Fixed income sector returns

Fixed income

2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	YTD	2009 - 2018 Ann.	Vol.
High Yield 58.2%	EMD LCL. 15.7%	TIPS 13.6%	EMD USD 17.4%	High Yield 7.4%	Muni 8.7%	Muni 3.8%	High Yield 17.1%	EMD LCL. 15.2%	Muni 1.4%	EMD LCL. 5.5%	High Yield 11.1%	EMD LCL. 11.5%
EMD USD 29.8%	High Yield 15.1%	Muni 12.3%	EMD LCL. 16.8%	MBS -1.4%	Corp. 7.5%	MBS 1.5%	EMD USD 10.2%	EMD USD 10.3%	MBS 1.0%	High Yield 4.5%	EMD USD 8.2%	High Yield 7.4%
EMD LCL. 22.0%	EMD USD 12.2%	Treas. 9.8%	High Yield 15.8%	Corp. -1.5%	EMD USD 7.4%	EMD USD 1.2%	EMD LCL. 9.9%	High Yield 7.5%	Treas. 0.9%	EMD USD 4.4%	Corp. 5.9%	EMD USD 7.2%
Corp. 18.7%	Corp. 9.0%	Corp. 8.1%	Corp. 9.8%	Asset Alloc. -1.9%	MBS 6.1%	Treas. 0.8%	Corp. 6.1%	Corp. 6.4%	Barclays Agg 0.0%	Corp. 2.4%	Asset Alloc. 5.0%	TIPS 5.9%
Asset Alloc. 14.7%	Asset Alloc. 7.9%	Asset Alloc. 8.1%	Asset Alloc. 7.4%	Barclays Agg -2.0%	Barclays Agg 6.0%	Barclays Agg 0.5%	Asset Alloc. 4.7%	Muni 5.8%	Asset Alloc. -0.7%	Asset Alloc. 1.9%	Muni 4.8%	Asset Alloc. 5.0%
TIPS 11.4%	Barclays Agg 6.5%	Barclays Agg 7.8%	TIPS 7.0%	Muni -2.2%	Asset Alloc. 5.5%	Asset Alloc. -0.3%	TIPS 4.7%	Asset Alloc. 5.3%	TIPS -1.3%	TIPS 1.3%	TIPS 3.6%	Corp. 4.6%
Muni 9.9%	TIPS 6.3%	EMD USD 7.3%	Muni 5.7%	Treas. -2.7%	Treas. 5.1%	Corp. -0.7%	Barclays Agg 2.6%	Barclays Agg 3.5%	High Yield -2.1%	Muni 1.1%	Barclays Agg 3.5%	Muni 4.3%
Barclays Agg 5.9%	Treas. 5.9%	MBS 6.2%	Barclays Agg 4.2%	EMD USD -5.3%	TIPS 3.6%	TIPS -1.4%	MBS 1.7%	TIPS 3.0%	Corp. -2.5%	Barclays Agg 1.1%	EMD LCL. 3.5%	Treas. 3.5%
MBS 5.9%	MBS 5.4%	High Yield 5.0%	MBS 2.6%	TIPS -8.6%	High Yield 2.5%	High Yield -4.5%	Treas. 1.0%	MBS 2.5%	EMD USD -4.3%	MBS 0.8%	MBS 3.1%	Barclays Agg 3.2%
Treas. -3.6%	Muni 4.0%	EMD LCL. -1.8%	Treas. 2.0%	EMD LCL. -9.0%	EMD LCL. -5.7%	EMD LCL. -14.9%	Muni -0.1%	Treas. 2.3%	EMD LCL. -6.2%	Treas. 0.5%	Treas. 2.1%	MBS 2.5%

Source: Barclays, Bloomberg, FactSet, J.P. Morgan Global Economic Research, J.P. Morgan Asset Management.
Past performance is not indicative of future returns. Fixed income sectors shown above are provided by Bloomberg unless otherwise noted and are represented by Broad Market: Bloomberg Barclays U.S. Aggregate Index; MBS: Bloomberg Barclays US Aggregate Securitized - MBS Index; Corporate: Bloomberg Barclays U.S. Aggregate Credit - Corporates - Investment Grade; Municipals: Bloomberg Barclays Munipal Bond 10-Year Index; High Yield: Bloomberg Barclays U.S. Aggregate Credit - Corporate - High Yield Index; Treasuries: Bloomberg Barclays Global U.S. Treasury; TIPS: Bloomberg Barclays Global Inflation-Linked - U.S. TIPs; Emerging Debt USD: J.P. Morgan EMBIG Diversified Index; Emerging Debt LCL: J.P. Morgan GBI EM Global Diversified Index (LCL) . The "Asset Allocation" portfolio assumes the following weights: 20% in MBS, 20% in Corporate,15% in Municipals, 5% in Emerging Debt USD, 5% in Emerging Debt LCL, 10% in High Yield, 20% in Treasuries, 5% in TIPS. Asset allocation portfolio assumes annual rebalancing. Annualized volatility is calculated as the standard deviation of annual returns.
Guide to the Markets – U.S. Data are as of January 31, 2019.

J.P.Morgan Asset Management

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U.S. | 1Q 2019 | As of January 31, 2019

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Equities

S&P 500 Price Index

Characteristic	Mar. 2000		Oct. 2007		Jan. 2019
Index level	1,527	➤	1,565	➤	2,704
P/E ratio (fwd.)	27.2x	➤	15.7x	➤	15.7x
Dividend yield	1.1%	➤	1.8%	➤	2.2%
10-yr. Treasury	6.2%	➤	4.7%	➤	2.6%

Jan. 31, 2019
P/E (fwd.) = 15.7x
2,704

+300%

Mar. 24, 2000
P/E (fwd.) = 27.2x
1,527

Oct. 9, 2007
P/E (fwd.) = 15.7x
1,565

+106%

+101%

-57%

-49%

Dec. 31, 1996
P/E (fwd.) = 16.0x
741

Oct. 9, 2002
P/E (fwd.) = 14.1x
777

Mar. 9, 2009
P/E (fwd.) = 10.3x
677

Source: Compustat, FactSet, Federal Reserve, Standard & Poor's, J.P. Morgan Asset Management.
Dividend yield is calculated as consensus estimates of dividends for the next 12 months, divided by most recent price, as provided by Compustat.
Forward price to earnings ratio is a bottom-up calculation based on the most recent S&P 500 Index price, divided by consensus estimates for earnings in the next 12 months (NTM), and is provided by FactSet Market Aggregates. Returns are cumulative and based on S&P 500 Index price movement only, and do not include the reinvestment of dividends. Past performance is not indicative of future returns.
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S&P 500 Index: Forward P/E ratio

Valuation measure	Description	Latest	25-year avg.*	Std. dev. Over-/under-Valued
P/E	Forward P/E	15.7x	16.1x	-0.1
CAPE	Shiller's P/E	28.8	26.9	0.3
Div. Yield	Dividend yield	2.2%	2.0%	-0.5
P/B	Price to book	2.9	2.9	0.0
P/CF	Price to cash flow	11.6	10.7	0.5
EY Spread	EY minus Baa yield	1.3%	-0.1%	-0.7

+1 Std. dev.: 19.3x

25-year average: 16.1x

-1 Std. dev.: 12.9x

Current: 15.7x

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Forward P/E and subsequent 1-yr. returns
S&P 500 Total Return Index

Current: 15.7x

R² = 10%

Forward P/E and subsequent 5-yr. annualized returns
S&P 500 Total Return Index
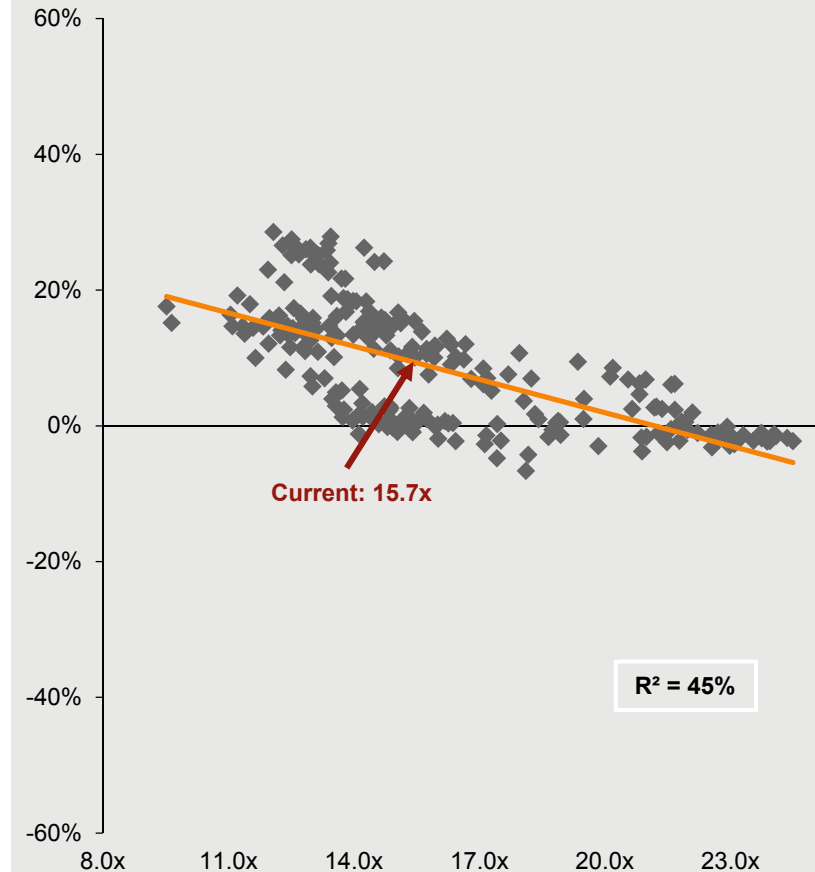
Current: 15.7x

R² = 45%

Equities

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Equities

S&P 500 operating earnings per share
Index quarterly operating earnings

S&P consensus analyst estimates

4Q18*:
$38.99
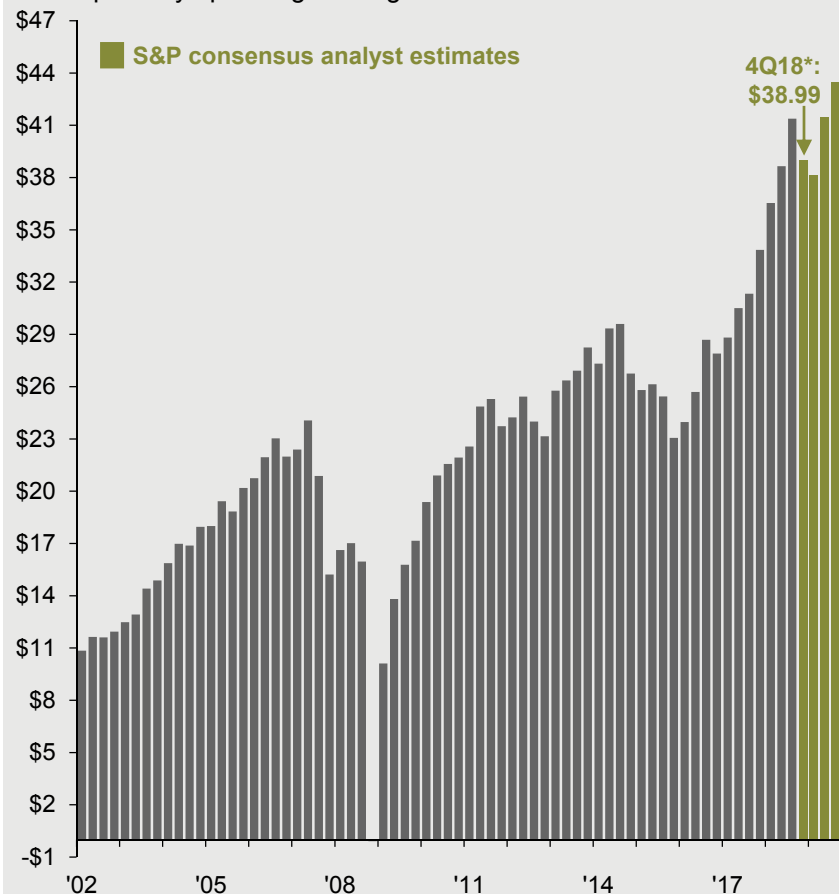
S&P 500 profit margins
Quarterly operating earnings/sales

4Q18*
11.1%

Source: Compustat, FactSet, Standard & Poor's, J.P. Morgan Asset Management; (Right) Federal Reserve.
EPS levels are based on operating earnings per share. Earnings estimates are Standard & Poor's consensus analyst expectations. Past performance
is not indicative of future returns. *4Q18 earnings are calculated using actual earnings for 57.7% of S&P 500 market cap and earnings estimates for
the remaining companies.
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S&P 500 year-over-year operating EPS growth
Annual growth broken into revenue, changes in profit margin & changes in share count

Share of EPS growth	4Q18*	Avg. '01–'17
Margin	8.8%	3.8%
Revenue	4.6%	3.0%
Share count	1.9%	0.2%
Total EPS	15.2%	6.9%
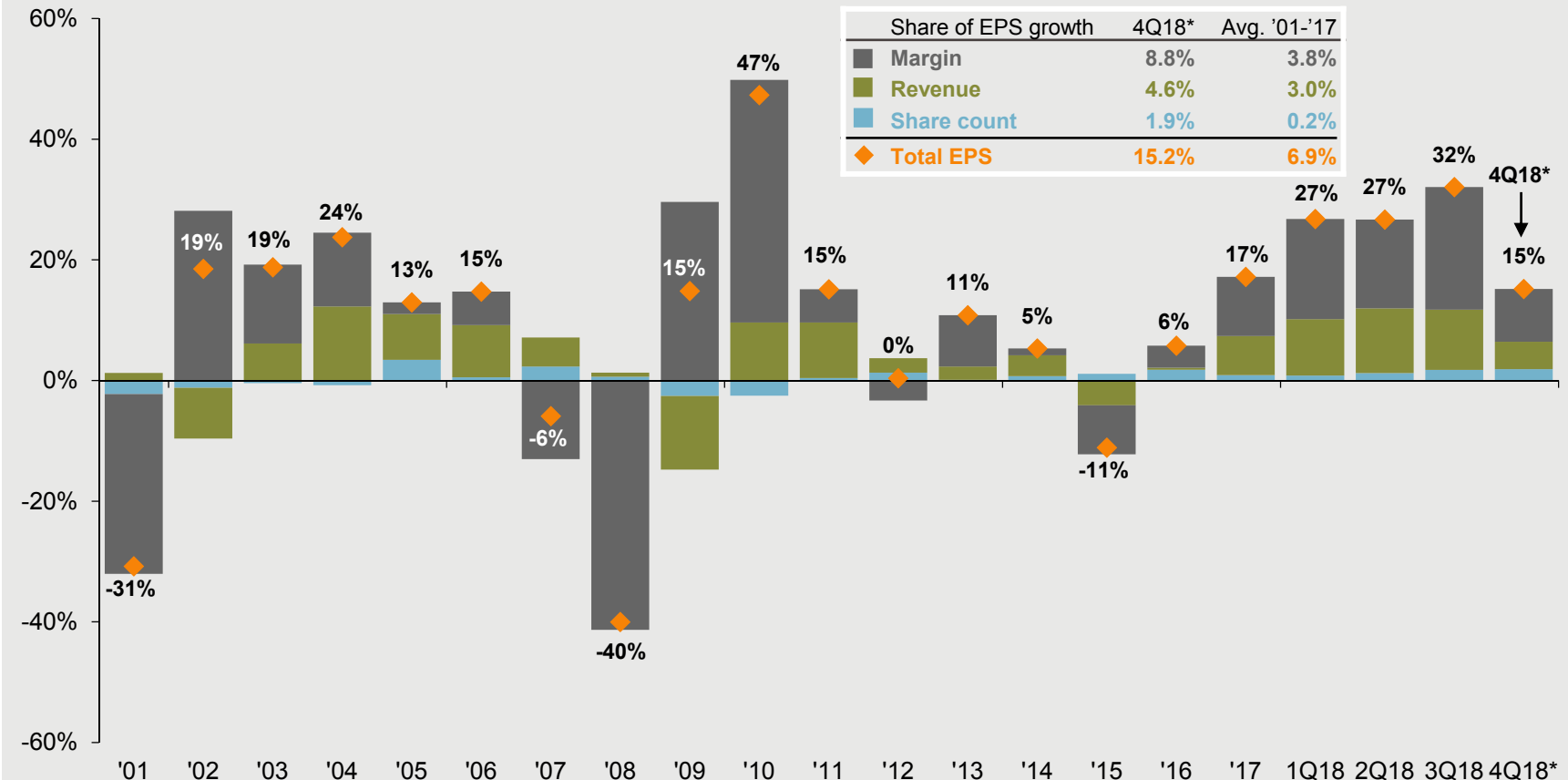
Source: Compustat, FactSet, Standard & Poor's, J.P. Morgan Asset Management.
EPS levels are based on annual operating earnings per share except for 2018, which is quarterly. Percentages may not sum due to rounding. Past performance is not indicative of future returns. *4Q18 earnings are calculated using actual earnings for 57.7% of S&P 500 market cap and earnings estimates for the remaining companies.
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S&P 500 announced buybacks
Value of announced buybacks, $bn
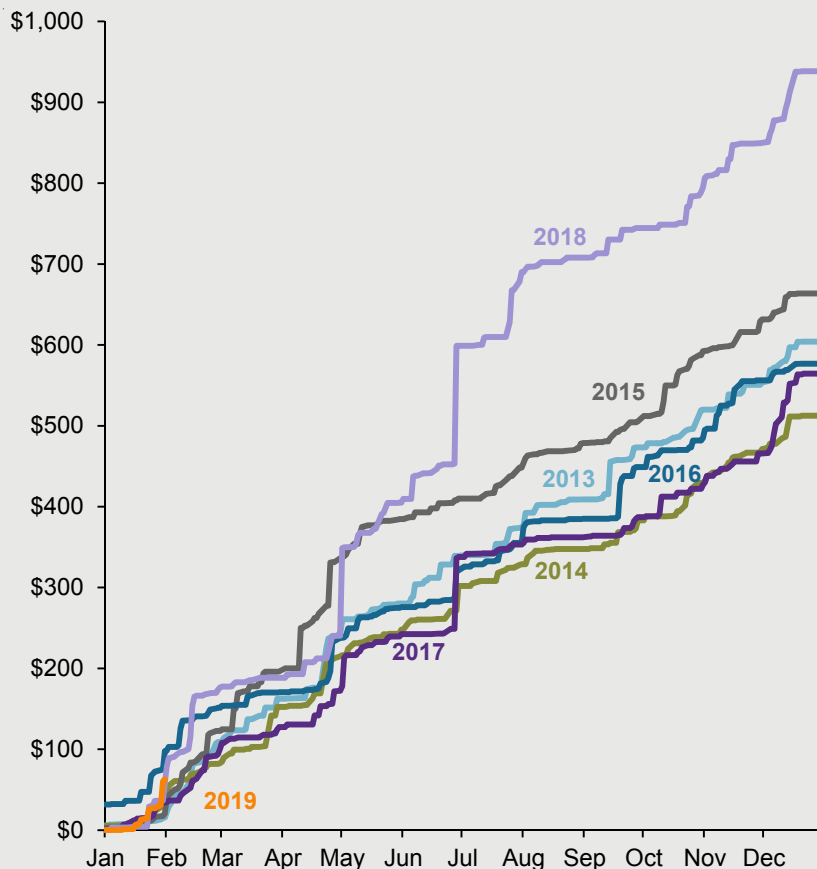
S&P 500 dividends per share
Year-over-year % change, quarterly

4Q18: 7.6%
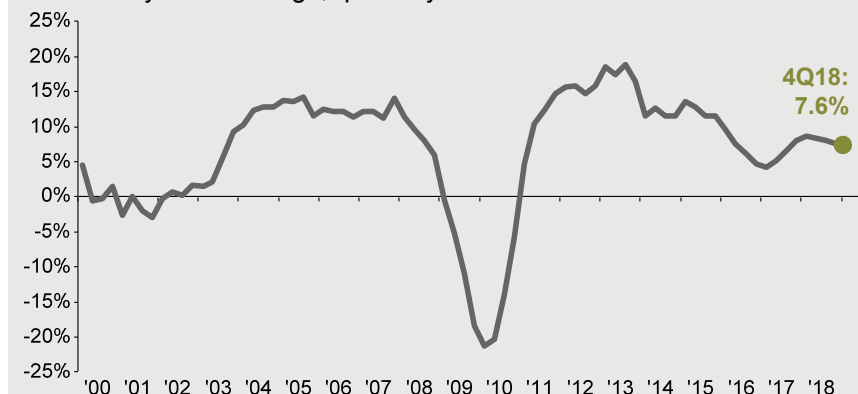
Corporate spending
Private non-residential fixed investment, y/y, value of deals announced, $tn

◄ M&A activity   Capital expenditures ►
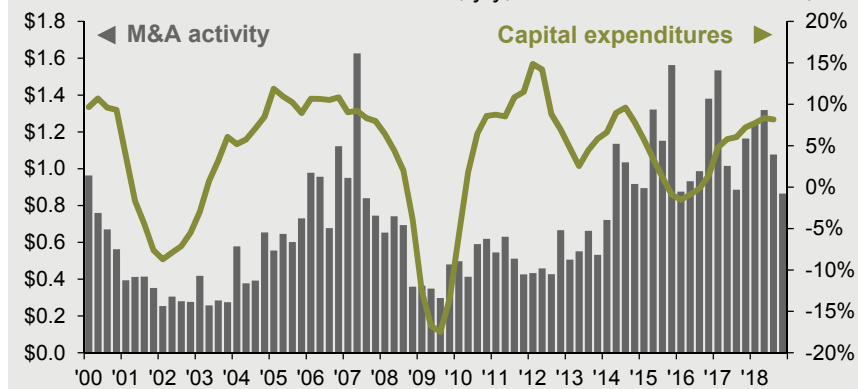
Source: Bloomberg, Compustat, FactSet, Standard & Poor's, J.P. Morgan Asset Management.
M&A activity is the quarterly value of officially announced transactions, and capital expenditures are private non-residential fixed domestic investment. Buybacks are based on company announcements year to date.
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QTD

	Value	Blend	Growth
Large	7.8%	8.0%	9.0%
Mid	10.3%	10.8%	11.5%
Small	10.9%	11.2%	11.5%

YTD

	Value	Blend	Growth
Large	7.8%	8.0%	9.0%
Mid	10.3%	10.8%	11.5%
Small	10.9%	11.2%	11.5%

Current P/E vs. 20-year avg. P/E

	Value	Blend	Growth
Large	13.5 / 13.7	15.7 / 15.8	19.4 / 19.6
Mid	13.7 / 14.1	15.9 / 16.2	20.6 / 21.1
Small	14.2 / 16.1	20.2 / 20.2	33.2 / 29.2

Since market peak (October 2007)

	Value	Blend	Growth
Large	80.3%	120.0%	169.0%
Mid	111.1%	125.4%	141.6%
Small	88.2%	107.4%	126.1%

Since market low (March 2009)

	Value	Blend	Growth
Large	349.5%	391.6%	448.5%
Mid	438.9%	444.0%	458.6%
Small	365.4%	400.0%	433.6%

Current P/E as % of 20-year avg. P/E

	Value	Blend	Growth
Large	98.1%	99.5%	98.8%
Mid	96.9%	98.5%	97.8%
Small	88.5%	99.9%	113.7%

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Equities

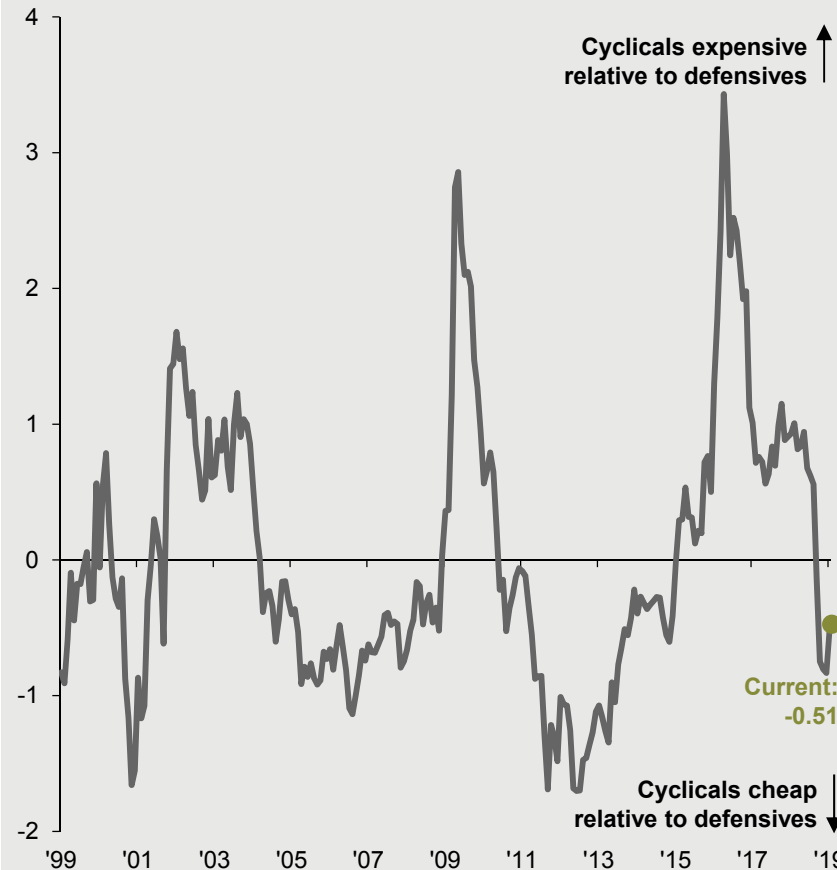|	Financials	Materials	Industrials	Real Estate	Cons. Discr.	Energy	Technology	Comm. Services*	Health Care	Cons. Staples	Utilities	S&P 500 Index	
S&P weight	**13.5%**	**2.7%**	**9.5%**	**3.0%**	**10.1%**	**5.5%**	**19.9%**	**10.3%**	**15.1%**	**7.2%**	**3.2%**	**100.0%**	Weight
Russell Growth weight	4.4%	1.8%	12.0%	2.3%	15.3%	0.8%	31.2%	12.4%	14.1%	5.7%	0.0%	100.0%	
Russell Value weight	22.7%	4.0%	7.7%	5.2%	5.3%	9.6%	9.3%	7.1%	15.1%	7.8%	6.3%	100.0%	
QTD	8.8	5.5	11.4	10.8	10.3	11.1	7.0	10.4	4.8	5.2	3.4	8.0	Return (%)
YTD	8.8	5.5	11.4	10.8	10.3	11.1	7.0	10.4	4.8	5.2	3.4	8.0	
Since market peak (October 2007)	12.4	59.0	106.5	81.3	244.5	5.8	218.9	49.1	210.0	160.8	105.6	120.0	
Since market low (March 2009)	513.6	278.8	467.4	572.4	697.5	93.8	568.2	184.8	399.8	265.7	259.9	391.6	
Beta to S&P 500	1.41	1.25	1.26	1.13	1.12	1.08	1.02	0.97*	0.77	0.60	0.34	1.00	β
Correl. to Treas. yields	0.42	0.17	0.21	-0.21	0.22	0.41	0.14	0.17	0.23	0.12	-0.22	0.26	ρ
Foreign % of sales	31.2	52.7	44.6	-	34.1	54.1	56.9	-	38.2	32.5	41.3	43.6	%
NTM Earnings Growth	9.0%	4.7%	11.0%	3.5%	9.4%	-5.4%	4.5%	5.6%*	6.8%	4.7%	4.9%	6.2%	EPS
20-yr avg.	**22.6%**	**20.4%**	**11.0%**	**7.6%****	**15.7%**	**13.3%**	**15.3%**	**9.8%***	**9.9%**	**8.8%**	**5.0%**	**11.9%**	
Forward P/E ratio	11.4x	14.5x	14.8x	18.3x	20.1x	17.4x	16.6x	17.2x	15.6x	17.6x	17.5x	15.7x	P/E
20-yr avg.	**12.7x**	**14.0x**	**16.2x**	**15.3x**	**18.0x**	**17.5x**	**20.5x**	**18.2x***	**16.8x**	**16.9x**	**14.2x**	**15.8x**	
Trailing P/E ratio	12.4x	15.2x	16.4x	18.9x	21.9x	16.4x	17.4x	18.1x	16.6x	18.4x	18.4x	16.7x	
20-yr avg.	**15.4x**	**16.7x**	**17.9x**	**16.4x**	**20.5x**	**21.6x**	**23.9x**	**20.1x***	**18.5x**	**18.2x**	**14.8x**	**17.6x**	
Dividend yield	2.4%	2.3%	2.1%	3.5%	1.4%	3.5%	1.8%	1.5%	1.8%	3.3%	3.6%	2.2%	Div
20-yr avg.	**2.3%**	**2.6%**	**2.1%**	**4.4%**	**1.4%**	**2.3%**	**1.0%**	**1.7%***	**1.8%**	**2.7%**	**4.0%**	**2.0%**	

Source: FactSet, Russell Investment Group, Standard & Poor's, J.P. Morgan Asset Management. All calculations are cumulative total return, not annualized, including dividends for the stated period. Since market peak represents period 10/9/07 – 1/31/19. Since market low represents period 3/9/09 – 1/31/19. Correlation to Treasury yields are trailing 2-year monthly correlations between S&P 500 sector price returns and 10-year Treasury yield movements. Foreign percent of sales is from Standard & Poor's, S&P 500 2017: Global Sales report as of June 2018. Real Estate and Comm. Services foreign sales are not included due to lack of availability. NTM earnings growth is the percent change in next 12 months earnings estimates compared to last 12 months earnings provided by brokers. Forward P/E ratio is a bottom-up calculation based on the most recent S&P 500 Index price, divided by consensus estimates for earnings in the next 12 months (NTM), and is provided by FactSet Market Aggregates. Trailing P/E ratios are bottom-up values defined as month-end price divided by the last 12 months of available reported earnings from brokers. Dividend yield is calculated as the next 12-month consensus dividend divided by most recent price. Beta calculations are based on 10-years of monthly price returns for the S&P 500 and its sub-indices. *Communication Services (formerly Telecom) averages and beta are based on 5-years of backtested data by JPMAM. **Real estate NTM earnings growth is a 15-year average due to data availability. Past performance is not indicative of future returns.
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Equities

Cyclicals vs. defensive valuations*
Relative fwd. P/E ratio of cyclicals vs. defensives, z-score

Cyclicals expensive relative to defensives ↑

Current: -0.51

Cyclicals cheap relative to defensives ↓

S&P 500 sector returns: Dividends vs. cap. apprec.
25-year annualized return, %

- Capital appreciation
- Dividends

Sector	Total	Cap. appr.	Div.
Health Care	12.2%	10.3%	1.9%
Tech	11.8%	10.9%	0.9%
Cons. Staples	10.0%	7.3%	2.7%
Cons. Disc.	9.9%	8.4%	1.5%
Industrials	9.3%	7.1%	2.2%
S&P 500	9.3%	7.1%	2.1%
Energy	8.9%	6.2%	2.7%
Financials	7.8%	5.5%	2.3%
Utilities	7.8%	3.4%	4.4%
Materials	7.1%	4.8%	2.3%
Real Estate	6.0%	3.1%	3.0%
Comm. Svcs	5.2%	1.2%	3.9%

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Equities

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	YTD	2004 - 2018 Ann.	2004 - 2018 Vol.
	Multi-Factor 21.1%	Momen. 19.3%	High Div. 21.1%	Momen. 17.8%	Min. Vol. -25.7%	Cyclical 36.9%	Small Cap 26.9%	High Div. 14.3%	Cyclical 20.1%	Small Cap 38.8%	Min. Vol. 16.5%	Momen. 9.3%	Small Cap 21.3%	Momen. 37.8%	Min. Vol. 1.5%	Small Cap 11.2%	Momen. 10.4%	Small Cap 18.6%
	Small Cap 18.3%	Multi-Factor 15.7%	Small Cap 18.4%	Defens. 17.7%	Defens. -26.7%	Quality 32.0%	Multi-Factor 18.3%	Min. Vol. 12.9%	Small Cap 16.3%	Multi-Factor 37.4%	High Div. 14.9%	Quality 7.0%	High Div. 16.3%	Cyclical 27.3%	Momen. -1.6%	Cyclical 9.2%	Multi-Factor 9.6%	Cyclical 17.4%
	Momen. 16.9%	Defens. 11.1%	Multi-Factor 16.6%	Quality 10.6%	High Div. -27.6%	Multi-Factor 29.8%	Momen. 18.2%	Defens. 10.1%	Multi-Factor 15.7%	Cyclical 35.0%	Multi-Factor 14.8%	Min. Vol. 5.6%	Cyclical 14.0%	Quality 26.0%	High Div. -2.3%	Multi-Factor 8.9%	Min. Vol. 9.4%	Momen. 16.2%
	Min. Vol. 14.5%	Min. Vol. 6.6%	Defens. 15.9%	Multi-Factor 5.5%	Quality -30.2%	Small Cap 27.2%	Cyclical 17.9%	Quality 8.4%	Momen. 15.1%	Momen. 34.8%	Momen. 14.7%	Cyclical 2.6%	Multi-Factor 13.7%	Multi-Factor 21.5%	Quality -2.6%	Quality 8.1%	Quality 9.3%	Multi-Factor 15.4%
	Defens. 11.9%	Small Cap 4.6%	Cyclical 15.0%	Min. Vol. 4.3%	Small Cap -33.8%	High Div. 18.4%	High Div. 15.9%	Multi-Factor 7.3%	Quality 14.0%	Quality 33.5%	Cyclical 13.6%	High Div. 0.7%	Min. Vol. 10.7%	High Div. 19.5%	Defens. -2.9%	Momen. 6.7%	High Div. 8.8%	High Div. 13.2%
	High Div. 11.8%	High Div. 3.7%	Min. Vol. 15.0%	High Div. 0.0%	Multi-Factor -39.3%	Min. Vol. 18.4%	Min. Vol. 14.7%	Momen. 6.1%	Min. Vol. 11.2%	High Div. 28.9%	Defens. 13.0%	Multi-Factor 0.4%	Quality 8.0%	Min. Vol. 19.2%	Cyclical -5.3%	Defens. 5.9%	Defens. 8.4%	Quality 13.0%
	Quality 10.2%	Cyclical 2.5%	Quality 12.0%	Cyclical -0.8%	Momen. -40.9%	Momen. 17.6%	Quality 12.6%	Cyclical -3.4%	Defens. 10.7%	Defens. 28.9%	Quality 11.8%	Defens. -0.9%	Defens. 7.7%	Small Cap 14.6%	Multi-Factor -9.7%	Min. Vol. 5.8%	Small Cap 7.5%	Defens. 12.1%
	Cyclical 10.0%	Quality 2.5%	Momen. 10.7%	Small Cap -1.6%	Cyclical -44.8%	Defens. 16.5%	Defens. 12.0%	Small Cap -4.2%	High Div. 10.6%	Min. Vol. 25.3%	Small Cap 4.9%	Small Cap -4.4%	Momen. 5.1%	Defens. 12.3%	Small Cap -11.0%	High Div. 5.4%	Cyclical 7.3%	Min. Vol. 11.5%

J.P.Morgan Asset Management

S&P 500 intra-year declines vs. calendar year returns

Despite average intra-year drops of 13.9%, annual returns positive in 29 of 39 years
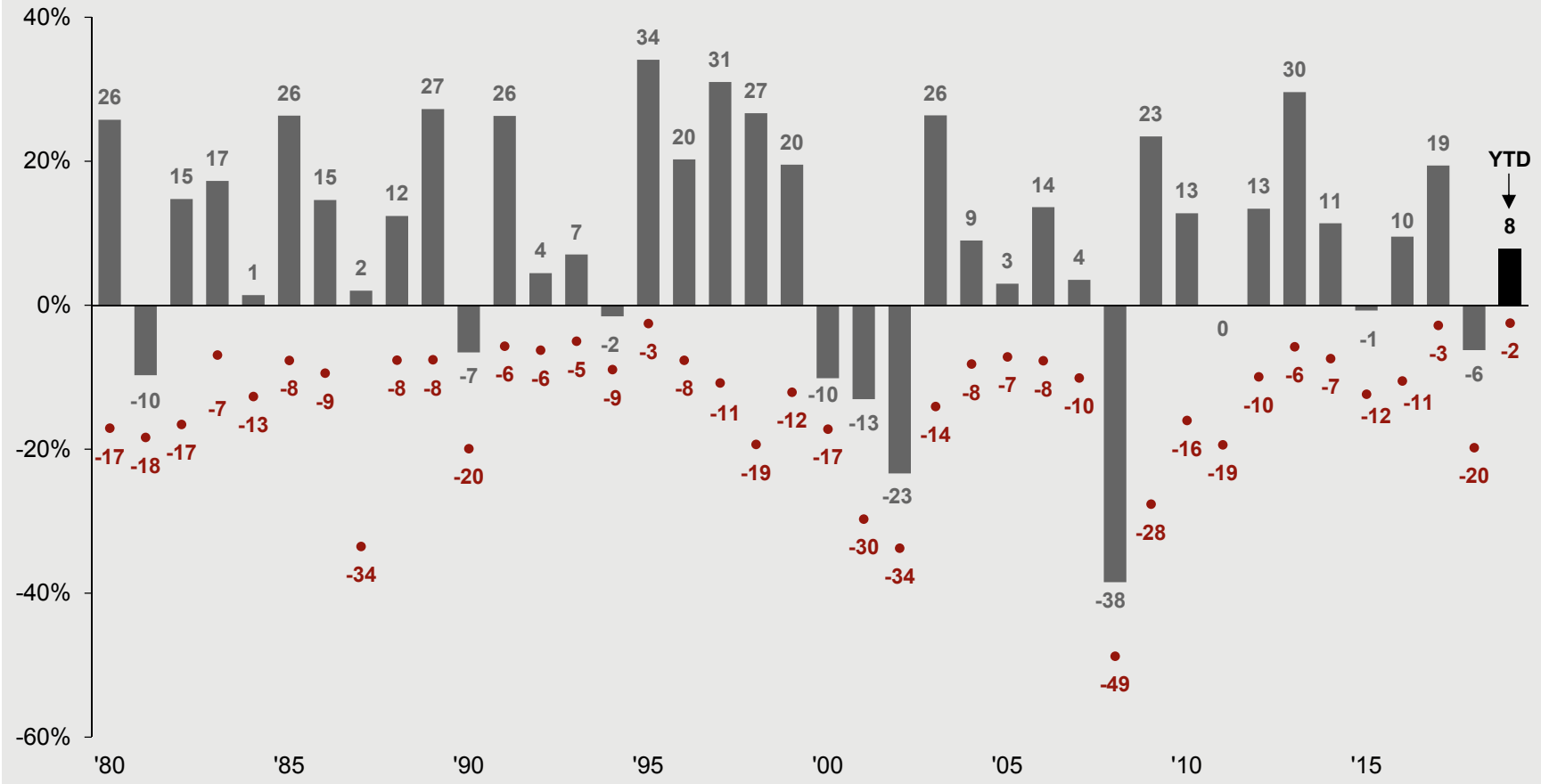
Source: FactSet, Standard & Poor's, J.P. Morgan Asset Management.

