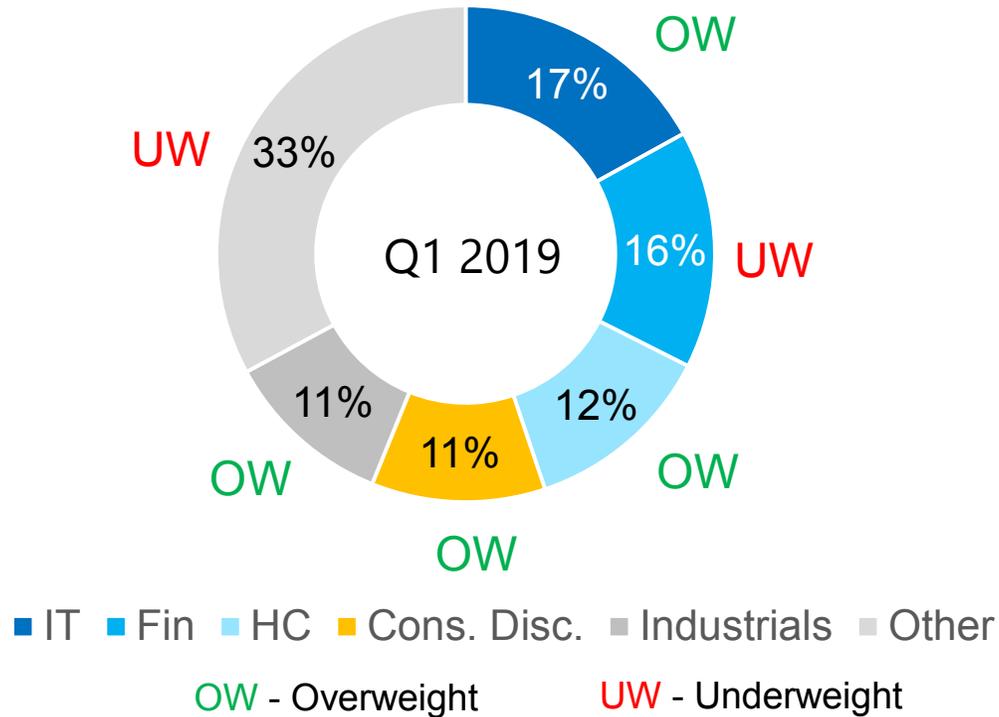
Q1 2019 Return %



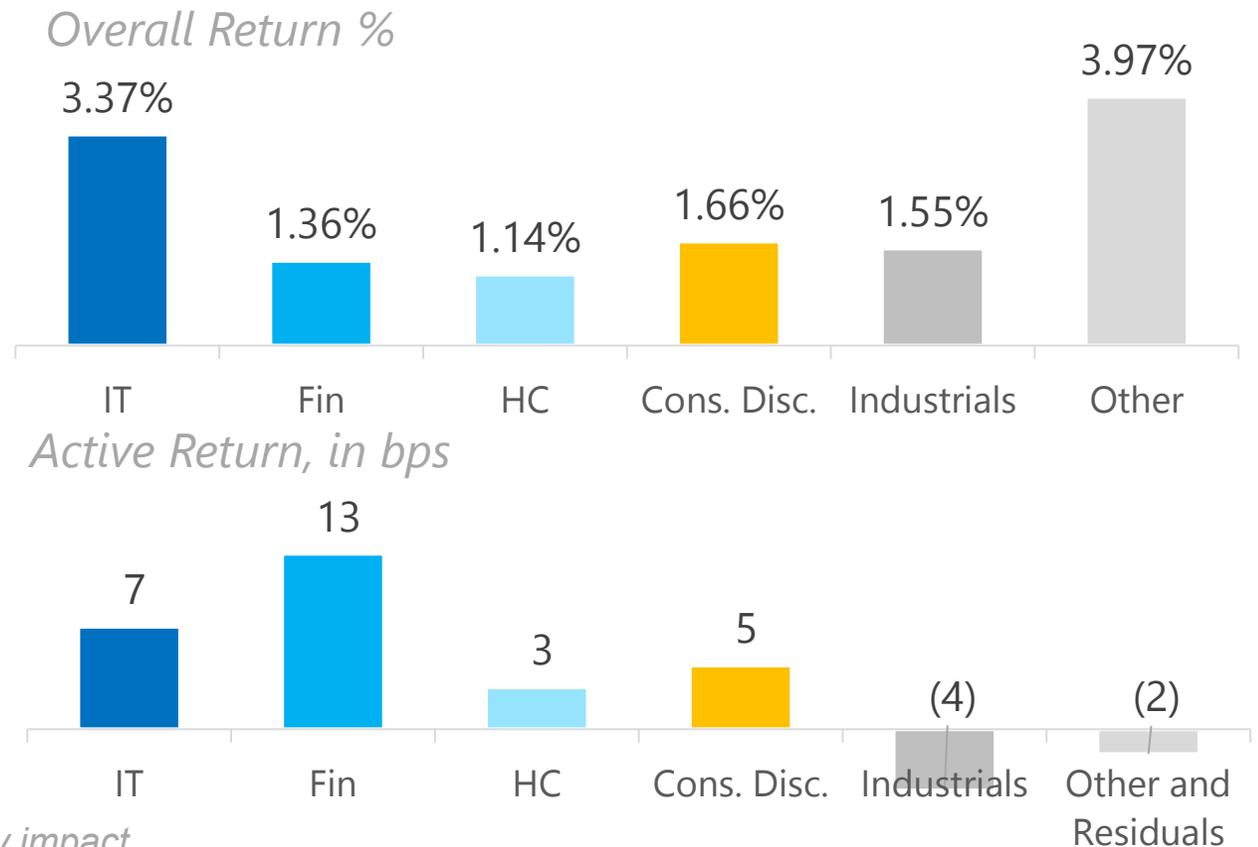
# Performance Attribution – Public Equity

Tilts towards IT, Financial, Healthcare and Consumer Discretionary worked

