
MAY 20, 2019

AGENDA ITEM 5
INFORMATION ITEM

CALIFORNIA SECURE CHOICE RETIREMENT SAVINGS INVESTMENT BOARD

Quarterly Investment Performance Review

This item will be presented orally at the meeting.

Attachment

Investment Performance Report for the Quarter Ending March 31, 2019

MEETING MATERIALS

CalSavers

Quarterly Review
As of March 31, 2019



M E K E T A I N V E S T M E N T G R O U P

BOSTON
MASSACHUSETTS

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1. Executive Summary**2. Performance Report As of March 31, 2019****3. Appendix**

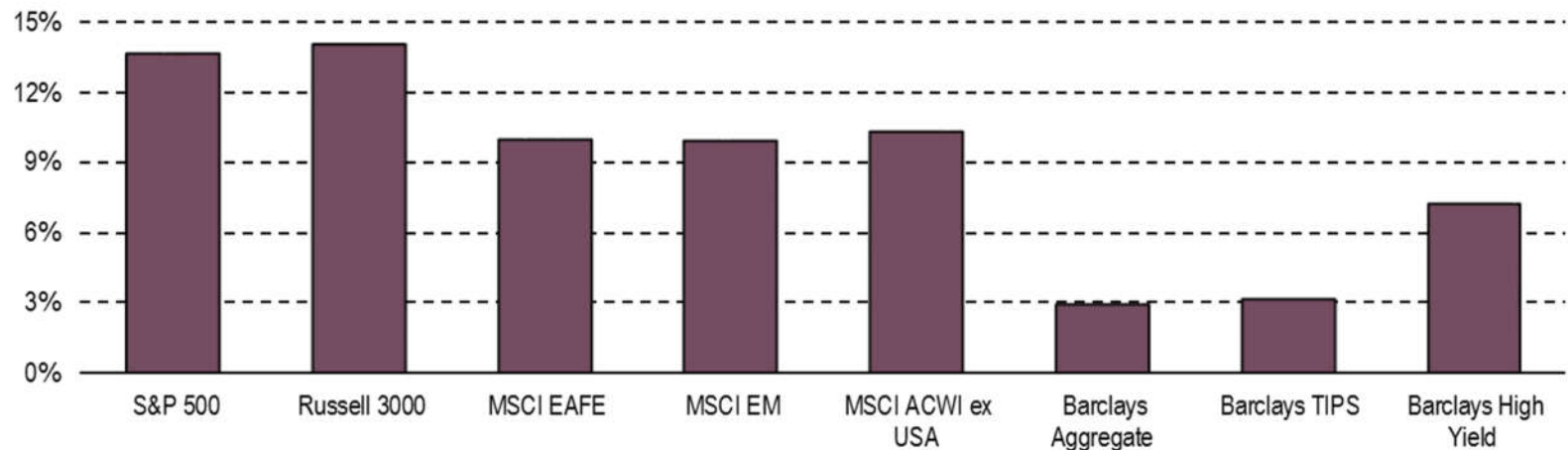
- World Markets
- Capital Markets Outlook & Risk Metrics
- Disclaimer, Glossary, and Notes

Executive Summary

Market Review for the First Quarter 2019

During the first quarter, world stocks and credit markets rebounded considerably from the fourth quarter of 2018. Equity markets were up close to, or into, the double digits in many parts of the world. In the fixed income markets, interest rates generally fell, with lower quality bonds outpacing higher quality bonds. Major central banks appeared to be steering away from tighter monetary policy and there was more optimism that the trade war between the U.S. and China would eventually be resolved. Despite this new sense of optimism, there are still concerns over the slowing of global economic growth as well as the growing uncertainty relating to Brexit.

Q1 Returns for Major Indices



Growth > Value

US Treasury 10 yr: -28 basis points

Small Cap > Large Cap

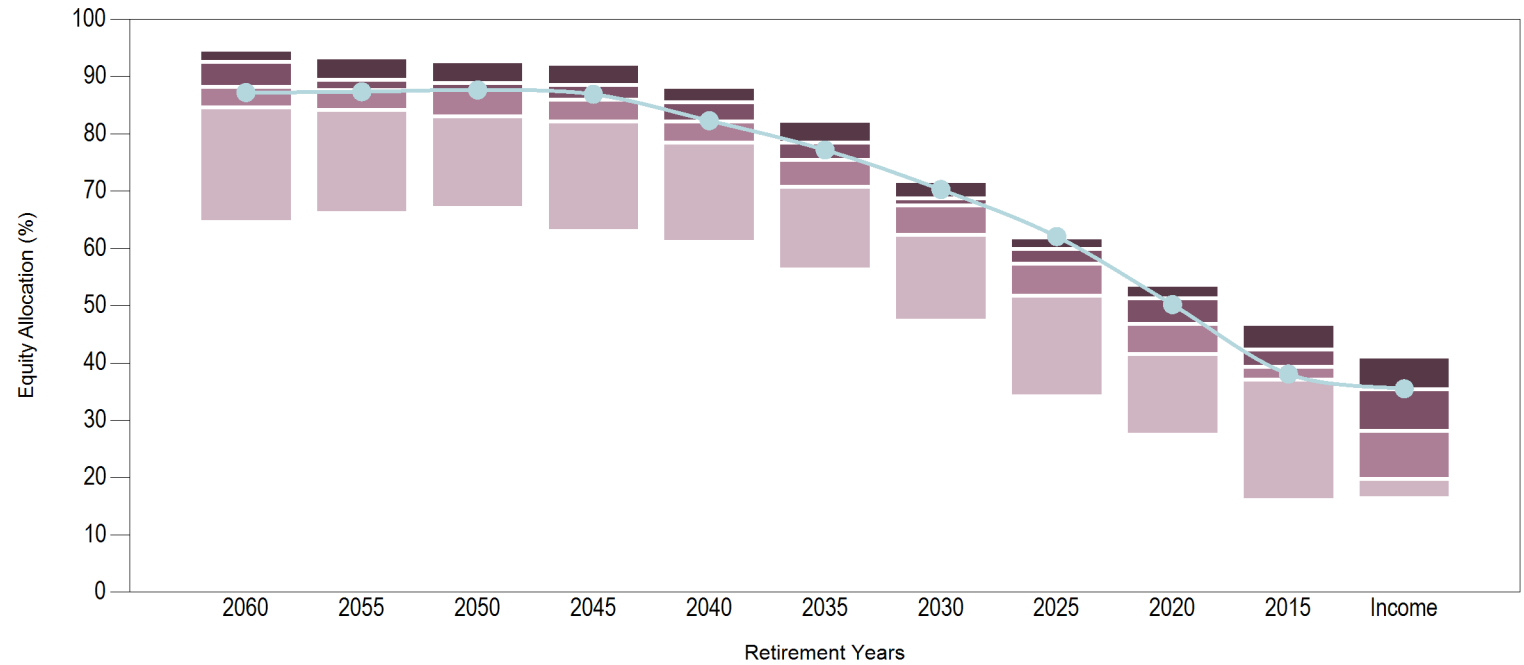
CalSavers Program Overview

As of March 31, 2019, total assets invested were at \$76,780 excluding seed money. With seed money included, total assets were at \$158,650.

- We are very pleased to provide the first quarter-end results for the CalSavers Program. As you recall, the Program successfully launched at the beginning of the year.
- The seed money was invested on January 2, with \$5,000 for each fund.
- Participant contributions were made for several of the Options during the quarter:
 - Money Market Fund: \$71,503
 - Global Equity Fund: \$1,362
 - Target Date Funds: \$3,420
- For Q1 2019, results for most of the funds were in line with expectations, tracking relatively close to their benchmarks.
- The excess returns (relative to the market benchmark) for the State Street Aggregate Bond Index Fund and State Street Institutional U.S. Government Money Market Fund were within acceptable ranges for Q1, but we will continue to monitor as they are approaching the edges of the tolerance bands we have set for each strategy.
- The Q1 excess return for the State Street Global Equity Fund was at nearly 130 basis points. This was caused by an incorrect initial seed investment amount of \$10,000 rather than the intended \$5,000 contribution. The error was corrected on January 4 (held in the account for 1-day), but the gains from the initial \$10,000 investment were left in the portfolio. One day total investment gains amounted to \$140.
- First quarter ranks for the State Street Target Date Funds varied significantly by vintage year, as some were top quartile performers while others were in the third quartile. We believe this is largely a function of total equity exposure, along with the regional allocation within equity. Generally speaking, the more U.S. equity exposure a fund had, the greater its likelihood of stronger performance. Conversely, the less total equity exposure and/or more non-U.S. exposure would have likely detracted from a peer rank perspective. Return dispersion levels were relatively tight as well for the period.

As of March 31, 2019

State Street Retirement Family vs. Universe of Target Date Families
As of January 31, 2019



	Allocation (Rank)										
5th Percentile	64.7	66.3	67.2	63.1	61.2	56.4	47.4	34.2	27.5	16.2	16.5
25th Percentile	84.7	84.3	83.2	82.3	78.5	70.9	62.5	51.8	41.6	37.2	19.8
Median	88.3	87.7	87.7	86.1	82.2	75.5	67.5	57.4	46.9	39.4	28.2
75th Percentile	92.6	89.5	88.9	88.6	85.6	78.5	68.8	60.0	51.4	42.4	35.5
95th Percentile	94.6	93.3	92.6	92.1	88.1	82.2	71.7	61.9	53.6	46.8	41.0
# of Portfolios	25	28	29	28	28	28	28	28	28	20	21
● State Street Retirement	87.2 (42)	87.4 (49)	87.7 (50)	86.9 (63)	82.3 (52)	77.2 (67)	70.3 (89)	62.1 (97)	50.2 (63)	38.1 (32)	35.5 (75)

How To Read The Quarterly Report

The Quarterly Report Covers:

Page 1-3. **Performance Summary.** Shows all existing Program Options, ESG to be included in future reporting following official launch. Observing the Headers going horizontally, you see the funds are identified by official name and ticker, the total market value of the funds (participant contribution + investment gains), and finally, the 1-month and Quarter (QTD) as well as performance since inception of the fund and the start Date the option offering. For this report only, QTD will match ITD as the performance calculation covers the first three months of the Program's existence. Observing the line items within the report vertically, the report shows: 1) Name of Fund, Benchmark used for the Fund, and finally the Fund's Peer Rank that is comprised of all similar Funds for that Morningstar Category.

Page 4. **Cash Flows.** Lists all Funds in the Options line-up. In this case, we have 4 current Options with 1 Option (TDF's) offering 12 underlying funds based on expected retirement year. Because these Funds have launched with zero assets, beginning market values show \$0. The Total Contribution header accounts for all participant contributions during the quarter. Additionally, there are headers for Benefit Withdrawals (\$ coming out) and Gain/Loss (from investments). The Ending MV column will match the Market Value found within the **Performance Summary** pages.

Page 5. **Investment Expense Analysis.** Shows the dollar value of each option as the % of the total portfolio. Lists the expense ratio for all funds. Total assets accumulated as of March 31 is \$76,780.

Page 6. **Peer Equity Allocations** of State Street Suite of Retirement Funds versus the Universe, based on retirement year. Composition within the graph shows results broken out into quartiles. Table below shows results for the median and various percentile breakpoints. For example, State Street's TDF 2060 shows an equity allocation of 87.2% versus a median of 87.7%. This places them in the 42nd percentile, meaning they fall just below median results with a sample size of 25 funds tested. Observing the shorter dated Funds, you can see that State Street's equity exposure relative to peers is higher. For example, State Street's TDF 2025 has a 62.1% equity allocation, which ranks in the 97th percentile among its peers as the median is closer to 57.4.

Page 7. **State Street Retirement Allocation over Time.** Graphical picture showing asset class allocations over the retirement years with Cash and Fixed Income making up a larger part of the portfolio as retirement nears.

Page 8-10. **Manager Pages.** These pages provide Account details on the Fund: for example, the structure/vehicle type, benchmark being used, and whether it is an active or passive strategy. Additionally, performance for longer periods are shown, as well as top 10 holdings in the fund and portfolio characteristics such as size, growth, and sector exposures.

Performance Report As of March 31, 2019

As of March 31, 2019

Performance Summary (Trailing)

	Ticker	Market Value (\$)	% of Portfolio	1 Mo (%)	QTD (%)	Inception (%)	Inception Date
Total Plan		76,780	100.0				
Target Retirement		4,232	5.5				
State Street Target Retirement Fund	SSFOX	123	0.2	1.2	6.2	6.2	Jan-19
State Street Target Retirement Income Custom TR USD				1.3	6.4	6.4	Jan-19
Target Date Retirement Mstar MF Rank				88	37	37	Jan-19
State Street Target Retirement 2015 Fund	SSBHX	0	0.0	1.2	6.6	6.6	Jan-19
State Street Target Retirement 2015 Custom TR USD				1.4	6.7	6.7	Jan-19
Target Date 2015 Mstar MF Rank				76	64	64	Jan-19
State Street Target Retirement 2020 Fund	SSBOX	0	0.0	1.4	8.1	8.1	Jan-19
State Street Target Retirement 2020 Custom TR USD				1.5	8.2	8.2	Jan-19
Target Date 2020 Mstar MF Rank				56	29	29	Jan-19
State Street Target Retirement 2025 Fund	SSBSX	0	0.0	1.6	9.3	9.3	Jan-19
State Street Target Retirement 2025 Custom TR USD				1.5	9.5	9.5	Jan-19
Target Date 2025 Mstar MF Rank				16	13	13	Jan-19
State Street Target Retirement 2030 Fund	SSBYX	0	0.0	1.5	10.0	10.0	Jan-19
State Street Target Retirement 2030 Custom TR USD				1.5	10.2	10.2	Jan-19
Target Date 2030 Mstar MF Rank				32	25	25	Jan-19
State Street Target Retirement 2035 Fund	SSCKX	229	0.3	1.5	10.6	10.6	Jan-19
State Street Target Retirement 2035 Custom TR USD				1.5	10.8	10.8	Jan-19
Target Date 2035 Mstar MF Rank				21	36	36	Jan-19
State Street Target Retirement 2040 Fund	SSCQX	1,868	2.4	1.4	11.2	11.2	Jan-19
State Street Target Retirement 2040 Custom TR USD				1.4	11.4	11.4	Jan-19
Target Date 2040 Mstar MF Rank				28	42	42	Jan-19

Accounts were funded on 1/2/2019.



