Quarterly Economic and Market Update

3rd Quarter 2019

Presented by Global Manager Research

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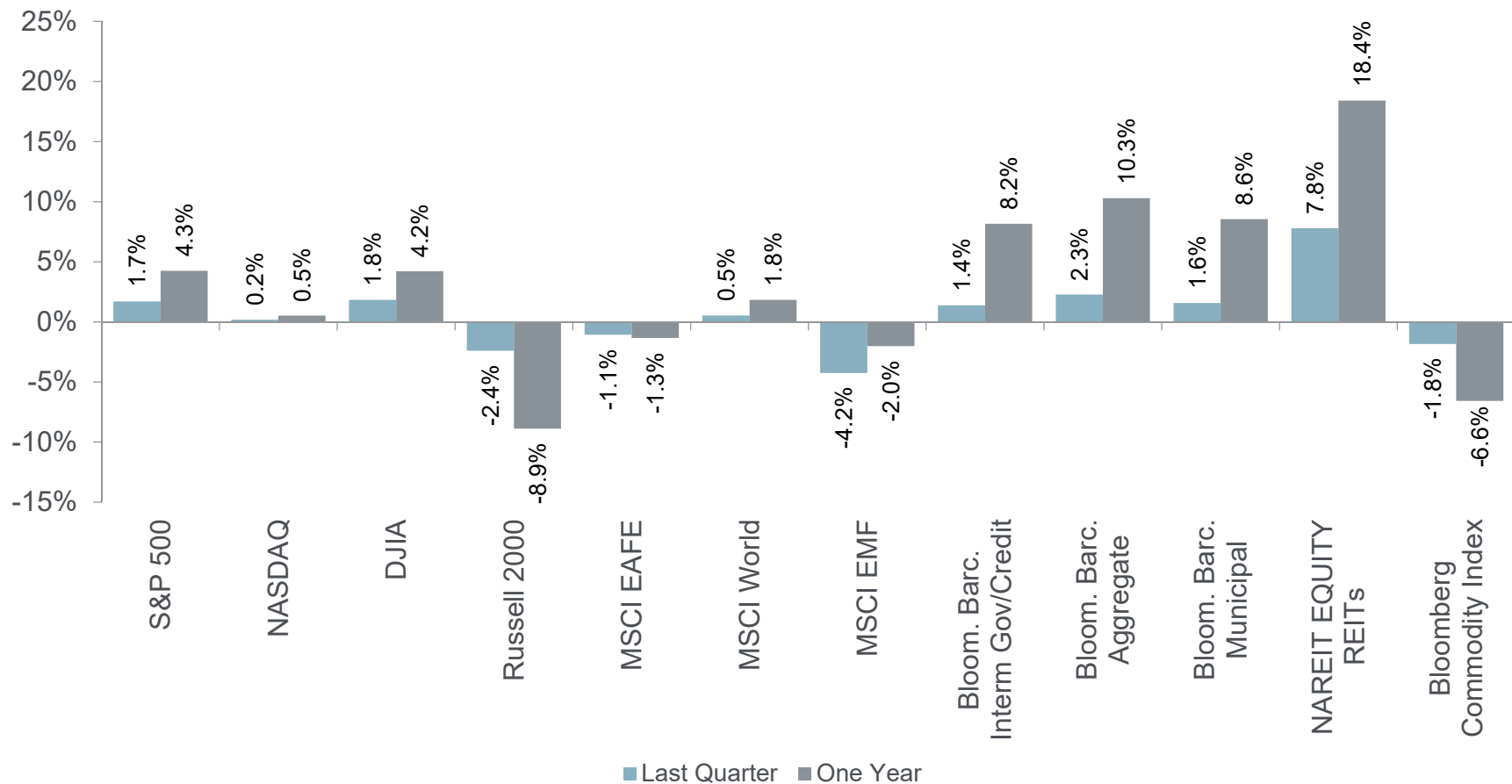**Past performance shown on the following slides does not guarantee future results.**

RBC | **Wealth Management**

Market Returns

3rd Quarter 2019 and Trailing 12 Months

Index Returns

Returns represent total returns through 09/30/2019
Data Source: FactSet Research Systems.

Market Returns: Fixed Income

3rd Quarter 2019 and Trailing 12 Months

Index Returns

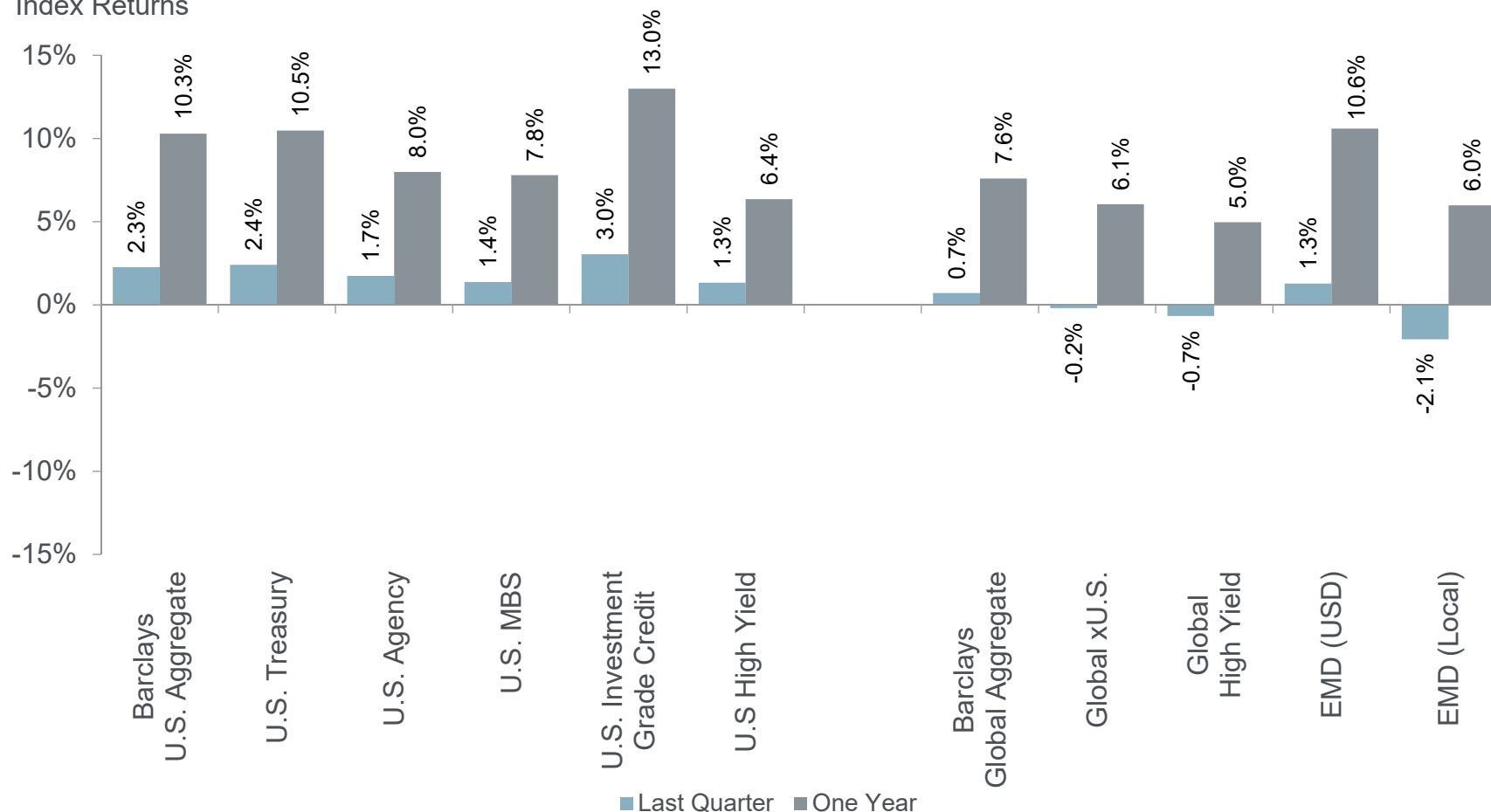| Index	Last Quarter	One Year
Barclays U.S. Aggregate	2.3%	10.3%
U.S. Treasury	2.4%	10.5%
U.S. Agency	1.7%	8.0%
U.S. MBS	1.4%	7.8%
U.S. Investment Grade Credit	3.0%	13.0%
U.S High Yield	1.3%	6.4%
Barclays Global Aggregate	0.7%	7.6%
Global xU.S.	-0.2%	6.1%
Global High Yield	-0.7%	5.0%
EMD (USD)	1.3%	10.6%
EMD (Local)	-2.1%	6.0%

Returns represent total returns through 09/30/2019.
Data Source: FactSet Research Systems.

Market Returns: U.S. Credit

3rd Quarter 2019 and Trailing 12 Months

Index Returns

	Last Quarter	One Year
U.S. Investment Grade Credit	3.0%	13.0%
AAA	4.2%	16.6%
AA	2.9%	11.5%
A	2.9%	12.6%
BBB	3.1%	13.4%
U.S High Yield	1.3%	6.4%
BB	2.0%	9.5%
B	1.6%	7.0%
CCC	-1.8%	-4.2%

Returns represent total returns through 09/30/2019.
Data Source: FactSet Research Systems.

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Market Returns: U.S. Sectors

3rd Quarter 2019 and Trailing 12 Months
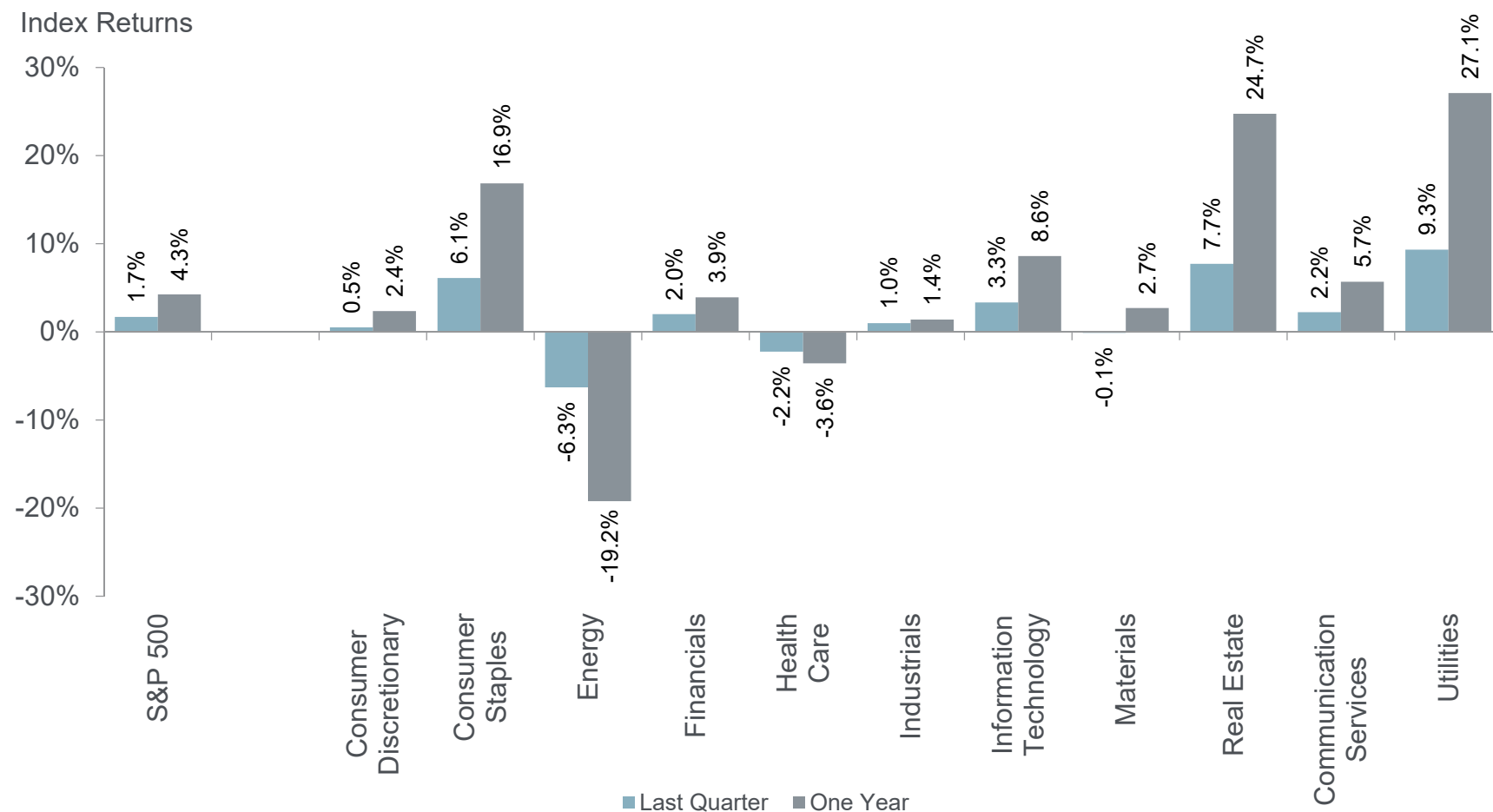
Index Returns

Last Quarter values: S&P 500 1.7%, Consumer Discretionary 0.5%, Consumer Staples 6.1%, Energy -6.3%, Financials 2.0%, Health Care -2.2%, Industrials 1.0%, Information Technology 3.3%, Materials -0.1%, Real Estate 7.7%, Communication Services 2.2%, Utilities 9.3%

One Year values: S&P 500 4.3%, Consumer Discretionary 2.4%, Consumer Staples 16.9%, Energy -19.2%, Financials 3.9%, Health Care -3.6%, Industrials 1.4%, Information Technology 8.6%, Materials 2.7%, Real Estate 24.7%, Communication Services 5.7%, Utilities 27.1%

■ Last Quarter ■ One Year

Returns represent total returns through 09/30/2019.
Data Source: FactSet Research Systems, Standard and Poor's.

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Economy

U.S. Real GDP Growth

U.S. Real GDP Growth
(Seasonally Adjusted Annual Rate)

Recession — GDP Now Cast — U.S. Real GDP Growth (SAAR)
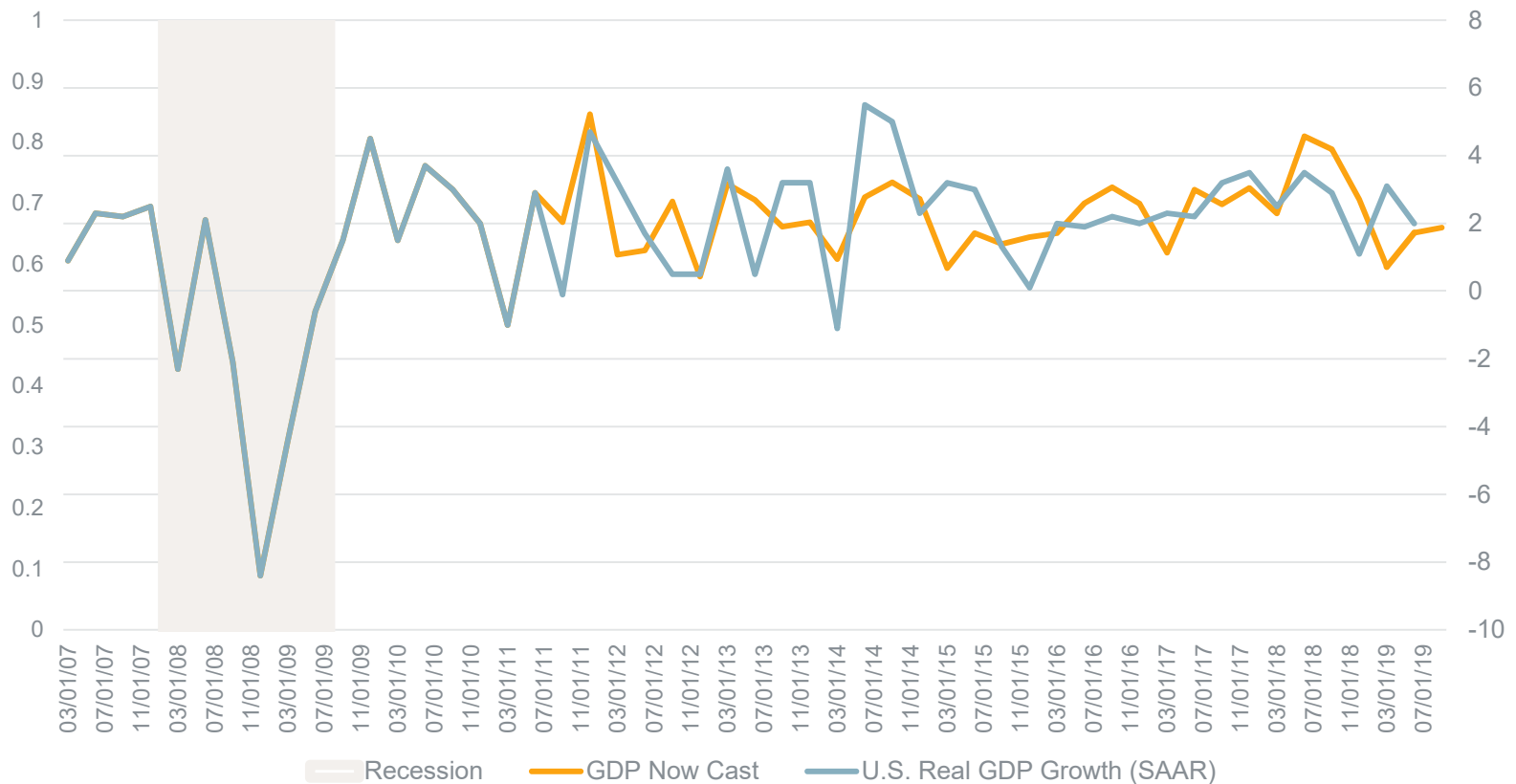
Data Source: St. Louis Federal Reserve and Atlanta Federal Reserve. Recessions are shaded. Data through 09/30/2019

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Economy

Institute for Supply Management: PMI
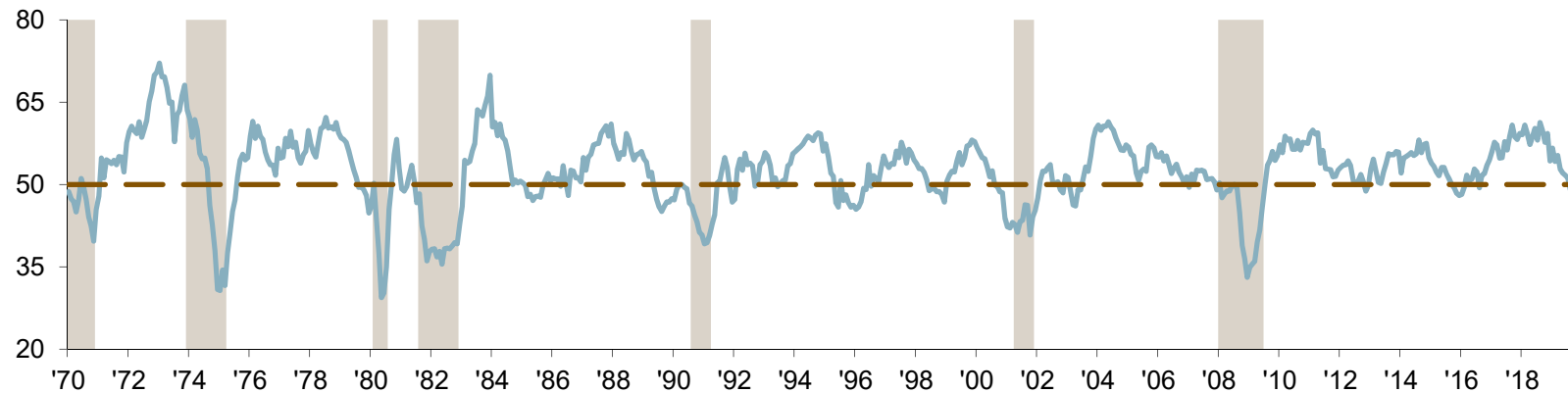
Inflation: CPI-U and Core CPI yoy % Change
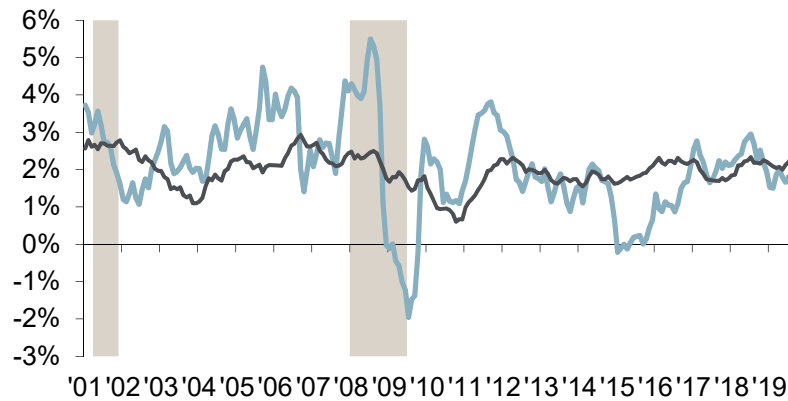
Housing Starts: New Privately Owned Units
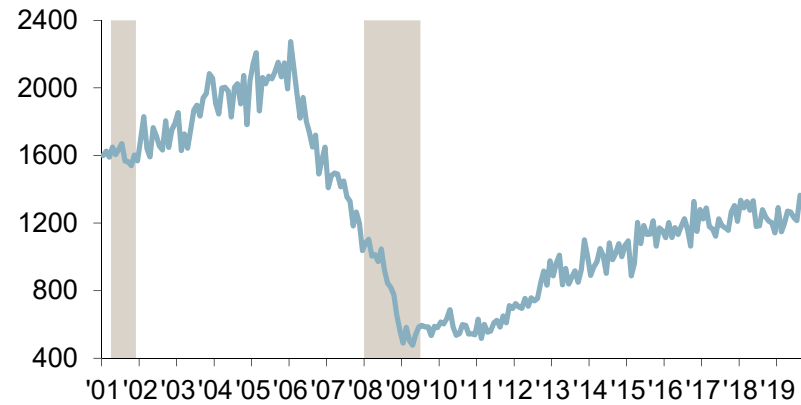
Data Source: St. Louis Federal Reserve. Recessions are shaded. Data through 8/31/2019.