## Sector Allocation



## Sector Return Attribution



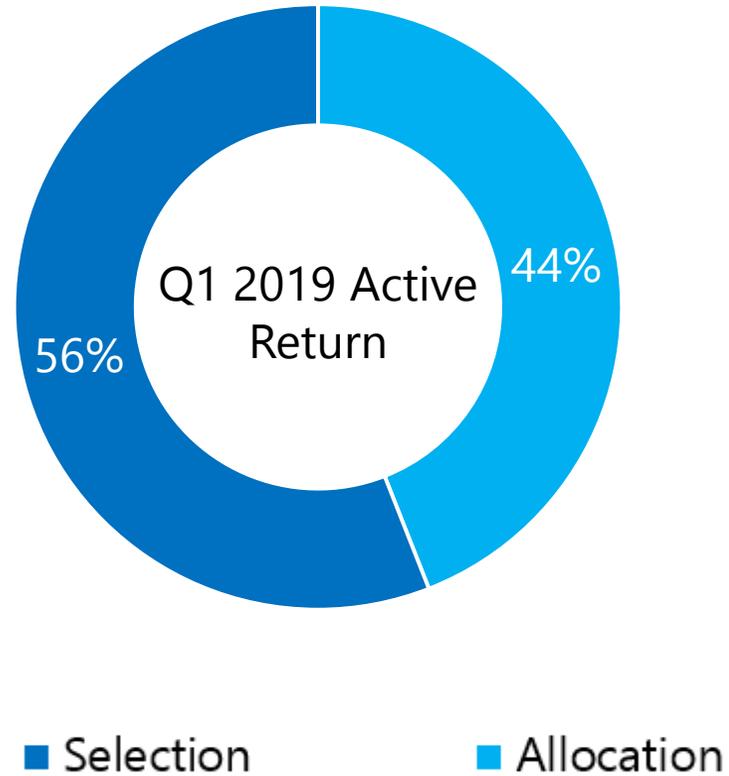
Note – Remaining active return of ~1 bps is because of currency impact

