MEKETA
INVESTMENT GROUP

Oakland Police and Fire Retirement System

Q3 2020

Quarterly Report

Table of Contents

1. Total Portfolio Summary
2. World Markets Third Quarter of 2020
3. Capital Markets Outlook & Risk Metrics
   - Meketa Market Sentiment Indicator
4. Total Portfolio Review
5. Manager Monitoring / Probation List
6. Individual Manager Performance
7. Disclaimer, Glossary, and Notes

Total Portfolio Summary

Total Portfolio Summary

As of September 30, 2020, the City of Oakland Police and Fire Retirement System (OPFRS) portfolio had an aggregate value of $400.0 million. This represents a $20.0 million increase in investment value and ($3.0) million in benefit payments over the quarter. Year-to-date, the OPFRS Total Portfolio value is lower by ($8.1) million, after withdrawals totaling ($12.0) million for benefit payments.

Asset Allocation Trends

- The asset allocation targets throughout this report reflect those as of September 30, 2020. Target weightings reflect the interim phase (CRO = 10%) of the Plan's previously approved asset allocation (effective 5/31/2017).
- Relative to policy targets, the portfolio ended the latest quarter overweight Domestic Equity, Covered Calls and Cash, while underweight Crisis Risk Offset. All asset classes were, however, within acceptable ranges from their policy targets.

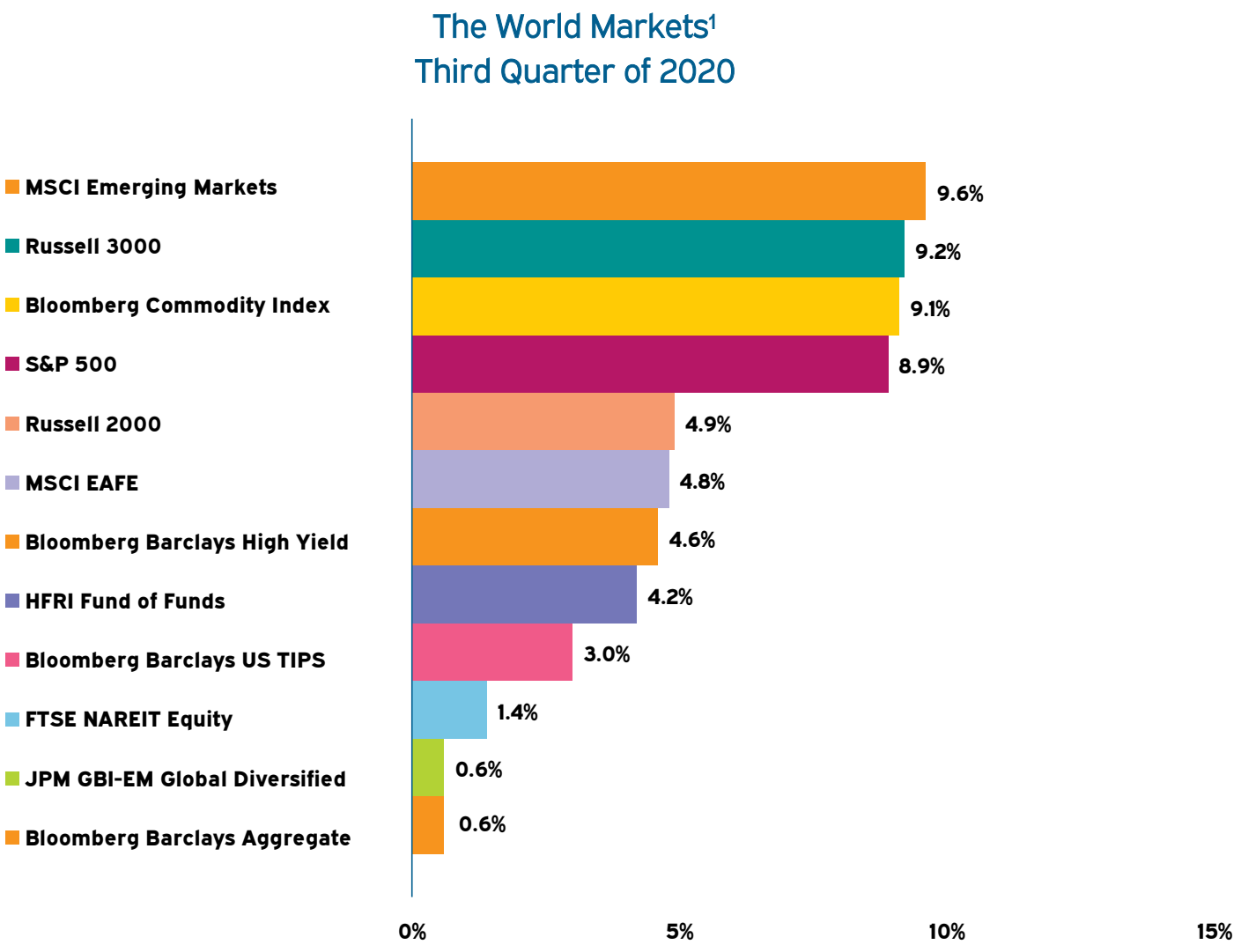
Recent Investment Performance

- During the most recent quarter, the OPFRS Total Portfolio generated an absolute return of +5.2%, gross of fees, underperforming its policy benchmark by 10 basis points. The portfolio underperformed its benchmark by (2.7%) and (0.4%) over the 1- and 3-year periods, respectively, and underperformed by (20) basis points over the 5-year period.
- The Total Portfolio outperformed the Median fund's return over the most recent quarter by 0.1% but underperformed the Median fund over the 1-year period by (2.3%). The Total Portfolio matched the median fund over the 3-year periods while outperforming the median fund by 0.8% over the 5-year period. Performance differences with respect to the Median Fund continue to be attributed largely to differences in asset allocation.

	Quarter	Fiscal Year	1 Year	3 Year	5 Year
Total Portfolio[1]	5.2	5.2	5.7	6.6	9.0
Policy Benchmark[2]	*5.1*	*5.1*	*8.4*	*7.0*	*9.2*
Excess Return	0.1	0.1	-2.7	-0.4	-0.2
Reference: Median Fund[3]	5.0	5.0	7.7	6.3	8.2
Reference: Total Net of Fees[4]	5.1	5.1	5.4	6.3	8.7

[1] Gross of Fees. Performance since 2005 includes securities lending.
[2] Evolving Policy Benchmark consists of 40% Russell 3000, 12% MSCI ACWI ex U.S., 33% Bbg BC Universal, 5% CBOE BXM , 6.7% SG Multi Asset Risk Premia, 3.3% Bbg BC Long Treasury.
[3] Investment Metrics < $1 Billion Public Plan Universe.
[4] Longer-term (>1 year) Net of fee returns are estimated based on OPFRS manager fee schedule (approximately 34 bps).

The World Markets
Third Quarter of 2020



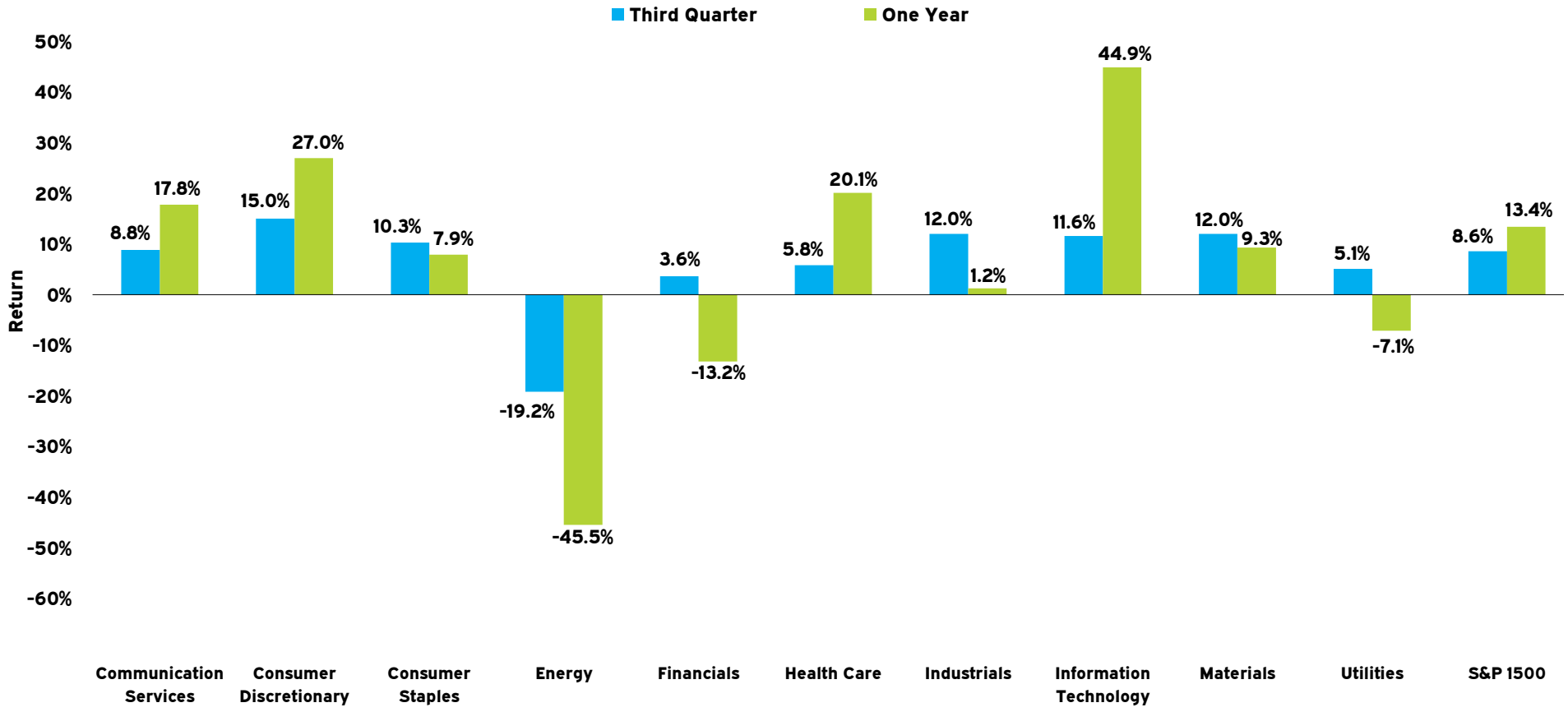
[1] Source: InvestorForce.

Index Returns[1]

	3Q20 (%)	YTD (%)	1 YR (%)	3 YR (%)	5 YR (%)	10 YR (%)
Domestic Equity						
S&P 500	8.9	5.6	15.1	12.3	14.1	13.7
Russell 3000	9.2	5.4	15.0	11.6	13.7	13.5
Russell 1000	9.5	6.4	16.0	12.4	14.1	13.8
Russell 1000 Growth	13.2	24.3	37.5	21.7	20.1	17.3
Russell 1000 Value	5.6	-11.6	-5.0	2.6	7.7	9.9
Russell MidCap	7.5	-2.3	4.6	7.1	10.1	11.8
Russell MidCap Growth	9.4	13.9	23.2	16.2	15.5	14.6
Russell MidCap Value	6.4	-12.8	-7.3	0.8	6.4	9.7
Russell 2000	4.9	-8.7	0.4	1.8	8.0	9.9
Russell 2000 Growth	7.2	3.9	15.7	8.2	11.4	12.3
Russell 2000 Value	2.6	-21.5	-14.9	-5.1	4.1	7.1
Foreign Equity						
MSCI ACWI (ex. US)	6.3	-5.4	3.0	1.2	6.2	4.0
MSCI EAFE	4.8	-7.1	0.5	0.6	5.3	4.6
MSCI EAFE (Local Currency)	1.2	-9.4	-4.7	0.6	4.8	6.3
MSCI EAFE Small Cap	10.3	-4.2	6.8	1.4	7.4	7.3
MSCI Emerging Markets	9.6	-1.2	10.5	2.4	9.0	2.5
MSCI Emerging Markets (Local Currency)	8.6	2.7	12.5	4.8	9.6	5.6
Fixed Income						
Bloomberg Barclays Universal	1.0	6.2	6.7	5.1	4.5	3.9
Bloomberg Barclays Aggregate	0.6	6.8	7.0	5.2	4.2	3.6
Bloomberg Barclays US TIPS	3.0	9.2	10.1	5.8	4.6	3.6
Bloomberg Barclays High Yield	4.6	0.6	3.3	4.2	6.8	6.5
JPM GBI-EM Global Diversified	0.6	-6.3	-1.4	0.2	4.8	0.5
Other						
FTSE NAREIT Equity	1.4	-17.5	-18.2	0.2	3.9	7.9
Bloomberg Commodity Index	9.1	-12.1	-8.2	-4.2	-3.1	-6.0
HFRI Fund of Funds	4.2	2.5	5.6	2.9	3.1	2.9

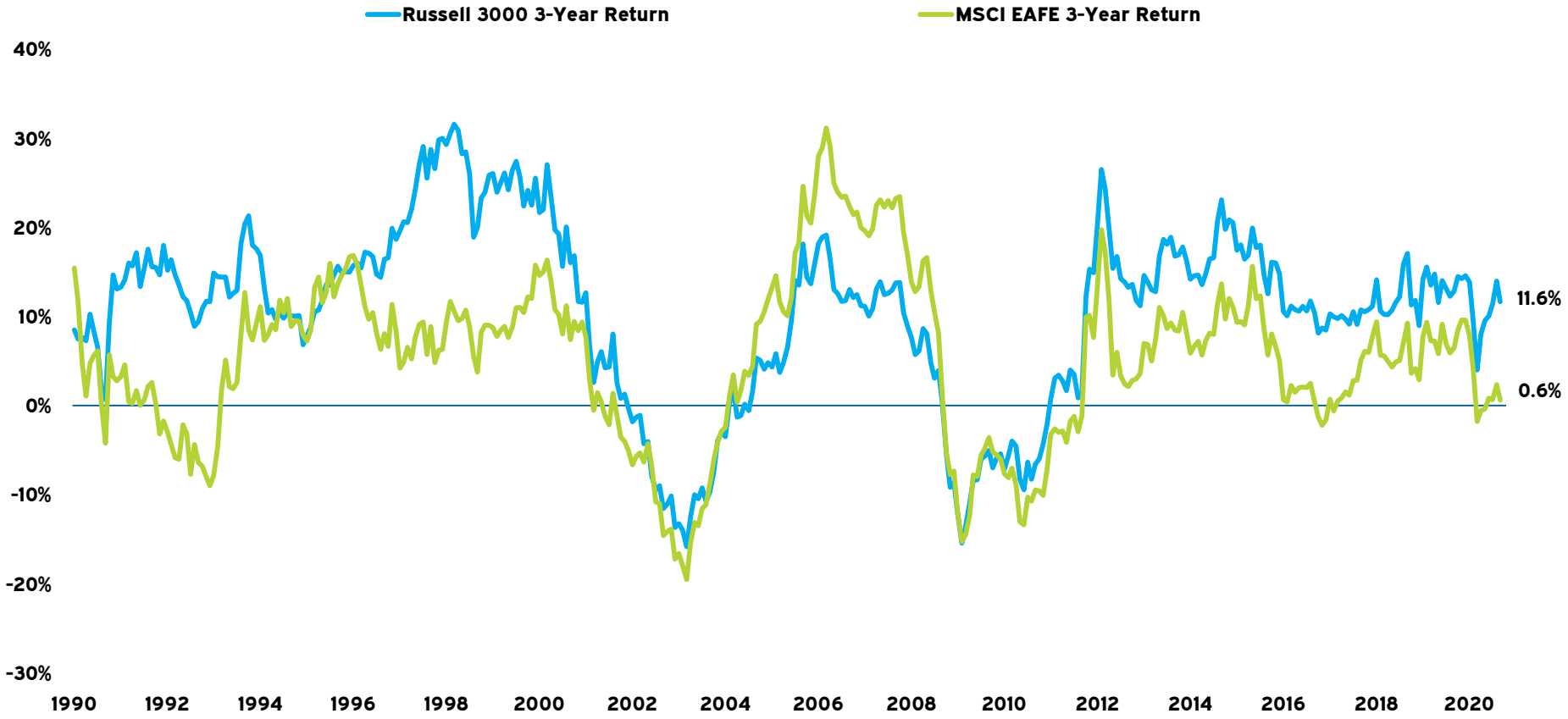
[1] Source: InvestorForce.

S&P Sector Returns[1]



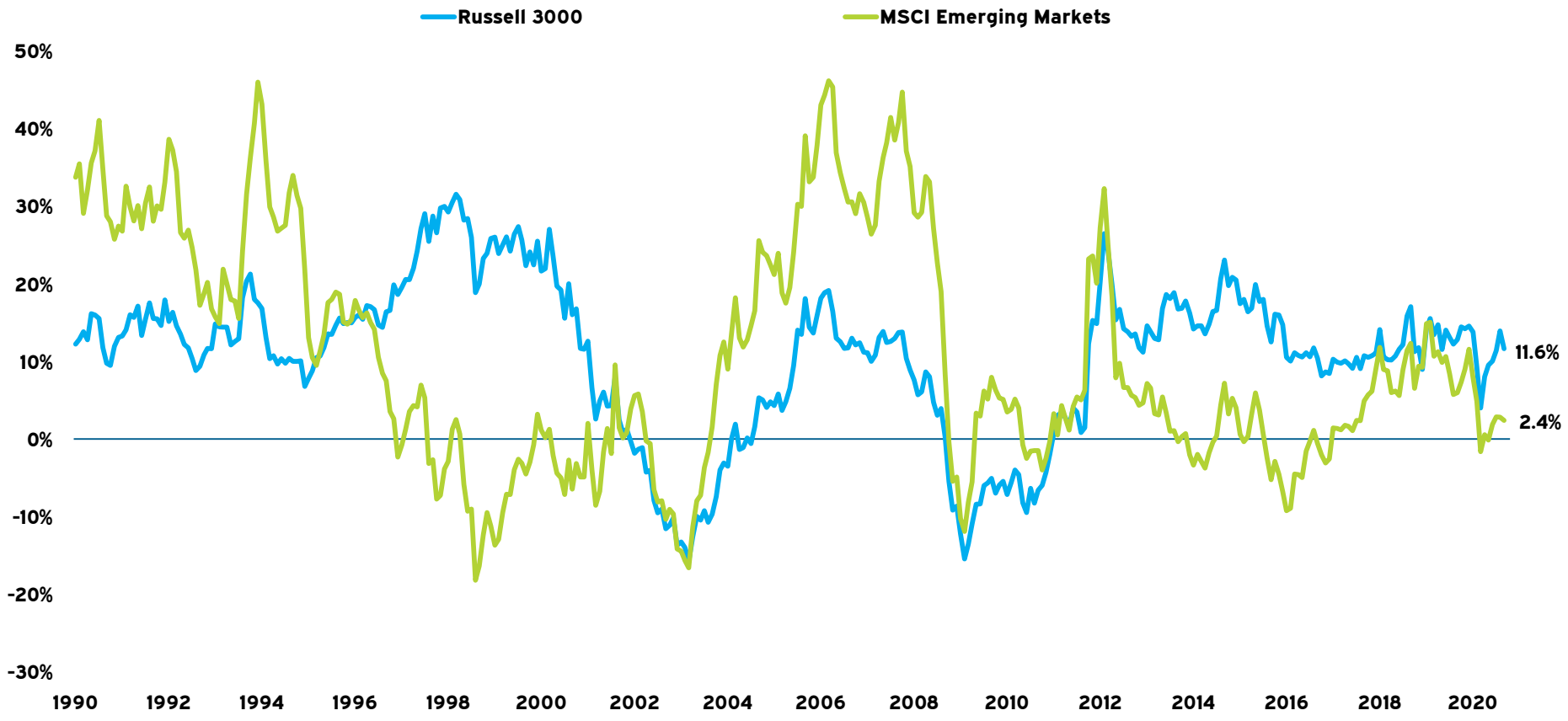
[1] Source: InvestorForce. Represents S&P 1500 (All Cap) data.

US and Developed Market Foreign Equity Rolling Three-Year Returns[1]



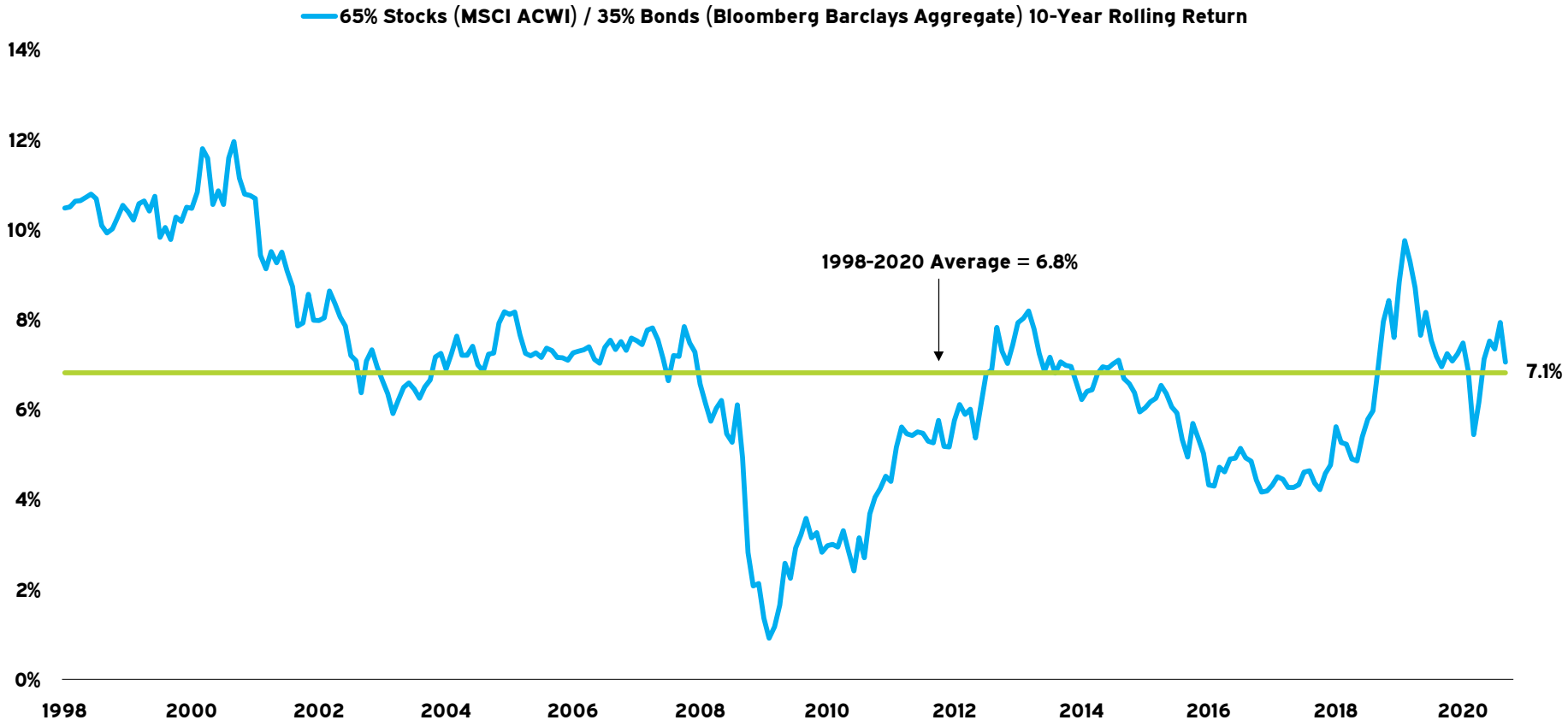
[1] Source: InvestorForce.

US and Emerging Market Equity Rolling Three-Year Returns[1]



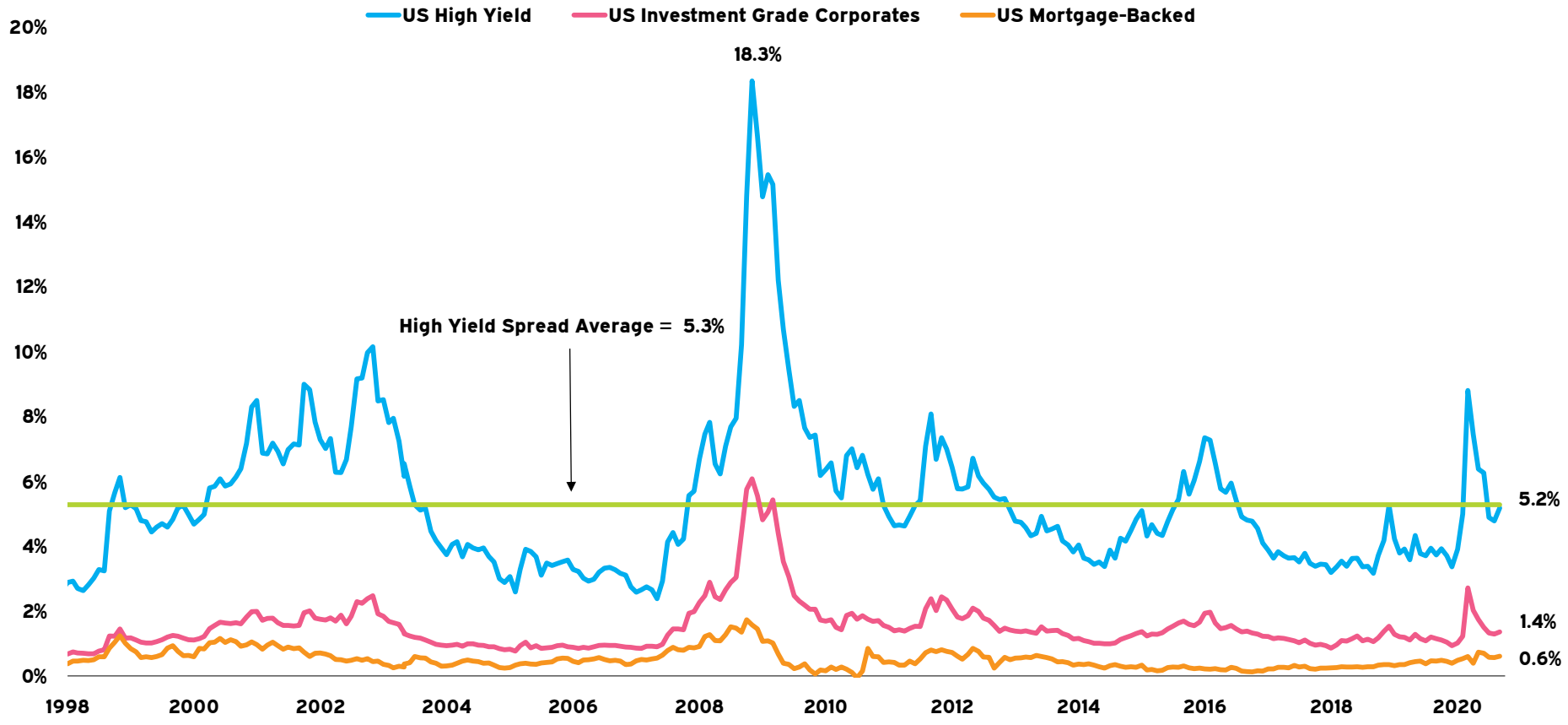
[1] Source: InvestorForce.

Rolling Ten-Year Returns: 65% Stocks and 35% Bonds[1]



[1] Source: InvestorForce.