Employment

Unemployment: Headline vs U6

U6

Headline

3.6%
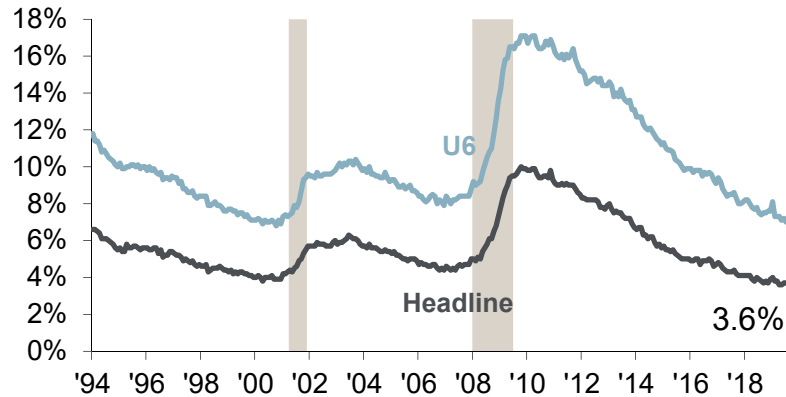
Not In Labor Force, Want Job Now (thousands)
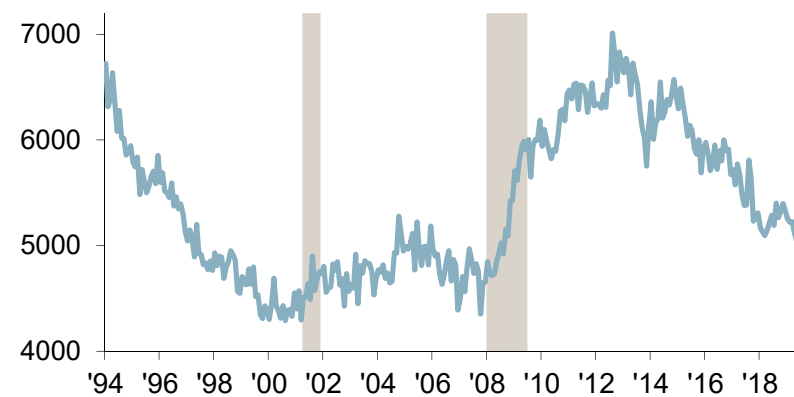
Average Weekly Hours of Production:
Nonsupervisory Employees, Private, yoy % Change
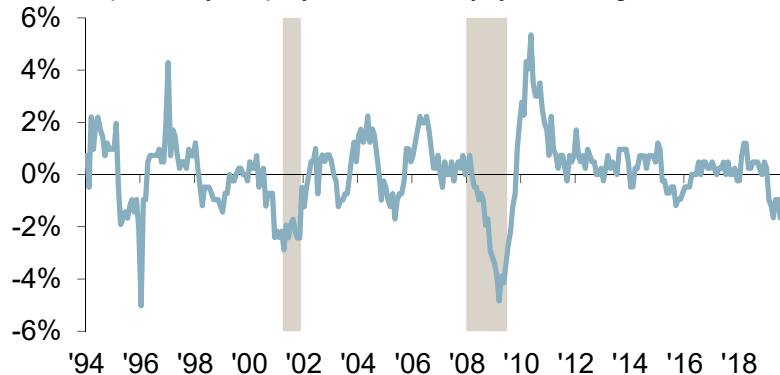
Average Weekly Overtime Hours of Production:
Nonsupervisory Employees, Manufacturing
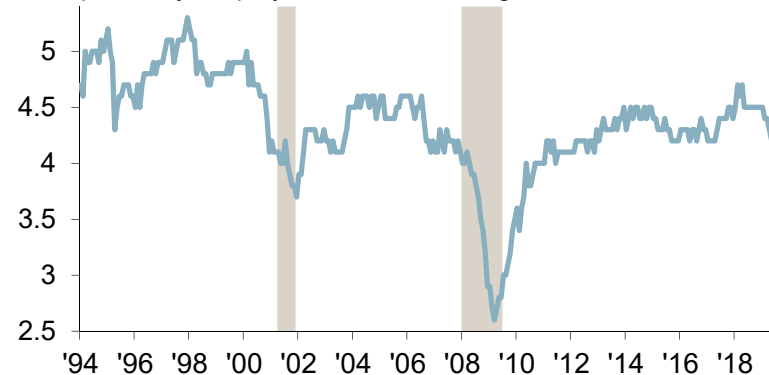
Data Source: St. Louis Federal Reserve, BLS. Recessions are shaded. Data through 8/31/2019.

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U.S. Recession Indicators

Philadelphia Fed Business Outlook Index:

Chicago Fed National Activity Index:

Yield Curve (10 Yr - 2 Yr):

Unemployment Rate: (24 month prior - current rate)
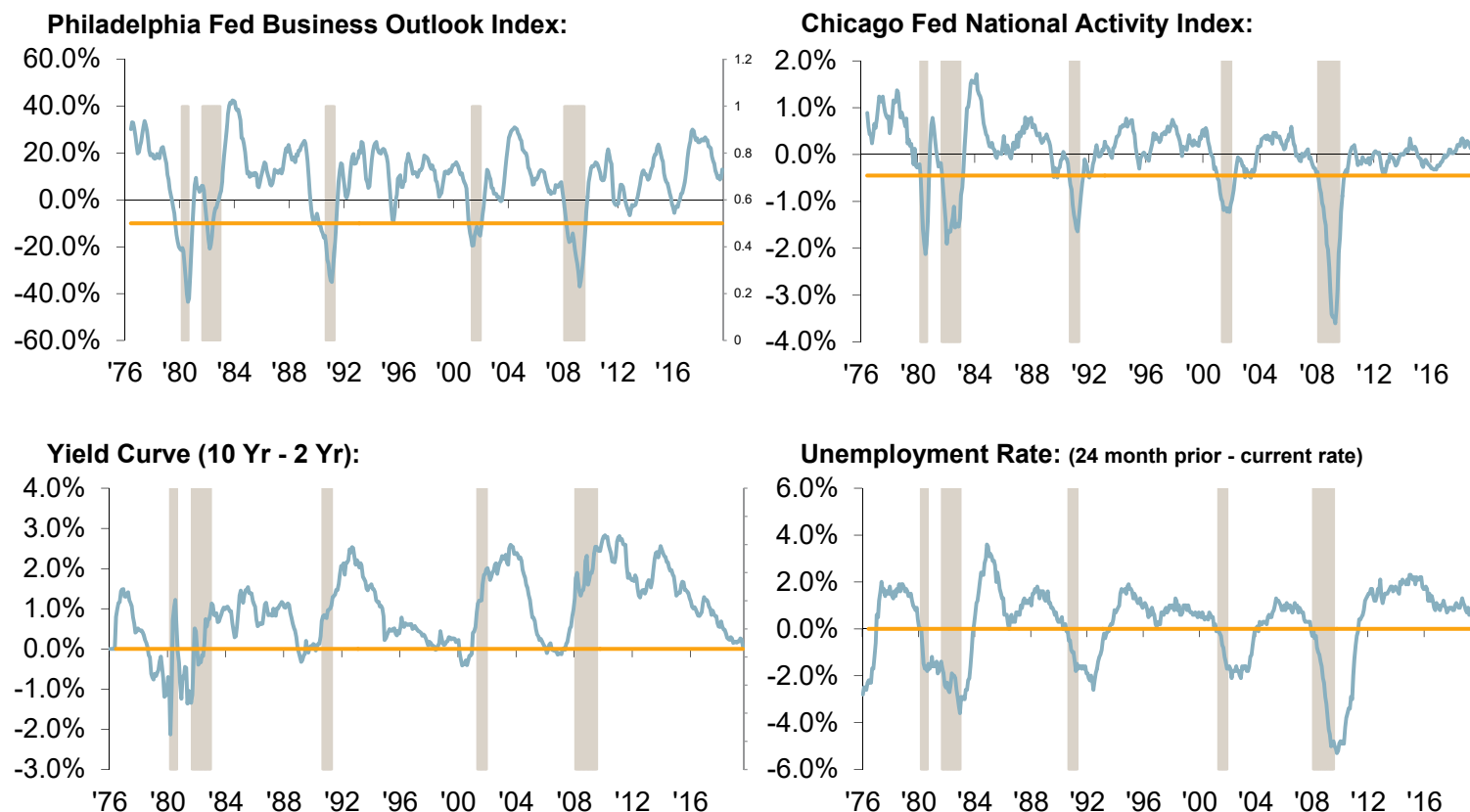
The economic statistics above are leading U.S. economic statistics that are manipulated in a way to signal potential recessions. When the economic statistic drops below the orange line, this indicates a recession is imminent or has already begun. The shaded vertical bars indicate the date of past U.S. recessions.
Data Source: St. Louis Federal Reserve, Bloomberg. Recessions are shaded. Data through 8/31/2019

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Fixed Income Spreads

Yield Curve Slope: 10 yr. - 3 mo.
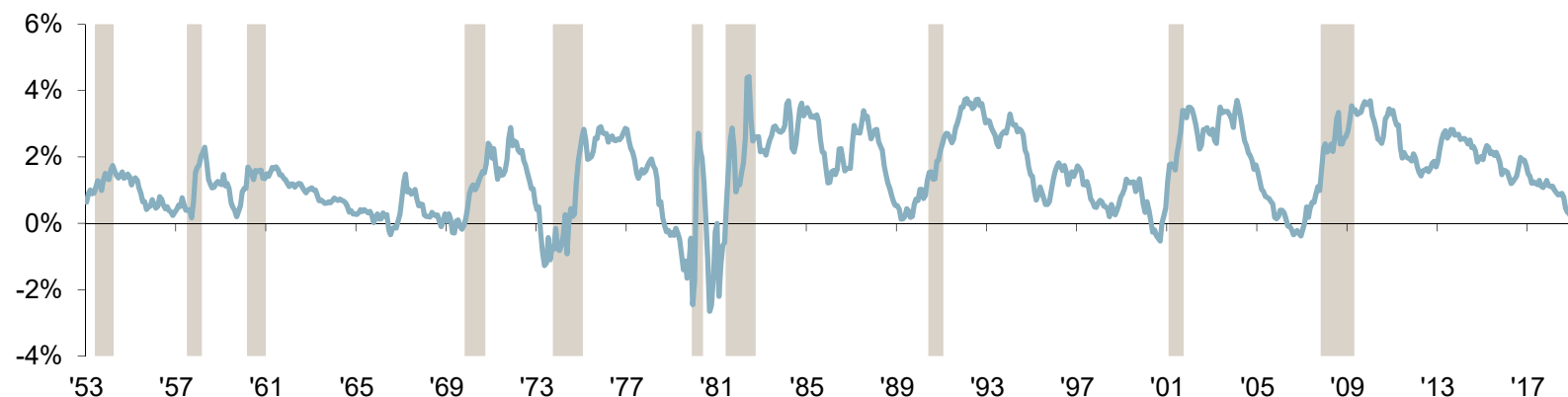
High Yield OAS
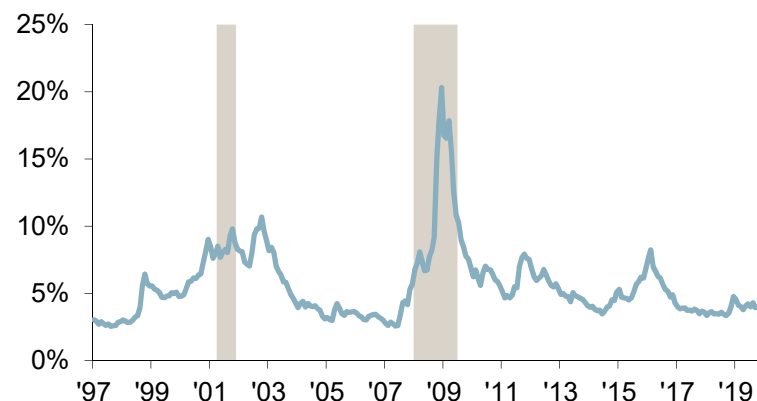
US AAA Corporate OAS
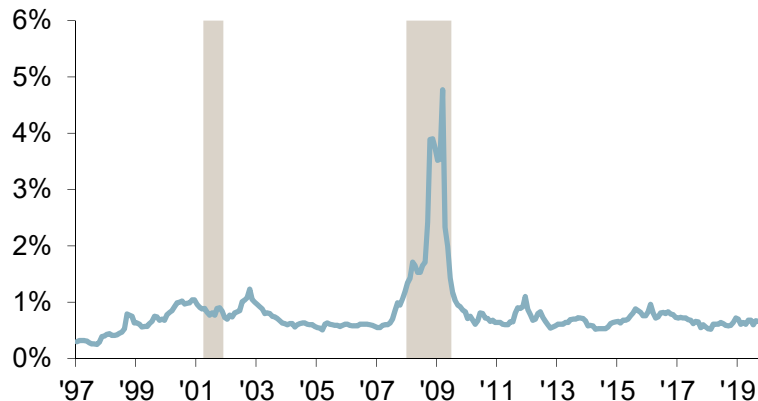
Data Source: St. Louis Federal Reserve, ICE Benchmark Administration Limited

Yield curve slope is calculated as the difference between the 10 year constant maturity treasury and the 3 month t-bill. High yield OAS is the calculated spreads between bonds in the BofAML High Yield Master II Index and the treasury spot curve. US AAA Corporate OAS is the calculated spread between bonds in the BofAML US Corporate Master Index and the treasury spot curve. Recessions are shaded. Data as of 9/30/2019.

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Probability of an Inverted Yield Curve
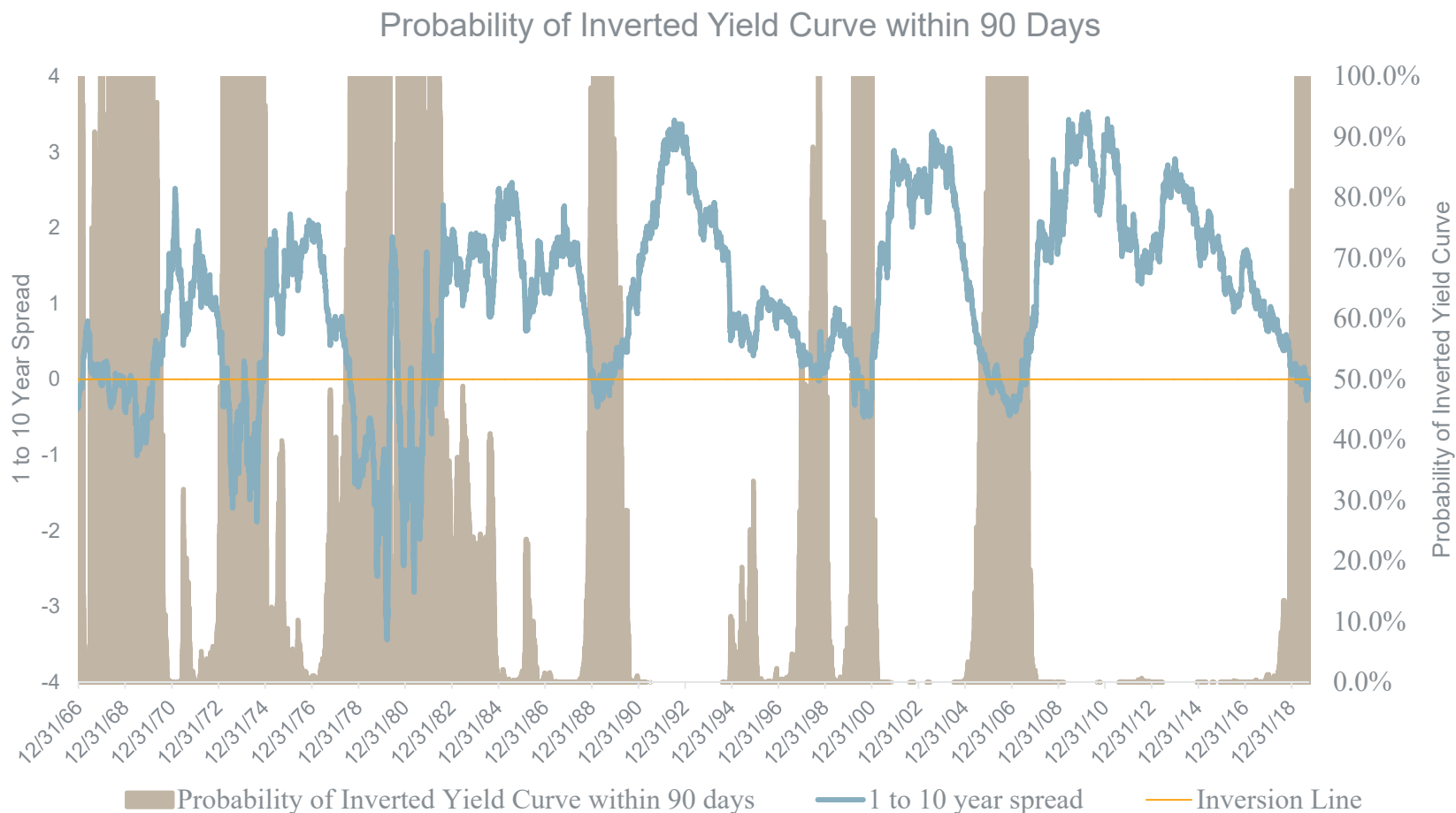
Probability of Inverted Yield Curve within 90 Days

Legend: Probability of Inverted Yield Curve within 90 days — 1 to 10 year spread — Inversion Line

Yield curve slope is calculated as the difference between the 10 year constant maturity treasury and the 1 year constant maturity treasury. The probability of an inverted yield curve is calculated based on the volatility of the yield curve over a 12 week period with a rolling 4 year moving window, based on a normal distribution and the number of standard deviations away from the inversion line. Data Source: St. Louis Federal Reserve. Data through 09/30/2019.

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Historical Perspective of an Inverted Yield Curve
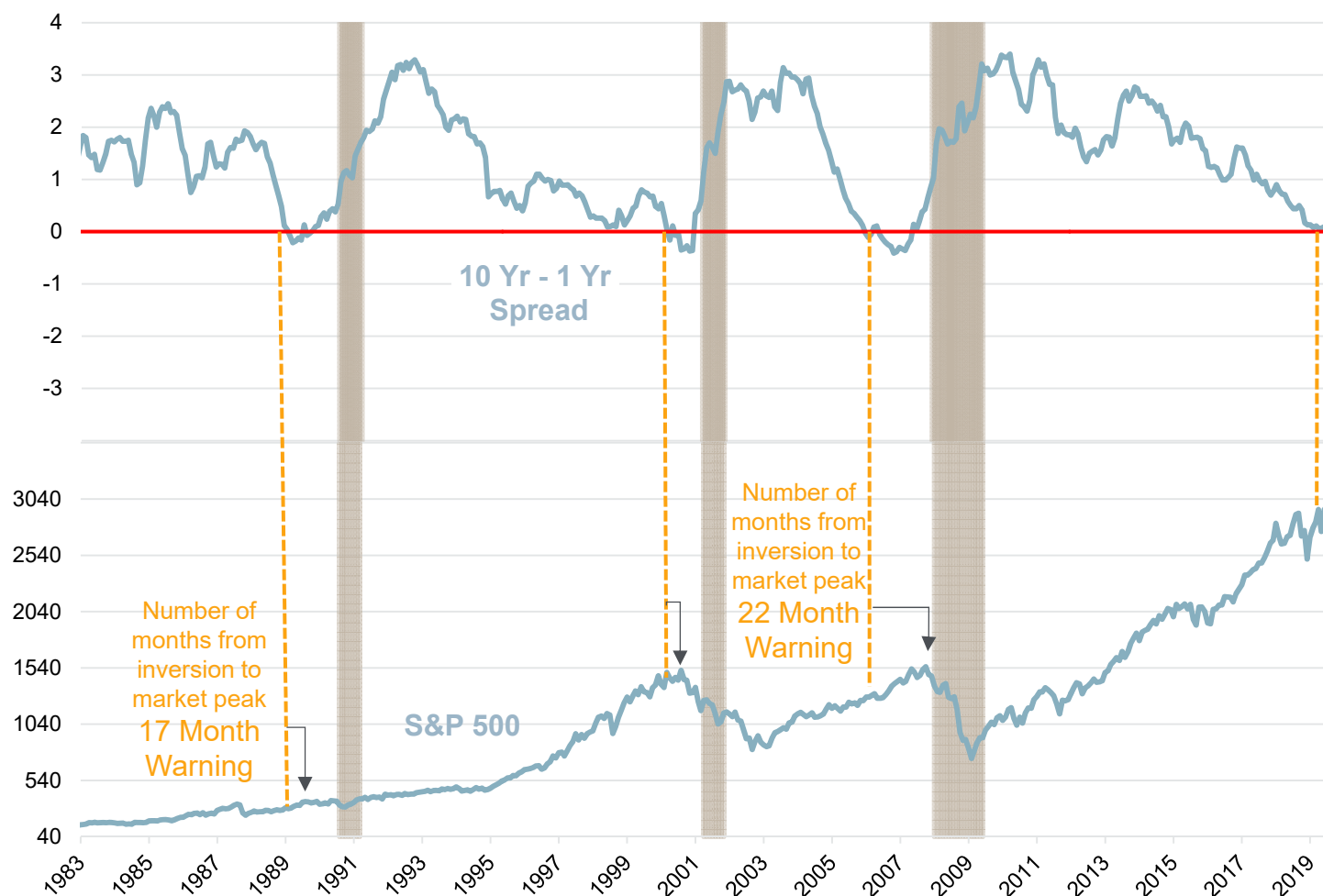
10 Yr - 1 Yr Spread

S&P 500

Number of months from inversion to market peak
17 Month Warning

Number of months from inversion to market peak
22 Month Warning

Yield curve slope is calculated as the difference between the 10 year constant maturity treasury and the 1 year constant maturity treasury. Data Source: St. Louis Federal Reserve, Standard and Poor's. Recessions are shaded. Data through 9/30/2019.

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Duration of Expansion in the U.S. Business Cycle
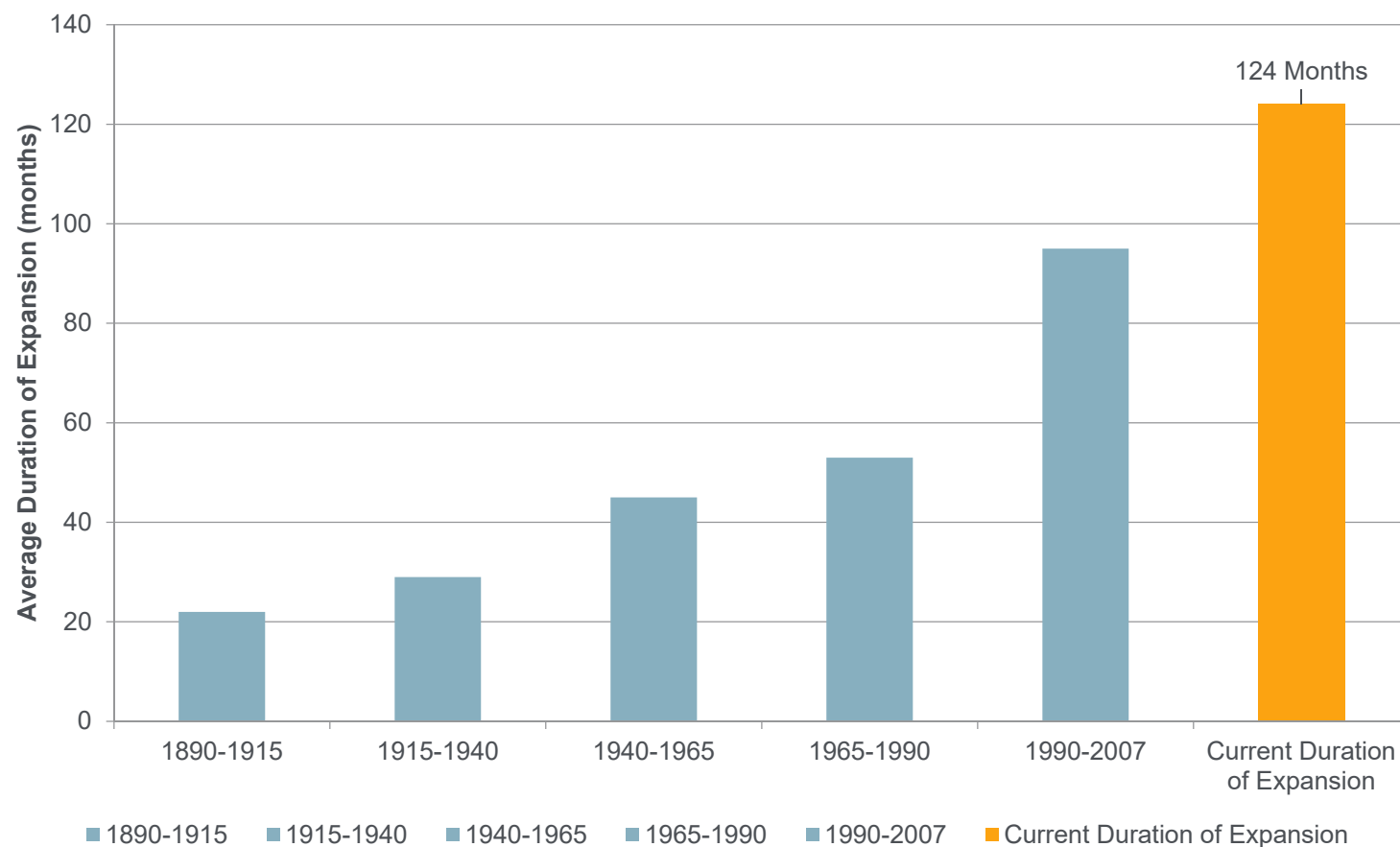
Data Source: National Bureau of Economic Research. Data through 9/30/2019.