Returns are based on price index only and do not include dividends. Intra-year drops refers to the largest market drops from a peak to a trough during the year. For illustrative purposes only. Returns shown are calendar year returns from 1980 to 2018, over which time period the average annual return was 8.4%.

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Equities

CBOE Market Volatility Index (VIX)

Index level

VIX	Level
'08 Peak	80.9
Average	19.6
Latest	16.6

**Financial crisis
(S&P 500: -48.8%)**

**J.P. Morgan
acquires Bear
Stearns
(S&P 500: -13.1%)**

**Flash crash,
Europe/Greece
(S&P 500: -16.0%)**

**U.S. downgrade,
Europe/periphery stress
(S&P 500: -19.4%)**

**Eurozone
double-dip
(S&P 500: -9.9%)**

**Taper
Tantrum
(S&P 500: -5.8%)**

**Global
slowdown
fears
(S&P 500: -7.4%)**

**Global slowdown, China,
Fed uncertainty
(S&P 500: -12.4%)**

**Oil,
U.S. recession
fears, China
(S&P 500: -10.5%)**

**Inflation, trade, tech
(S&P 500: -10.2%)**

**Rising
rates,
trade, peak
growth
(S&P 500:
-19.8%)**

Sources: CBOE, FactSet, J.P. Morgan Asset Management.
Stock market returns are based on calendar year peak to trough declines experienced during VIX spike, except for J.P. Morgan acquires Bear
Stearns, which is based on the calendar year peak to the acquisition date. Average is based on the period shown from 12/31/2006 to 1/31/2019.
Guide to the Markets – U.S. Data are as of January 31, 2019.

J.P.Morgan
Asset Management

Equities

U.S. recessions and S&P 500 composite declines from all-time highs
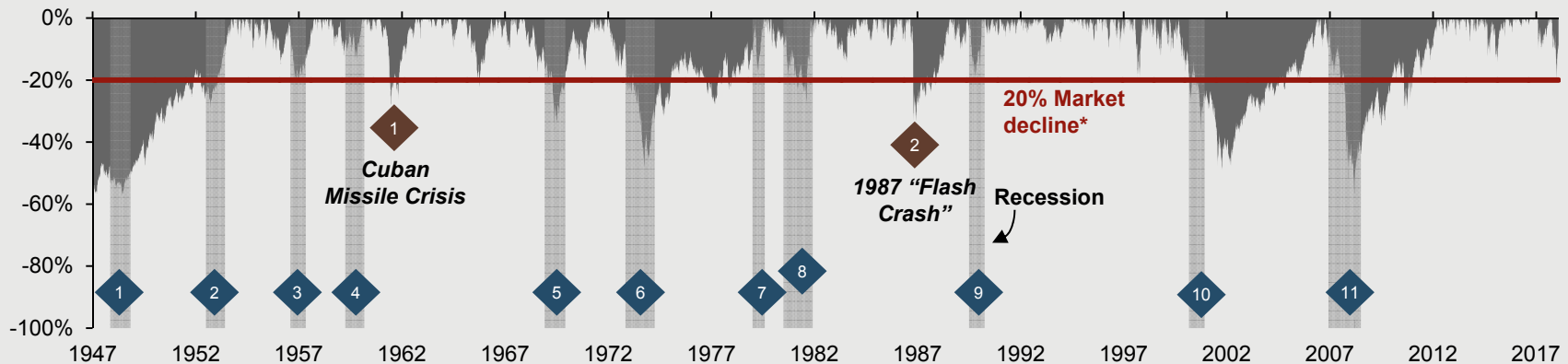
Characteristics of recessions and related stock market declines

	Recession			Related Market Sell-off			Macro Environment		
Recession	Peak Quarter	Trough Quarter	% Decline	Peak Date	Trough Date	% Decline	Commodity Spike	Aggressive Fed	Extreme Valuations
1 Recession of 1949	4Q48	4Q49	-1.5%	6/15/1948	6/13/1949	-21%			♦
2 Recession of 1953	2Q53	2Q54	-2.4%	1/5/1953	9/14/1953	-15%			♦
3 Recession of 1958	3Q57	2Q58	-3.0%	8/2/1956	10/22/1957	-22%			♦
4 Recession of 1960-61	2Q60	1Q61	-0.1%	8/3/1959	10/25/1960	-14%			♦
5 Recession of 1969-70	4Q69	4Q70	-0.2%	11/29/1968	5/26/1970	-36%		♦	
6 Recession of 1973-75	4Q73	1Q75	-3.1%	1/11/1973	10/3/1974	-48%	♦	♦	
7 Recession of 1980	1Q80	3Q80	-2.2%	2/13/1980	3/27/1980	-17%	♦	♦	
8 Recession of 1981-82	3Q81	4Q82	-2.5%	11/28/1980	8/12/1982	-27%	♦	♦	
9 Early 1990s recession	3Q90	1Q91	-1.4%	7/16/1990	10/11/1990	-20%	♦		
10 Early 2000s recession	1Q01	4Q01	-0.4%	3/24/2000	10/9/2002	-49%	♦		♦
11 Great Recession	4Q07	2Q09	-4.0%	10/9/2007	3/9/2009	-57%	♦	♦	
Non-recession Bear Markets									
1 1962 flash crash, Cuban Missile Crisis	-	-	-	12/12/1961	6/26/1962	-28%			♦
2 1987 flash crash, program trading, overheating markets	-	-	-	8/25/1987	12/4/1987	-34%			♦
Average	**-**	**-**	**-1.9%**	**-**	**-**	**-30%**			

Source: FactSet, NBER, Robert Shiller, Standard & Poor's, J.P. Morgan Asset Management.
*A bear market is defined as a 20% or more decline from the previous market high. The related market return is the peak to trough return over the cycle. Periods of "Recession" are defined using NBER business cycle dates. "Commodity spikes" are defined as movement in oil prices of over 100% over an 18-month period. Periods of "Extreme Valuations" are those where S&P 500 last 12 months' P/E levels were approximately two standard deviations above long-run averages, or time periods where equity market valuations appeared expensive given the broader macroeconomic environment. "Aggressive Fed Tightening" is defined as Federal Reserve monetary tightening that was unexpected and/or significant in magnitude. Bear and Bull returns are price returns.
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J.P.Morgan
Asset Management

Equities

Correlations between weekly stock returns and interest rate movements
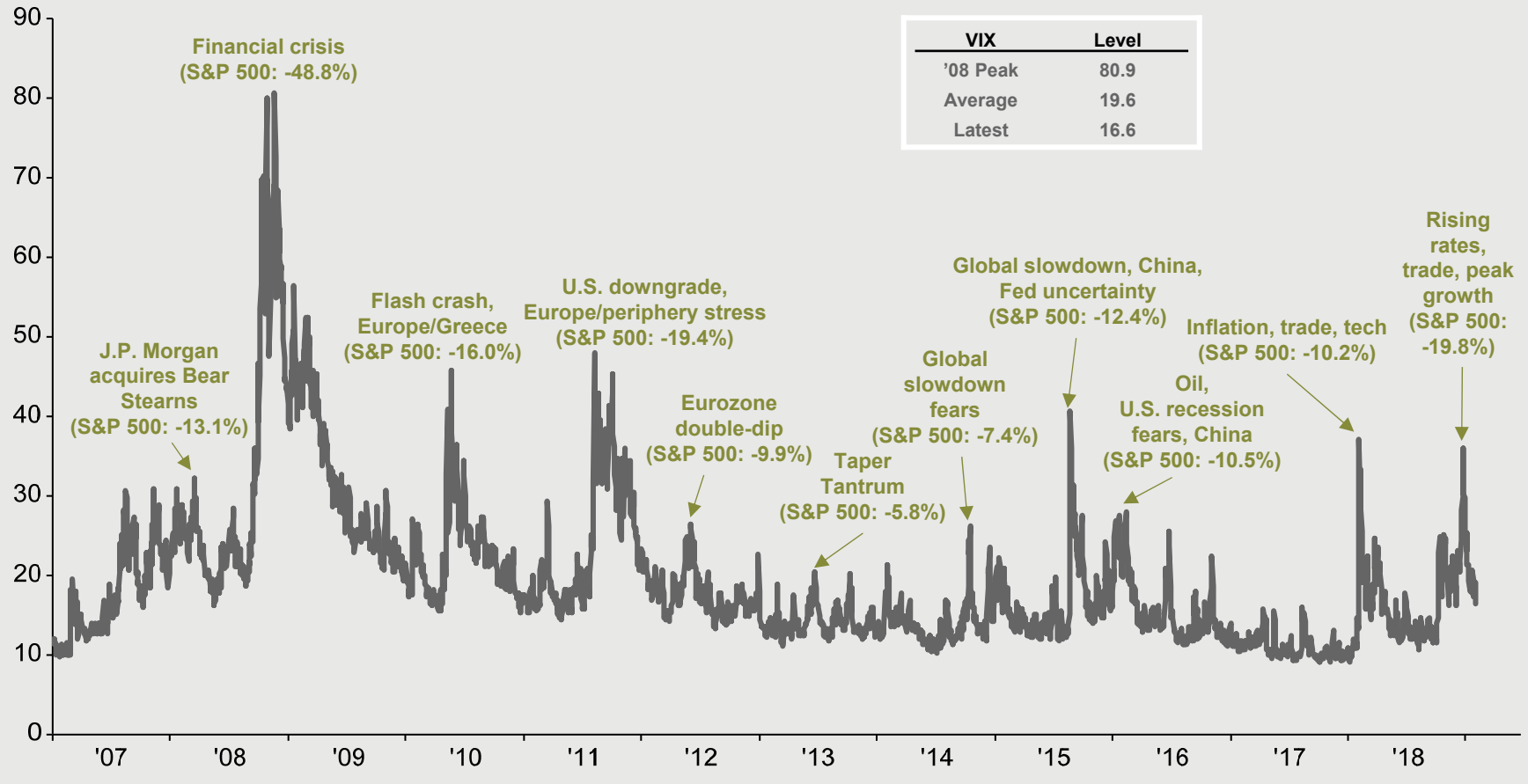Weekly S&P 500 returns, 10-year Treasury yield, rolling 2-year correlation, May 1963 – January 2018

Source: FactSet, FRB, Standard & Poor's, J.P. Morgan Asset Management.
Returns are based on price index only and do not include dividends. Markers represent monthly 2-year correlations only.
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S&P Composite Index
Log scale, annual
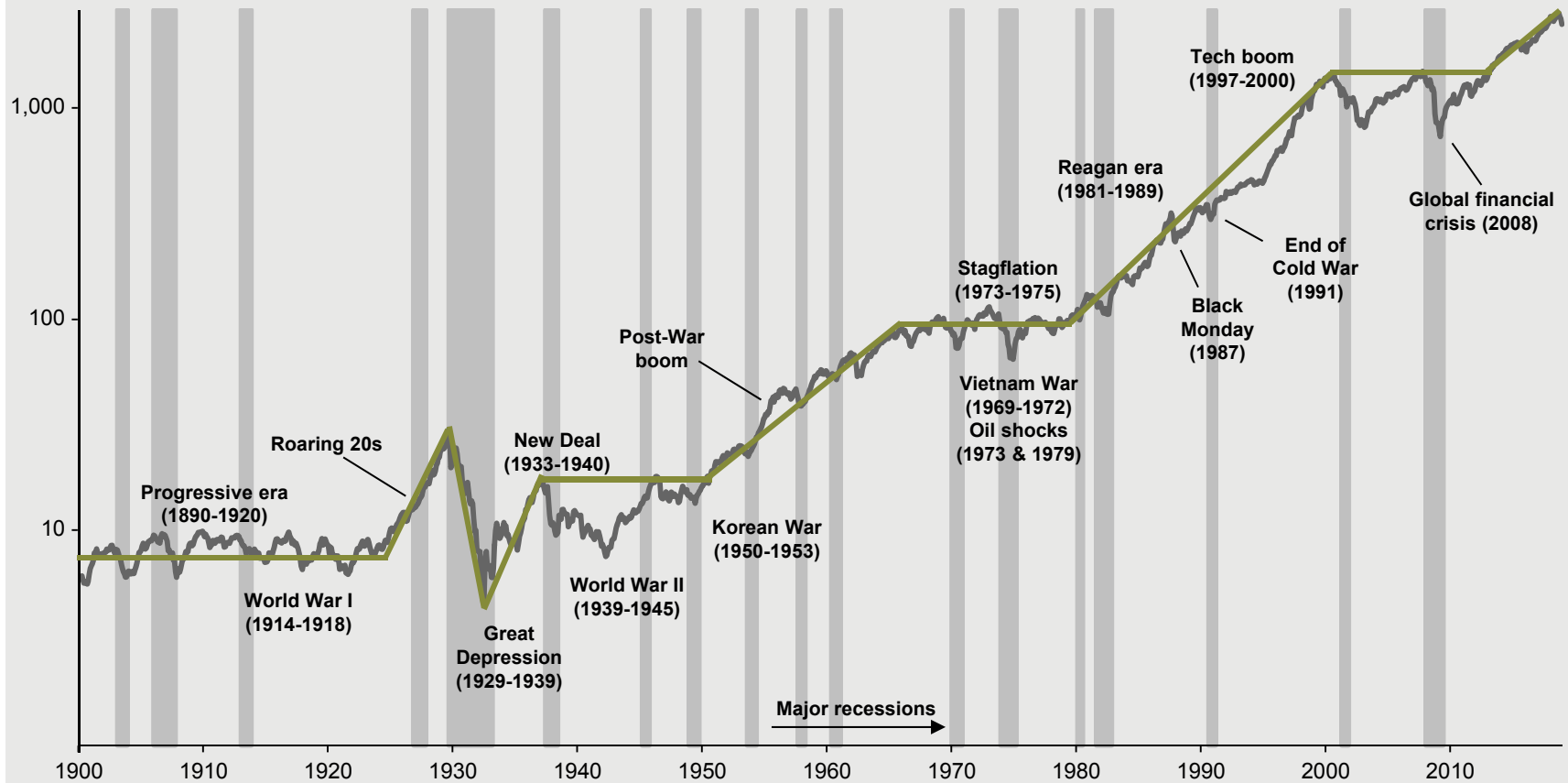
Source: FactSet, NBER, Robert Shiller, J.P. Morgan Asset Management.
Data shown in log scale to best illustrate long-term index patterns. Past performance is not indicative of future returns. Chart is for illustrative purposes only.
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Asset Management

Economy

Length of economic expansions and recessions

Average length (months):

■ Expansions: 48 months
■ Recessions: 15 months
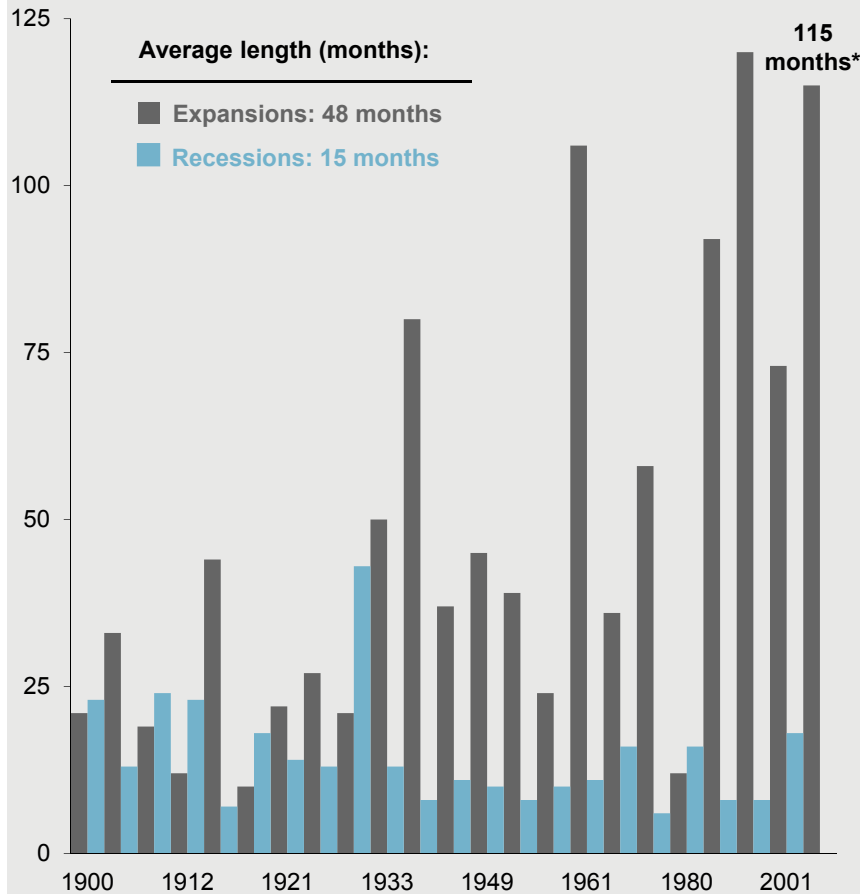
115 months*

Strength of economic expansions
Cumulative real GDP growth since prior peak, percent

Prior expansion peak

4Q48	1Q80
2Q53	3Q81
3Q57	3Q90
2Q60	1Q01
4Q69	4Q07
4Q73	

Number of quarters

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Economy

Real GDP
Year-over-year % change

	Real GDP	3Q18
YoY % chg:		3.0%
QoQ % chg:		3.4%

Average: 2.7%

Expansion average: 2.3%

'73   '78   '83   '88   '93   '98   '03   '08   '13   '18
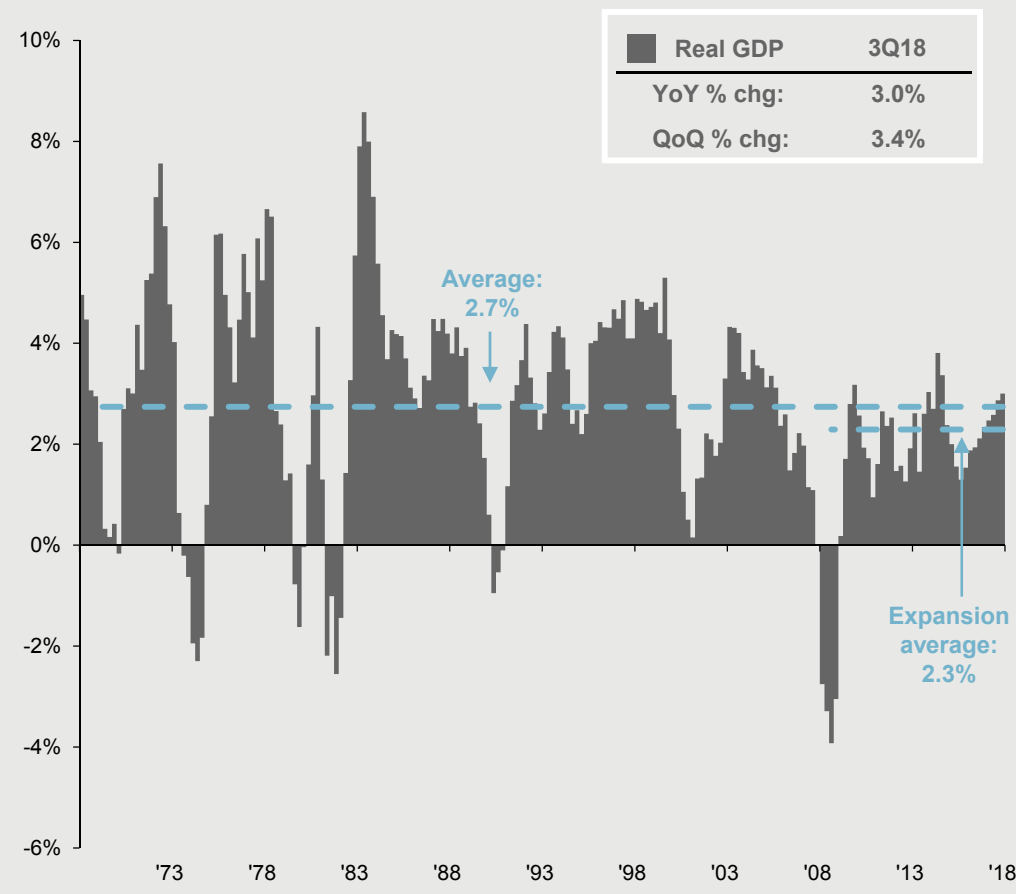
Components of GDP
3Q18 nominal GDP, USD trillions

3.9% Housing

14.1% Investment ex-housing

17.2% Gov't spending

68.0% Consumption

-3.2% Net exports
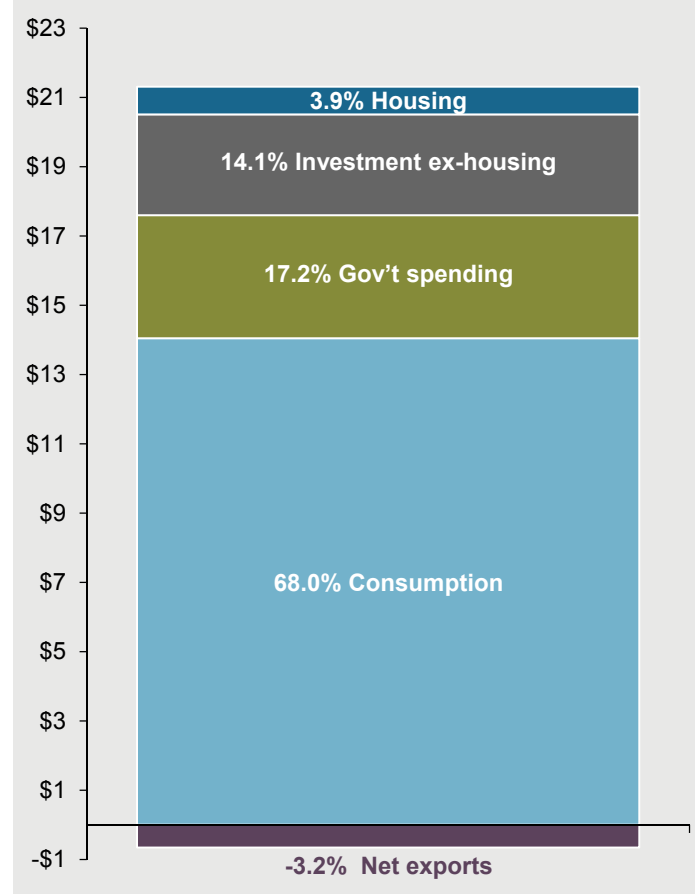
Source: BEA, FactSet, J.P. Morgan Asset Management.
Values may not sum to 100% due to rounding. Quarter-over-quarter percent changes are at an annualized rate. Average represents the annualized growth rate for the full period. Expansion average refers to the period starting in the third quarter of 2009.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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Economy

Consumer balance sheet
3Q18, trillions of dollars outstanding, not seasonally adjusted

Total assets: $124.9tn

3Q07 Peak: $83.8tn
1Q09 Low: $72.0tn

Homes: 23%

Other tangible: 5%

Deposits: 9%

Pension funds: 21%

Other financial assets: 42%

Other non-revolving: 1%
Revolving*: 6%
Auto loans: 7%
Other liabilities: 9%
Student debt: 10%

Total liabilities: $15.9tn

Mortgages: 66%
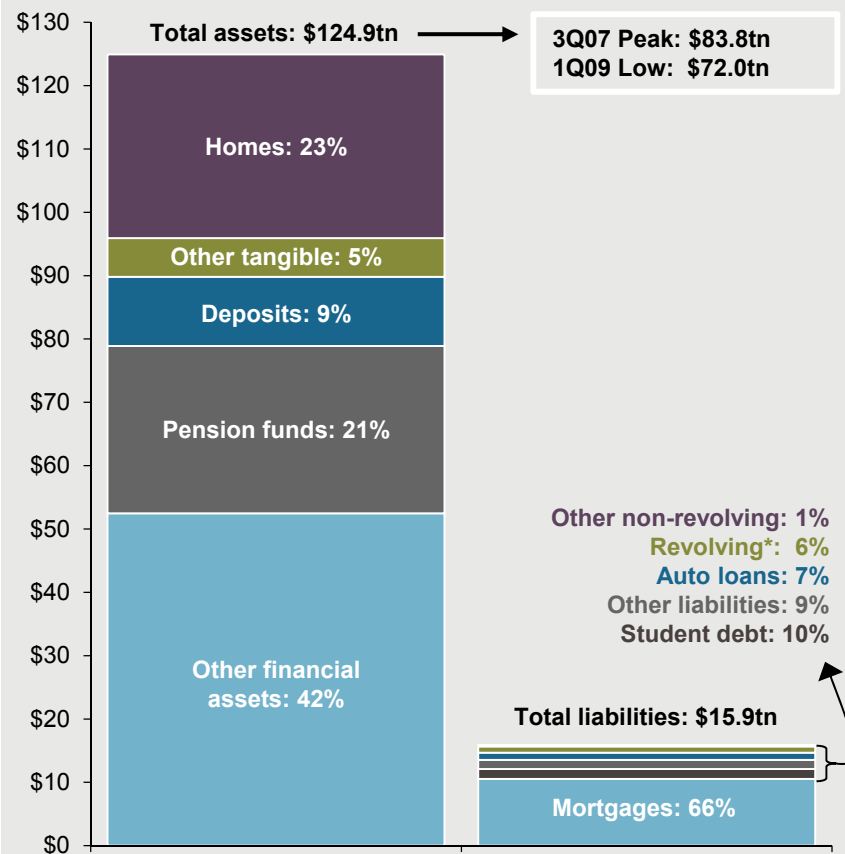
Household debt service ratio
Debt payments as % of disposable personal income, SA

1Q80: 10.6%

4Q07: 13.2%

4Q18**: 9.9%
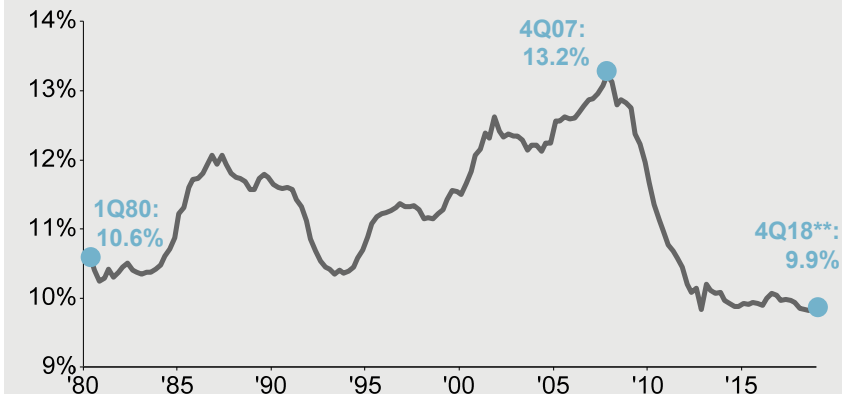
Household net worth
Not seasonally adjusted, USD billions

4Q18**: $106,658

3Q07: $69,465
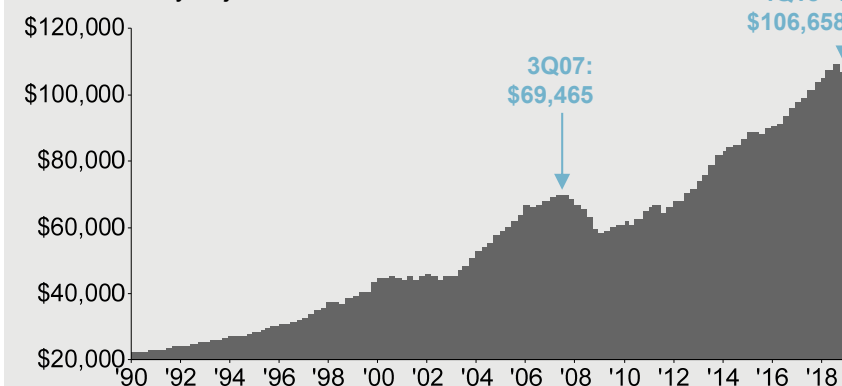
Source: FactSet, FRB, J.P. Morgan Asset Management; (Top and bottom right) BEA.
Data include households and nonprofit organizations. SA – seasonally adjusted. *Revolving includes credit cards. Values may not sum to 100% due to rounding. **4Q18 figures for debt service ratio and household net worth are J.P. Morgan Asset Management estimates.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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Economy

Residential investment as a % of GDP
Quarterly, seasonally adjusted

Recession

Average:
4.4%

3Q18:
3.9%
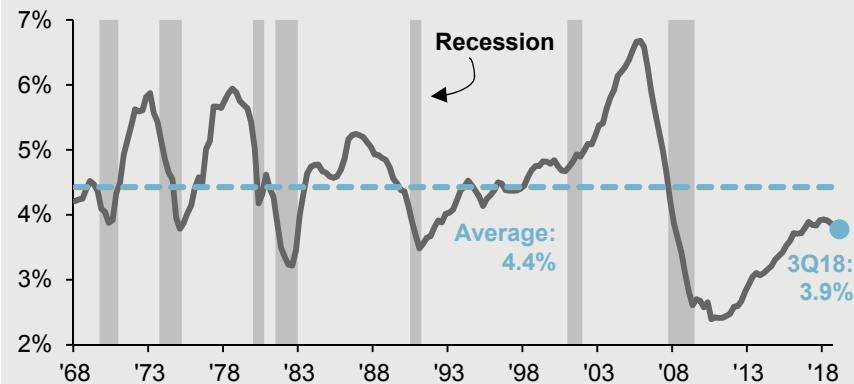
Business fixed investment as a % of GDP
Quarterly, seasonally adjusted

3Q18:
13.6%

Average:
12.8%
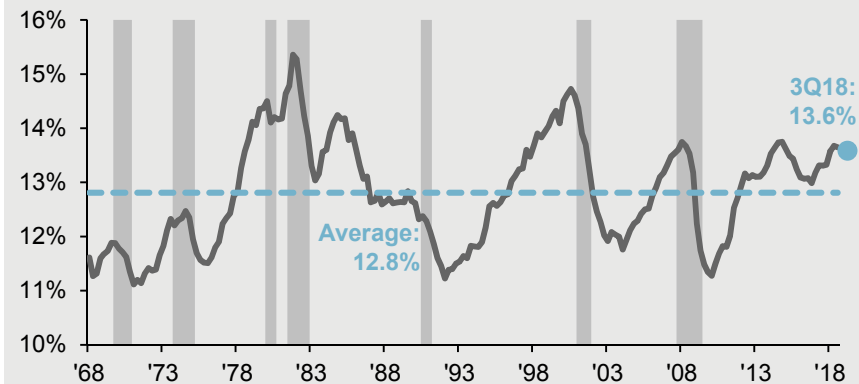
Motor vehicle and parts consumption as a % of GDP
Quarterly, seasonally adjusted