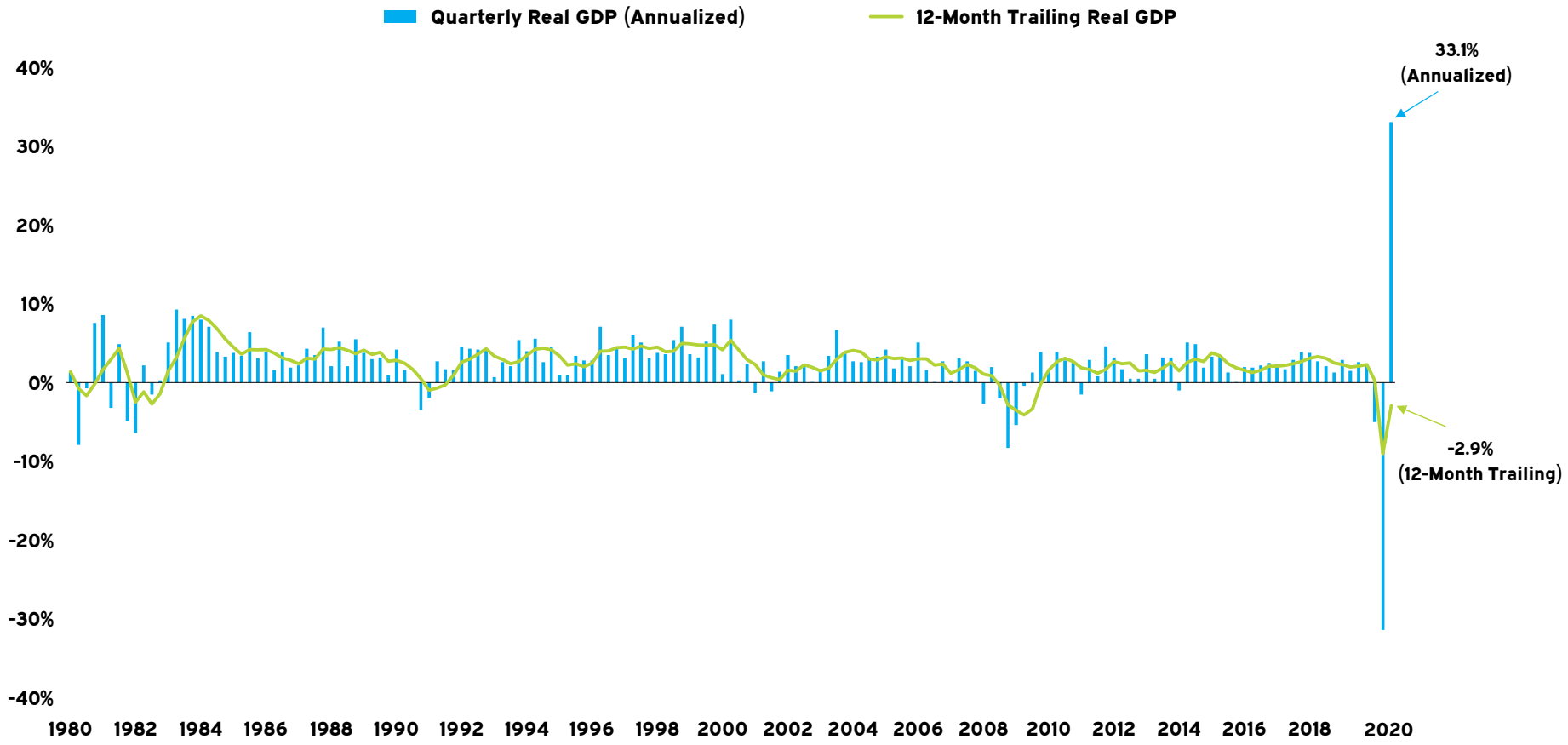
Credit Spreads vs. US Treasury Bonds[1,2]



1 Source: Barclays Live. Data represents the OAS.

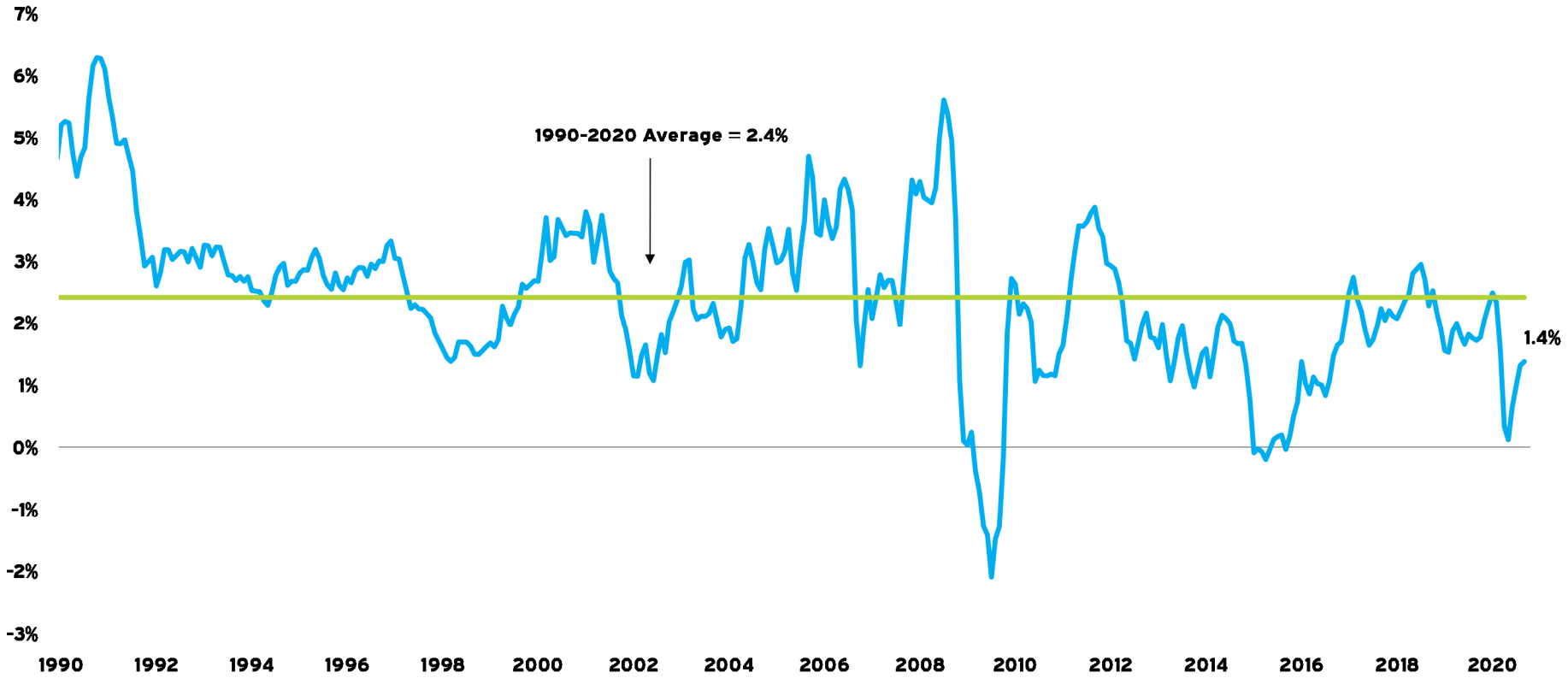
2 The median high yield spread was 4.8% from 1997-2020.

US Real Gross Domestic Product (GDP) Growth[1]



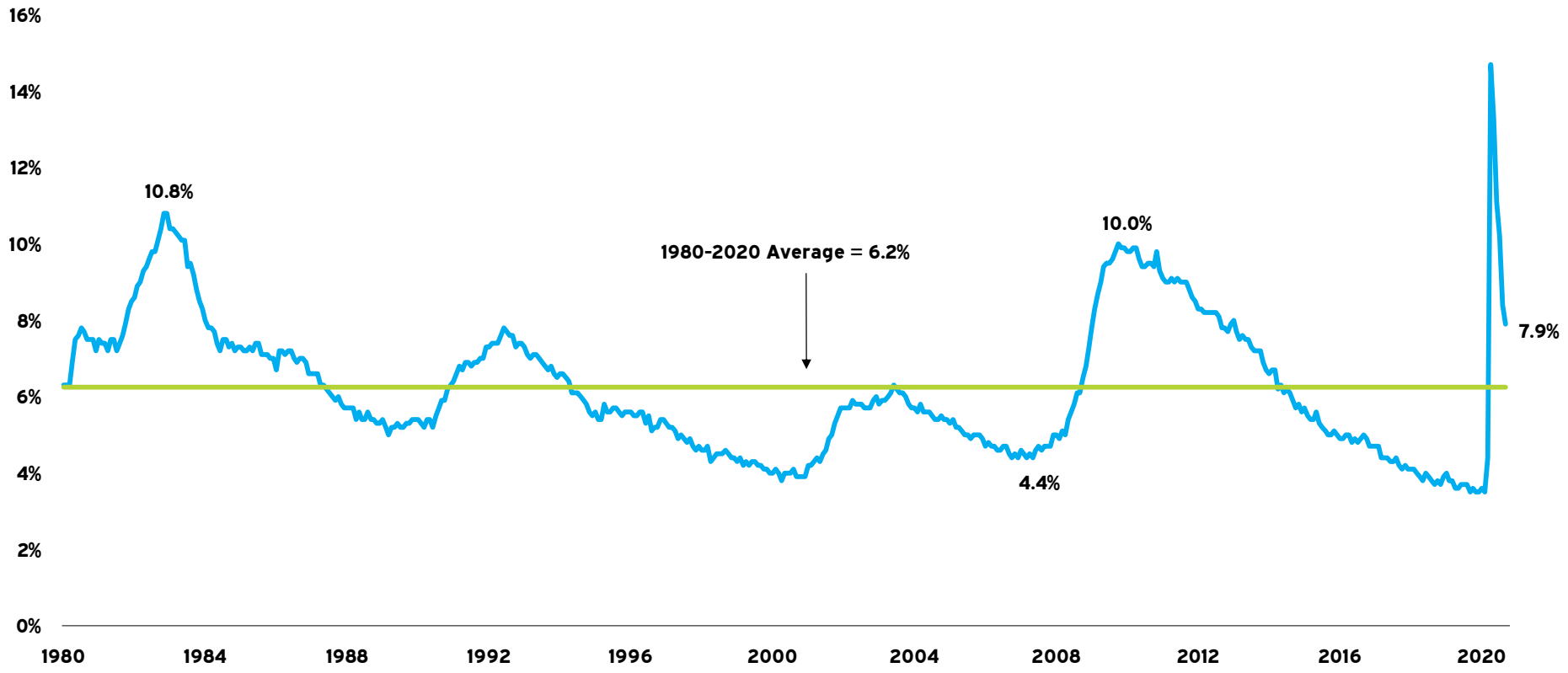
[1] Source: Bureau of Economic Analysis. Data is as of Q3 2020 and represents the first estimate.

US Inflation (CPI)
Trailing Twelve Months[1]



[1] Source: Bureau of Labor Statistics. Data is non-seasonally adjusted CPI, which may be volatile in the short-term. Data is as of September 30, 2020.

US Unemployment[1]



[1] Source: Bureau of Labor Statistics. Data is as of September 30, 2020.

Capital Markets Outlook & Risk Metrics

As of October 31, 2020

Capital Markets Outlook

Takeaways

- October saw a modest reversal from the primary themes of Q2 and Q3. In particular, global equity markets generally produced flat-to-negative returns, although small cap and value stocks regained some ground relative to their counterparts. Additionally, longer-term interest rates in the US ticked up slightly, resulting in negative returns for most safe haven assets (e.g., US Treasury bonds).
- Risk-oriented markets have rebounded significantly since the March lows, although October represented a pause to the recovery. Despite some catch-up in October, there continues to be a high degree of divergence among equity regions/styles/capitalizations, and this is exemplified at the extremes with US large cap growth stocks outperforming US small cap value stocks by nearly 40% thus far in 2020.
- While the shorter portions of the US Treasury curve were stable during October, yields rose by 10-20 basis points for US Treasuries greater than 5 years in maturity. Although this movement is not significant in an absolute sense, at current interest rate levels such a move does modestly impact bond prices.
- Real yields in the US ticked up during October, with the most significant movements occurring at the longer end of the curve. The entire real yield curve does, however, remain in negative territory.
- Q3 GDP and other economic data indicate that an economic recovery was well underway. However, recent increases in COVID-related cases/deaths, as well as newly announced shutdowns in Europe and other regions, represent a new headwind to the recovery.

Capital Markets Outlook

Takeaways

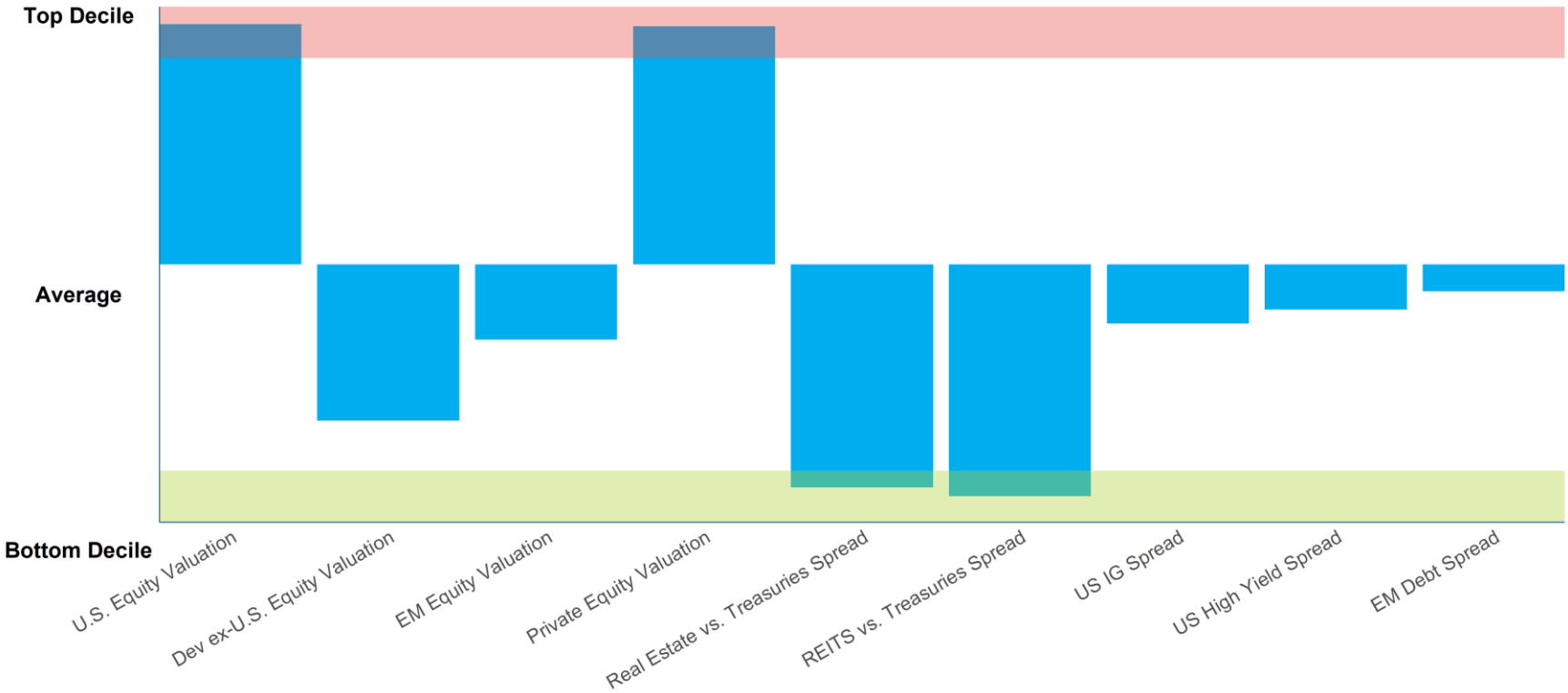
- Market activity appears to be focused on two items: 1) 2020 election results and 2) vaccine development and COVID-related shutdowns. Returning to pre-COVID levels of economic activity is not expected to occur until 2021 at the earliest.
- Implied equity market volatility[1] increased throughout October before ending the month at around 38. Conversely, our Systemic Risk measure decreased during the month, while implied fixed income volatility[2] increased.
- While valuations for several risk-based asset classes appear neutral-to-attractive at first glance, it is important to note that the full impact on corporate earnings and solvencies remains unknown. The path that the global economy will take moving forward is uncertain.
- The Market Sentiment Indicator[3] returned to grey (i.e., neutral) at month-end.

[1] As measured by VIX Index.

[2] As measured by MOVE Index.

[3] See Appendix for the rationale for selection and calculation methodology used for the risk metrics.

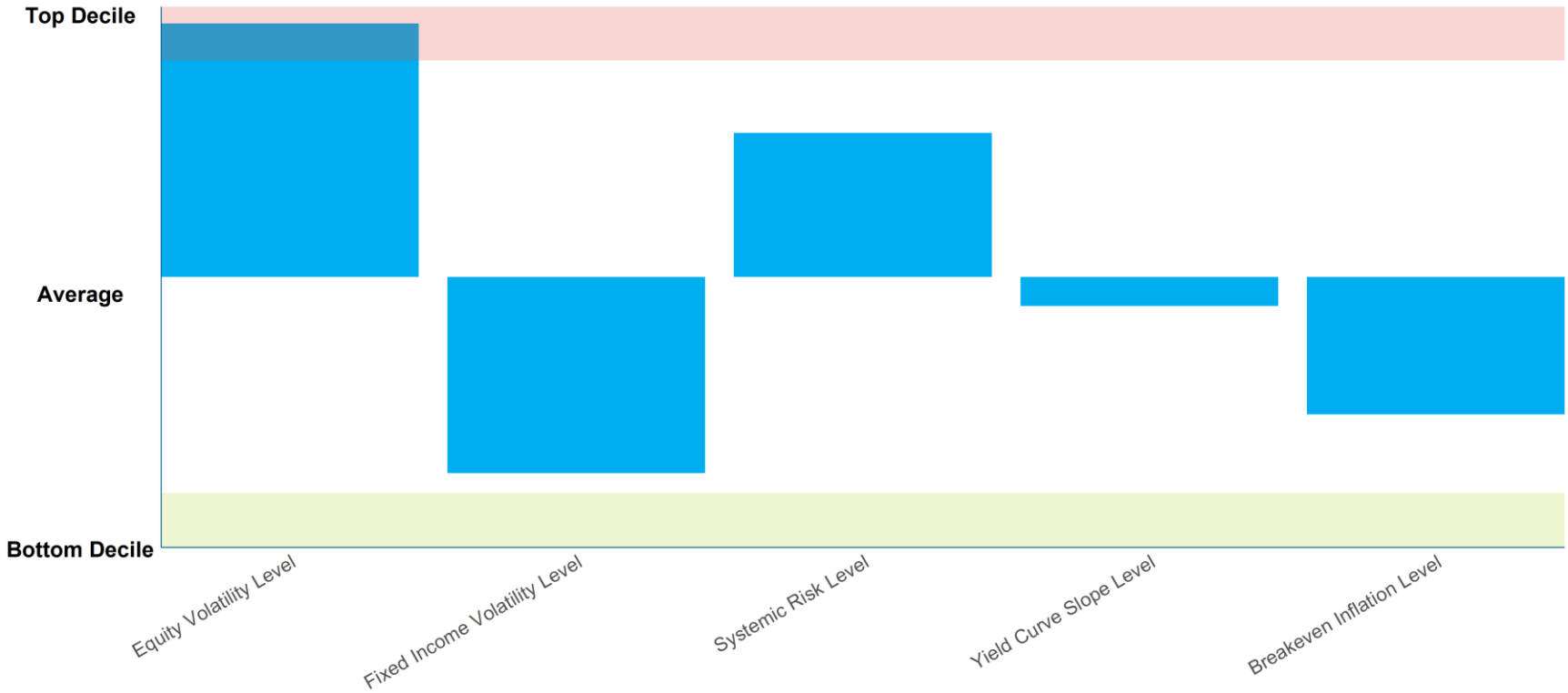
Risk Overview/Dashboard (1)
(As of October 31, 2020)[1]



- Dashboard (1) summarizes the current state of the different valuation metrics per asset class relative to their own history.

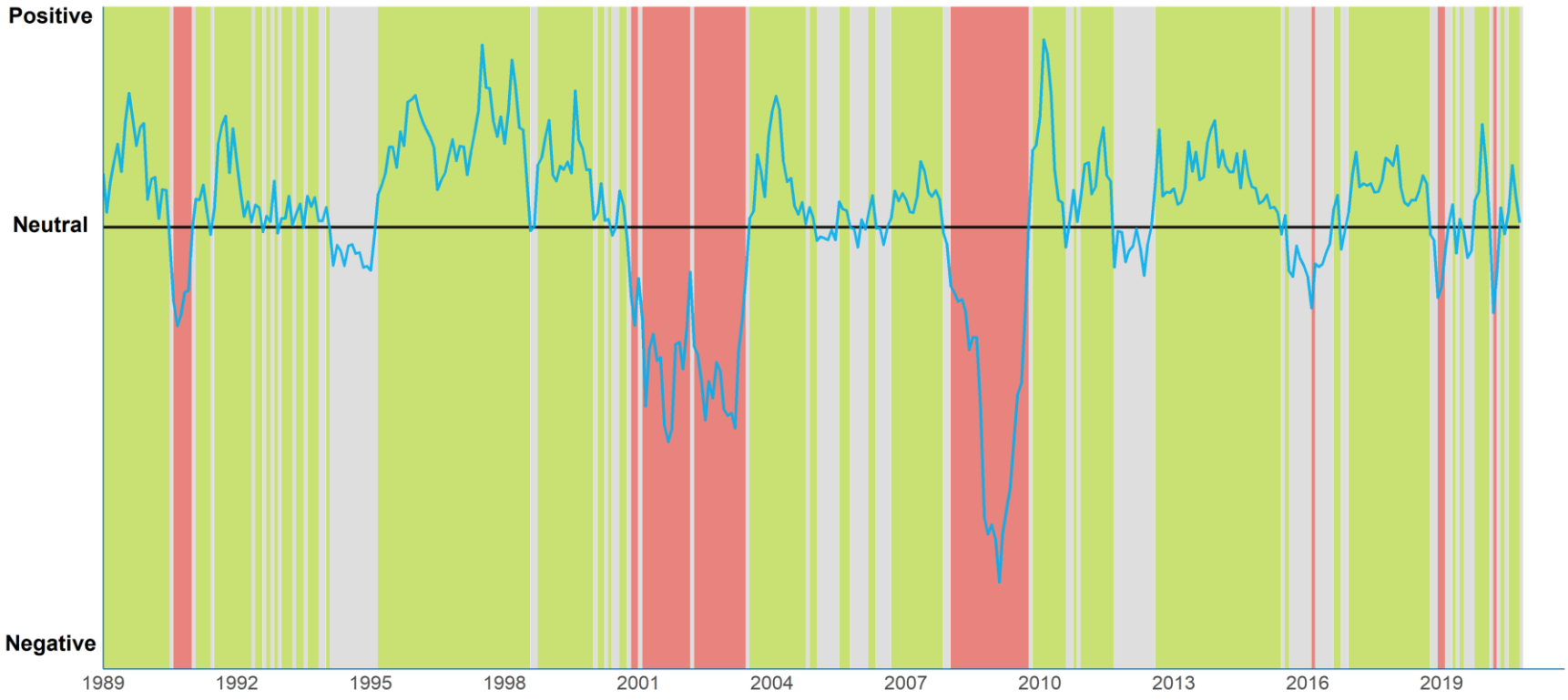
[1] With the exception of Private Equity Valuation, that is YTD as of December 31, 2019.

Risk Overview/Dashboard (2)
(As of October 31, 2020)

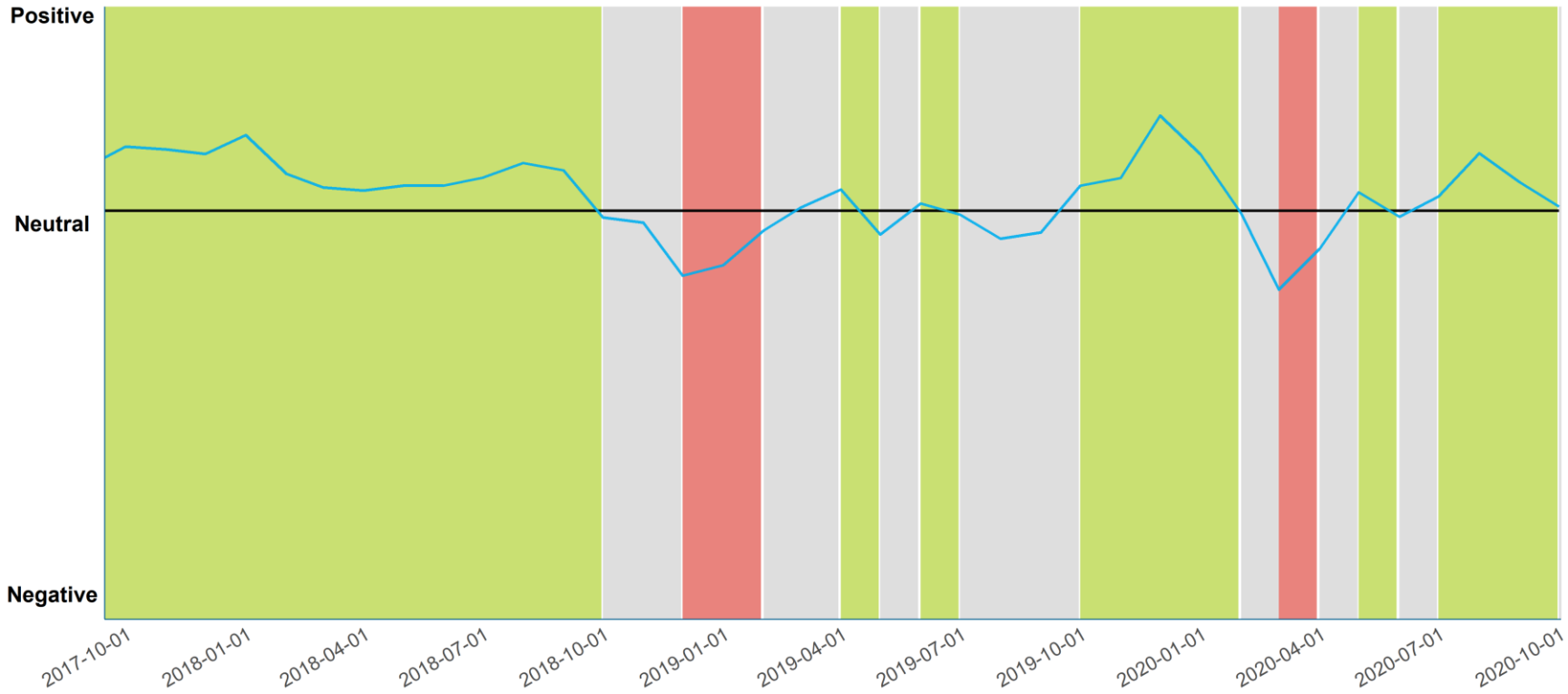


- Dashboard (2) shows how the current level of each indicator compares to its respective history.