As of March 31, 2019

	Ticker	Market Value (\$)	% of Portfolio	1 Mo (%)	QTD (%)	Inception (%)	Inception Date
State Street Target Retirement 2045 Fund	SSDEX	0	0.0	1.3	11.7	11.7	Jan-19
State Street Target Retirement 2045 Custom TR USD				1.3	11.9	11.9	Jan-19
Target Date 2045 Mstar MF Rank				41	46	46	Jan-19
State Street Target Retirement 2050 Fund	SSDLX	0	0.0	1.3	11.8	11.8	Jan-19
State Street Target Retirement 2050 Custom TR USD				1.3	12.0	12.0	Jan-19
Target Date 2050 Mstar MF Rank				36	48	48	Jan-19
State Street Target Retirement 2055 Fund	SSDQX	720	0.9	1.3	11.8	11.8	Jan-19
State Street Target Retirement 2055 Custom TR USD				1.3	12.0	12.0	Jan-19
Target Date 2055 Mstar MF Rank				38	56	56	Jan-19
State Street Target Retirement 2060 Fund	SSDYX	581	0.8	1.3	11.8	11.8	Jan-19
State Street Target Retirement 2060 Custom TR USD				1.3	12.0	12.0	Jan-19
Target Date 2060+ Mstar MF Rank				33	69	69	Jan-19
State Street Target Retirement 2065 Fund	SSDYX	710	0.9	1.3	11.8	11.8	Jan-19
State Street Target Retirement 2065 Custom TR USD				1.3	12.0	12.0	Jan-19
Target Date 2060+ Mstar MF Rank				33	69	69	Jan-19

Accounts were funded on 1/2/2019.



As of March 31, 2019

	Ticker	Market Value (\$)	% of Portfolio	1 Mo (%)	QTD (%)	Inception (%)	Inception Date
Money Market		71,157	92.7				
State Street Institutional U.S. Government Money Market Fund	GVMXX	71,157	92.7	0.1	0.3	0.3	Jan-19
<i>91 Day T-Bills</i>				<i>0.2</i>	<i>0.6</i>	<i>0.6</i>	<i>Jan-19</i>
<i>Money Market - Taxable MStar MF Rank</i>				<i>99</i>	<i>99</i>	<i>99</i>	<i>Jan-19</i>
Core Bond		0	0.0				
State Street Aggregate Bond Index Fund	SSFEX	0	0.0	1.7	2.6	2.6	Jan-19
<i>BBgBarc US Aggregate TR</i>				<i>1.9</i>	<i>2.9</i>	<i>2.9</i>	<i>Jan-19</i>
<i>Intermediate Core Bond MStar MF Rank</i>				<i>69</i>	<i>81</i>	<i>81</i>	<i>Jan-19</i>
Equity		1,391	1.8				
Global Equity Fund	SSSYX/SSGLX	1,391	1.8	1.3	13.6	13.6	Jan-19
<i>MSCI ACWI</i>				<i>1.3</i>	<i>12.2</i>	<i>12.2</i>	<i>Jan-19</i>
<i>World Large Stock Mstar MF Rank</i>				<i>54</i>	<i>35</i>	<i>35</i>	<i>Jan-19</i>

Accounts were funded on 1/2/2019.



As of March 31, 2019

Cash Flows
3 Months Ending March 31, 2019

	Beginning MV	Total Contr	Benefit Withdrawals	Gain/Loss	Ending MV
State Street Target Retirement Fund	--	\$122	\$0	\$1	\$123
State Street Target Retirement 2015 Fund	--	\$0	\$0	\$0	\$0
State Street Target Retirement 2020 Fund	--	\$0	\$0	\$0	\$0
State Street Target Retirement 2025 Fund	--	\$0	\$0	\$0	\$0
State Street Target Retirement 2030 Fund	--	\$0	\$0	\$0	\$0
State Street Target Retirement 2035 Fund	--	\$229	\$0	\$0	\$229
State Street Target Retirement 2040 Fund	--	\$1,718	\$0	\$150	\$1,868
State Street Target Retirement 2045 Fund	--	\$0	\$0	\$0	\$0
State Street Target Retirement 2050 Fund	--	\$0	\$0	\$0	\$0
State Street Target Retirement 2055 Fund	--	\$402	\$0	\$318	\$720
State Street Target Retirement 2060 Fund	--	\$263	\$0	\$318	\$581
State Street Target Retirement 2065 Fund	--	\$686	\$0	\$25	\$710
State Street Institutional U.S. Government Money Market Fund	--	\$71,503	-\$646	\$300	\$71,157
State Street Aggregate Bond Index Fund	--	\$0	\$0	\$0	\$0
Global Equity Fund	--	\$1,362	\$0	\$29	\$1,391
Total	--	\$76,285	-\$646	\$1,141	\$76,780

As of March 31, 2019

Investment Expense Analysis
As Of March 31, 2019

Name	Market Value	% of Portfolio	Expense Ratio
State Street Target Retirement Fund	\$123	0.2%	0.09%
State Street Target Retirement 2015 Fund	\$0	0.0%	0.09%
State Street Target Retirement 2020 Fund	\$0	0.0%	0.09%
State Street Target Retirement 2025 Fund	\$0	0.0%	0.09%
State Street Target Retirement 2030 Fund	\$0	0.0%	0.09%
State Street Target Retirement 2035 Fund	\$229	0.3%	0.09%
State Street Target Retirement 2040 Fund	\$1,868	2.4%	0.09%
State Street Target Retirement 2045 Fund	\$0	0.0%	0.09%
State Street Target Retirement 2050 Fund	\$0	0.0%	0.09%
State Street Target Retirement 2055 Fund	\$720	0.9%	0.09%
State Street Target Retirement 2060 Fund	\$581	0.8%	0.09%
State Street Target Retirement 2065 Fund	\$710	0.9%	0.09%
State Street Institutional U.S. Government Money Market Fund	\$71,157	92.7%	0.12%
State Street Aggregate Bond Index Fund	\$0	0.0%	0.03%
Global Equity Fund	\$1,391	1.8%	
Total	\$76,780	100.0%	0.12%

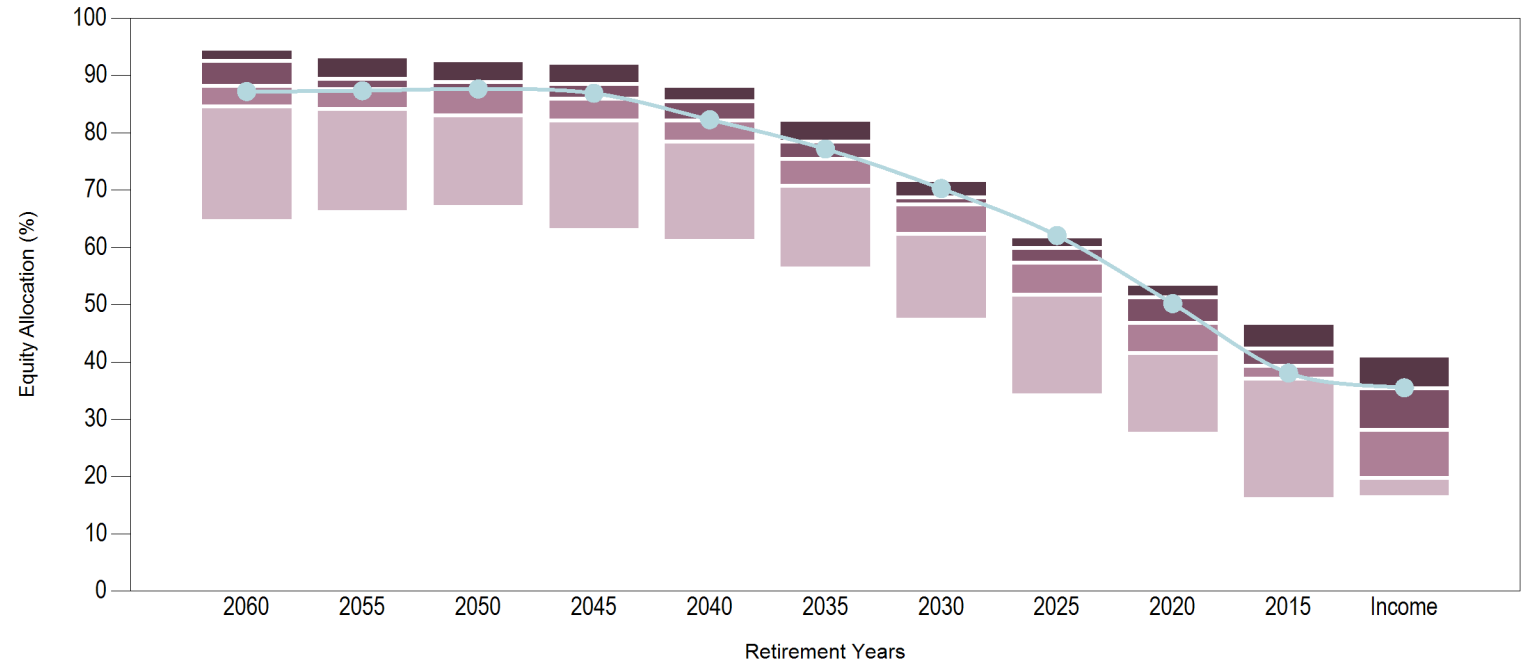
Expense analysis based on underlying fund level expenses only.



As of March 31, 2019

State Street Retirement Family vs. Universe of Target Date Families

As of January 31, 2019

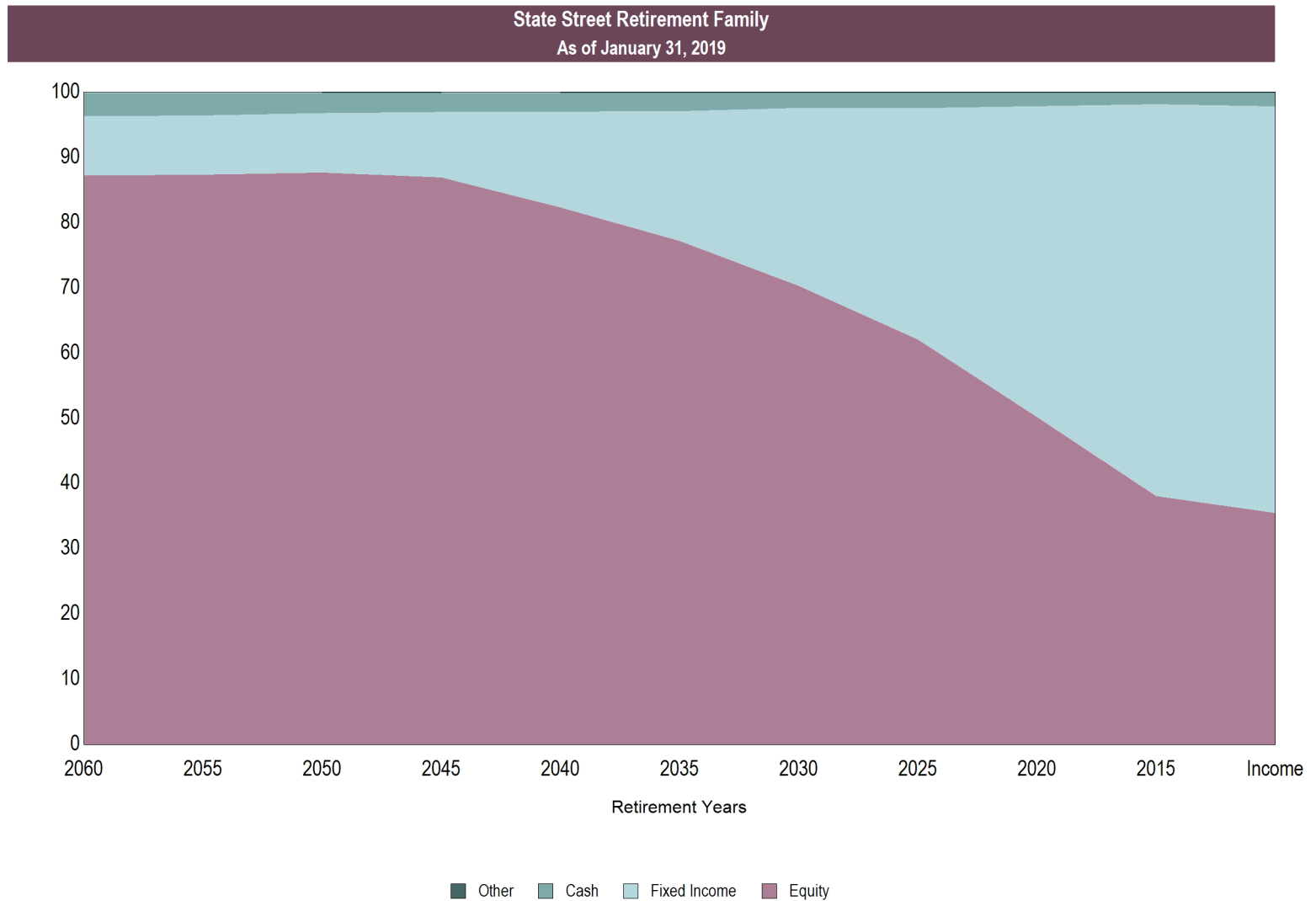


5th Percentile
25th Percentile
Median
75th Percentile
95th Percentile
of Portfolios

● State Street Retirement

Allocation (Rank)

64.7	66.3	67.2	63.1	61.2	56.4	47.4	34.2	27.5	16.2	16.5
84.7	84.3	83.2	82.3	78.5	70.9	62.5	51.8	41.6	37.2	19.8
88.3	87.7	87.7	86.1	82.2	75.5	67.5	57.4	46.9	39.4	28.2
92.6	89.5	88.9	88.6	85.6	78.5	68.8	60.0	51.4	42.4	35.5
94.6	93.3	92.6	92.1	88.1	82.2	71.7	61.9	53.6	46.8	41.0
25	28	29	28	28	28	28	28	28	20	21
87.2 (42)	87.4 (49)	87.7 (50)	86.9 (63)	82.3 (52)	77.2 (67)	70.3 (89)	62.1 (97)	50.2 (63)	38.1 (32)	35.5 (75)



State Street Aggregate Bond Index Fund

As of March 31, 2019

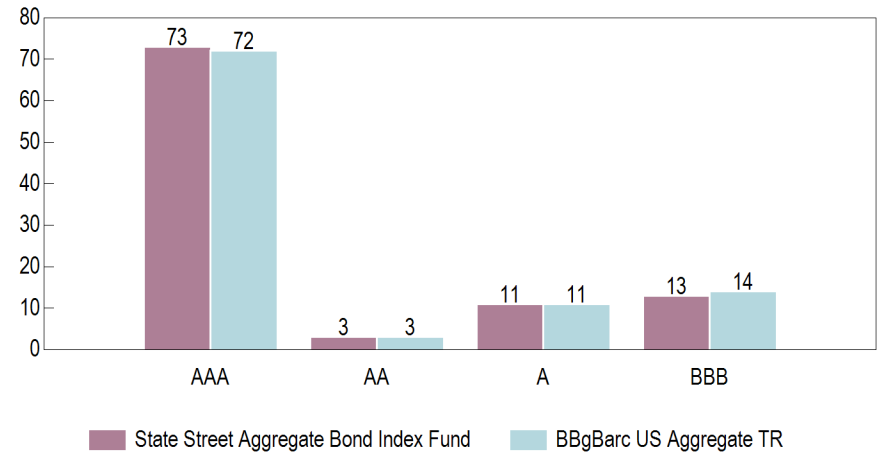
Account Information

Account Name	State Street Aggregate Bond Index Fund
Account Structure	Mutual Fund
Investment Style	Passive
Inception Date	1/01/19
Account Type	Fixed
Benchmark	BBgBarc US Aggregate TR
Universe	Intermediate Core Bond MStar MF