Average:
3.2%

3Q18:
2.5%
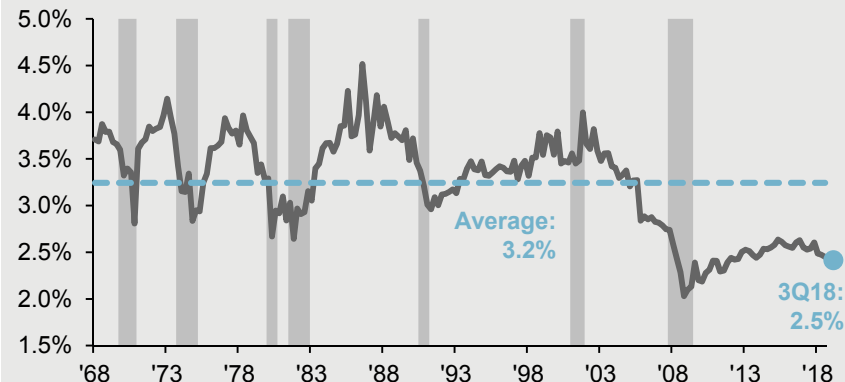
Change in private inventories as a % of GDP
Quarterly, seasonally adjusted
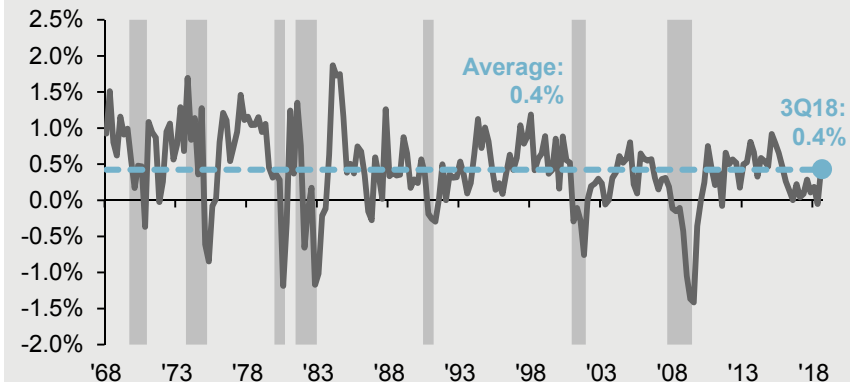
Average:
0.4%

3Q18:
0.4%

Source: BEA, FactSet, J.P. Morgan Asset Management.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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Economy

Growth in working-age population
Percent increase in civilian non-institutional population ages 16-64

Census forecast →

Period	Immigrant	Native born	Total
'78-'87	0.3%	1.0%	1.3%
'88-'97	0.4%	0.6%	1.0%
'98-'07	0.6%	0.8%	1.3%
'08-'17	0.3%	0.2%	0.5%
'18-'27	0.15%	0.04%	0.2%
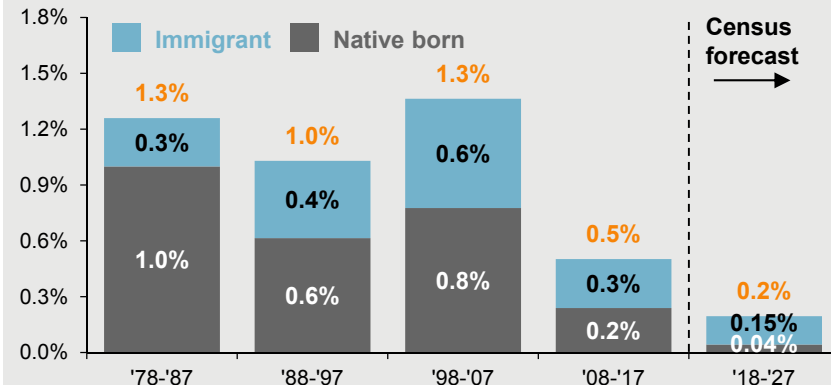
Growth in private non-residential capital stock
Non-residential fixed assets, year-over-year % change

2017: 1.8%
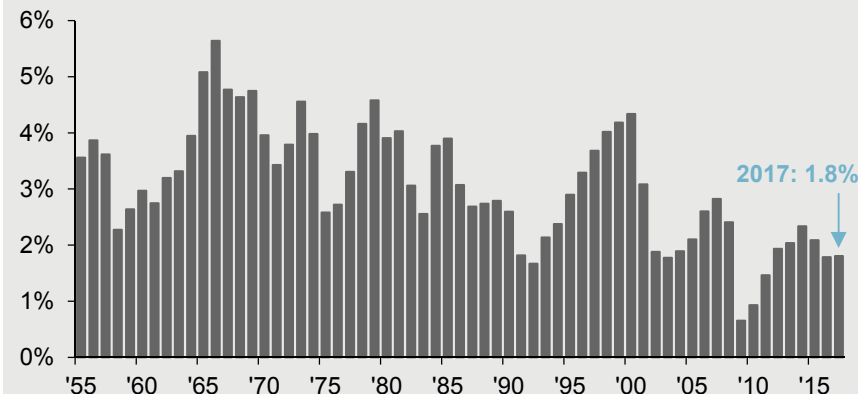
Drivers of GDP growth
Average year-over-year % change

Growth in workers
+ Growth in real output per worker
Growth in real GDP

Period	Growth in real output per worker	Growth in workers	Growth in real GDP
'68-'77	1.0%	2.2%	3.2%
'78-'87	1.3%	1.9%	3.2%
'88-'97	1.6%	1.4%	3.0%
'98-'07	1.9%	1.1%	3.0%
'08-'17	0.9%	0.5%	1.5%
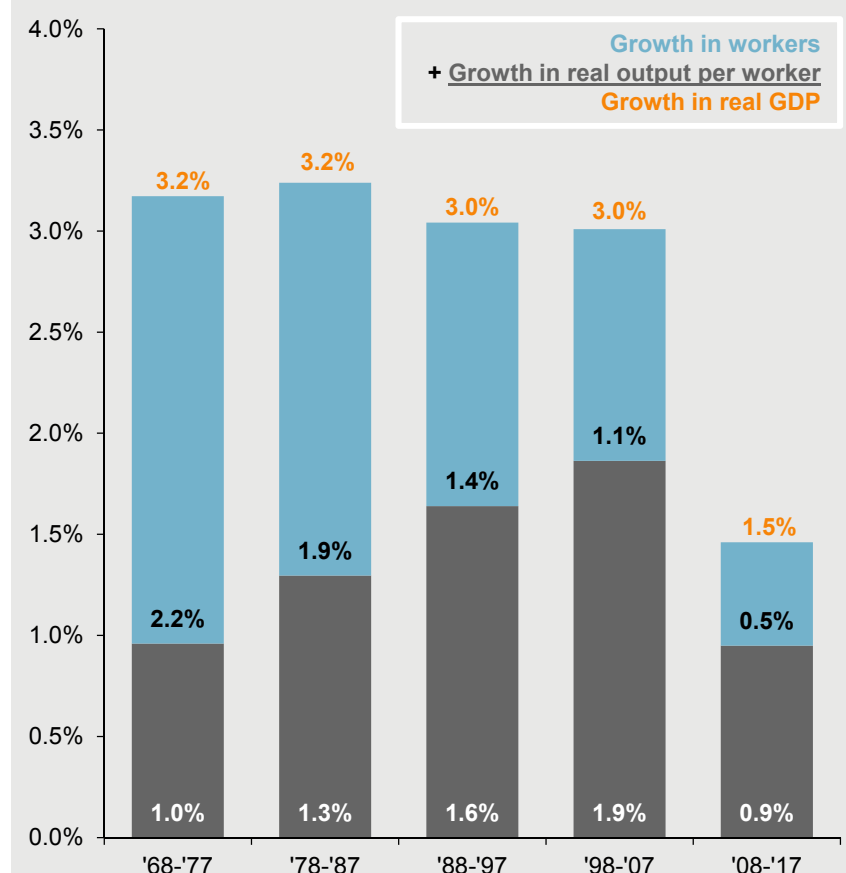
Source: J.P. Morgan Asset Management; (Top left) Census Bureau, DOD, DOJ; (Top left and right) BLS; (Right and bottom left) BEA.
GDP drivers are calculated as the average annualized growth in the 10 years ending in 4Q17. Future working-age population is calculated as the total estimated number of Americans from the Census Bureau, per the September 2018 report, controlled for military enrollment, growth in institutionalized population and demographic trends. Growth in working-age population does not include illegal immigration; DOD Troop Readiness reports used to estimate percent of population enlisted.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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The 2019 federal budget
CBO Baseline forecast, USD trillions

Economy

Total spending: $4.4tn

Other: $482bn (11%)

Net int.: $383bn (9%)

Non-defense disc.: $670bn (15%)

Defense: $664bn (15%)

Social Security: $1,039bn (24%)

Medicare & Medicaid: $1,174bn (27%)

Borrowing: $897bn (20%)

Other: $280bn (6%)

Social insurance: $1,233bn (28%)

Corp.: $245bn (6%)

Income: $1,756bn (40%)

Total government spending | Sources of financing
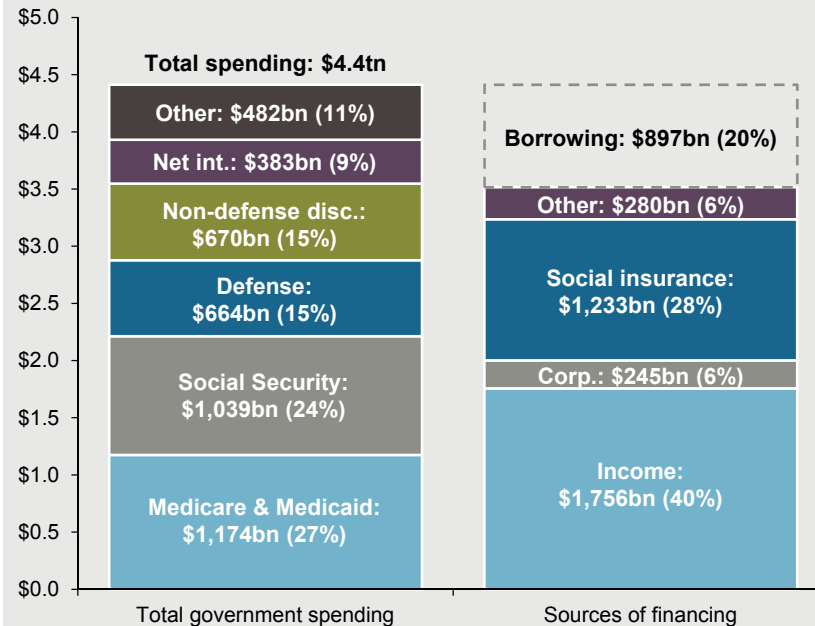
CBO's Baseline assumptions

	2019	'20-'21	'22-'23	'24-'29
Real GDP growth	2.7%	1.7%	1.6%	1.8%
10-year Treasury	3.4%	3.7%	3.7%	3.7%
Headline inflation (CPI)	2.1%	2.6%	2.5%	2.3%
Unemployment	3.5%	3.9%	4.7%	4.8%

Federal budget surplus/deficit
% of GDP, 1990 – 2029, 2019 CBO Baseline

CBO Forecast

2018: -3.8%

2029: -4.4%
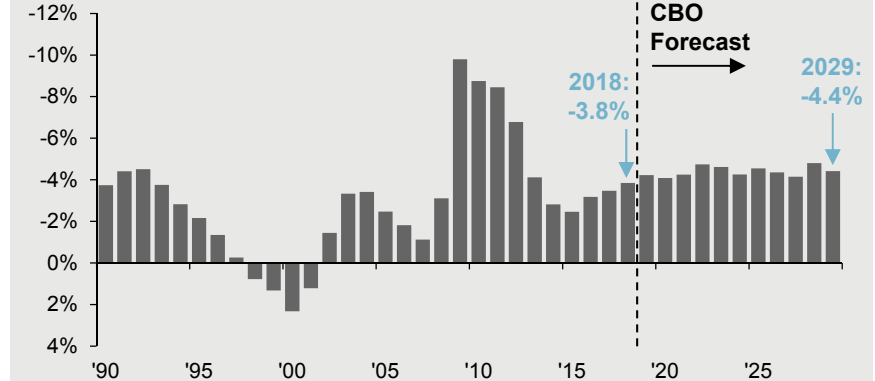
Federal net debt (accumulated deficits)
% of GDP, 1940 – 2029, 2019 CBO Baseline, end of fiscal year
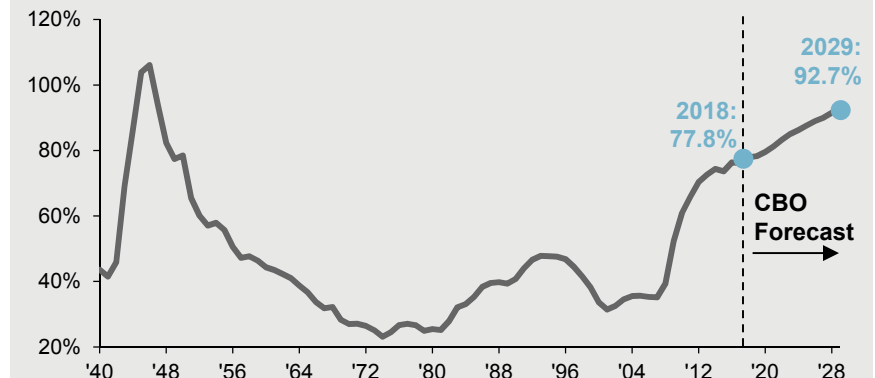
2029: 92.7%

2018: 77.8%

CBO Forecast

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Economy

Civilian unemployment rate and year-over-year wage growth for private production and non-supervisory workers
Seasonally adjusted, percent
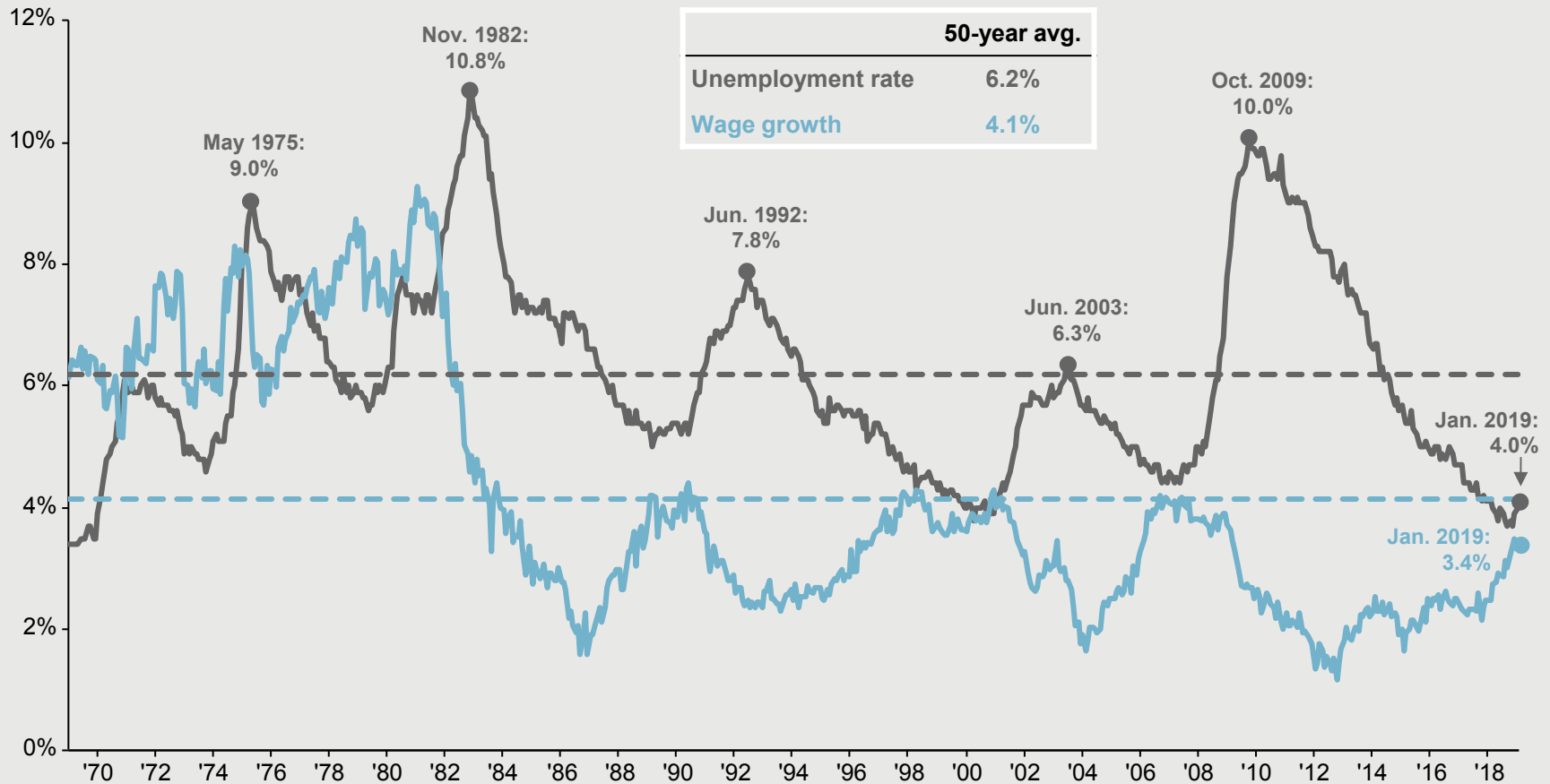
	50-year avg.
Unemployment rate	6.2%
Wage growth	4.1%

Nov. 1982:
10.8%

May 1975:
9.0%

Jun. 1992:
7.8%

Oct. 2009:
10.0%

Jun. 2003:
6.3%

Jan. 2019:
4.0%

Jan. 2019:
3.4%

Source: BLS, FactSet, J.P. Morgan Asset Management.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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Economy

Employment – Total private payroll
Total job gain/loss, thousands

8.8mm jobs lost

20.8 mm jobs gained
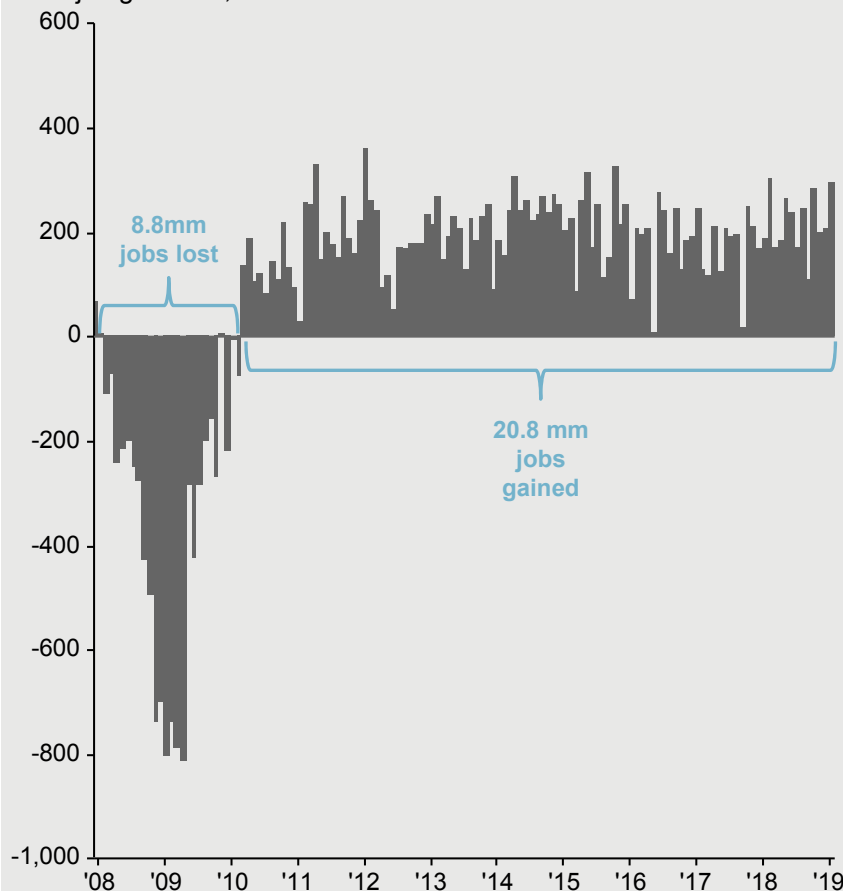
Labor force participation rate decline since 2007 peak*
Population employed or looking for work as a % of total, ages 16+

Aging

Cyclical

Other

Labor force participation rate

Jan. 2019: 63.2%
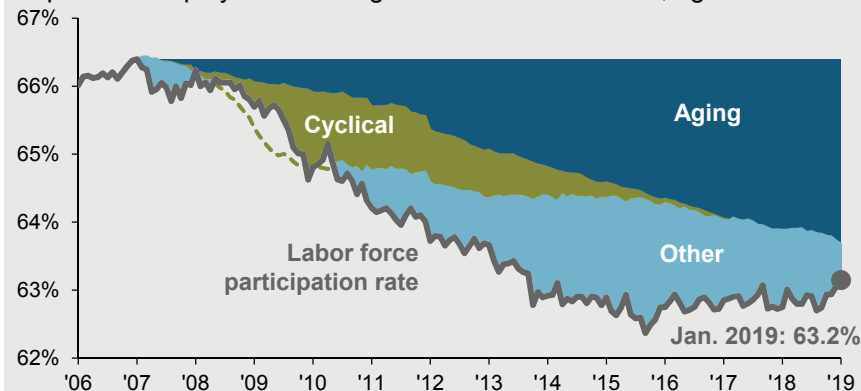
Net job creation since February 2010
Millions of jobs

5.7	4.7	4.3	4.1	2.1	0.0
Info. Fin. & Bus. Svcs.	Mfg. Trade & Trans.	Leisure, Hospt. & Other Svcs.	Educ. & Health Svcs.	Mining & Construct.	Gov't
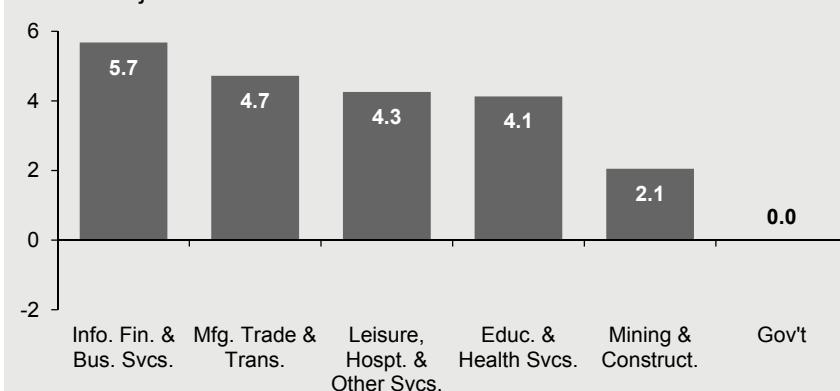
Source: BLS, FactSet, J.P. Morgan Asset Management. (Bottom right) Info. fin. & bus. svcs. = Information, financial activities and professional and business services; Mfg. trade & trans. = Manufacturing, trade, transportation and utilities; Leisure, hospt. & other svcs. = Leisure, hospitality and other services; Educ. & health svcs. = Education & health services; Mining & construct. = Natural resources mining and construction; Gov't = Government. *Aging effect on the labor force participation rate is the estimated number of people who are no longer employed or looking for work because they are retired. Cyclical effect is the estimated number of people who lose their jobs and stop looking for work or do not look for work because of the economic conditions. Other represents the drop in labor force participation from the prior expansion peak that cannot be explained by age or cyclical effects. Estimates for reason of decline in labor force participation rate are made by J.P. Morgan Asset Management.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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Asset Management

Economy

Unemployment rate by education level

Education level	Jan. 2019
Less than high school degree	5.7%
High school no college	3.8%
Some college	3.4%
College or greater	2.4%
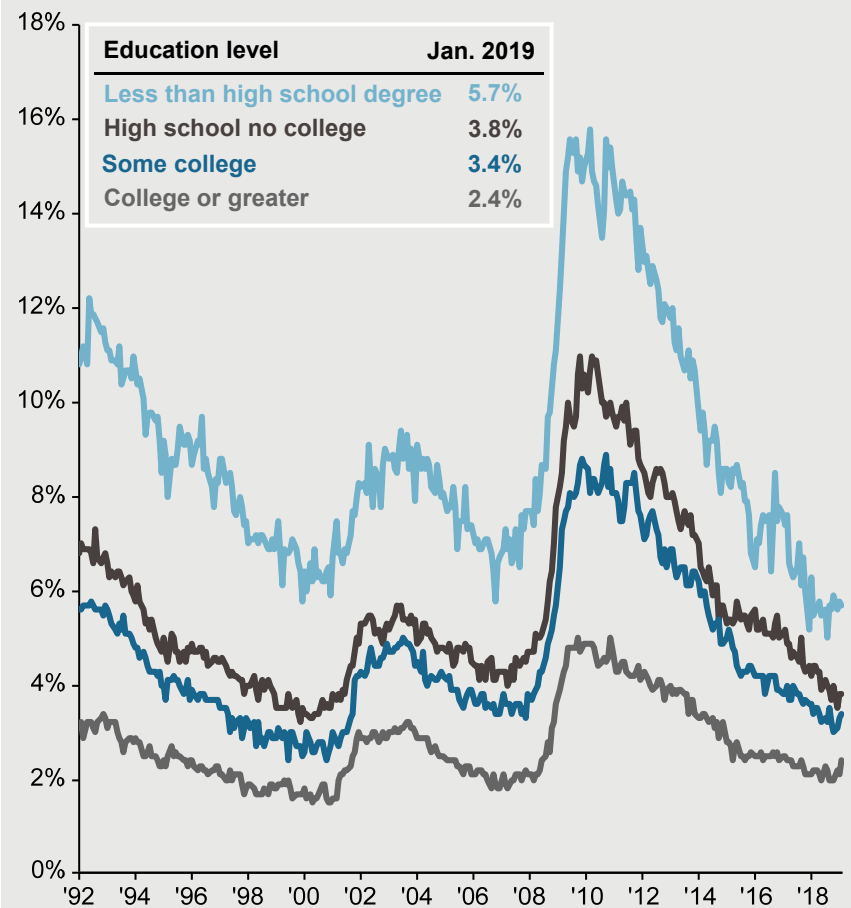
Average annual earnings by highest degree earned
Workers aged 18 and older, 2017

High school graduate: **$38,145**
Bachelor's degree: **$67,763** (+30K)
Advanced degree: **$98,368** (+31K)
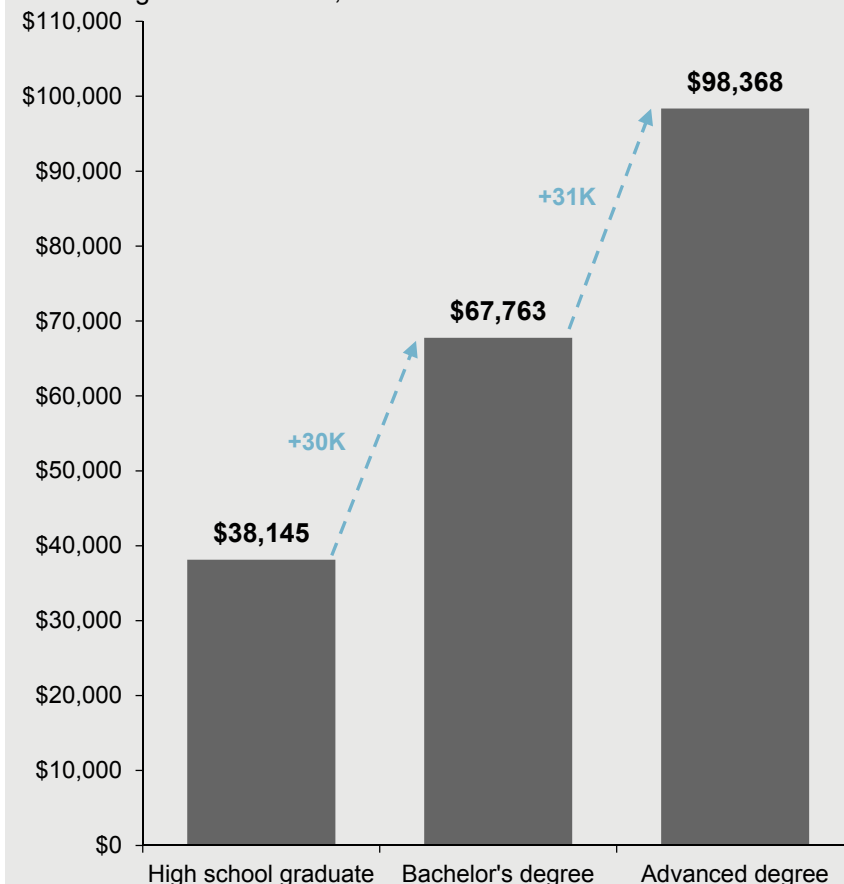
Source: J.P. Morgan Asset Management; (Left) BLS, FactSet; (Right) Census Bureau.
Unemployment rates shown are for civilians aged 25 and older. Earnings by educational attainment comes from the Current Population Survey and is published under historical income tables by person by the Census Bureau.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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CPI and core CPI

% change vs. prior year, seasonally adjusted

	50-yr. avg.	Dec. 2018
Headline CPI	**4.0%**	**1.9%**
Core CPI	**4.0%**	**2.2%**
Food CPI	4.0%	1.6%
Energy CPI	4.4%	-0.2%
Headline PCE deflator	3.5%	1.8% *
Core PCE deflator	3.4%	1.9% *
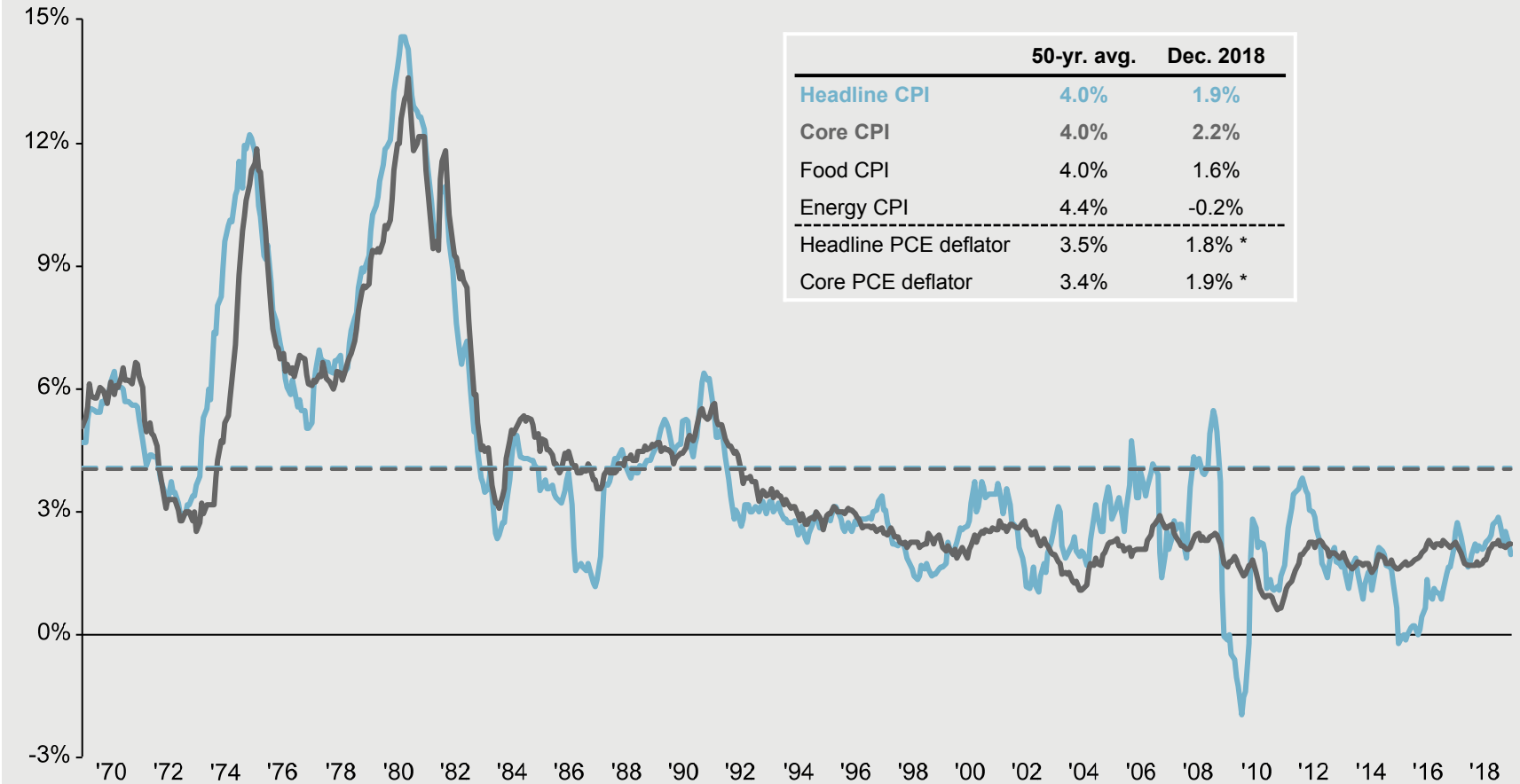
Source: BLS, FactSet, J.P. Morgan Asset Management.
CPI used is CPI-U and values shown are % change vs. one year ago. Core CPI is defined as CPI excluding food and energy prices. The Personal Consumption Expenditure (PCE) deflator employs an evolving chain-weighted basket of consumer expenditures instead of the fixed-weight basket used in CPI calculations. *PCE figures are as of November 2018.
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Economy

The U.S. dollar
Monthly average of major currencies nominal trade-weighted index

Jan. 2019: 91.1
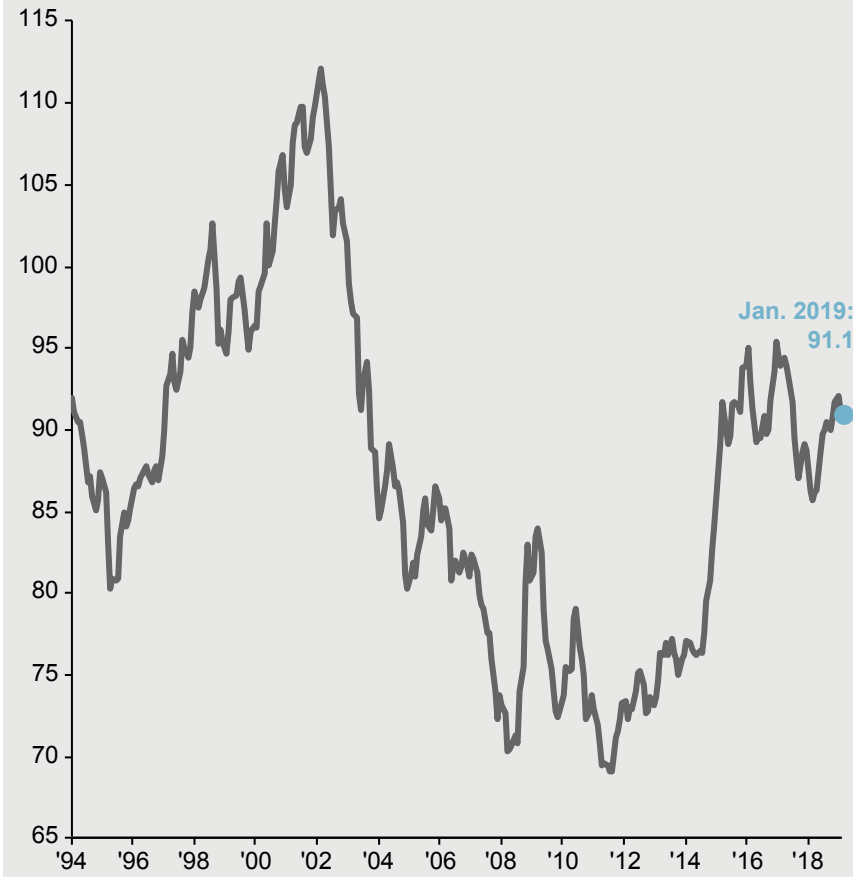
The U.S. trade balance
Current account balance, % of GDP