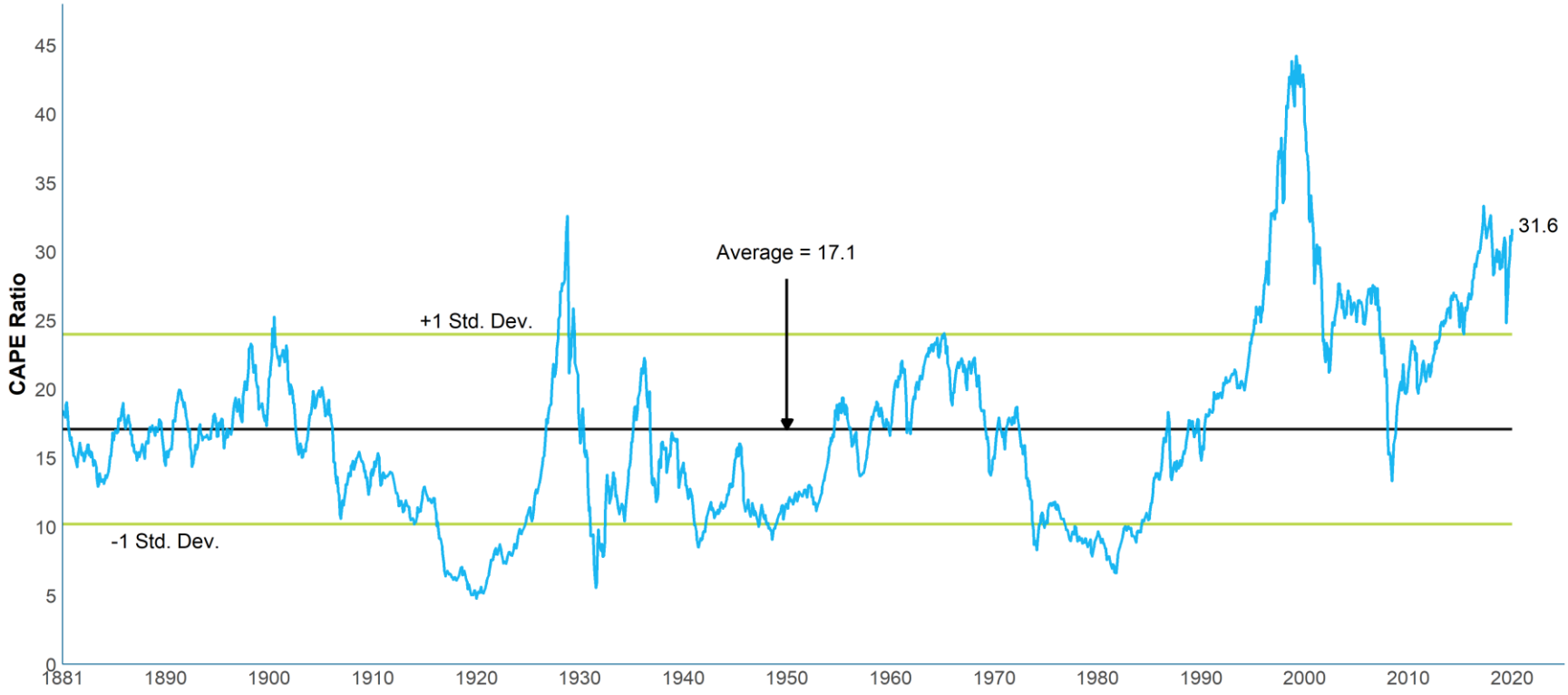
Market Sentiment Indicator (All History)
(As of October 31, 2020)



Market Sentiment Indicator (Last Three Years)
(As of October 31, 2020)



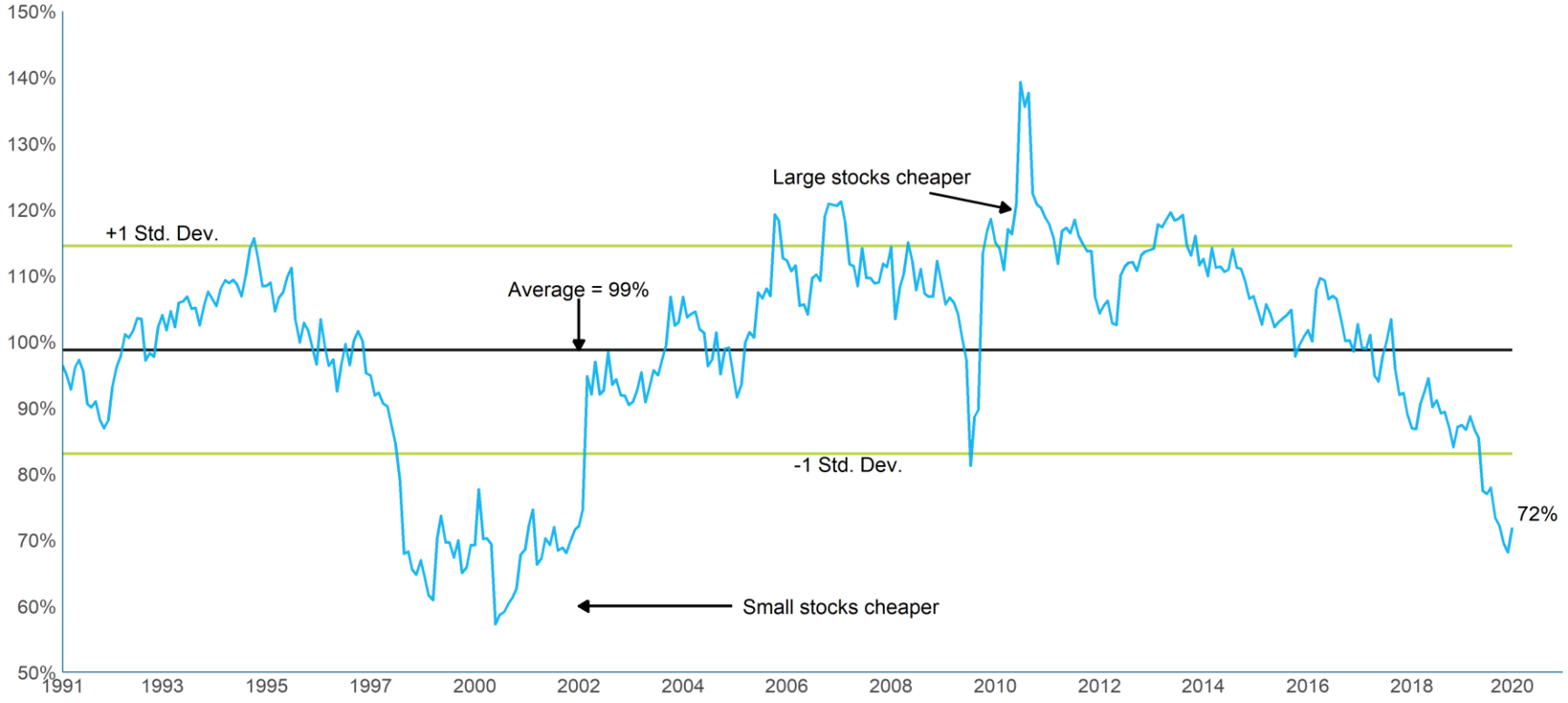
US Equity Cyclically Adjusted P/E[1]
(As of October 31, 2020)



- This chart details one valuation metric for US equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

[1] US Equity Cyclically Adjusted P/E on S&P 500 Index. Source: Robert Shiller, Yale University, and Meketa Investment Group.

Small Cap P/E vs. Large Cap P/E[1]
(As of October 31, 2020)



- This chart compares the relative attractiveness of small cap US equities vs. large cap US equities on a valuation basis. A higher (lower) figure indicates that large cap (small cap) is more attractive.

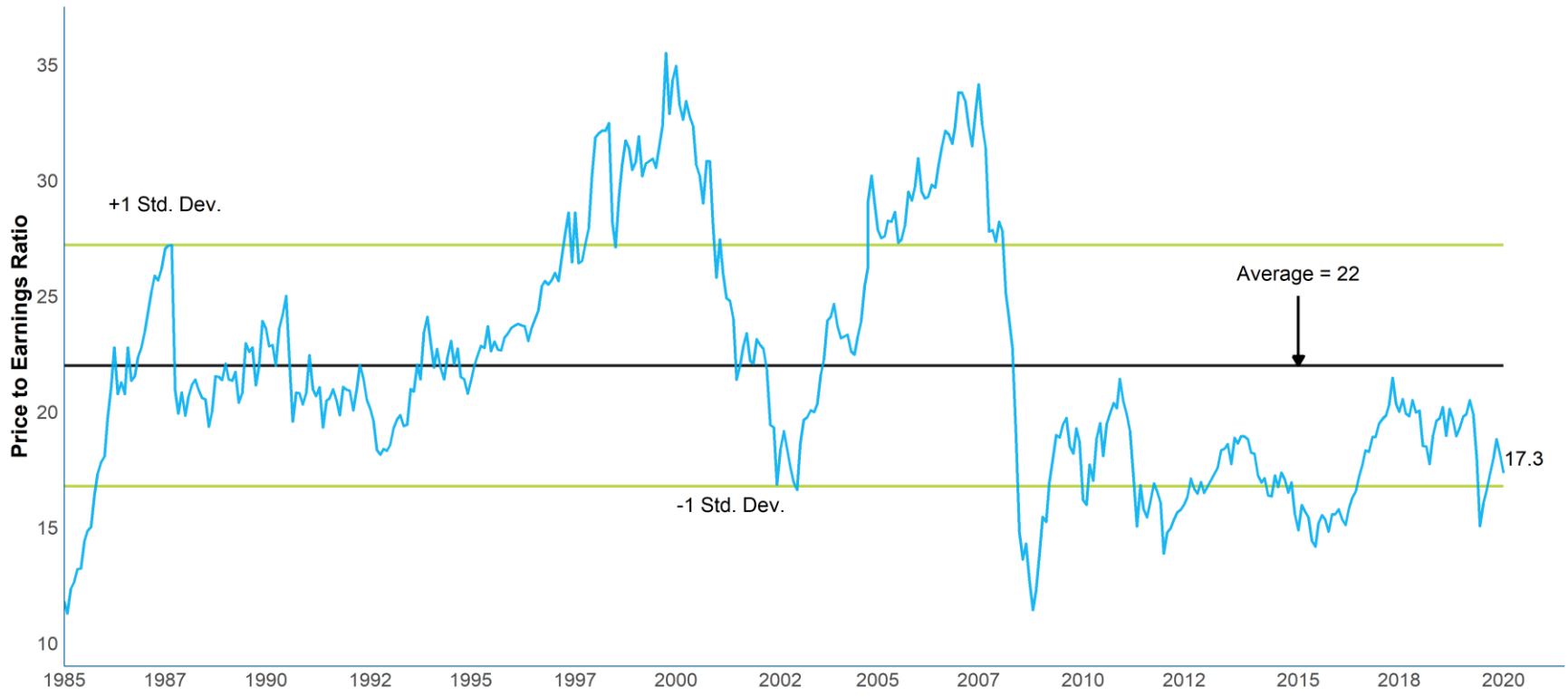
[1] Small Cap P/E (Russell 2000 Index) vs. Large Cap P/E (Russell 1000 Index) - Source: Russell Investments. Earnings figures represent 12-month "as reported" earnings.

Growth P/E vs. Value P/E[1]
(As of October 31, 2020)

- This chart compares the relative attractiveness of US growth equities vs. US value equities on a valuation basis. A higher (lower) figure indicates that value (growth) is more attractive.

[1] 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.

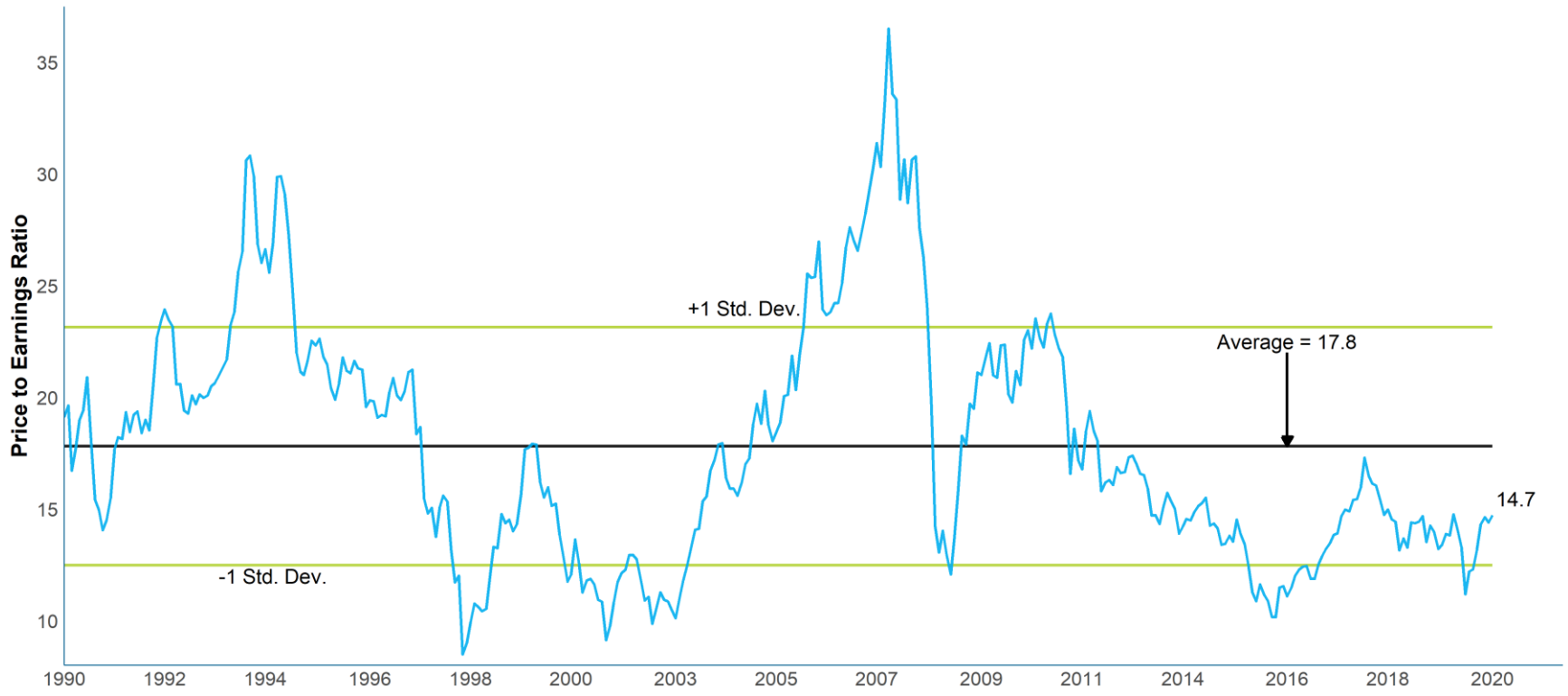
Developed International Equity Cyclically Adjusted P/E[1]
(As of October 31, 2020)



- This chart details one valuation metric for developed international equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

[1] 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.

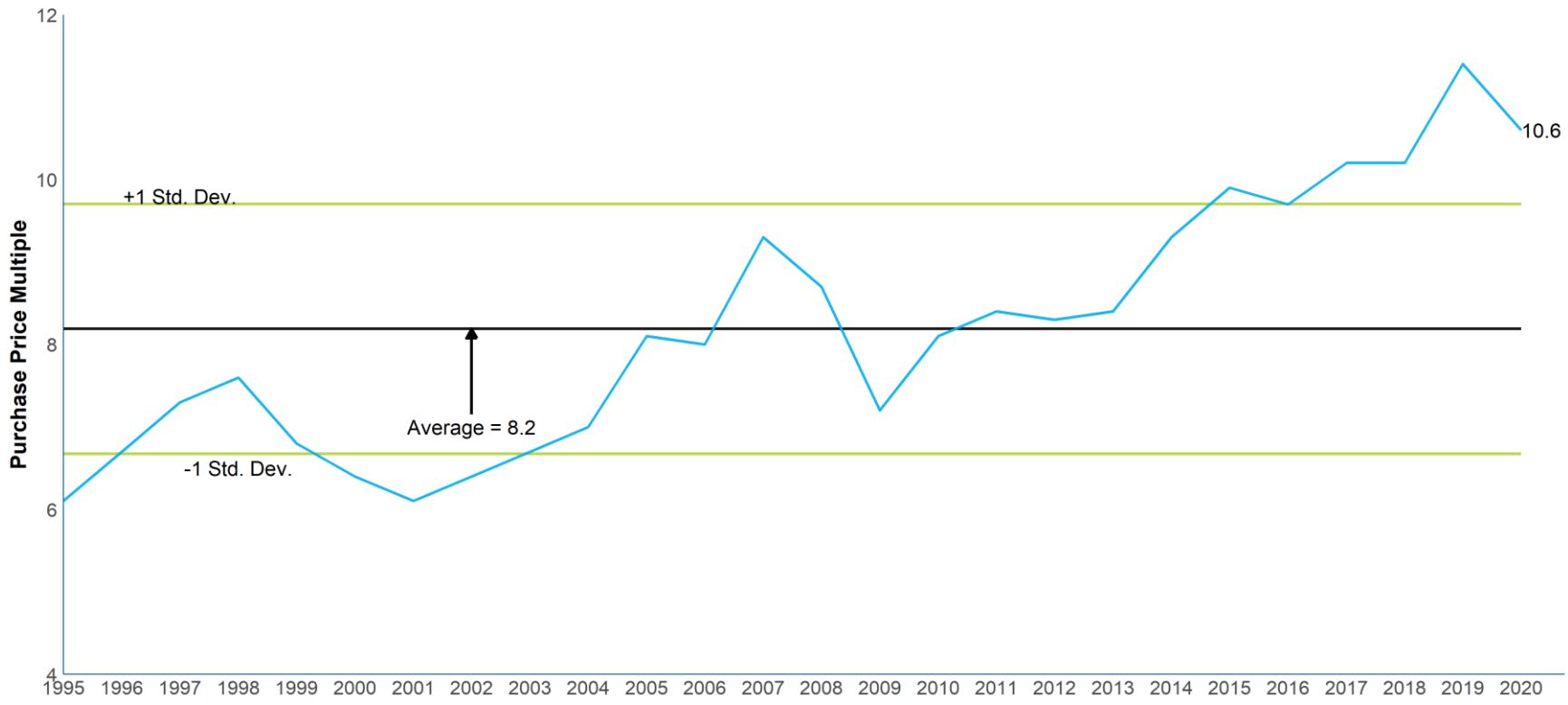
Emerging Market Equity Cyclically Adjusted P/E[1]
(As of October 31, 2020)



- This chart details one valuation metric for emerging markets equities. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

[1] 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[1]
(As of February 29, 2020)[2]

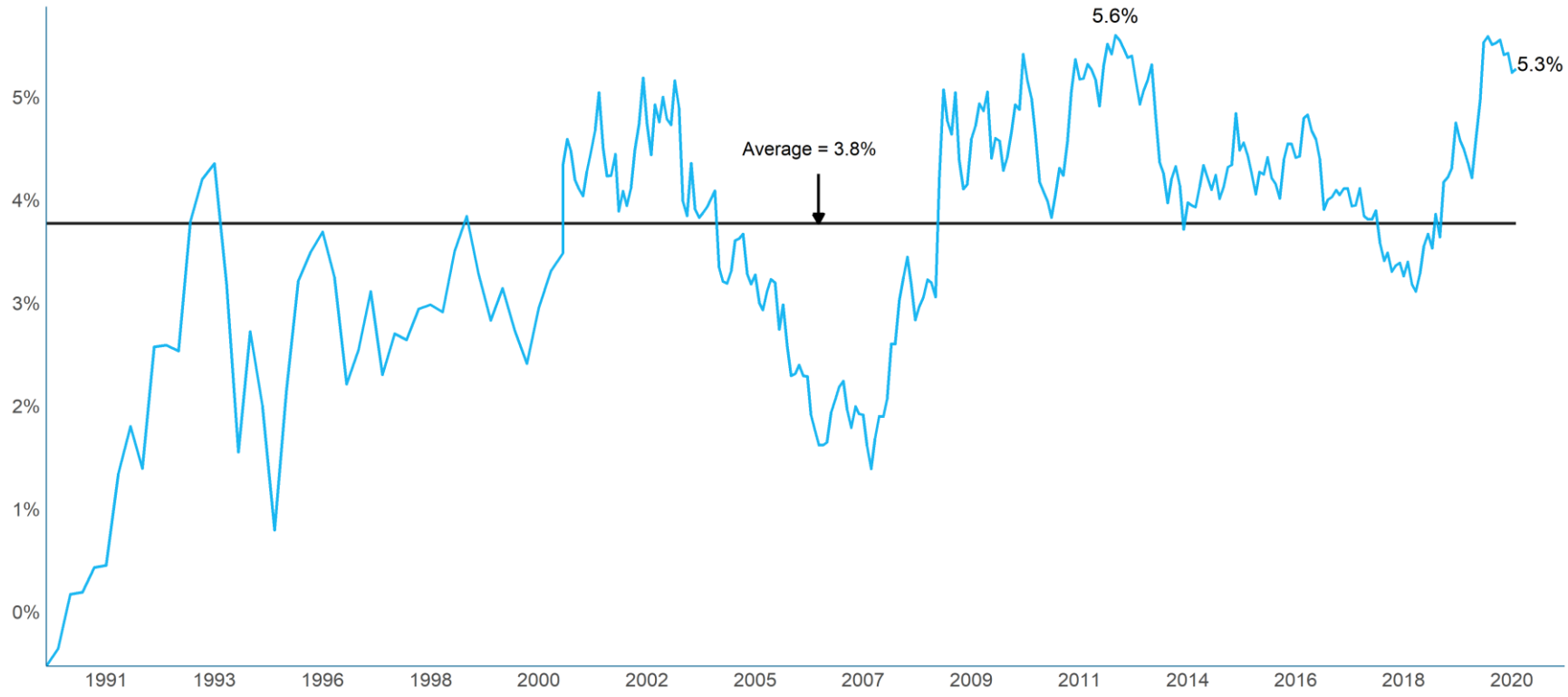


- This chart details one valuation metric for the private equity market. A higher (lower) figure indicates more expensive (cheaper) valuation relative to history.

[1] Private Equity Multiples – Source: S&P LCD Average EBITDA Multiples Paid in All LBOs.

[2] Annual figures, except for 2020 (YTD).

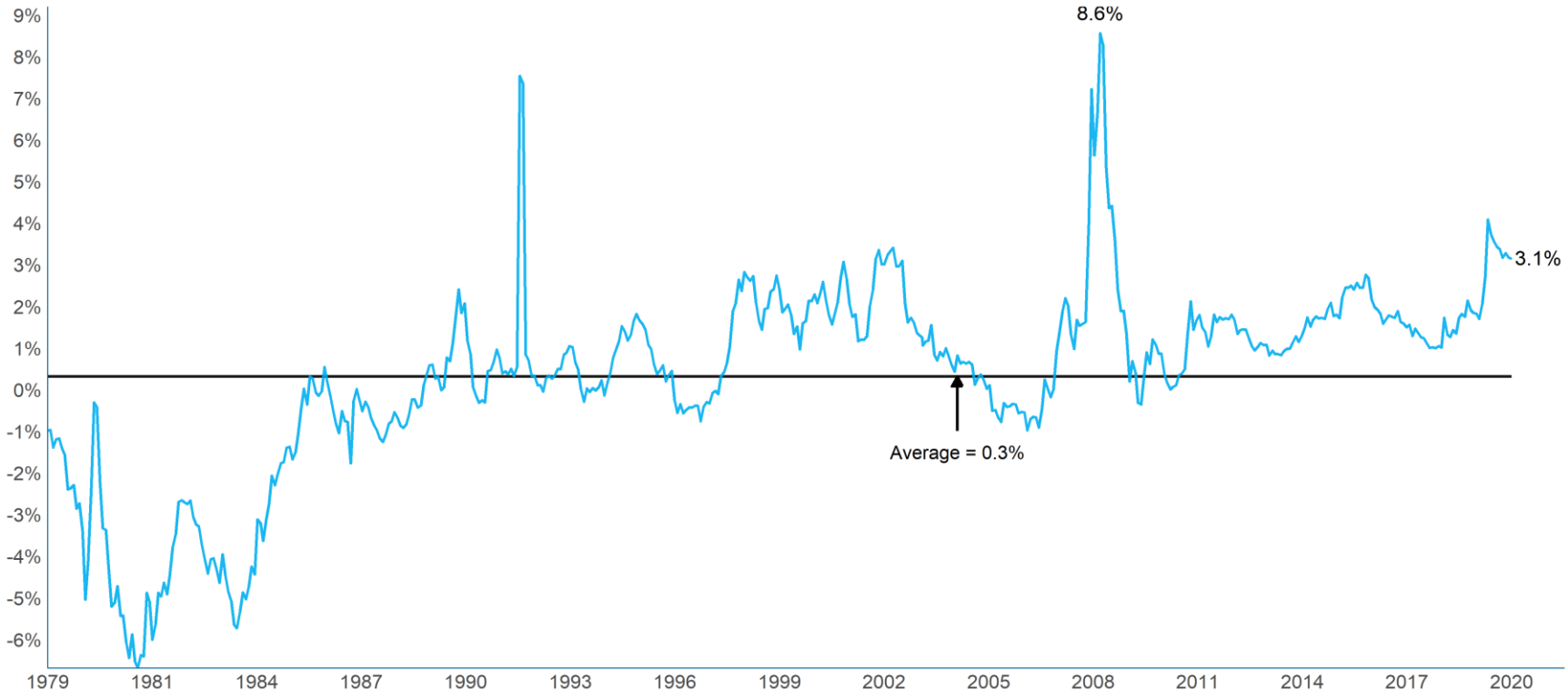
Core Real Estate Spread vs. Ten-Year Treasury[1]
(As of October 31, 2020)



- This chart details one valuation metric for the private core real estate market. A higher (lower) figure indicates cheaper (more expensive) valuation.

[1] Core Real Estate Spread vs. Ten-Year Treasury – Source: Real Capital Analytics, US 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.

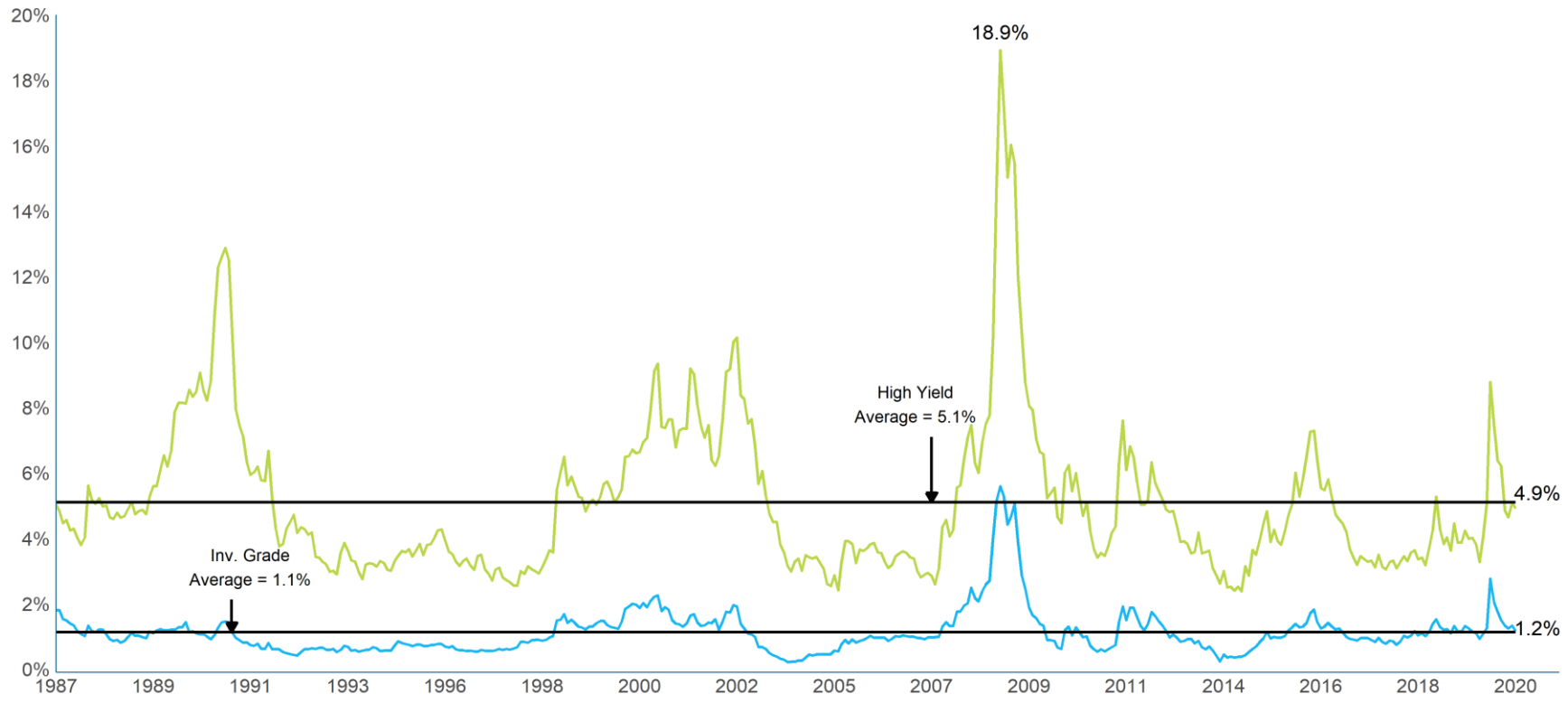
REITs Dividend Yield Spread vs. Ten-Year Treasury[1]
(As of October 31, 2020)



- This chart details one valuation metric for the public REITs market. A higher (lower) figure indicates cheaper (more expensive) valuation.