Source: MSCI BarraOne



# Public Equity – Outperformance

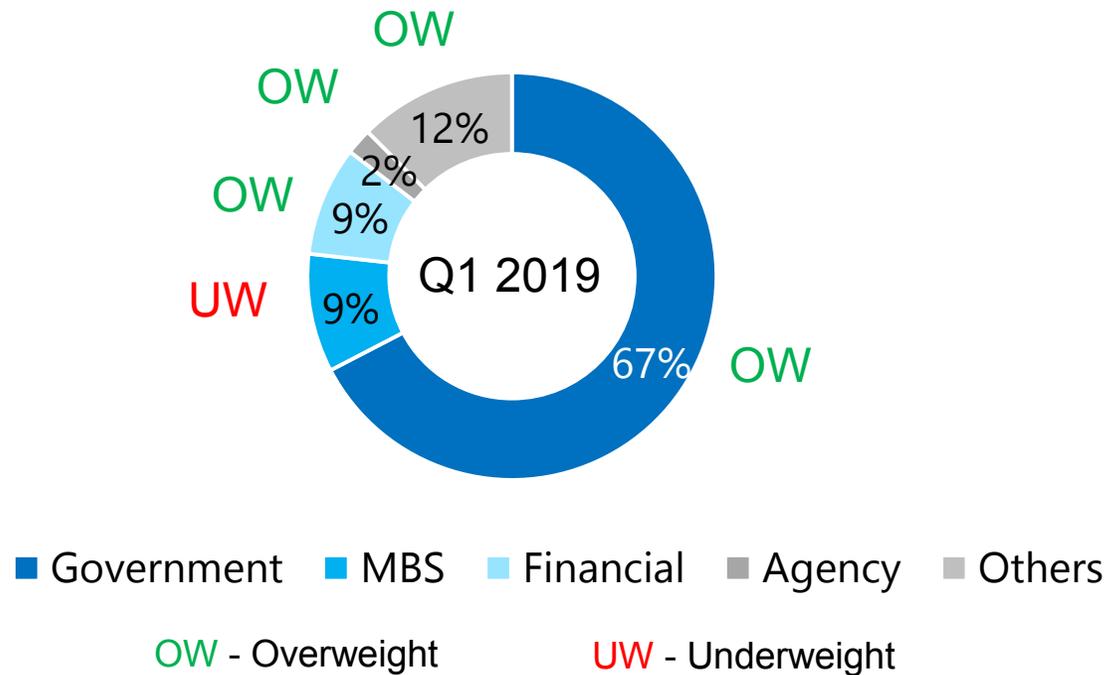
Outperformance primarily attributed to security selection



# Performance Attribution – Public Fixed Income

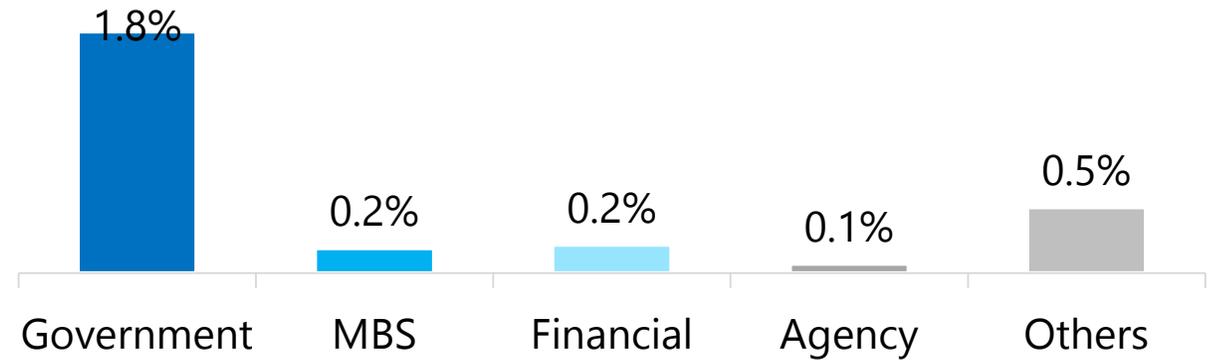
Underperformance across multiple sectors