3Q18: -2.4%
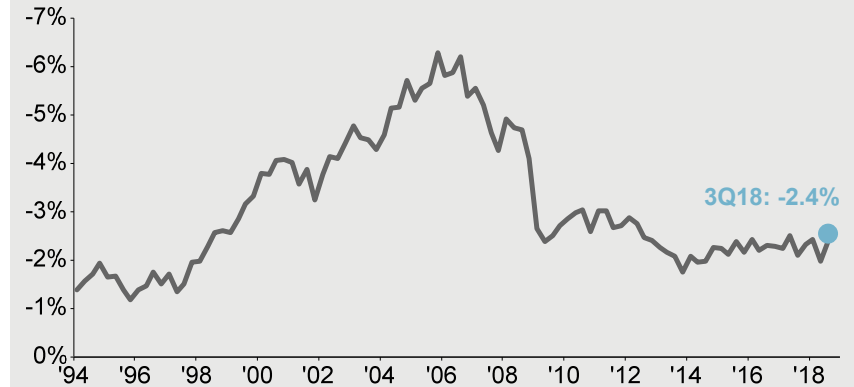
Developed markets interest rate differentials
Difference between U.S. and international 10-year yields*

Jan. 2019: 2.3%
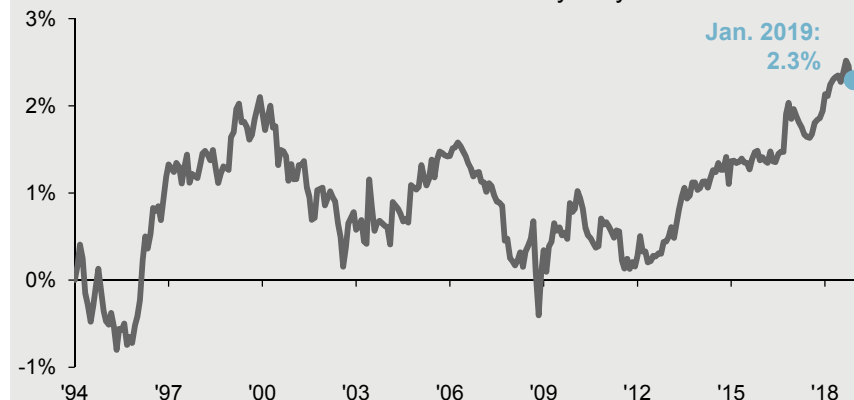
Source: J.P. Morgan Asset Management; (Left) FactSet, Federal Reserve; (Top right) Bureau of Economic Analysis, FactSet; (Bottom right) Tullett Prebon. Currencies in the Trade Weighted U.S. Dollar Major Currencies Index are: Australian dollar, British pound, Canadian dollar, euro, Japanese yen, Swedish krona and Swiss franc. *Interest rate differential is the difference between the 10-year U.S. Treasury yield and a basket of the 10-year yields of each major trading partner (Australia, Canada, Europe, Japan, Sweden, Switzerland and UK). Weights on the basket are calculated using the 10-year average of total government bonds outstanding in each region. Europe is defined as the 19 countries in the euro area.
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Change in production and consumption of liquid fuels
Production, consumption and inventories, millions of barrels per day

Production	2016	2017	2018	2019*	2020*	Growth since '16
U.S.	14.8	15.7	17.9	19.6	20.8	40.5%
OPEC	37.4	37.3	37.2	36.2	36.1	-3.7%
Russia	11.3	11.2	11.4	11.5	11.7	3.7%
Global	**97.4**	**98.0**	**100.4**	**101.8**	**103.5**	**6.3%**
Consumption						
U.S.	19.7	20.0	20.5	20.8	21.0	6.7%
China	12.8	13.4	13.9	14.3	14.8	15.9%
Global	**96.9**	**98.6**	**100.0**	**101.5**	**103.1**	**6.3%**
Inventory Change	0.5	-0.5	0.4	0.3	0.4	

U.S. crude oil inventories and rig count**
Million barrels, number of active rigs
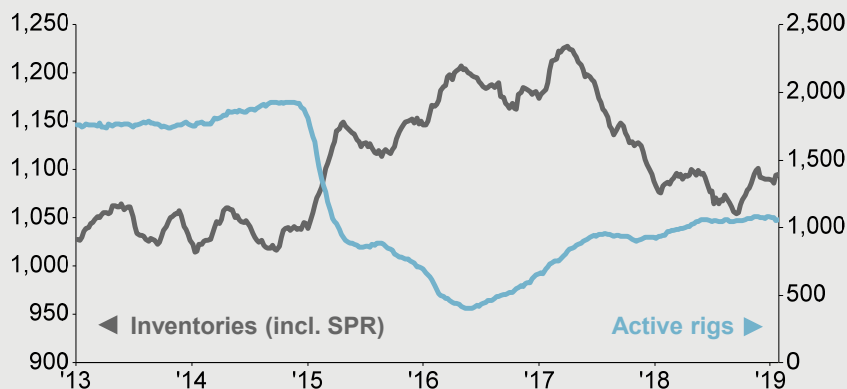
Price of oil
WTI crude, nominal prices, USD/barrel

Source: J.P. Morgan Asset Management; (Top and bottom left) EIA; (Right) FactSet; (Bottom left) Baker Hughes.
*Forecasts are from the January 2019 EIA Short-Term Energy Outlook and start in 2019. **U.S. crude oil inventories include the Strategic Petroleum Reserve (SPR). Active rig count includes both natural gas and oil rigs. WTI crude prices are monthly averages in USD using continuous contract NYM prices.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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Asset Management

Economy

Federal funds rate expectations
FOMC and market expectations for the federal funds rate

Legend:
- Federal funds rate
- FOMC year-end estimates
- Market expectations on 12/19/18
- FOMC long-run projection*

Chart annotations: 2.38%, 2.88%, 3.13%, 3.13%, 2.53%, 2.39%, 2.35%, 2.75%

FOMC December 2018 forecasts
Percent

	2018	2019	2020	2021	Long run*
Change in real GDP, 4Q to 4Q	3.0	2.3	2.0	1.8	1.9
Unemployment rate, 4Q	3.7	3.5	3.6	3.8	4.4
PCE inflation, 4Q to 4Q	1.9	1.9	2.1	2.1	2.0
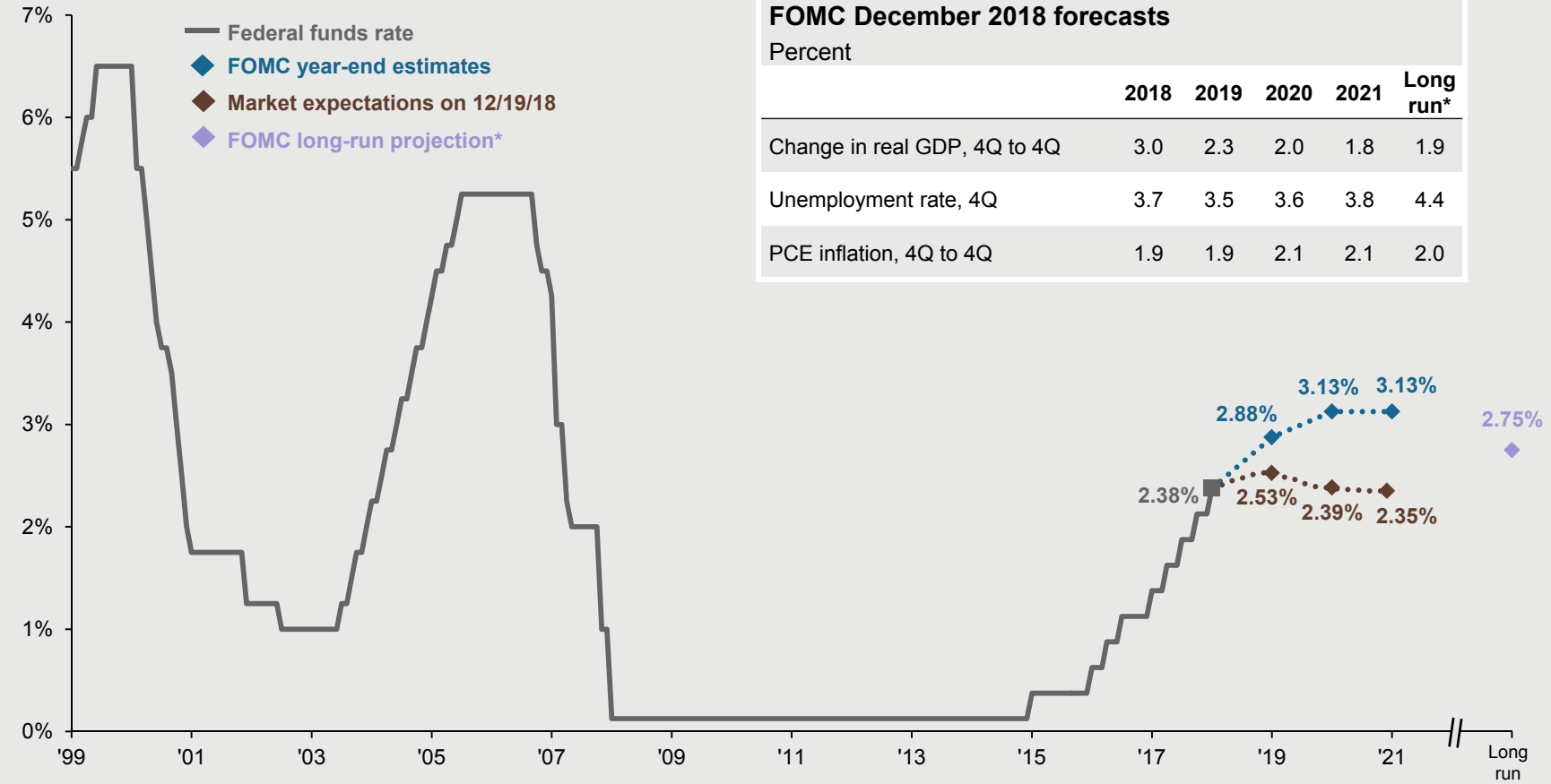
Source: Bloomberg, FactSet, Federal Reserve, J.P. Morgan Asset Management.
Market expectations are the federal funds rates priced into the fed futures market as of the date of the December 2018 FOMC meeting and are through November 2021. *Long-run projections are the rates of growth, unemployment and inflation to which a policymaker expects the economy to converge over the next five to six years in absence of further shocks and under appropriate monetary policy.
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Fixed income

Nominal and real 10-year Treasury yields

Sep. 30, 1981:
15.84%

	Average (1958- YTD 2019)	1/31/2019
Nominal yields	**6.03%**	**2.63%**
Real yields	**2.35%**	**0.42%**
Inflation	**3.68%**	**2.21%**

Nominal 10-year
Treasury yield

Real 10-year
Treasury yield

Jan. 31, 2019:
2.63%

Jan. 31, 2019:
0.42%
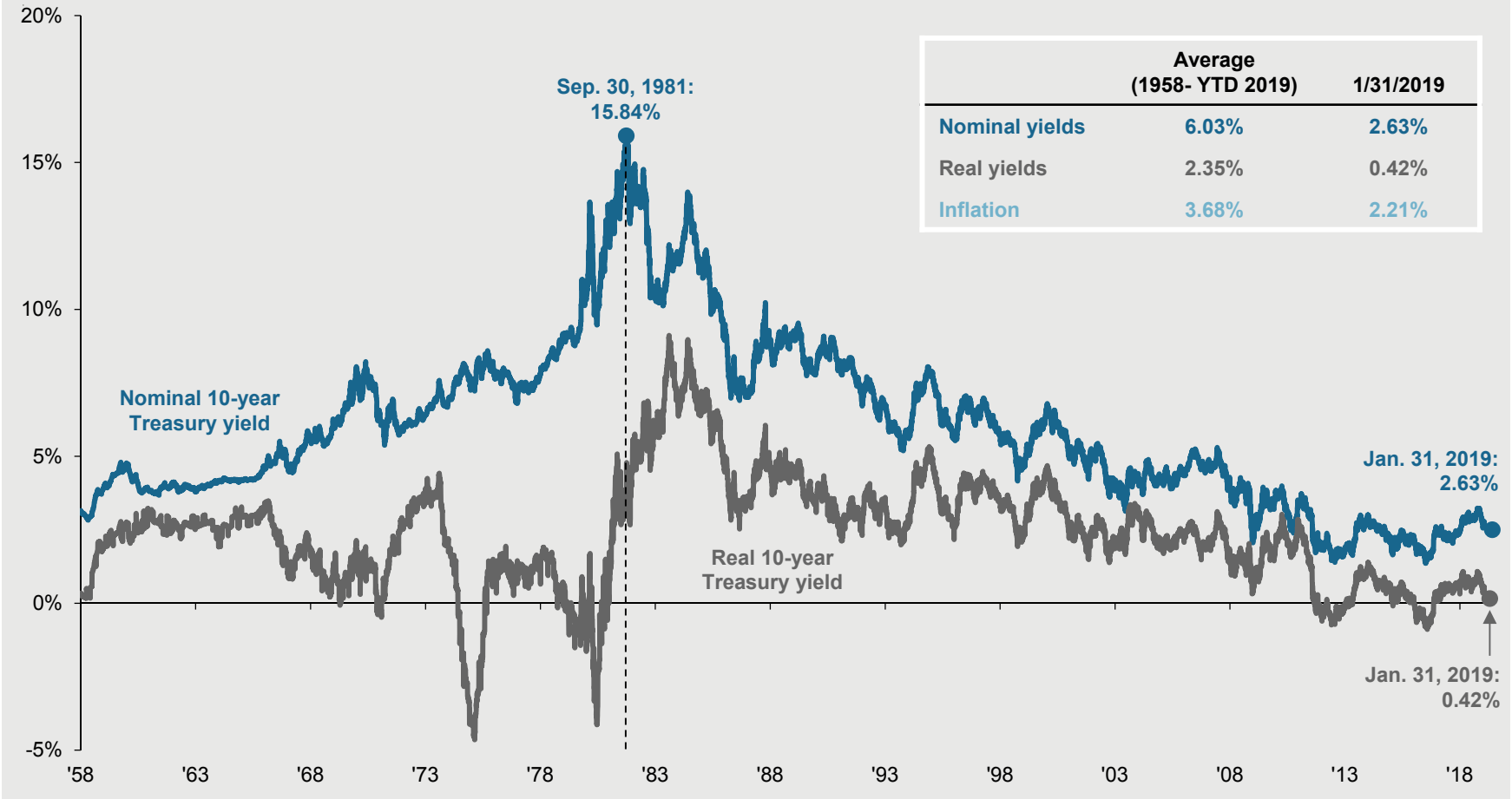
Source: BLS, FactSet, Federal Reserve, J.P. Morgan Asset Management.
Real 10-year Treasury yields are calculated as the daily Treasury yield less year-over-year core CPI inflation for that month except for January 2019,
where real yields are calculated by subtracting out December 2018 year-over-year core inflation.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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U.S. yield curve steepness
Short-term yield versus long-term yield spread*

Recession

- Inversion without recession
- Inversion prior to recession

Rate hiking cycle

Date of inversion prior to recession	Time to recession
April 11, 1968	19 months
March 9, 1973	7 months
August 18, 1978	16 months
September 12, 1980	9 months
December 13, 1988	18 months
February 2, 2000	12 months
June 8, 2006	17 months
Average	**14 months**

Fixed income
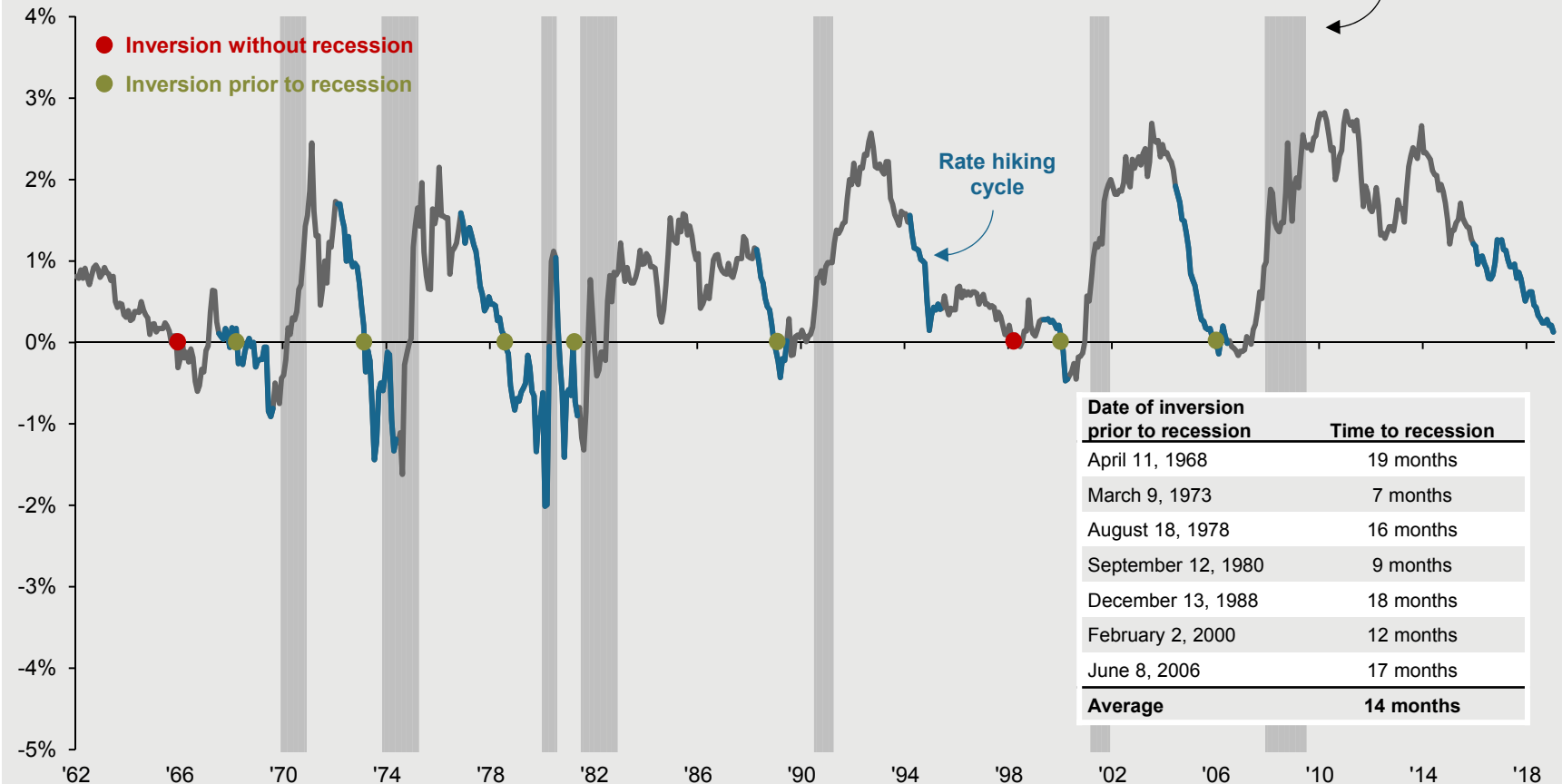
Source: FactSet, Federal Reserve, J.P. Morgan Asset Management. *From January 1962 to May 1976 short-term bond is U.S. 1-year bond. Short-dated bond is 2-year from June 1976. Time to recession is calculated as the time between the final sustained inversion of the yield curve prior to recession, and the onset of recession.
Guide to the Markets – U.S. Data are as of January 31, 2019.

J.P.Morgan
Asset Management

Fixed income

Duration and yield of the Bloomberg Barclays U.S. Aggregate Index
Years (left) and yield to worst (right)

	Average	Jan. 31, 2019
Yield (right)	5.04%	3.15%
Duration (left)	4.8 years	5.9 years

Higher duration = more sensitive to interest rates

Lower duration = less sensitive to interest rates
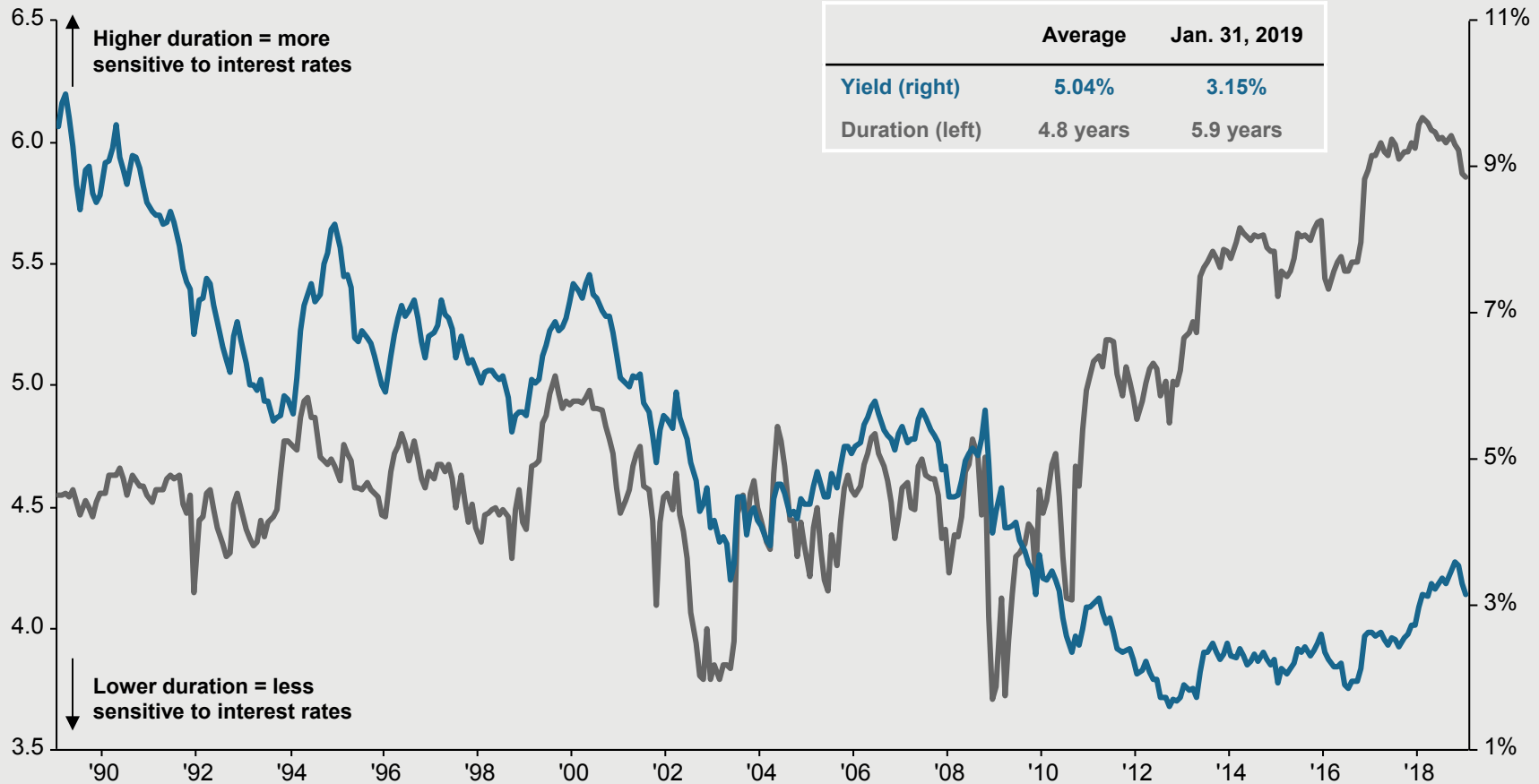
Source: Barclays, Bloomberg, FactSet, J.P. Morgan Asset Management.
Duration measures the sensitivity of the price of a bond to a change in interest rates. The higher the duration the greater the sensitivity of the bond is to movements in the interest rate. Yield is yield to worst.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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Asset Management

Fixed income

U.S. Treasuries	Yield		Return				
	1/31/2019	12/31/2018	2019	Avg. Maturity	Correlation to 10-year	Correlation to S&P 500	
2-Year	2.50%	2.48%	0.27%	2 years	0.72	-0.19	
5-Year	2.53%	2.51%	0.52%	5	0.92	-0.26	
TIPS	0.78%	0.98%	1.35%	10	0.66	0.10	
10-Year	2.63%	2.69%	0.73%	10	1.00	-0.37	
30-Year	2.98%	3.02%	0.61%	30	0.92	-0.42	
Sector							
Convertibles	7.03%	6.54%	7.90%	-	-0.34	0.90	
Floating Rate	3.97%	4.26%	1.13%	2.9	-0.38	0.44	
High Yield	6.90%	7.95%	4.52%	5.8	-0.23	0.72	
MBS	3.28%	3.39%	0.79%	6.9	0.79	-0.13	
Broad Market	3.15%	3.28%	1.06%	8.2	0.87	-0.08	
Corporates	3.91%	4.20%	2.35%	10.8	0.47	0.25	
Municipals	2.39%	2.53%	1.09%	10.0	0.68	-0.05	

Impact of a 1% rise in interest rates
Assumes a parallel shift in the yield curve and steady spreads
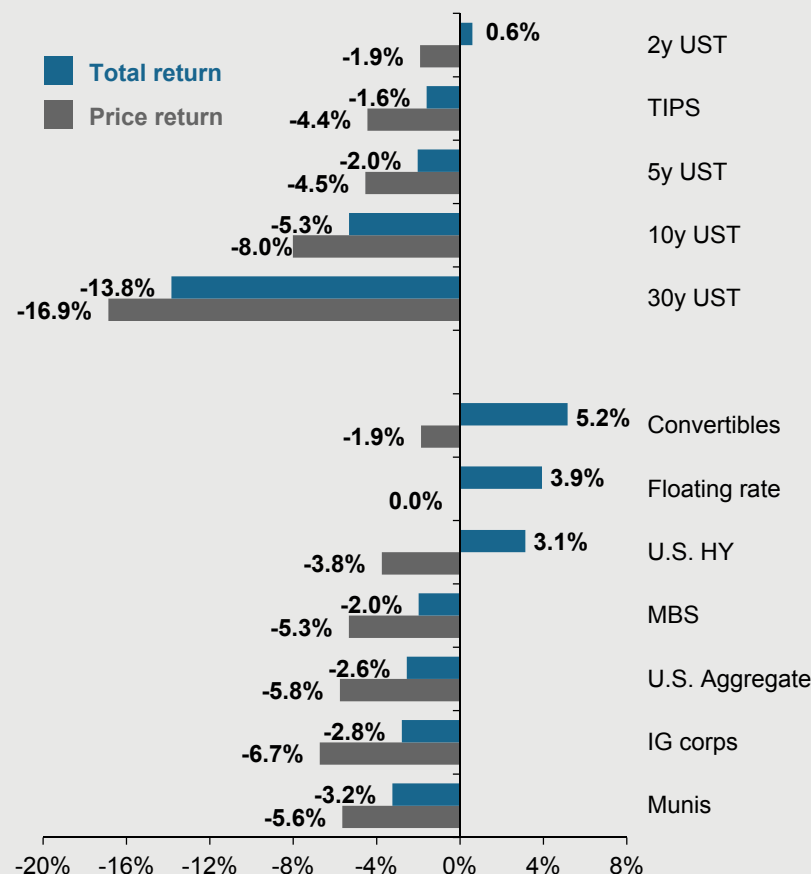
Total return (blue)
Price return (grey)

	Total return	Price return
2y UST	0.6%	-1.9%
TIPS	-1.6%	-4.4%
5y UST	-2.0%	-4.5%
10y UST	-5.3%	-8.0%
30y UST	-13.8%	-16.9%
Convertibles	5.2%	-1.9%
Floating rate	3.9%	0.0%
U.S. HY	3.1%	-3.8%
MBS	-2.0%	-5.3%
U.S. Aggregate	-2.6%	-5.8%
IG corps	-2.8%	-6.7%
Munis	-3.2%	-5.6%

Axis: -20% -16% -12% -8% -4% 0% 4% 8%

J.P.Morgan Asset Management

Correlation of fixed income sectors vs. S&P 500 and yields
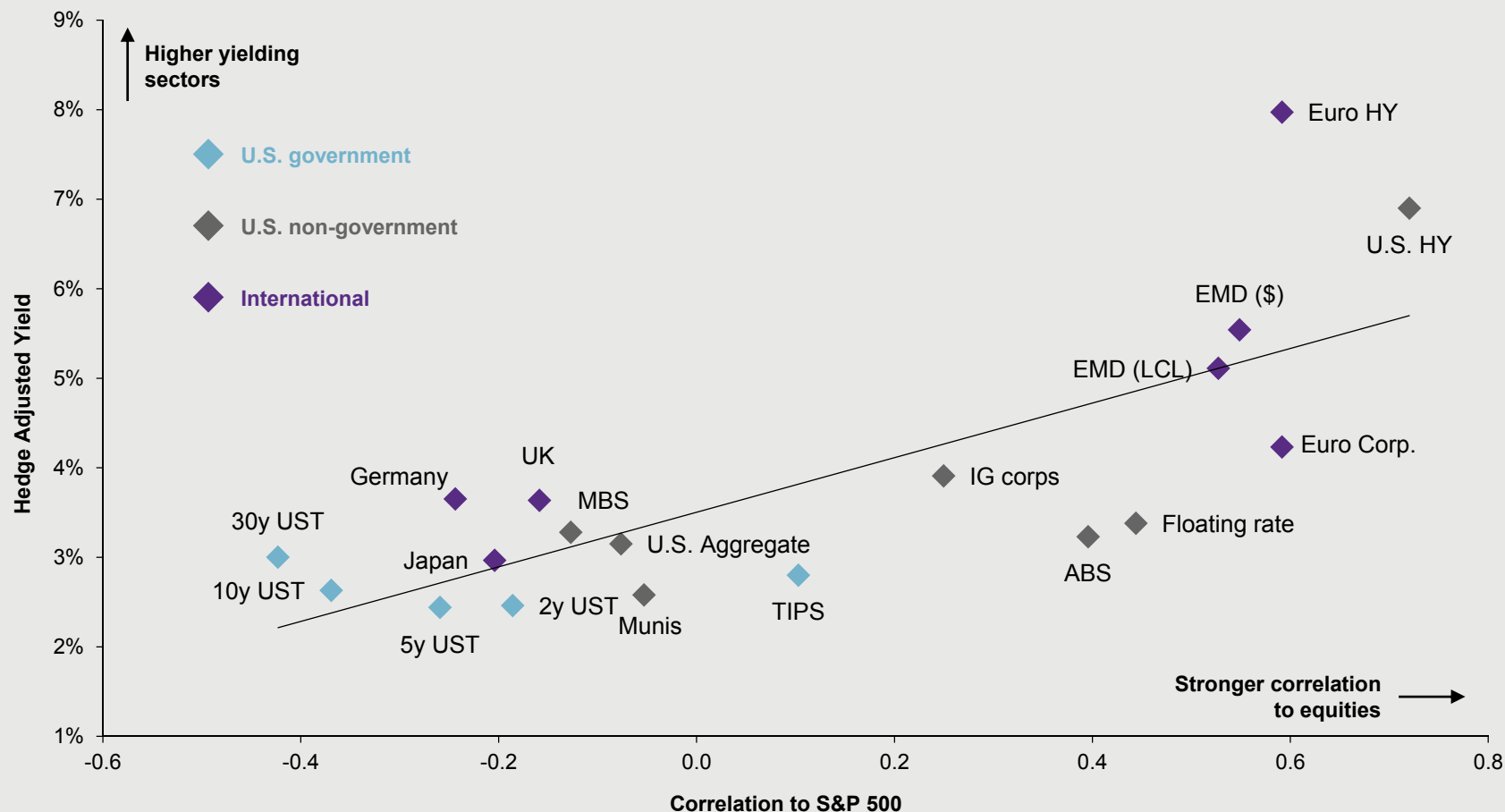
Source: Bloomberg, FactSet, ICE, J.P. Morgan Asset Management. Sectors shown above are provided by Bloomberg and are represented by – Barclay's U.S. Aggregate; MBS: U.S. Aggregate Securitized - MBS; ABS: Barclays ABS + CMBS; IG corps: U.S. Corporates; Municipals: Muni Bond 10-year; U.S. High Yield: Corporate High Yield; TIPS: Treasury Inflation-Protection Securities (TIPS); Floating Rate: FRN (BBB); EMD ($): Barclay's EM USD Aggregate; EMD (LCL): Barclay's EM Local Currency Government Index; European Corporates: Bloomberg Barclays Euro Aggregate Corporate Index; Euro HY: Bloomberg Barclays Pan-European High Yield index. Country yields are represented by the global aggregate for each country except where noted. Yield and return information based on bellwethers for Treasury securities. Correlations are based on 10-years of monthly returns for all sectors. International fixed income sector correlations are in hedged U.S. dollar returns except EMD local index. Yields for all indices are in hedged returns using three-month LIBOR rates between the U.S. and international LIBOR.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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Default rate and spread to worst
Percent

	30-yr. avg.	Latest
Default rate	3.73%	1.77%
Spread to worst	5.79%	4.73%

Recession →
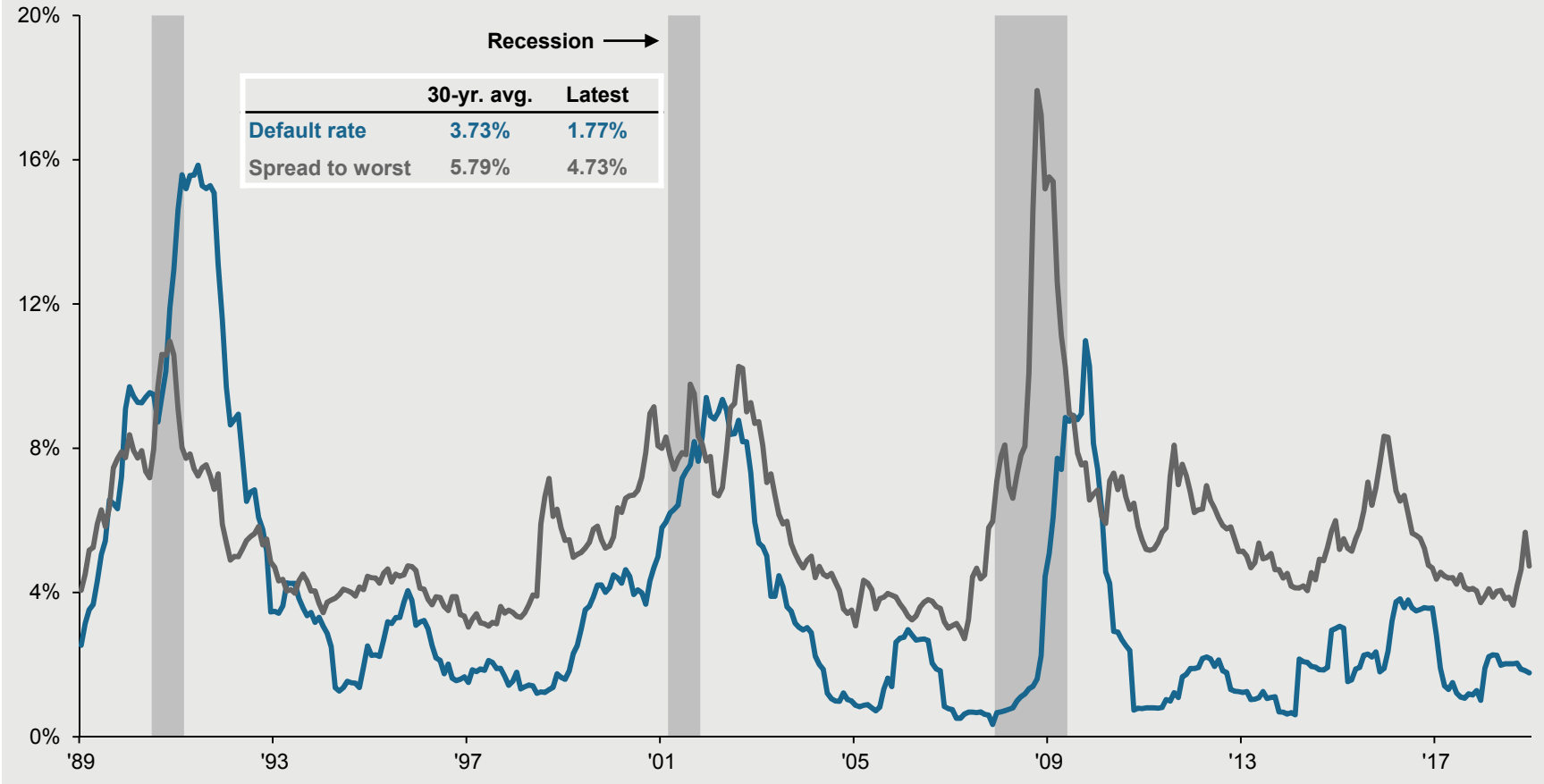
Source: J.P. Morgan Global Economic Research, J.P. Morgan Asset Management.
Default rates are defined as the par value percentage of the total market trading at or below 50% of par value and include any Chapter 11 filing, prepackaged filing or missed interest payments. Spreads indicated are benchmark yield to worst less comparable maturity Treasury yields. Yield to worst is defined as the lowest potential yield that can be received on a bond without the issuer actually defaulting and reflects the possibility of the bond being called at an unfavorable time for the holder. High yield is represented by the J.P. Morgan Domestic High Yield Index.
Guide to the Markets – U.S. Data are as of January 31, 2019.