S&P Index Calendar Year Total Returns

Since 1926
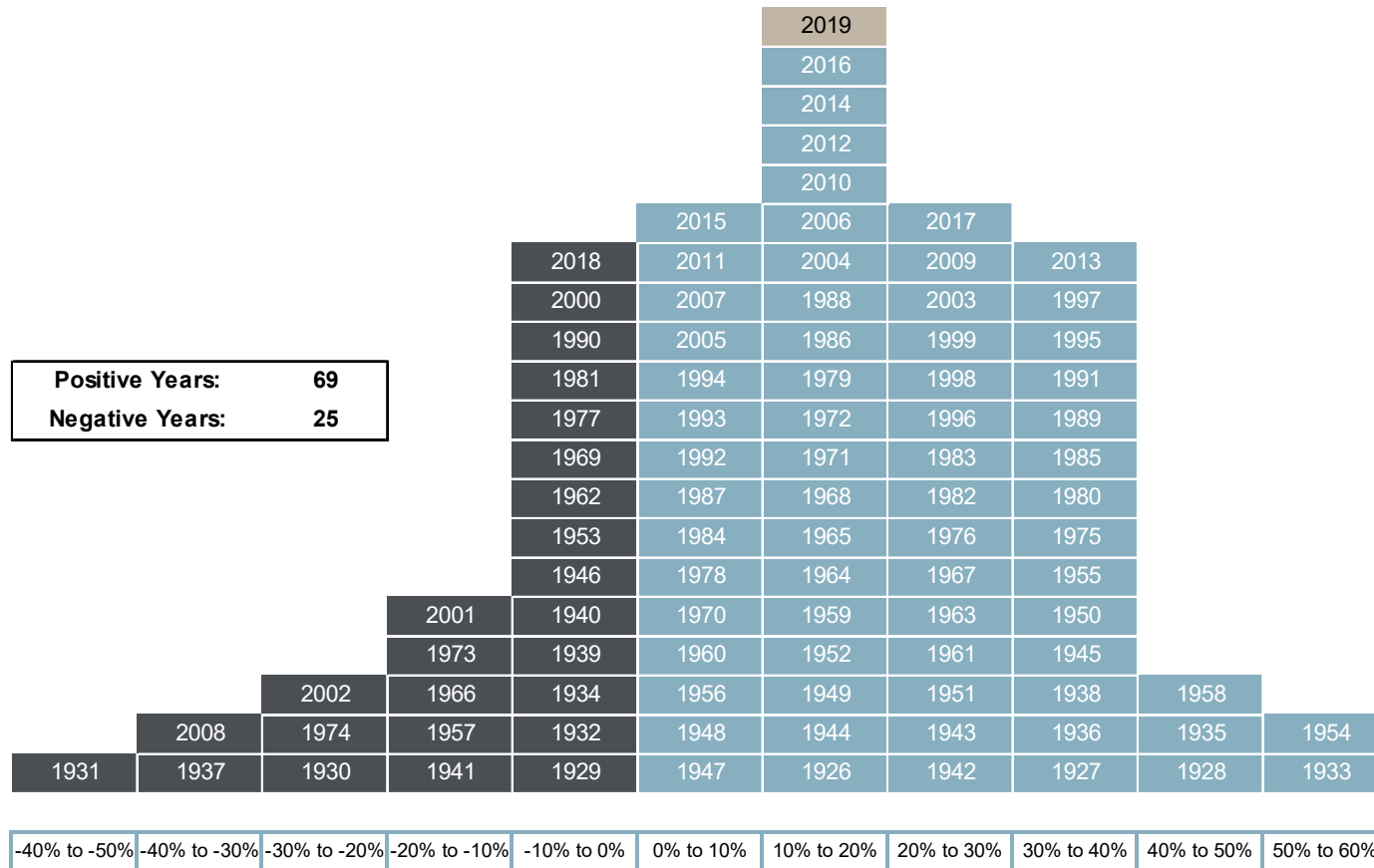
Positive Years:	69
Negative Years:	25

-40% to -50%	-40% to -30%	-30% to -20%	-20% to -10%	-10% to 0%	0% to 10%	10% to 20%	20% to 30%	30% to 40%	40% to 50%	50% to 60%
						2019				
						2016				
						2014				
						2012				
						2010				
					2015	2006	2017			
				2018	2011	2004	2009	2013		
				2000	2007	1988	2003	1997		
				1990	2005	1986	1999	1995		
				1981	1994	1979	1998	1991		
				1977	1993	1972	1996	1989		
				1969	1992	1971	1983	1985		
				1962	1987	1968	1982	1980		
				1953	1984	1965	1976	1975		
				1946	1978	1964	1967	1955		
			2001	1940	1970	1959	1963	1950		
			1973	1939	1960	1952	1961	1945		
		2002	1966	1934	1956	1949	1951	1938	1958	
	2008	1974	1957	1932	1948	1944	1943	1936	1935	1954
1931	1937	1930	1941	1929	1947	1926	1942	1927	1928	1933

Returns through 9/30/2019.
Data Source: Ibbotson Associates, Standard and Poor's and FactSet Research Systems.
Returns prior to 1974 are from Ibbotson Associates. Returns from 1974 to present are from FactSet Research Systems. The Ibbotson returns are computed as the S&P 90 From 1926 through 1956 and the S&P 500 thereafter.

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Rolling 10-Year S&P 500 Total Returns

Contributors to Rolling 10-Year S&P 500 Return
Calendar Years 1971 - 2018

Legend:
- Combined Effects
- EPS Growth
- P/E Change
- Dividends
- Total Return

Ending Date of 10-Year Period
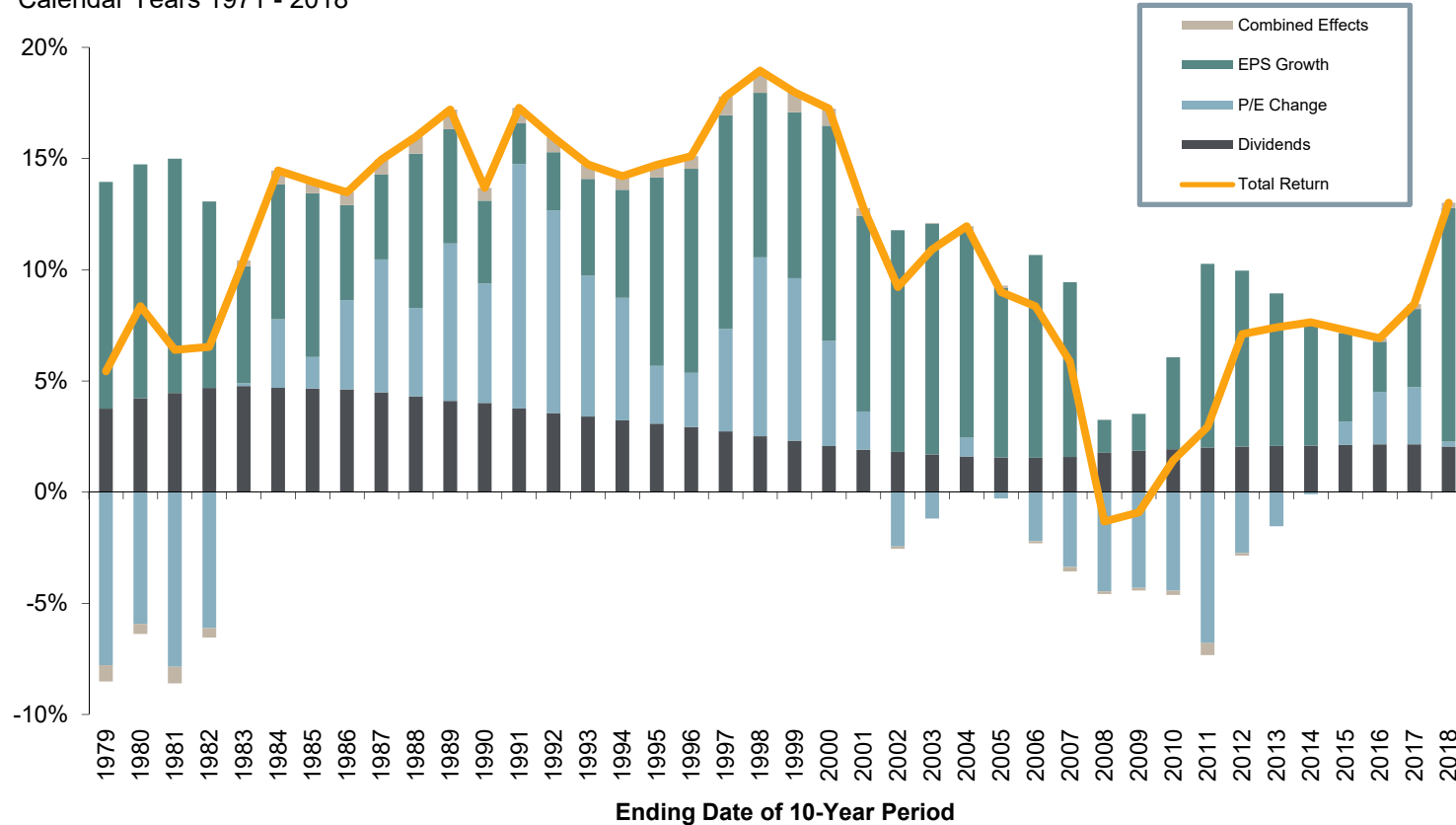
Returns shown are based on calendar years from 1971 to 2018

Data Source: Bloomberg

Returns by Style

S&P 500 Growth vs Value: Last 12 Months

S&P 500 Growth (LHS)

S&P 500 Value (RHS)
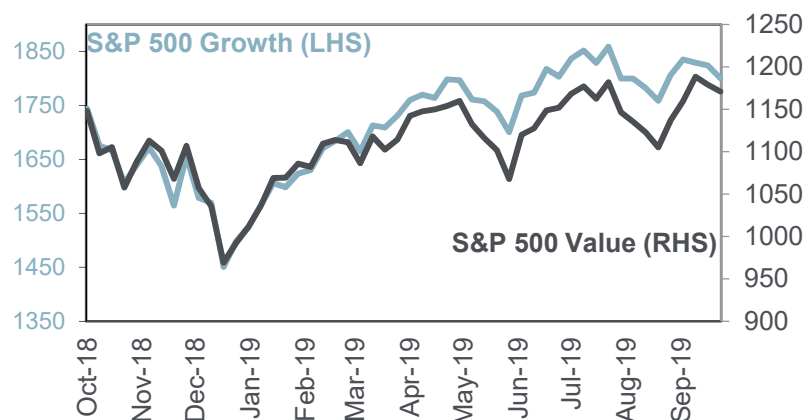
S&P 500 Growth vs Value: 3/09 - 03/19

S&P 500 Growth (LHS)

S&P 500 Value (RHS)
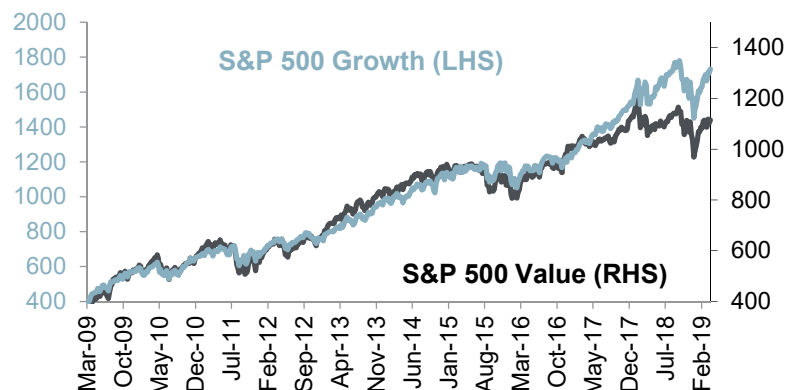
3Q 2019

	Value	Blend	Growth
Large	2.8%	1.7%	0.7%
Mid	0.4%	-0.1%	-0.6%
Small	1.5%	-0.2%	-1.9%

YTD Return

	Value	Blend	Growth
Large	20.0%	20.6%	21.1%
Mid	17.4%	17.9%	18.3%
Small	15.5%	13.5%	11.5%

Since Market Peak (October 2007)

	Value	Blend	Growth
Large	97.0%	145.5%	204.3%
Mid	128.6%	154.3%	171.4%
Small	91.4%	151.1%	133.8%

Since Market Low (March 2009)

	Value	Blend	Growth
Large	391.3%	448.7%	520.6%
Mid	483.7%	463.2%	527.4%
Small	373.3%	498.8%	451.8%

Best   Worst

Source: FactSet Research Systems, Standard and Poor's.
Since Market Low represents period 3/9/09 – 09/30/19, illustrating market returns since the S&P 500 Index low on March 9, 2009.
Since Market Peak represents period 10/9/07 – 09/30/19, illustrating market returns since the most recent S&P 500 Index high on October 9, 2007. For all time periods, total return is based on S&P style indexes.

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U.S. Growth vs. U.S. Value

Calendar Year Returns

Annual Performance: Growth Stocks - Value Stocks
Percent Difference

Growth Outperforms Value

Growth Underperforms Value
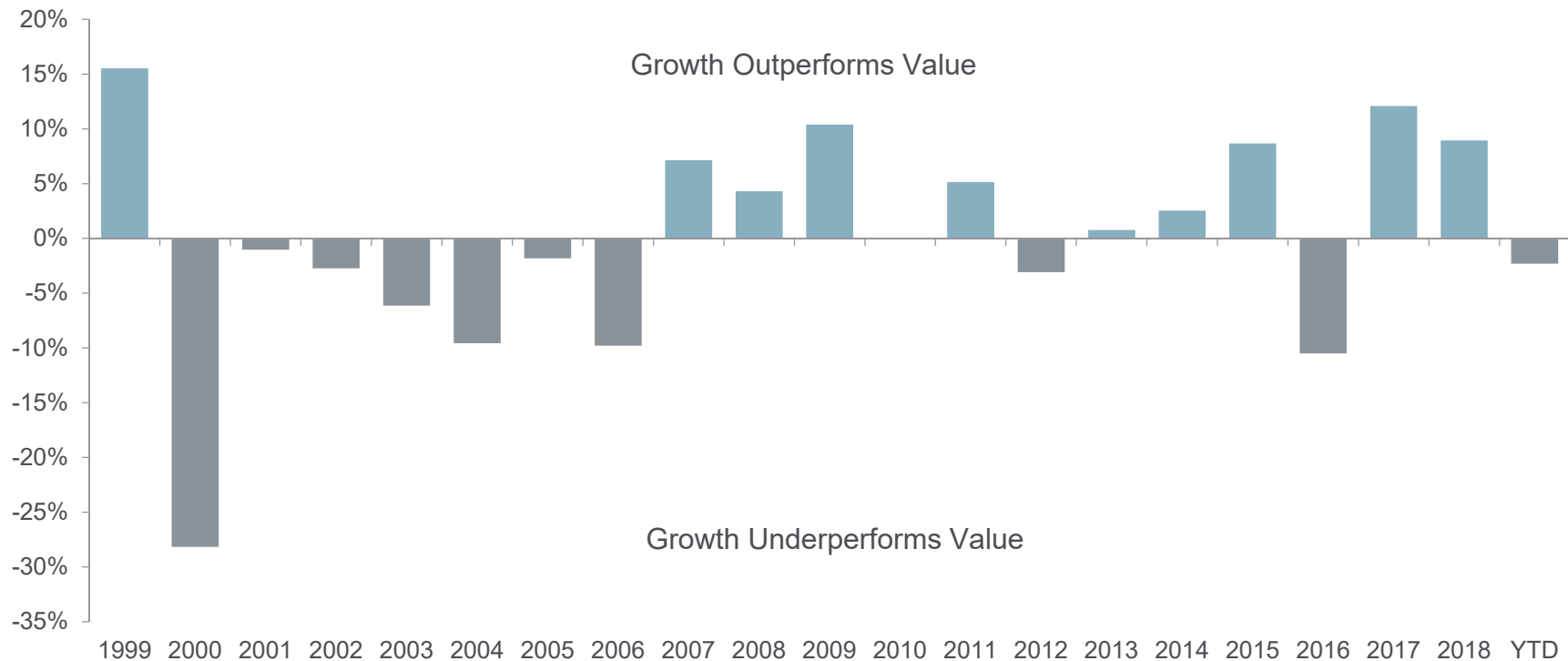
Returns through 09/30/2019.
Growth represented by the S&P 500 Growth Index and Value represented by the S&P 500 Value Index.
Data Source: FactSet Research Systems, Standard and Poor's.

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U.S. Large Caps vs. U.S. Small Caps
Calendar Year Returns

Annual Performance: Large Cap Stocks - Small Cap Stocks
Percent Difference

Large Cap Outperforms Small Cap

Small Cap Outperforms Large Cap
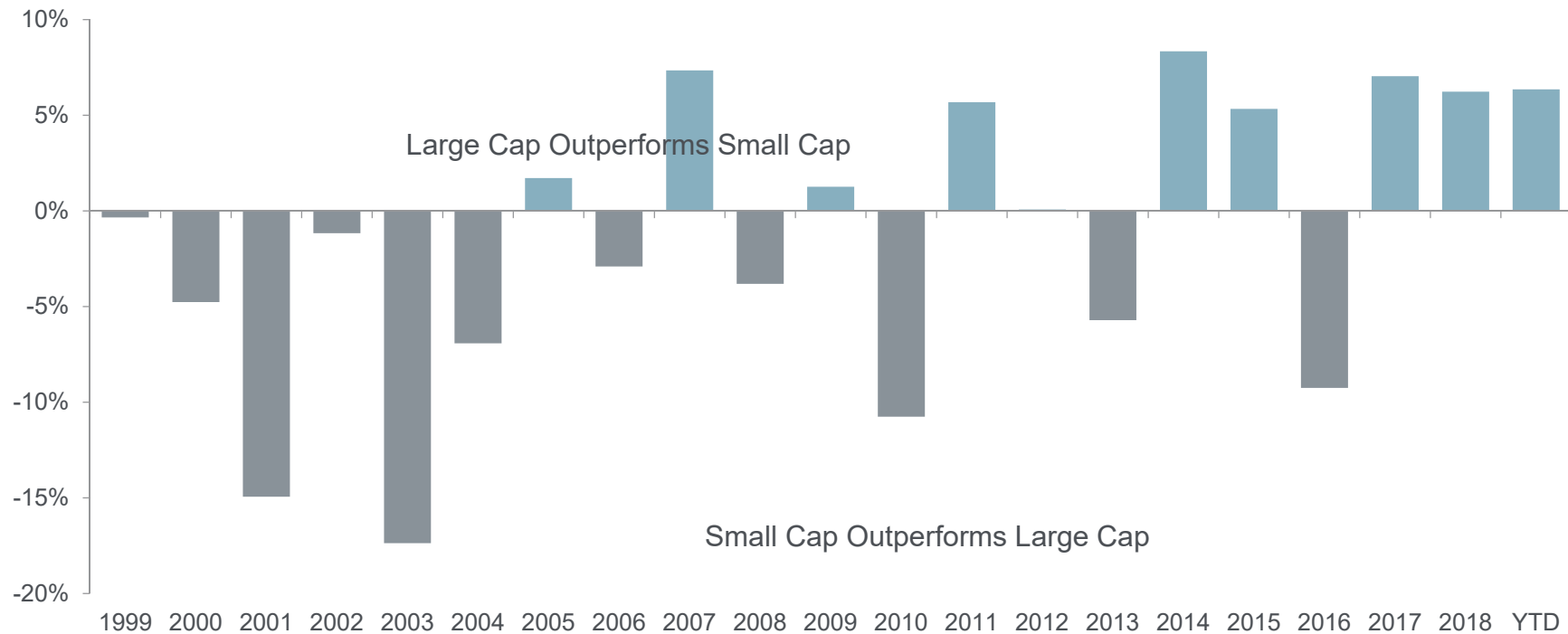
Returns through 9/30/2019.
Large Caps represented by the S&P 500 Index and Small Caps represented by the Russell 2000 Index.
Data Source: FactSet Research Systems, Standard and Poor's.