## Sector Allocation

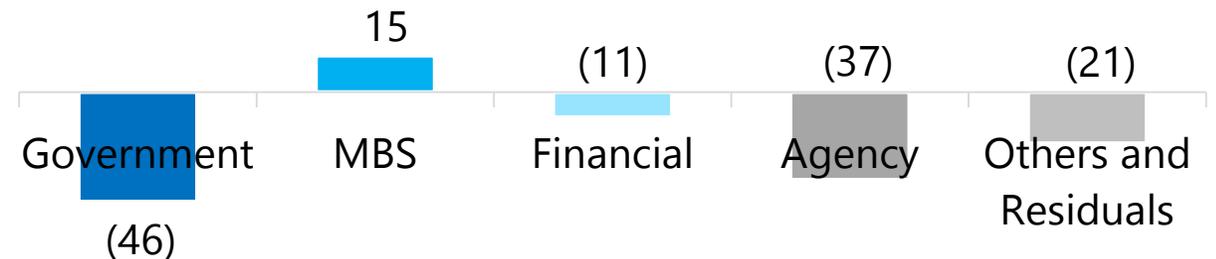


## Return Attribution

Overall Return %

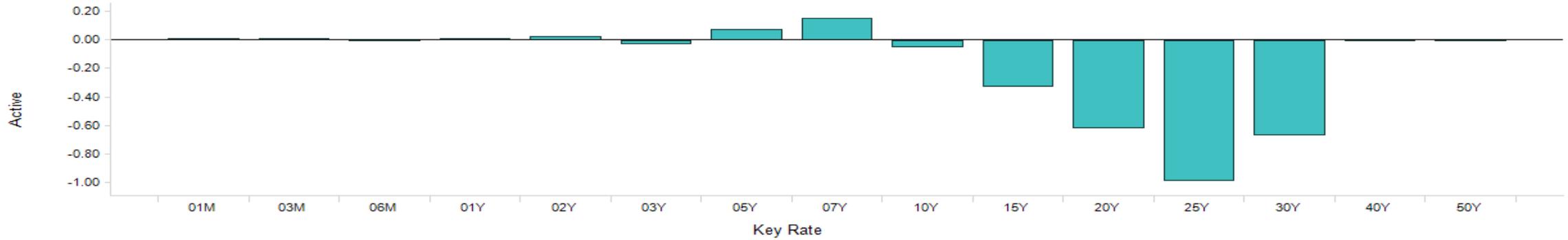


Active Return, in bps



# Public Fixed Income – Duration Analysis

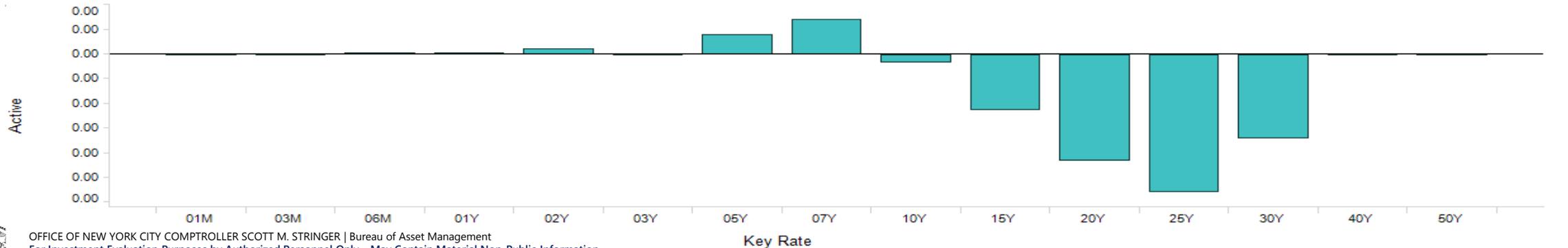
**Contribution to Duration (yrs)**



**Term Structure Rates**

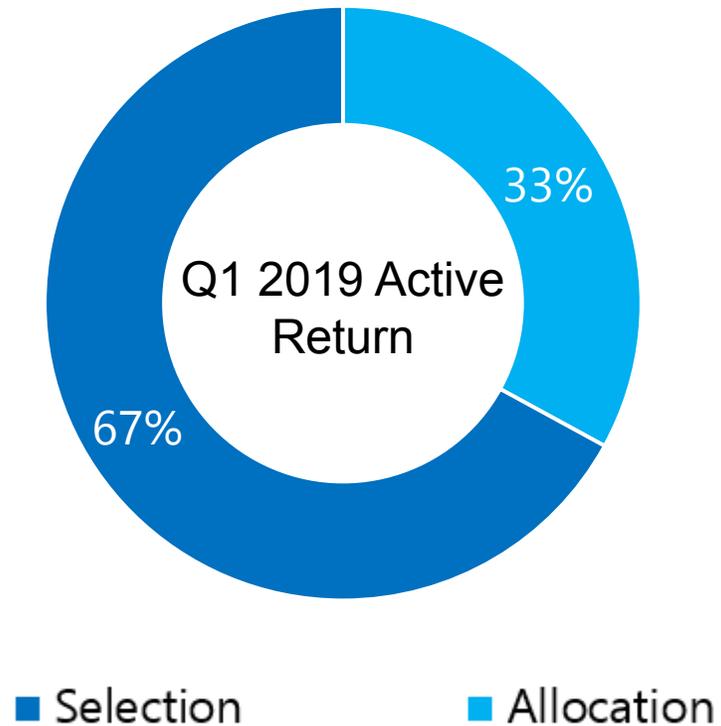


**KRD Attribution/Contribution**



# Public Fixed Income – Underperformance

Underperformance primarily attributed to security selection



# Stress Tests

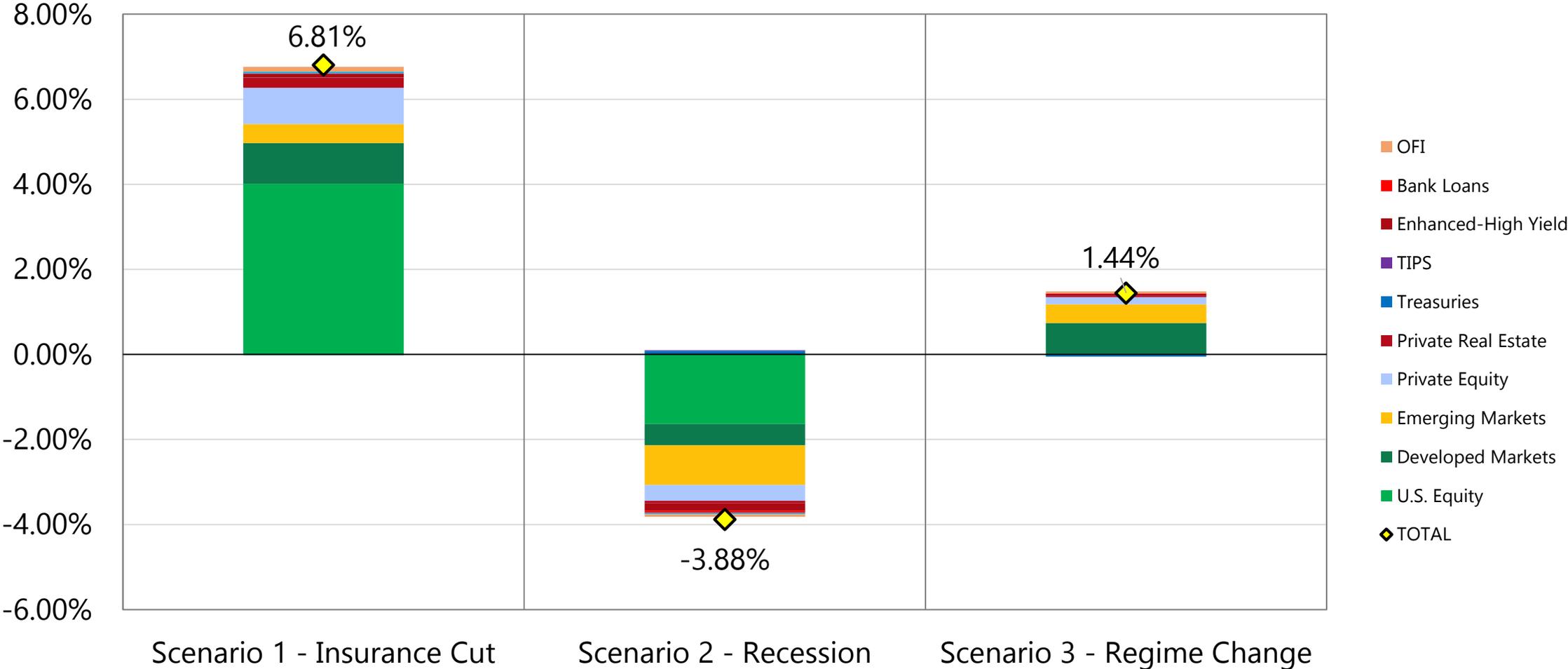
- Stress tests evaluate the impact of possible future financial scenarios on the investment portfolio – in order to gauge how the portfolios will weather adverse events/extreme market conditions