J.P.Morgan
Asset Management

Fixed income

Fixed income

Global central bank balance sheet expansion*
USD billions, 12-month rolling flow

Legend:
- Fed
- BoJ
- ECB
- BoE
- Total
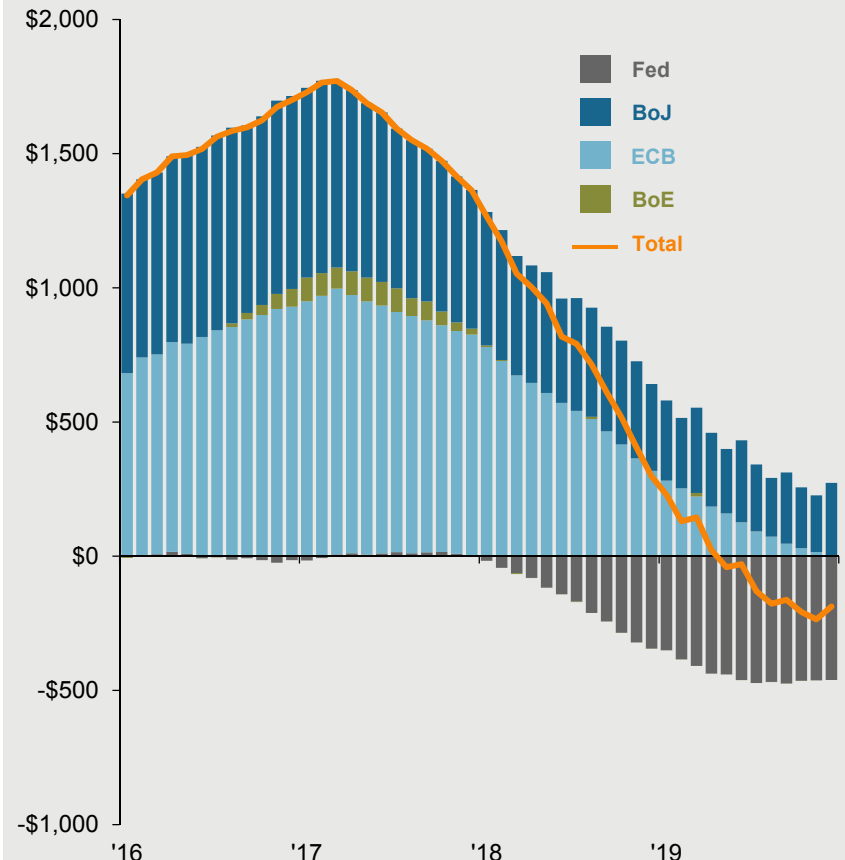
Number of rate changes by top-10 DM central banks**

Legend:
- Cuts
- Hikes
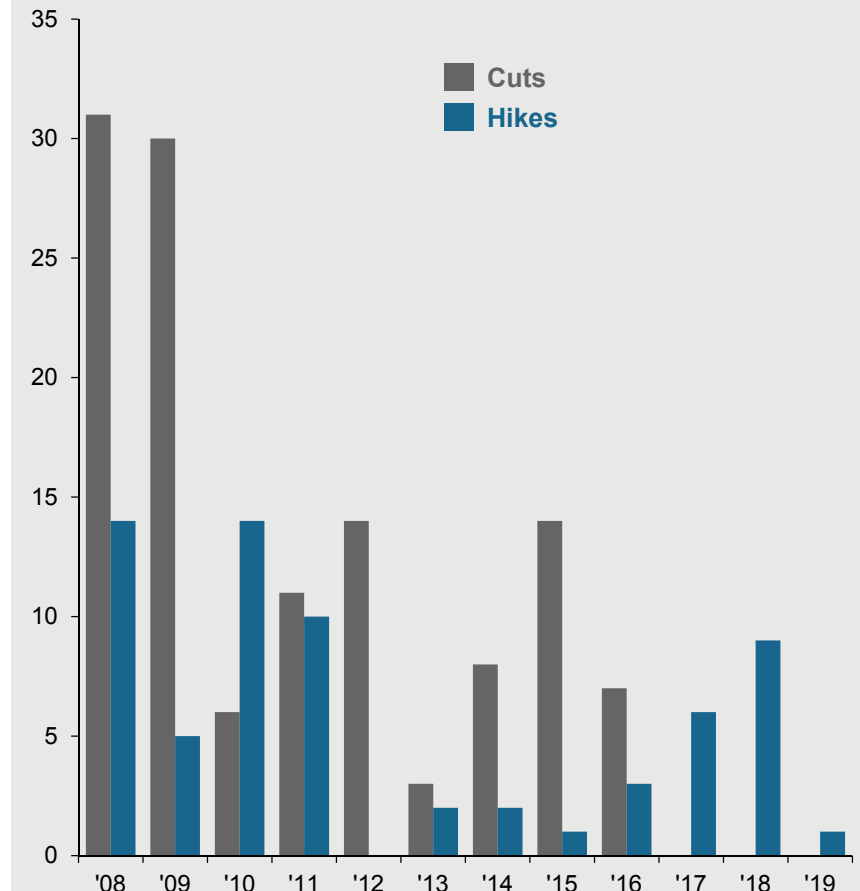
Source: J.P. Morgan Asset Management; (Left) Bank of England, Bank of Japan, European Central Bank, FactSet, Federal Reserve System, J.P. Morgan Global Economic Research; (Right) Bloomberg. *Includes the Bank of Japan (BoJ), Bank of England (BoE), European Central Bank (ECB) and Federal Reserve. Balance sheet expansion assumes no more quantitative easing (QE) from BoE; tapering of ECB from 30bn to 15bn EUR in October 2018 and 0 in January 2019; tapering of BoJ QE to 30trn JPY ann. for 2019; and tapering of Fed QE per the September 2017 FOMC statement, incorporating a maturity schedule. **Including: Australia, Canada, Denmark, Eurozone, Japan, Norway, Sweden, Switzerland, UK and U.S.
Guide to the Markets – U.S. Data are as of January 31, 2019.

J.P.Morgan
Asset Management

Fixed income

Aggregates	Yield		2019 Return			
	1/31/2019	12/31/2018	Local	USD	Duration	Correl to 10-year
U.S.	3.15%	3.28%	1.06%	1.06%	5.9 years	0.87
Gbl. ex-U.S.	1.19%	1.26%	-	1.83%	7.7	0.26
Japan	0.14%	0.18%	0.45%	1.26%	9.3	0.49
Germany	0.57%	0.62%	0.81%	1.19%	6.4	0.06
UK	1.81%	1.92%	0.63%	3.93%	10.2	0.16
Italy	1.83%	2.00%	1.17%	1.55%	6.4	-0.08
Spain	0.89%	0.98%	1.34%	1.72%	7.0	-0.07
Sector						
Euro Corp.	1.15%	1.30%	1.09%	1.47%	5.0 years	0.15
Euro HY	4.89%	5.33%	2.45%	2.83%	4.1	-0.28
EMD ($)	6.24%	6.86%	-	4.41%	6.6	0.19
EMD (LCL)	6.25%	6.46%	1.76%	5.46%	5.2	0.00
EM Corp.	5.65%	6.14%	-	2.72%	5.4	-0.01

Global bond market
USD trillions

	12/31/89	6/30/18
U.S.	61.3%	36.9%
Dev. ex-U.S.	37.8%	41.7%
EM	1.0%	21.4%

EM: $23tn

Developed ex-U.S.: $46tn

U.S.: $40tn
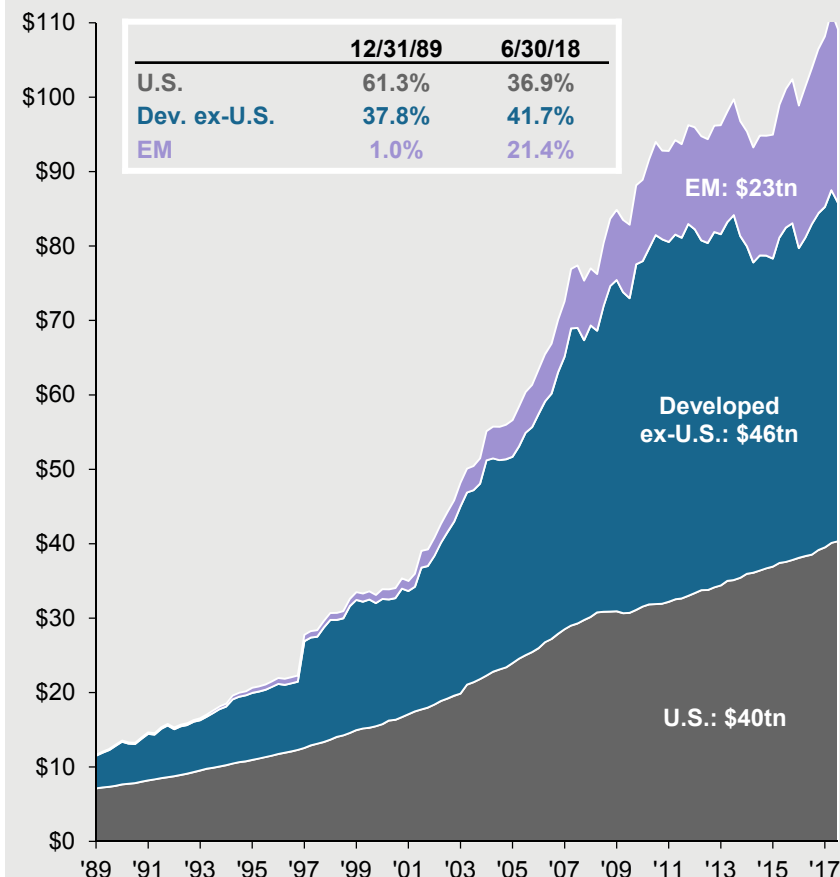
Source: J.P. Morgan Asset Management; (Left) Barclays, Bloomberg, FactSet; (Right) BIS.
Fixed income sectors shown above are provided by Bloomberg and are represented by the global aggregate for each country except where noted.
EMD sectors are represented by the J.P. Morgan EMBIG Diversified Index (USD), the J.P. Morgan GBI EM Global Diversified Index (LCL) and the
J.P. Morgan CEMBI Broad Diversified Index (Corp). European Corporates are represented by the Bloomberg Barclays Euro Aggregate Corporate
Index and the Bloomberg Barclays Pan-European High Yield index. Sector yields reflect yield to worst. Correlations are based on 10 years of monthly
returns for all sectors. Past performance is not indicative of future results. Global bond market regional breakdown may not sum to 100% due to
rounding.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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Asset Management

International

Returns	2019 YTD		2018		15-years	
	Local	USD	Local	USD	Ann.	Beta
Regions						
U.S. (S&P 500)	-	8.0	-	-4.4	7.8	0.86
AC World ex-U.S.	6.1	7.6	-10.2	-13.8	5.7	1.11
EAFE	5.5	6.6	-10.5	-13.4	5.2	1.07
Europe ex-UK	6.4	6.4	-10.6	-14.4	5.7	1.22
Emerging markets	7.2	8.8	-9.7	-14.2	8.3	1.28
Selected Countries						
United Kingdom	3.7	7.1	-8.8	-14.1	4.1	1.01
France	5.5	5.9	-7.5	-11.9	5.4	1.23
Germany	6.3	6.7	-17.7	-21.6	6.1	1.34
Japan	5.2	6.1	-14.9	-12.6	4.0	0.76
China	11.2	11.1	-18.6	-18.7	9.9	1.25
India	-0.1	-1.9	1.4	-7.3	10.0	1.37
Brazil	10.7	17.8	16.7	-0.1	10.0	1.51
Russia	8.1	13.6	18.1	0.5	4.8	1.54

Weights in MSCI All Country World Index
% global market capitalization, float adjusted

- Emerging markets 12%
- Europe ex-UK 14%
- UK 5%
- Japan 8%
- Pacific 4%
- Canada 3%
- United States 55%

Global equities by sector
% of index market capitalization

- U.S.
- Emerging markets
- EAFE

Sector	U.S.	Emerging markets	EAFE
Technology	30%	28%	12%
Consumer	17%	17%	23%
Health Care	15%	3%	11%
Financials	13%	25%	19%
Industrials	9%	5%	14%
Commodities	8%	15%	13%

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Sources of global equity returns*
Total return, USD

2018 **2019 YTD**

Legend:
- ◆ Total return
- Currency effect
- EPS growth outlook (local)
- Multiples
- Dividends

2018 values:
- U.S.: -4.4%
- Japan: -12.6%
- ACWI ex-U.S.: -13.8%
- EM: -14.2%
- Europe ex-UK: -14.4%

2019 YTD values:
- EM: 8.8%
- U.S.: 8.0%
- ACWI ex-U.S.: 7.6%
- Europe ex-UK: 6.4%
- Japan: 6.1%

International

Source: FactSet, MSCI, Standard & Poor's, J.P. Morgan Asset Management.
All return values are MSCI Gross Index (official) data, except the U.S., which is the S&P 500. *Multiple expansion is based on the forward P/E ratio and EPS growth outlook is based on NTMA earnings estimates. Chart is for illustrative purposes only. Past performance is not indicative of future results.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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Asset Management

International

U.S. dollar in historical perspective
Index level, nom. major trade-weighted exchange rate, Mar. 1973=100

Dollar strengthening, <u>hurts</u> international returns

5 years: +55%

10 years: -44%

7.5 years: -14%

7 years: +39%

9.5 years: -38%

5.5 years: +36%

Dollar weakening, <u>helps</u> international returns
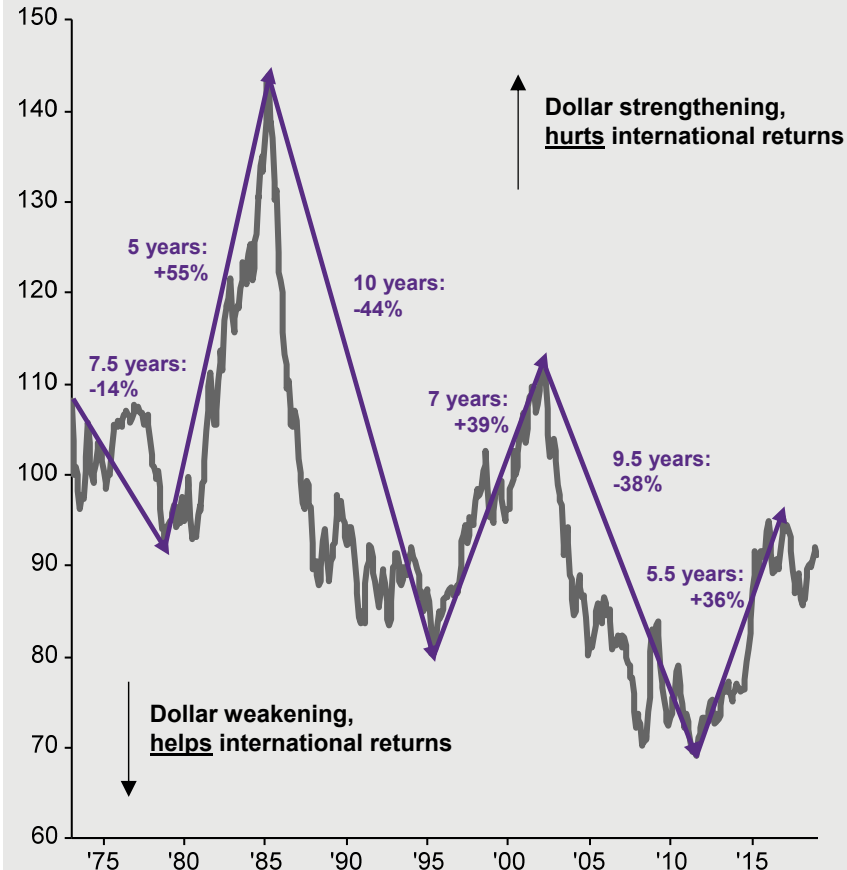
Currency impact on international returns
MSCI All Country World ex-U.S. Index, total return

41.4%
21.4%
17.1%
27.2%
17.1%
42.1%
11.6%
-45.2%
-13.3%
17.4%
15.8%
-3.4%
-5.3%
5.0%
27.8%
-13.8%
7.6%

+ Local currency return
Currency return

= ◆ U.S. dollar return
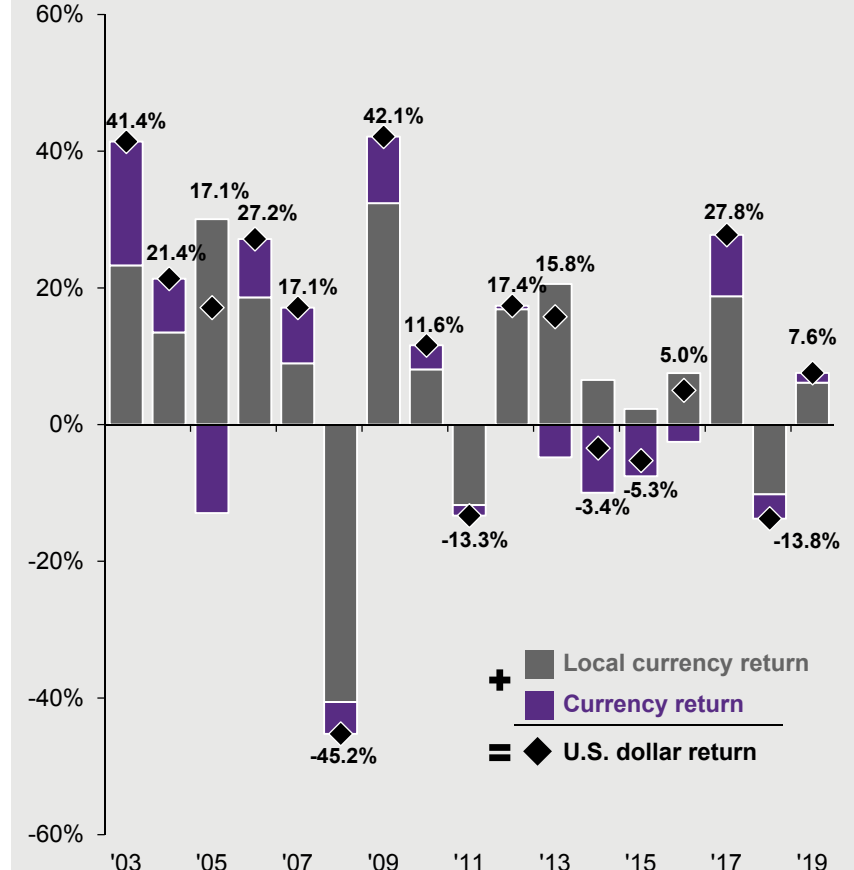
Source: FactSet, J.P. Morgan Asset Management; (Left) Federal Reserve; (Right) MSCI.
Currencies in the nominal major trade-weighted U.S. dollar index are: Australian dollar, British pound, Canadian dollar, euro, Japanese yen, Swedish krona and Swiss franc. Past performance is not a reliable indicator of current and future results.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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MSCI All Country World ex-U.S. and S&P 500 Indices
Dec. 1996 = 100, U.S. dollar, price return

	P/E	20-yr. avg.	Div. Yield	20-yr. avg.
S&P 500	15.7x	15.8x	2.2%	2.0%
ACWI ex-U.S.	12.5x	14.1x	3.6%	3.0%
As % of U.S.	*79%*	*90%*	*167%*	*149%*

Jan. 31, 2019
P/E (fwd.) = 15.7x

Jan. 31, 2019
P/E (fwd.) = 12.5x

+106% −49% +101% −57% +300%
+48% −52% +216% −62% +104%

International
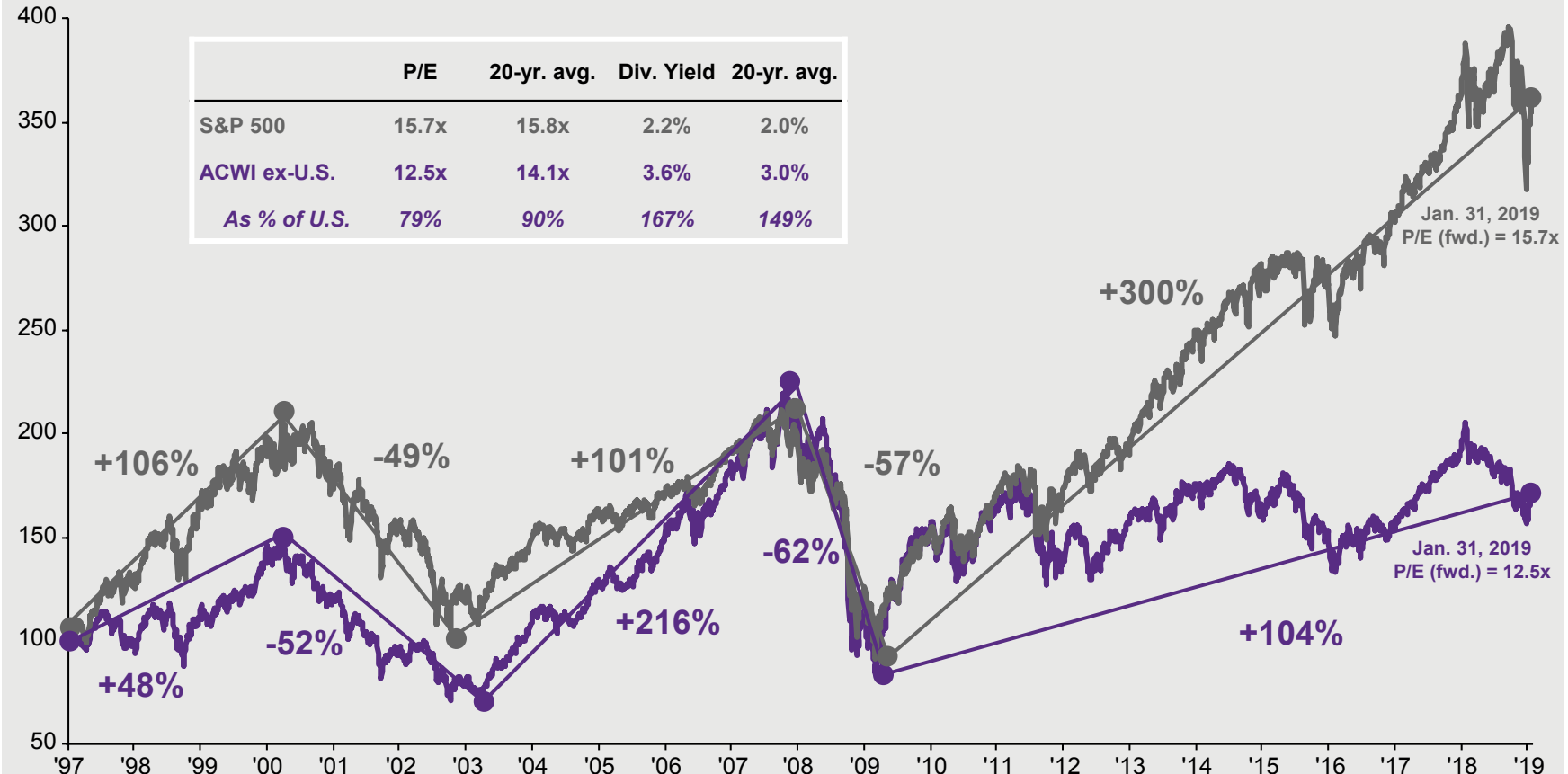
Source: FactSet, MSCI, Standard & Poor's, J.P. Morgan Asset Management.
Forward price to earnings ratio is a bottom-up calculation based on the most recent index price, divided by consensus estimates for earnings in the next 12 months (NTM), and is provided by FactSet Market Aggregates. Returns are cumulative and based on price movement only, and do not include the reinvestment of dividends. Dividend yield is calculated as consensus estimates of dividends for the next 12 months, divided by most recent price, as provided by FactSet Market Aggregates. Past performance is not a reliable indicator of current and future results.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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Global earnings
EPS, local currency, next 12 months, Jan. 2006 = 100
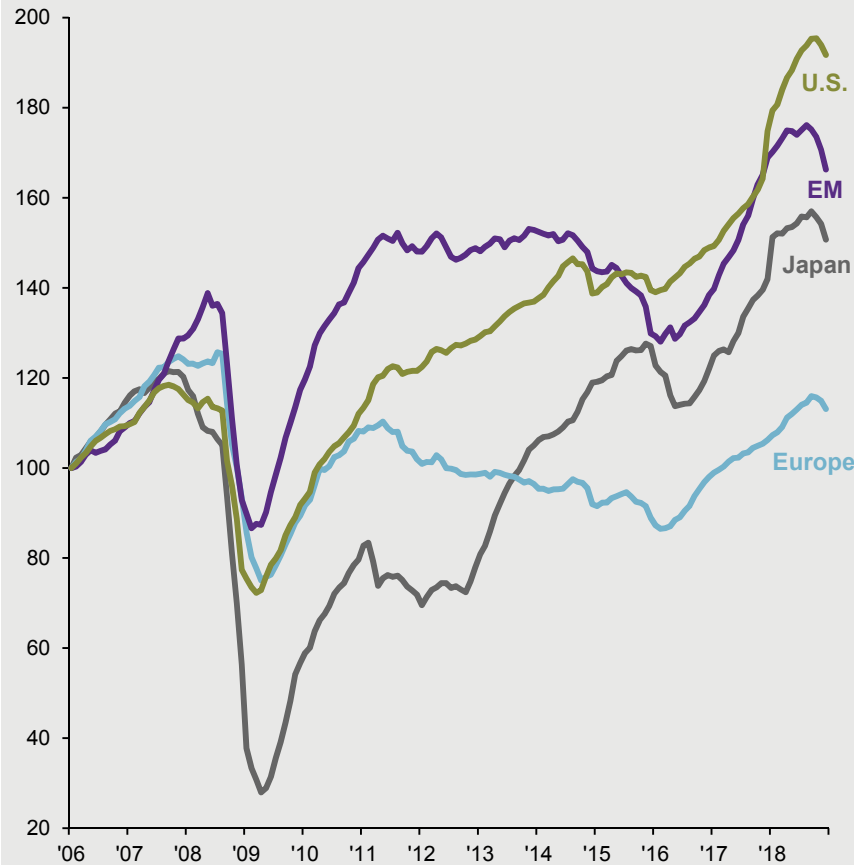
Global valuations
Current and 25-year historical valuations*

International
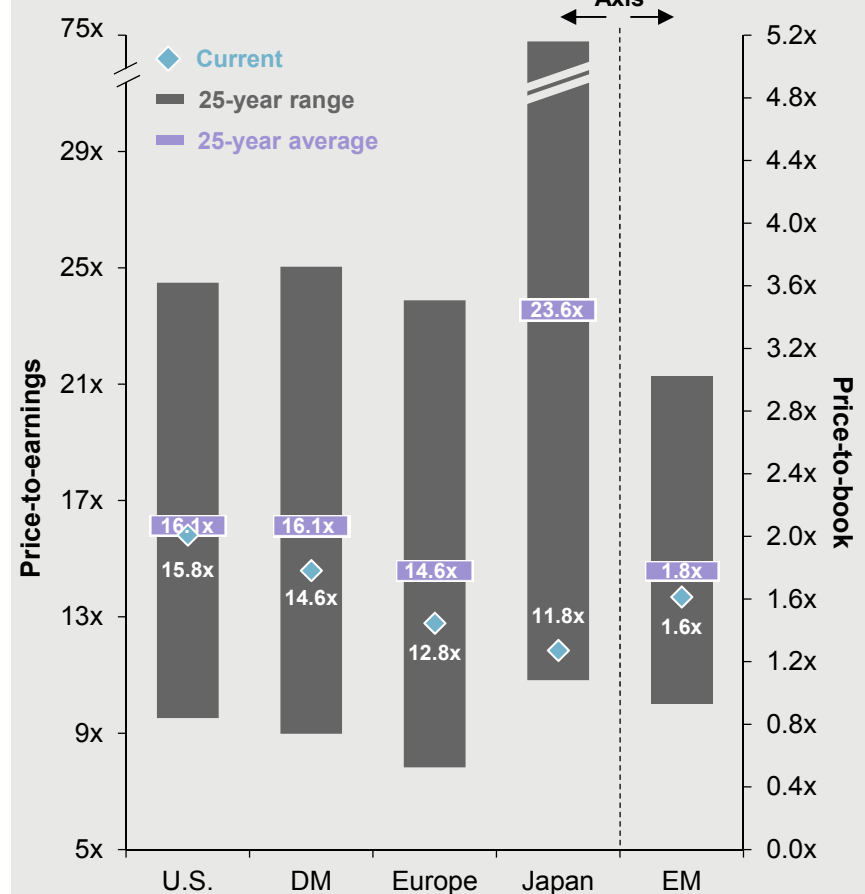
Source: FactSet, MSCI, Standard & Poor's, Thomson Reuters, J.P. Morgan Asset Management.
*Valuations refer to NTMA P/E for Europe, U.S., Japan and developed markets and P/B for emerging markets. Valuation and earnings charts use MSCI indices for all regions/countries, except for the U.S., which is the S&P 500. All indices use IBES aggregate earnings estimates, which may differ from earnings estimates used elsewhere in the book. MSCI Europe includes the eurozone as well as countries not in the currency bloc, such as Norway, Sweden, Switzerland and the UK (which collectively make up 47% of the overall index). Past performance is not a reliable indicator of current and future results.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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International

Growth surprises
Citi Economic Surprise Indices by region

Legend:
— U.S.
— Eurozone
— Emerging markets
— Japan

Economic indicators beating market expectations

Economic indicators missing market expectations

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Global Purchasing Managers' Index for manufacturing, quarterly

		2019 Dec	2019 Jan
	Global	51.4	50.7
	DM	52.3	51.8
	EM	50.3	49.5
Developed	U.S.	53.8	54.9
	Canada	53.6	53.0
	Japan	52.6	50.3
	UK	54.2	52.8
	Euro Area	51.4	50.5
	Germany	51.5	49.7
	France	49.7	51.2
	Italy	49.2	47.8
	Spain	51.1	52.4
	Greece	53.8	53.7
Emerging	China	49.7	48.3
	Indonesia	51.2	49.9
	Korea	49.8	48.3
	Taiwan	47.7	47.5
	India	53.2	53.9
	Brazil	52.6	52.7
	Mexico	49.7	50.9
	Russia	51.7	50.9

Years across top: 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018

Source: Markit, J.P. Morgan Asset Management.
Heatmap colors are based on PMI relative to the 50 level, which indicates acceleration or deceleration of the sector, for the time period shown. Heat map is based on quarterly averages, with the exception of the two most recent figures, which are single month readings. Data for Canada, Indonesia and Mexico are back-tested and filled in from December 2007 to November 2010 for Canada and May 2011 for Indonesia and Mexico due to lack of existing PMI figures for these countries. DM and EM represent developed markets and emerging markets, respectively.
Guide to the Markets – U.S. Data are as of January 31, 2019.