[1] REITs Dividend Yield Spread vs. Ten-Year Treasury – Source: NAREIT, US Treasury. REITs are proxied by the yield for the NAREIT Equity index.

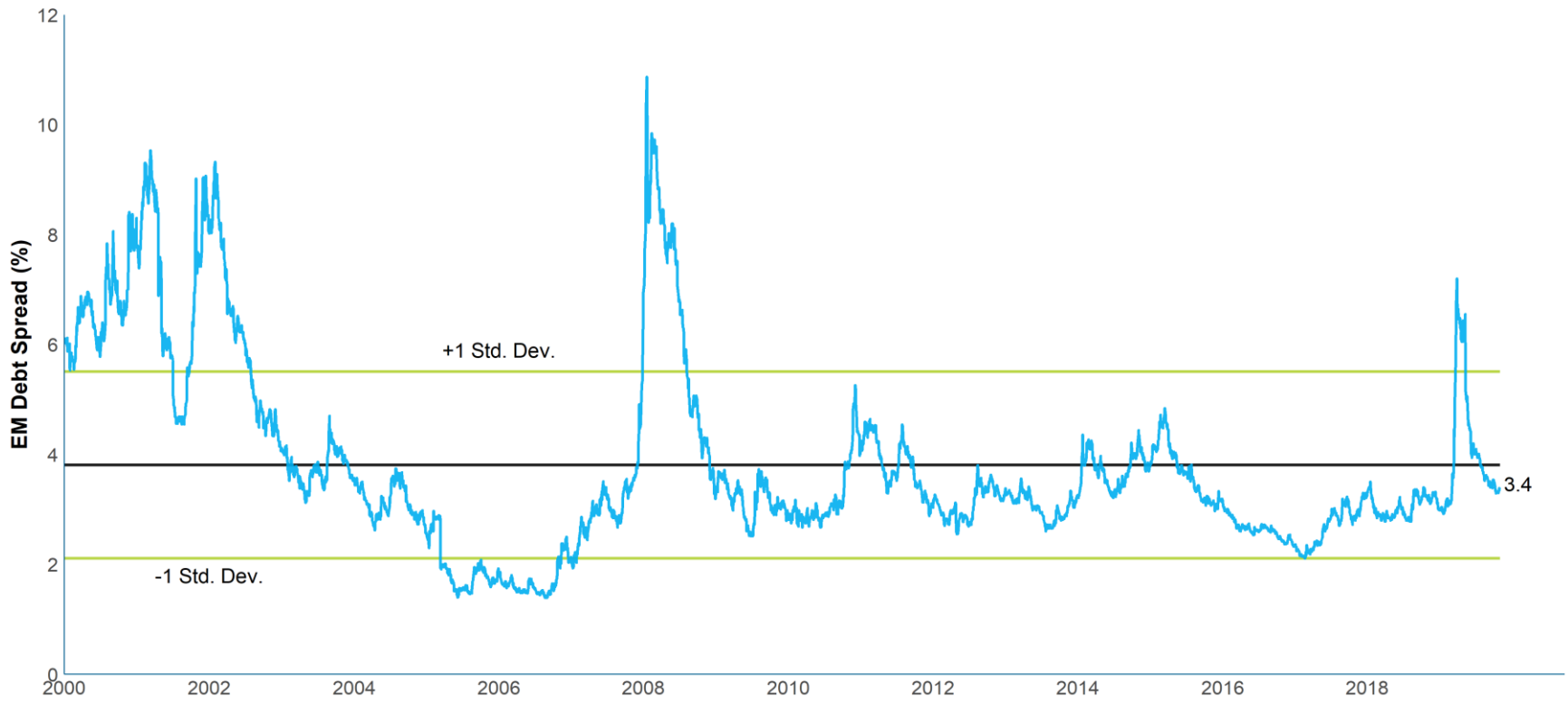
Credit Spreads[1]
(As of October 31, 2020)



- This chart details one valuation metric for the US credit markets. A higher (lower) figure indicates cheaper (more expensive) valuation relative to history.

[1] Credit Spreads – Source: Barclays Capital. High Yield is proxied by the Barclays High Yield index and Investment Grade Corporates are proxied by the Barclays US Corporate Investment Grade index. Spread is calculated as the difference between the Yield to Worst of the respective index and the 10-Year US Treasury yield.

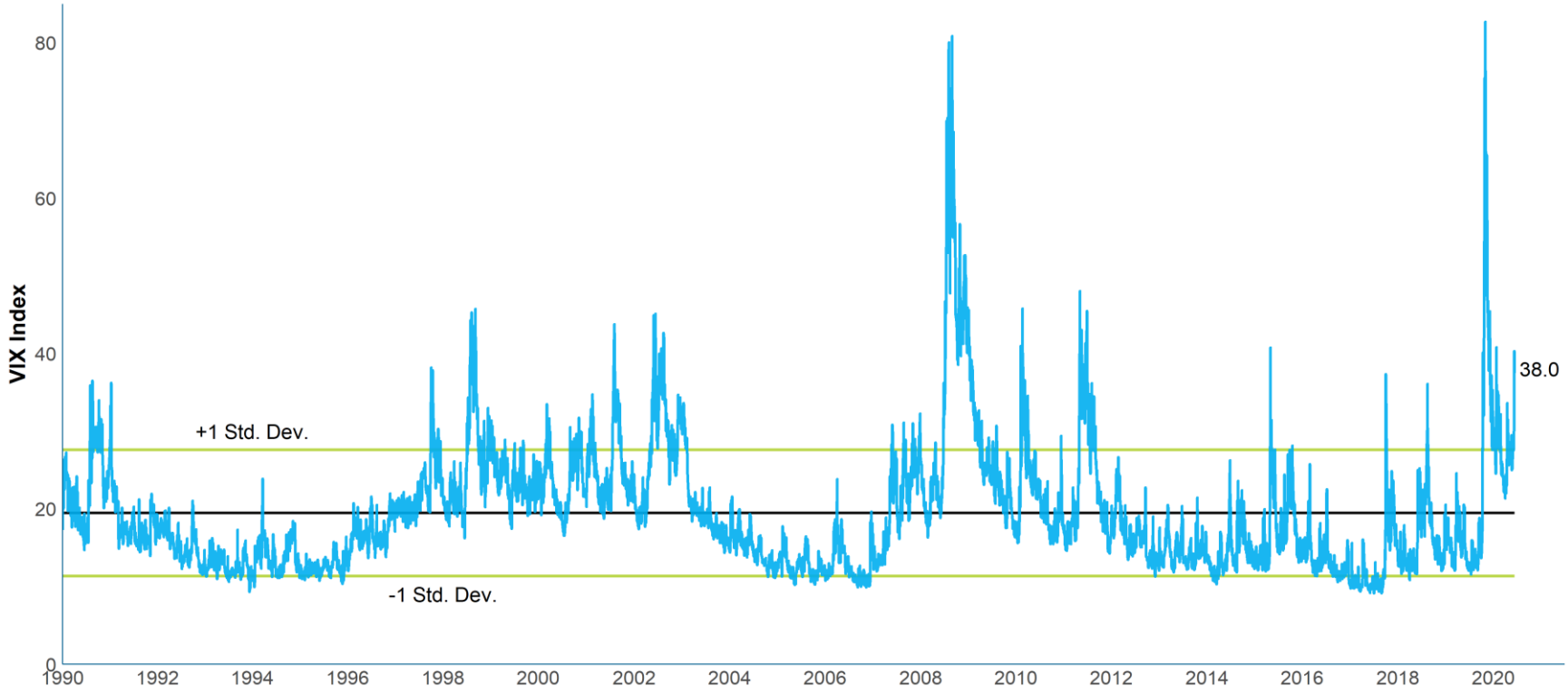
Emerging Market Debt Spreads[1]
(As of October 31, 2020)



- This chart details one valuation metric for the EM debt markets. A higher (lower) figure indicates cheaper (more expensive) valuation relative to history.

[1] EM Spreads – Source: Bloomberg. Option Adjusted Spread (OAS) for the Bloomberg Barclays EM USD Aggregate Index.

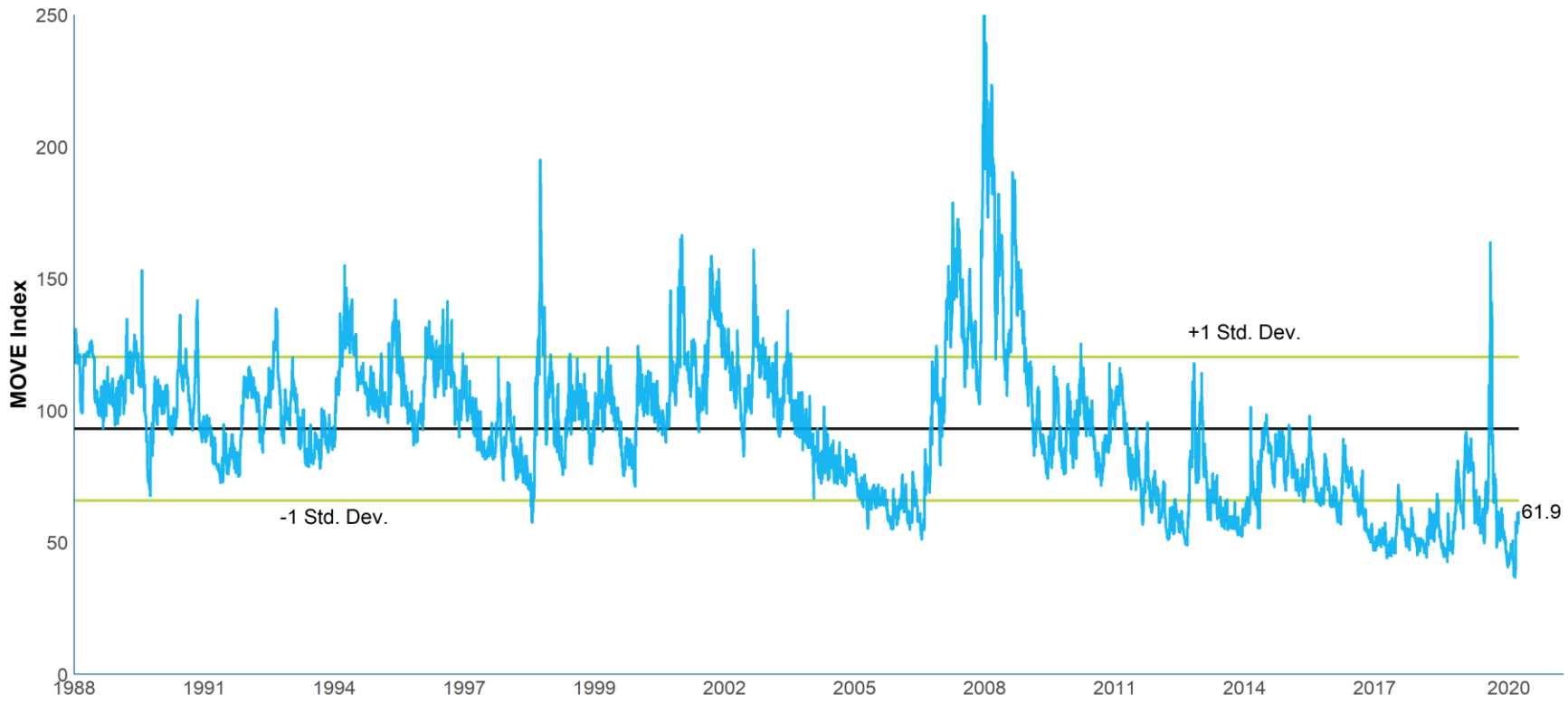
Equity Volatility[1]
(As of October 31, 2020)



- This chart details historical implied equity market volatility. This metric tends to increase during times of stress/fear and while declining during more benign periods.

[1] Equity Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by VIX Index, a Measure of implied option volatility for US equity markets.

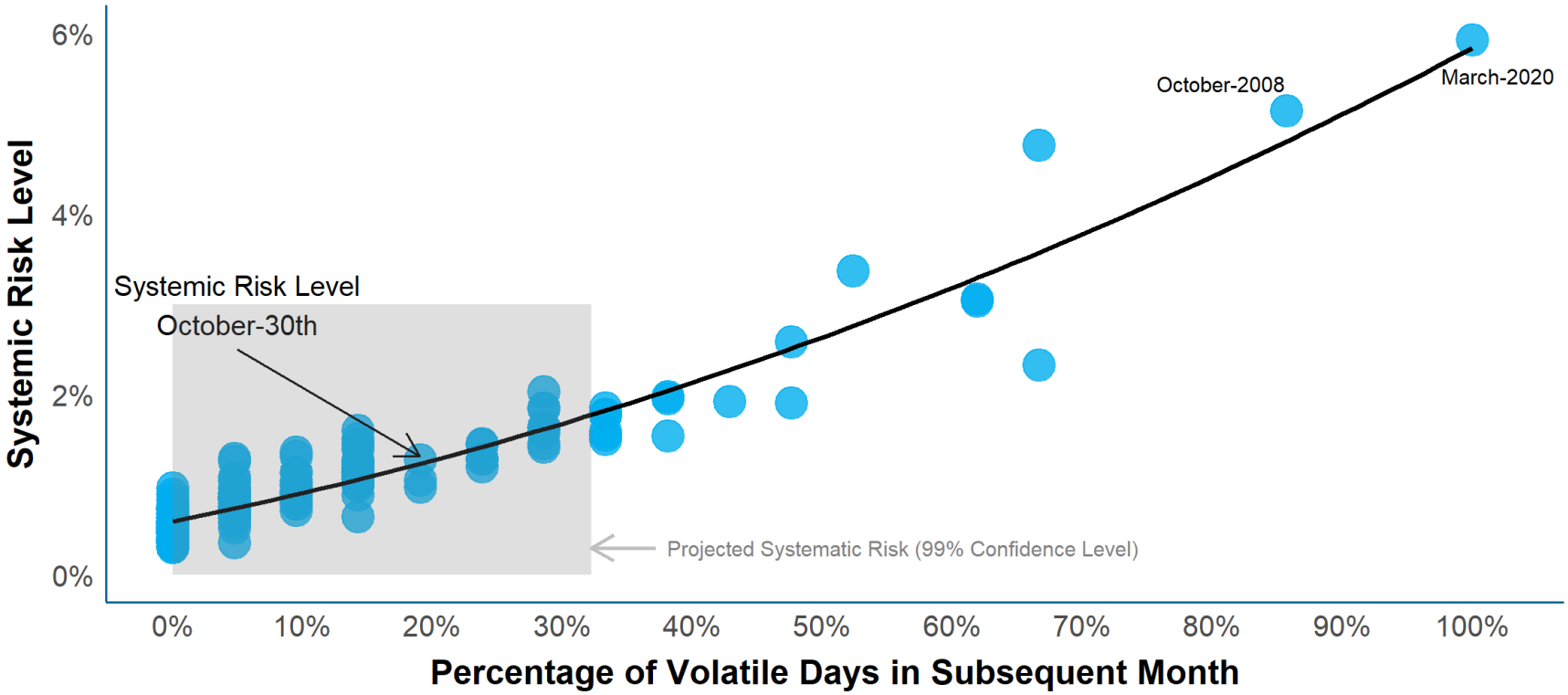
Fixed Income Volatility[1]
(As of October 31, 2020)



- This chart details historical implied fixed income market volatility. This metric tends to increase during times of stress/fear and while declining during more benign periods.

[1] Fixed Income Volatility – Source: Bloomberg, and Meketa Investment Group. Fixed Income Volatility proxied by MOVE Index, a Measure of implied option volatility for US Treasury markets.

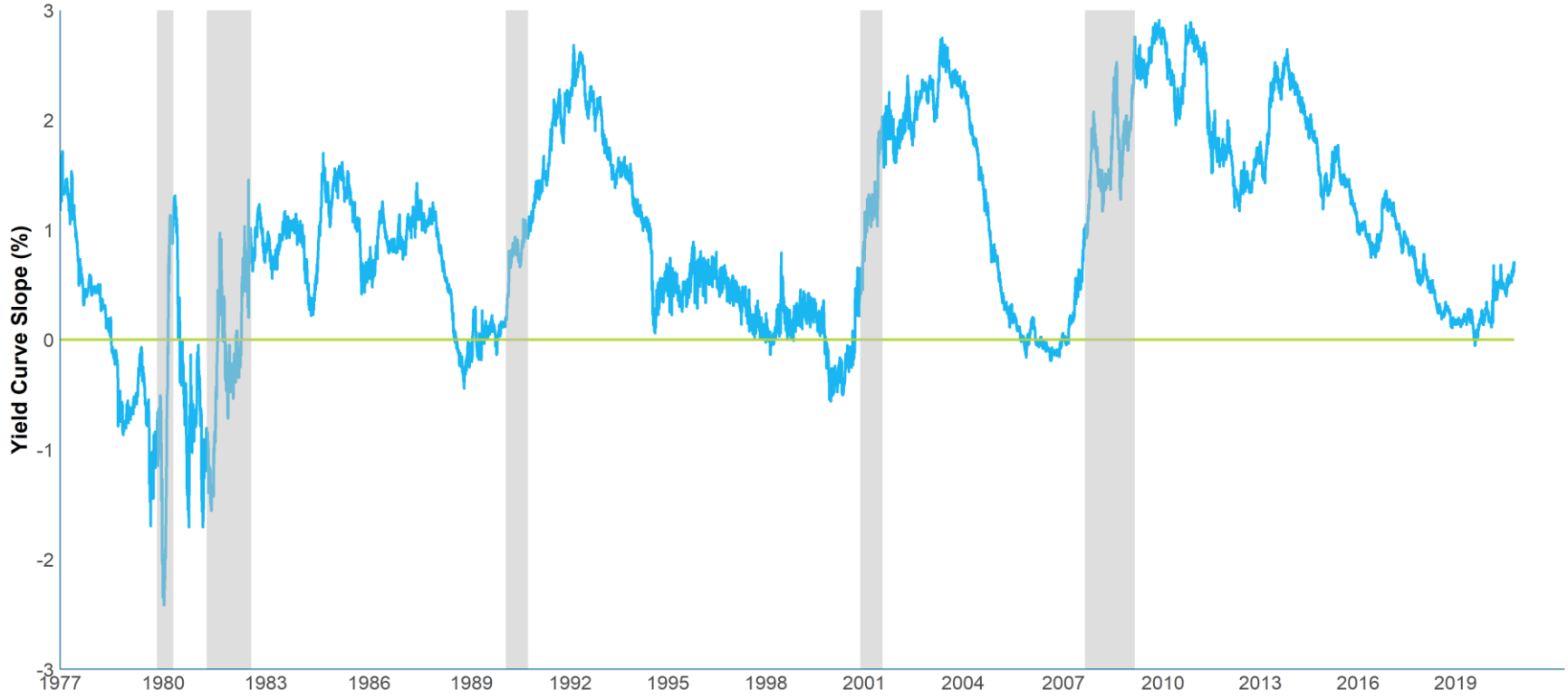
Systemic Risk and Volatile Market Days[1]
(As of October 31, 2020)



- Systemic Risk is a measure of 'System-wide' risk, which indicates herding type behavior.

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

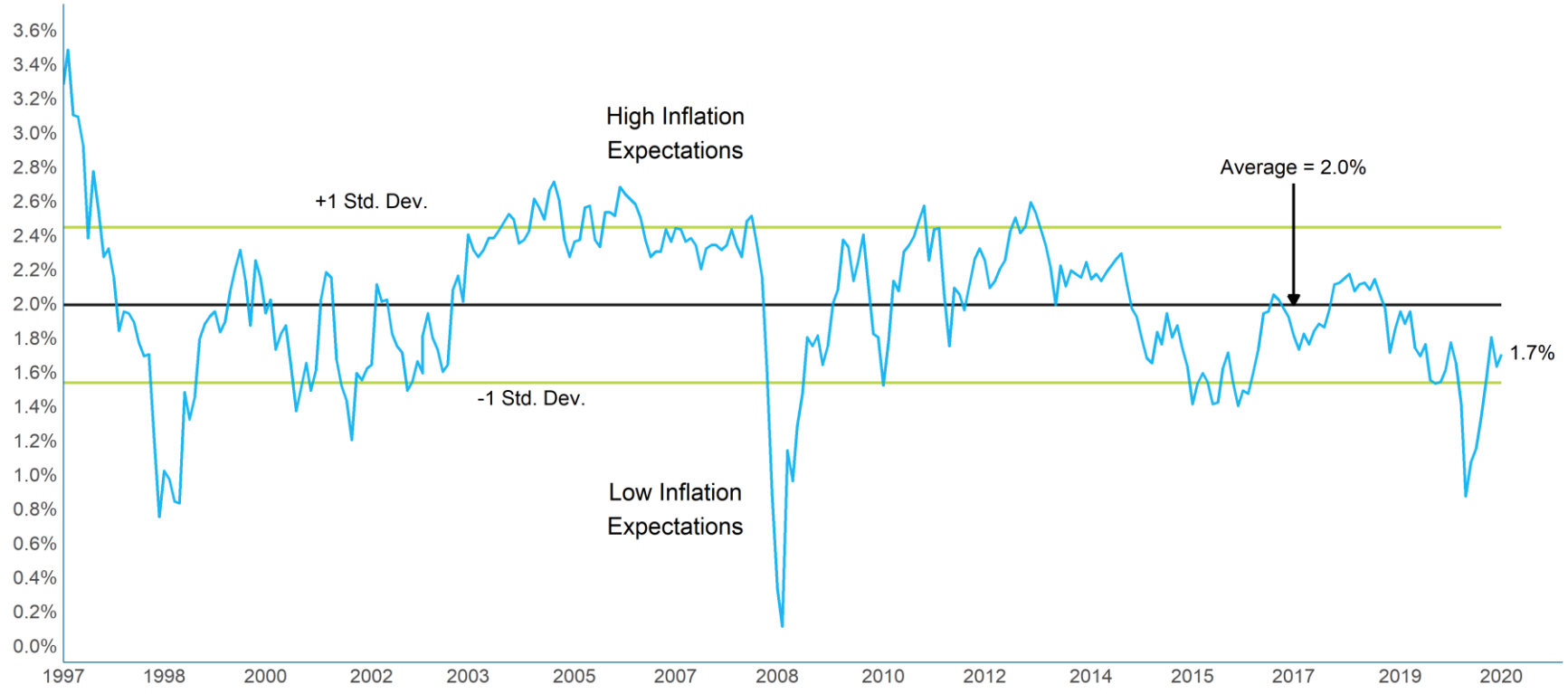
Yield Curve Slope (Ten Minus Two)[1]
(As of October 31, 2020)



- This chart details the historical difference in yields between ten-year and two-year US Treasury bonds/notes. A higher (lower) figure indicates a steeper (flatter) yield curve slope.

[1] Yield Curve Slope (Ten Minus Two) – Source: Bloomberg, and Meketa Investment Group. Yield curve slope is calculated as the difference between the 10-Year US Treasury Yield and 2-Year US Treasury Yield.

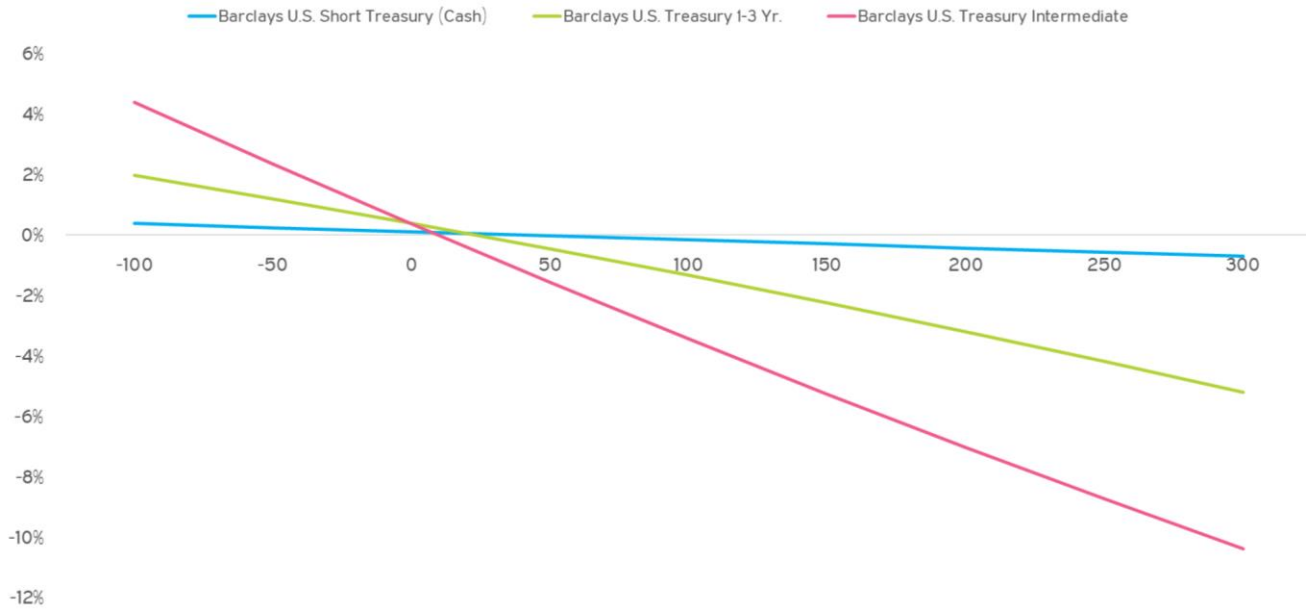
Ten-Year Breakeven Inflation[1]
(As of October 31, 2020)



- This chart details the difference between nominal and inflation-adjusted US Treasury bonds. A higher (lower) figure indicates higher (lower) inflation expectations.

[1] Ten-Year Breakeven Inflation – Source: US Treasury and Federal Reserve. Inflation is measured by the Consumer Price Index (CPI-U NSA).

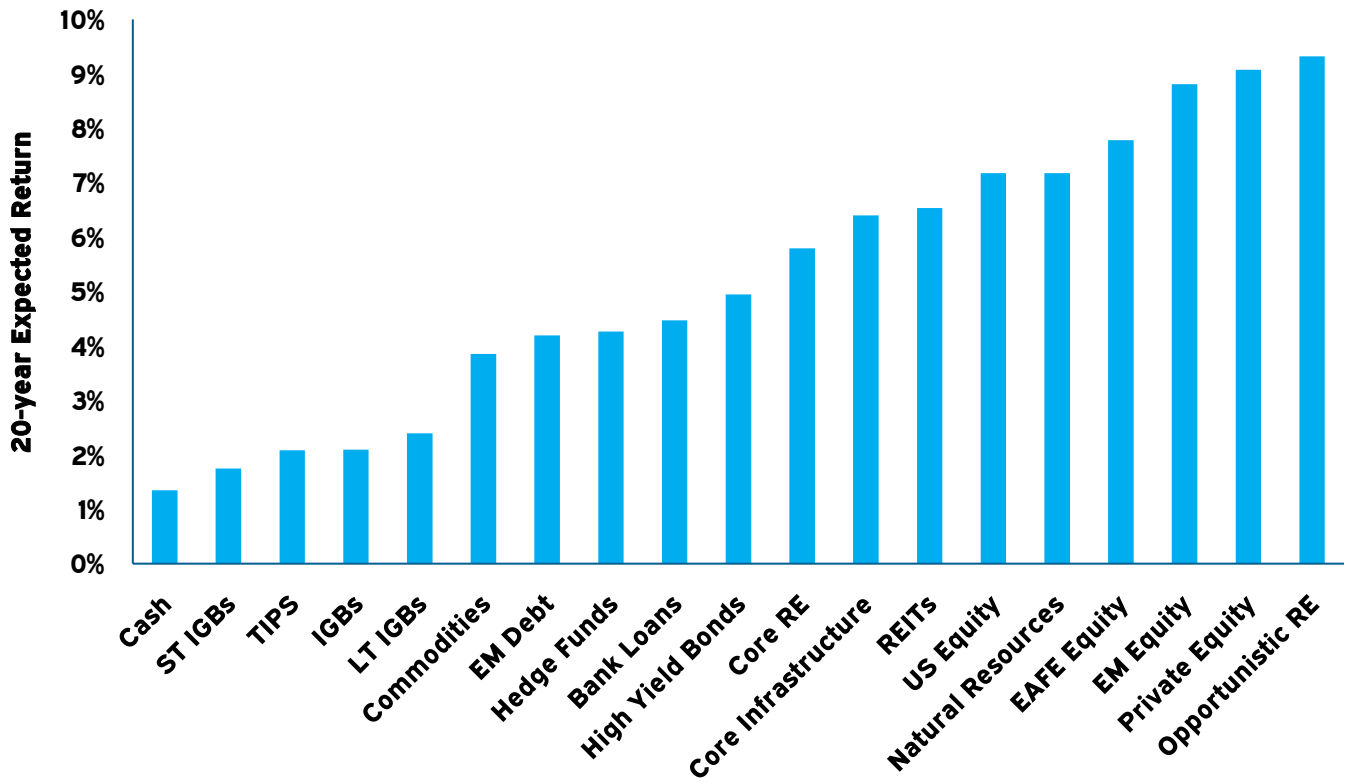
Total Return Given Changes in Interest Rates (bps)[1]
(As of October 31, 2020)



	Total Return for Given Changes in Interest Rates (bps)									Statistics	
	-100	-50	0	50	100	150	200	250	300	Duration	YTW
Barclays US Short Treasury (Cash)	0.4%	0.2%	0.1%	0.0%	-0.2%	-0.3%	-0.4%	-0.6%	-0.7%	0.27	0.09%
Barclays US Treasury 1-3 Yr.	1.9%	1.2%	0.4%	-0.5%	-1.4%	-2.3%	-3.2%	-4.2%	-5.2%	1.65	0.37%
Barclays US Treasury Intermediate	4.4%	2.3%	0.3%	-1.6%	-3.5%	-5.3%	-7.0%	-8.8%	-10.4%	3.92	0.34%
Barclays US Treasury Long	23.0%	11.7%	1.5%	-7.6%	-15.5%	-22.3%	-27.9%	-32.4%	-35.8%	19.24	1.50%

[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. Source: Bloomberg, and Meketa Investment Group.