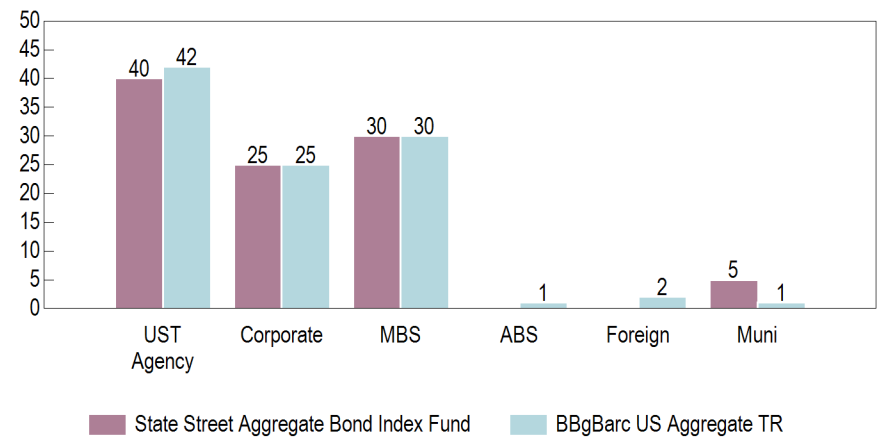
Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Inception (%)	Inception Date
State Street Aggregate Bond Index Fund	2.6	--	--	--	2.6	Jan-19
BBgBarc US Aggregate TR	2.9	4.5	2.0	2.7	2.9	Jan-19
Intermediate Core Bond MStar MF Median	3.2	4.3	2.5	2.7	3.2	Jan-19
Intermediate Core Bond MStar MF Rank	81	--	--	--	81	Jan-19

Credit Quality Allocation



US Sector Allocation

State Street Aggregate Bond Index Fund Fixed Income Characteristics
vs. BBgBarc US Aggregate TR

	Portfolio Q1-19	Index Q1-19
Fixed Income Characteristics		
Yield to Maturity	2.93	2.93
Average Duration	5.82	5.82
Average Quality	AA	AA

State Street Equity 500 Index K

As of March 31, 2019

Account Information

Account Name	State Street Equity 500 Index K
Account Structure	Mutual Fund
Investment Style	Passive
Inception Date	1/01/19
Account Type	Equity
Benchmark	S&P 500
Universe	Large Cap MStar MF

Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Inception (%)	Inception Date
State Street Equity 500 Index K	13.7	--	--	--	13.7	Jan-19
S&P 500	13.6	9.5	13.5	10.9	13.6	Jan-19
Large Cap MStar MF Median	13.3	8.0	12.5	9.4	13.3	Jan-19
Large Cap MStar MF Rank	42	--	--	--	42	Jan-19

Top Holdings

MICROSOFT	3.9%
APPLE	3.7%
AMAZON.COM	3.2%
FACEBOOK CLASS A	1.7%
BERKSHIRE HATHAWAY 'B'	1.7%
JOHNSON & JOHNSON	1.6%
ALPHABET 'C'	1.6%
ALPHABET A	1.5%
EXXON MOBIL	1.5%
JP MORGAN CHASE & CO.	1.4%
Total	21.7%

State Street Equity 500 Index K Equity Characteristics
vs S&P 500

	Portfolio Q1-19	Index Q1-19
Market Value		
Market Value (\$M)	--	--
Number Of Holdings	490	505
Characteristics		
Weighted Avg. Market Cap. (\$B)	214.13	211.45
Median Market Cap (\$B)	21.24	21.17
P/E Ratio	20.17	20.23
Yield	2.00	2.00
EPS Growth - 5 Yrs.	12.24	12.29
Price to Book	3.49	3.48
Sector Distribution		
Energy	5.47	5.43
Materials	2.64	2.64
Industrials	9.42	9.48
Consumer Discretionary	10.23	10.15
Consumer Staples	7.43	7.33
Health Care	14.46	14.57
Financials	12.61	12.69
Information Technology	21.02	21.19
Communication Services	10.28	10.11
Utilities	3.33	3.33
Real Estate	3.07	3.09

State Street Global Equity ex-US Index Fund K

As of March 31, 2019

Account Information

Account Name	State Street Global Equity ex-US Index Fund K
Account Structure	Mutual Fund
Investment Style	Passive
Inception Date	1/01/19
Account Type	Equity
Benchmark	MSCI ACWI ex USA
Universe	Foreign MStar MF

Portfolio Performance Summary

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	Inception (%)	Inception Date
State Street Global Equity ex-US Index Fund K	10.3	--	--	--	10.3	Jan-19
MSCI ACWI ex USA	10.3	-4.2	8.1	2.6	10.3	Jan-19
Foreign MStar MF Median	10.7	-6.2	7.0	2.6	10.7	Jan-19
Foreign MStar MF Rank	60	--	--	--	60	Jan-19

Top Holdings

NESTLE 'R'	1.5%
TENCENT HOLDINGS	1.3%
ALIBABA GROUP HLDG.SPN. ADR 1:1	1.2%
NOVARTIS 'R'	1.0%
TAIWAN SEMICON.MNFG.	1.0%
ROCHE HOLDING	1.0%
SAMSUNG ELECTRONICS	0.9%
HSBC HOLDINGS	0.8%
BP	0.7%
ROYAL DUTCH SHELL A(LON)	0.7%
Total	10.1%

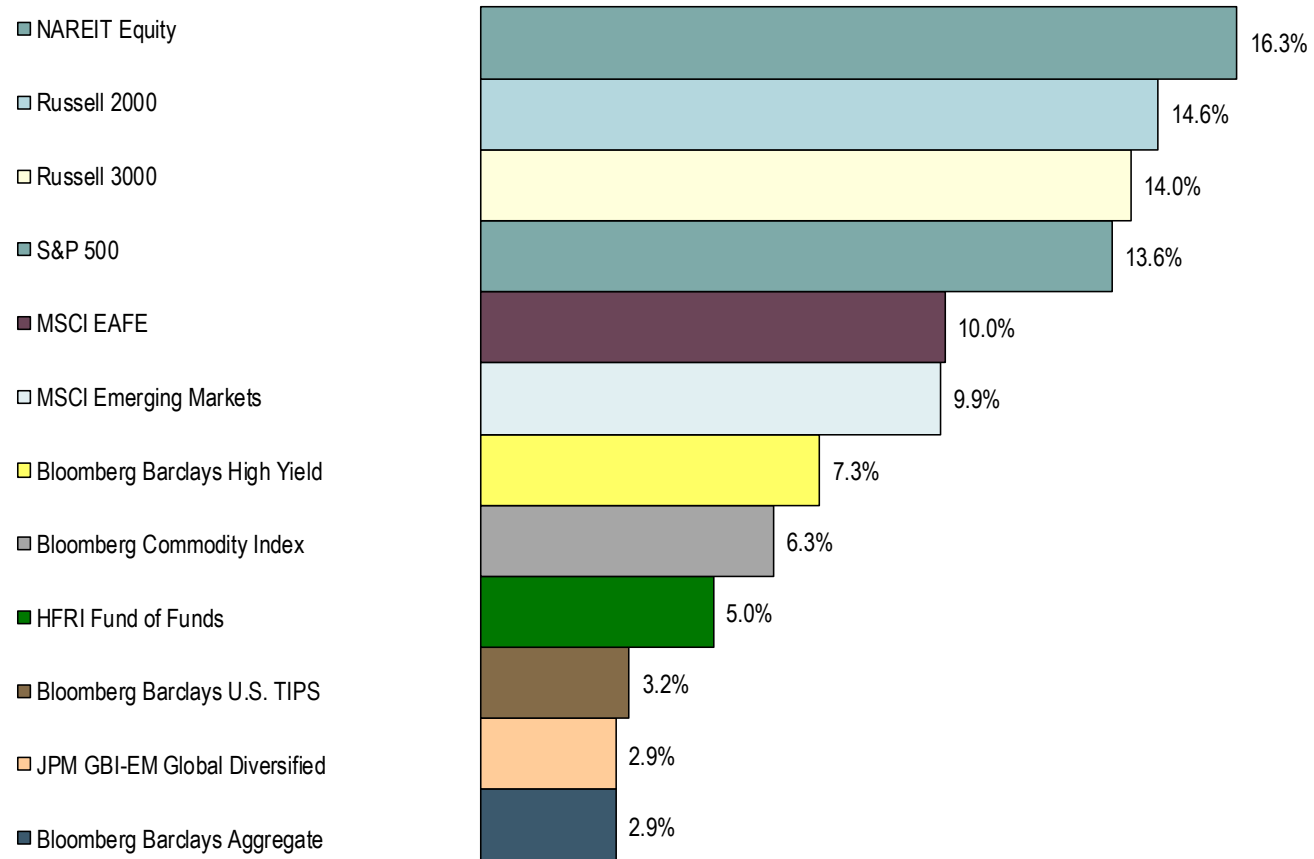
State Street Global Equity ex-US Index Fund K Equity Characteristics
vs MSCI ACWI ex USA

	Portfolio Q1-19	Index Q1-19
Market Value		
Market Value (\$M)	--	--
Number Of Holdings	2173	2145
Characteristics		
Weighted Avg. Market Cap. (\$B)	64.98	64.41
Median Market Cap (\$B)	7.44	7.67
P/E Ratio	14.69	14.55
Yield	3.18	3.21
EPS Growth - 5 Yrs.	10.75	10.83
Price to Book	2.26	2.24
Beta (holdings; domestic)	1.05	1.05
Sector Distribution		
Energy	7.25	7.44
Materials	7.63	7.62
Industrials	11.68	11.70
Consumer Discretionary	11.16	11.08
Consumer Staples	9.92	9.93
Health Care	8.40	8.40
Financials	21.56	21.66
Information Technology	8.37	8.36
Communication Services	7.02	7.00
Utilities	3.30	3.36
Real Estate	3.40	3.45

Appendix

The World Markets First Quarter of 2019

The World Markets¹ First Quarter of 2019



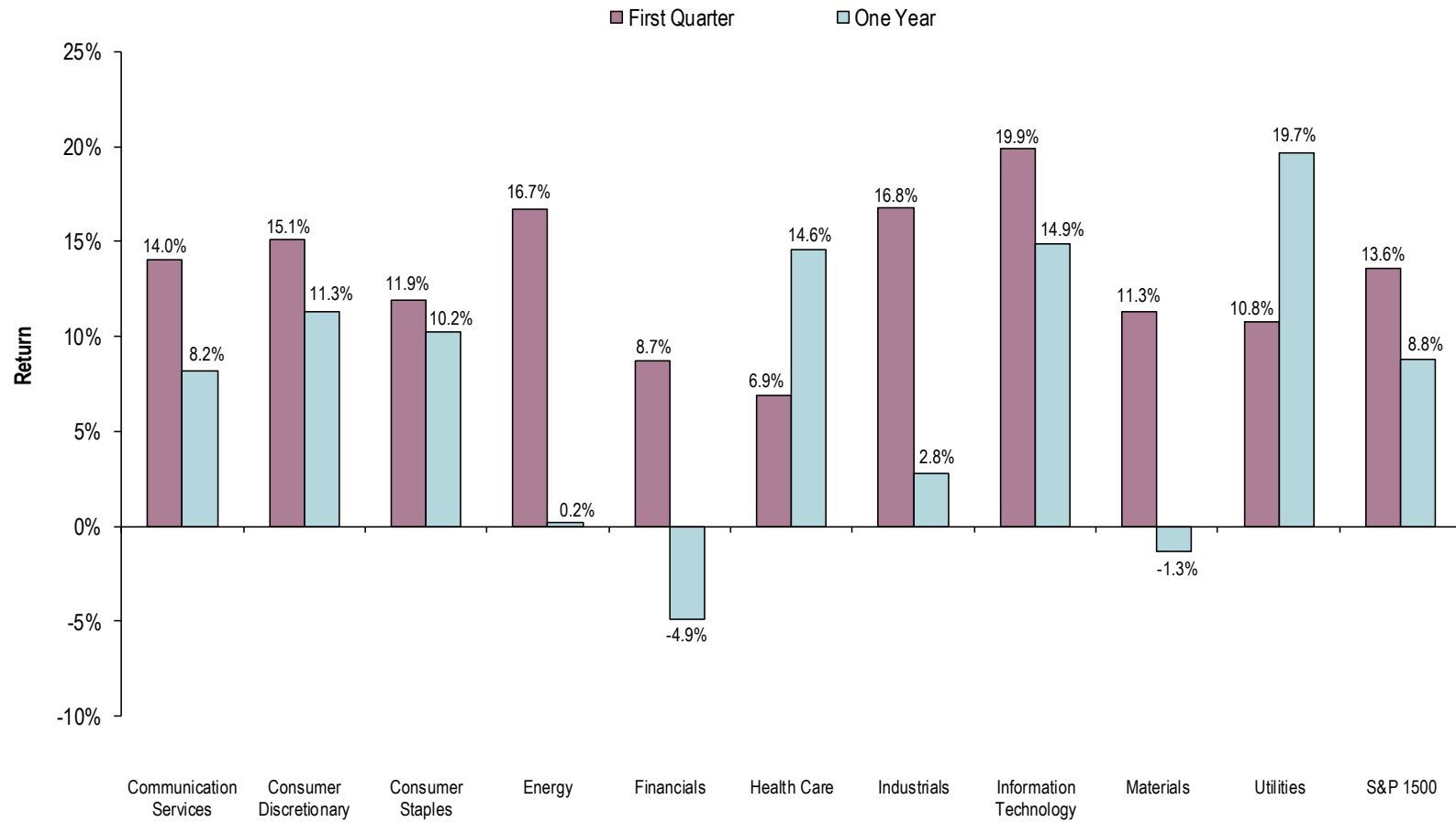
¹ Source: InvestorForce.