International

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Year-over-year headline inflation by country and region, quarterly

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Nov	Dec
Global												2.4%	2.1%
DM												1.9%	1.6%
EM												3.2%	2.9%
U.S.												2.2%	1.9%
Canada												1.7%	2.0%
Japan												0.9%	0.3%
UK												2.3%	2.1%
Euro Area												1.9%	1.6%
Germany												2.2%	1.7%
France												2.2%	1.9%
Italy												1.6%	1.2%
Spain												1.7%	1.2%
Greece												1.1%	0.6%
China												2.2%	1.9%
Indonesia												3.2%	3.1%
Korea												1.9%	1.3%
Taiwan												0.4%	-0.1%
India												3.5%	2.2%
Brazil												4.0%	3.7%
Mexico												4.7%	4.8%
Russia												3.8%	4.3%
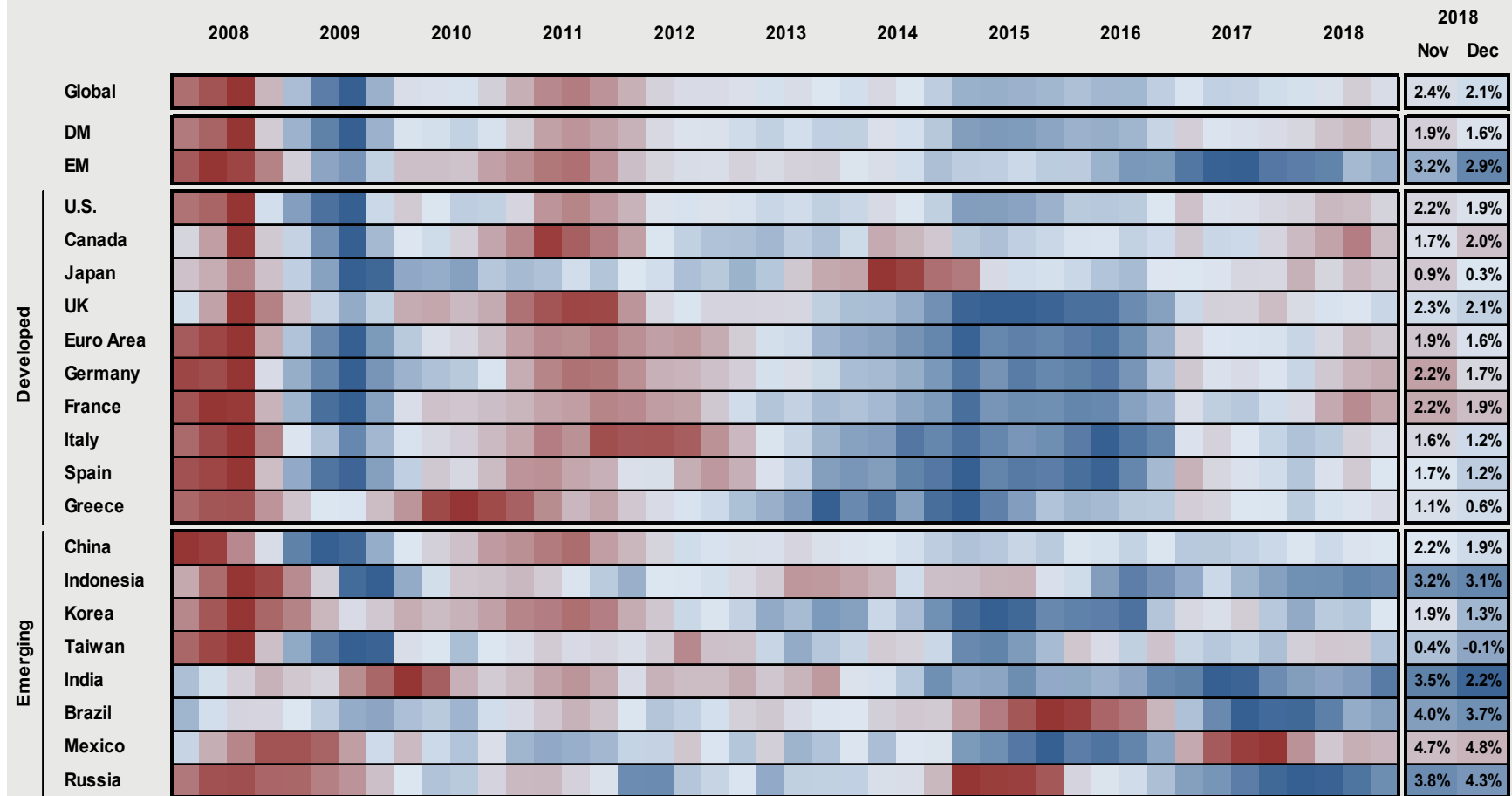
Source: Bank of Mexico, DGBAS, Eurostat, FactSet, Federal Reserve, Goskomstat of Russia, IBGE, India Ministry of Statistics & Programme Implementation, Japan Ministry of Internal Affairs & Communications, Korean National Statistical Office, Melbourne Institute, National Bureau of Statistics China, Statistics Canada, Statistics Indonesia, UK Office for National Statistics (ONS), J.P. Morgan Asset Management.
Heatmap is based on quarterly averages, with the exception of the two most recent figures, which are single month readings. Colors are based on z-score of year-over-year inflation rate relative to 10-year history. DM and EM represent developed markets and emerging markets, respectively.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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International

World trade volume
Year-over-year, % change, 3-month moving average, monthly

Average: 5.1%

Nov. 2018: 2.8%
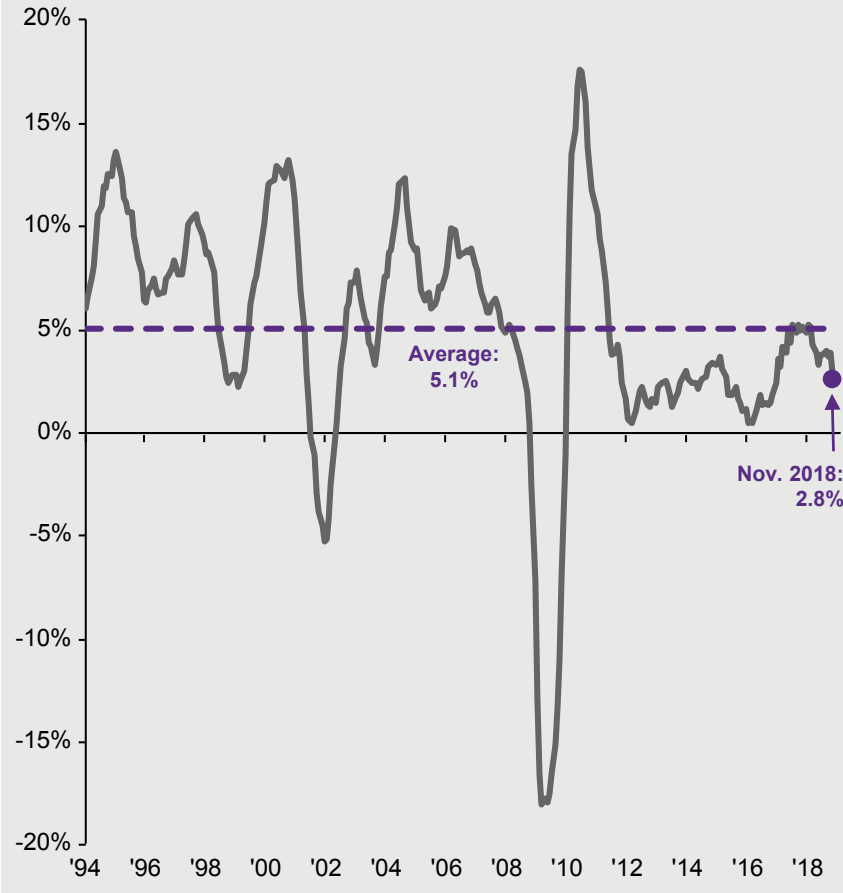
Exports as a share of GDP
Goods exports, 2017

Legend:
- U.S.
- EU
- EM ex-China
- China
- Other

Brazil 11%
India 11%
China 19%
Russia 23%
Mexico 36%
Korea 36%
S. Africa 48%
Taiwan 55%

U.S. 8%
Japan 14%
Eurozone 16%
UK 17%
Canada 25%
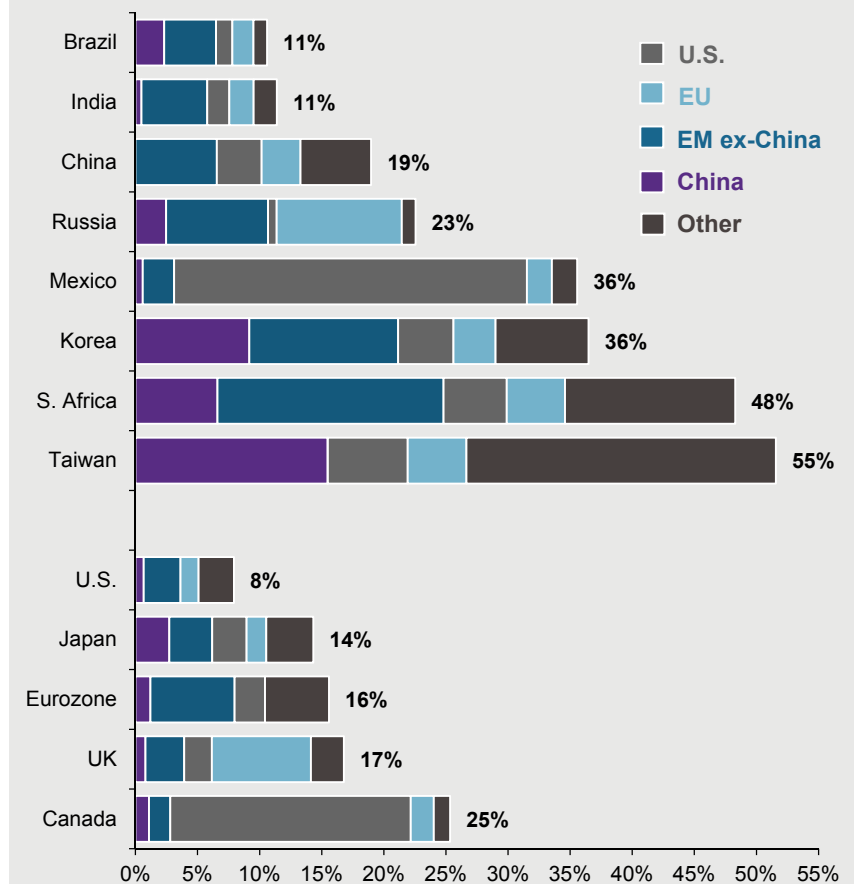
Source: FactSet, J.P. Morgan Asset Management; (Left) CPB Netherlands Bureau for Economic Policy Analysis; (Right) IMF.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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International

Eurozone GDP growth
Contribution to eurozone real GDP growth, % change year-over-year

Legend:
- Real GDP
- Domestic demand
- Net exports
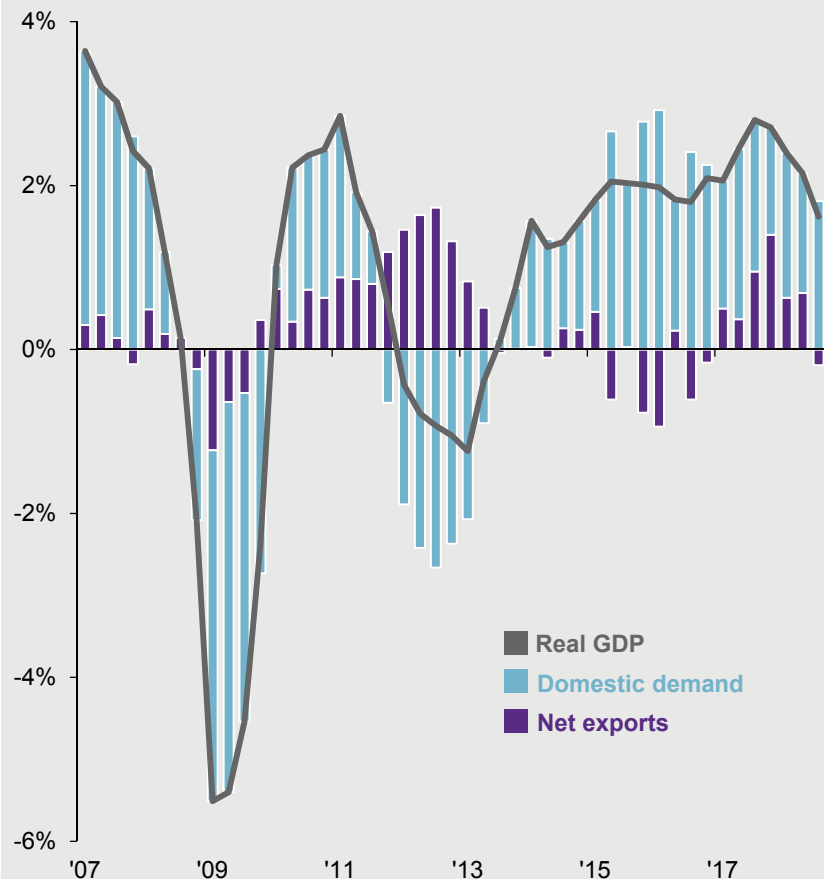
Eurozone unemployment and wage growth
Seasonally adjusted, year-over-year compensation growth

◀ Unemployment   Wage growth ▶

3Q18: 2.5%

Dec. 2018: 7.9%
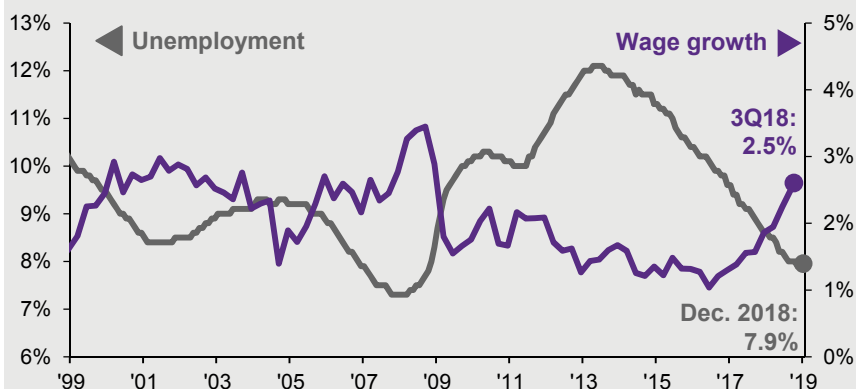
Eurozone credit demand
Net % of banks reporting positive loan demand

↑ Stronger loan demand

↓ Weaker loan demand
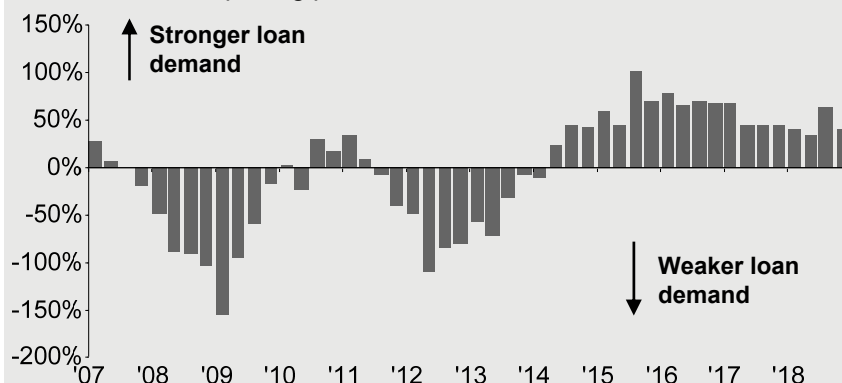
Source: FactSet, J.P. Morgan Asset Management; (Left and top right) ECB, Eurostat; (Bottom right) ECB.
Eurozone shown is the aggregate of the 19 countries that currently use the euro.
Guide to the Markets – U.S. Data are as of January 31, 2019.

J.P.Morgan
Asset Management

International

Japanese economic growth
Real GDP, y/y % change

20-yr. average: 0.9%

3Q18: 0.0%
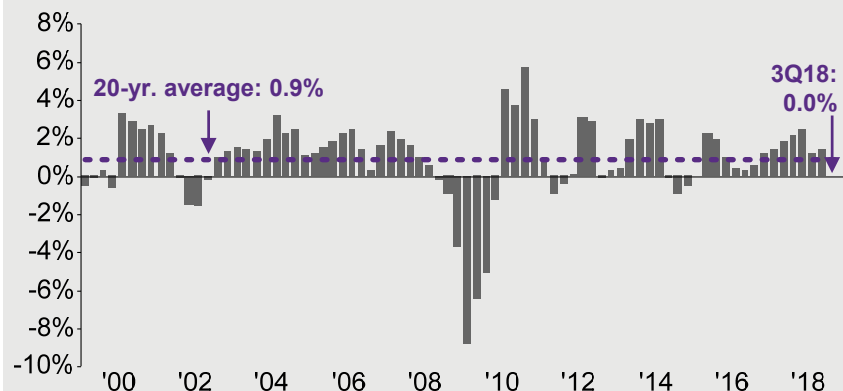
Japanese labor market
Unemployment, y/y % change in wages, 3-month moving average

Unemployment rate

Dec. 2018: 2.4%

Wage growth

Nov. 2018: 0.7%
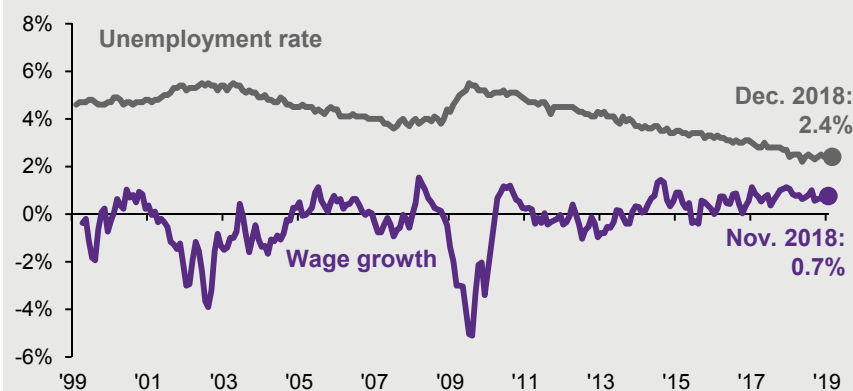
Japanese yen and the stock market

◄ **Japanese ¥ per U.S. $**

Nikkei 225 Index ►
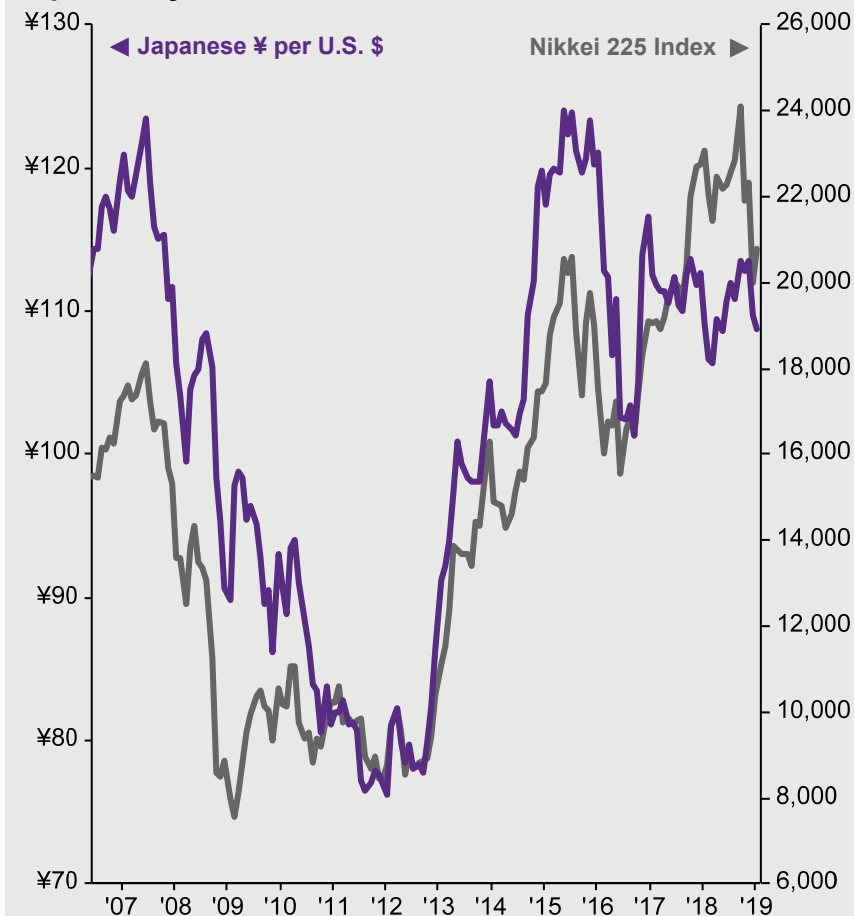
Source: FactSet, J.P. Morgan Asset Management; (Top left) Japanese Cabinet Office; (Bottom left) Ministry of Health, Labor and Welfare Japan; (Right) Nikkei. Past performance is not a reliable indicator of current and future results.
Guide to the Markets – U.S. Data are as of January 31, 2019.

J.P.Morgan
Asset Management

International

China real GDP contribution
Year-over-year % change

Legend:
- Investment
- Consumption
- Net exports

'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18
9.7%	9.4%	10.6%	9.6%	7.9%	7.8%	7.3%	6.9%	6.7%	6.8%	6.6%

Investment: 5.1%, 8.1%, 7.1%, 4.4%, 3.4%, 4.3%, 3.4%, 2.9%, 2.9%, 2.3%, 2.1%
Consumption: 4.3%, 5.3%, 4.8%, 5.9%, 4.3%, 3.6%, 3.6%, 4.1%, 4.5%, 3.9%, 5.0%
Net exports: 0.3%, -4.0%, -1.3%, -0.8%, 0.2%, -0.1%, 0.3%, -0.1%, -0.6%, 0.6%, -0.6%
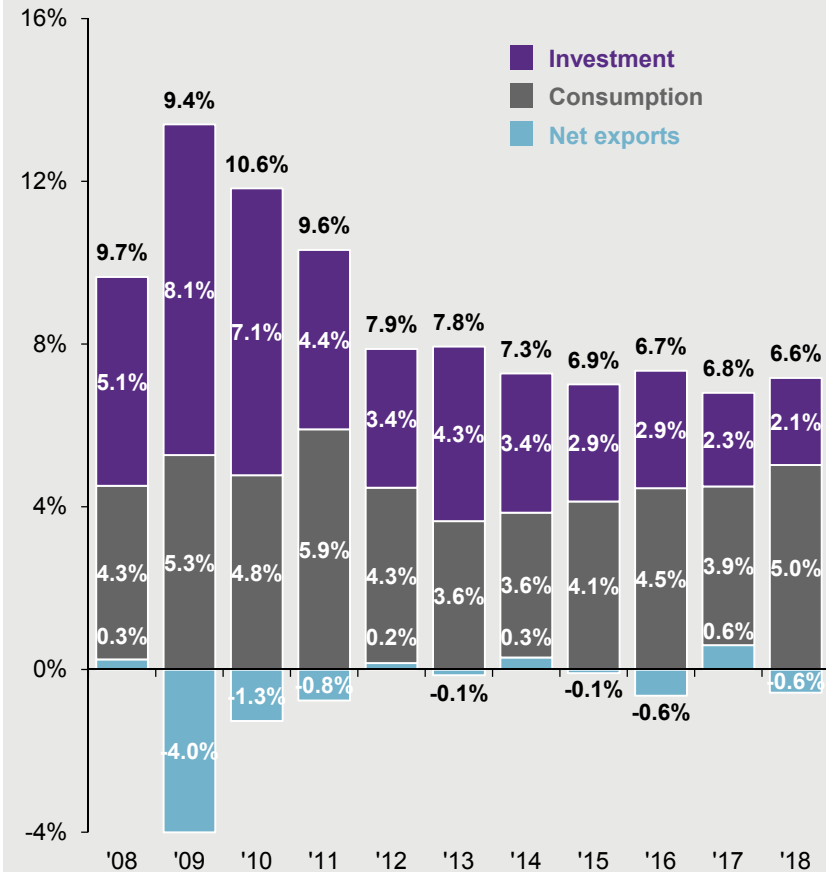
Chinese debt by sector
% of GDP, 2Q18

	China	U.S.
Public debt	47.6%	97.6%
Household debt	50.3%	76.6%
Non-financial corporate debt	155.1%	74.4%

Non-financial corporations

Households

General government
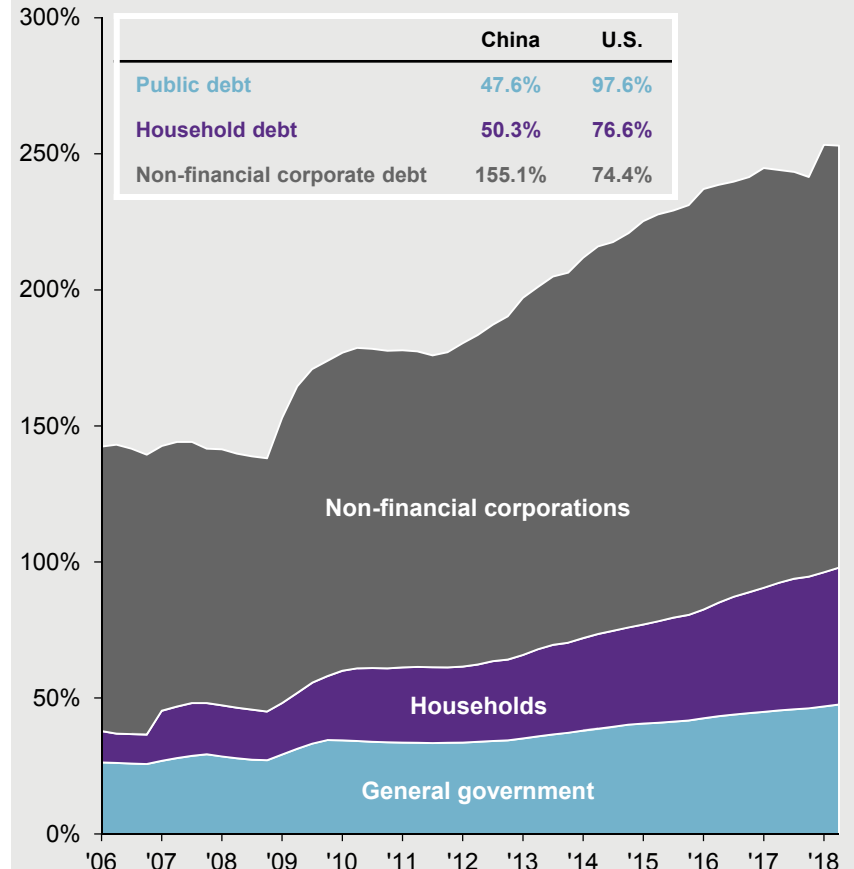
Source: FactSet, J.P. Morgan Asset Management; (Left) CEIC; (Right) BIS.
Household and non-financial corporate debt is based on market value and government debt is based on nominal value. Public debt refers to general
government debt.
Guide to the Markets – U.S. Data are as of January 31, 2019.

J.P.Morgan
Asset Management

International

EM vs. DM growth
Monthly, consensus expectations for GDP growth in 12 months

- DM growth
- EM growth
- Growth differential
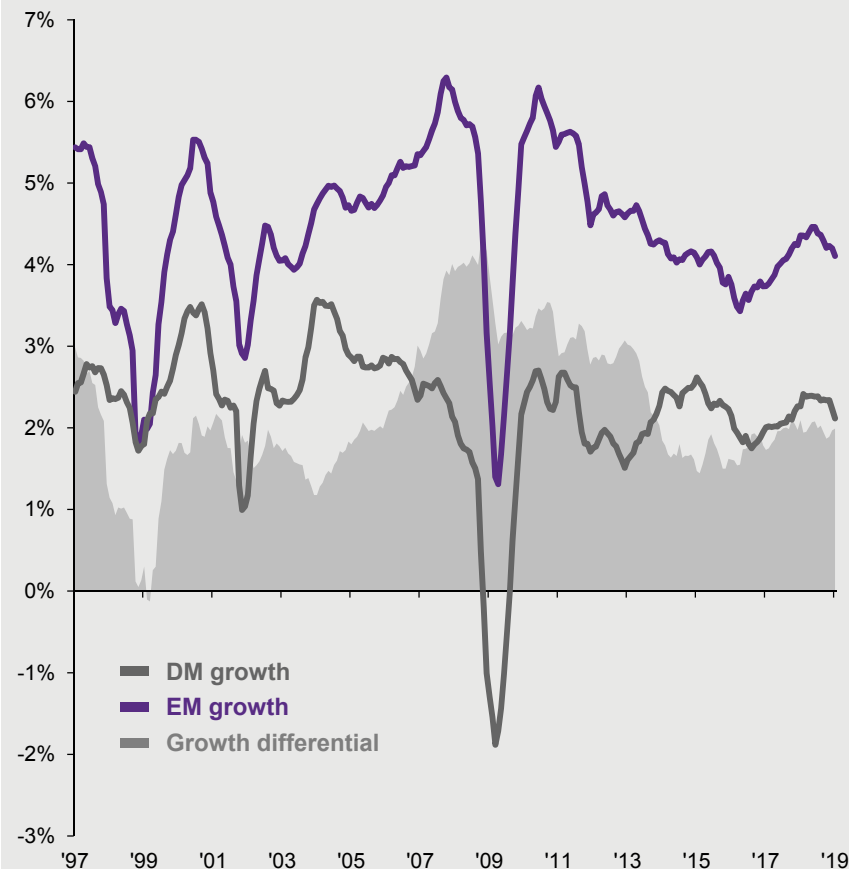
Growth of the middle class
Percent of total population

	1995	2018F	2030F
India	1%	14%	79%
China	0%	34%	72%
Brazil	30%	53%	61%
Mexico	40%	71%	79%
Korea	92%	90%	88%
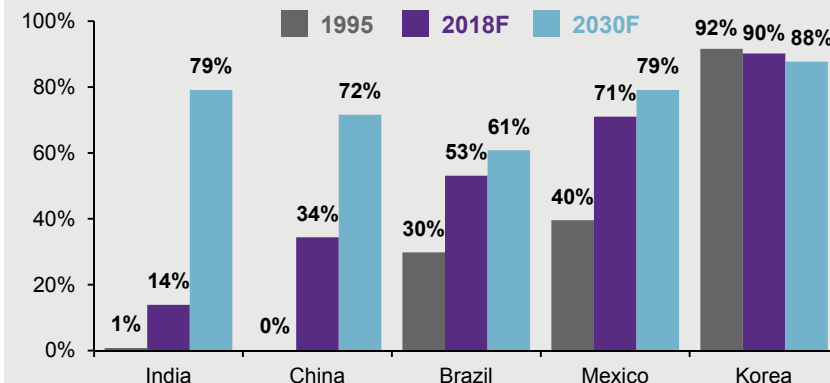
Relative price-to-book ratio
MSCI Emerging Markets vs. S&P 500

Average: 0.67x

Jan. 2019: 0.53x
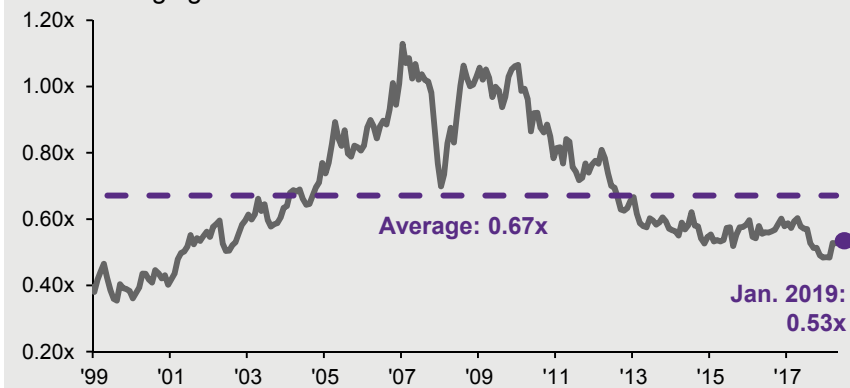
Source: J.P. Morgan Asset Management; (Left) Consensus Economics; (Top right) Brookings Institute; (Bottom right) FactSet, MSCI, Standard & Poor's. "Growth differential" is consensus estimates for EM growth in the next 12 months minus consensus estimates for DM growth in the next 12 months, provided by Consensus Economics. Middle class is defined as $3,600-$36,000 annual per capita income in purchasing power parity terms. Historical and forecast figures come from the Brookings Development, Aid and Governance Indicators.
Guide to the Markets – U.S. Data are as of January 31, 2019.

J.P.Morgan
Asset Management

International

Emerging market equities and the dollar
Relative EM/DM equity performance, local currency, U.S. dollar REER

◀ MSCI EM / MSCI DM

U.S. dollar ▶

Weaker dollar, EM outperforming

Correlation	
Pre-Jan. 2010	-0.90
Post-Jan. 2010	-0.79

Stronger dollar, EM underperforming

EM currency drivers

Foreign currency debt is decreasing

■ Foreign currency debt, % of GDP, 3 yr. improvement*

■ Current account balance, % GDP

◆ YTD currency performance vs. U.S. dollar

India, Korea, Argentina, China, Turkey, Mexico, Russia, Brazil, S. Africa
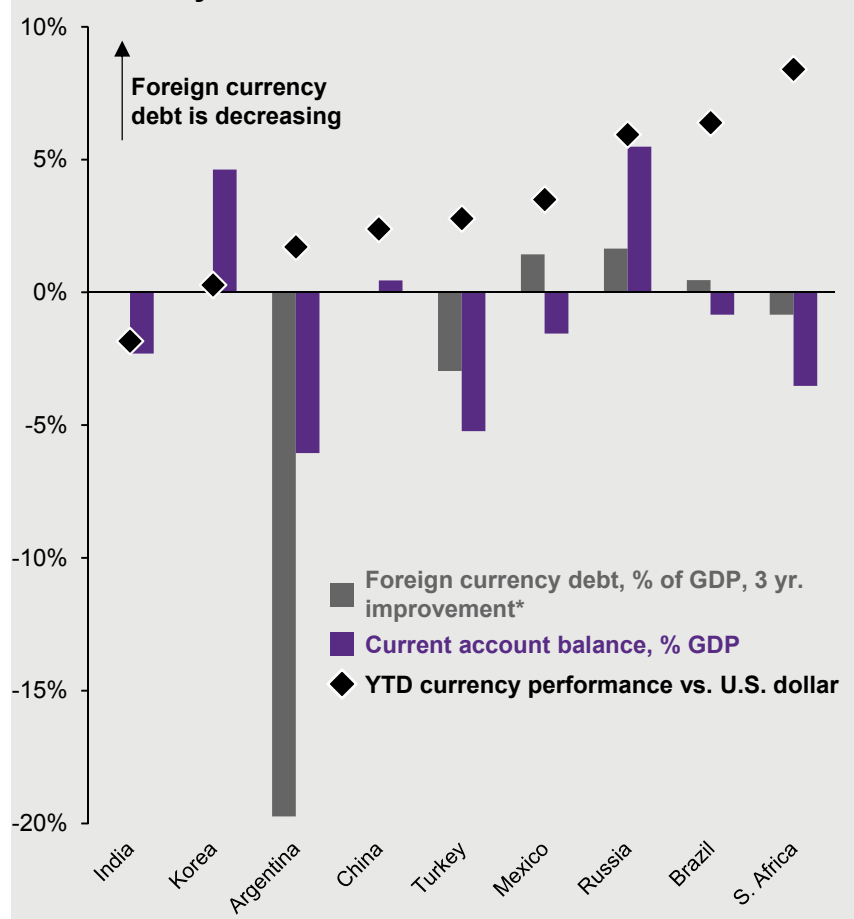
Source: J.P. Morgan Asset Management; (Left) MSCI; (Right) FactSet, IIF (Institute of International Finance), INDEC (National Institute of Statistics and Census of Argentina), Central Bank of Turkey, Central Bank of Brazil, Central Bank of Russia, Reserve Bank of India, Bank of Korea, State Administration of Foreign Exchange China, Bank of Mexico, Reserve Bank of South Africa.
*Four-quarter moving average of quarterly foreign currency denominated debt as a percentage of GDP levels, compared to levels that prevailed three years ago. A negative figure indicates foreign currency debt has been rising, while a positive figure indicates foreign currency debt has been falling. Current account figures are an average of the past four quarters.
Guide to the Markets – U.S. Data are as of January 31, 2019.