Long-Term Outlook – 20-Year Annualized Expected Returns[1]



- This chart details Meketa's long-term forward-looking expectations for total returns across asset classes.

[1] Source: Meketa Investment Group's 2020 Annual Asset Study.

Appendix

Data Sources and Explanations[1]

- US 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, US 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.

[1] All Data as of October 31, 2020 unless otherwise noted.

Appendix

Data Sources and Explanations[1]

- REITs Dividend Yield Spread vs. Ten-Year Treasury – Source: NAREIT, US 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 US Corporate Investment Grade index.
  - Spread is calculated as the difference between the Yield to Worst of the respective index and the 10-Year Treasury Yield.
- EM Debt Spreads – Source: Bloomberg, and Meketa Investment Group. Option Adjusted Spread (OAS) for the Bloomberg Barclays EM USD Aggregate Index.
- Equity Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by VIX Index, a Measure of implied option volatility for US equity markets.
- Fixed Income Volatility – Source: Bloomberg, and Meketa Investment Group. Equity Volatility proxied by MOVE Index, a Measure of implied option volatility for US Treasury markets.
- Systemic Risk and Volatile Market Days – Source: Meketa Investment Group. 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.

[1] All Data as of October 31, 2020 unless otherwise noted.

Appendix

Data Sources and Explanations[1]

- Yield Curve Slope (Ten Minus Two) – Source: Bloomberg, and Meketa Investment Group. Yield curve slope is calculated as the difference between the 10-Year US Treasury Yield and 2-Year US Treasury Yield.
- Ten-Year Breakeven Inflation – Source: US Treasury and Federal Reserve. Inflation is measured by the Consumer Price Index (CPI-U NSA).

[1] All Data as of October 31, 2020 unless otherwise noted.

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.

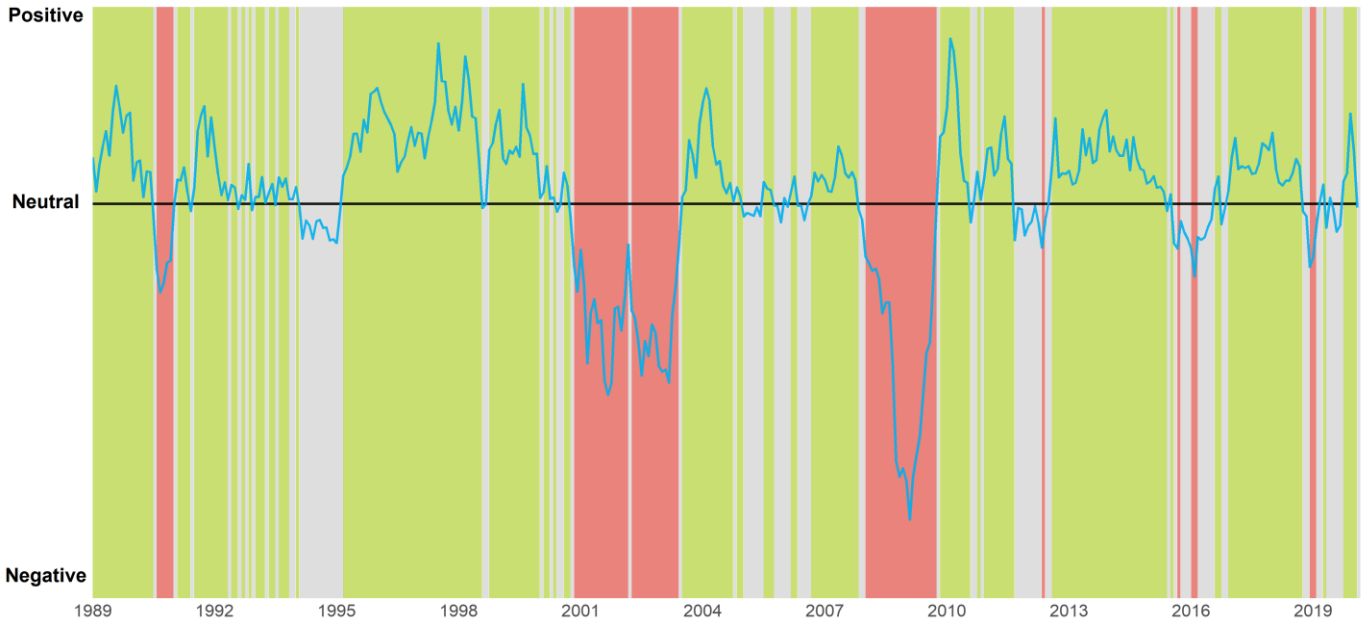
- Meketa's Risk Metrics, which rely significantly on standard market measures of relative valuation, often provide valid early signals of increasing long-term risk levels in the global investment markets. However, as is the case with numerous valuation measures, the Risk Metrics may convey such risk 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 US Treasury bond yield) for corporate bonds (trailing 12-months) for both investment grade bonds (75% weight) and high yield bonds (25% weight).
  - Both measures are converted to Z-scores and then combined to get an "apples to apples" comparison without the need of re-scaling.
- 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/~lpederse/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.

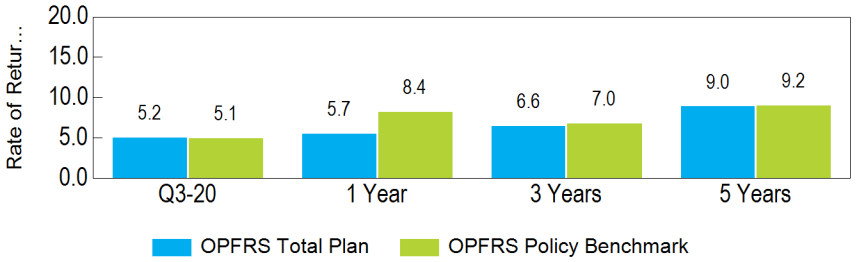
Total Portfolio Review

OPFRS Total Plan | As of September 30, 2020

Year to Date	Anlzd Return	Standard Deviation
OPFRS Total Plan	1.80%	5.29%
OPFRS Policy Benchmark	4.99%	4.50%
InvMetrics Public DB $250mm-$1B Gross Median	4.53%	4.40%

1 Year Ending September 30, 2020	Anlzd Return	Standard Deviation
OPFRS Total Plan	5.44%	4.82%
OPFRS Policy Benchmark	8.39%	4.09%
InvMetrics Public DB $250mm-$1B Gross Median	7.74%	4.03%

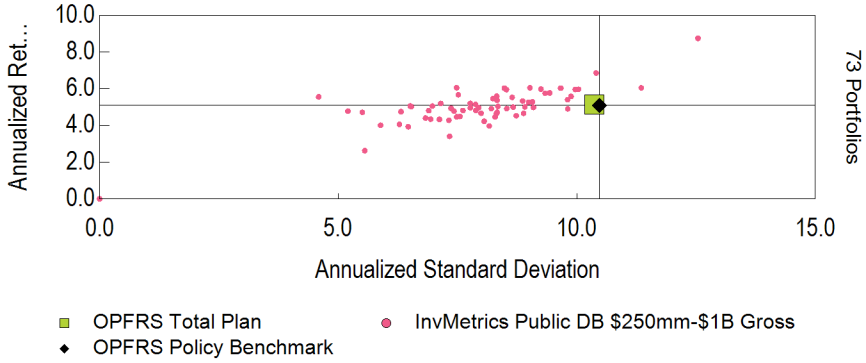
Return Summary
Ending September 30, 2020



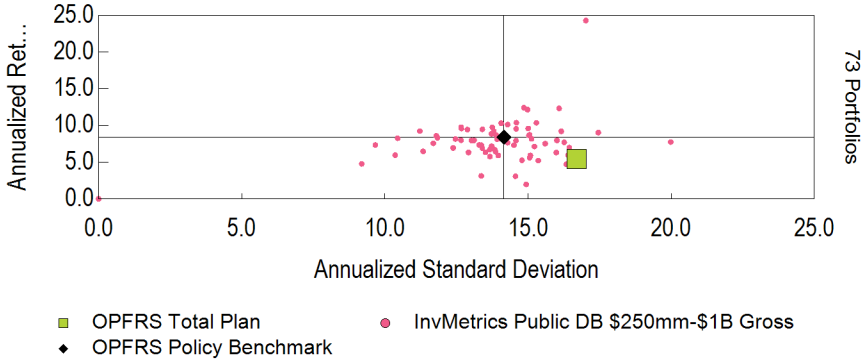
Summary of Cash Flows

	Quarter-To-Date	One Year
Beginning Market Value	$383,325,294	$391,243,866
Net Cash Flow	-$3,291,600	-$13,036,146
Capital Appreciation	$20,033,548	$21,859,522
Ending Market Value	$400,067,242	$400,067,242

Annualized Return vs. Annualized Standard Deviation
3 Months Ending September 30, 2020



Annualized Return vs. Annualized Standard Deviation
1 Year Ending September 30, 2020



Evolving Policy Benchmark consists of 40% russell 3000, 12% MSCI ACWI ex U.S., 33% Bbg BC Universal, 5% CBOE BXM, 6.7% SG Multi Asset Risk Premia, 3.3% Bbg BC Long Treasury.

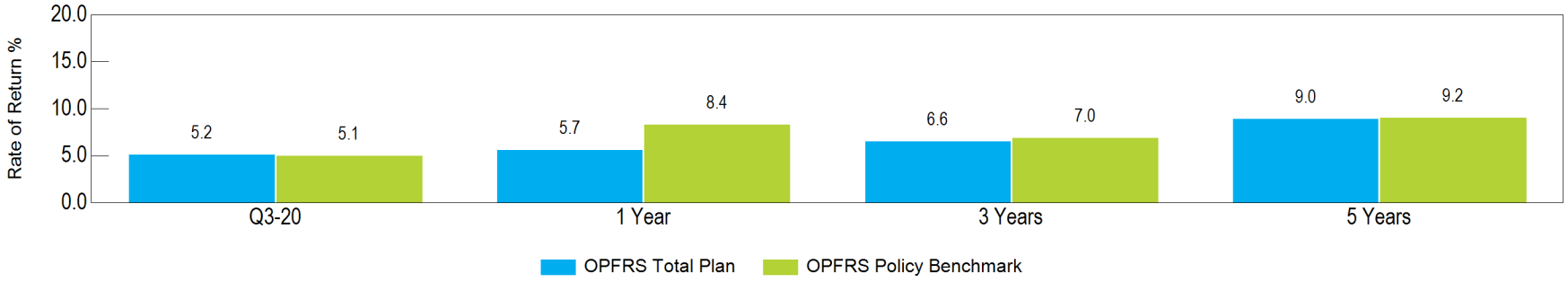
Asset Class Performance (gross of fees) | As of September 30, 2020

	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	7 Yrs (%)	10 Yrs (%)
OPFRS Total Plan	**5.2**	**5.7**	**6.6**	**9.0**	**7.7**	**8.3**
OPFRS Policy Benchmark	*5.1*	*8.4*	*7.0*	*9.2*	*7.8*	*8.0*
Excess Return	0.1	-2.7	-0.4	-0.2	-0.1	0.3
Domestic Equity	**8.3**	**11.6**	**10.3**	**12.9**	**11.4**	**13.2**
Russell 3000 (Blend)	*9.2*	*15.0*	*11.6*	*13.7*	*12.1*	*13.5*
Excess Return	-0.9	-3.4	-1.3	-0.8	-0.7	-0.3
International Equity	**5.5**	**2.4**	**1.8**	**7.2**	**4.5**	**5.3**
MSCI ACWI ex US (Blend)	*6.4*	*3.4*	*1.6*	*6.7*	*3.7*	*4.5*
Excess Return	-0.9	-1.0	0.2	0.5	0.8	0.8
Fixed Income	**1.9**	**6.8**	**5.6**	**4.9**	**4.5**	**4.2**
Blmbg BC Universal (Blend)	*1.0*	*6.7*	*5.1*	*4.5*	*4.2*	*3.9*
Excess Return	0.9	0.1	0.5	0.4	0.3	0.3
Credit	**7.7**	**3.3**	**2.7**	**5.8**	**--**	**--**
BBgBarc US High Yield TR	*4.6*	*3.3*	*4.2*	*6.8*	--	--
Excess Return	3.1	0.0	-1.5	-1.0		
Covered Calls	**7.1**	**7.2**	**6.9**	**9.7**	**--**	**--**
CBOE S&P 500 BuyWrite USD	*6.5*	*-4.9*	*1.1*	*4.8*	--	--
Excess Return	0.6	12.1	5.8	4.9		
Crisis Risk Offset	**-1.2**	**-20.4**	**--**	**--**	**--**	**--**
SG Multi Alternative Risk Premia Index	*-0.6*	*-13.9*	--	--	--	--
Excess Return	-0.6	-6.5				
Cash	**0.0**	**1.5**	**1.9**	**1.4**	**1.0**	**--**
FTSE T-Bill 3 Months TR	*0.0*	*1.0*	*1.6*	*1.2*	*0.8*	--
Excess Return	0.0	0.5	0.3	0.2	0.2	

1. Evolving Policy Benchmark consists of 40% Russell 3000, 12% MSCI Acwi ex U.S., 33% Bbg BC Universal, 5% CBOE BXM, 6.7% SG Multi Asset Risk Premia, 3.3% Bbg BC Long Treasury,
2. Domestic Equity Benchmark consists of S&P 500 thru 3/31/98 10% Russell 1000, 20% Russell 1000 Value, 5% RMC from 4/1/98 - 12/31/04 and Russell 3000 from 1/1/05 to present.
3. International Equity Benchmark consists of MSCI EAFE thru 12/31/04 and MSCI ACWI x US thereafter.
4. Fixed Income Benchmark consists of Bbg BC Aggregate prior to 4/1/06, and Bbg BC Universal thereafter.

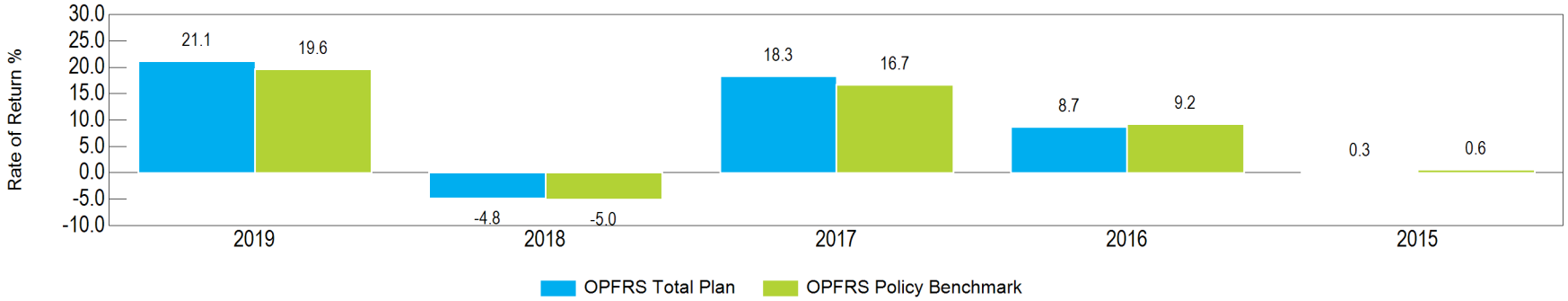
Portfolio Relative Performance Results | As of September 30, 2020

Trailing Period Performance (annualized)
Ending September 30, 2020



	QTD (%)	1 Yr (%)	3 Yrs (%)	5 Yrs (%)	2015 (%)	2016 (%)	2017 (%)	2018 (%)	2019 (%)
OPFRS Total Plan	**5.2**	**5.7**	**6.6**	**9.0**	**0.3**	**8.7**	**18.3**	**-4.8**	**21.1**
OPFRS Policy Benchmark	*5.1*	*8.4*	*7.0*	*9.2*	*0.6*	*9.2*	*16.7*	*-5.0*	*19.6*
InvMetrics Public DB $250mm-$1B Gross Median	*5.0*	*7.7*	*6.3*	*8.2*	*0.0*	*7.8*	*15.8*	*-4.1*	*18.6*

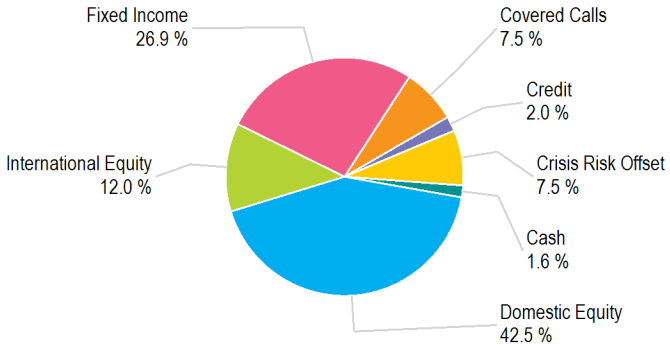
Calendar Year Performance
Ending September 30, 2020



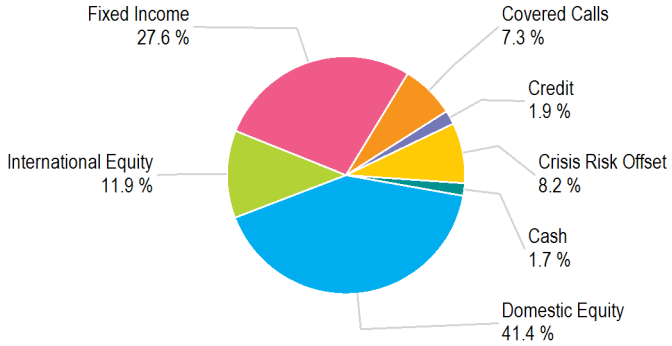
Asset Allocation vs. Target
As Of September 30, 2020

	Current	%	Policy	Difference*
Domestic Equity	$169,962,378	42.5%	40.0%	2.5%
International Equity	$47,942,430	12.0%	12.0%	0.0%
Fixed Income	$107,701,274	26.9%	31.0%	-4.1%
Covered Calls	$29,895,963	7.5%	5.0%	2.5%
Credit	$8,028,648	2.0%	2.0%	0.0%
Crisis Risk Offset	$30,031,879	7.5%	10.0%	-2.5%
Cash	$6,504,670	1.6%	0.0%	1.6%
Total	**$400,067,242**	**100.0%**	**100.0%**	

September 30, 2020: $400,067,242



June 30, 2020: $383,325,294



Target weightings reflect the Plan's evolving asset allocation (effective 5/31/2017.)

Manager Performance - Gross of Fees | As of September 30, 2020

	Market Value	% of Portfolio	QTD	YTD	1 Yr	3 Yrs	5 Yrs	S.I.	S.I. Date
Domestic Equity	**169,962,378**	**100.0**	**8.3**	**2.7**	**11.6**	**10.3**	**12.9**	**8.6**	**Jun-97**
Russell 3000 (Blend)			*9.2*	*5.4*	*15.0*	*11.6*	*13.7*	*8.8*	*Jun-97*
Excess Return			-0.9	-2.7	-3.4	-1.3	-0.8	-0.2	
Northern Trust Russell 1000	97,755,168	57.5	9.4	6.3	15.9	12.4	14.0	13.8	Jun-10
Russell 1000			*9.5*	*6.4*	*16.0*	*12.4*	*14.1*	*13.9*	*Jun-10*
Excess Return			-0.1	-0.1	-0.1	0.0	-0.1	-0.1	
eV US Large Cap Core Equity Gross Rank			*30*	*34*	*31*	*34*	*29*	*37*	*Jun-10*
EARNEST Partners	34,661,855	20.4	8.5	2.5	10.4	11.4	14.6	9.8	Apr-06
Russell MidCap			*7.5*	*-2.3*	*4.6*	*7.1*	*10.1*	*8.2*	*Apr-06*
Excess Return			1.0	4.8	5.8	4.3	4.5	1.6	
eV US Mid Cap Core Equity Gross Rank			*26*	*24*	*19*	*22*	*10*	*31*	*Apr-06*
iShares Edge MSCI Min Vol	18,419,148	10.8	5.6	--	--	--	--	19.2	Apr-20
MSCI USA Minimum Volatility GR USD			*5.8*	--	--	--	--	*19.4*	*Apr-20*
Excess Return			-0.2					-0.2	
eV US Low Volatility Equity Gross Rank			*53*	--	--	--	--	*63*	*Apr-20*
Rice Hall James	12,400,423	7.3	5.7	3.0	13.1	7.6	--	8.2	Jul-17
Russell 2000 Growth			*7.2*	*3.9*	*15.7*	*8.2*	--	*9.5*	*Jul-17*
Excess Return			-1.5	-0.9	-2.6	-0.6		-1.3	
eV US Small Cap Growth Equity Gross Rank			*84*	*74*	*72*	*81*	--	*87*	*Jul-17*
Vanguard Russell 2000 Value	6,725,783	4.0	2.7	-21.3	-14.7	--	--	-13.0	Aug-19
Russell 2000 Value			*2.6*	*-21.5*	*-14.9*	--	--	*-13.4*	*Aug-19*
Excess Return			0.1	0.2	0.2			0.4	
eV US Small Cap Value Equity Gross Rank			*49*	*65*	*60*	--	--	*59*	*Aug-19*

Manager Performance - Gross of Fees | As of September 30, 2020

	Market Value	% of Portfolio	QTD	YTD	1 Yr	3 Yrs	5 Yrs	S.I.	S.I. Date
International Equity	**47,942,430**	**100.0**	**5.5**	**-6.7**	**2.4**	**1.8**	**7.2**	**5.1**	**Jan-98**
MSCI ACWI ex US (Blend)			*6.4*	*-5.1*	*3.4*	*1.6*	*6.7*	*5.3*	*Jan-98*
Excess Return			-0.9	-1.6	-1.0	0.2	0.5	-0.2	
SGA ACWI ex-U.S. Equity	33,541,668	70.0	5.9	-5.7	--	--	--	-5.1	Dec-19
MSCI ACWI ex USA Gross			*6.4*	*-5.1*	--	--	--	*-0.9*	*Dec-19*
Excess Return			-0.5	-0.6				-4.2	
eV ACWI ex-US All Cap Core Eq Gross Rank			*79*	*69*	--	--	--	*85*	*Dec-19*
Vanguard Developed Markets ETF	14,122,361	29.5	6.0	-5.6	2.2	--	--	5.0	Sep-19
FTSE Developed All Cap Ex US TR USD			*6.0*	*-5.8*	*2.3*	--	--	*5.0*	*Sep-19*
Excess Return			0.0	0.2	-0.1			0.0	
eV ACWI ex-US All Cap Core Eq Gross Rank			*77*	*68*	*72*	--	--	*71*	*Sep-19*

Total International Equity market value includes cash held in closed accounts Fisher and Hansberger.