- We have examined three scenarios suggested by historical and current circumstances – including ongoing speculation that the Fed may cut rates.

Stress Scenario	Description	Impact on Portfolio
<b>1. Insurance Cut</b>	<ul style="list-style-type: none"> <li>• Fed cuts rate by 50 bps</li> <li>• Curve steepens</li> <li>• Growth continues to trend</li> </ul>	 6.8%
<b>2. Recession</b>	<ul style="list-style-type: none"> <li>• Growth slows</li> <li>• Fed cuts rate in response</li> <li>• Global growth is impacted as well</li> </ul>	-3.9% 
<b>3. Regime Change</b>	<ul style="list-style-type: none"> <li>• Fed cuts rate to hit inflation target of 2-2.5%</li> </ul>	 1.4%



# Stress Tests – Impact by Asset Class

The chart below details the impact of stress scenarios by asset class



## Stress Tests – Assumptions

Type	Factor	Insurance Cut	Regime Change	Recession
Equity Markets	Russell 3000	+10%	Flat	-5%
	MSCI US	NA	NA	NA
	MSCI EAFE (USD)	Flat	Flat	-8%
	MSCI EM (USD)	+5%	Flat	-15%
	MSCI China	NA	NA	NA
Currency	USD	-5%	NA	-10%
Nominal Rates	USD 3-mo	-50bp	-75bp	-150bp
	USD 10-yr	-5bp	-10bp	-50bp
	USD 30-yr	+10bp	+30bp	-10bp
	JPY 10-yr	NA	NA	NA
	EUR 10-yr	NA	NA	NA
Real Rates	3-mo TIPS	-50bp	Flat	-75bp
	10-yr TIPS	-5bp	Flat	-15bp
	30-yr TIPS	+10bp	Flat	-15bp
Credit Spreads	BBB Spreads	Flat	Flat	+40bp
	BB Spreads	NA	NA	+100bp



**QUESTIONS?**