J.P.Morgan
Asset Management

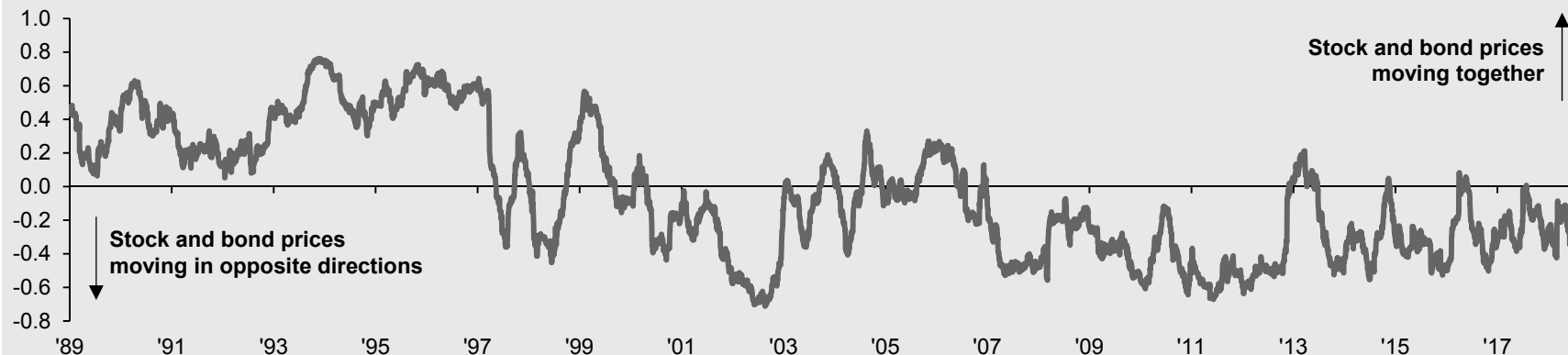|	U.S. Large Cap	EAFE	EME	Bonds	Corp. HY	Munis	Currcy.	EMD	Cmdty.	REITs	Hedge funds	Private equity		Ann. Volatility
U.S. Large Cap	1.00	0.88	0.73	-0.18	0.64	-0.16	-0.49	0.45	0.55	0.75	0.83	0.81		14%
EAFE		1.00	0.88	-0.06	0.74	-0.04	-0.66	0.63	0.58	0.70	0.86	0.82		18%
EME			1.00	0.07	0.85	0.06	-0.70	0.81	0.63	0.57	0.82	0.67		20%
Bonds				1.00	0.18	0.85	-0.19	0.50	-0.05	0.29	-0.11	-0.21		3%
Corp. HY					1.00	0.15	-0.53	0.83	0.61	0.61	0.75	0.46		10%
Munis						1.00	-0.16	0.53	-0.16	0.18	-0.08	-0.26		4%
Currencies							1.00	-0.61	-0.57	-0.43	-0.43	-0.62		7%
EMD								1.00	0.47	0.52	0.59	0.33		7%
Commodities									1.00	0.39	0.60	0.64		15%
REITs										1.00	0.59	0.60		21%
Hedge funds											1.00	0.72		5%
Private equity												1.00		10%

Alternatives

Source: Barclays Inc., Bloomberg, Cambridge Associates, Credit Suisse/Tremont, FactSet, Federal Reserve, MSCI, NCREIF, Standard & Poor's, J.P. Morgan Asset Management.
Indices used – Large Cap: S&P 500 Index; Currencies: Federal Reserve Trade Weighted Dollar; EAFE: MSCI EAFE; EME: MSCI Emerging Markets; Bonds: Bloomberg Barclays Aggregate; Corp HY: Bloomberg Barclays Corporate High Yield; EMD: Bloomberg Barclays Emerging Market; Cmdty.: Bloomberg Commodity Index; Real Estate: NAREIT ODCE Index; Hedge Funds: CS/Tremont Hedge Fund Index; Private equity: Cambridge Associates Global Buyout & Growth Index. Private equity data are reported on a one-quarter lag. All correlation coefficients and annualized volatility are calculated based on quarterly total return data for period 12/31/08 to 12/31/18, except for Private equity, which is based on the period from 9/30/08 to 9/30/18. This chart is for illustrative purposes only.
Guide to the Markets – U.S. Data are as of January 31, 2019.

J.P.Morgan
Asset Management

Alternatives

U.S. stock/bond correlations
Rolling 90-day correlation between the S&P 500 and the Bloomberg Barclays U.S. Aggregate

Stock and bond prices moving together

Stock and bond prices moving in opposite directions

Hedge fund returns in different market environments
Average return in up and down months for S&P 500

- HFRI FW Comp.
- **S&P 500**

1.1% 2.8% -1.2% -3.6%

S&P 500 up   S&P 500 down
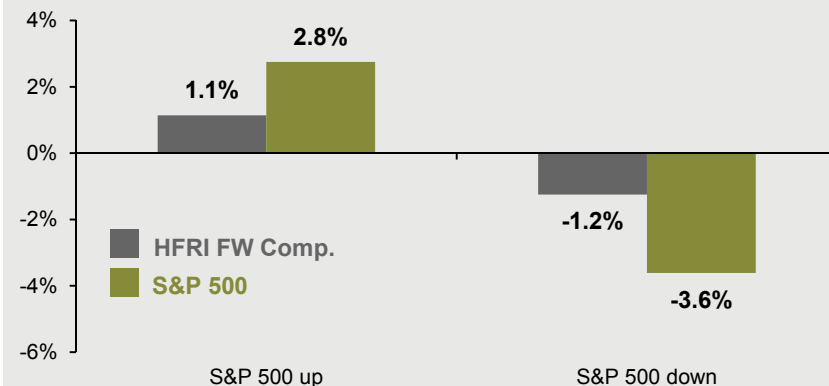
Hedge fund returns in different market environments
Average return in up and down months for Bloomberg Barclays Agg.

- HFRI FW Comp.
- **Bloomberg Barclays U.S. Agg.**

0.5% 0.8% 0.1% -0.6%

Bloomberg Barclays Agg up   Bloomberg Barclays Agg down
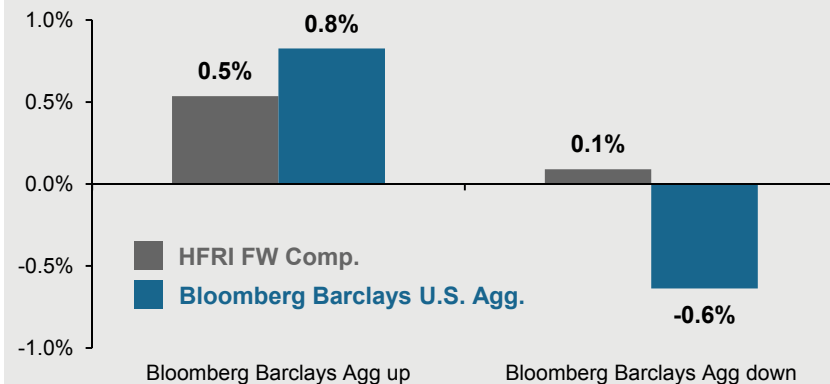
Source: Barclays, Bloomberg, FactSet, HFRI, Standard & Poor's, J.P. Morgan Asset Management.
Guide to the Markets – U.S. Data are as of January 31, 2019.

J.P.Morgan
Asset Management

Alternatives

Public vs. private equity returns
MSCI AC World total return and Global Buyout & Growth Equity Index*

- **MSCI ACWI**
- **Buyout & Growth Equity Index**
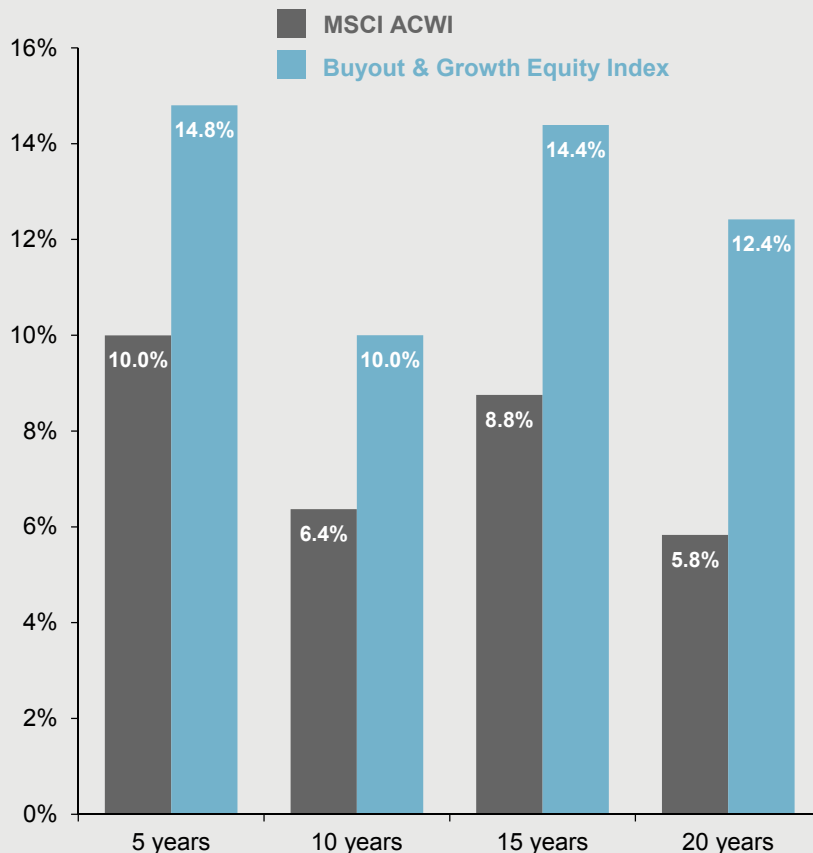
Number of U.S. listed companies

2017: 4,336
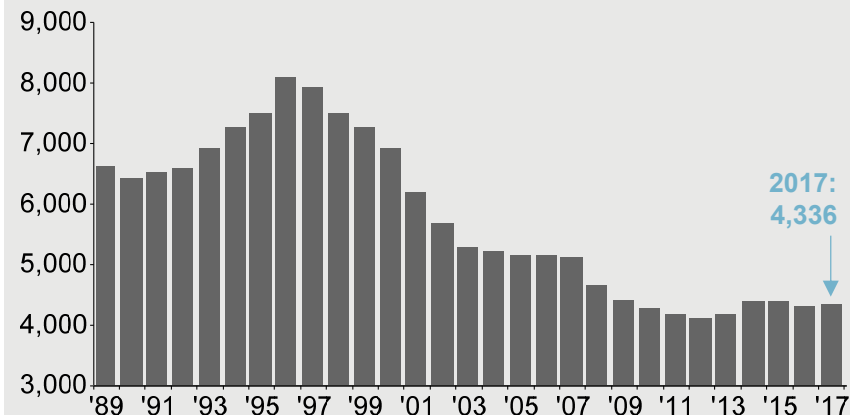
Private equity assets under management
Trillions USD

- **Dry powder**
- **Unrealized value**
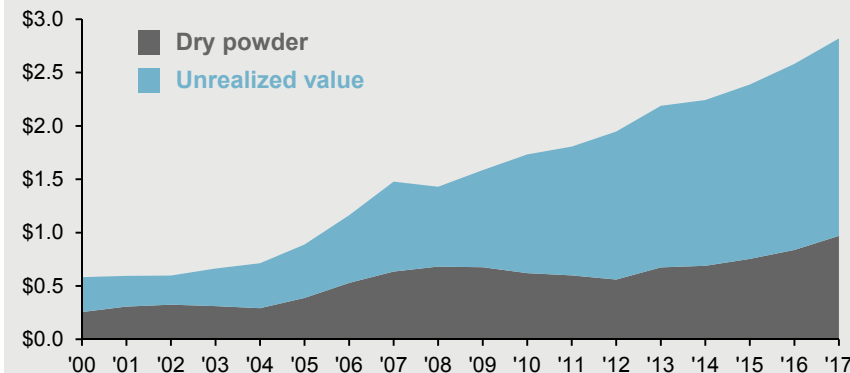
Sources: Cambridge Associates, Prequin, Standard & Poor's, University of Florida, J.P. Morgan Asset Management.
*Global Buyout & Growth Equity and MSCI AC World total return data are as of June 30, 2018.
Guide to the Markets – U.S. Data are as of January 31, 2019.

J.P.Morgan
Asset Management

S&P 500 total return: Dividends vs. capital appreciation
Average annualized returns

Legend: Capital appreciation (dark gray), Dividends (light blue)

Decade	Capital appreciation	Dividends
1950s	13.6%	5.1%
1960s	4.4%	3.3%
1970s	1.6%	4.2%
1980s	12.6%	4.4%
1990s	15.3%	2.5%
2000s	-2.7%	1.8%
2010-2018	10.7%	2.4%
1950-2018	7.5%	3.4%

Asset class yields

Asset class	Yield
Global Transport	9.3%
MLPs	7.6%
U.S. High Yield	6.9%
Preferreds	5.8%
Global Infrastructure	5.8%
Global REITs	4.3%
U.S. REITs	4.1%
International Equity	3.3%
Convertibles	3.0%
DM Equity	2.6%
U.S. Equity	2.1%

Alternatives

J.P.Morgan Asset Management

Commodity prices
Commodity price z-scores

	-3	-2	-1	0	1	2	3	4	5

Bloomberg Commodity Index — $72.88 ◆ $175.42, Current $80.73

Agriculture — $40.85 ◆ $97.67, Current $42.73

Livestock — $22.99 ◆ $41.63, Current $28.91

Crude oil — $26.21 ◆ $113.93, Current $53.79

Silver — $11.79 ◆ $48.60, Current $16.07

Industrial metals — $84.23 ◆ $211.51, Current $117.89

Natural gas — $1.64 ◆ $6.15, Current $2.95

Gold — $868 ◆ $1,892, Current $1,325

Example — Low level ◆ High level, Current
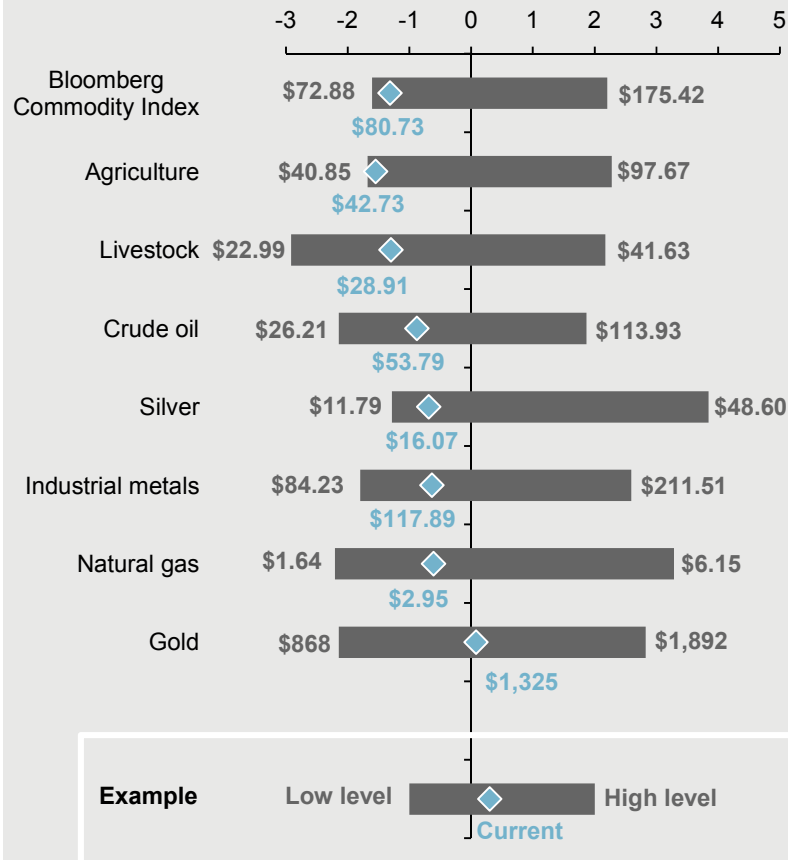
Gold prices
USD per ounce

- Gold, inflation adjusted
- Gold

Jan. 2019: $1,323
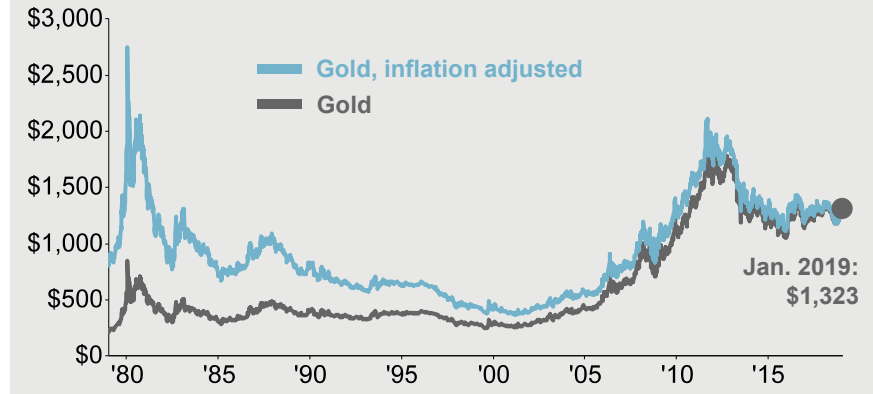
Commodity prices and inflation
Year-over-year % change

◄ Headline CPI   Bloomberg Commodity Index ►
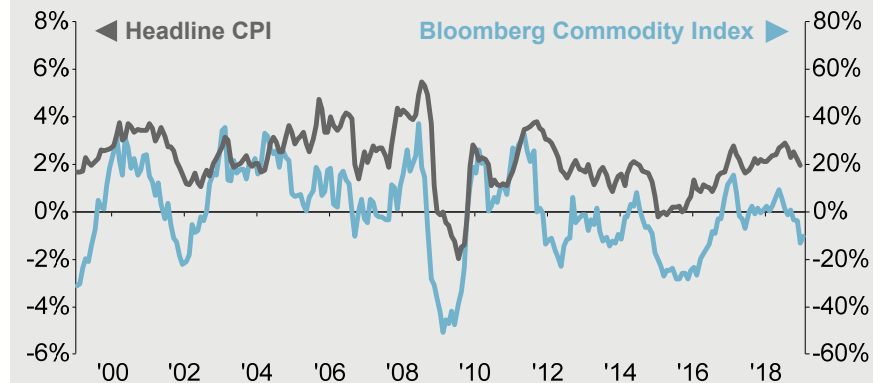
Source: FactSet, J.P. Morgan Asset Management; (Left) Bloomberg, CME; (Top right) BLS, CME; (Bottom right) Bloomberg, BLS.
Commodity prices are represented by the appropriate Bloomberg Commodity sub-index. Crude oil shown is WTI. Other commodity prices are represented by futures contracts. Z-scores are calculated using daily prices over the past 10 years.
Guide to the Markets – U.S. Data are as of January 31, 2019.

Alternatives

J.P.Morgan
Asset Management

2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	YTD	Ann. (2004-2018)	Vol. (2004-2018)
REITs 31.6%	EM Equity 34.5%	REITs 35.1%	EM Equity 39.8%	Fixed Income 5.2%	EM Equity 79.0%	REITs 27.9%	REITs 8.3%	REITs 19.7%	Small Cap 38.8%	REITs 28.0%	REITs 2.8%	Small Cap 21.3%	EM Equity 37.8%	Cash 1.8%	REITs 11.6%	REITs 8.5%	REITs 22.4%
EM Equity 26.0%	Comdty. 21.4%	EM Equity 32.6%	Comdty. 16.2%	Cash 1.8%	High Yield 59.4%	Small Cap 26.9%	Fixed Income 7.8%	High Yield 19.6%	Large Cap 32.4%	Large Cap 13.7%	Large Cap 1.4%	High Yield 14.3%	DM Equity 25.6%	Fixed Income 0.0%	Small Cap 11.2%	EM Equity 8.3%	EM Equity 22.1%
DM Equity 20.7%	DM Equity 14.0%	DM Equity 26.9%	DM Equity 11.6%	Asset Alloc. -25.4%	DM Equity 32.5%	EM Equity 19.2%	High Yield 3.1%	EM Equity 18.6%	DM Equity 23.3%	Fixed Income 6.0%	Fixed Income 0.5%	Large Cap 12.0%	Large Cap 21.8%	REITs -4.0%	EM Equity 8.8%	Large Cap 7.8%	Small Cap 18.6%
Small Cap 18.3%	REITs 12.2%	Small Cap 18.4%	Asset Alloc. 7.1%	High Yield -26.9%	REITs 28.0%	Comdty. 16.8%	Large Cap 2.1%	DM Equity 17.9%	Asset Alloc. 14.9%	Asset Alloc. 5.2%	Cash 0.0%	Comdty. 11.8%	Small Cap 14.6%	High Yield -4.1%	Large Cap 8.0%	Small Cap 7.5%	Comdty. 18.6%
High Yield 13.2%	Asset Alloc. 8.1%	Large Cap 15.8%	Fixed Income 7.0%	Small Cap -33.8%	Small Cap 27.2%	Large Cap 15.1%	Cash 0.1%	Small Cap 16.3%	High Yield 7.3%	Small Cap 4.9%	DM Equity -0.4%	EM Equity 11.6%	Asset Alloc. 14.6%	Large Cap -4.4%	DM Equity 6.6%	High Yield 7.3%	DM Equity 17.6%
Asset Alloc. 12.8%	Large Cap 4.9%	Asset Alloc. 15.3%	Large Cap 5.5%	Comdty. -35.6%	Large Cap 26.5%	High Yield 14.8%	Asset Alloc. -0.7%	Large Cap 16.0%	REITs 2.9%	Cash 0.0%	Asset Alloc. -2.0%	REITs 8.6%	High Yield 10.4%	Asset Alloc. -5.8%	Asset Alloc. 5.9%	Asset Alloc. 6.2%	Large Cap 14.5%
Large Cap 10.9%	Small Cap 4.6%	High Yield 13.7%	Cash 4.8%	Large Cap -37.0%	Asset Alloc. 25.0%	Asset Alloc. 13.3%	Small Cap -4.2%	Asset Alloc. 12.2%	Cash 0.0%	High Yield 0.0%	High Yield -2.7%	Asset Alloc. 8.3%	REITs 8.7%	Small Cap -11.0%	Comdty. 5.4%	DM Equity 5.2%	High Yield 11.0%
Comdty. 9.1%	High Yield 3.6%	Cash 4.8%	High Yield 3.2%	REITs -37.7%	Comdty. 18.9%	DM Equity 8.2%	DM Equity -11.7%	Fixed Income 4.2%	Fixed Income -2.0%	EM Equity -2.0%	Small Cap -4.4%	Fixed Income 2.6%	Fixed Income 3.5%	Comdty. -11.2%	High Yield 4.4%	Fixed Income 3.9%	Asset Alloc. 10.3%
Fixed Income 4.3%	Cash 3.0%	Fixed Income 4.3%	Small Cap -1.6%	DM Equity -43.1%	Fixed Income 5.9%	Fixed Income 6.5%	Comdty. -13.3%	Cash 0.1%	EM Equity -2.3%	DM Equity -4.5%	EM Equity -14.6%	DM Equity 1.5%	Comdty. 1.7%	DM Equity -13.4%	Fixed Income 1.1%	Cash 1.3%	Fixed Income 3.3%
Cash 1.2%	Fixed Income 2.4%	Comdty. 2.1%	REITs -15.7%	EM Equity -53.2%	Cash 0.1%	Cash 0.1%	EM Equity -18.2%	Comdty. -1.1%	Comdty. -9.5%	Comdty. -17.0%	Comdty. -24.7%	Cash 0.8%	Cash 0.8%	EM Equity -14.2%	Cash 0.2%	Comdty. -2.5%	Cash 0.8%

Source: Barclays, Bloomberg, FactSet, MSCI, NAREIT, Russell, Standard & Poor's, J.P. Morgan Asset Management.
Large cap: S&P 500, Small cap: Russell 2000, EM Equity: MSCI EME, DM Equity: MSCI EAFE, Comdty: Bloomberg Commodity Index, High Yield: Bloomberg Barclays Global HY Index, Fixed Income: Bloomberg Barclays US Aggregate, REITs: NAREIT Equity REIT Index, Cash: Bloomberg Barclays 1-3m Treasury. The "Asset Allocation" portfolio assumes the following weights: 25% in the S&P 500, 10% in the Russell 2000, 15% in the MSCI EAFE, 5% in the MSCI EME, 25% in the Bloomberg Barclays US Aggregate, 5% in the Bloomberg Barclays 1-3m Treasury, 5% in the Bloomberg Barclays Global High Yield Index, 5% in the Bloomberg Commodity Index and 5% in the NAREIT Equity REIT Index. Balanced portfolio assumes annual rebalancing. Annualized (Ann.) return and volatility (Vol.) represents period of 12/31/03 – 12/31/18. Annualized volatility is calculated as the standard deviation of quarterly returns multiplied by the square root of 4. Please see disclosure page at end for index definitions. All data represents total return for stated period. Past performance is not indicative of future returns.
Guide to the Markets – U.S. Data are as of January 31, 2019.

Investing principles

J.P.Morgan Asset Management

Registered product flows

USD billions	AUM	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
U.S. equity	7,458	(8)	16	(19)	(22)	106	176	(34)	(33)	34	22	0	23	77	114	173	142	57	88
World equity	3,036	82	241	11	208	149	201	61	19	85	56	(35)	186	168	133	88	39	11	(9)
Taxable bond	3,605	122	390	223	56	86	(8)	295	167	210	301	57	105	50	45	27	44	103	58
Tax-free bond	707	7	33	31	21	33	(55)	52	(8)	14	71	12	14	17	7	(6)	(3)	12	9
Multi-asset	2,305	(9)	61	29	60	95	96	51	33	58	39	11	96	78	80	81	51	22	19
Liquidity	2,879	168	92	200	40	29	30	(0)	(47)	(347)	(237)	676	527	171	49	(53)	(91)	1	255

Cumulative flows into long-term asset products
Mutual fund and ETF flows, quarterly, USD billions
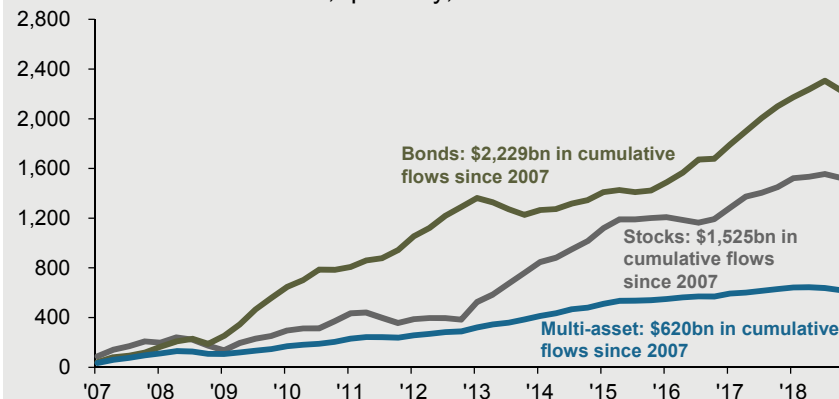
Flows into U.S. equity funds & S&P 500 performance
Mutual fund and ETF flows, price index, quarterly, USD billions

Source: Strategic Insight Simfund, J.P. Morgan Asset Management. All data include flows through December 2018 and capture all registered product flows (open-end mutual funds and ETFs). Simfund data are subject to periodic revisions. World equity flows are inclusive of emerging market, global equity and regional equity flows. Multi-asset flows include asset allocation, balanced fund, flexible portfolio and mixed income flows. *Guide to the Markets – U.S.* Data are as of January 31, 2019.

Investing principles

J.P.Morgan Asset Management

61

Probability of reaching ages 80 and 90
Persons aged 65, by gender, and combined couple

Men

Women

Couple – at least one lives to specified age

- 90%
- 73%
- 63%
- 48%
- 33%
- 22%

80 years   90 years
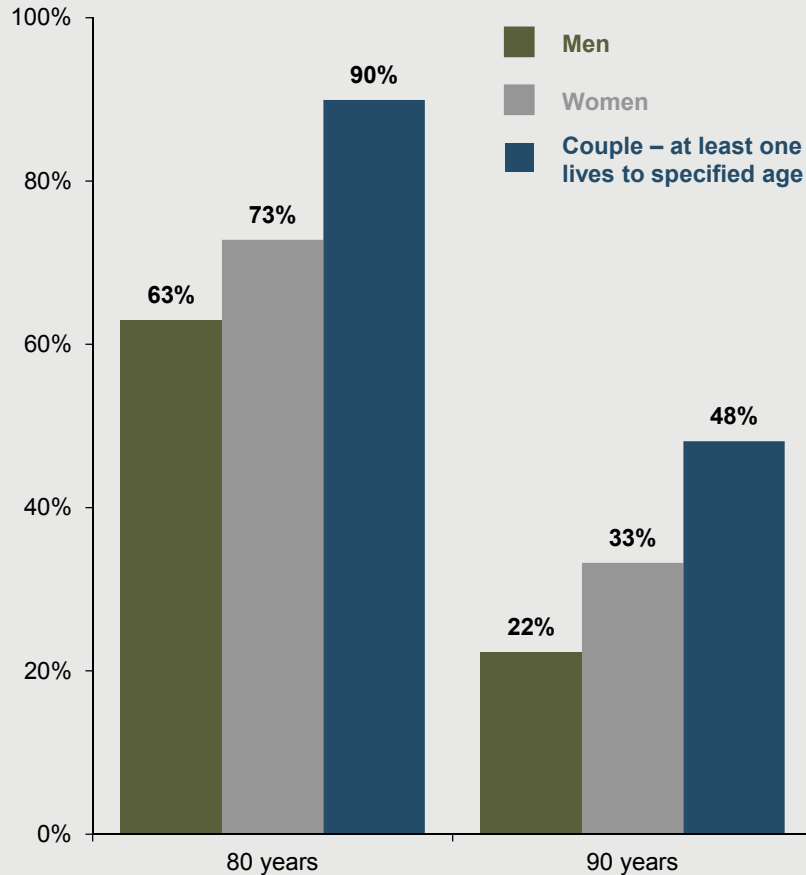
Retirement savings gap
Anticipated amount needed vs. actual savings, thousands

- 64%
- $126
- $120
- $120

% of people who think they need >$500,000 for retirement

55-64   65-74   >75

Median value of retirement account by age of head
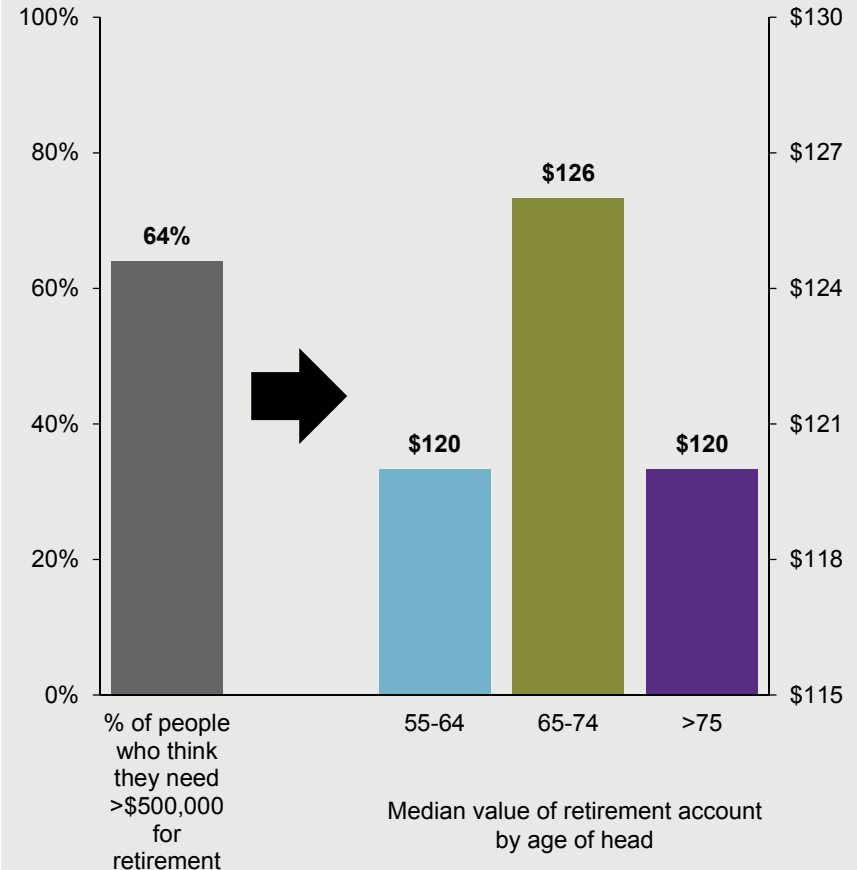
Source: J.P. Morgan Asset Management; (Left) SSA 2015 Life Tables; (Right) 2017 Retirement Confidence Survey, Employee Benefit Research Institute and Greenwald & Associates; 2016 Survey of Consumer Finances, Federal Reserve.
EBRI survey was conducted from January 6, 2017 to January 13, 2017 through online interviews with 1,671 individuals (1,082 workers and 589 retirees) ages 25 and older in the United States.
Guide to the Markets – U.S. Data are as of January 31, 2019.