Manager Performance - Gross of Fees | As of September 30, 2020

	Market Value	% of Portfolio	QTD	YTD	1 Yr	3 Yrs	5 Yrs	S.I.	S.I. Date
Fixed Income	**107,701,274**	**100.0**	**1.9**	**6.5**	**6.8**	**5.6**	**4.9**	**5.6**	**Dec-93**
Blmbg BC Universal (Blend)			*1.0*	*6.2*	*6.7*	*5.1*	*4.5*	*5.4*	*Dec-93*
Excess Return			0.9	0.3	0.1	0.5	0.4	0.2	
Ramirez	78,306,337	72.7	1.9	5.5	5.6	5.4	--	5.4	Jan-17
BBgBarc US Aggregate TR			*0.6*	*6.8*	*7.0*	*5.2*	--	*5.0*	*Jan-17*
Excess Return			1.3	-1.3	-1.4	0.2		0.4	
eV US Core Fixed Inc Net Rank			*6*	*93*	*93*	*49*	--	*34*	*Jan-17*
Reams	29,394,894	27.3	2.0	18.0	17.9	9.1	6.6	6.2	Feb-98
Blmbg BC Universal (Blend)			*1.0*	*6.2*	*6.7*	*5.1*	*4.5*	*5.1*	*Feb-98*
Excess Return			1.0	11.8	11.2	4.0	2.1	1.1	
eV US Core Plus Fixed Inc Gross Rank			*32*	*1*	*1*	*1*	*4*	*37*	*Feb-98*

Manager Performance - Gross of Fees | As of September 30, 2020

	Market Value	% of Portfolio	QTD	YTD	1 Yr	3 Yrs	5 Yrs	S.I.	S.I. Date
Covered Calls	**29,895,963**	**100.0**	**7.1**	**1.0**	**7.2**	**6.9**	**9.7**	**8.0**	**Apr-14**
CBOE S&P 500 BuyWrite USD			*6.5*	*-9.6*	*-4.9*	*1.1*	*4.8*	*4.3*	*Apr-14*
Excess Return			0.6	10.6	12.1	5.8	4.9	3.7	
Parametric DeltaShift	16,203,027	54.2	7.9	3.8	11.5	9.4	12.0	10.2	Apr-14
CBOE S&P 500 BuyWrite USD			*6.5*	*-9.6*	*-4.9*	*1.1*	*4.8*	*4.3*	*Apr-14*
Excess Return			1.4	13.4	16.4	8.3	7.2	5.9	
eV US Large Cap Core Equity Gross Rank			*56*	*49*	*54*	*68*	*69*	*64*	*Apr-14*
Parametric BXM	13,692,936	45.8	6.3	-1.9	2.7	4.2	7.3	6.2	Apr-14
CBOE S&P 500 BuyWrite USD			*6.5*	*-9.6*	*-4.9*	*1.1*	*4.8*	*4.3*	*Apr-14*
Excess Return			-0.2	7.7	7.6	3.1	2.5	1.9	
eV US Large Cap Core Equity Gross Rank			*83*	*82*	*91*	*96*	*97*	*97*	*Apr-14*

Manager Performance - Gross of Fees | As of September 30, 2020

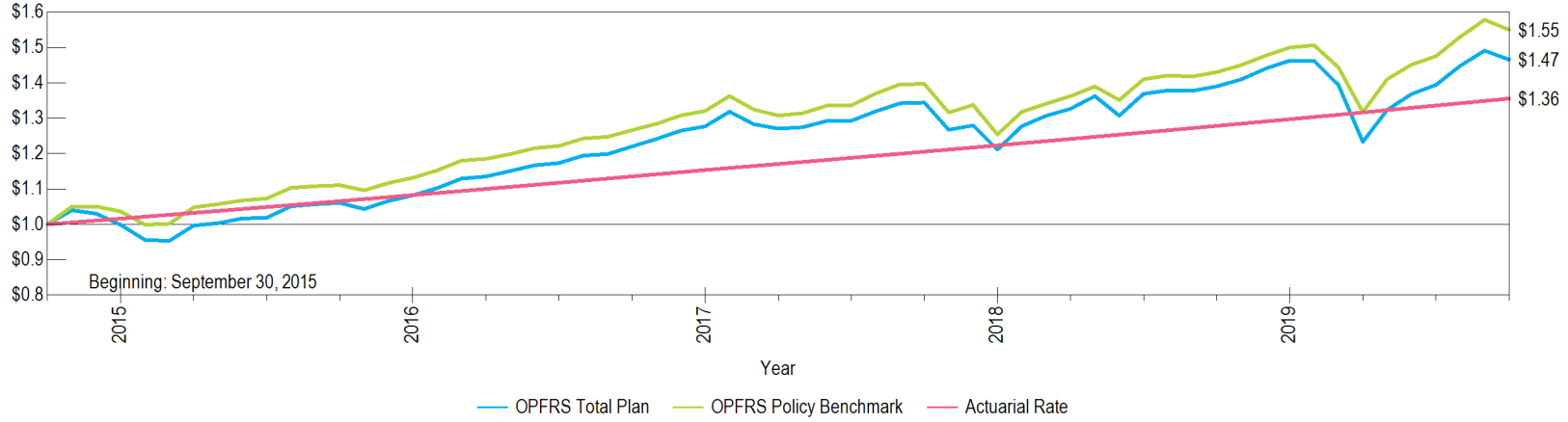
	Market Value	% of Portfolio	QTD	YTD	1 Yr	3 Yrs	5 Yrs	S.I.	S.I. Date
Credit	**8,028,648**	**100.0**	**7.7**	**0.5**	**3.3**	**2.7**	**5.8**	**5.0**	**Feb-15**
BBgBarc US High Yield TR			*4.6*	*0.6*	*3.3*	*4.2*	*6.8*	*5.4*	*Feb-15*
Excess Return			3.1	-0.1	0.0	-1.5	-1.0	-0.4	
DDJ Capital	8,028,648	100.0	7.7	0.5	3.3	2.7	5.8	5.0	Feb-15
ICE BofA High Yield Master TR			*4.7*	*-0.3*	*2.3*	*3.9*	*6.6*	*5.2*	*Feb-15*
Excess Return			3.0	0.8	1.0	-1.2	-0.8	-0.2	
eV US High Yield Fixed Inc Gross Rank			*1*	*56*	*49*	*97*	*78*	*68*	*Feb-15*

Manager Performance - Gross of Fees | As of September 30, 2020

	Market Value	% of Portfolio	QTD	YTD	1 Yr	3 Yrs	5 Yrs	S.I.	S.I. Date
Crisis Risk Offset	**30,031,879**	**100.0**	**-1.2**	**-21.2**	**-20.4**	**--**	**--**	**-8.5**	**Aug-18**
SG Multi Alternative Risk Premia Index			*-0.6*	*-13.1*	*-13.9*	*--*	*--*	*-5.5*	*Aug-18*
Excess Return			-0.6	-8.1	-6.5			-3.0	
Parametric Systematic Alternative Risk Premia	15,284,520	50.9	-2.4	-42.5	-40.3	--	--	-19.8	Aug-18
SG Multi Alternative Risk Premia Index			*-0.6*	*-13.1*	*-13.9*	*--*	*--*	*-5.5*	*Aug-18*
Excess Return			-1.8	-29.4	-26.4			-14.3	
Vanguard Long-Term Treasury ETF	14,747,360	49.1	0.0	21.0	15.8	--	--	19.6	Jul-19
BBgBarc US Govt Long TR			*0.1*	*21.1*	*16.2*	--	--	*19.8*	*Jul-19*
Excess Return			-0.1	-0.1	-0.4			-0.2	
eV US Long Duration - Gov/Cred Fixed Inc Net Rank			*99*	*5*	*14*	--	--	*7*	*Jul-19*

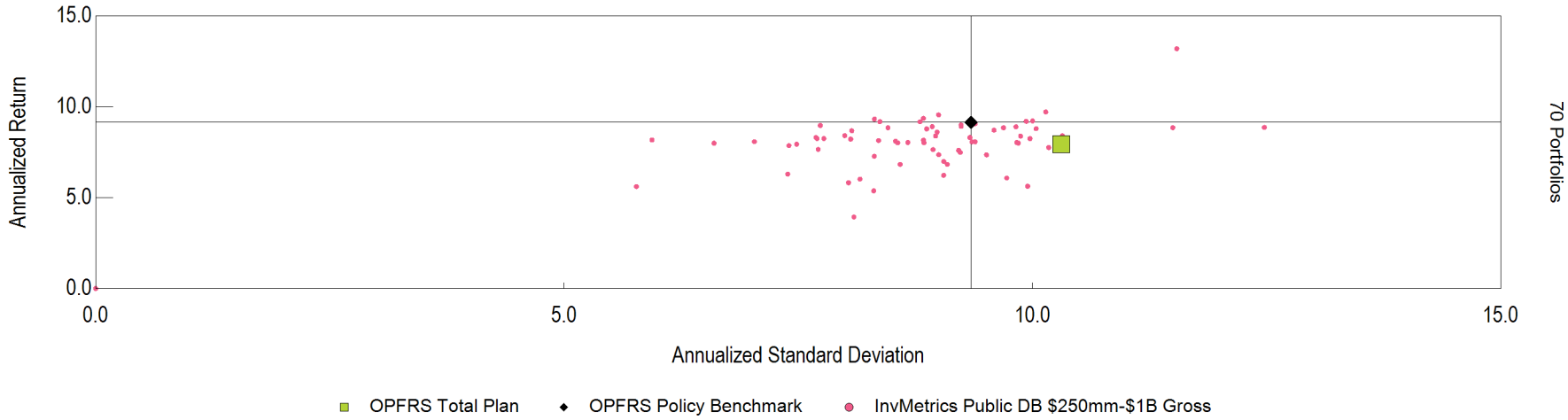
Total Portfolio 5-Year Performance | As of September 30, 2020

Growth of a Dollar

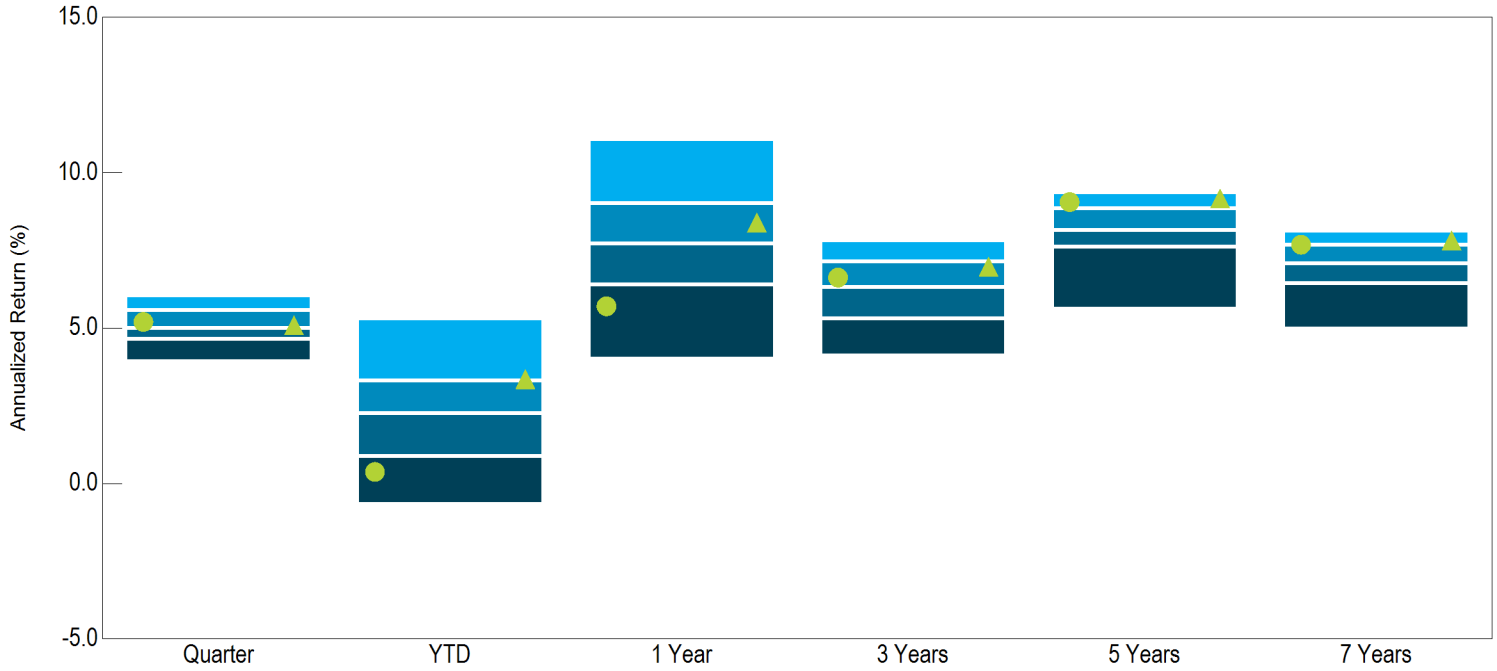


The actuarial expected rate of return was 8% through 6/30/2009, 7.5% through 6/30/2010, 7% through 6/30/2011, 6.75% through 6/30/2014, 6.5% through 2/31/2017 and 6.0% currently

Annualized Return vs. Annualized Standard Deviation
5 Years Ending September 30, 2020



InvMetrics Public DB $250mm-$1B Gross Return Comparison



	Return (Rank)											
5th Percentile	6.0		5.3		11.1		7.8		9.4		8.1	
25th Percentile	5.6		3.3		9.0		7.2		8.9		7.7	
Median	5.0		2.3		7.7		6.3		8.2		7.1	
75th Percentile	4.7		0.9		6.4		5.3		7.6		6.5	
95th Percentile	4.0		-0.7		4.0		4.1		5.6		5.0	
# of Portfolios	73		73		73		72		70		69	
● **OPFRS Total Plan**	5.2	(41)	0.4	(84)	5.7	(87)	6.6	(41)	9.0	(14)	7.7	(26)
▲ **OPFRS Policy Benchmark**	5.1	(43)	3.4	(24)	8.4	(35)	7.0	(33)	9.2	(12)	7.8	(21)

Manager Monitoring / Probation List

Monitoring/Probation Status

Return vs. Benchmark since Corrective Action
As of September 30, 2020

Portfolio	Status	Concern	Months Since Corrective Action	Performance^ Since Corrective Action (Gross)	Peer Group Percentile Ranking	Date of Corrective Action*
DDJ Capital	On Watch	Performance	15	1.1	1	5/29/2019
Ice BofAML US High Yield			---	4.6		
Rice Hall James	On Watch	Performance	15	11.2	84	5/29/2019
Russell 2000 Growth	---	---	---	14.2		

^Annualized performance if over one year.
* Approximate date based on when Board voted to either monitor a manager at a heightened level or place it on probation.

Investment Performance Criteria
For Manager Monitoring/Probation Status

Asset Class	Short-term (Rolling 12 months)	Medium-term (Rolling 36 months)	Long-term (60 + months)
Active Domestic Equity	Fund return < benchmark return – 3.5%	Annualized Fund return < benchmark return – 1.75% for 6 consecutive months	VRR** < 0.97 for 6 consecutive months
Active International Equity	Fund return < benchmark return – 4.5%	Annualized Fund return < benchmark return – 2.0% for 6 consecutive months	VRR < 0.97 for 6 consecutive months
Passive International Equity	Tracking Error > 0.50%	Tracking Error > 0.45% for 6 consecutive months	Annualized Fund return < benchmark return – 0.40% for 6 consecutive months
Fixed Income	Fund return < benchmark return – 1.5%	Annualized Fund return < benchmark return – 1.0% for 6 consecutive months	VRR < 0.98 for 6 consecutive months

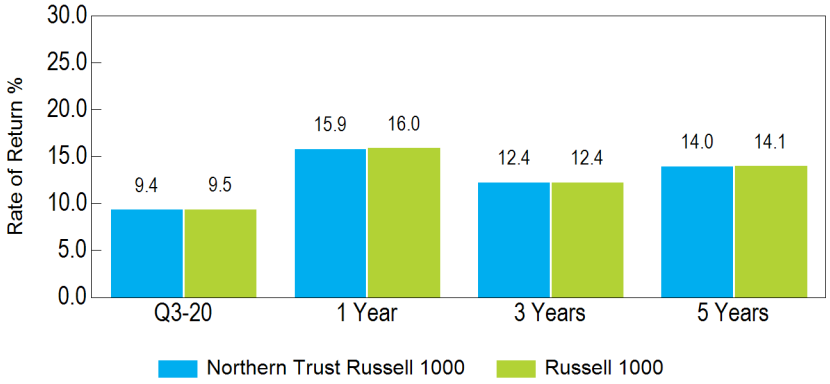
** VRR – Value Relative Ratio – is calculated as: manager cumulative return / benchmark cumulative return.

Individual Manager Performance

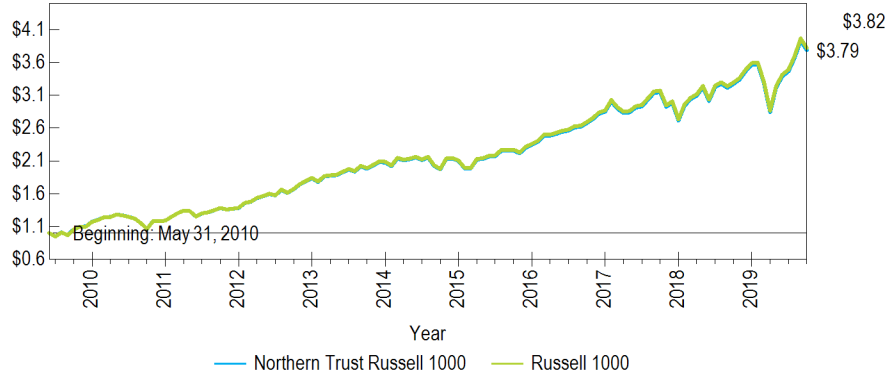
Northern Trust Russell 1000 | As of September 30, 2020

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Northern Trust Russell 1000	0.00%	1.00	-0.70	0.95	0.13%	1.00	98.37%	99.75%
Russell 1000	0.00%	1.00	--	0.95	0.00%	1.00	100.00%	100.00%

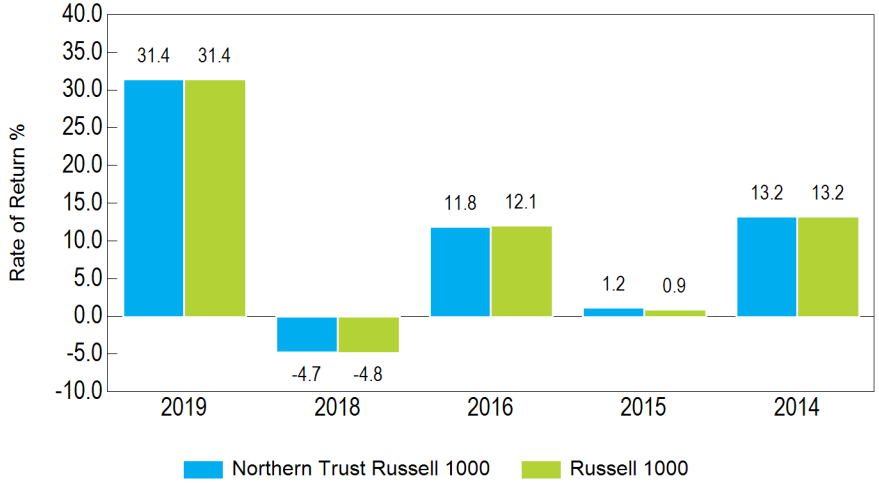
Trailing Period Performance



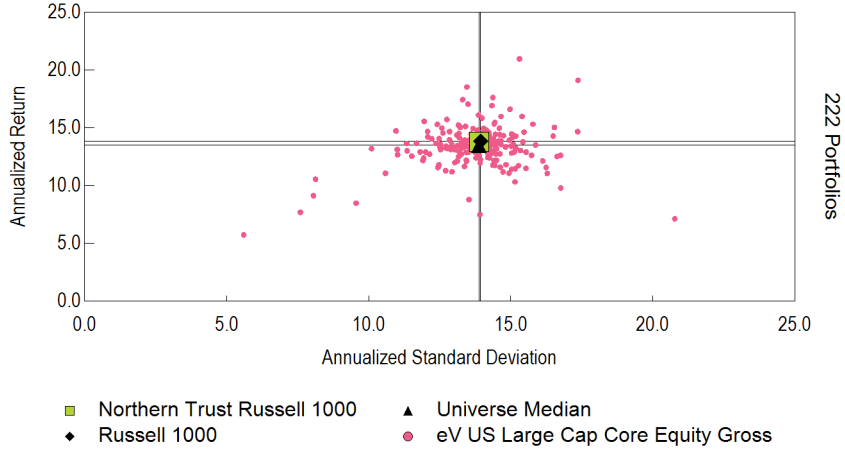
Growth of a Dollar



Calendar Year Performance



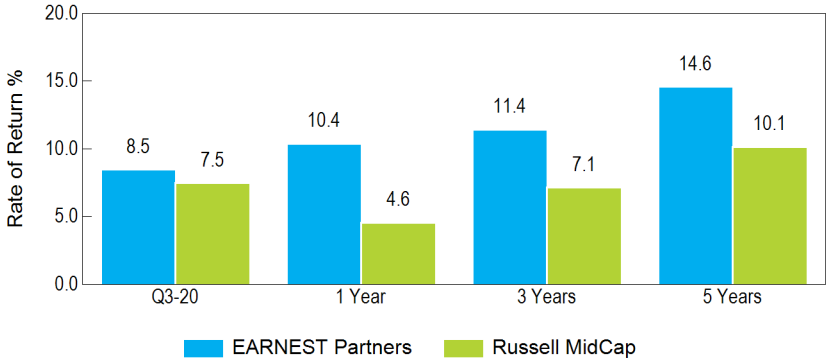
Risk/Return - S.I.



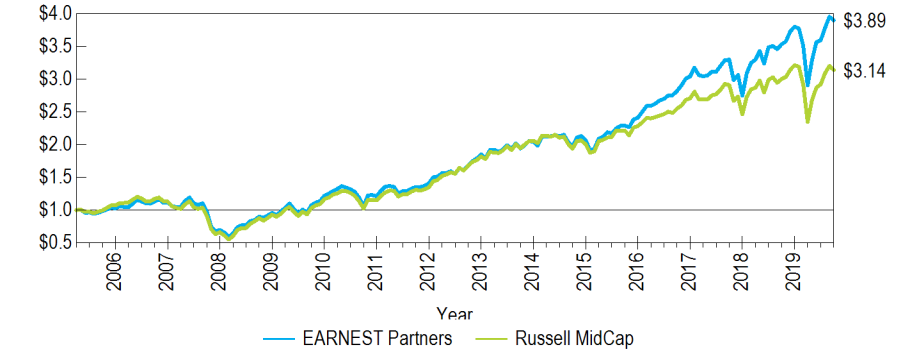
EARNEST Partners | As of September 30, 2020

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
EARNEST Partners	0.14%	0.99	0.49	0.49	3.32%	0.97	104.84%	98.69%
Russell MidCap	0.00%	1.00	--	0.40	0.00%	1.00	100.00%	100.00%

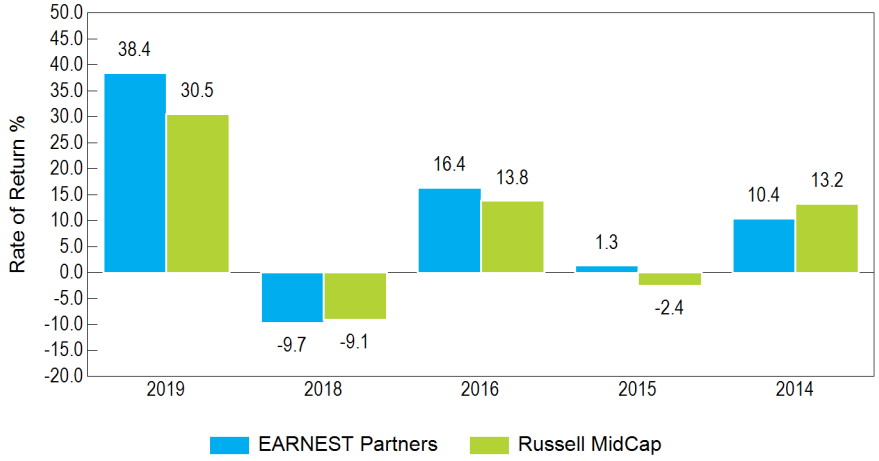
Trailing Period Performance



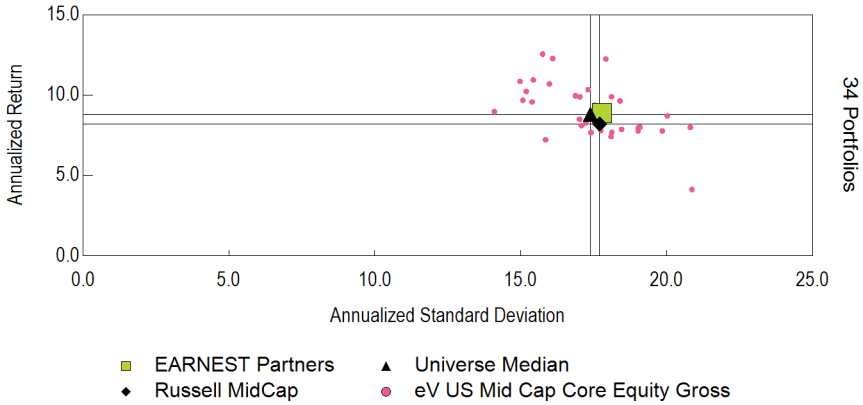
Growth of a Dollar



Calendar Year Performance



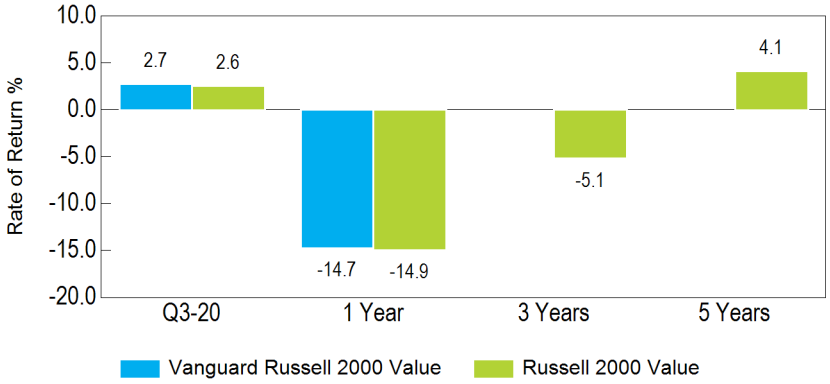
Risk/Return - S.I.



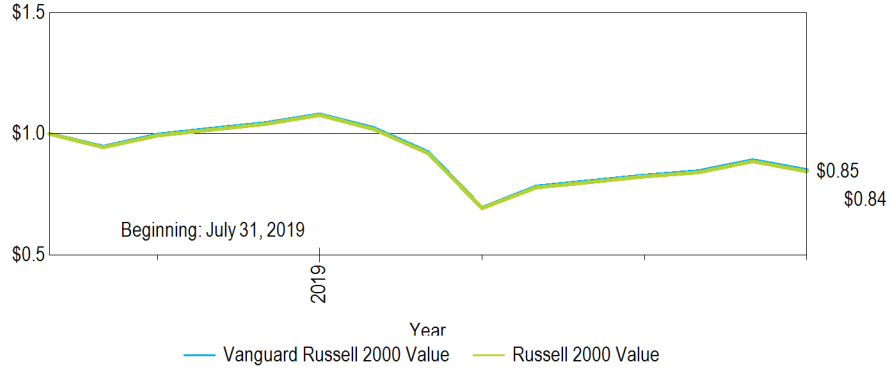
Vanguard Russell 2000 Value | As of September 30, 2020

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Vanguard Russell 2000 Value	0.05%	1.01	0.92	-0.45	0.49%	1.00	101.17%	99.67%
Russell 2000 Value	0.00%	1.00	--	-0.47	0.00%	1.00	100.00%	100.00%

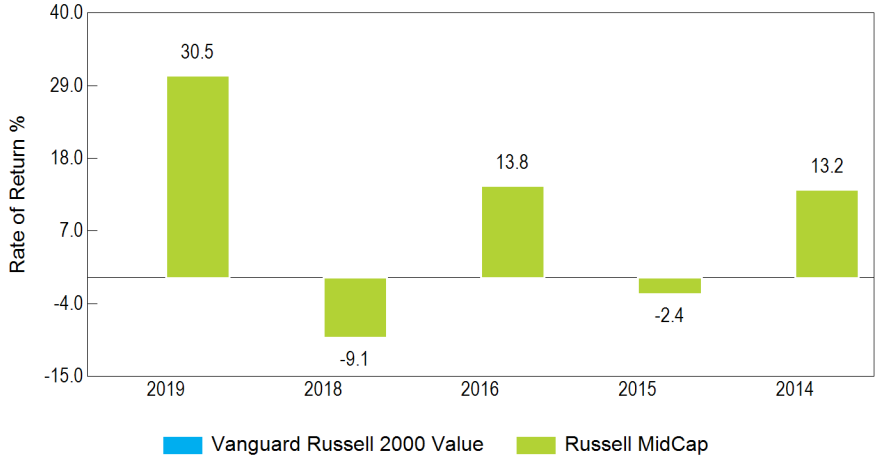
Trailing Period Performance



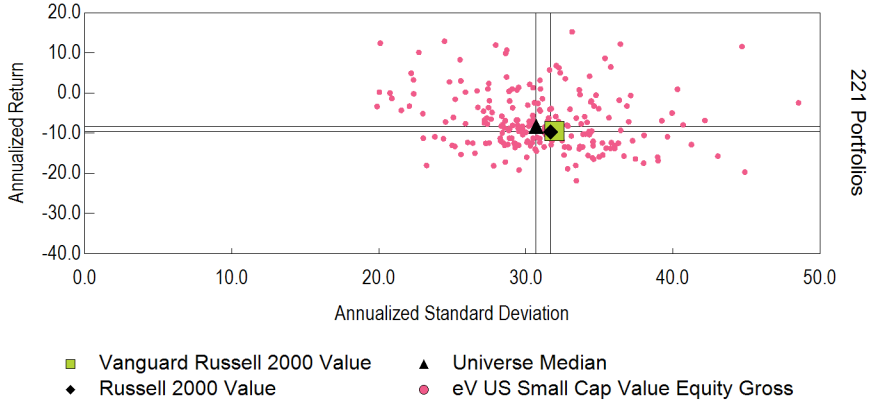
Growth of a Dollar



Calendar Year Performance



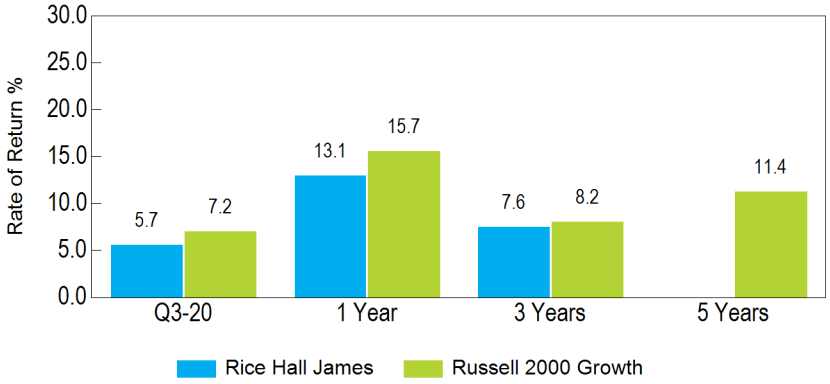
Risk/Return - S.I.