Index Returns¹

	1Q19 (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
Domestic Equity					
S&P 500	13.6	9.5	13.5	10.9	15.9
Russell 3000	14.0	8.8	13.5	10.4	16.0
Russell 1000	14.0	9.3	13.5	10.6	16.0
Russell 1000 Growth	16.1	12.7	16.5	13.5	17.5
Russell 1000 Value	11.9	5.7	10.5	7.7	14.5
Russell MidCap	16.5	6.5	11.8	8.8	16.9
Russell MidCap Growth	19.6	11.5	15.1	10.9	17.6
Russell MidCap Value	14.4	2.9	9.5	7.2	16.4
Russell 2000	14.6	2.0	12.9	7.1	15.4
Russell 2000 Growth	17.1	3.9	14.9	8.4	16.5
Russell 2000 Value	11.9	0.2	10.9	5.6	14.1
Foreign Equity					
MSCI ACWI (ex. U.S.)	10.3	-4.2	8.1	2.6	8.8
MSCI EAFE	10.0	-3.7	7.3	2.3	9.0
MSCI EAFE (Local Currency)	10.6	2.8	8.5	6.0	9.8
MSCI EAFE Small Cap	10.7	-9.4	7.5	4.5	12.8
MSCI Emerging Markets	9.9	-7.4	10.7	3.7	8.9
MSCI Emerging Markets (Local Currency)	10.1	-1.7	11.3	7.2	10.2
Fixed Income					
Bloomberg Barclays Universal	3.3	4.5	2.6	3.0	4.4
Bloomberg Barclays Aggregate	2.9	4.5	2.0	2.7	3.8
Bloomberg Barclays U.S. TIPS	3.2	2.7	1.7	1.9	3.4
Bloomberg Barclays High Yield	7.3	5.9	8.6	4.7	11.3
JPM GBI-EM Global Diversified	2.9	-7.6	3.3	-0.8	4.3
Other					
NAREIT Equity	16.3	20.3	6.0	9.0	18.2
Bloomberg Commodity Index	6.3	-5.3	2.2	-8.9	-2.6
HFRI Fund of Funds	5.0	0.5	4.1	2.3	3.6

¹ Source: InvestorForce.

S&P Sector Returns¹



¹ Source: InvestorForce. Represents S&P 1500 (All Cap) data.

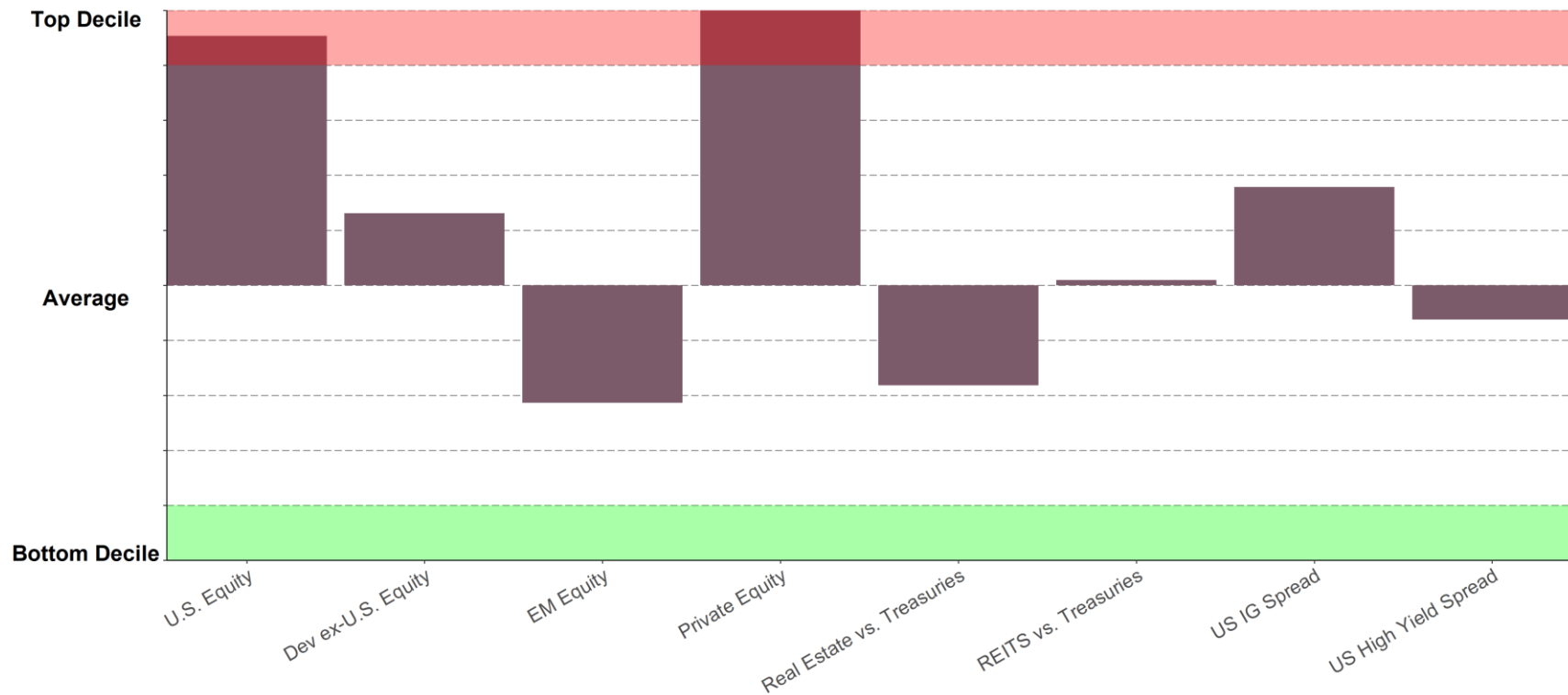
Capital Markets Outlook & Risk Metrics

Capital Market Outlook - Takeaways

- April reverted back to several capital market themes of prior years: 1) U.S. Equity outperforming Non-U.S. Equity, 2) Growth outpacing Value, and 3) tepid returns to Fixed Income. In aggregate, April generally rewarded investors who took on equity and credit (i.e., economic growth) risks across the globe.
- After only four months, year-to-date returns for most risk-based assets are multiples (e.g., 2x) of annual expectations, with the exception of Emerging Markets Equity, which has produced year-to-date returns in-line with annual expectations.
- U.S. equity markets remain expensive whereas Non-U.S. equity markets remain reasonably valued.
- The U.S. yield curve remained relatively stable over the month, with only marginal increases (≈ 10 basis points) on the long end of the curve. The yield curve remains at one of its flattest points since the Great Financial Crisis. Furthermore, because of the current low levels of long-term rates, interest rate risk remains at elevated levels for most high quality Fixed Income portfolios.
- Implied equity market volatility persisted at low levels throughout April, ranging from roughly 12.0% to 14.3% over the course of the month (end-of-day data). This range is materially below the long-term average level ($\approx 19\%$).
- The Market Sentiment Indicator¹ returned to positive (green) as a result of positive year-over-year momentum in both equity and credit markets.
- **Market uncertainty is higher than numbers might indicate.** Diverging global economic growth, nuanced monetary policies, and ongoing geopolitical turmoil has resulted in increased uncertainty in the global capital markets. Moreover, equity and credit markets continue to produce different macroeconomic signals when compared to sovereign bond markets.

¹ See Appendix for the rationale for selection and calculation methodology used for the risk metrics.

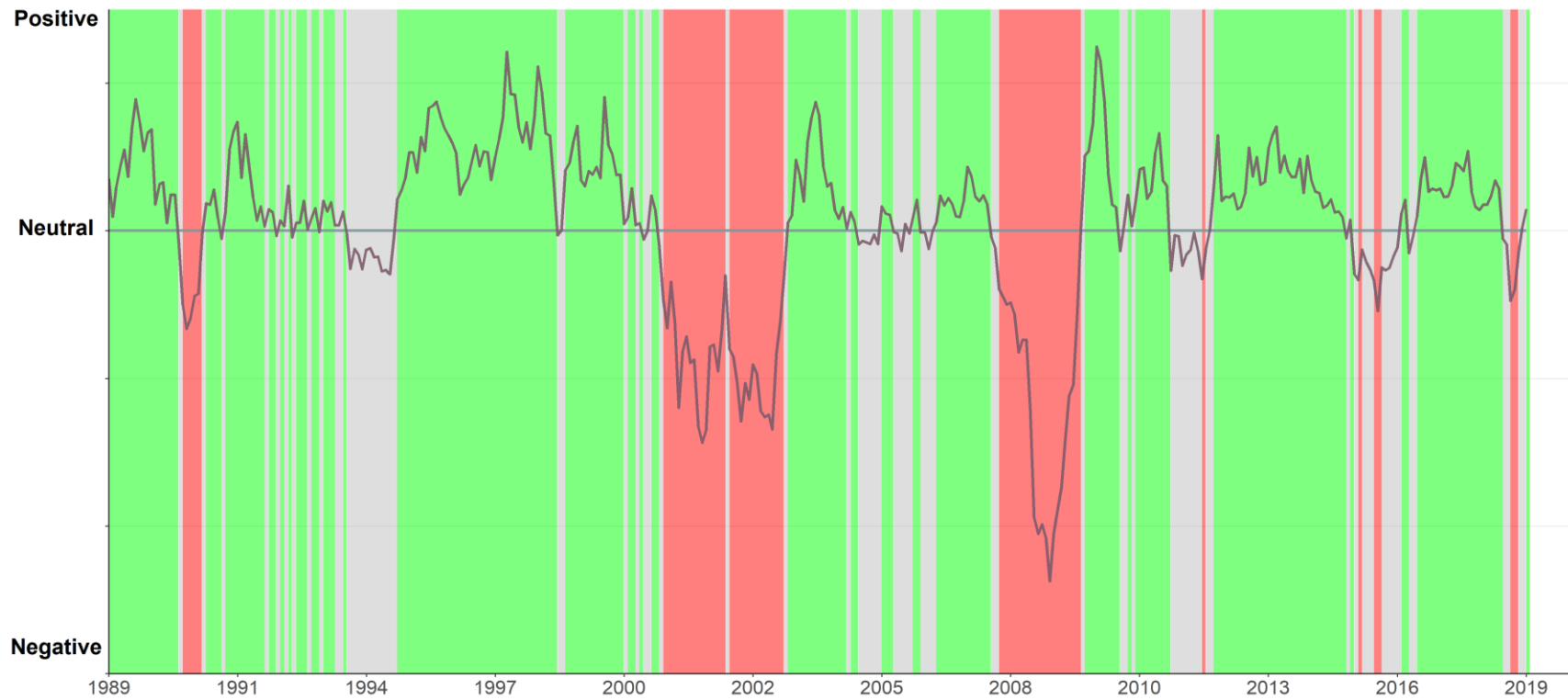
Risk Overview/Dashboard (1)



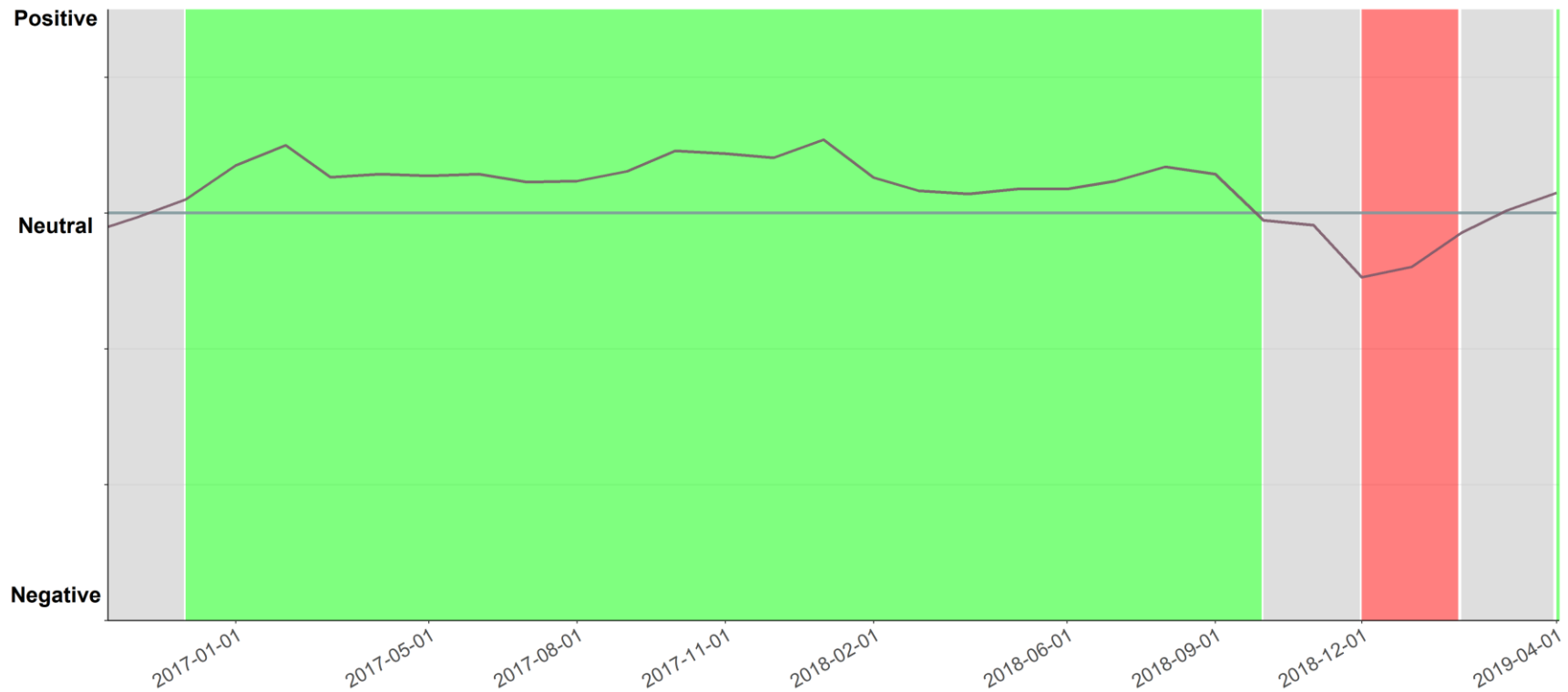
Risk Overview/Dashboard (2)



Market Sentiment Indicator (All History)