Investing principles

J.P.Morgan
Asset Management

Range of stock, bond and blended total returns
Annual total returns, 1950-2018

	Annual avg. total return	Growth of $100,000 over 20 years
Stocks	11.1%	$816,946
Bonds	5.8%	$311,366
50/50 portfolio	8.8%	$543,922

1-yr.
- 47%
- 43%
- 33%
- -39%
- -8%
- -15%

5-yr. rolling
- 28%
- 23%
- 21%
- -3%
- -2%
- 1%

10-yr. rolling
- 19%
- 16%
- 16%
- -1%
- 1%
- 2%

20-yr. rolling
- 17%
- 12%
- 14%
- 6%
- 1%
- 5%

Investing principles
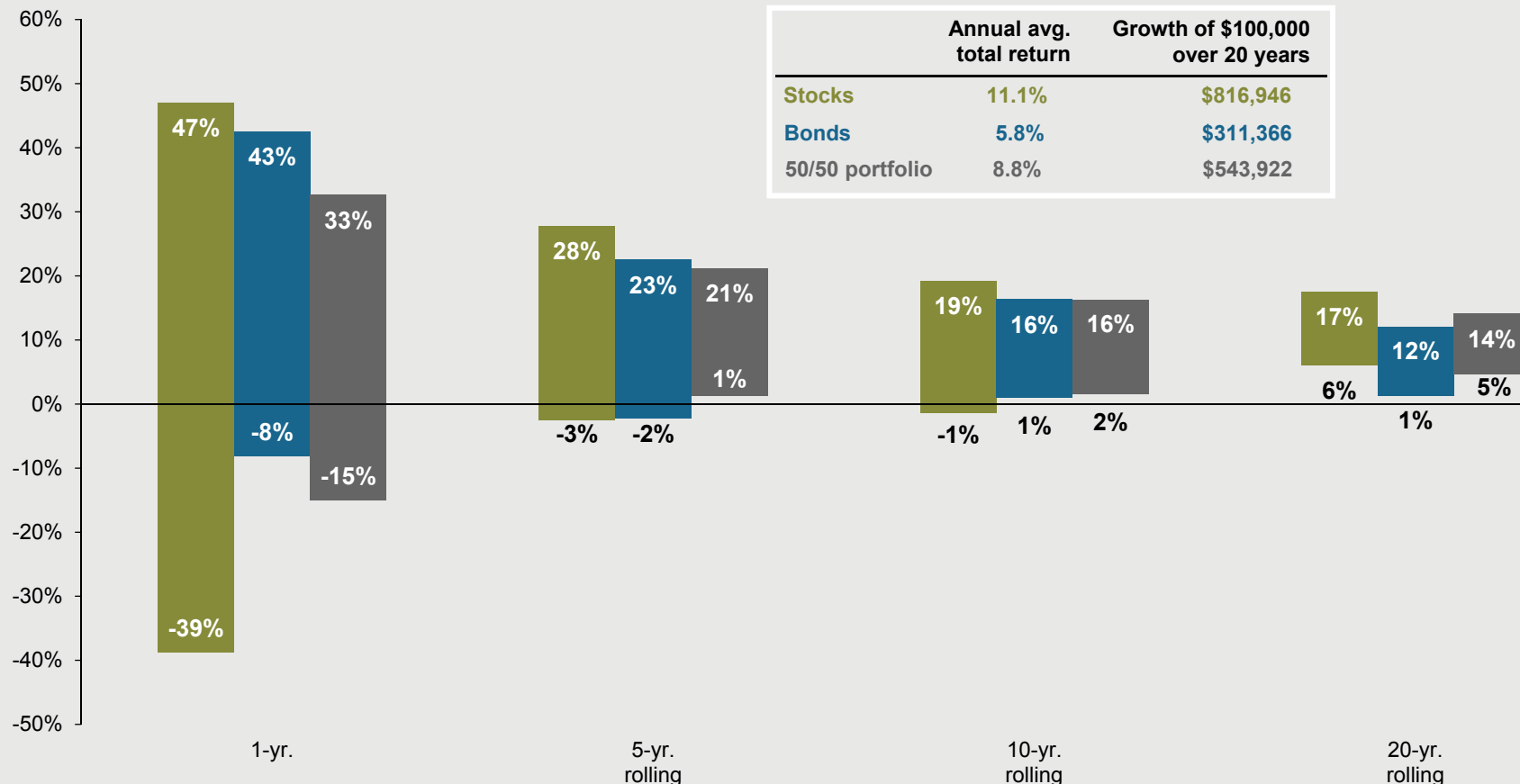
Source: Barclays, Bloomberg, FactSet, Federal Reserve, Robert Shiller, Strategas/Ibbotson, J.P. Morgan Asset Management.
Returns shown are based on calendar year returns from 1950 to 2018. Stocks represent the S&P 500 Shiller Composite and Bonds represent Strategas/Ibbotson for periods from 1950 to 2010 and Bloomberg Barclays Aggregate thereafter. Growth of $100,000 is based on annual average total returns from 1950 to 2018.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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Asset Management

Portfolio returns: Equities vs. equity and fixed income blend

40/60 stocks & bonds
60/40 stocks & bonds
S&P 500

Oct. 2007: S&P 500 peak

Nov. 2009: 40/60 portfolio recovers

Oct. 2010: 60/40 portfolio recovers

Mar. 2009: S&P 500 portfolio loses over $50,000

Mar. 2012: S&P 500 recovers

20-year annualized returns by asset class (1998 – 2017)

REITs	Gold	S&P 500	60/40	Oil	40/60	EAFE	Bonds	Homes	Average Investor	Inflation
9.1%	7.8%	7.2%	6.4%	6.4%	6.1%	5.7%	5.0%	3.4%	2.6%	2.1%

Investing principles

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Average return leading up to and following equity market peaks
S&P 500 total return index, 1945 - 2018
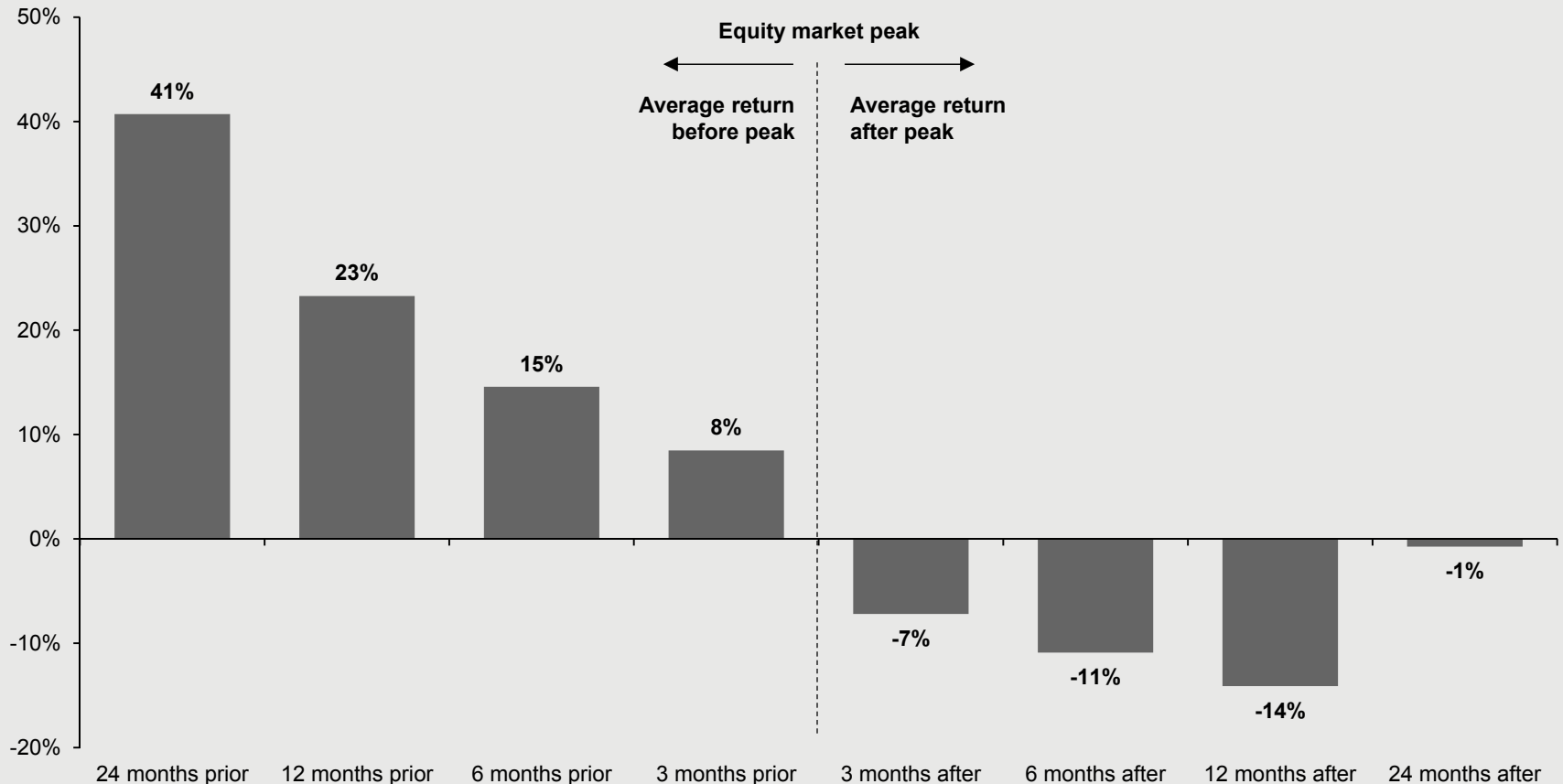
Source: FactSet, Robert Shiller, Standard & Poor's, J.P. Morgan Asset Management.
Chart is based on return data from 11 bear markets since 1945. A bear market is defined as a decline of 20% or more in the S&P 500 benchmark.
Monthly total return data from 1945 to 1970 is from the S&P Shiller Composite index. From 1970 to present, return data is from Standard & Poor's.
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Income earned by $100,000 investment in a 6-mo. CD

■ Income generated
— Income needed to beat inflation

2006: $5,240

2018: $588
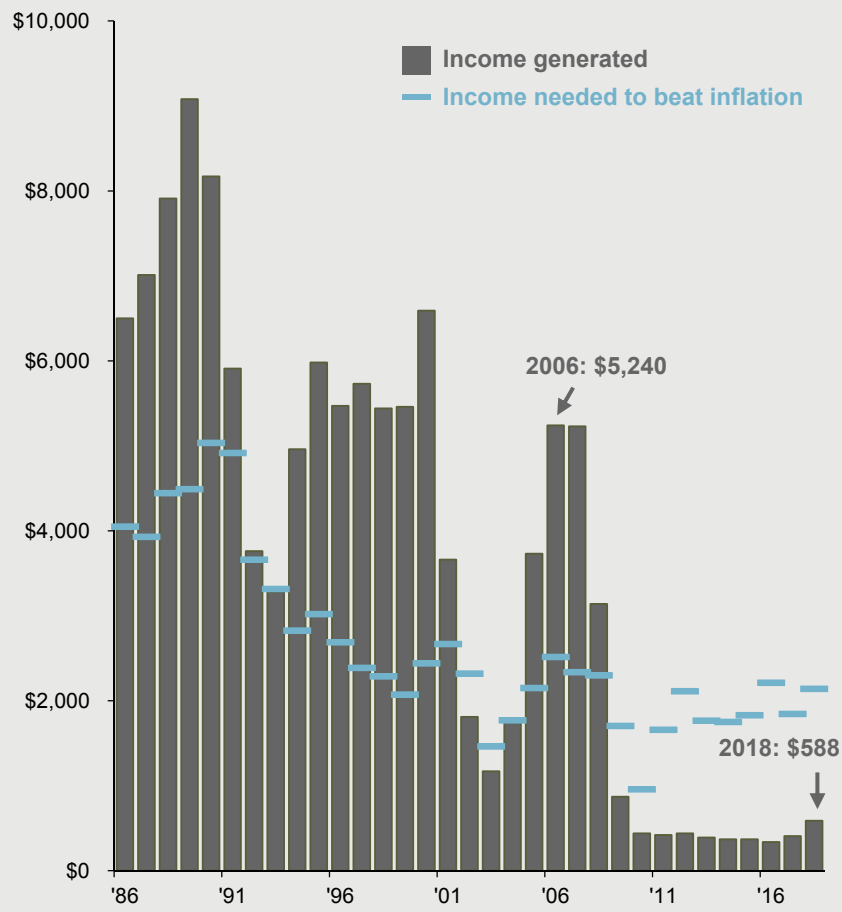
Cash accounts in perspective
Trillions of U.S. dollars

$16.3
- Currency, $1.6
- Checking accounts, $2.2
- Retail MMF, $0.8
- Inst. MMF, $1.9
- Savings & small time deposits, $9.8

$14.2

$10.3

Cash accounts | Consumer spending | Mortgage debt

Investing principles
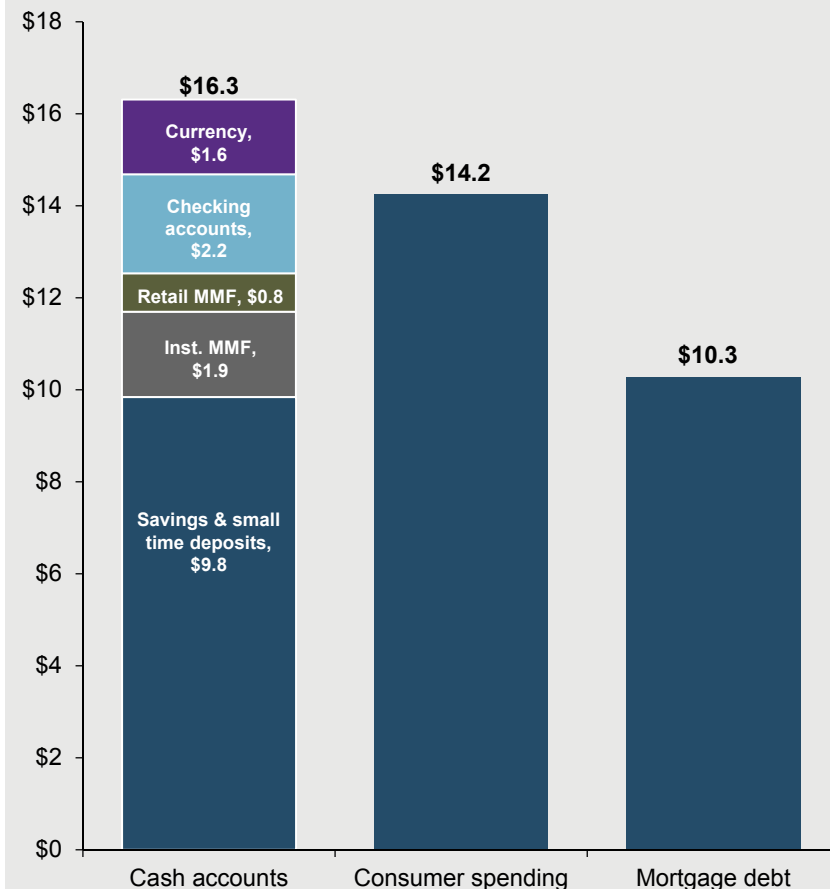
Source: FactSet, J.P. Morgan Asset Management; (Left) Bankrate.com; (Right) BEA, Federal Reserve System.
Cash accounts are as of 12/31/2018, consumer spending is as of 11/30/18 and mortgage debt is as of 9/30/18. M2 includes M1 (currency in circulation and checking accounts) plus savings deposits, small-denomination time deposits and retail money market mutual funds. Institutional money market funds are considered a memorandum item, not included in M2. Annual income is for illustrative purposes and is calculated based on the 6-month CD yield on average during each year and $100,000 invested. Past performance is not indicative of comparable future results. *Guide to the Markets – U.S.* Data are as of January 31, 2019.

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Asset allocation: Corporate DB plans vs. endowments

Asset class	Endowments	Corporate DB plans
Equities	36.0%	37.4%
Fixed Income	8.0%	44.4%
Hedge Funds	19.0%	3.9%
Private Equity	11.0%	3.8%
Real Estate	6.0%	3.3%
Other Alternatives	16.0%	4.0%
Cash	4.0%	3.2%
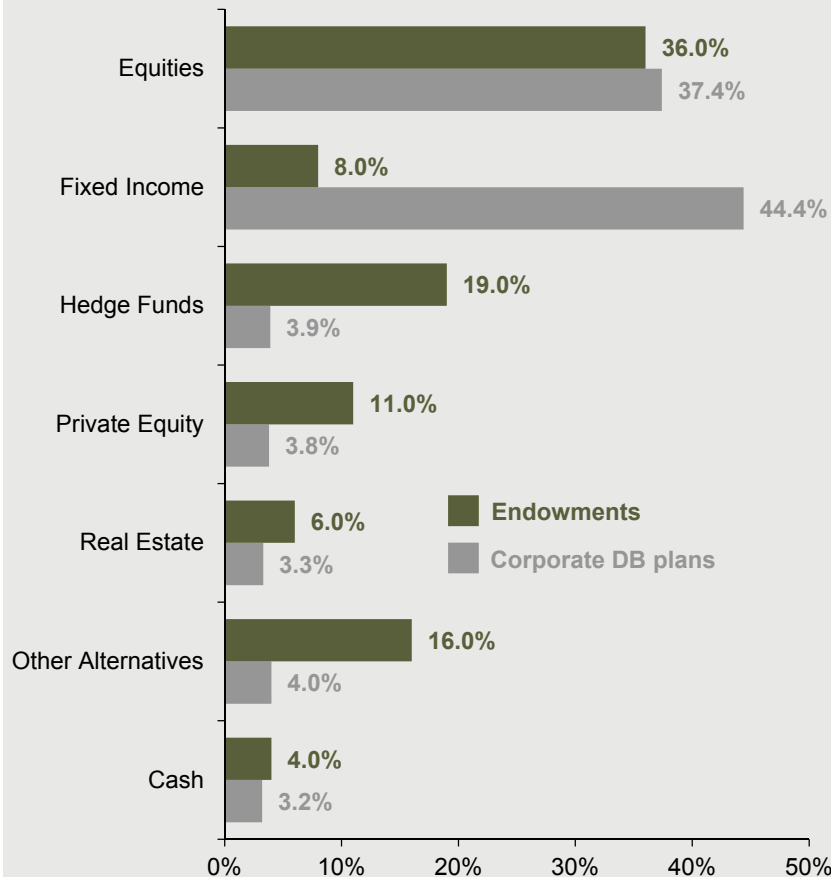
Defined benefit plans: Milliman 100 companies

USD trillions — Assets ($tn), Liabilities ($tn); Funded status (%)
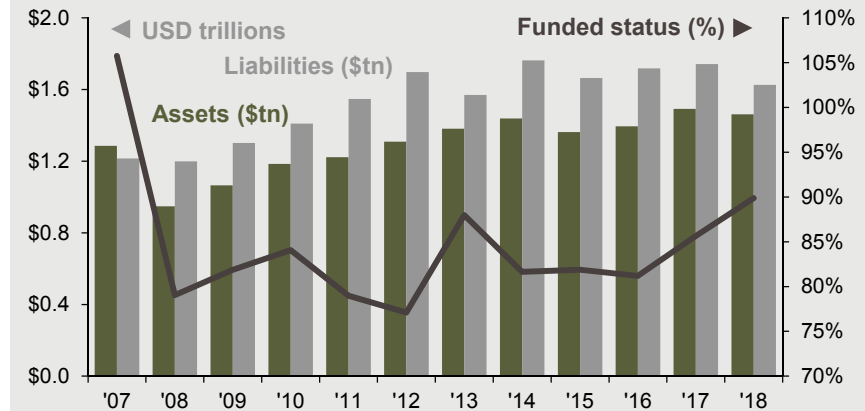
Pension return assumptions: S&P 500 companies

1999: Average 9.2%
2018: Average 6.5%

Return assumption	1999	2018
< 6%	0%	24%
6 to 6.5%	1%	16%
6.5 to 7%	1%	24%
7 to 7.5%	1%	21%
7.5 to 8%	5%	12%
8 to 8.5%	9%	1%
8.5 to 9%	27%	2%
9 to 9.5%	29%	0%
9.5 to 10%	20%	0%
> 10%	7%	0%

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Investment universe & U.S. investors
Percentage of total net assets, 2017

Legend: ■ U.S.   ■ Global

Global GDP: U.S. 24%, Global 76%
Global stock & bond markets*: U.S. 36%, Global 64%
U.S. investor allocation: U.S. 70%, Global 30%
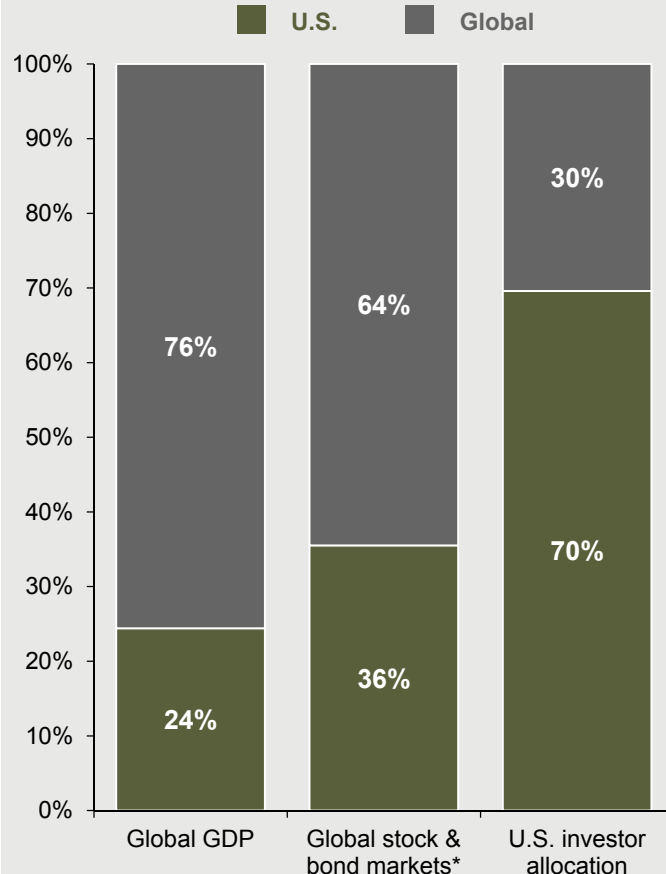
Investor allocation by region
Likelihood of owning stocks in an industry vs. national average**

Financials
-2%, -12%, +9%, -5%

Technology
+10%, -8%, +0%, -7%

% +/- National Average

Industrials
-9%, +11%, -2%, +5%

Energy
-7%, -6%, -10%, +14%
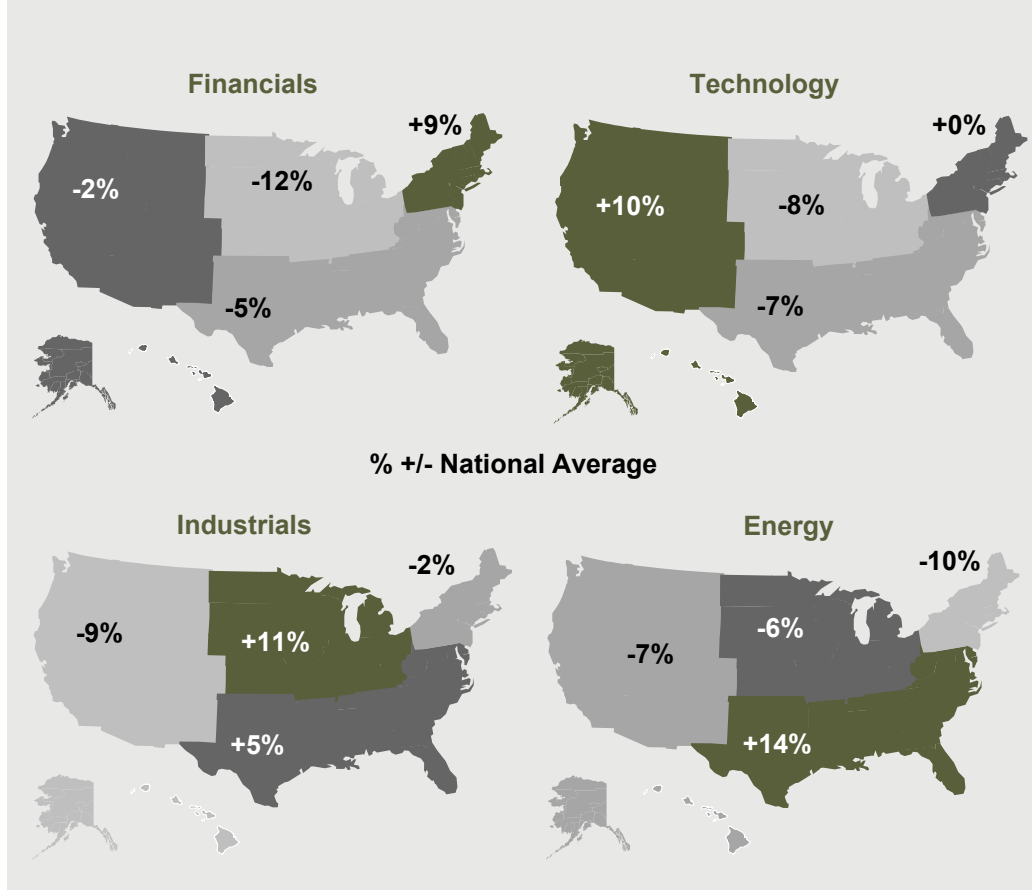
Source: IMF, Openfolio, Strategic Insight Simfund, J.P. Morgan Asset Management.
*Global stock and bond markets data are as of 2013. U.S. investor allocation is the total value of investments in global or domestic equity mutual funds and ETFs as of 2017. **Investor allocation by region is based on data collected by Openfolio. Average sector allocations at the national level are determined by looking at the sector allocations of over 20,000 brokerage accounts, and taking a simple average. Portfolio allocations are then evaluated on a regional basis, and the regional averages are compared to the national average to highlight any investor biases. Further details can be found on openfolio.com.
Guide to the Markets – U.S. Data are as of January 31, 2019.

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Asset Management

Investing principles

All indexes are unmanaged and an individual cannot invest directly in an index. Index returns do not include fees or expenses.

Equities:

The **Dow Jones Industrial Average** is a price-weighted average of 30 actively traded blue-chip U.S. stocks.

The **MSCI ACWI (All Country World Index)** is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets.

The **MSCI EAFE Index (Europe, Australasia, Far East)** is a free float-adjusted market capitalization index that is designed to measure the equity market performance of developed markets, excluding the US & Canada.

The **MSCI Emerging Markets Index** is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets.

The **MSCI Europe Index** is a free float-adjusted market capitalization index that is designed to measure developed market equity performance in Europe.

The **MSCI Pacific Index** is a free float-adjusted market capitalization index that is designed to measure equity market performance in the Pacific region.

The **Russell 1000 Index**® measures the performance of the 1,000 largest companies in the Russell 3000.

The **Russell 1000 Growth Index**® measures the performance of those Russell 1000 companies with higher price-to-book ratios and higher forecasted growth values.

The **Russell 1000 Value Index**® measures the performance of those Russell 1000 companies with lower price-to-book ratios and lower forecasted growth values.

The **Russell 2000 Index**® measures the performance of the 2,000 smallest companies in the Russell 3000 Index.

The **Russell 2000 Growth Index**® measures the performance of those Russell 2000 companies with higher price-to-book ratios and higher forecasted growth values.

The **Russell 2000 Value Index**® measures the performance of those Russell 2000 companies with lower price-to-book ratios and lower forecasted growth values.

The **Russell 3000 Index**® measures the performance of the 3,000 largest U.S. companies based on total market capitalization.

The **Russell Midcap Index**® measures the performance of the 800 smallest companies in the Russell 1000 Index.

The **Russell Midcap Growth Index** ® measures the performance of those Russell Midcap companies with higher price-to-book ratios and higher forecasted growth values. The stocks are also members of the Russell 1000 Growth index.

The **Russell Midcap Value Index** ® measures the performance of those Russell Midcap companies with lower price-to-book ratios and lower forecasted growth values. The stocks are also members of the Russell 1000 Value index.

The **S&P 500 Index** is widely regarded as the best single gauge of the U.S. equities market. The index includes a representative sample of 500 leading companies in leading industries of the U.S. economy. The **S&P 500 Index** focuses on the large-cap segment of the market; however, since it includes a significant portion of the total value of the market, it also represents the market.

Fixed income:

The **Bloomberg Barclays 1-3 Month U.S. Treasury Bill Index** includes all publicly issued zero-coupon US Treasury Bills that have a remaining maturity of less than 3 months and more than 1 month, are rated investment grade, and have $250 million or more of outstanding face value. In addition, the securities must be denominated in U.S. dollars and must be fixed rate and non convertible.

The **Bloomberg Barclays Global High Yield Index** is a multi-currency flagship measure of the global high yield debt market. The index represents the union of the US High Yield, the Pan-European High Yield, and Emerging Markets (EM) Hard Currency High Yield Indices. The high yield and emerging markets sub-components are mutually exclusive. Until January 1, 2011, the index also included CMBS high yield securities.

The **Bloomberg Barclays Municipal Index**: consists of a broad selection of investment- grade general obligation and revenue bonds of maturities ranging from one year to 30 years. It is an unmanaged index representative of the tax-exempt bond market.

The **Bloomberg Barclays US Dollar Floating Rate Note (FRN) Index** provides a measure of the U.S. dollar denominated floating rate note market.

The **Bloomberg Barclays US Corporate Investment Grade Index** is an unmanaged index consisting of publicly issued US Corporate and specified foreign debentures and secured notes that are rated investment grade (Baa3/BBB or higher) by at least two ratings agencies, have at least one year to final maturity and have at least $250 million par amount outstanding. To qualify, bonds must be SEC-registered.

The **Bloomberg Barclays US High Yield Index** covers the universe of fixed rate, non-investment grade debt. Eurobonds and debt issues from countries designated as emerging markets (sovereign rating of Baa1/BBB+/BBB+ and below using the middle of Moody's, S&P, and Fitch) are excluded, but Canadian and global debt (SEC registered) of issuers in non-EMG countries are included.

The **Bloomberg Barclays US Mortgage Backed Securities Index** is an unmanaged index that measures the performance of investment grade fixed-rate mortgage backed pass-through securities of GNMA, FNMA and FHLMC.

The **Bloomberg Barclays US TIPS Index** consists of Inflation-Protection securities issued by the U.S. Treasury.

The **J.P. Morgan Emerging Market Bond Global Index (EMBI)** includes U.S. dollar denominated Brady bonds, Eurobonds, traded loans and local market debt instruments issued by sovereign and quasi-sovereign entities.

The **J.P. Morgan Domestic High Yield Index** is designed to mirror the investable universe of the U.S. dollar domestic high yield corporate debt market.

The **J.P. Morgan Corporate Emerging Markets Bond Index Broad Diversified (CEMBI Broad Diversified)** is an expansion of the **J.P. Morgan Corporate Emerging Markets Bond Index (CEMBI)**. The CEMBI is a market capitalization weighted index consisting of U.S. dollar denominated emerging market corporate bonds.

The **J.P. Morgan Emerging Markets Bond Index Global Diversified (EMBI Global Diversified)** tracks total returns for U.S. dollar-denominated debt instruments issued by emerging market sovereign and quasi-sovereign entities: Brady bonds, loans, Eurobonds. The index limits the exposure of some of the larger countries.

The **J.P. Morgan GBI EM Global Diversified** tracks the performance of local currency debt issued by emerging market governments, whose debt is accessible by most of the international investor base.

The **U.S. Treasury Index** is a component of the U.S. Government index.

Other asset classes:

The **Alerian MLP Index** is a composite of the 50 most prominent energy Master Limited Partnerships (MLPs) that provides investors with an unbiased, comprehensive benchmark for the asset class.

The **Bloomberg Commodity Index** and related sub-indices are composed of futures contracts on physical commodities and represents twenty two separate commodities traded on U.S. exchanges, with the exception of aluminum, nickel, and zinc

The **Cambridge Associates U.S. Global Buyout and Growth Index®** is based on data compiled from 1,768 global (U.S. & ex – U.S.) buyout and growth equity funds, including fully liquidated partnerships, formed between 1986 and 2013.

The **CS/Tremont Hedge Fund Index** is compiled by Credit Suisse Tremont Index, LLC. It is an asset-weighted hedge fund index and includes only funds, as opposed to separate accounts. The Index uses the Credit Suisse/Tremont database, which tracks over 4500 funds, and consists only of funds with a minimum of US$50 million under management, a 12-month track record, and audited financial statements. It is calculated and rebalanced on a monthly basis, and shown net of all performance fees and expenses. It is the exclusive property of Credit Suisse Tremont Index, LLC.

The **HFRI Monthly Indices (HFRI)** are equally weighted performance indexes, utilized by numerous hedge fund managers as a benchmark for their own hedge funds. The HFRI are broken down into 4 main strategies, each with multiple sub strategies. All single-manager HFRI Index constituents are included in the HFRI Fund Weighted Composite, which accounts for over 2200 funds listed on the internal HFR Database.

The **NAREIT EQUITY REIT Index** is designed to provide the most comprehensive assessment of overall industry performance, and includes all tax-qualified real estate investment trusts (REITs) that are listed on the NYSE, the American Stock Exchange or the NASDAQ National Market List.

The **NFI-ODCE**, short for NCREIF Fund Index - Open End Diversified Core Equity, is an index of investment returns reporting on both a historical and current basis the results of 33 open-end commingled funds pursuing a core investment strategy, some of which have performance histories dating back to the 1970s. The NFI-ODCE Index is capitalization-weighted and is reported gross of fees. Measurement is time-weighted.

Definitions:

Investing in **alternative assets** involves higher risks than traditional investments and is suitable only for sophisticated investors. Alternative investments involve greater risks than traditional investments and should not be deemed a complete investment program. They are not tax efficient and an investor should consult with his/her tax advisor prior to investing. Alternative investments have higher fees than traditional investments and they may also be highly leveraged and engage in speculative investment techniques, which can magnify the potential for investment loss or gain. The value of the investment may fall as well as rise and investors may get back less than they invested.

Bonds are subject to interest rate risks. Bond prices generally fall when interest rates rise.

Investments in **commodities** may have greater volatility than investments in traditional securities, particularly if the instruments involve leverage. The value of commodity-linked derivative instruments may be affected by changes in overall market movements, commodity index volatility, changes in interest rates, or factors affecting a particular industry or commodity, such as drought, floods, weather, livestock disease, embargoes, tariffs and international economic, political and regulatory developments. Use of leveraged commodity-linked derivatives creates an opportunity for increased return but, at the same time, creates the possibility for greater loss.

Derivatives may be riskier than other types of investments because they may be more sensitive to changes in economic or market conditions than other types of investments and could result in losses that significantly exceed the original investment. The use of derivatives may not be successful, resulting in investment losses, and the cost of such strategies may reduce investment returns.

Distressed Restructuring Strategies employ an investment process focused on corporate fixed income instruments, primarily on corporate credit instruments of companies trading at significant discounts to their value at issuance or obliged (par value) at maturity as a result of either formal bankruptcy proceeding or financial market perception of near term proceedings.

Investments in **emerging markets** can be more volatile. The normal risks of investing in foreign countries are heightened when investing in emerging markets. In addition, the small size of securities markets and the low trading volume may lead to a lack of liquidity, which leads to increased volatility. Also, emerging markets may not provide adequate legal protection for private or foreign investment or private property.

The price of **equity** securities may rise, or fall because of changes in the broad market or changes in a company's financial condition, sometimes rapidly or unpredictably. These price movements may result from factors affecting individual companies, sectors or industries, or the securities market as a whole, such as changes in economic or political conditions. Equity securities are subject to "stock market risk" meaning that stock prices in general may decline over short or extended periods of time.

Equity market neutral strategies employ sophisticated quantitative techniques of analyzing price data to ascertain information about future price movement and relationships between securities, select securities for purchase and sale. Equity Market Neutral Strategies typically maintain characteristic net equity market exposure no greater than 10% long or short.

Global macro strategies trade a broad range of strategies in which the investment process is predicated on movements in underlying economic variables and the impact these have on equity, fixed income, hard currency and commodity markets.

International investing involves a greater degree of risk and increased volatility. Changes in currency exchange rates and differences in accounting and taxation policies outside the U.S. can raise or lower returns. Some overseas markets may not be as politically and economically stable as the United States and other nations.

There is no guarantee that the use of **long and short positions** will succeed in limiting an investor's exposure to domestic stock market movements, capitalization, sector swings or other risk factors. Using long and short selling strategies may have higher portfolio turnover rates. Short selling involves certain risks, including additional costs associated with covering short positions and a possibility of unlimited loss on certain short sale positions.

Merger arbitrage strategies which employ an investment process primarily focused on opportunities in equity and equity related instruments of companies which are currently engaged in a corporate transaction.

Mid-capitalization investing typically carries more risk than investing in well-established "blue-chip" companies. Historically, mid-cap companies' stock has experienced a greater degree of market volatility than the average stock.

Price to forward earnings is a measure of the price-to-earnings ratio (P/E) using forecasted earnings. **Price to book value** compares a stock's market value to its book value. **Price to cash flow** is a measure of the market's expectations of a firm's future financial health. **Price to dividends** is the ratio of the price of a share on a stock exchange to the dividends per share paid in the previous year, used as a measure of a company's potential as an investment.

Real estate investments may be subject to a higher degree of market risk because of concentration in a specific industry, sector or geographical sector. Real estate investments may be subject to risks including, but not limited to, declines in the value of real estate, risks related to general and economic conditions, changes in the value of the underlying property owned by the trust and defaults by borrower.

Relative Value Strategies maintain positions in which the investment thesis is predicated on realization of a valuation discrepancy in the relationship between multiple securities.

Small-capitalization investing typically carries more risk than investing in well-established "blue-chip" companies since smaller companies generally have a higher risk of failure. Historically, smaller companies' stock has experienced a greater degree of market volatility than the average stock.

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Unless otherwise stated, all data are as of January 31, 2019 or most recently available.

Guide to the Markets – U.S.

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