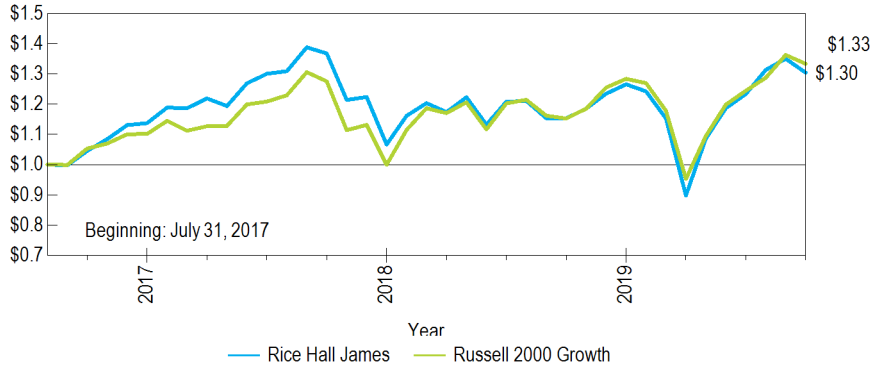
Rice Hall James | As of September 30, 2020

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Rice Hall James	-0.07%	1.05	-0.12	0.29	6.24%	0.94	100.90%	102.37%
Russell 2000 Growth	0.00%	1.00	--	0.35	0.00%	1.00	100.00%	100.00%

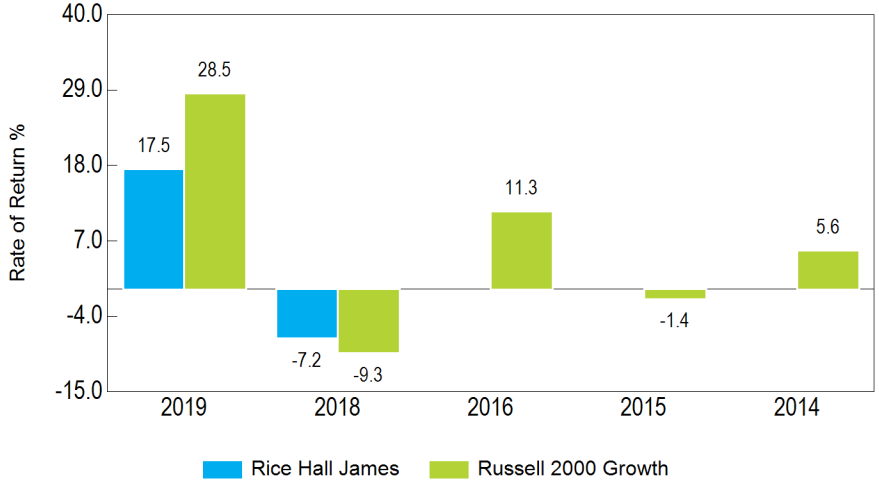
Trailing Period Performance



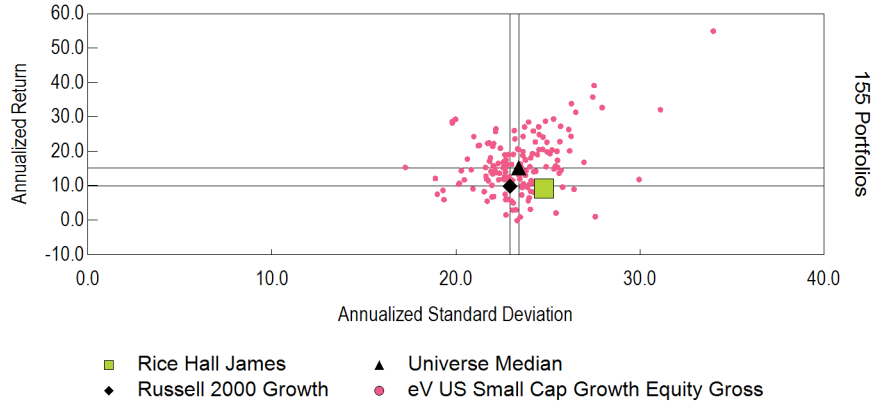
Growth of a Dollar



Calendar Year Performance



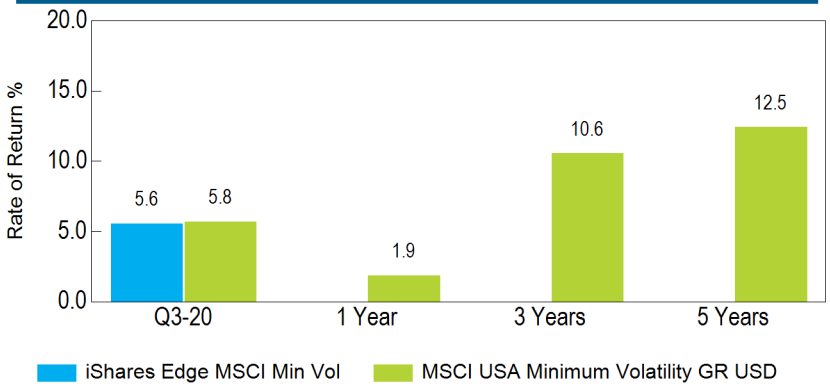
Risk/Return - S.I.



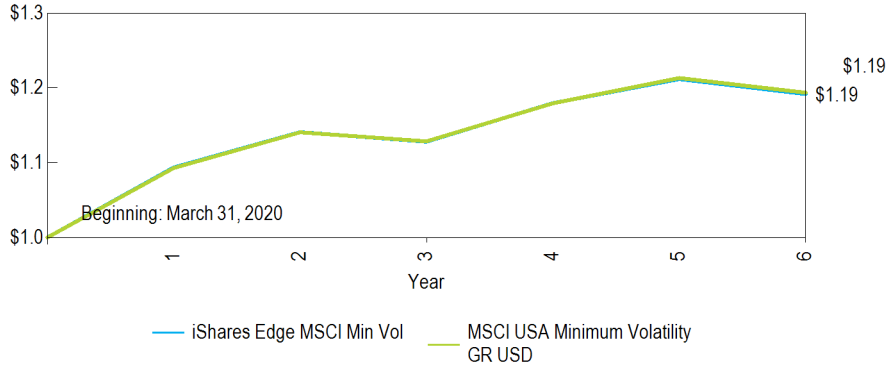
iShares Edge MSCI Min Vol | As of September 30, 2020

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
iShares Edge MSCI Min Vol	-0.06%	1.01	-0.66	1.35	0.28%	1.00	99.69%	103.64%
MSCI USA Minimum Volatility GR USD	0.00%	1.00	--	1.38	0.00%	1.00	100.00%	100.00%

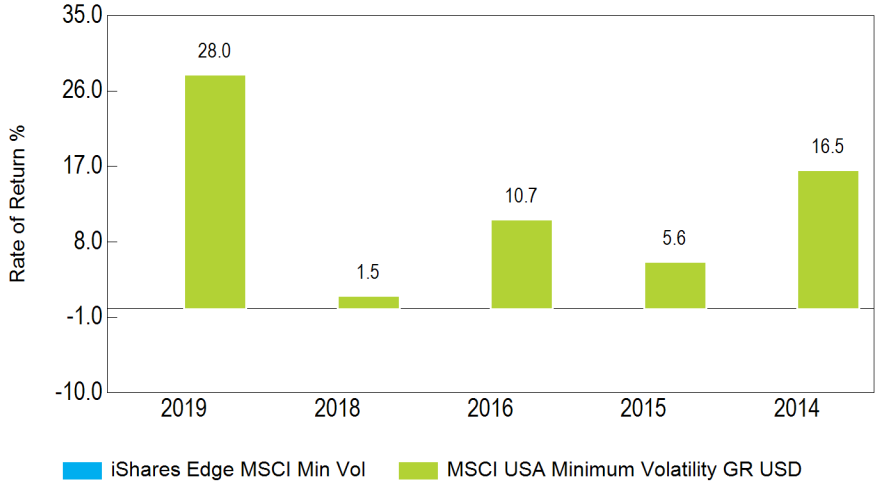
Trailing Period Performance



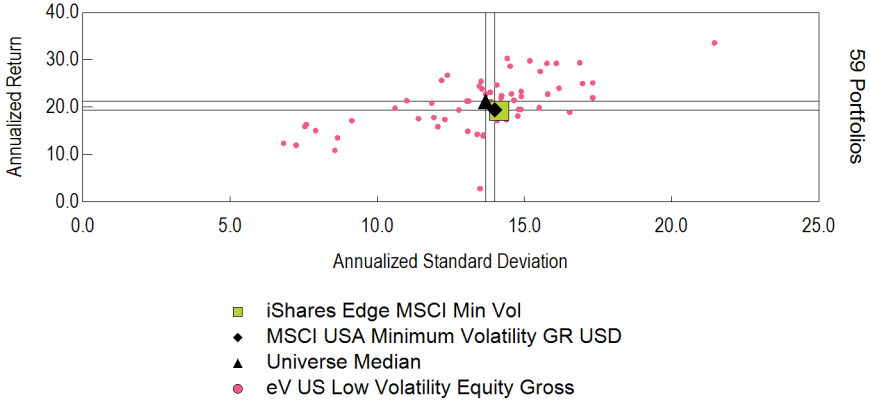
Growth of a Dollar



Calendar Year Performance



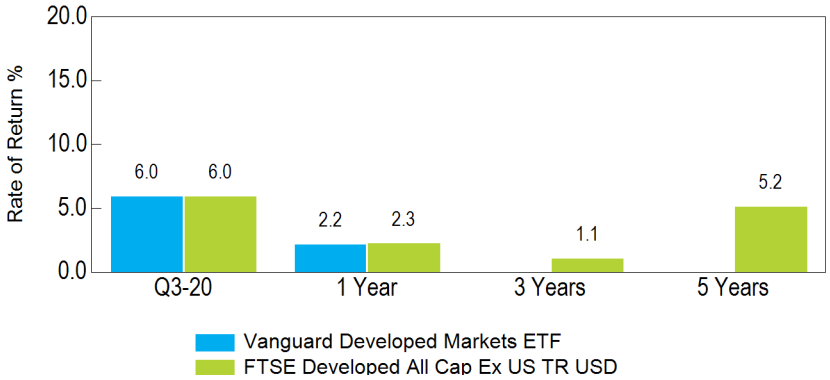
Risk/Return - S.I.



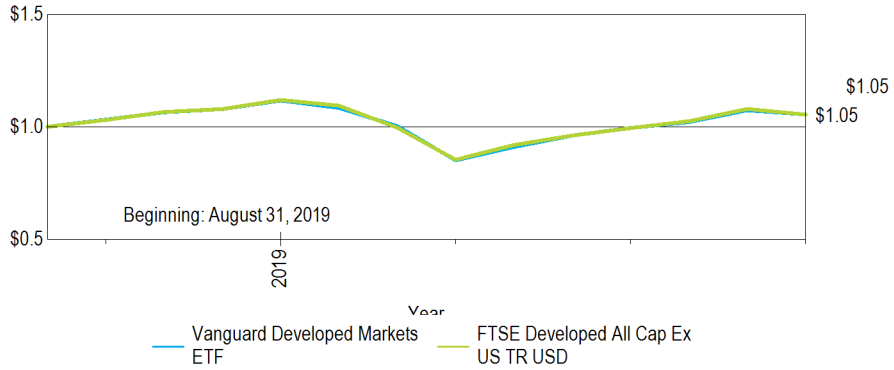
Vanguard Developed Markets ETF | As of September 30, 2020

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Vanguard Developed Markets ETF	0.01%	0.99	0.02	0.19	2.27%	0.99	98.64%	98.68%
FTSE Developed All Cap Ex US TR USD	0.00%	1.00	--	0.19	0.00%	1.00	100.00%	100.00%

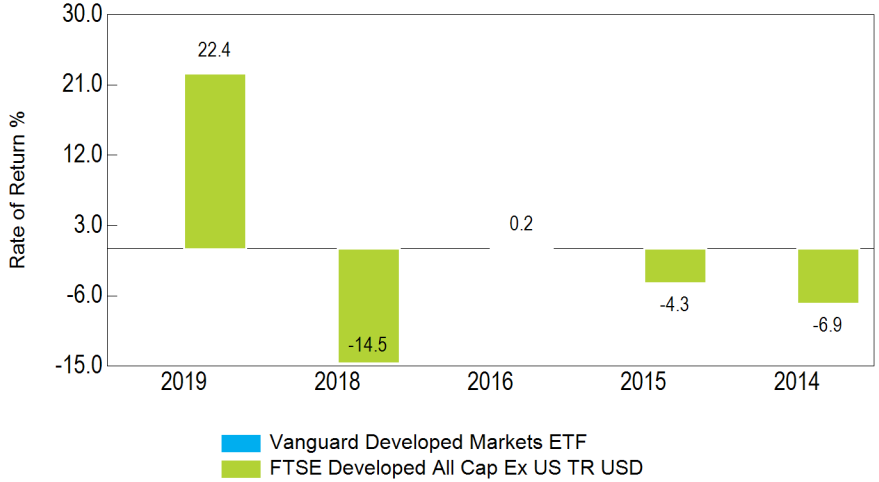
Trailing Period Performance



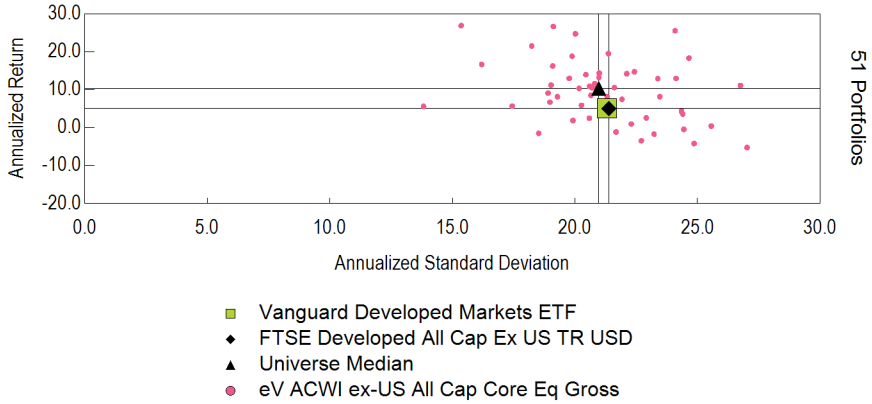
Growth of a Dollar



Calendar Year Performance



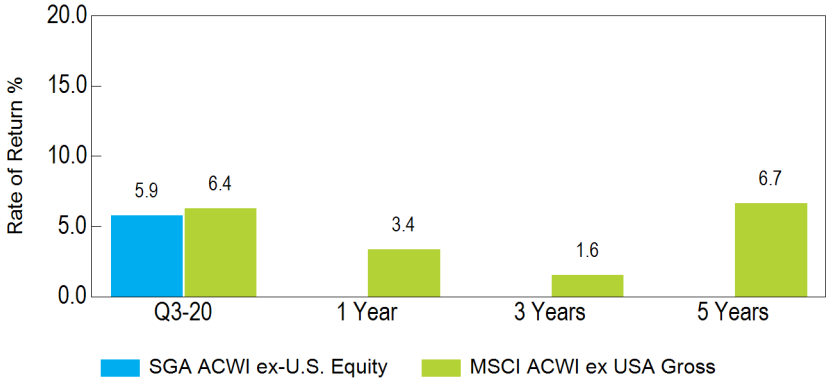
Risk/Return - S.I.



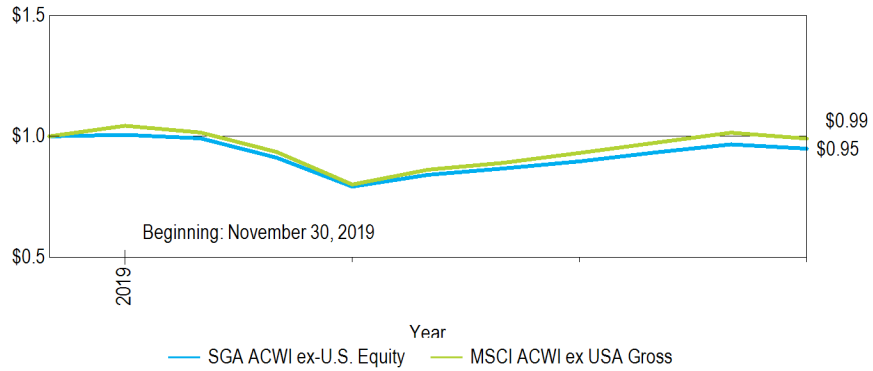
SGA ACWI ex-U.S. Equity | As of September 30, 2020

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
SGA ACWI ex-U.S. Equity	-0.46%	0.86	-0.81	-0.27	5.11%	0.97	70.62%	90.44%
MSCI ACWI ex USA Gross	0.00%	1.00	--	-0.06	0.00%	1.00	100.00%	100.00%

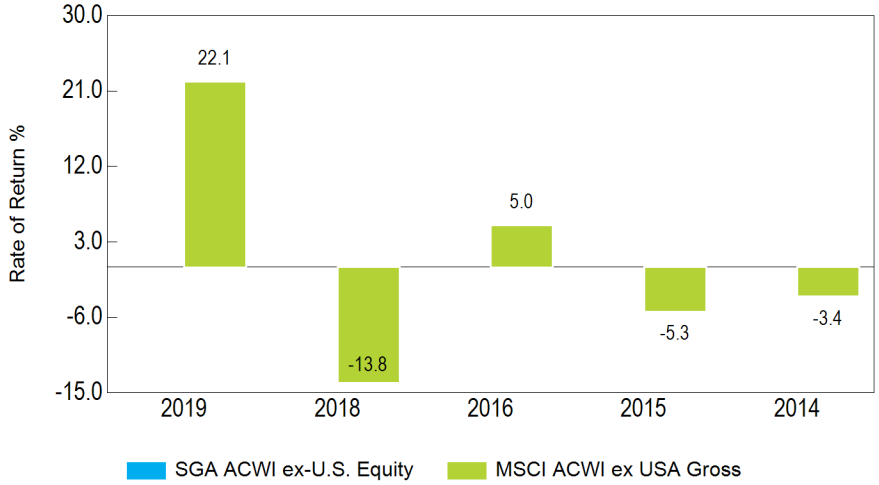
Trailing Period Performance



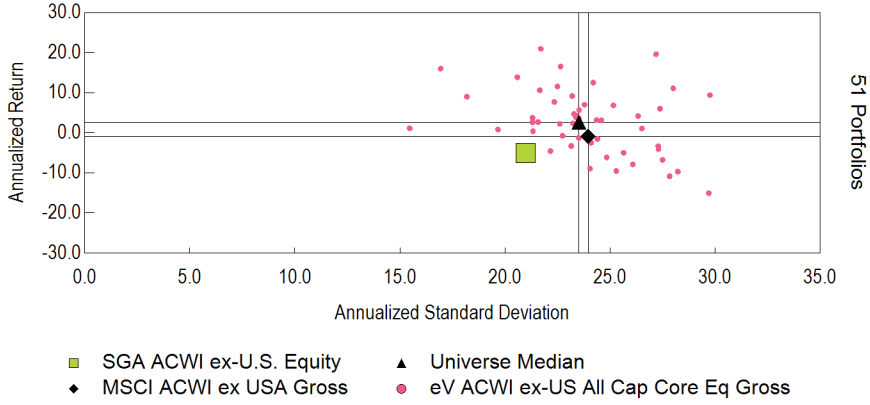
Growth of a Dollar



Calendar Year Performance



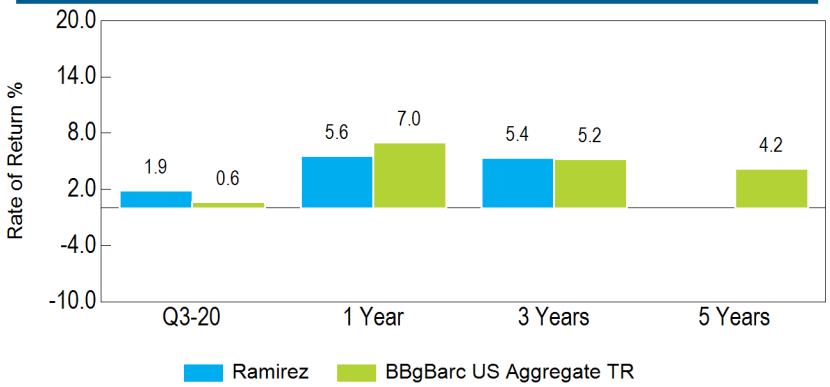
Risk/Return - S.I.



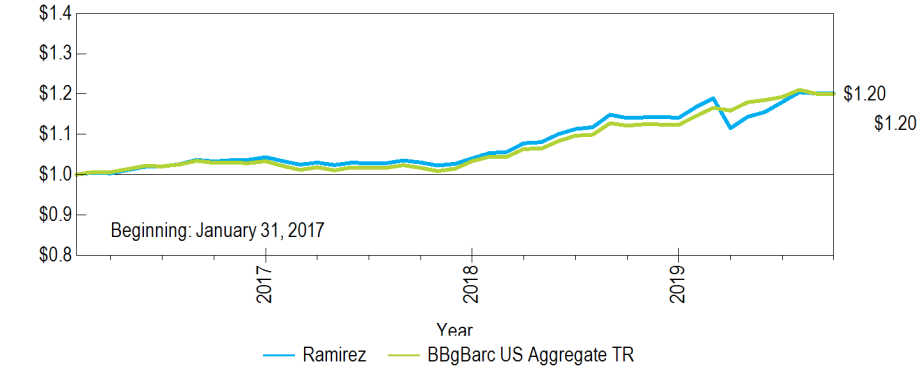
Ramirez | As of September 30, 2020

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Ramirez	-0.05%	1.18	0.08	0.80	3.21%	0.58	121.17%	149.04%
BBgBarc US Aggregate TR	0.00%	1.00	--	1.17	0.00%	1.00	100.00%	100.00%

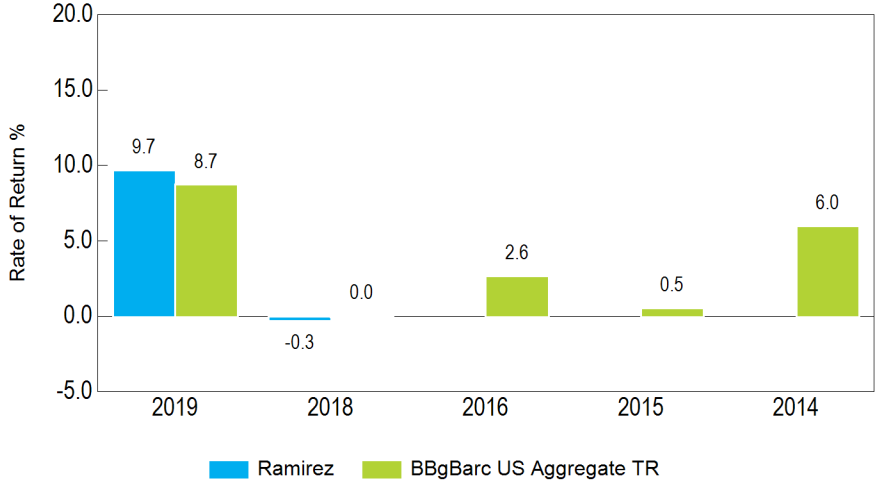
Trailing Period Performance



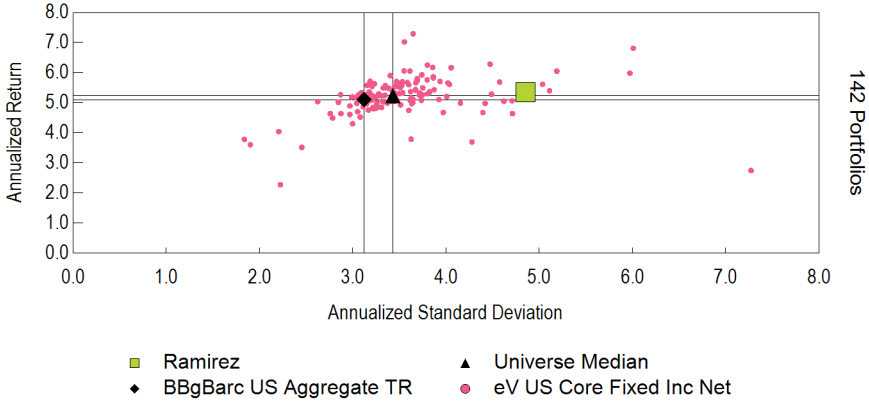
Growth of a Dollar



Calendar Year Performance



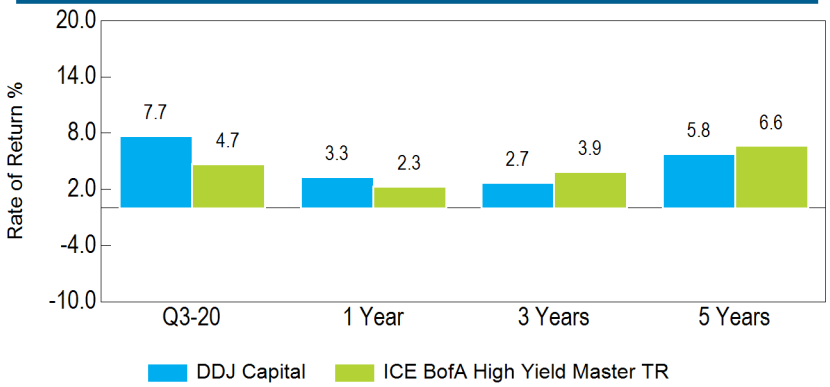
Risk/Return - S.I.



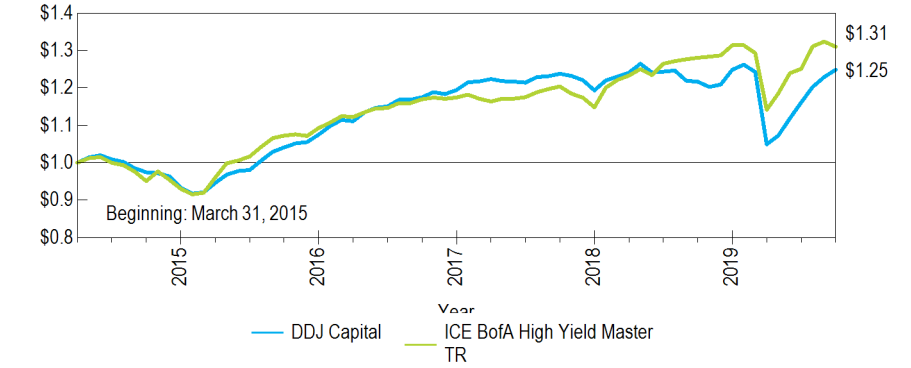
DDJ Capital | As of September 30, 2020

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
DDJ Capital	0.00%	0.97	-0.06	0.42	4.06%	0.78	86.77%	88.13%
ICE BofA High Yield Master TR	0.00%	1.00	--	0.49	0.00%	1.00	100.00%	100.00%

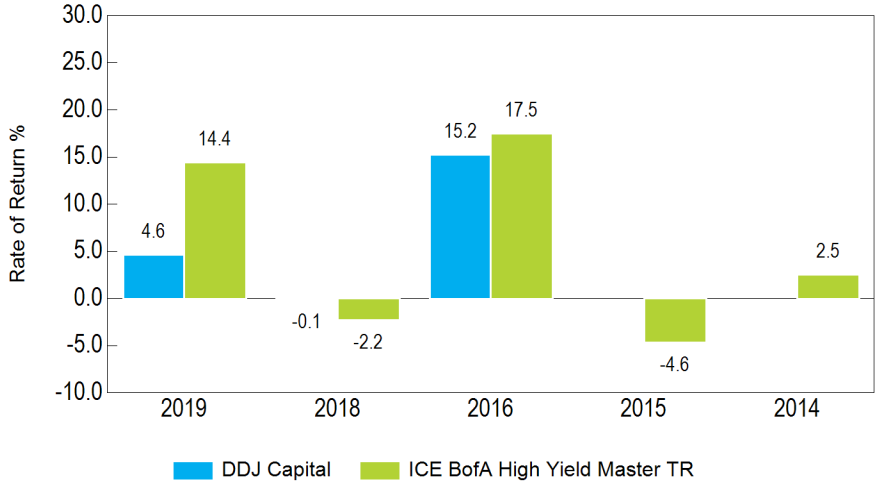
Trailing Period Performance



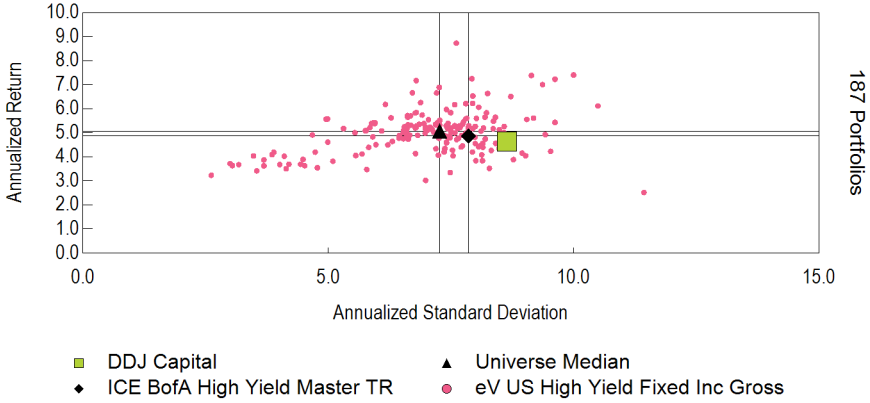
Growth of a Dollar



Calendar Year Performance



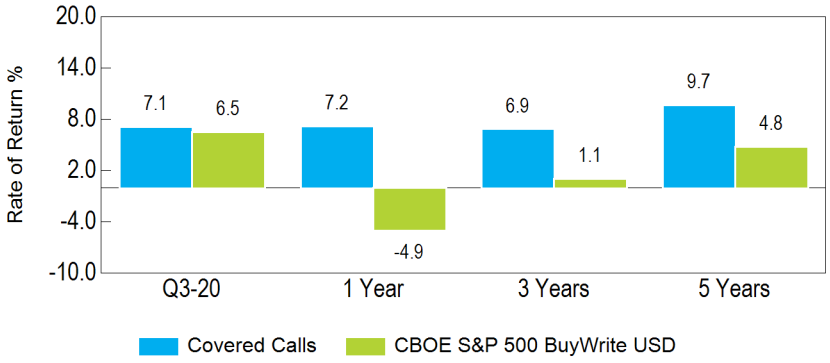
Risk/Return - S.I.