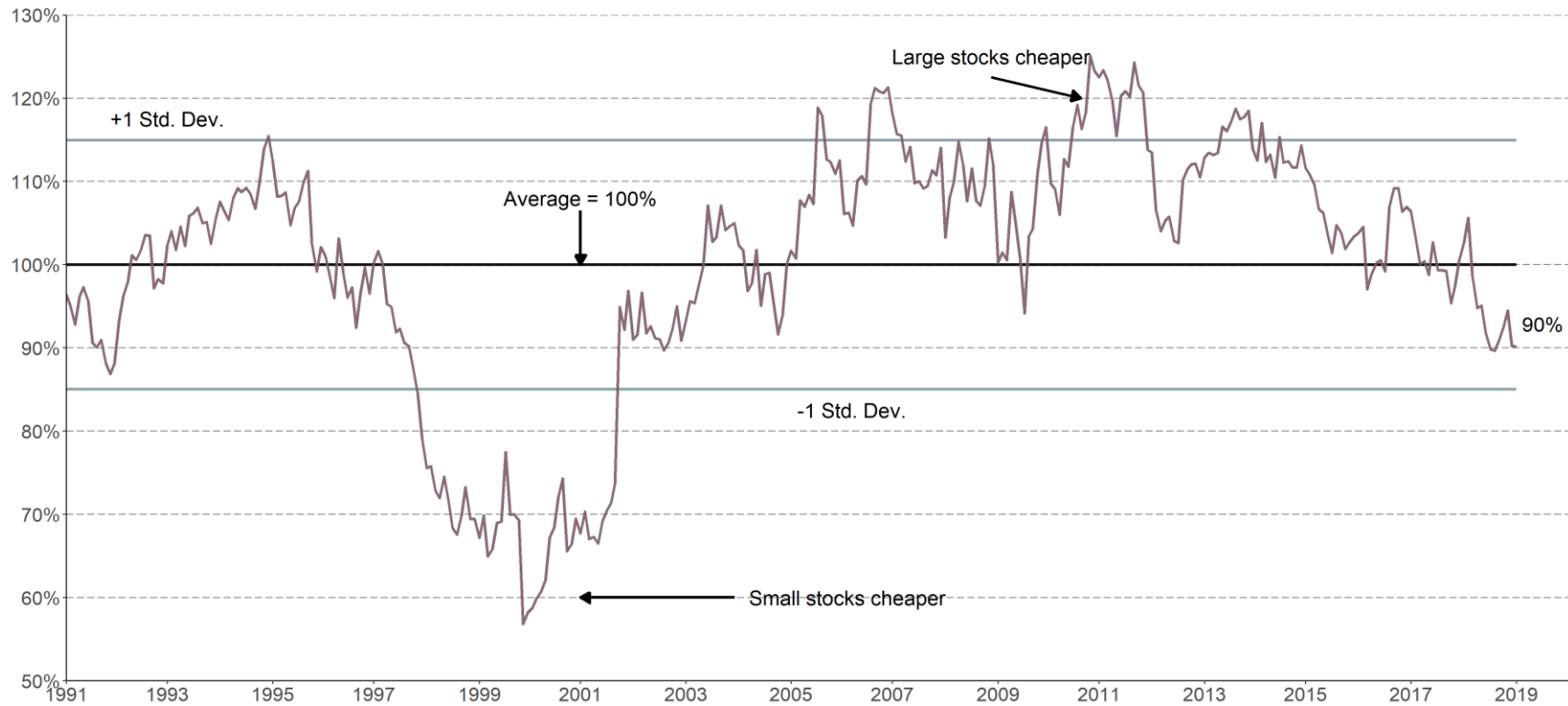
Market Sentiment Indicator (Last Three Years)



U.S. Equity Cyclically Adjusted P/E



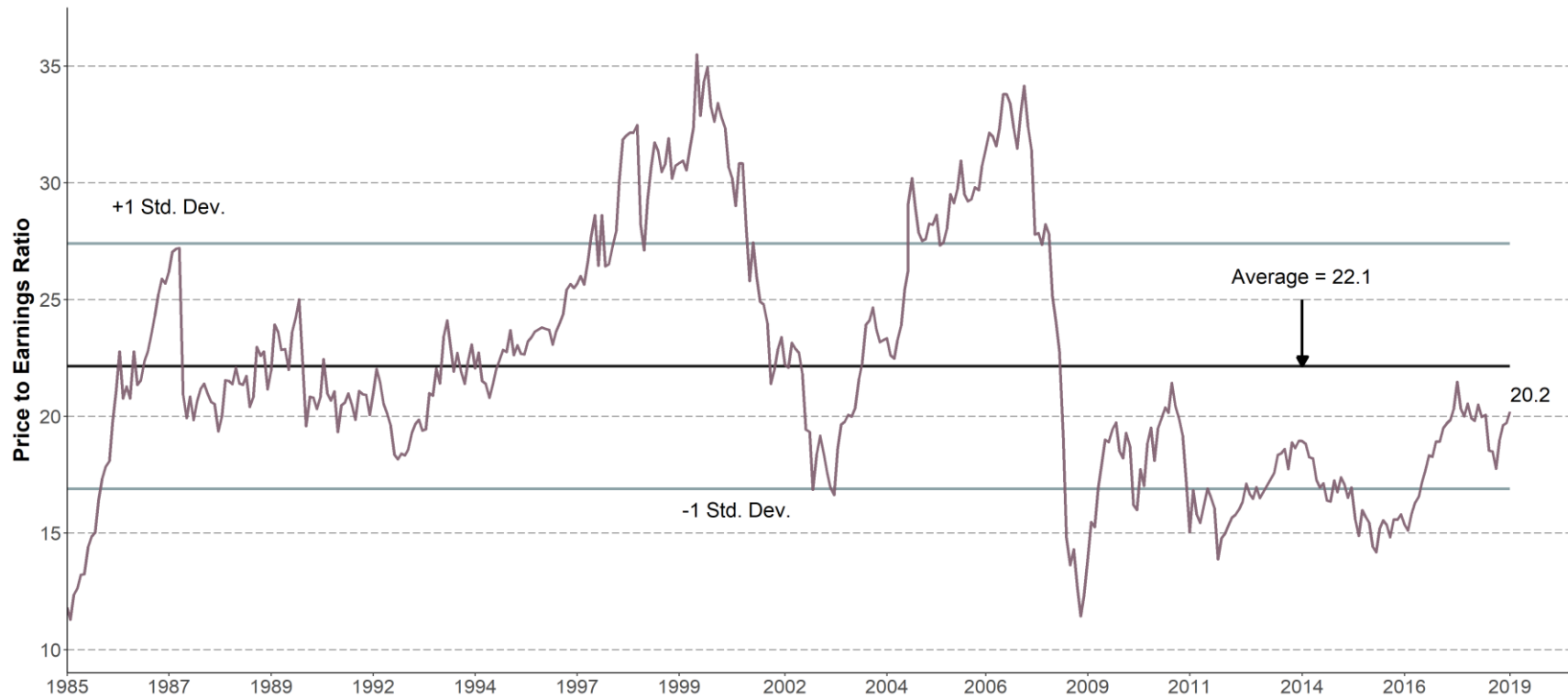
Small Cap P/E vs. Large Cap P/E



Growth P/E vs. Value P/E



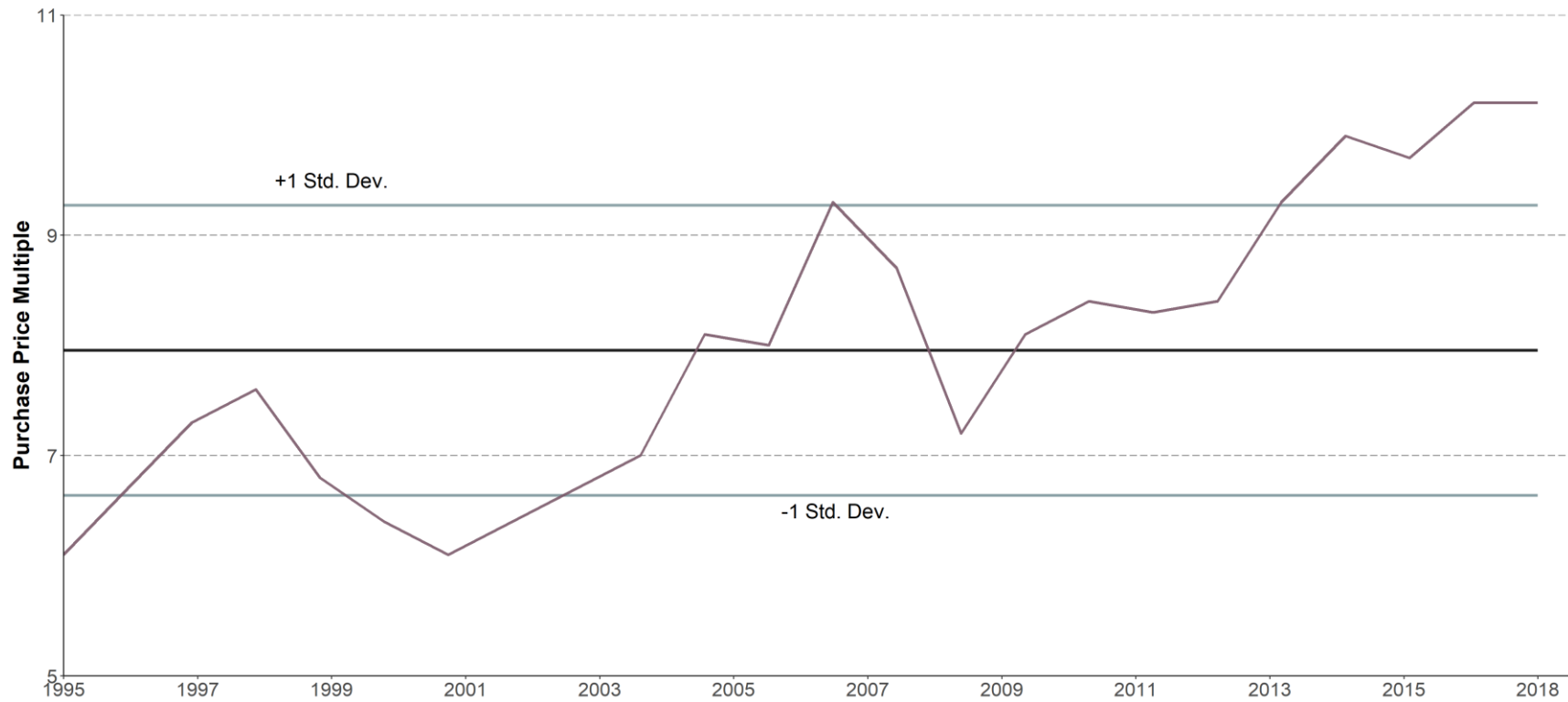
Developed International Equity Cyclically Adjusted P/E



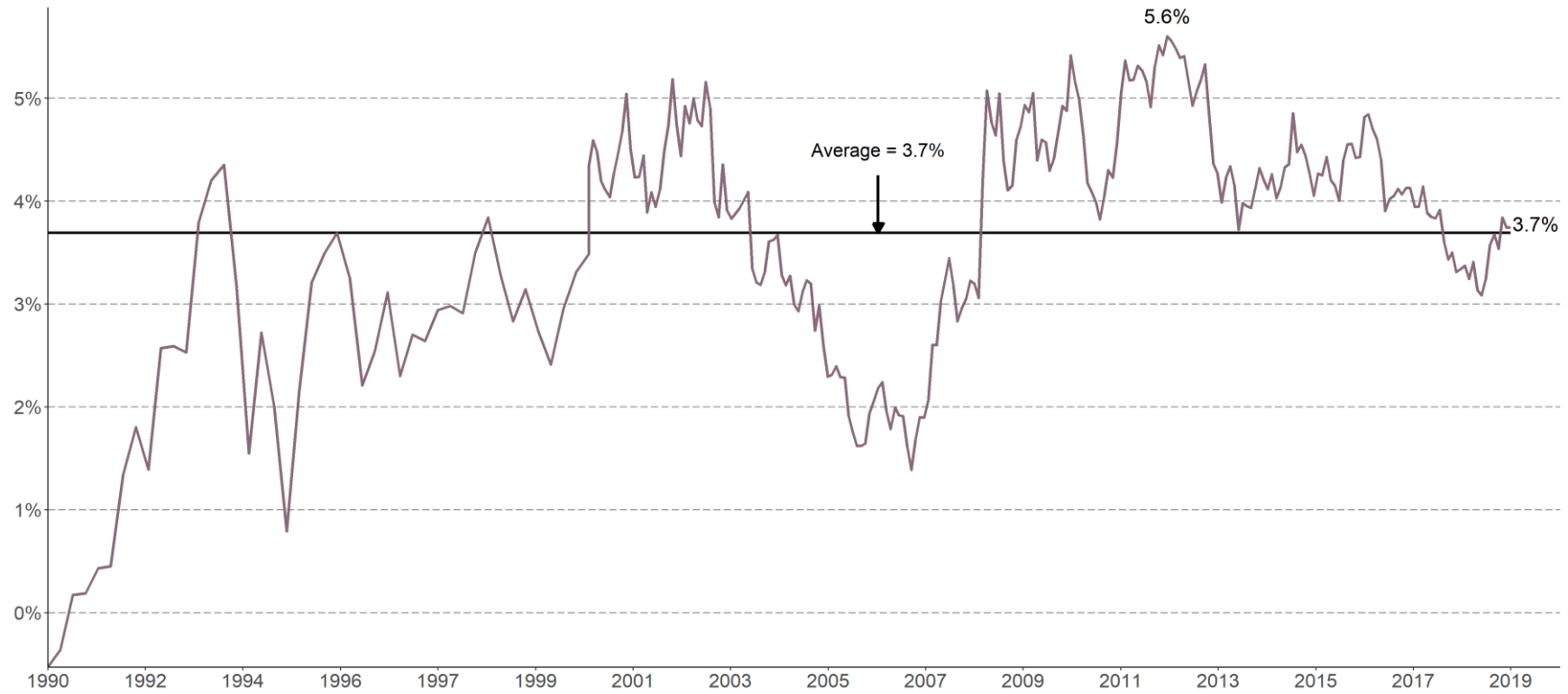
Emerging Market Equity Cyclically Adjusted P/E