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U.S. Large Caps vs. U.S. Small Caps

Market Valuations

Large Cap Valuation Ratios

Small Cap Valuation Ratios

◆ Current   ● 12 Months Ago   ── 10 Year Average
── 1 Standard Deviation   ▮ High/Low Bar
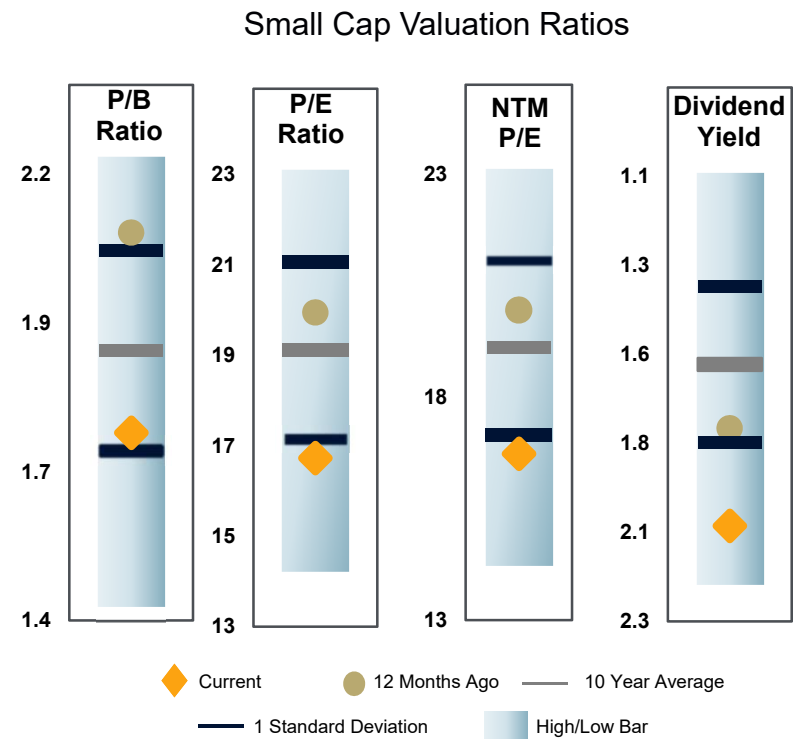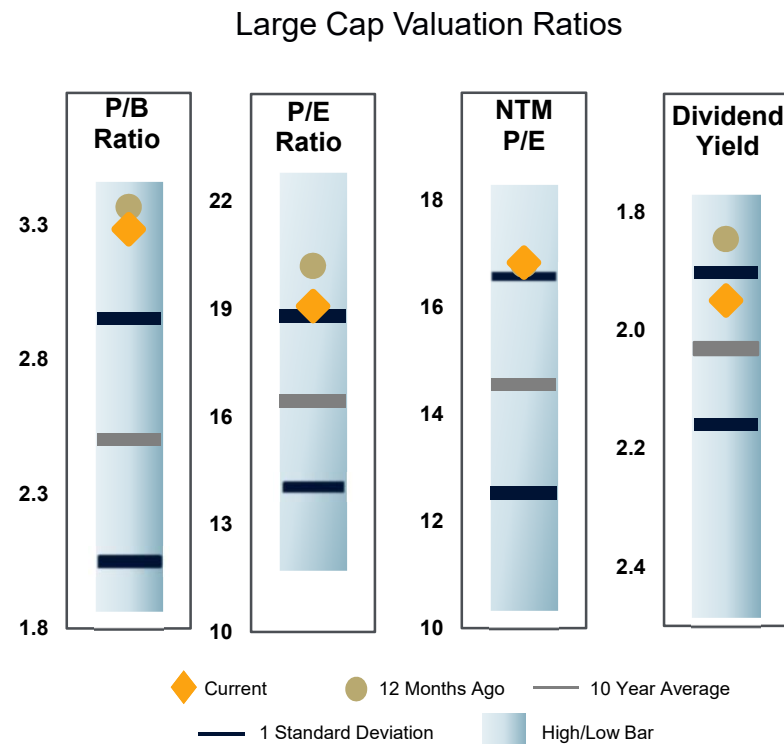
Data through 9/30/2019.
Data Source: FactSet Research Systems, Standard and Poor's.
Large Caps represented by the S&P 500 Index and Small Caps represented by the S&P 600 Index.

Dividend Yield: Multiplies the DPS over the last year then divides the resulting figure by the price.
Price/Earnings: Reflects the closing price for the company at fiscal quarter end divided by earnings per share before extraordinary items for last twelve months.
NTM P/PE: Price to Next Twelve Months Earnings. Calculated as the current market price over the estimated earnings for the next twelve months for the index.
Price/Book: Displays the book value per share for the ending month divided by share price.

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S&P 500 Historical P/E Range

S&P 500 Historical P/E Range

Average

Data through 9/30/2019

Data Source: FactSet Research Systems

Regional Market Valuations
Trailing P/E
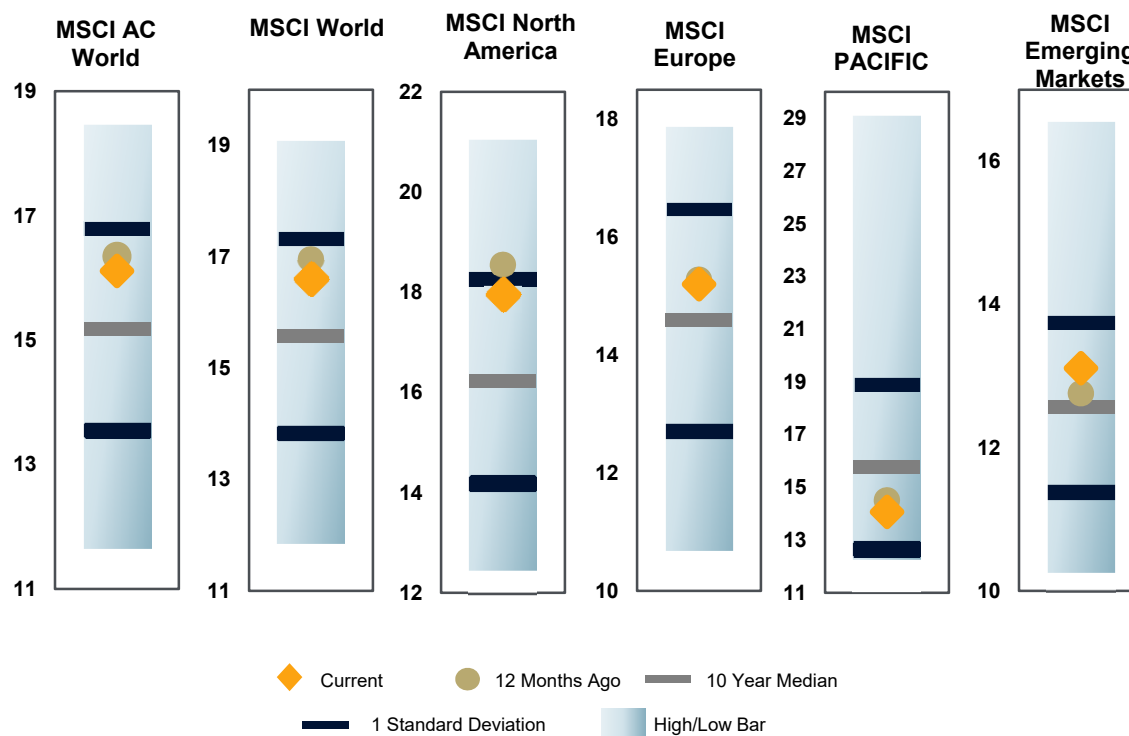
Legend:
- ◆ Current
- ● 12 Months Ago
- ▬ 10 Year Median
- ▬ 1 Standard Deviation
- ▮ High/Low Bar

Trailing P/E: Price to Trailing Twelve Months Earnings. Calculated as the current market price over the trailing earnings for the prior twelve months for the index
Note: The MSCI AC World index includes emerging market countries. The MSCI World index only includes developed market countries.
Data through 9/30/2019 based on MSCI Market Indices.
International investing involves risks not typically associated with U.S. investing, including currency fluctuation, foreign tax, political instability and different accounting standards.
Data Source: Morgan Stanley Capital International and FactSet Research Systems.

Wealth Management

Select Country Market Valuations
Trailing P/E
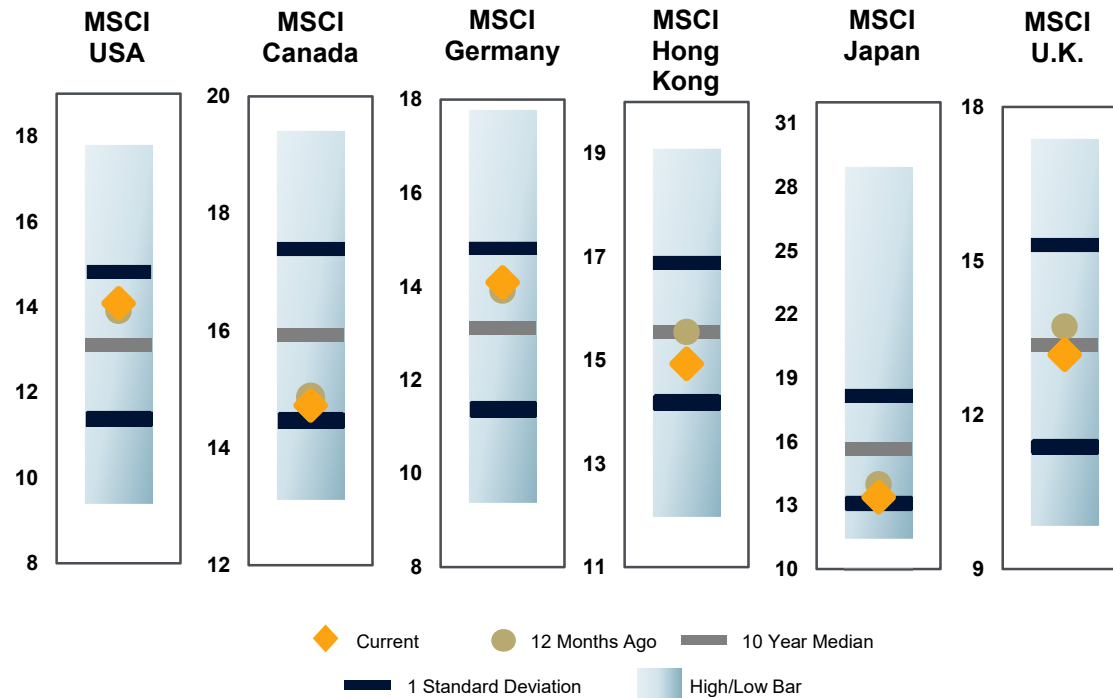
Current   12 Months Ago   10 Year Median

1 Standard Deviation   High/Low Bar

Trailing P/E: Price to Trailing Twelve Months Earnings. Calculated as the current market price over the trailing earnings for the prior twelve months for the index
Data through 9/30/2019 based on MSCI Market Indices.
International investing involves risks not typically associated with U.S. investing, including currency fluctuation, foreign tax, political instability and different accounting standards.
Data Source: Morgan Stanley Capital International and FactSet Research Systems.

Developed Market Equity Performance
Best and Worst Markets Since 1996

Year	Best Market	Worst Market	U.S. Return	U.S. Rank	Year	Best Market	Worst Market	U.S. Return	U.S. Rank
1996	Spain 41.3%	Japan -15.4%	24.1%	11	2008	Japan -29.1%	Ireland -71.7%	-37.1%	3
1997	Portugal 27.9%	Singapore -30.1%	34.1%	6	2009	Norway 88.6%	Japan 6.4%	27.1%	16
1998	Finland 122.6%	Norway -29.7%	30.7%	8	2010	Sweden 34.8%	Greece -44.7%	15.5%	7
1999	Finland 153.3%	Belgium -13.8%	22.4%	10	2011	Ireland 14.3%	Greece -62.7%	2.0%	2
2000	Switzerland 6.4%	Finland -37.8%	-12.5%	12	2012	Belgium 40.7%	Spain 4.7%	16.1%	14
2001	Australia 2.7%	Finland -37.8%	-12.0%	7	2013	Greece 52.7%	Singapore 1.7%	32.6%	4
2002	Austria 17.3%	Germany -32.9%	-22.7%	17	2014	Israel 23.7%	Portugal -37.7%	13.4%	2
2003	Greece 69.5%	Finland 20.5%	29.1%	21	2015	Denmark 24.4%	Canada -23.6%	1.3%	11
2004	Austria 72.3%	Finland 7.1%	10.7%	21	2016	Canada 25.5%	Israel -24.5%	11.6%	6
2005	Canada 28.9%	Ireland -2.1%	5.7%	18	2017	Austria 59%	Israel 2.6%	21.9%	16
2006	Spain 50.2%	Japan 6.3%	15.3%	21	2018	Finland -2.2%	Austria -27.1%	-4.5%	3
2007	Finland 50.1%	Ireland -19.6%	6.0%	19	2019	Netherlands 23%	Israel 2.2%	20.1%	5

Returns through 9/30/2019 and based on MSCI Developed Market Indices. As of December 2013, MSCI classified 23 countries as Developed Markets. Recent changes include the removal of Greece in November 2013 and the addition of Israel in 2010. International investing involves risks not typically associated with U.S. investing, including currency fluctuation, foreign tax, political instability and different accounting standards.
Data Source: Morgan Stanley Capital International and FactSet Research Systems.

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Developed Market Equities

Top Performing Countries

One-Year, Three-Year, Five-Year, Ten-Year bar chart:

- One-Year: SWITZERLAND 11.9%, New Zealand 10.0%, NETHERLANDS 9.5%
- Three-Year: USA 12.6%, NETHERLANDS 11.4%, ITALY 11.3%
- Five-Year: USA 10.1%, NETHERLANDS 8.4%, New Zealand 7.5%
- Ten-Year: USA 12.5%, DENMARK 9.6%, New Zealand 9.5%

Returns through 9/30/2019 are based on 22 MSCI Developed Market Indices. Returns greater than one year are annualized.
International investing involves risks not typically associated with U.S. investing, including currency fluctuation, foreign tax, political instability and different accounting standards.
Data Source: Morgan Stanley Capital International and FactSet Research Systems..

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U.S. Stocks vs. International Stocks

Calendar Year Returns

Annual Performance: U.S. Stocks - International Stocks
Percent Difference

Returns through 9/30/2019.
U.S. stocks represented by the S&P 500 Index. International stocks represented by the MSCI EAFE Index.
International investing involves risks not typically associated with U.S. investing, including currency fluctuation, foreign tax, political instability and different accounting standards.
Data Source: FactSet Research Systems, Standard and Poor's.

U.S. Stock vs. U.S. Bonds

Calendar Year Returns

Annual Performance: Stocks - Bonds
Percent Difference

Stocks Outperform Bonds

Stocks Underperform Bonds
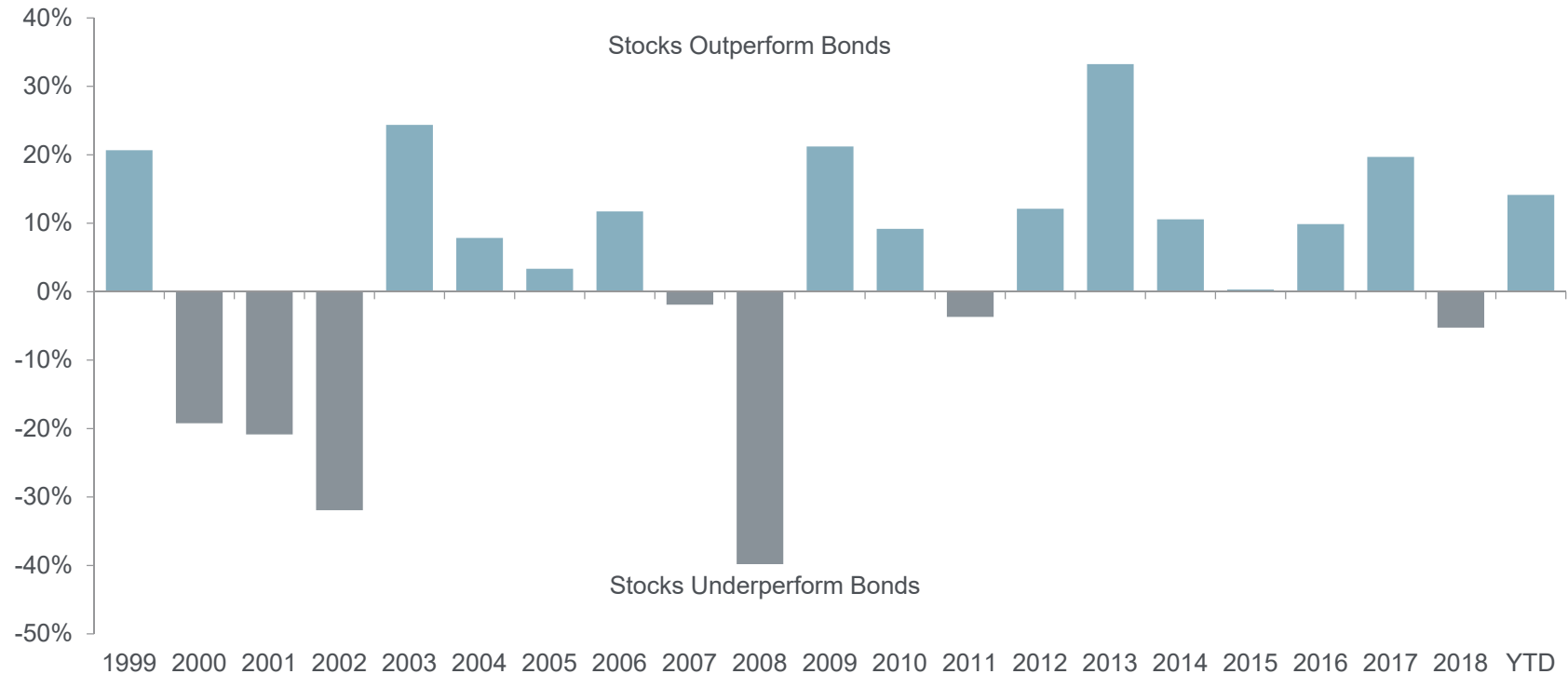
Returns through 9/30/2019.
U.S. Stocks represented by the S&P 500 Index.
U.S. Bonds represented by the Bloomberg Barclays Intermediate Government Credit Index.
Data Source: FactSet Research Systems, Standard and Poor's.

S&P 500 Div. Yield vs. 10-Year Treasury Yield

Yield Comparison
S&P 500 vs 10-Year Treasury

10-Year Treasury

S&P 500 Dividend Yield
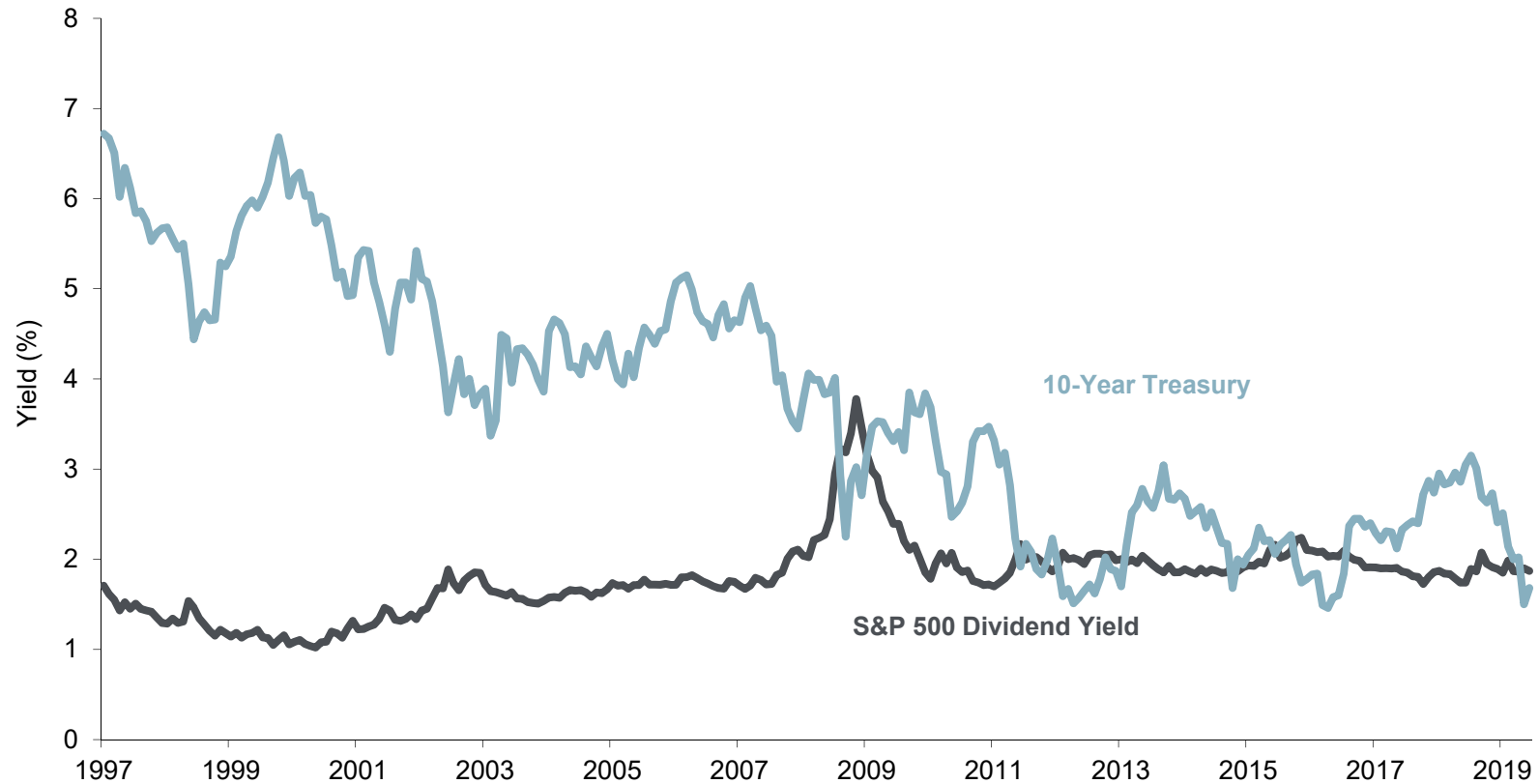
Before time period shown, the last historical point where the S&P 500 dividend yield was greater than the 10-Year Treasury yield was 1958.
Data as of 9/30/2019.
Source: FactSet Research Systems, Standard and Poor's.

Historical Yield

Since January 1999

Bond Yields: Treasuries, Munis, & Corps
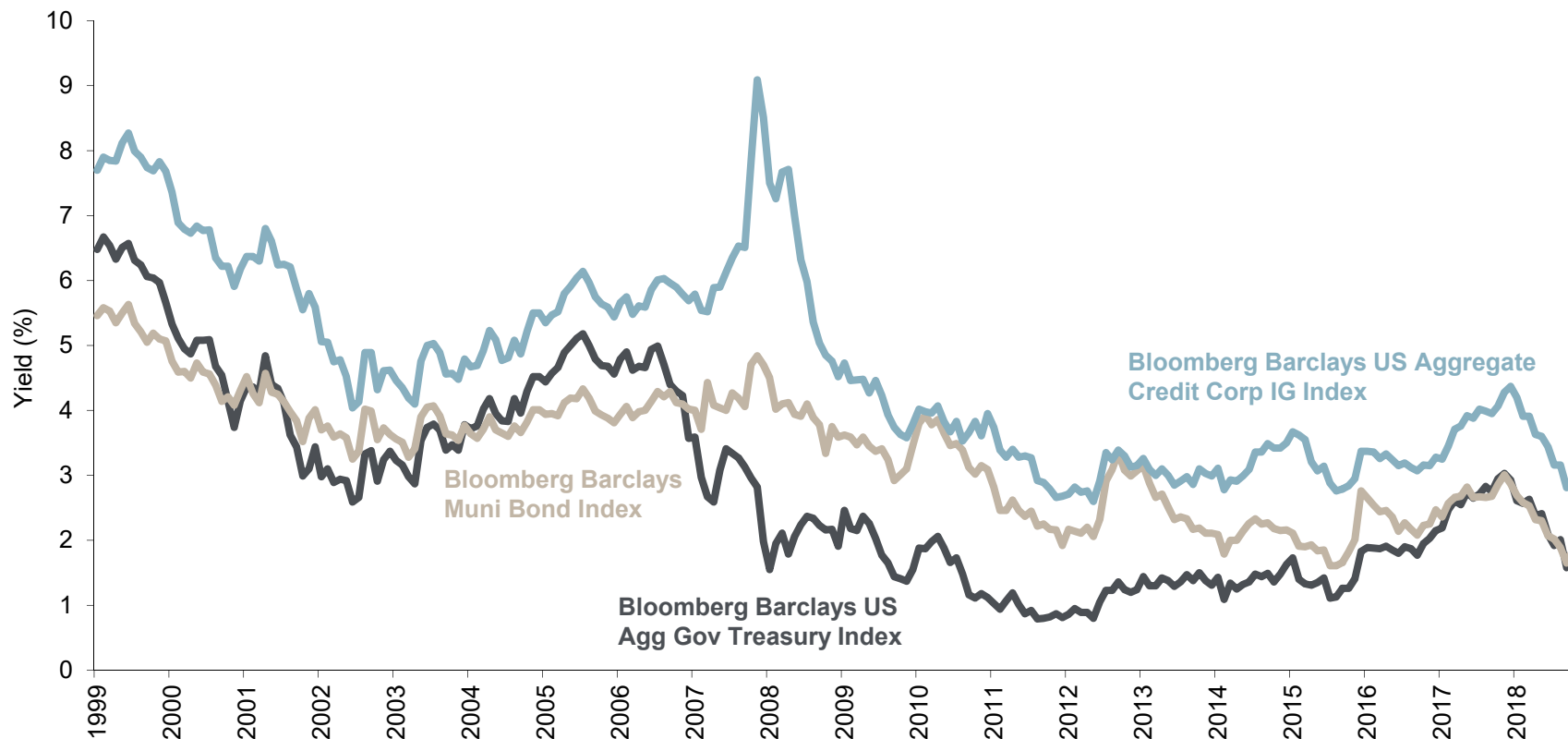
Bloomberg Barclays US Aggregate Credit Corp IG Index

Bloomberg Barclays Muni Bond Index

Bloomberg Barclays US Agg Gov Treasury Index

Data through 9/30/2019.