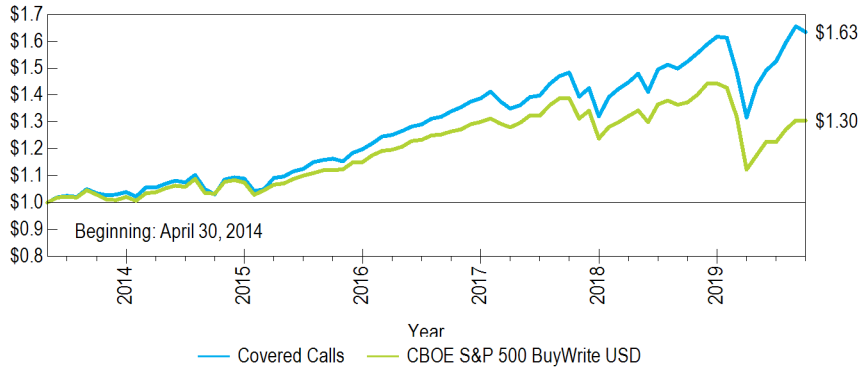
Covered Calls | As of September 30, 2020

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Covered Calls	0.30%	0.99	1.13	0.67	3.30%	0.90	138.24%	97.36%
CBOE S&P 500 BuyWrite USD	0.00%	1.00	--	0.33	0.00%	1.00	100.00%	100.00%

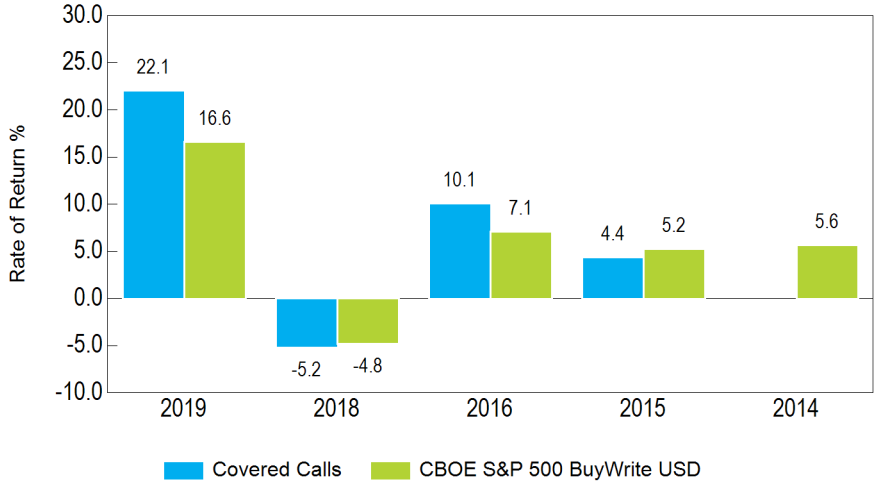
Trailing Period Performance



Growth of a Dollar



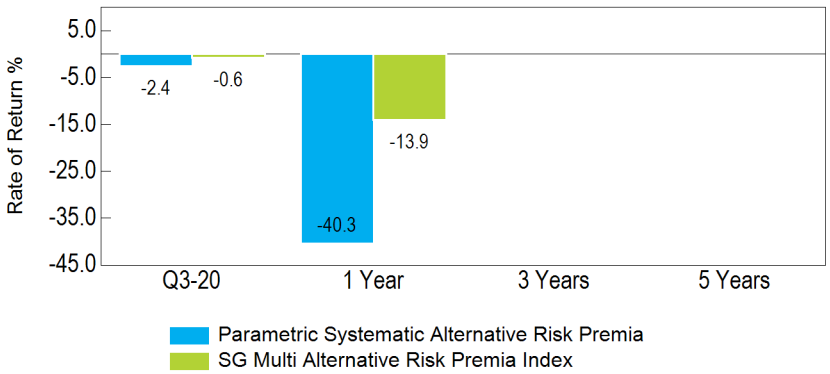
Calendar Year Performance



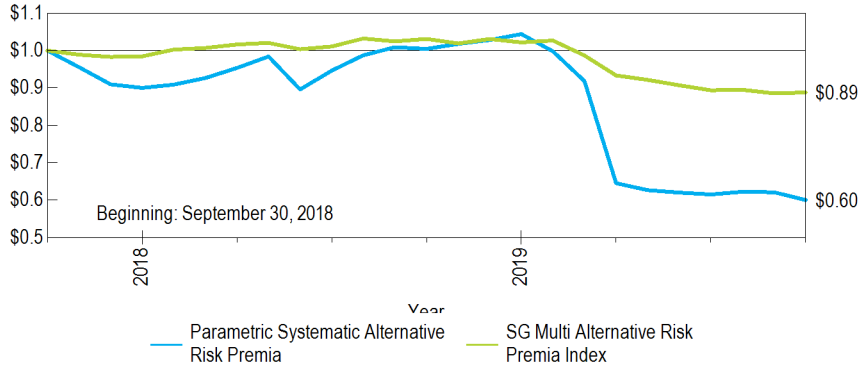
Parametric Systematic Alternative Risk Premia | As of September 30, 2020

	Alpha	Beta	Information Ratio	Sharpe Ratio	Tracking Error	R-Squared	Up Mkt Capture Ratio	Down Mkt Capture Ratio
Parametric Systematic Alternative Risk Premia	-0.13%	3.31	-0.77	-0.92	19.68%	0.63	158.91%	243.77%
SG Multi Alternative Risk Premia Index	0.00%	1.00	--	-1.23	0.00%	1.00	100.00%	100.00%

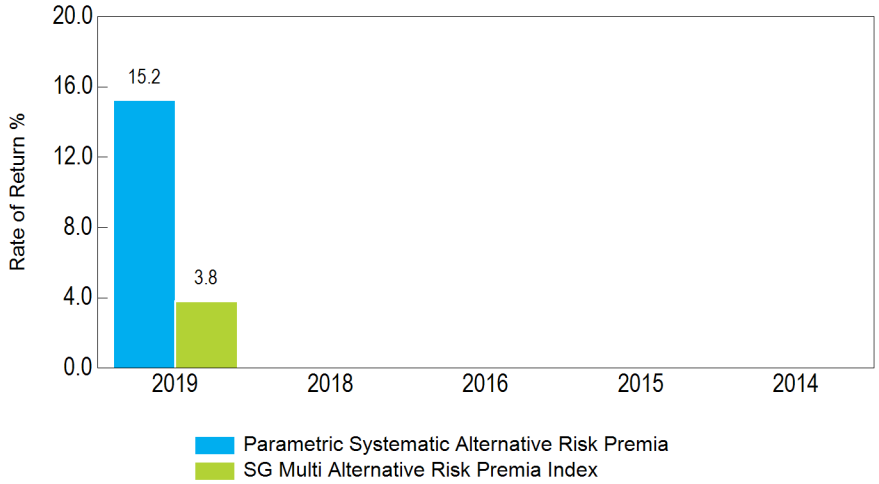
Trailing Period Performance



Growth of a Dollar

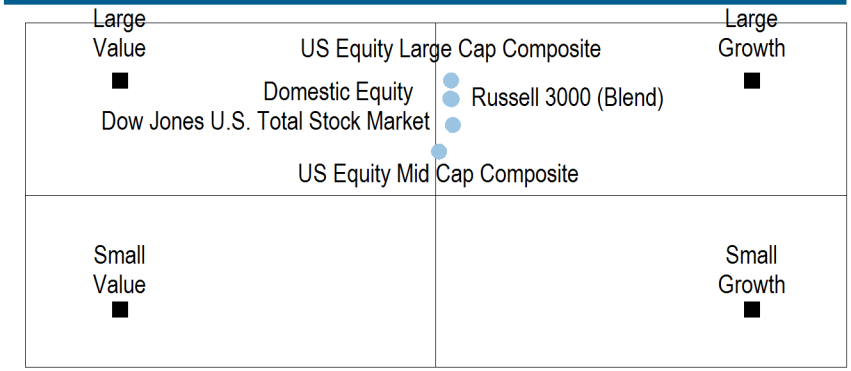


Calendar Year Performance

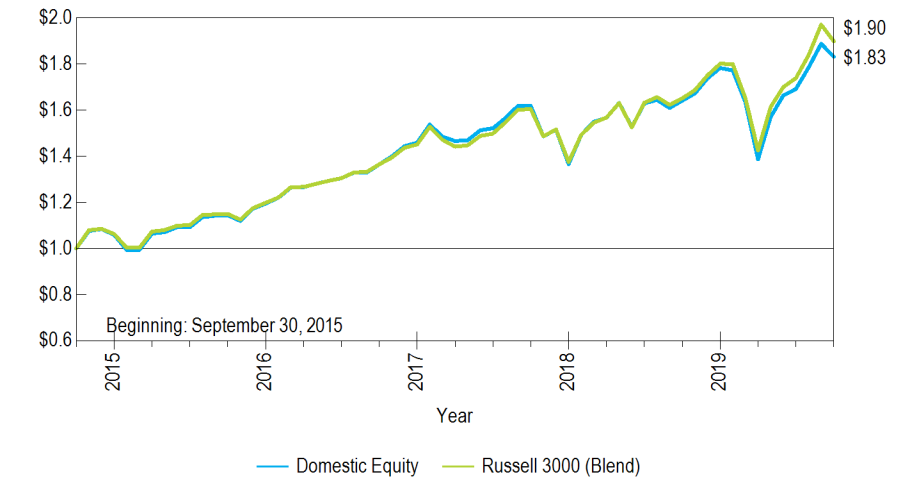


Domestic Equity | As of September 30, 2020

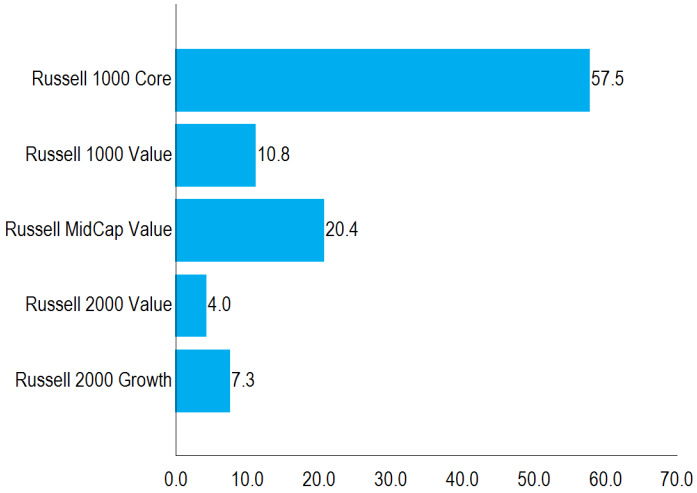
Style Map (5-Year)



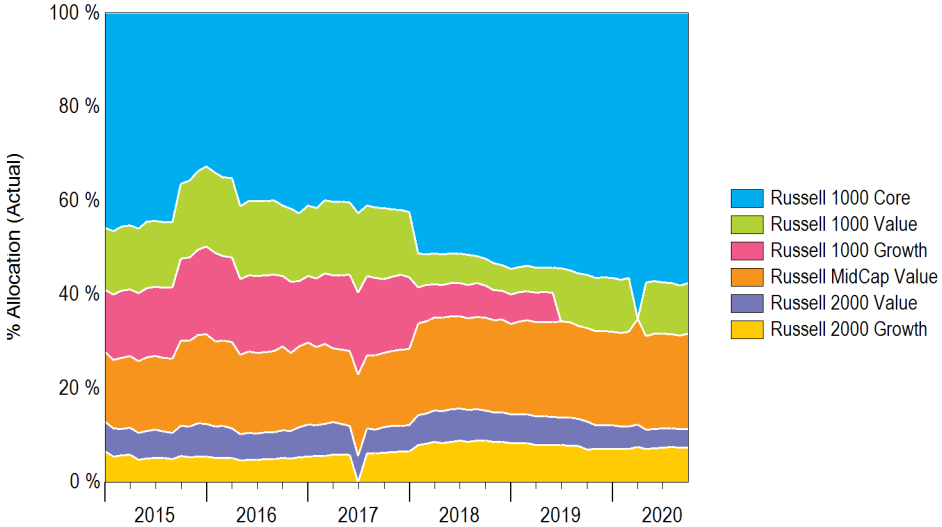
Growth of a Dollar



Style Exposure

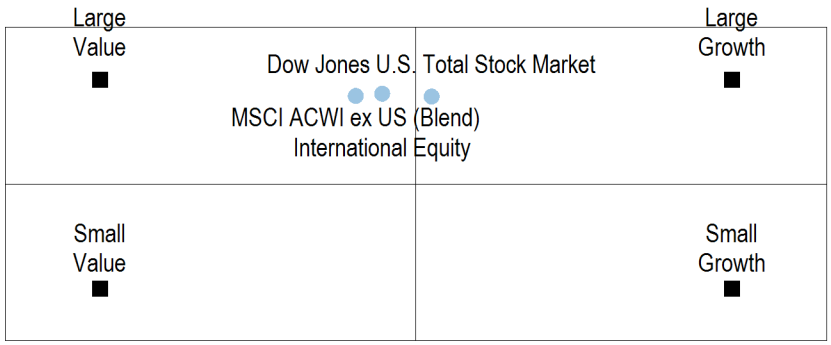


Style History (5-Year)

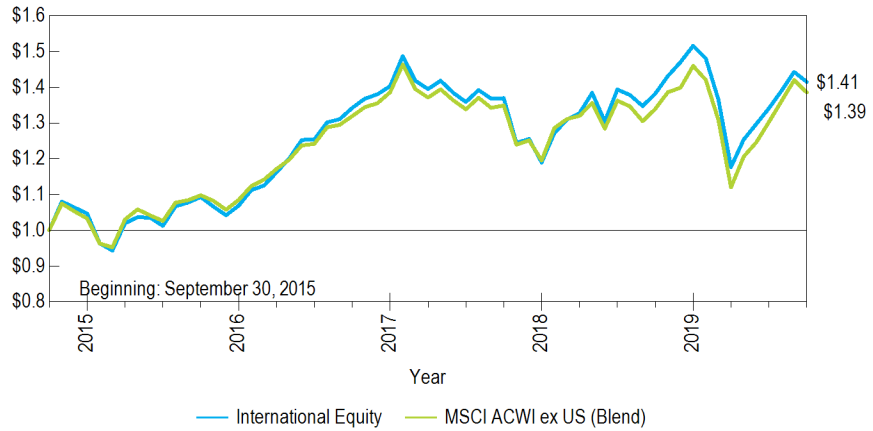


International Equity | As of September 30, 2020

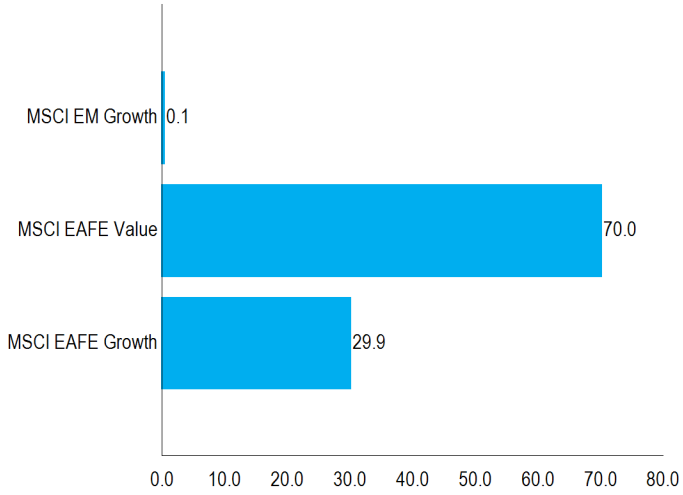
U.S. Effective Style Map
5 Years Ending September 30, 2020



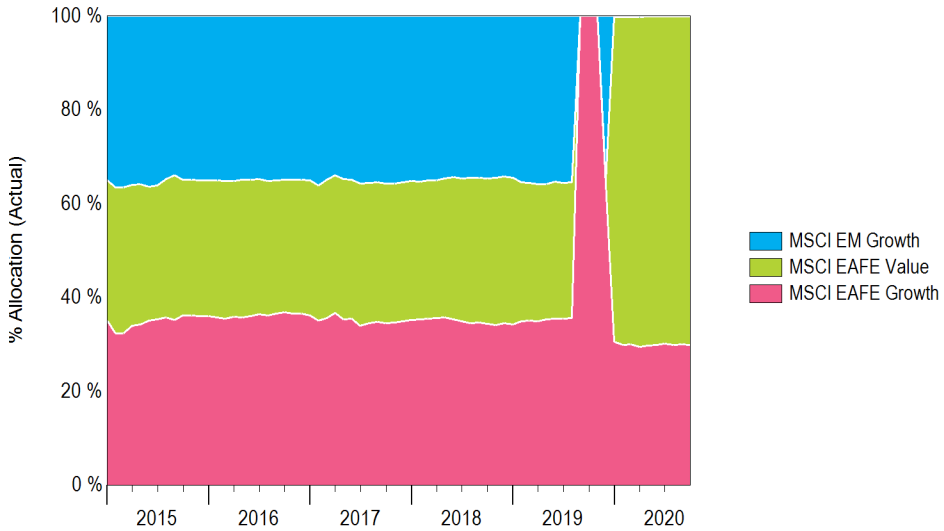
Growth of a Dollar
5 Years Ending September 30, 2020



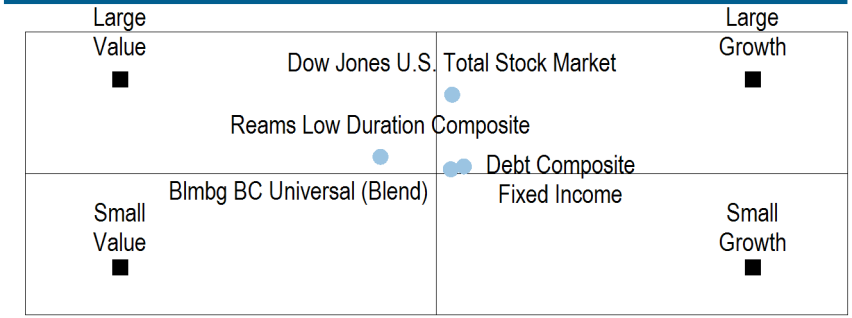
Style Exposure



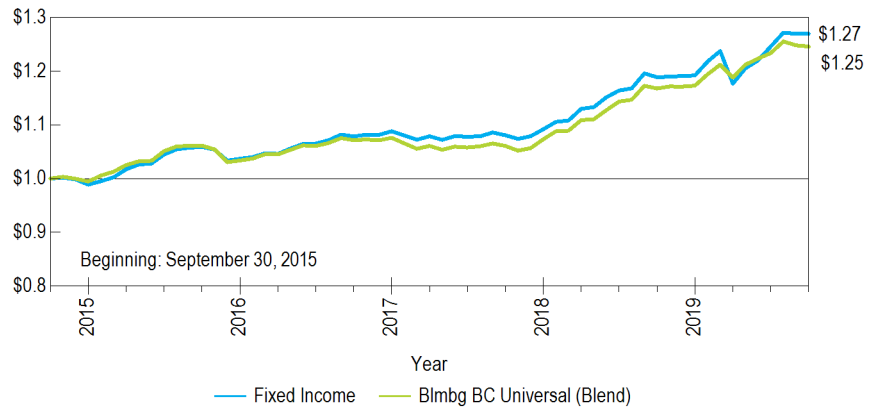
Style History (5-Year)



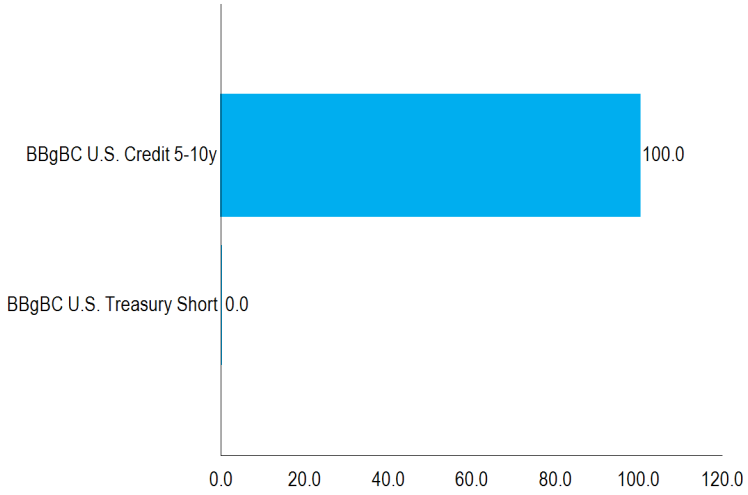
U.S. Effective Style Map
5 Years Ending September 30, 2020



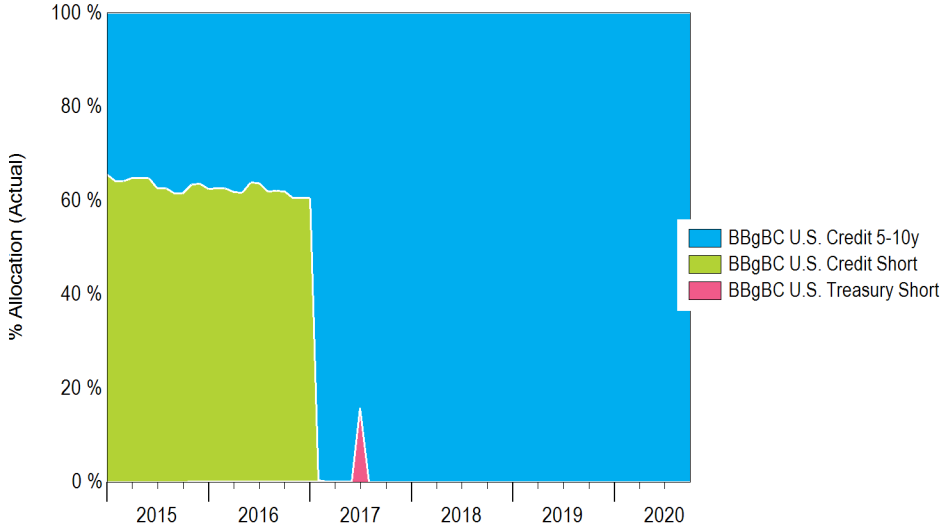
Growth of a Dollar
5 Years Ending September 30, 2020



Style Exposure



Style History (5-Year)



Disclaimer, Glossary, and Notes

WE HAVE PREPARED THIS REPORT (THIS "REPORT") FOR THE SOLE BENEFIT OF THE INTENDED RECIPIENT (THE "RECIPIENT").

SIGNIFICANT EVENTS MAY OCCUR (OR HAVE OCCURRED) AFTER THE DATE OF THIS REPORT AND THAT IT IS NOT OUR FUNCTION OR RESPONSIBILITY TO UPDATE THIS REPORT. ANY OPINIONS OR RECOMMENDATIONS PRESENTED HEREIN REPRESENT OUR GOOD FAITH VIEWS AS OF THE DATE OF THIS REPORT AND ARE SUBJECT TO CHANGE AT ANY TIME. ALL INVESTMENTS INVOLVE RISK. THERE CAN BE NO GUARANTEE THAT THE STRATEGIES, TACTICS, AND METHODS DISCUSSED HERE WILL BE SUCCESSFUL.

INFORMATION USED TO PREPARE THIS REPORT WAS OBTAINED FROM INVESTMENT MANAGERS, CUSTODIANS, AND OTHER EXTERNAL SOURCES. WHILE WE HAVE EXERCISED REASONABLE CARE IN PREPARING THIS REPORT, WE CANNOT GUARANTEE THE ACCURACY OF ALL SOURCE INFORMATION CONTAINED HEREIN.

CERTAIN INFORMATION CONTAINED IN THIS REPORT MAY CONSTITUTE "FORWARD - LOOKING STATEMENTS," WHICH CAN BE IDENTIFIED BY THE USE OF TERMINOLOGY SUCH AS "MAY," "WILL," "SHOULD," "EXPECT," "AIM", "ANTICIPATE," "TARGET," "PROJECT," "ESTIMATE," "INTEND," "CONTINUE" OR "BELIEVE," OR THE NEGATIVES THEREOF OR OTHER VARIATIONS THEREON OR COMPARABLE TERMINOLOGY. ANY FORWARD-LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION ARE BASED UPON CURRENT ASSUMPTIONS. CHANGES TO ANY ASSUMPTIONS MAY HAVE A MATERIAL IMPACT ON FORWARD - LOOKING STATEMENTS, FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS. ACTUAL RESULTS MAY THEREFORE BE MATERIALLY DIFFERENT FROM ANY FORECASTS, PROJECTIONS, VALUATIONS, OR RESULTS IN THIS PRESENTATION.

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. Portfolio Return- [Risk Free Rate+Beta*(market return-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 is 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.

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.

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.

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.

Tracking Error: A divergence between the price behavior of a position or a portfolio and the price behavior of a benchmark, as defined by the difference in standard deviation.

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%.

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

Yield to Worst: The lowest potential yield that can be received on a bond without the issuer actually defaulting. The yield to worst is calculated by making worst-case scenario assumptions on the issue by calculating the returns that would be received if provisions, including prepayment, call, or sinking fund, are used by the issuer.

NCREIF Property Index (NPI): Measures unleveraged investment performance of a very large pool of individual commercial real estate properties acquired in the private market by tax-exempt institutional investors for investment purposes only. The NPI index is capitalization-weighted for a quarterly time series composite total rate of return.

NCREIF Fund Index - Open End Diversified Core Equity (NFI-ODCE): Measures the investment performance of 28 open-end commingled funds pursuing a core investment strategy that reflects funds' leverage and cash positions. The NFI-ODCE index is equal-weighted and is reported gross and net of fees for a quarterly time series composite total rate of return.

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

The Russell Indices®, TM, SM are trademarks/service marks of the Frank Russell Company.

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.