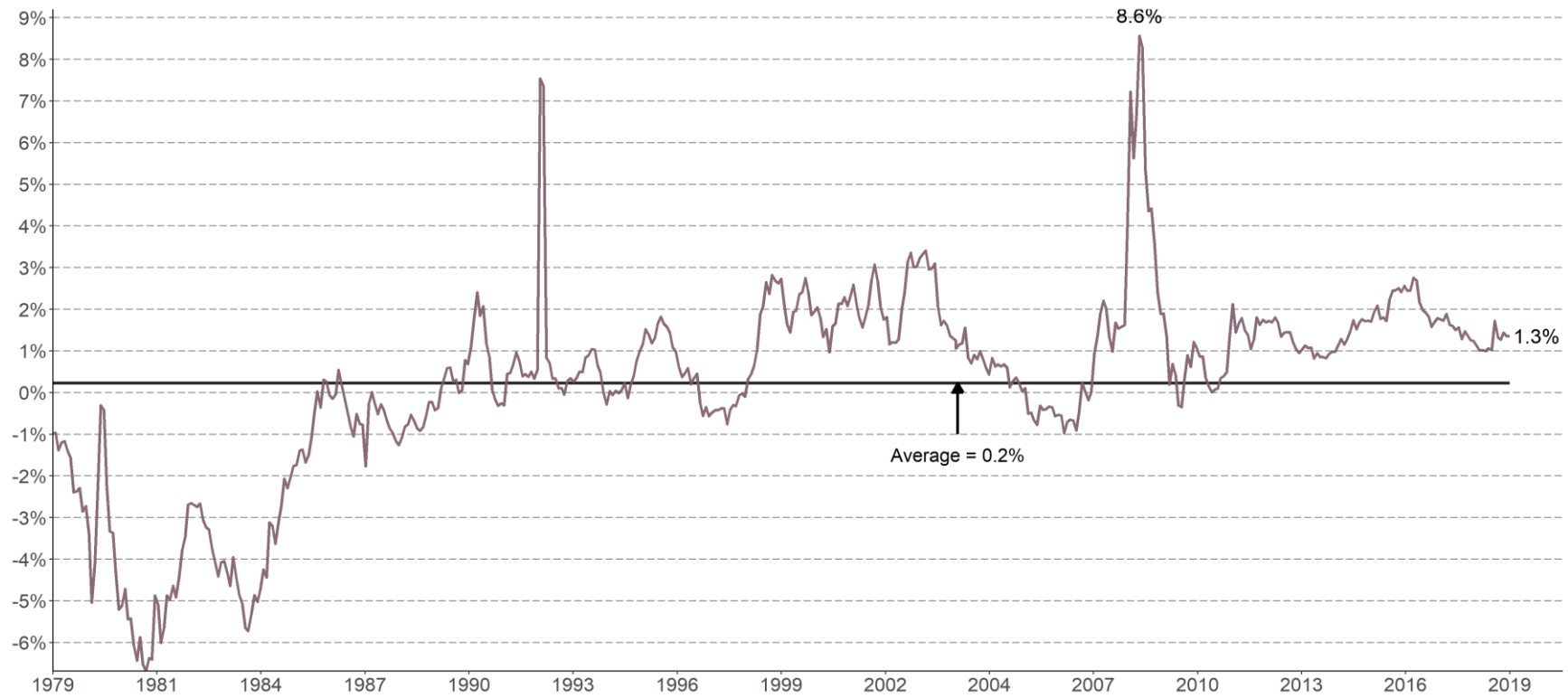
Private Equity Multiples



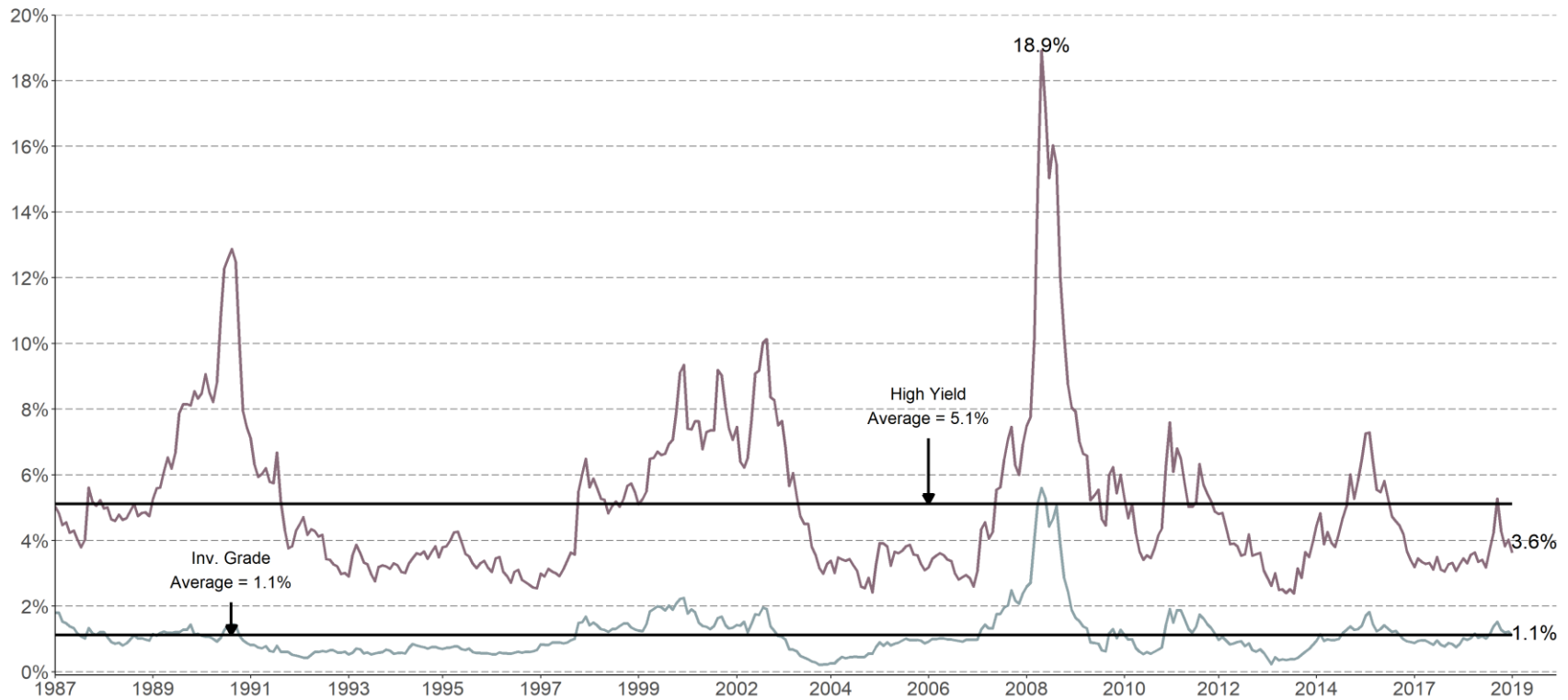
Core Real Estate Spread vs. Ten-Year Treasury



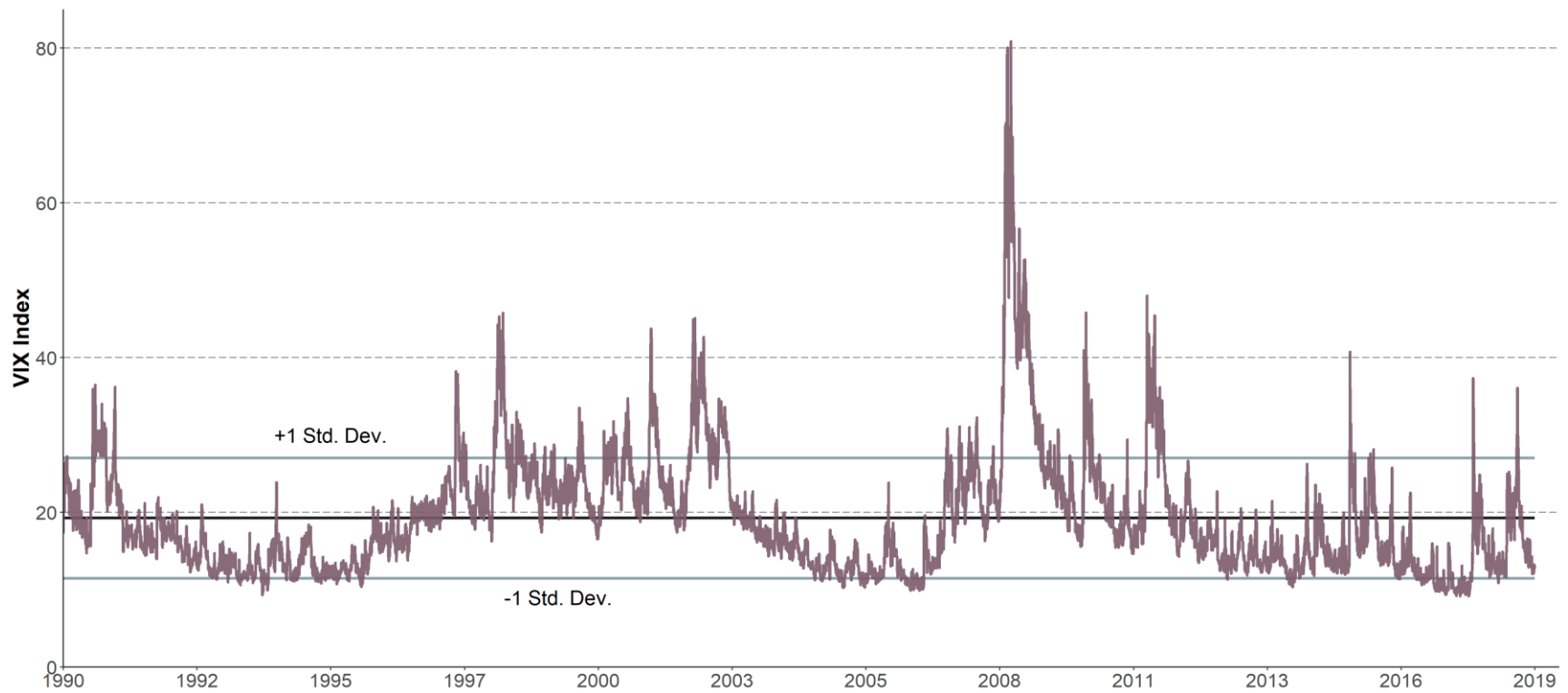
REITs Dividend Yield Spread vs. Ten-Year Treasury