Data Source: FactSet Research Systems.

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Historical Government Yield

Since January 1999

7-10 Year Government Yields:
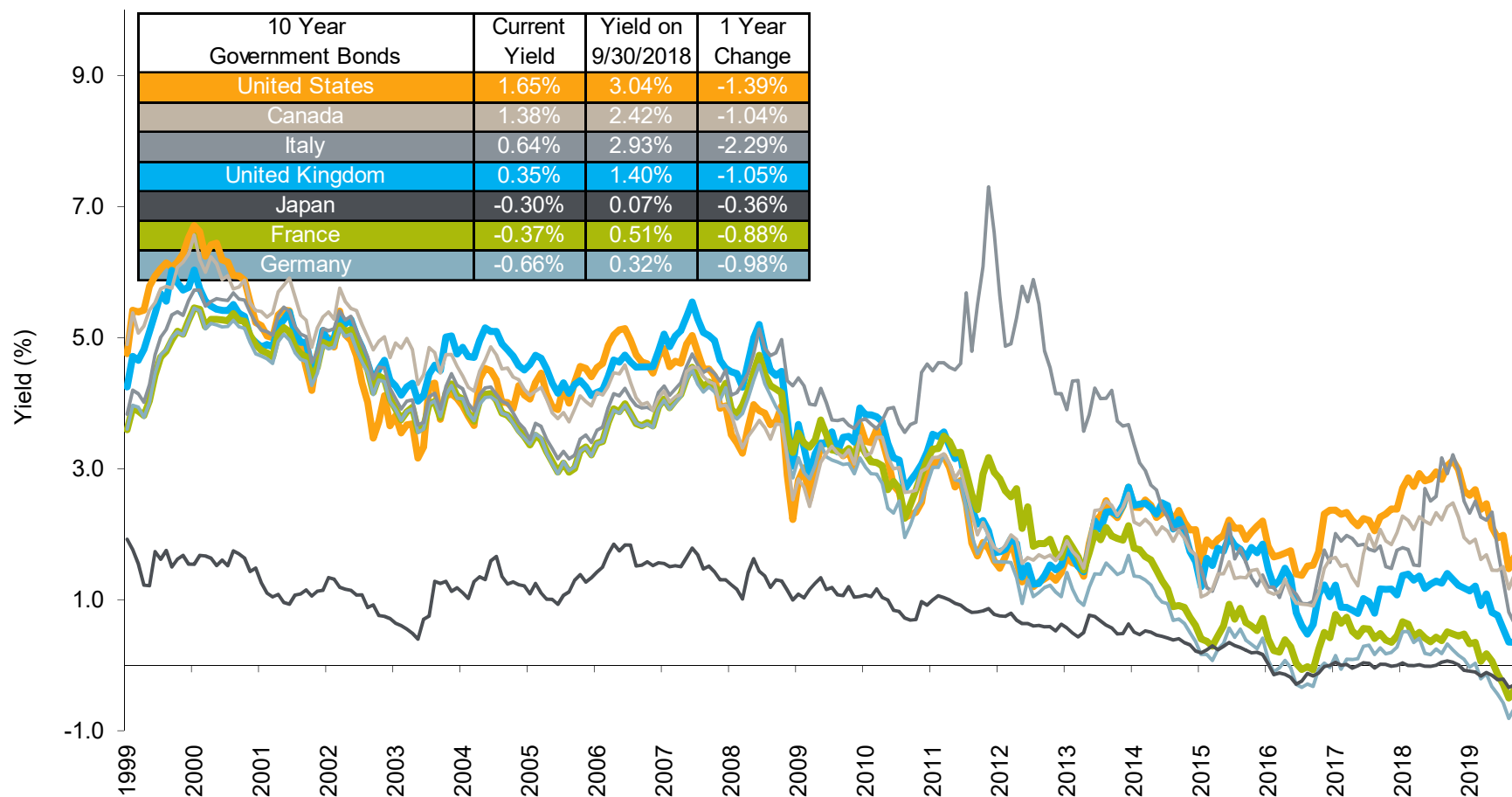
10 Year Government Bonds	Current Yield	Yield on 9/30/2018	1 Year Change
United States	1.65%	3.04%	-1.39%
Canada	1.38%	2.42%	-1.04%
Italy	0.64%	2.93%	-2.29%
United Kingdom	0.35%	1.40%	-1.05%
Japan	-0.30%	0.07%	-0.36%
France	-0.37%	0.51%	-0.88%
Germany	-0.66%	0.32%	-0.98%

Data through 9/30/2019.

Data Source: FactSet Research Systems.

Treasury Curve

Change in Yield
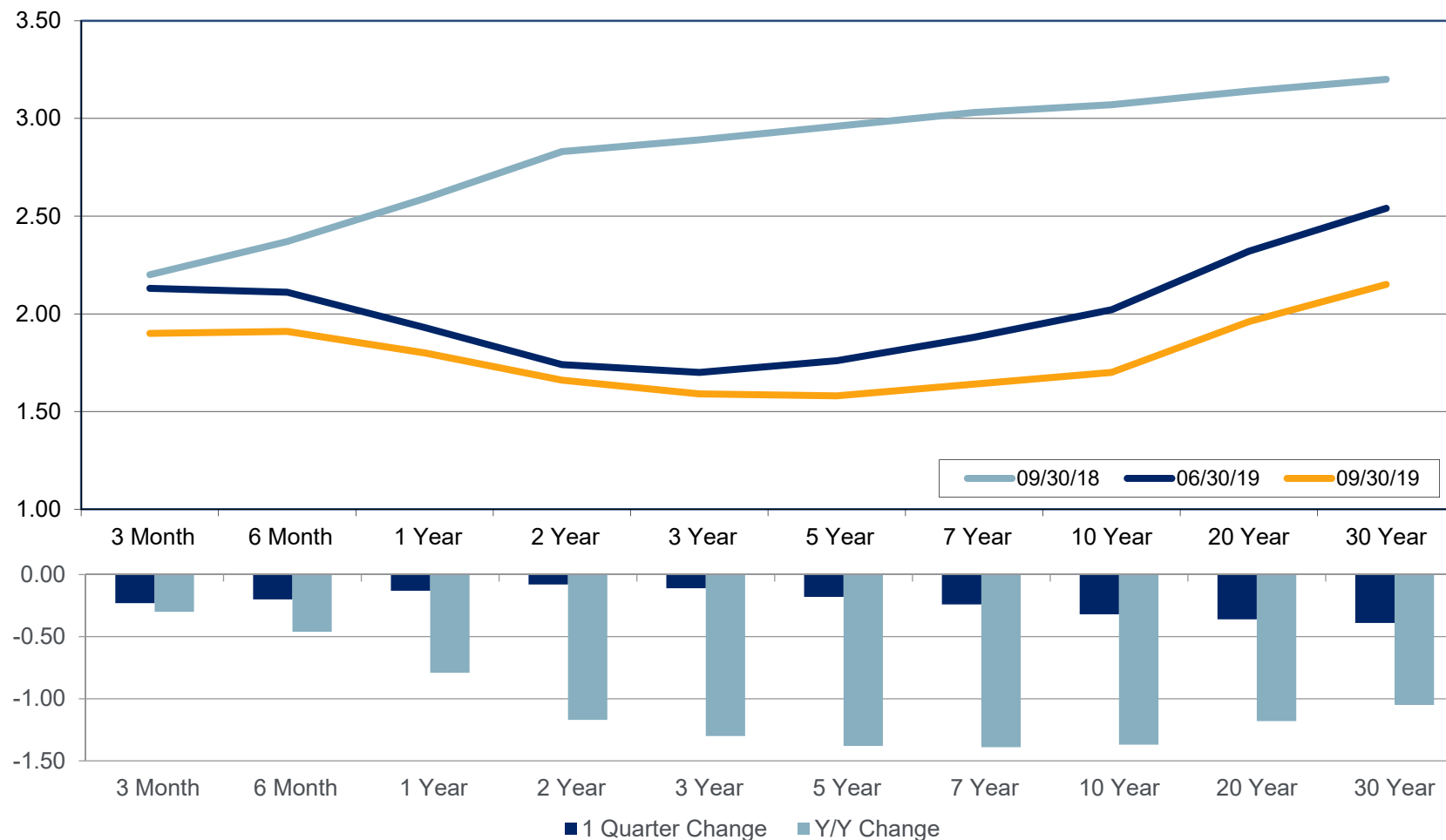
Legend: 09/30/18, 06/30/19, 09/30/19

Bar chart legend: ■ 1 Quarter Change ■ Y/Y Change

Data through 9/30/2019.

Data Source: St. Louis Federal reserve.

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Impact of Changing Interest Rates

Assumes a parallel shift in the yield curve and steady spreads

Impact of a 0.5% **rise** in interest rates
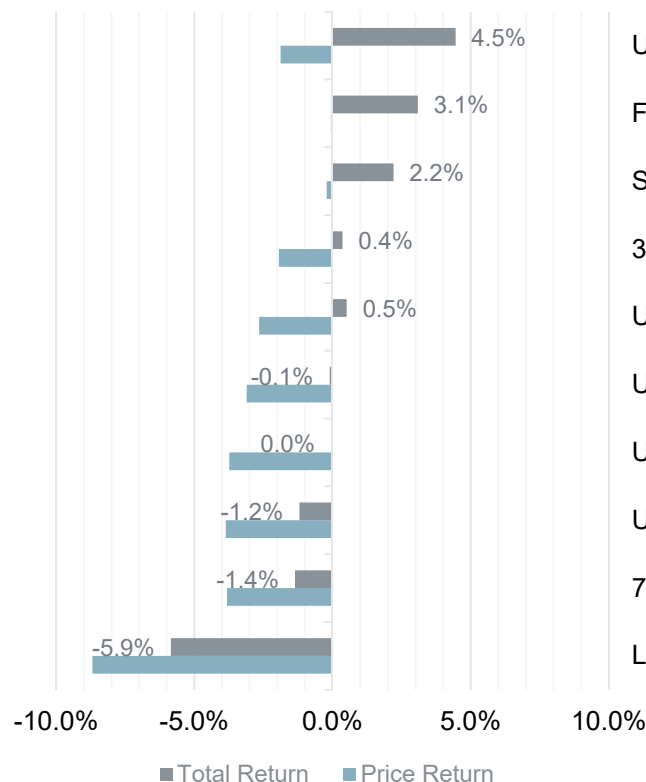
Impact of a 0.5% **decline** in interest rates

	Impact of 0.5% rise	Impact of 0.5% decline
U.S. High Yield Corporate Bonds	4.5%	8.2%
Floating Rate Notes	3.1%	3.2%
Short Term Treasury Bonds	2.2%	2.6%
3 - 5 Year Treasury Bonds	0.4%	4.3%
U.S. MBS	0.5%	5.8%
U.S. Aggregate	-0.1%	6.1%
U.S. Corporate Bonds	0.0%	7.5%
U.S. TIPS	-1.2%	6.6%
7 - 10 Year Treasury Bonds	-1.4%	6.3%
Long Treasury Bonds	-5.9%	11.6%

■ Total Return ■ Price Return

■ Total Return ■ Price Return
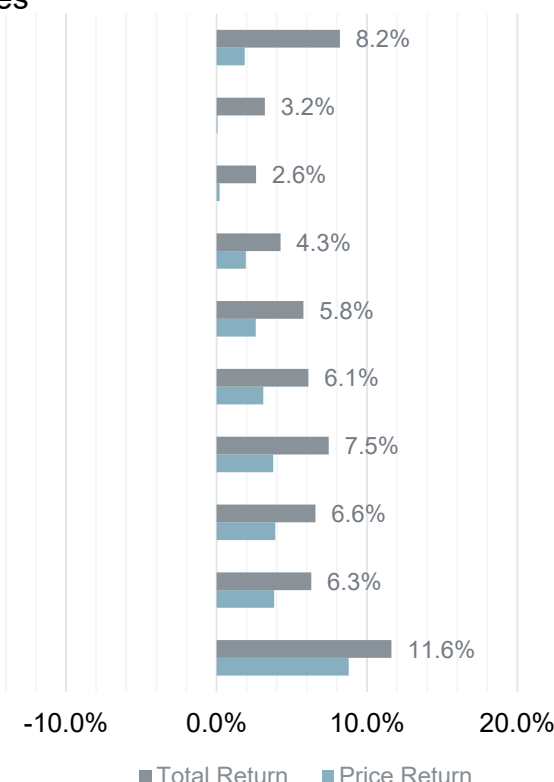
Data Source: Bloomberg. Data through 03/31/2019.
Total Return incorporates both duration and convexity according to the following formula:
New Price = (Price*-Duration*Change in Interest Rates))+(0.5*Price*Convexity*(change in Rates)^2)

RBC | **Wealth Management**

Bloomberg Barclays Agg. Index Quarterly Total Returns
Since 1990

Bloomberg Barclays Aggregate Index Quarterly Returns
Since 1990
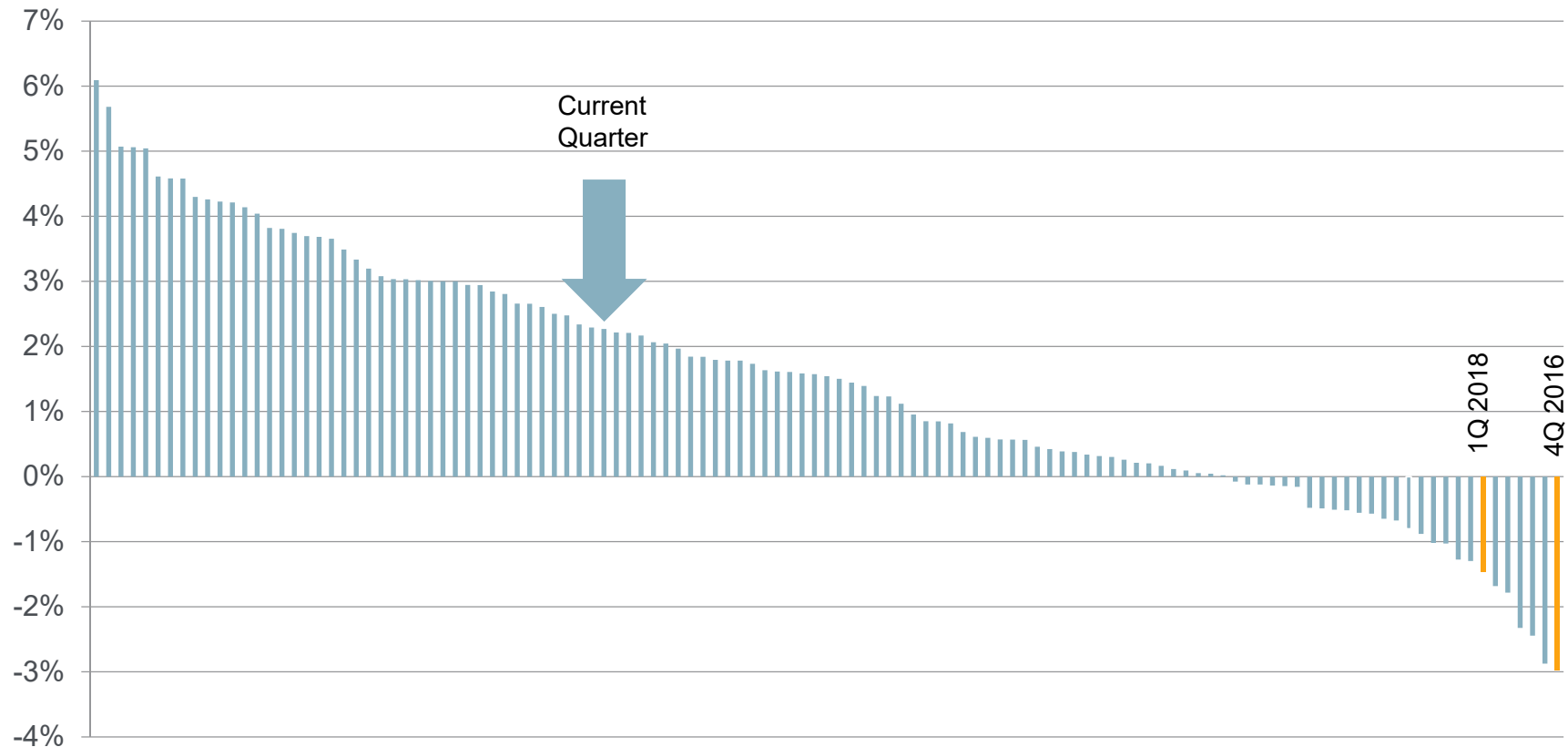
Current
Quarter

1Q 2018

4Q 2016

Data Source: FactSet Research Systems
Returns from 1/1/1990 through 9/30/2019.

RBC | Wealth Management

U.S. Corporate Debt
Yield to Worst
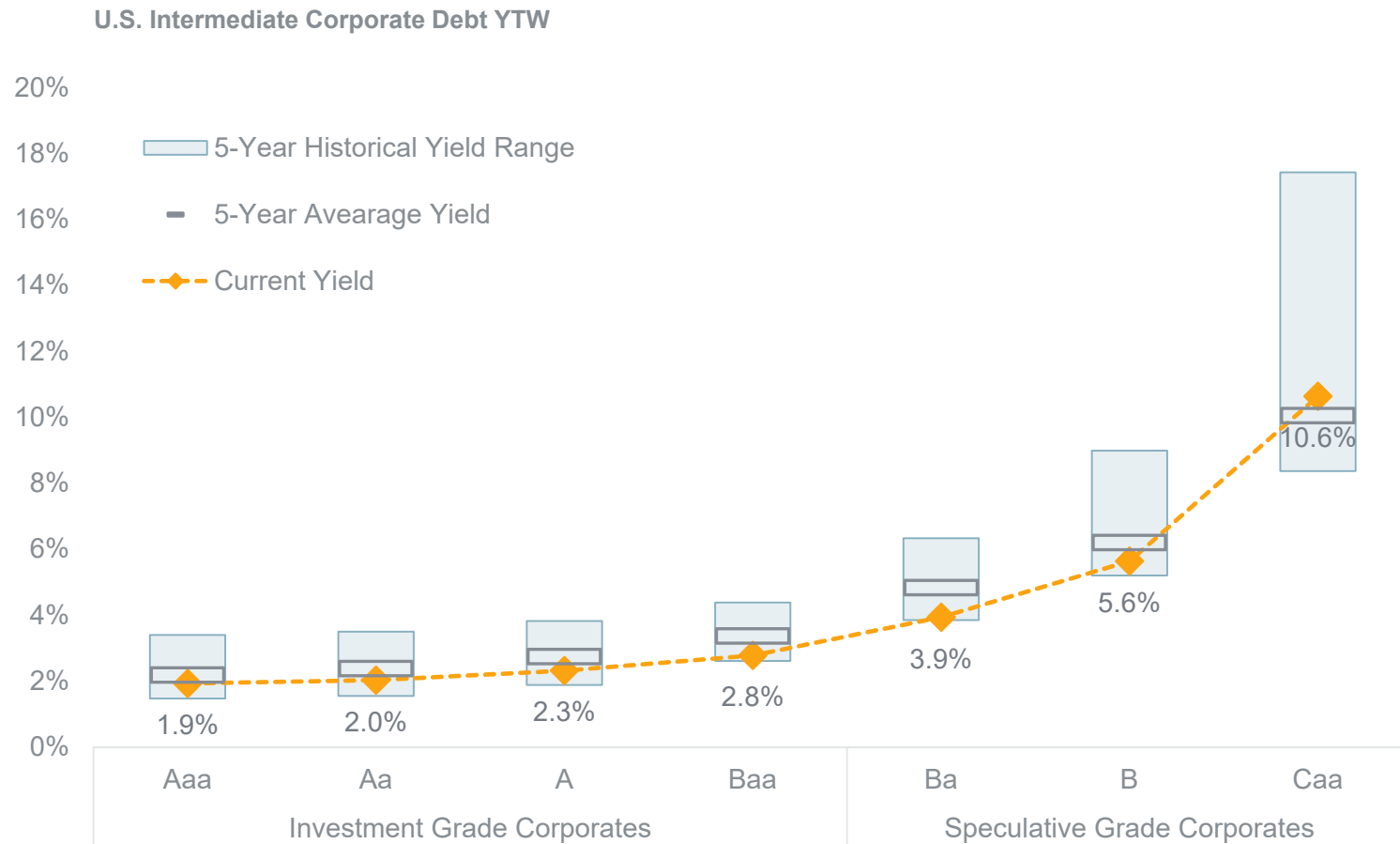
U.S. Intermediate Corporate Debt YTW

Legend:
- 5-Year Historical Yield Range
- 5-Year Avearage Yield
- Current Yield

Investment Grade Corporates				Speculative Grade Corporates		
Aaa	Aa	A	Baa	Ba	B	Caa
1.9%	2.0%	2.3%	2.8%	3.9%	5.6%	10.6%

Data Source: Factset. Research Systems
Data through 09/30/2019.