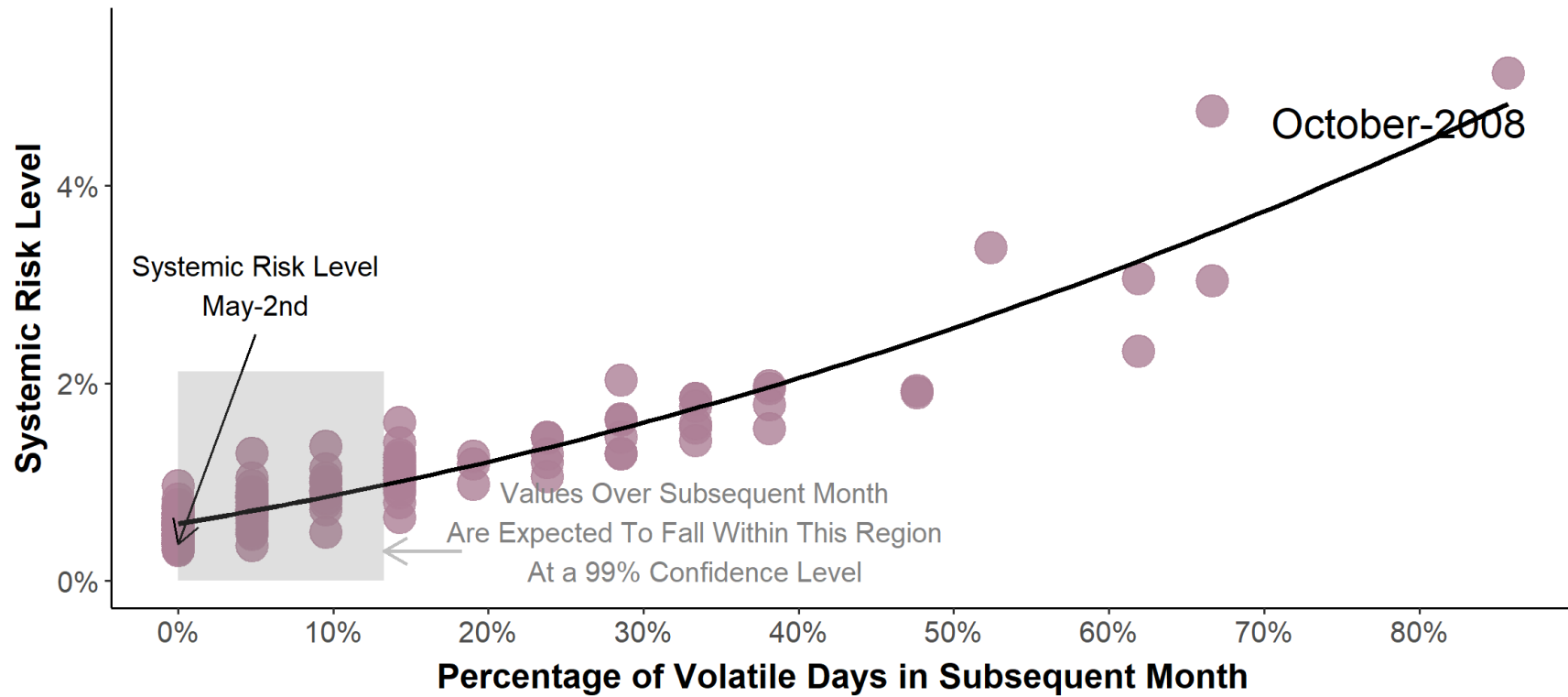
Credit Spreads



Equity Volatility

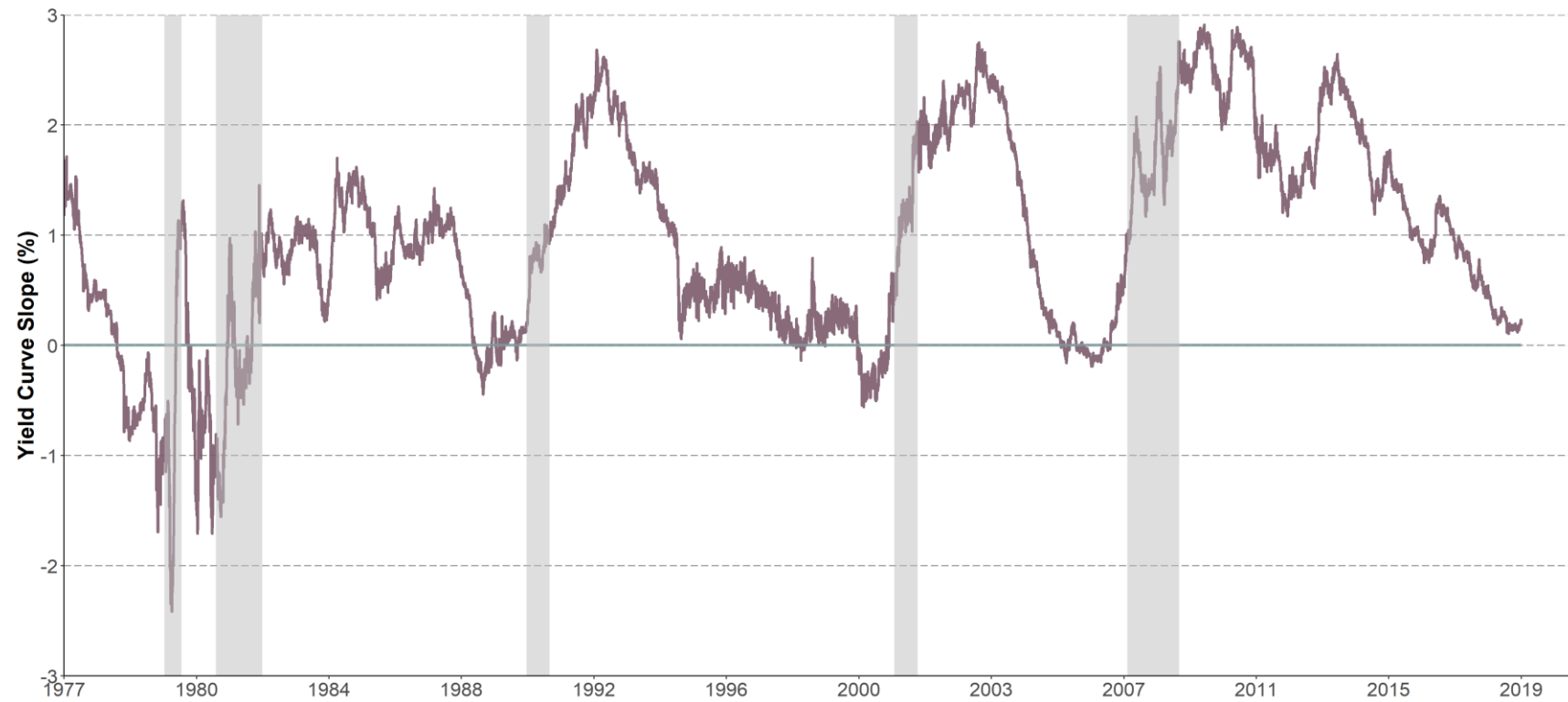


Systemic Risk and Volatile Market Days¹

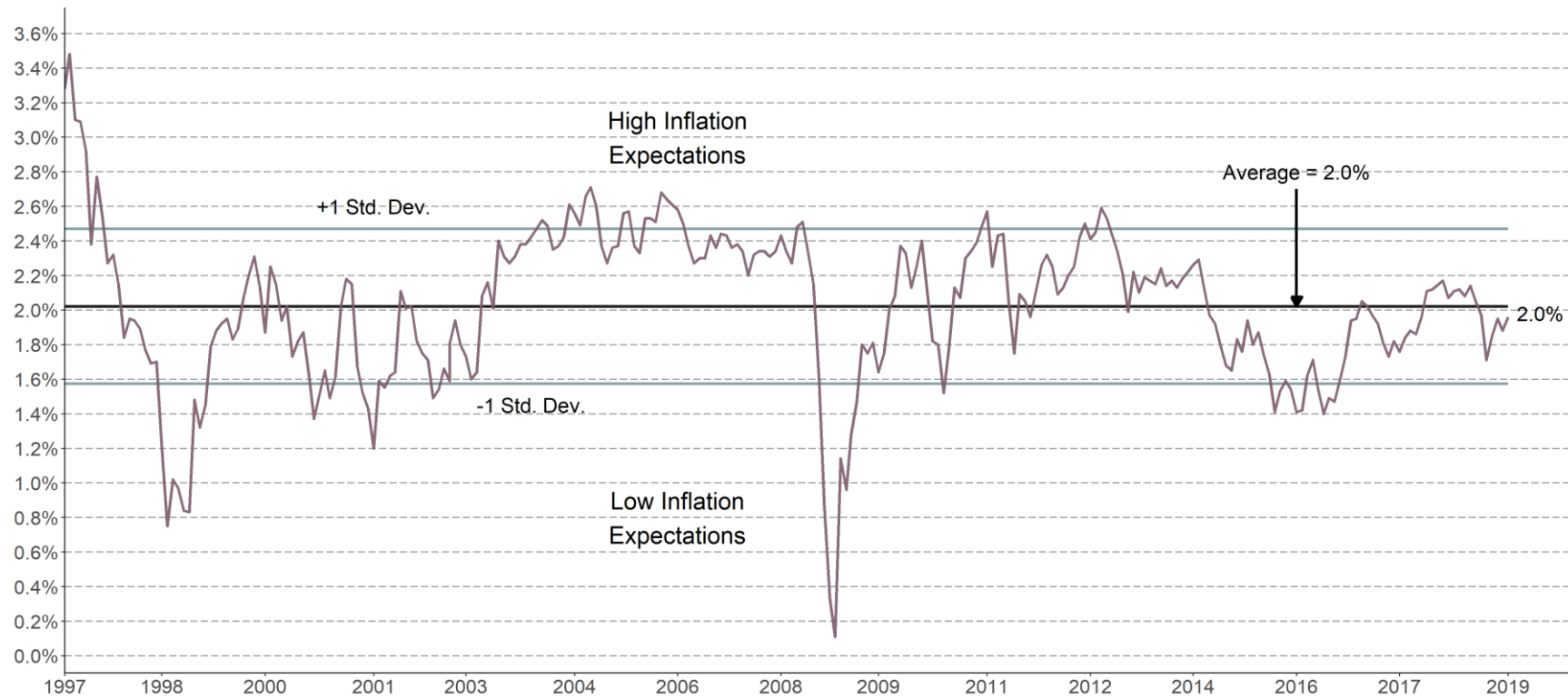


¹ Source: Meketa Investment Group, as of April 30, 2019. Volatile days are defined as the top 10 percent of realized turbulence which is a multivariate distance between asset returns.

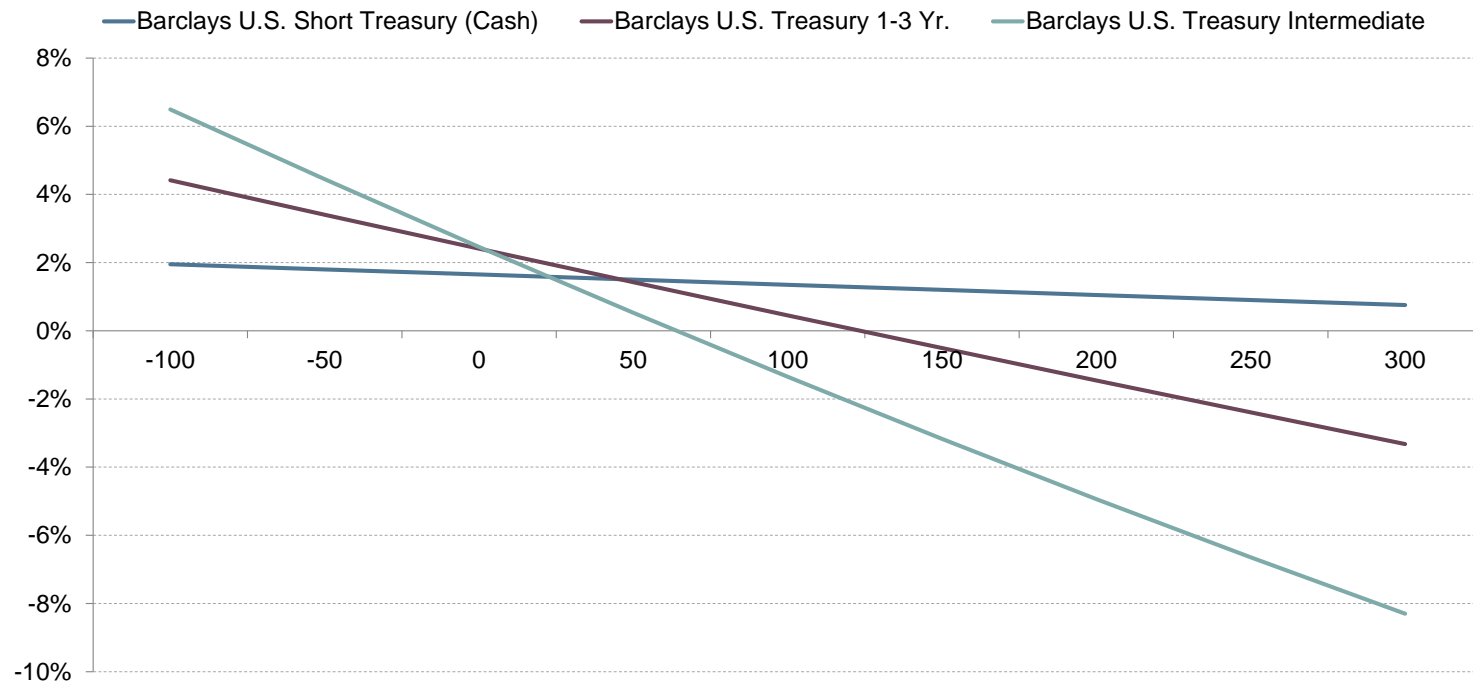
Yield Curve Slope (Ten Minus Two)



Ten-Year Breakeven Inflation

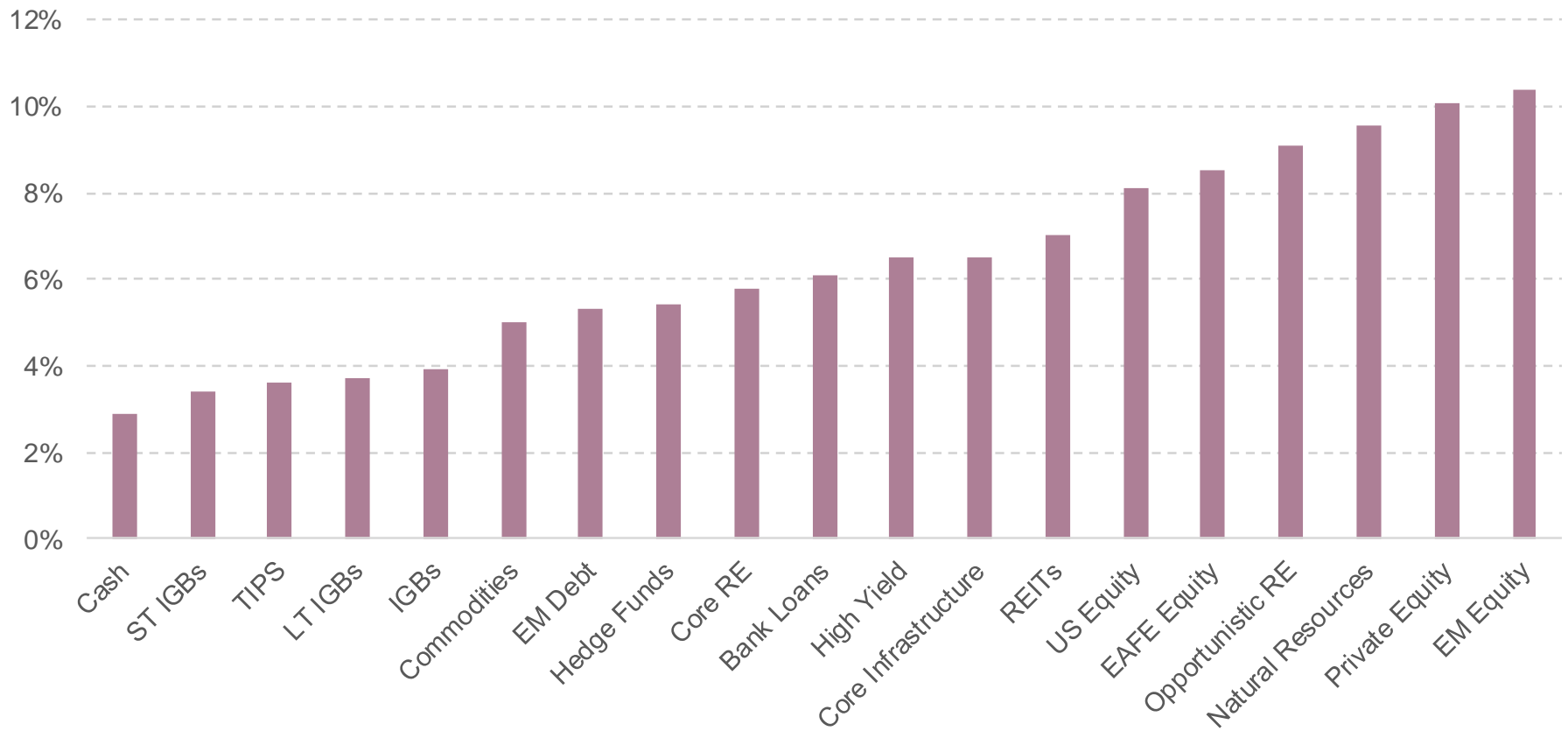


Total Return Given Changes in Interest Rates (bps)¹



	Total Return for Given Changes in Interest Rates (bps)									Statistics	
	-100	-50	0	50	100	150	200	250	300	Duration	YTW
Barclays U.S. Short Treasury (Cash)	2.7%	2.6%	2.4%	2.3%	2.1%	2.0%	1.8%	1.7%	1.5%	0.3	2.40%
Barclays U.S. Treasury 1-3 Yr.	4.4%	3.4%	2.5%	1.5%	0.5%	-0.4%	-1.4%	-2.3%	-3.2%	1.95	2.47%
Barclays U.S. Treasury Intermediate	6.3%	4.3%	2.3%	0.4%	-1.4%	-3.2%	-4.9%	-6.6%	-8.2%	3.84	2.34%
Barclays U.S. Treasury Long	22.4%	12.1%	2.9%	-5.4%	-12.6%	-18.9%	-24.2%	-28.4%	-31.7%	17.5	2.87%

¹ Data represents the expected total return from a given change in interest rates (shown in basis points) over a 12-month period assuming a parallel shift in rates. Data is as of May 1, 2019 via Barclays, Bloomberg, and Meketa Investment Group.

Long-Term Outlook¹

¹ Twenty-year expected returns based upon Meketa Investment Group's 2019 Annual Asset Study.

Appendix – Data Sources and Explanations

All Data as of April 30, 2019

- U.S. Equity Cyclically Adjusted P/E on S&P 500 Index – Source: Robert Shiller and Yale University.
- Small Cap P/E (Russell 2000 Index) vs. Large Cap P/E (Russell 1000 Index) - Source: Russell Investments. Earnings figures represent 12-month “as reported” earnings.
- Growth P/E (Russell 3000 Growth Index) vs. Value (Russell 3000 Value Index) P/E - Source: Bloomberg, MSCI, and Meketa Investment Group. Earnings figures represent 12-month “as reported” earnings.
- Developed International Equity (MSCI EAFE ex Japan Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years.
- Emerging Market Equity (MSCI Emerging Markets Index) Cyclically Adjusted P/E – Source: MSCI and Bloomberg. Earnings figures represent the average of monthly “as reported” earnings over the previous ten years
- Private Equity Multiples – Source: S&P LCD Average EBITDA Multiples Paid in All LBOs
- Core Real Estate Spread vs. Ten-Year Treasury – Source: Real Capital Analytics, U.S. Treasury, Bloomberg, and Meketa Investment Group. Core Real Estate is proxied by weighted sector transaction based indices from Real Capital Analytics and Meketa Investment Group.
- REITs Dividend Yield Spread vs. Ten-Year Treasury – Source: NAREIT, U.S. Treasury. REITs are proxied by the yield for the NAREIT Equity index.
- Credit Spreads – Source: Barclays Capital. High Yield is proxied by the Barclays High Yield index and Investment Grade Corporates are proxied by the Barclays U.S. Corporate Investment Grade index.

Appendix – Data Sources and Explanations (Continued)
All Data as of April 30, 2019

- Equity Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by VIX Index, a Measure of implied option volatility for U.S. equity markets.
- Systemic Risk and Volatile Market Days – Source: Meketa Investment Group, as of April 30, 2019. Volatile days are defined as the top 10 percent of realized turbulence, which is a multivariate distance between asset returns.
 - Systemic Risk, which measures risk across markets, is important because the more contagion of risk that exists between assets, the more likely it is that markets will experience volatile periods.
- Yield Curve Slope (Ten Minus Two) – Source: Bloomberg, and Meketa Investment Group. Yield curve slope is calculated as the difference between the 10-Year U.S. Treasury Yield and 2-Year U.S. Treasury Yield.
- Ten-Year Breakeven Inflation – Source: U.S. Treasury and Federal Reserve. Data is as of May 1, 2019 for TIPS and Treasuries. Inflation is measured by the Consumer Price Index (CPI-U NSA).