RBC Wealth Management

Returns During 10 Worst Bond Markets
Since 1990

	Average	4Q 2016	1Q 1994	2Q 2004	2Q 2013	1Q 1996	2Q 2015	1Q 2018	4Q 2010	1Q 1992	2Q 1994
Convertibles	2.1%	2.1%	-2.9%	-0.6%	2.2%	6.5%	0.6%	2.4%	6.7%	6.7%	-3.1%
High Yield Bonds	1.3%	1.8%	-1.9%	-1.0%	-1.4%	1.8%	0.0%	-0.9%	7.4%	7.4%	-0.3%
Bank Loans	0.8%	2.2%			-0.2%		-0.1%	1.4%			
HFRI Fund of Funds	0.7%	0.9%	-3.3%	-1.5%	0.0%	3.1%	0.2%		3.3%	3.3%	0.1%
S&P 500	0.5%	3.8%	-3.8%	1.7%	2.9%	5.4%	0.3%	-0.8%	-2.5%	-2.5%	0.4%
Short-Term Government Bonds	-0.3%	-0.5%		-1.1%	-0.1%		0.1%	-0.2%			
Preferreds	-0.9%	-3.8%	-4.4%	-5.4%	-2.4%	1.0%	-1.1%	-1.0%	4.0%	4.0%	-0.2%
Telecom	-1.8%	4.8%	-5.0%	-1.0%	1.0%	-4.2%	1.6%	-7.5%	-6.7%	-6.7%	5.8%
Bloomberg Barclays US Aggregate	**-1.9%**	**-3.0%**	**-2.9%**	**-2.4%**	**-2.3%**	**-1.8%**	**-1.7%**	**-1.5%**	**-1.3%**	**-1.3%**	**-1.0%**
Staples	-1.9%	-2.0%	-4.3%	0.5%	0.5%	3.6%	-1.7%	-7.1%	-4.0%	-4.0%	-0.9%
REITS	-2.0%	-2.9%	2.2%	-6.6%	-3.4%	2.6%	-8.9%	-6.7%	1.0%	1.0%	1.4%
Investment Grade Bonds	-2.4%	-2.8%	-3.5%	-3.4%	-3.3%	-2.6%	-3.2%	-2.3%	-0.7%	-0.7%	-1.6%
MLPs	-2.5%	2.0%		-6.6%	1.9%	4.6%	-6.1%	-11.1%			
TIPS	-2.9%	-2.4%		-3.1%	-7.1%		-1.1%	-0.8%			
Intermediate-Term Government Bonds	-3.4%	-5.6%	-4.8%	-4.3%	-4.2%	-3.3%	-2.4%	-1.9%	-3.1%	-3.1%	-1.5%
Utilities	-4.8%	0.1%	-11.1%	-1.3%	-2.7%	-2.0%	-5.8%	-3.3%	-7.5%	-7.5%	-6.6%
Long-Term Government Bonds	-6.6%	-12.2%	-6.4%	-5.7%	-5.8%	-7.5%	-9.1%	-3.4%			-3.1%

Highest Average Return --> (left vertical axis label, top)
<-- Lowest Average Return (left vertical axis label, bottom)

Data Source: FactSet Research Systems.
Returns from 1/1/1990 through 9/30/2019.

RBC | Wealth Management

Commodity Prices
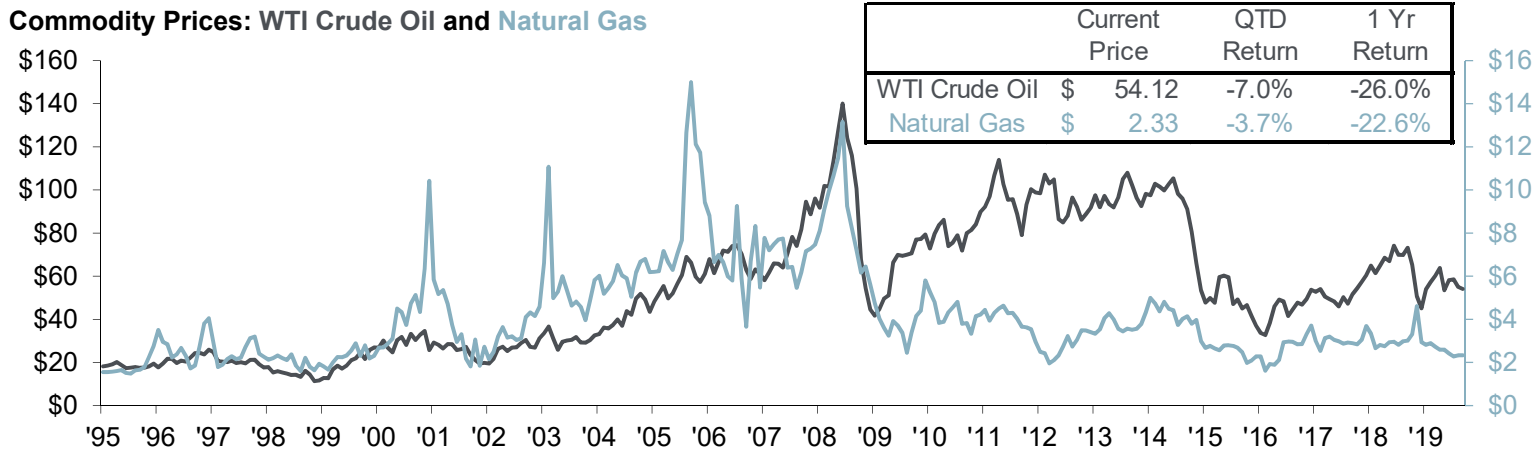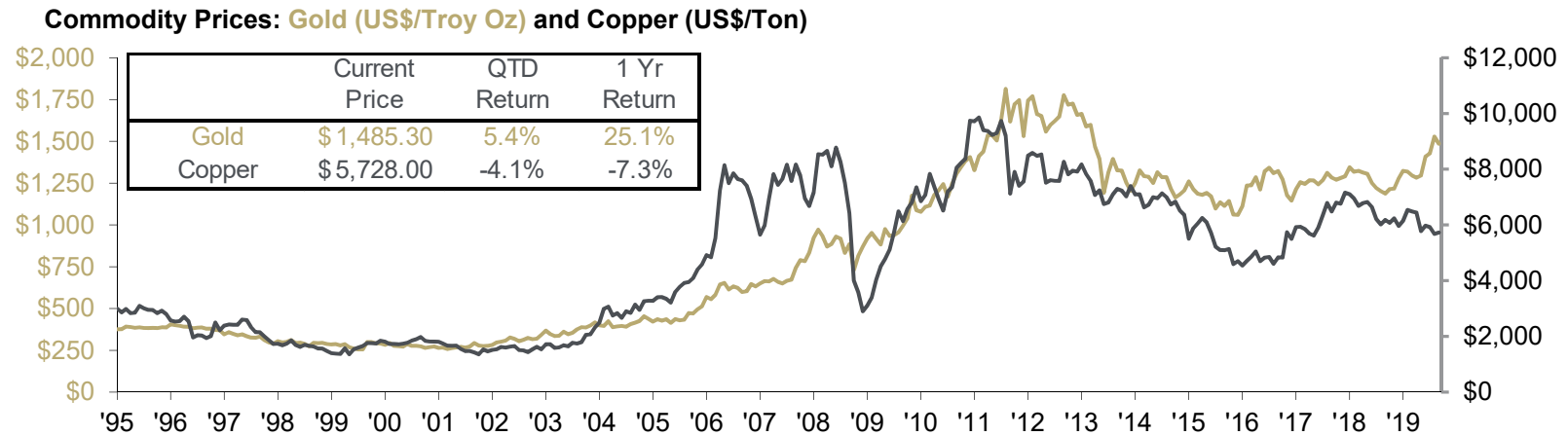
Commodity Prices: Gold (US$/Troy Oz) and Copper (US$/Ton)

	Current Price	QTD Return	1 Yr Return
Gold	$1,485.30	5.4%	25.1%
Copper	$5,728.00	-4.1%	-7.3%

Commodity Prices: WTI Crude Oil and Natural Gas

	Current Price	QTD Return	1 Yr Return
WTI Crude Oil	$ 54.12	-7.0%	-26.0%
Natural Gas	$ 2.33	-3.7%	-22.6%

Data Source: FactSet Research Systems.
Data through 9/30/2019.

RBC Wealth Management

Historical Growth of $1

Since January 1923
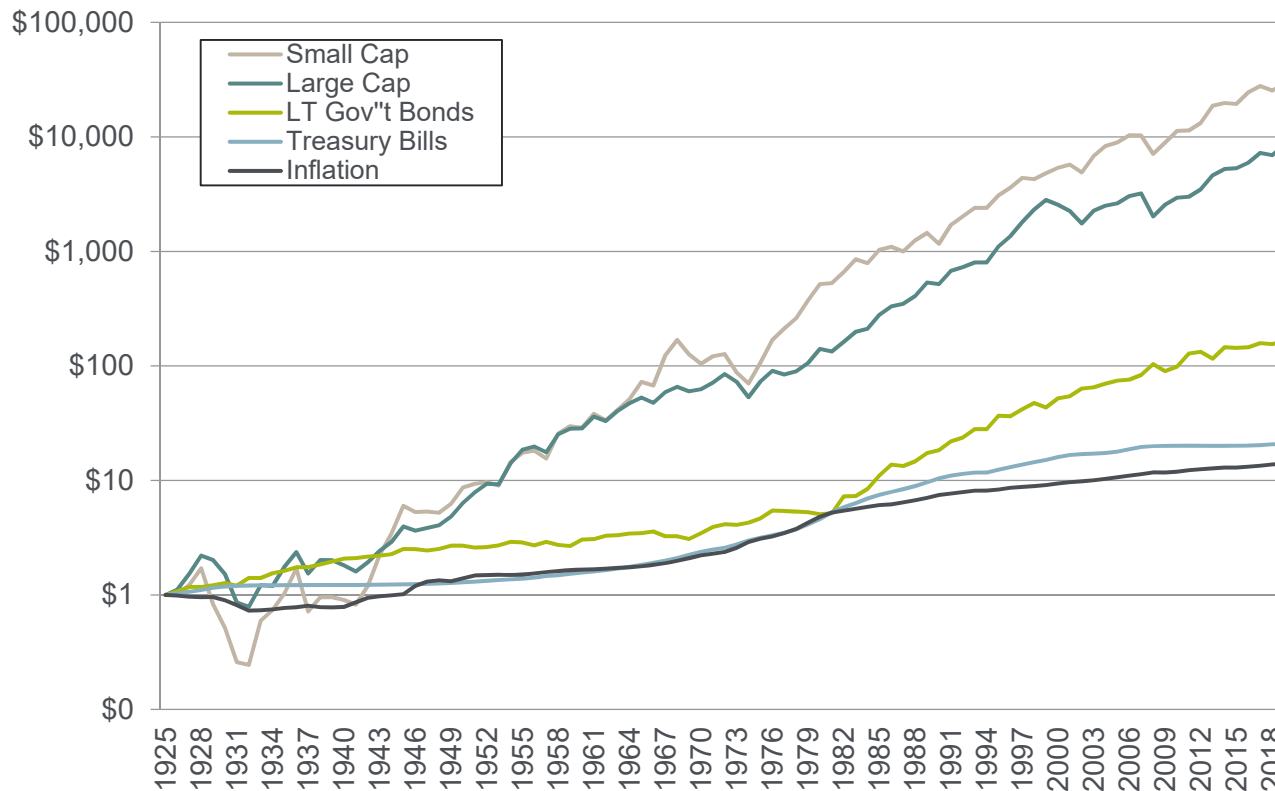
Asset Class	Ending Balance	Annualized Return
Small Cap	$28,830	11.4%
Large Cap	$8,357	10.0%
LT Gov't Bonds	$163	5.5%
Treasury Bills	$21	3.3%
Inflation	$14	2.8%

Chart legend:
- Small Cap
- Large Cap
- LT Gov''t Bonds
- Treasury Bills
- Inflation

Small Cap Equities: Represented by the S&P 600 Index.
Large Cap Equities: Represented by the S&P 500 Index.
Long Term Gov't Bonds: Represented by the Citigroup USBIG Treasury 10+ Year Index.
Treasury Bills: Represented by the Citigroup 3-month T-Bill Index.
Inflation: Represented by the Consumer Price Index – All Urban Consumers (CPI-U).
Past performance does not guarantee future results.
Data Source: FactSet Research Systems. Data through 9/30/2019.

RBC | Wealth Management

Historical Growth of $1 With REITs

Since January 1971

Asset Class	Ending Balance	Annualized Return
REITS	$266	12.1%
Small Cap	$189	11.4%
Large Cap	$144	10.7%
LT Gov't Bonds	$41	7.9%
Treasury Bills	$9	4.6%
Inflation	$6	3.8%
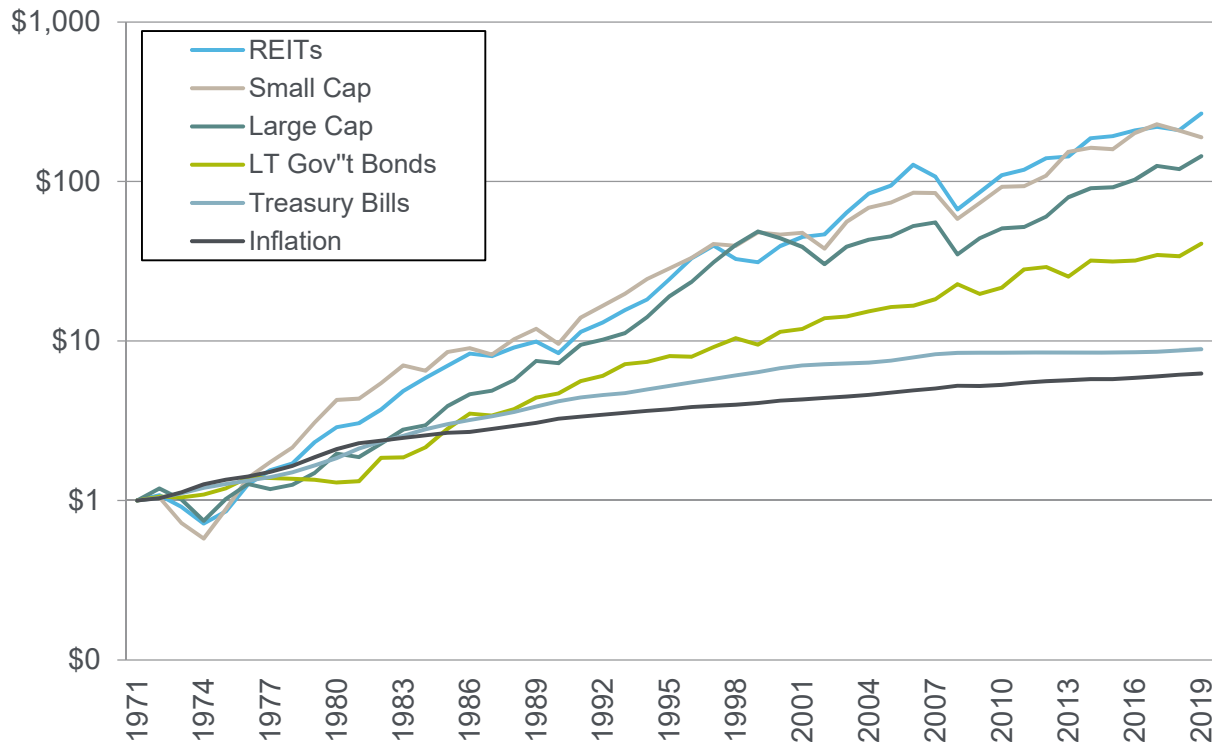
REITs: Represented by FTSE NAREIT Equity Real Estate Investment Trusts Index.
Small Cap Equities: Represented by the S&P 600 Index.
Large Cap Equities: Represented by the S&P 500 Index.
Long Term Gov't Bonds: Represented by the Citigroup USBIG Treasury 10+ Year Index.
Treasury Bills: Represented by the Citigroup 3-month T-Bill Index.
Inflation: Represented by the Consumer Price Index – All Urban Consumers (CPI-U).
See disclosures for more detailed information on the indices used in this chart.
Past performance does not guarantee future results.
Data Source: FactSet Research Systems. Data through 9/30/2019.

RBC | Wealth Management

Historical Returns by Holding Period

Range of Stock, Bond and Blended Total Returns
Rolling Total Returns, Since 1979
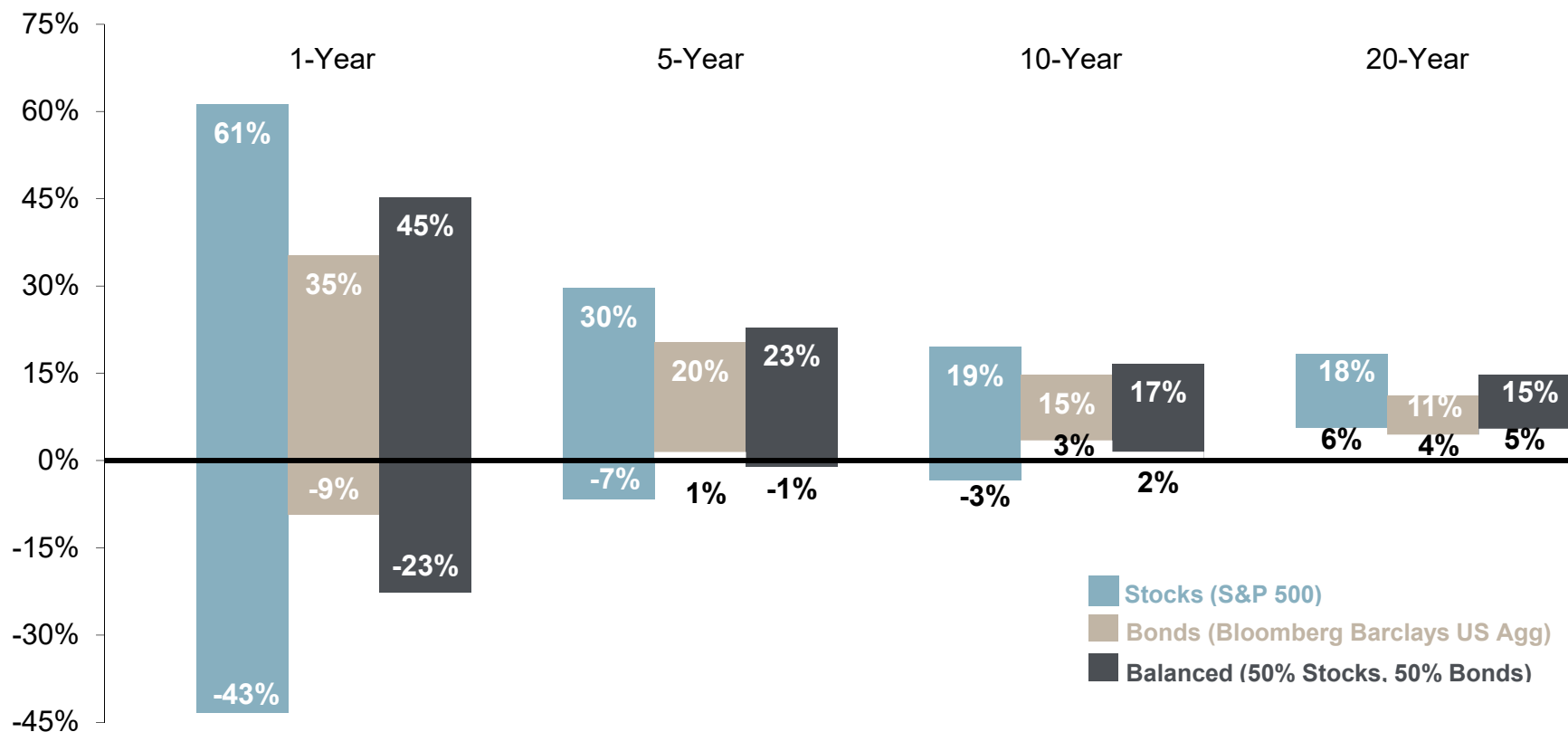
Bar Chart Returns 1/1/1979 through 09/30/2019.
Data source: Ibbotson Associates and FactSet Research Systems.

Historical 10 Year Rolling Returns
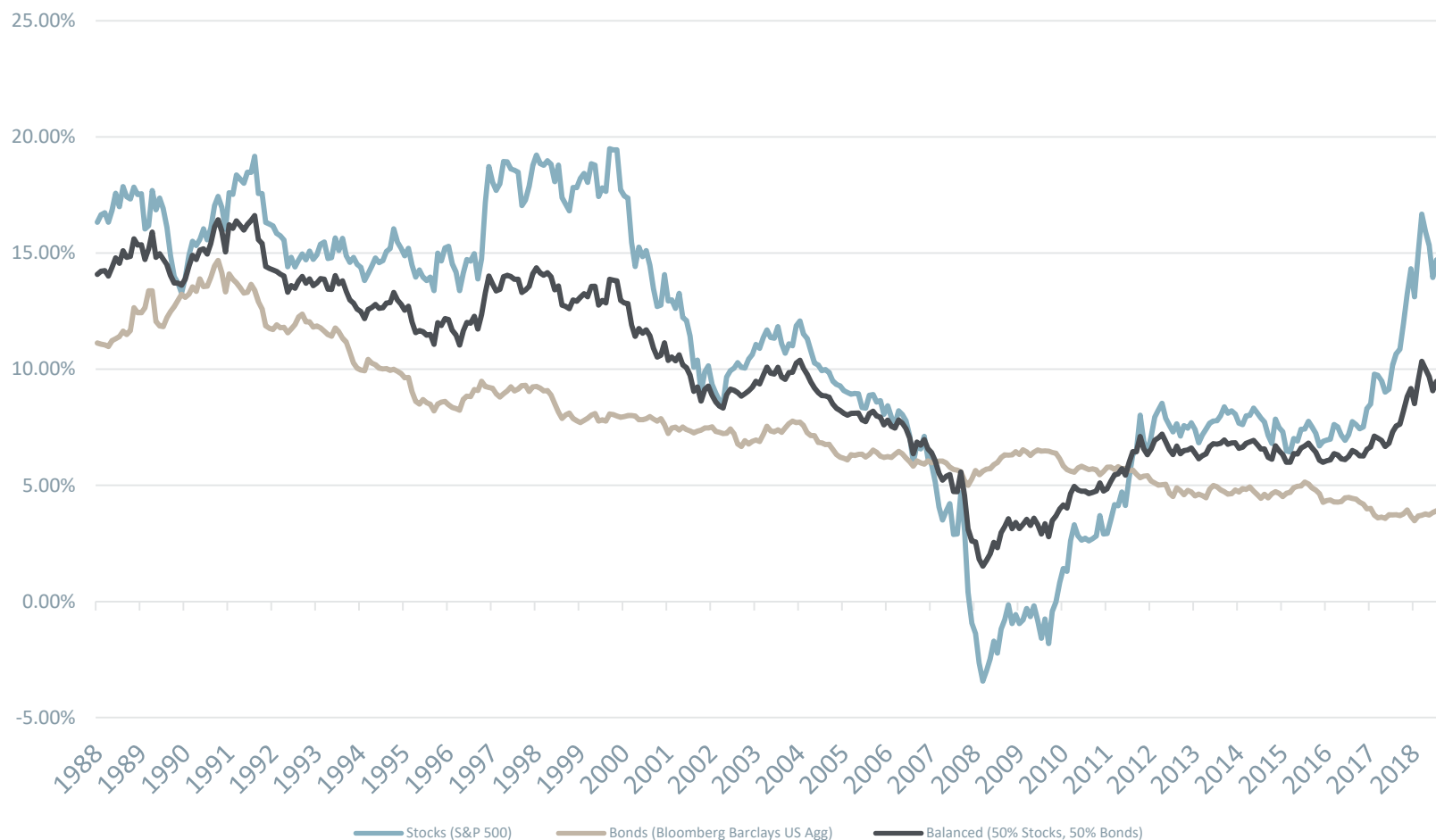
Legend: Stocks (S&P 500) — Bonds (Bloomberg Barclays US Agg) — Balanced (50% Stocks, 50% Bonds)

Returns through 9/30/2019.
Data source: FactSet Research Systems.