Meketa Market Sentiment Indicator

Explanation, Construction and Q&A

Meketa has created the MIG Market Sentiment Indicator (MIG-MSI) to complement our valuation-focused Risk Metrics. This measure of sentiment is meant to capture significant and persistent shifts in long-lived market trends of economic growth risk, either towards a risk-seeking trend or a risk-aversion trend.

This appendix explores:

- What is the Meketa Market Sentiment Indicator?
- How do I read the indicator graph?
- How is the Meketa Market Sentiment Indicator constructed?
- What do changes in the indicator mean?

Meketa has created a market sentiment indicator for monthly publication (the MIG-MSI – see below) to complement Meketa’s Risk Metrics.

Meketa’s Risk Metrics, which rely significantly on standard market measures of relative valuation, often provide valid early signals of increasing long-term risk levels in the global investment markets. However, as is the case with numerous valuation measures, the Risk Metrics may convey such risk concerns long before a market corrections take place. The MIG-MSI helps to address this early-warning bias by measuring whether the markets are beginning to acknowledge key Risk Metrics trends, and / or indicating non-valuation based concerns. Once the MIG-MSI indicates that the market sentiment has shifted, it is our belief that investors should consider significant action, particularly if confirmed by the Risk Metrics. Importantly, Meketa believes the Risk Metrics and MIG-MSI should always be used in conjunction with one another and never in isolation. The questions and answers below highlight and discuss the basic underpinnings of the Meketa MIG-MSI:

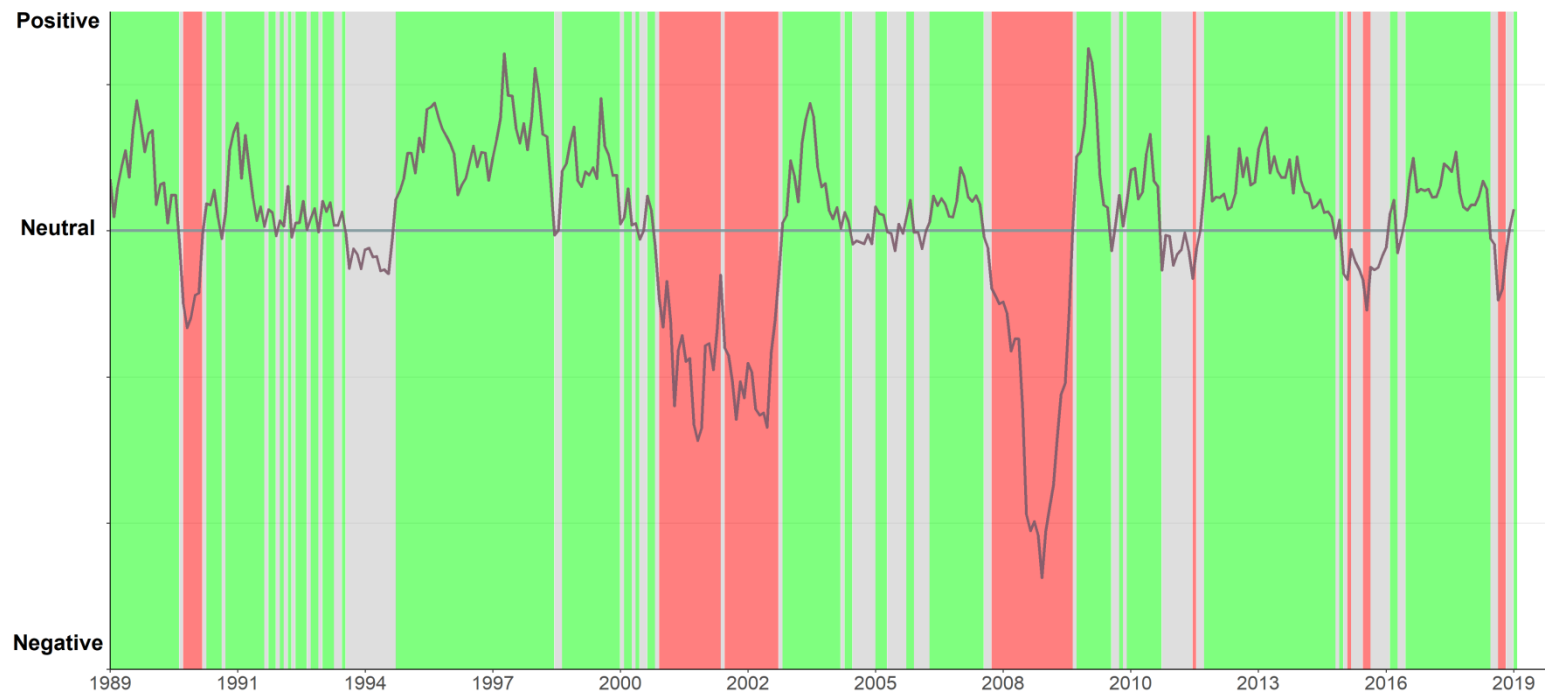
What is the Meketa Market Sentiment Indicator (MIG-MSI)?

The MIG-MSI is a measure meant to gauge the market’s sentiment regarding economic growth risk. Growth risk cuts across most financial assets, and is the largest risk exposure that most portfolios bear. The MIG-MSI takes into account the momentum (trend over time, positive or negative) of the economic growth risk exposure of publicly traded stocks and bonds, as a signal of the future direction of growth risk returns; either positive (risk seeking market sentiment), or negative (risk averse market sentiment).

How do I read the Meketa Market Sentiment Indicator graph?

Simply put, the MIG-MSI is a color-coded indicator that signals the market's sentiment regarding economic growth risk. It is read left to right chronologically. A green indicator on the MIG-MSI indicates that the market's sentiment towards growth risk is positive. A gray indicator indicates that the market's sentiment towards growth risk is neutral or inconclusive. A red indicator indicates that the market's sentiment towards growth risk is negative. The black line on the graph is the level of the MIG-MSI. The degree of the signal above or below the neutral reading is an indication the signal's current strength.

Momentum as we are defining it is the use of the past behavior of a series as a predictor of its future behavior.



How is the Meketa Market Sentiment Indicator (MIG-MSI) Constructed?

The MIG-MSI is constructed from two sub-elements representing investor sentiment in stocks and bonds:

- Stock return momentum: Return momentum for the S&P 500 Equity Index (trailing 12-months)
- Bond yield spread momentum: Momentum of bond yield spreads (excess of the measured bond yield over the identical duration U.S. Treasury bond yield) for corporate bonds (trailing 12-months) for both investment grade bonds (75% weight) and high yield bonds (25% weight). The scale of this measure is adjusted to match that of the stock return momentum measure.

The black line reading on the graph is calculated as the average of the stock return momentum measure and the bonds spread momentum measure.¹ The color reading on the graph is determined as follows:

- If both stock return momentum and bond spread momentum are positive = GREEN (positive)
- If one of the momentum indicators is positive, and the other negative = GRAY (inconclusive)
- If both stock return momentum and bond spread momentum are negative = RED (negative)

¹ Momentum as we are defining it is the use of the past behavior of a series as a predictor of its future behavior.
"Time Series Momentum" Moskowitz, Ooi, Pedersen, August 2010. <http://pages.stern.nyu.edu/~lpedersen/papers/TimeSeriesMomentum.pdf>

What does the Meketa Market Sentiment Indicator (MIG-MSI) mean? Why might it be useful?

There is strong evidence that time series momentum is significant and persistent. In particular, across an extensive array of asset classes, the sign of the trailing 12-month return (positive or negative) is indicative of future returns (positive or negative) over the next 12-month period. The MIG-MSI is constructed to measure this momentum in stocks and corporate bond spreads. A reading of green or red is agreement of both the equity and bond measures, indicating that it is likely that this trend (positive or negative) will continue over the next 12 months. When the measures disagree, the indicator turns gray. A gray reading does not necessarily mean a new trend is occurring, as the indicator may move back to green, or into the red from there. The level of the reading (black line) and the number of months at the red or green reading, gives the user additional information on which to form an opinion, and potentially take action.

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PERFORMANCE DATA CONTAINED HEREIN REPRESENT PAST PERFORMANCE. PAST PERFORMANCE IS NO GUARANTEE OF FUTURE RESULTS.

Credit Risk: Refers to the risk that the issuer of a fixed income security may default (i.e., the issuer will be unable to make timely principal and/or interest payments on the security.)

Duration: Measure of the sensitivity of the price of a bond to a change in its yield to maturity. Duration summarizes, in a single number, the characteristics that cause bond prices to change in response to a change in interest rates. For example, the price of a bond with a duration of three years will rise by approximately 3% for each 1% decrease in its yield to maturity. Conversely, the price will decrease 3% for each 1% increase in the bond's yield. Price changes for two different bonds can be compared using duration. A bond with a duration of six years will exhibit twice the percentage price change of a bond with a three-year duration. The actual calculation of a bond's duration is somewhat complicated, but the idea behind the calculation is straightforward. The first step is to measure the time interval until receipt for each cash flow (coupon and principal payments) from a bond. The second step is to compute a weighted average of these time intervals. Each time interval is measured by the present value of that cash flow. This weighted average is the duration of the bond measured in years.

Information Ratio: This statistic is a measure of the consistency of a portfolio's performance relative to a benchmark. It is calculated by subtracting the benchmark return from the portfolio return (excess return), and dividing the resulting excess return by the standard deviation (volatility) of this excess return. A positive information ratio indicates outperformance versus the benchmark, and the higher the information ratio, the more consistent the outperformance.

Jensen's Alpha: A measure of the average return of a portfolio or investment in excess of what is predicted by its beta or "market" risk. $\text{Portfolio Return} - [\text{Risk Free Rate} + \text{Beta} * (\text{market return} - \text{Risk Free Rate})]$.

Market Capitalization: For a firm, market capitalization is the total market value of outstanding common stock. For a portfolio, market capitalization is the sum of the capitalization of each company weighted by the ratio of holdings in that company to total portfolio holdings; thus it is a weighted-average capitalization. Meketa Investment Group considers the largest 65% of the broad domestic equity market as large capitalization, the next 25% of the market as medium capitalization, and the smallest 10% of stocks as small capitalization.

Market Weighted: Stocks in many indices are weighted based on the total market capitalization of the issue. Thus, the individual returns of higher market-capitalization issues will more heavily influence an index's return than the returns of the smaller market-capitalization issues in the index.

Maturity: The date on which a loan, bond, mortgage, or other debt/security becomes due and is to be paid off.

Prepayment Risk: The risk that prepayments will increase (homeowners will prepay all or part of their mortgage) when mortgage interest rates decline; hence, investors' monies will be returned to them in a lower interest rate environment. Also, the risk that prepayments will slow down when mortgage interest rates rise; hence, investors will not have as much money as previously anticipated in a higher interest rate environment. A prepayment is any payment in excess of the scheduled mortgage payment.

Price-Book Value (P/B) Ratio: The current market price of a stock divided by its book value per share. Meketa Investment Group calculates P/B as the current price divided by Compustat's quarterly common equity. Common equity includes common stock, capital surplus, retained earnings, and treasury stock adjusted for both common and nonredeemable preferred stock. Similar to high P/E stocks, stocks with high P/B's tend to be riskier investments.

Price-Earnings (P/E) Ratio: A stock's market price divided by its current or estimated future earnings. Lower P/E ratios often characterize stocks in low growth or mature industries, stocks in groups that have fallen out of favor, or stocks of established blue chip companies with long records of stable earnings and regular dividends. Sometimes a company that has good fundamentals may be viewed unfavorably by the market if it is an industry that is temporarily out of favor. Or a business may have experienced financial problems causing investors to be skeptical about its future. Either of these situations would result in lower relative P/E ratios. Some stocks exhibit above-average sales and earnings growth or expectations for above average growth. Consequently, investors are willing to pay more for these companies' earnings, which results in elevated P/E ratios. In other words, investors will pay more for shares of companies whose profits, in their opinion, are expected to increase faster than average. Because future events are in no way assured, high P/E stocks tend to be riskier and more volatile investments. Meketa Investment Group calculates P/E as the current price divided by the I/B/E/S consensus of twelve-month forecast earnings per share.

Quality Rating: The rank assigned a security by such rating services as Fitch, Moody's, and Standard & Poor's. The rating may be determined by such factors as (1) the likelihood of fulfillment of dividend, income, and principal payment of obligations; (2) the nature and provisions of the issue; and (3) the security's relative position in the event of liquidation of the company. Bonds assigned the top four grades (AAA, AA, A, BBB) are considered investment grade because they are eligible bank investments as determined by the controller of the currency.

Sharpe Ratio: A commonly used measure of risk-adjusted return. It is calculated by subtracting the risk free return (usually three-month Treasury bill) from the portfolio return and dividing the resulting excess return by the portfolio's total risk level (standard deviation). The result is a measure of return per unit of total risk taken. The higher the Sharpe ratio, the better the fund's historical risk adjusted performance.

Standard Deviation: A measure of the total risk of an asset or a portfolio. Standard deviation measures the dispersion of a set of numbers around a central point (e.g., the average return). If the standard deviation is small, the distribution is concentrated within a narrow range of values. For a normal distribution, about two thirds of the observations will fall within one standard deviation of the mean, and 95% of the observations will fall within two standard deviations of the mean.

STIF Account: Short-term investment fund at a custodian bank that invests in cash-equivalent instruments. It is generally used to safely invest the excess cash held by portfolio managers.

Style: The description of the type of approach and strategy utilized by an investment manager to manage funds. For example, the style for equities is determined by portfolio characteristics such as price-to-book value, price-to-earnings ratio, and dividend yield. Equity styles include growth, value, and core.

Yield to Maturity: The yield, or return, provided by a bond to its maturity date; determined by a mathematical process, usually requiring the use of a “basis book.” For example, a 5% bond pays \$5 a year interest on each \$100 par value. To figure its current yield, divide \$5 by \$95—the market price of the bond—and you get 5.26%. Assume that the same bond is due to mature in five years. On the maturity date, the issuer is pledged to pay \$100 for the bond that can be bought now for \$95. In other words, the bond is selling at a discount of 5% below par value. To figure yield to maturity, a simple and approximate method is to divide 5% by the five years to maturity, which equals 1% pro rata yearly. Add that 1% to the 5.26% current yield, and the yield to maturity is roughly 6.26%.

$$\frac{5\% \text{ (discount)}}{5 \text{ (yrs. to maturity)}} = 1\% \text{ pro rata, plus } 5.26\% \text{ (current yield)} = 6.26\% \text{ (yield to maturity)}$$

Sources: [Investment Terminology](#), International Foundation of Employee Benefit Plans, 1999.
[The Handbook of Fixed Income Securities](#), Fabozzi, Frank J., 1991.

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Throughout this report, numbers may not sum due to rounding.

Returns for periods greater than one year are annualized throughout this report.

Values shown are in millions of dollars, unless noted otherwise.