RBC **Wealth Management**

Efficient Frontier

Fixed Income Diversification Opportunities

Efficient Frontier: U.S. Stocks and Bonds

100% Stocks

80% Stocks / 20% Bonds

60% Stocks / 40% Bonds

40% Stocks / 60% Bonds

20% Stocks / 80% Bonds

100% Bonds

% Annualized Return

% Standard Deviation

Wealth Management

RBC

Efficient Frontier
International Diversification Opportunities

Efficient Frontier: U.S. and International Equities
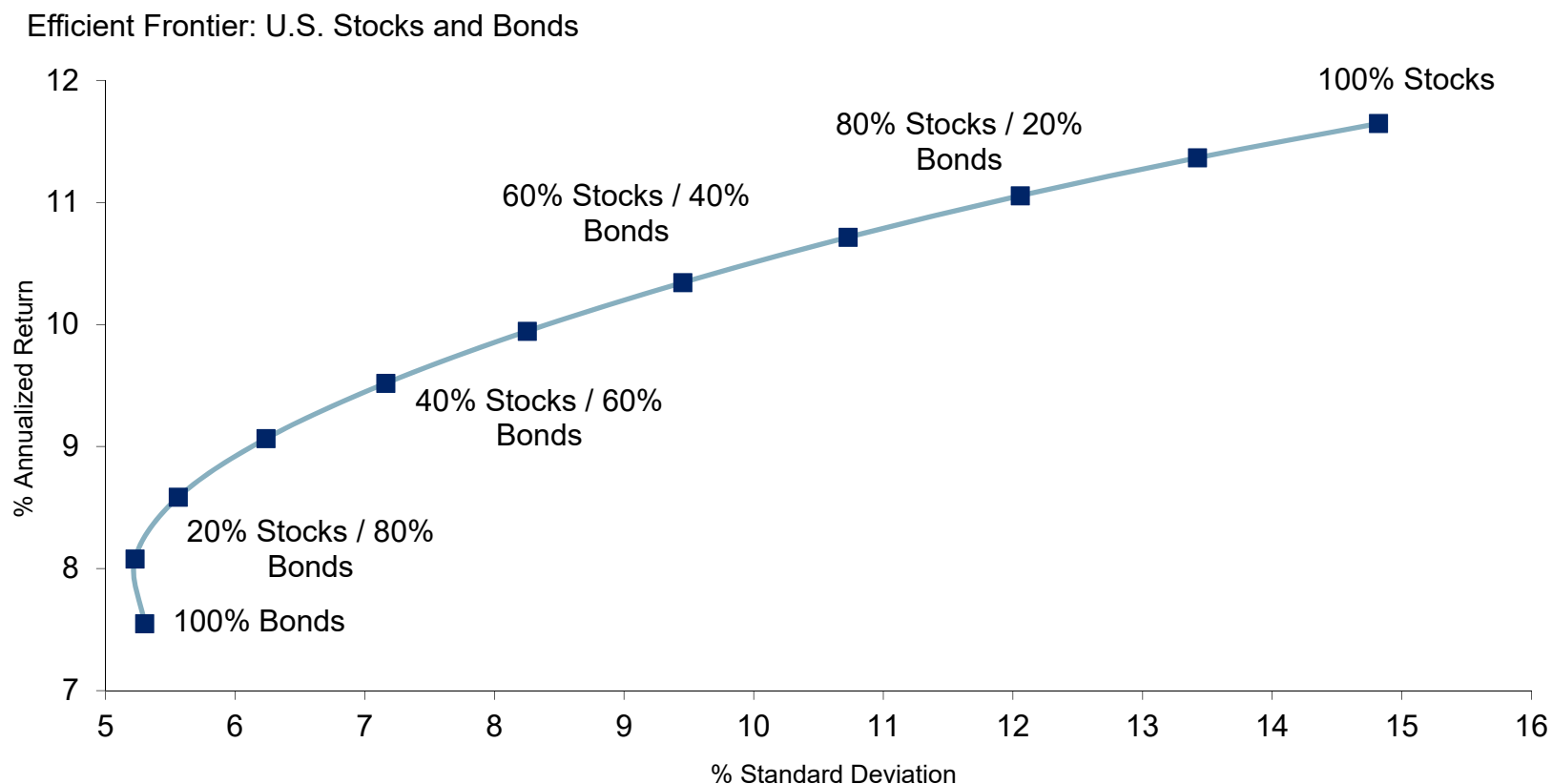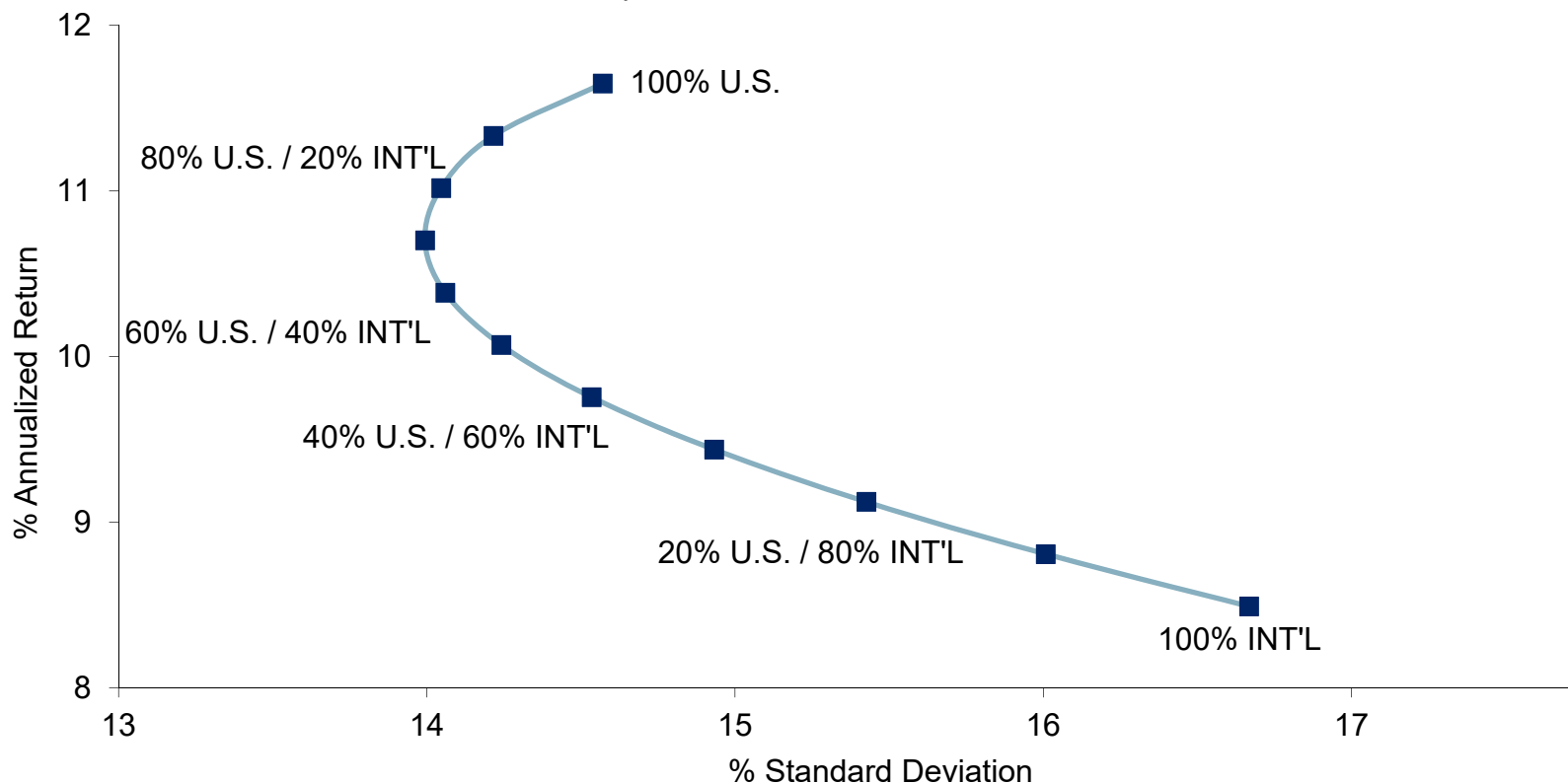
Returns from 1/1/1980 through 9/30/2019.
U.S. stocks represented by the S&P 500 Index. International stocks represented by the MSCI EAFE Index.
International investing involves risks not typically associated with U.S. investing, including currency fluctuation, foreign tax, political instability and different accounting standards.
Data Source: FactSet Research Systems.

Efficient Frontier

Alternative Investment Opportunities

Efficient Frontier: U.S. Stocks and Bonds with the addition of Alternitive Investments
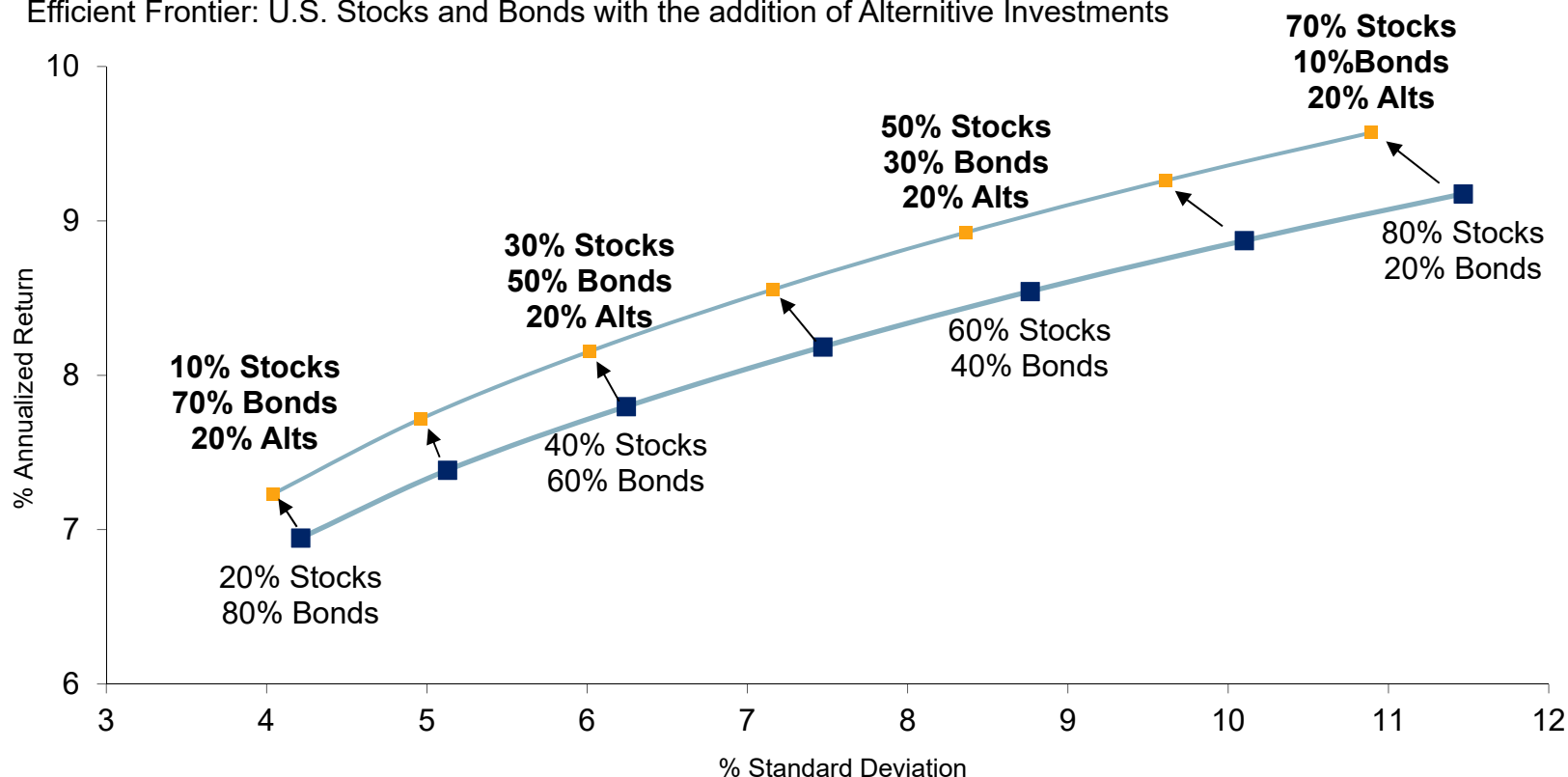
Returns from 1/1/1980 through 8/31/2019.

Stocks represented by the S&P 500 Index. Bonds represented by the Bloomberg BarCap Aggregate Index. Alts represented by a 50/50 blend of alternative fixed income and alternative equities indexes. Alternative Equity - 60% HFRI Equity Hedge, 25% HFRI Event Driven, 15% HFRI Macro. Alternative Fixed Income – 15% HFRI Event Driven, 25% HFRI Macro, and 60% HFRI Relative Value.

Investing in alternative investments may be speculative and not suitable for all clients and is intended for investors who are willing and able to bear the unique economic risks of the investment. Investors should consider whether such investments are suitable in light of their individual financial situation.

Data Source: FactSet Research Systems.

Equity Index Correlations

Equity Index Correlations to the S&P 500
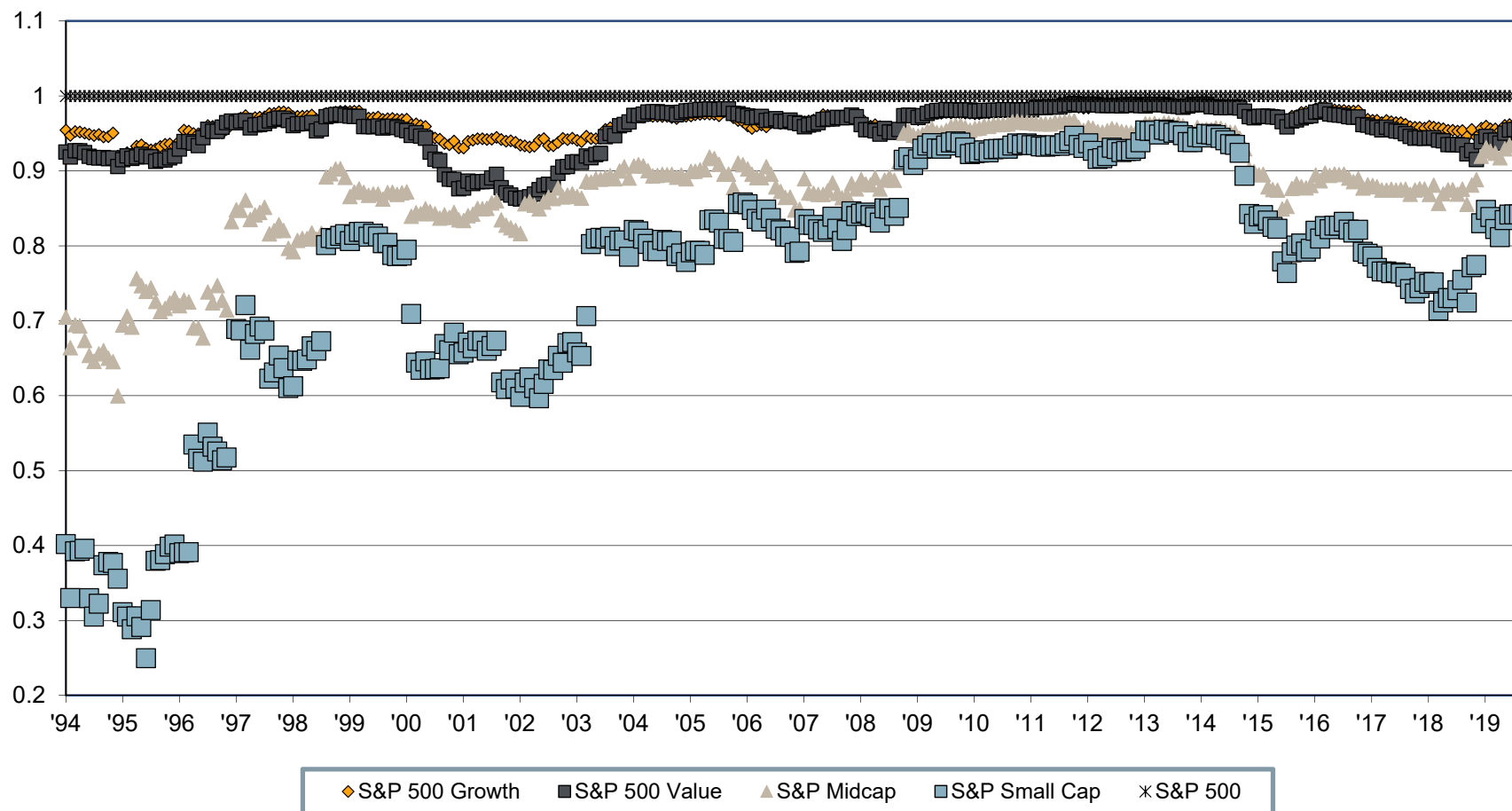
Returns 36-month moving window, computed monthly through 9/30/2019
Data Source: FactSet Research Systems.

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Alternative Index Correlations

Alternative Index Correlations to the S&P 500

Legend: ◇ HFRX Macro/CTA ■ Bloomberg Commodity Index ▲ FTSE Nareit Equity-Reits ■ HFRI Fund of Funds Composite ✳ S&P 500
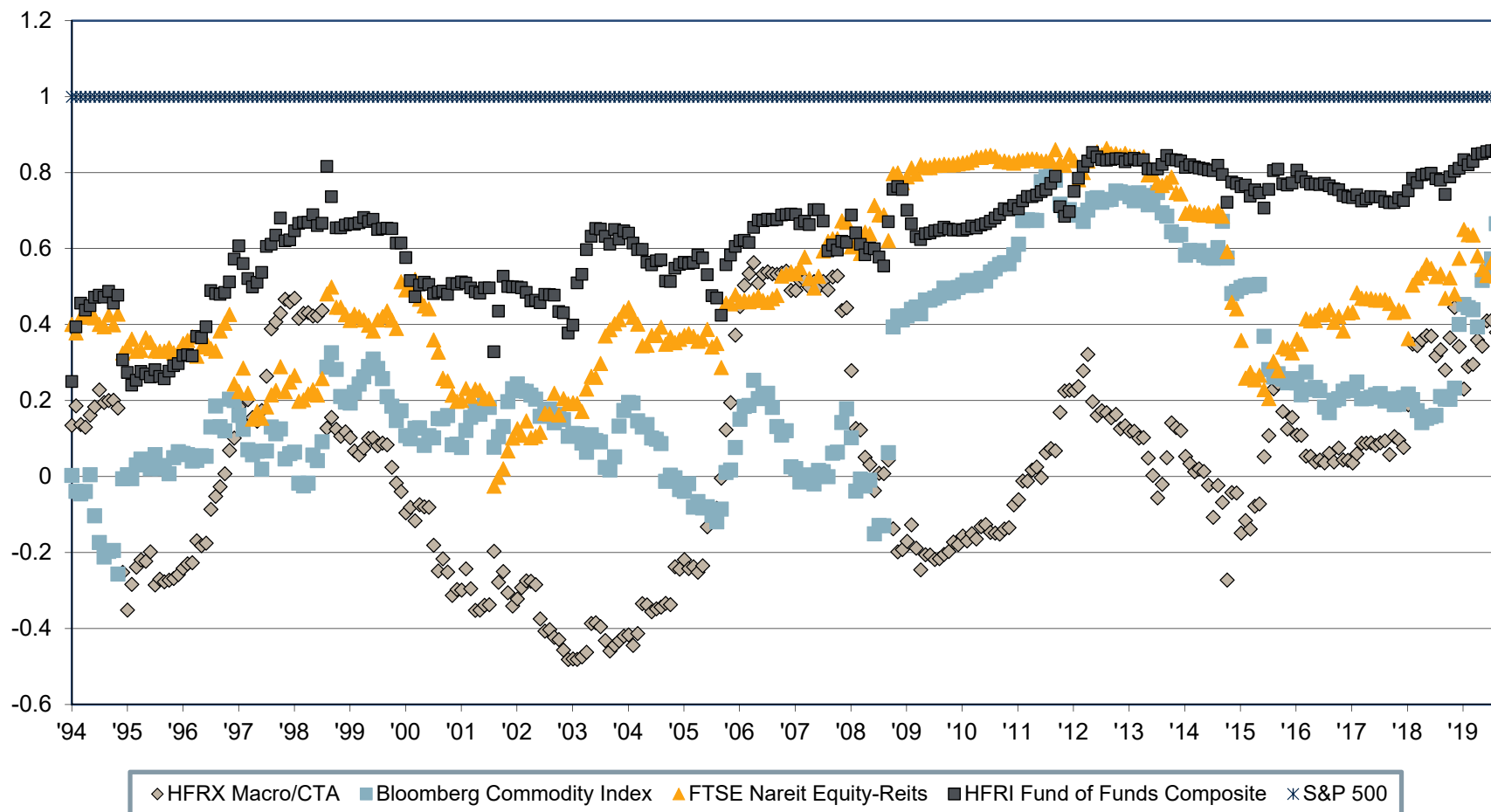
Returns 36-month moving window, computed monthly through 8/31/2019.
Data Source: FactSet Research Systems.

Fixed Income Index Correlations

Fixed Income Index Correlations to the S&P 500
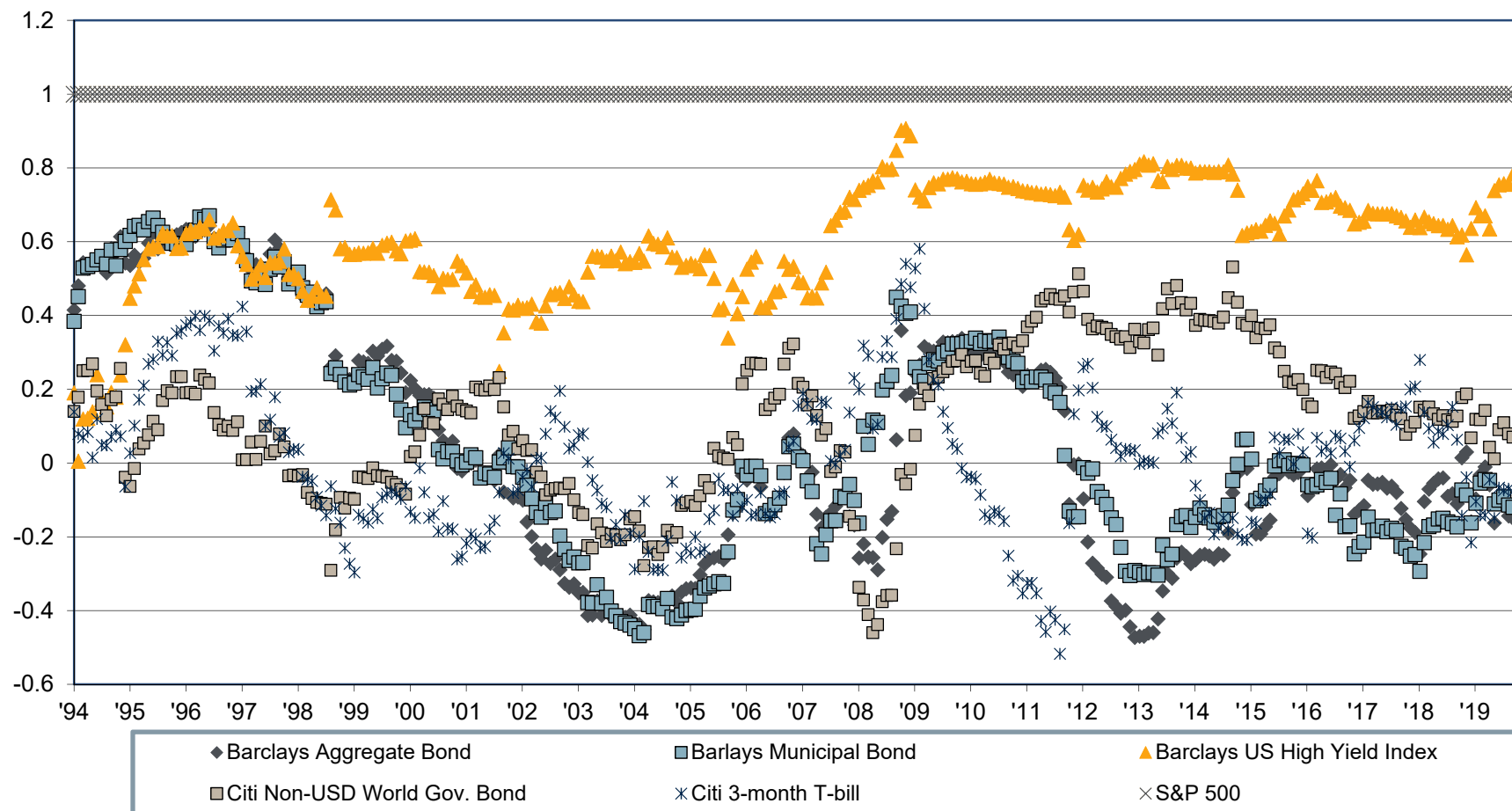
Returns 36-month moving window, computed monthly through 9/30/2019.
Data Source: FactSet Research Systems.

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S&P 500 Sector Risk vs. Return

Risk vs Return: U.S. Sectors
Since January 1990
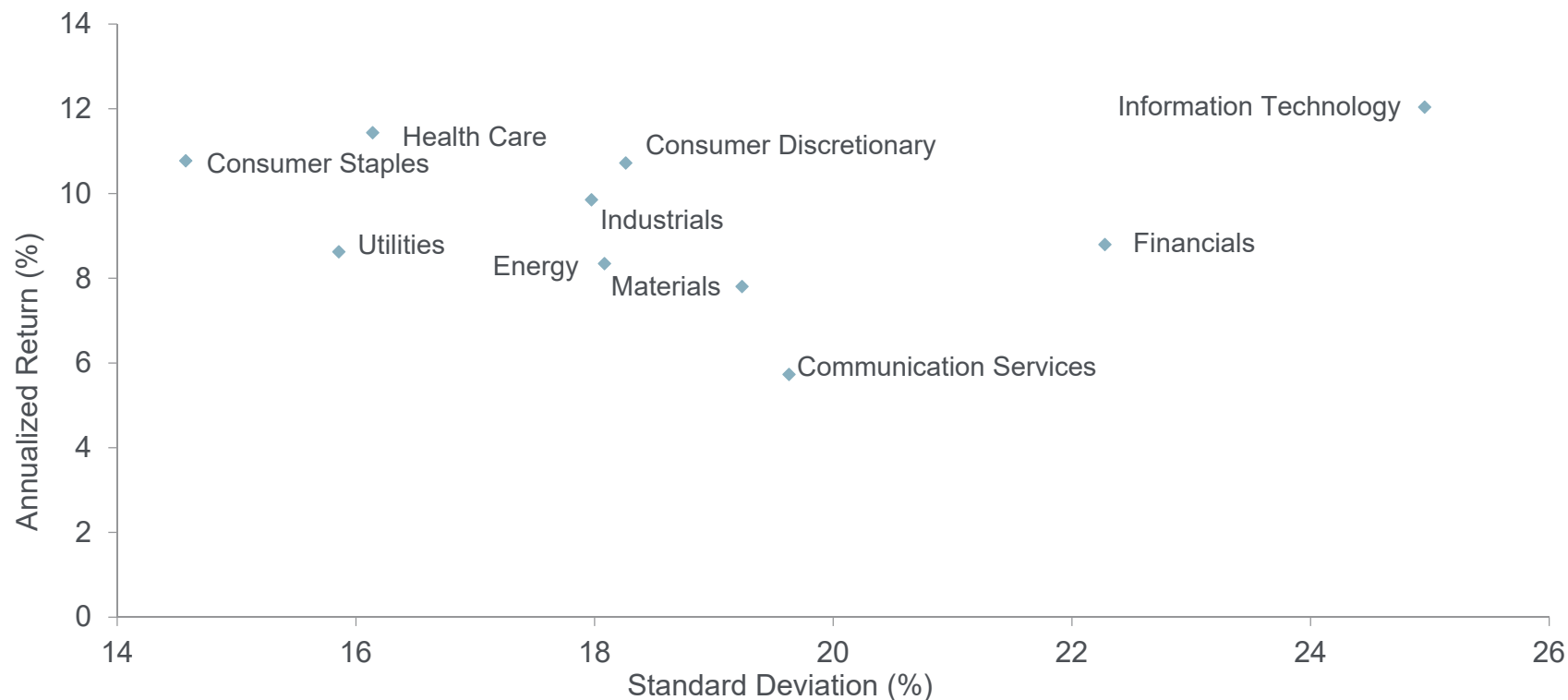
Standard & Poor's offers sector indices on the S&P 500 Index based upon the Global Industry Classification System (GICS). The GICS structure facilitates industry analysis by classifying companies at four different levels – Sectors, Industry Groups, Industries and Sub-Industries. Due to the global nature and flexibility of the GICS structure, its classifications have become widely used throughout the financial community. For a detailed description of the classification standard, please visit the Standard & Poor's web site at www.gics.standardandpoors.com.

Data Source: FactSet Research Systems. Data through 9/30/2019.

U.S. Dollar Exchange Rates

Exchange Rate: Canadian Dollar per U.S. Dollar

CAD/USD — 10 Year Average

Exchange Rate: Euro per U.S. Dollar

EUR/USD — 10 Year Average

Exchange Rate: British Pound per U.S. Dollar

GBP/USD — 10 Year Average

Exchange Rate: Japanese Yen per U.S. Dollar

JPY/USD — 10 Year Average
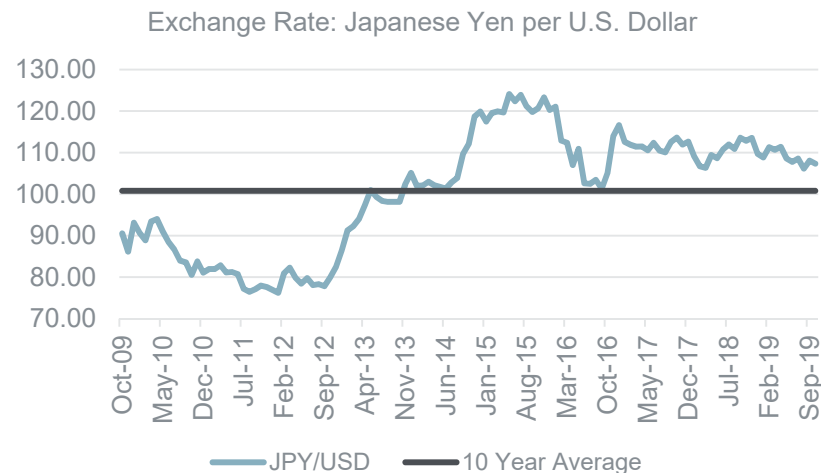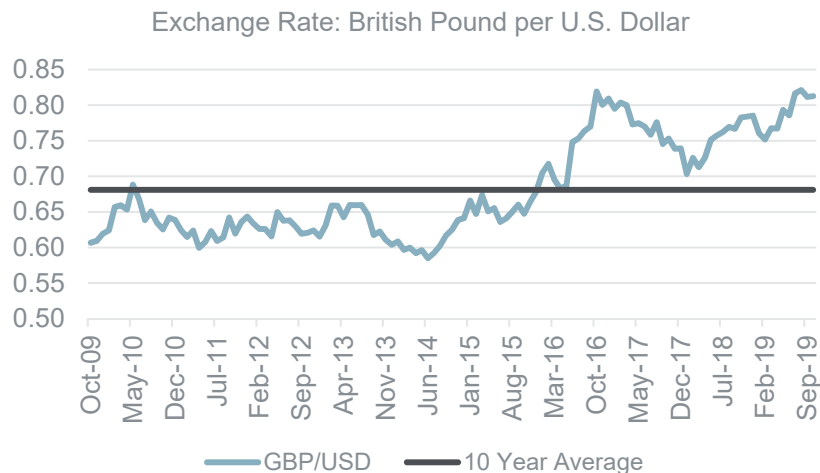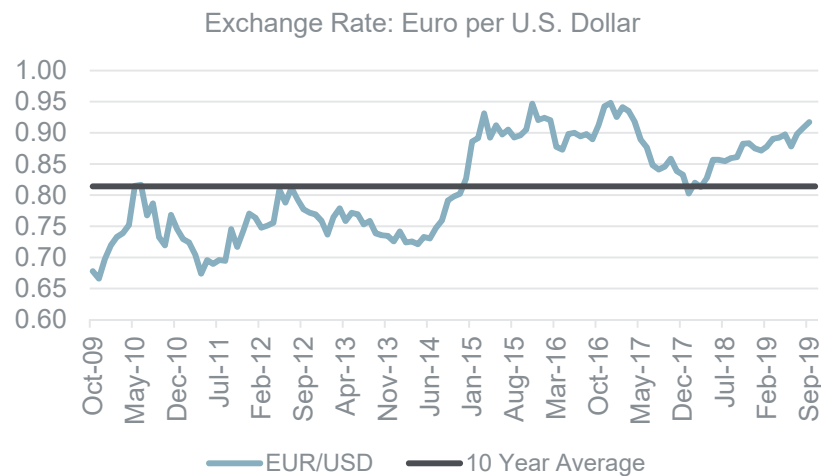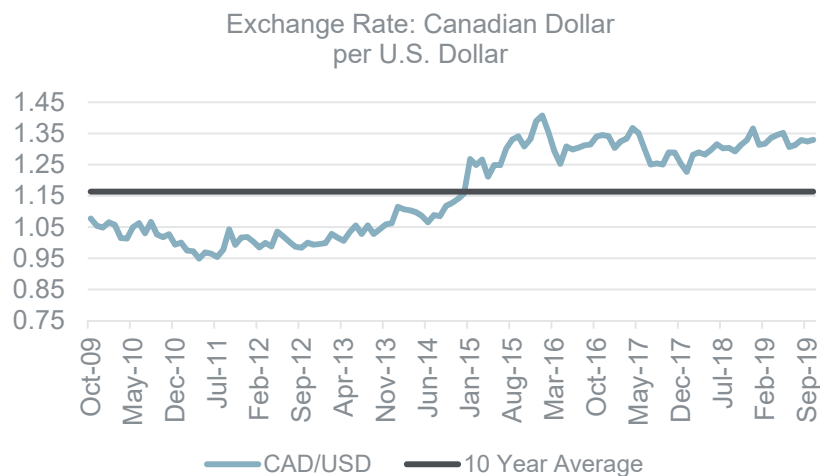
Exchange Rates through 9/30/2019.
Data Source: FactSet Research Systems.

Currency Effect

Select Countries

Legend: U.S. Investor Return | Local Currency Return | Currency Effect

Returns through 9/30/2019 are based on 22 MSCI Developed Market Indices. Returns greater than one year are annualized.
International investing involves risks not typically associated with U.S. investing, including currency fluctuation, foreign tax, political instability and different accounting standards.
Data Source: Morgan Stanley Capital International and FactSet Research Systems.

Disclosures and Definitions

This information is not intended to be used as the primary basis of investment decisions. Because of individual client requirements, it should not be construed as advice designed to meet the particular investment needs of any investor. The figures presented have been obtained from sources we believe to be reliable and current as of September 30, 2019, but cannot be guaranteed as to accuracy and do not purport to be complete.

Index information provided has been calculated on a total return basis with dividends reinvested. The effects of taxes and/or expenses and fees normally associated with an investment account have not been considered. Returns are based on past performance which may or may not be similar to future returns, and are not meant to be representative of any specific investment. Although used as benchmarks for informational purposes, individual indices are not available for direct investment

Sources of Information:
Bloomberg: Bloomberg is a leading provider of data, analytics, electronic trading and financial news.
Ibbotson Associates: Ibbotson Associates is a leading authority on asset allocation, providing products and services to help investment professionals obtain, manage and retain assets.
Morningstar: Morningstar is provider of performance analysis and analytical software.
MSCI: Morgan Stanley Capital International indices are the most widely used benchmarks by global portfolio managers.
Standard & Poor's: Standard & Poor's is a provider of independent financial information and analytical services
St. Louis Federal Reserve: The Federal Reserve Bank of St. Louis disseminates economic, financial, and monetary data through its FRED website.
FactSet Research Systems: FactSet is a leading provider of global financial and economic information. FactSet also provides the tools to download, combine, and manipulate financial data for investment analysis.
U.S. Department of Labor: Bureau of Labor Statistics: The BLS is the principle fact-finding agency for the United States Government in the field of labor and economic statistics.

General Information:
CAPE: Cyclically Adjusted Price to Earnings. Calculated as the current market price over a 10 year average of real earnings.
Correlation: Correlation describes the strength of the relationship between two variables. Correlation can be any value between +1 and -1. A value of +1 indicates perfect positive correlation (meaning the variables move together in perfect unison) and –1 indicates perfect negative correlation (meaning the variables move together in perfect negative unison). Generally, combining assets that have low correlations with increase diversification.
Dividend Yield: Multiplies the DPS over the last year then divides the resulting figure by the price.
Fed Funds Rate: The interest rate at which banks lend to each other overnight.
Federal Open Market Committee (FOMC): The branch of the Federal Reserve Board that determines the direction of monetary policy.
Fed Tightening Campaign: Describes a period in which the FOMC raises the fed funds rate in an attempt to tighten the money supply, or decrease the amount of money available in the banking system.
EPS Growth: Historical annual EPS growth for the past five fiscal years as of the report date.
Housing Starts: Annualized number of privately owned housing units that have started construction. Start of construction occurs when excavation begins for the footings or foundations of a building.
Market Cap: Multiplies the price as of the ending day by the shares as of the ending month.
NTM P/PE: Price to Next Twelve Months Earnings. Calculated as the current market price over the estimated earnings for the next twelve months for the index.
Price/Book: Displays the book value per share for the ending month divided by share price.
Price/Earnings: Reflects the closing price for the company at fiscal quarter end divided by earnings per share before extraordinary items for last twelve months.
P/PE: Price to Peak Earnings. Calculated as the current market price over the prior peak earnings of the index.
Recession Shading: Recession dates are provided by the NBER
Sharpe Ratio: A measure of the risk-adjusted return of an investment. It is calculated using standard deviation and excess return to determine reward per unit of risk. The higher the Sharpe Ratio, the better the historical risk-adjusted performance of the investment.
Standard Deviation: A statistical measure of dispersion about and average, which, depicts how widely the returns varied over a certain period of time.
U6 Unemployment: Total unemployed persons plus all marginally attached workers plus total employed part time for economic reasons

Index Descriptions:
Bloomberg Commodity Index: Composed of futures contracts on 19 physical commodities. Component weightings are primarily determined by liquidity. No related group of commodities (e.g., energy, precious metals, livestock and grains) may constitute more than 33% of the index.
Citigroup 3-Month Treasury Bill: Represents the average yield of the most recent 3-month Treasury Bill issues.
Citigroup Treasury 10+ Year Index: The Treasury Index computes returns for the current 10-year and 30-year on-the-run Treasury that has been in existence for the entire month.
Consumer Price Index – All Urban Consumers (CPI-U): Measures the weighted average change in prices of a fixed basket of goods and services purchased by households defined as All Urban Consumers, a population group that represents around 87 percent of the total population in the United States. The cost-of-living or inflation indicator is computed from data collected by the U.S. Department of Labor's Bureau of Labor Statistics. Not seasonally-adjusted.
Credit Suisse High Yield: Contains tradable below-investment-grade fixed-rate debt obligations, including cash-pay, deferred-interest, step-up, payment-in-kind and defaulted bonds chosen based on market size, liquidity and diversification criteria.

Disclosures and Definitions (cont.)

Barclay CTA Index: an industry benchmark of representative performance of commodity trading advisors. There were 533 programs included in the calculation of the Index for the year 2010. The Index is unweighted and rebalanced at the beginning of each year.

Bloomberg Barclays US Aggregate: A market-capitalization weighted index of investment-grade fixed-rate debt issues, including government, corporate, asset-backed and mortgage-backed securities, with maturities of at least one year.

Bloomberg Barclays Intermediate Government/Credit: A market value weighted performance benchmark for government and corporate fixed-rate debt issues with maturities between one and 10 years.

Bloomberg Barclays Municipal: A market capitalization-weighted index of investment grade municipal bonds with maturities of at least one year.

DJIA: Dow Jones Industrial Average is a price-weighted arithmetic average which covers 30 major NYSE industrial companies representing about 25 percent of the NYSE total market capitalization.

HRFI Equity Hedge: Composite Index represents an equally-weighted index of managers who maintain positions both long and short in primarily equity and equity derivative securities.

HRFI Event Driven: Composite Index represents an equally-weighted index of managers who maintain positions in companies currently or prospectively involved in corporate transactions..

HRFI Fund of Funds: Composite Index represents an equally-weighted index of more than 600 fund of hedge funds.

HRFI Macro: Composite Index represents an equally-weighted index of managers which trade a broad range of strategies in which the investment process is predicated on movements in underlying economic variables.

HRFI Relative Value: Composite Index represents an equally-weighted index of managers who maintain positions in which the investment thesis is predicated on realization of a valuation discrepancy between securities.

Headline Unemployment: Number of unemployed persons as a percentage of the labor force.

ICE BofAML 10+ Yr Municipal Index: Consists of a subset of The Merrill Lynch US Municipal Securities Index including all securities with a remaining term to final maturity greater than or equal to 10 years.

ICE BofAML 10+ Yr US Corporate Index: Consists of a subset of The Merrill Lynch US Corporate Index including all securities with a remaining term to final maturity greater than or equal to 10 years.

ICE BofAML 10+ Yr US Treasury Index: Consists of a subset of The Merrill Lynch US Treasury Index Including all securities with remaining term to final maturity greater than or equal to 10 years.

BAML 7-10 Year French Government Index: Consists of EUR denominated sovereign debt publicly issued by the French government in the French domestic or eurobond market: with maturity greater than 7 years but less than 10.

ICE BAML 7-10 Year German Government Index: Consists of EUR denominated sovereign debt publicly issued by the German government in the German domestic or eurobond market: with maturity greater than 7 years but less than 10.

ICE BAML 7-10 Year Italian Government Index: Consists of EUR denominated sovereign debt publicly issued by the Italian government in the Italian domestic or eurobond market: with maturity greater than 7 years but less than 10.

ICE BAML 7-10 Year Japan Government Index: Consists of JPY denominated sovereign debt publicly issued by the Japan government in the Japan domestic market with maturity greater than 7 years but less than 10.

ICE BAML 7-10 Year Spanish Government Index: Consists of EUR denominated sovereign debt publicly issued by the Spain government in the Spain domestic or eurobond market: with maturity greater than 7 years but less than 10.

ICE BAML 7-10 Year US Government Index: Consists of USD denominated sovereign debt publicly issued by the USD government in the US domestic market with maturity greater than 7 years but less than 10.

MSCI EAFE: Morgan Stanley Capital International Europe, Australasia and Far East Index. An arithmetic, market value-weighted average of the performance of several securities listed on the stock exchanges of several developed markets around the world, excluding the United States.

MSCI Emerging Markets Free: A Capitalization-weighted index representing emerging markets in the free (open to non-local investors) world.

MSCI World: An arithmetic, market value-weighted average of the performance of approximately 1700 securities listed on the stock exchanges of several developed markets around the world, including the United States.

FTSE NAREIT Equity Real Estate Investment Trusts (REITs) Contains all tax qualified Equity Real Estate Investment Trusts (REITs) with common shares traded on the New York Stock Exchange, American Stock Exchange or NASDAQ National Market List. A company is classified as an Equity REIT if at least 75 percent of its gross invested book assets are invested in real properties. Preferred stocks, convertible preferred stocks, participating preferred stocks, convertible debentures, warrants, rights and operating partnership units are excluded. Free float-adjusted, market capitalization-weighted.

NASDAQ: A capitalization-weighted index that measures all Nasdaq listed domestic and foreign stocks.

Not in Labor Force, Want Job Now: Number of persons not currently in the labor force (i.e. have given up looking for employment) currently desiring employment.

PMI: A national survey of purchasing managers representative of the state of the manufacturing sector. A PMI above 50 indicates that the manufacturing economy is generally expanding; below 50 that it is generally contracting.

S&P 500: The index comprises 500 of the largest U.S. companies. The index is capitalization-weighted and calculated on a total return basis with dividends reinvested. Long-term performance is represented by the S&P 90 Index from 1926 through 1956, as provided by Ibbotson Associates, and the S&P 500 Index from 1957 to present.

S&P 500 Growth: S&P Style Indices divide the complete market capitalization of each parent index into growth and value segments. Growth stocks are measured using three factors: sales growth, the ratio of earnings change to price, and momentum.

S&P 500 Value: S&P Style Indices divide the complete market capitalization of each parent index into growth and value segments. Value stocks are measured using three factors: the ratios of book value, earnings, and sales to price.

S&P Midcap 400: The index comprises 400 companies selected as broadly representative of companies with midrange market capitalization (market valuation of between 200 million and 5 billion). The index is capitalization-weighted and calculated on a total return basis with dividends reinvested.

S&P Midcap 400 Growth: S&P Style Indices divide the complete market capitalization of each parent index into growth and value segments. Growth stocks are measured using three factors: sales growth, the ratio of earnings change to price, and momentum.

S&P Midcap 400 Value: S&P Style Indices divide the complete market capitalization of each parent index into growth and value segments. Value stocks are measured using three factors: the ratios of book value, earnings, and sales to price.

S&P SmallCap 600: The index comprises 600 companies seeking to measure the small-cap segment of the U.S. equity market. The index requires specific inclusion criteria to ensure that companies are liquid and financially viable. The index is capitalization-weighted and calculated on a total return basis with dividends reinvested.

S&P SmallCap 600 Growth: S&P Style Indices divide the complete market capitalization of each parent index into growth and value segments. Growth stocks are measured using three factors: sales growth, the ratio of earnings change to price, and momentum.

S&P SmallCap 600 Value: S&P Style Indices divide the complete market capitalization of each parent index into growth and value segments. Value stocks are measured using three factors: the ratios of book value, earnings, and sales to price.

Wealth Management

Thank you

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